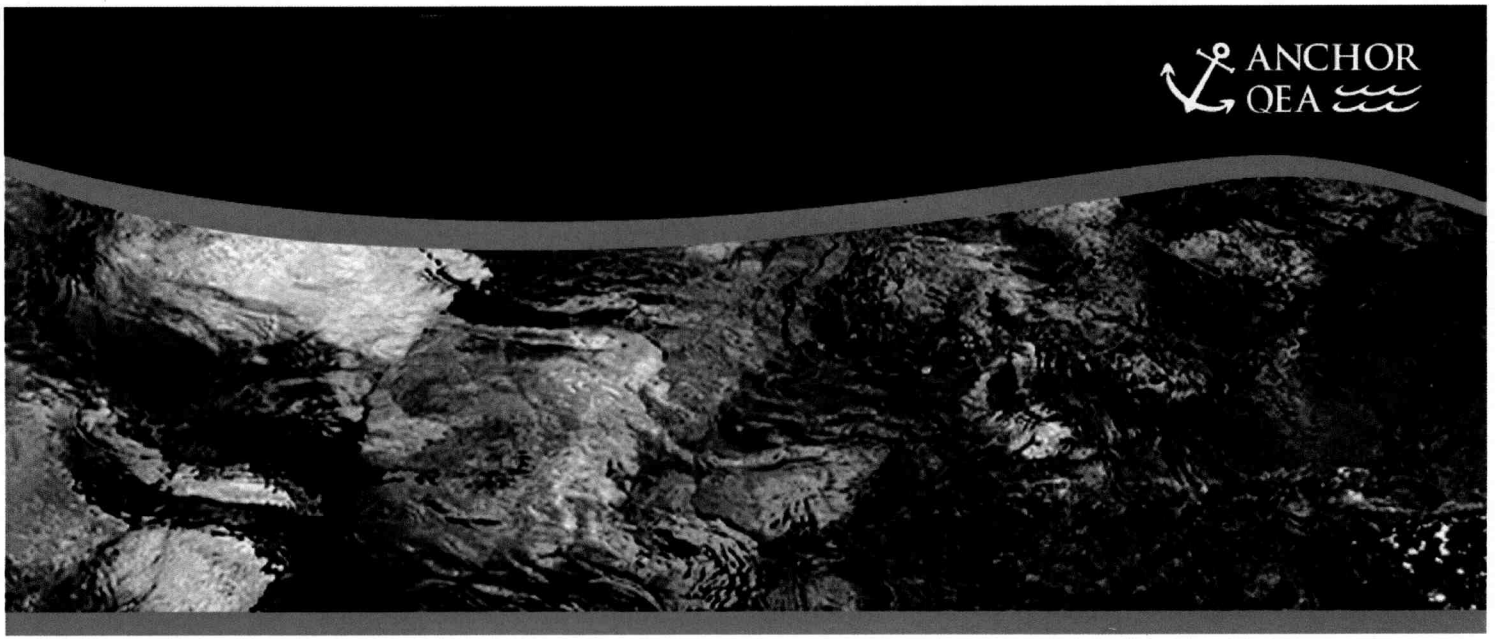

BASELINE ECOLOGICAL RISK ASSESSMENT REPORT
PATRICK BAYOU SUPERFUND SITE
DEER PARK, TEXAS

Prepared for

Patrick Bayou Joint Defense Group

U.S. Environmental Protection Agency

Prepared by

Anchor QEA, LLC

614 Magnolia Avenue

Ocean Springs, Mississippi 39564

March 2013

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LIST OF ACRONYMS AND ABBREVIATIONS

µg	microgram
µg/L	micrograms per liter
95 UCL	95 percent upper confidence limit
ACR	acute-to-chronic ratio
Ah	aryl hydrocarbon
ANOVA	analysis of variance
AOC	Administrative Order on Consent
AQUIRE	Aquatic Toxicity Information Retrieval
AUF	area use factor
AWQC	ambient water quality criteria
BAF	bioaccumulation factor
BCF	bioconcentration factor
BEHP	bis(2-ethylhexyl) phthalate
BERA	Baseline Ecological Risk Assessment
BERA Work Plan	Final Baseline Ecological Risk Assessment Work Plan
BI	benthic index
BMF	biomagnification factor
BSAF	biota-sediment accumulation factor
CCA	canonical correspondence analysis
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cm	centimeter
COC	chemical of concern
COI	chemical of interest
COPC	chemical of potential concern
CSM	Conceptual Site Model
DDT	dichlorodiphenyltrichloroethane
DL	detection limit
DO	dissolved oxygen

DOC	dissolved organic carbon
DQO	data quality objective
DW	dry weight
Eco-SSL	ecological soil screening level
EPC	exposure point concentration
ERA	ecological risk assessment
ERED	Environmental Residue-Effects Database
ES-BI	Engle and Summers Biotic Index
ESBTU	Equilibrium Partitioning Sediment Benchmark Toxic Unit
FAV	Final Acute Value
FCV	Final Chronic value
FCM	food chain multiplier
FS	Feasibility Study
GOM	Gulf of Mexico
GOMA	Gulf of Mexico Alliance
GOMA B-IBI	Gulf of Mexico Alliance Benthic Index of Biological Integrity
HPAH	high molecular weight polycyclic aromatic hydrocarbon
HQ	hazard quotient
HSC	Houston Ship Channel
JDG	Joint Defense Group
kg	kilogram
km	kilometer
km^2	square kilometer
L/kg	liters per kilogram
LOAEL	lowest observed adverse effects level
LOE	line of evidence
LOED	lowest estimated dose
LPAH	low molecular weight polycyclic aromatic hydrocarbon
MeHg	methylmercury
mg	milligram

mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MHHW	mean higher high water
MLLW	mean lower low water
NAVD88	North American Vertical Datum 1988
ng/L	nanograms per liter
NOAA	National Oceanic and Atmospheric Administration
NOAEL	no observed adverse effects level
PAH	polycyclic aromatic hydrocarbon
PB	Patrick Bayou
PBLO	Patrick Bayou Lead Organization
PCB	polychlorinated biphenyl
PCDD	polychlorinated dibenzo-p-dioxin
PCDF	polychlorinated dibenzofuran
PEC-Q	probable effect concentration quotient
PEL-Q	probable effect level quotient
PRG	preliminary remediation goal
PRP	potentially responsible party
PSCR	Preliminary Site Characterization Report
QAPP	Quality Assurance Project Plan
RG	remediation goal
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
SAP	Sampling and Analysis Plan
SH	State Highway
Site	Patrick Bayou Superfund Site
SOW	Statement of Work
SQG	sediment quality guideline
SQG-Q	sediment quality guideline quotient
SQT	sediment quality triad

SVOC	semivolatile organic compound
SWAC	surface weighted average concentration
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TCEQ	Texas Commission on Environmental Quality
TDI	total daily intake
TEF	toxic equivalency factor
TEQ	toxic equivalent quotient
TL	trophic level
TMDL	total maximum daily load
TNRCC	Texas Natural Resource Conservation Commission
TOC	total organic carbon
TRV	toxicity reference value
TU	toxic unit
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound
WOE	weight-of-evidence
WQB	water quality benchmark
WQC	water quality criteria
WW	wet weight
WWTP	waste water treatment plant

EXECUTIVE SUMMARY

This *Baseline Ecological Risk Assessment* (BERA) meets the requirements of Task 4 in the Statement of Work (SOW) of the Administrative Order on Consent (AOC) for the *Remedial Investigation/Feasibility Study* (RI/FS) of the Patrick Bayou Superfund Site (Site). The approach followed in the BERA provides a characterization of potential Site-related risks to ecological receptors resulting from the presence of hazardous substances in Site media, as presented in the *Baseline Ecological Risk Assessment Work Plan* (BERA Work Plan; Anchor QEA 2011a).

Problem Formulation

The BERA Conceptual Site Model (CSM) illustrates known and suspected sources of chemical contamination, types of chemicals and affected media, known and potential routes of migration, and known or potential ecological receptors. Complete and potentially significant exposure pathways are identified for the following ecological receptors:

- Benthic invertebrate community
- Fish community
- Sediment-probing birds and omnivorous/herbivorous birds – spotted sandpiper
- Carnivorous wading birds – composite avian receptor[1]
- Piscivorous birds – belted kingfisher
- Omnivorous/herbivorous mammals – raccoon

The exposure pathways for these receptors include a combination of direct contact with sediment, sediment ingestion, biota ingestion, and contact with porewater and surface water.

The assessment endpoints for the selected receptors are based on protection and maintenance of the communities or populations they represent. Although the goal of the assessment endpoints is based on protection of communities and/or populations, the measurement endpoints for most ecological receptors evaluated in the BERA concern the survival, growth,

[1] A composite avian receptor based on several different species was chosen to represent the range of life histories, physical descriptions (e.g., body weight), and feeding strategies of species within this guild.

and reproduction of the organisms in each receptor group[2]. This practice, which is common in Superfund ecological risk assessment (ERA), requires the extrapolation of individual level effects to assess potential risks to the community or population being considered. As such, thresholds for effects in this BERA are set at a level that may cause limited adverse effects on individuals but, if not exceeded, are not expected to result in adverse effects to the community or population overall.

Estimates of risk for all receptors are performed using deterministic approaches. Single estimates of exposure, such as estimated dietary intake or empirical estimates of concentration of a chemical of potential concern (COPC) in sediment are compared to levels that may result in adverse effects to ecological receptors. The exposure assessment quantifies the magnitude and spatial and temporal patterns of exposure to COPCs for ecological receptors identified during problem formulation. Consistent with the BERA Work Plan, the lowest observed adverse effects levels (LOAELs), or their equivalent, are used to define effects levels for risk estimates.

A hazard quotient (HQ) representing the ratio of estimated exposure to the adverse effects level is calculated for each receptor-COPC pair. Receptor-COPC exposure scenarios that result in HQs less than 1.0 are not expected to result in any adverse effects to either the individual receptor or the overall community or population of receptors represented by the receptor evaluated in the risk assessment. In addition to evaluating quantitative descriptions of ecological risks and threshold concentrations for adverse ecological effects, the risk characterization also presents information on the significance of the identified risks to support risk management decisions.

Several sources of uncertainty are associated with all Superfund risk estimates (USEPA 1997). Uncertainty in this BERA is primarily addressed through sensitivity analysis, whereby different point estimates of parameter uncertainty (e.g., treatment of non-detects) are used to bracket a range of risk estimates around the baseline scenario.

[2] The exception to this approach is the evaluation of benthic community composition measurement endpoint.

Wildlife Risk Assessment

Dietary exposure of wildlife to Site COPCs is the primary line of evidence (LOE) to assess risk to these receptor groups. Both prey tissue (i.e., fish and shellfish) and incidental sediment ingestion are considered in dietary dose estimates. Several potentially bioaccumulative COPCs, including polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxin/polychlorinated dibenzofuran (PCDD/PCDFs), polycyclic aromatic hydrocarbons (PAHs), lead, mercury, hexachlorobenzene, hexachlorobutadiene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene, were identified in the BERA Work Plan and are evaluated for wildlife. Only one COPC, PCBs expressed as 2,3,7,8-tetrachlorodibenzo-p-dioxin equivalents (i.e., PCB toxic equivalents [TEQs]), is equal to or exceeds a HQ of 1.0 for two receptors: spotted sandpiper and belted kingfisher. Uncertainty analysis indicates that HQs for these COPC-receptor pairs may be above or below the threshold of concern (HQ of 1.0) depending on the assumptions used to characterize risk; demonstrating that within the ranges of exposure and effects variables evaluated, risks may or may not exceed a threshold of concern for these COPC-receptor pairs.

Fish Risk Assessment

Risks to fish are assessed using a body burden approach, comparing the concentration of COPCs in fish tissue to tissue levels that are expected to have adverse effects on fish. The BERA Work Plan identified PCBs, PCDD/PCDFs, mercury, and selenium as bioaccumulative fish COPCs. Measured or estimated levels of these COPCs in whole body fish are compared to their corresponding effects levels. None of the COPCs exceed their respective effects levels (i.e., all HQs are less than 1.0). As a result, no adverse risk to fish populations from Site COPCs are identified.

Benthic and Aquatic Invertebrate Risk Assessment

Sediment chemistry, Site specific toxicity tests, and data on the condition of the benthic community (e.g., abundance, diversity, etc.) are used to assess risk to benthic invertebrates from exposure to sediment COPCs.

Initially, benthic toxicity models were evaluated to determine if an empirical, Site-specific relationship between surficial sediment chemistry and observed toxicity in laboratory

bioassays using Site sediment could be established. If such a model could be developed, toxicity in Site sediments could then be predicted across the Site using sediment chemistry alone. Several different quotient or toxic unit (TU) models that have been described in the open literature to assess this relationship were evaluated in the BERA Work Plan (Anchor QEA 2011a). The performance of each model was assessed by applying it to Site specific, co-located bulk sediment chemistry data and bioassay (i.e., toxicity) data for the marine amphipod *Leptocheirus plumulosus*. Of the models assessed, a mean quotient model using the Probable Effects Level (Long et al. 2006) was initially selected based on several performance criteria identified in the BERA Work Plan. This model, hereafter referred to as the mean Probable Effects Level-Quotient (PEL-Q), was refined using a series of optimization steps in the BERA Work Plan. This optimized model included four COPCs (total PCBs, total PAHs, lead, and bis(2-ethylhexyl)phthalate [BEHP]) that demonstrated a statistically significant difference in concentration between toxic and non-toxic samples.

This toxicity model initially developed in the BERA Work Plan was refined and reevaluated during the BERA. During the development of the BERA, it became apparent that the toxicity model, as initially conceived, had several limitations that could not be resolved and that led to a significant amount of uncertainty in its utility and relevance as a primary line of evidence. Specifically, and in no particular order of priority, these limitations are: the lack of reference area toxicity tests to account for naturally occurring stressors and confounding factors (e.g., salinity acclimation, porewater ammonia, etc.) that may result in an unknown but potentially significant amount of conservative bias in the toxicity attributed to Site COPCs; the model, when applied to other test species, results in a high percentage of false positives, leading to a potentially significant amount of Site sediments to be falsely predicted as toxic; and the analytical uncertainty in the PCB analysis in the toxicity sample dataset confounds the extrapolation of the sediment chemistry data to more recent samples. Thus, the uncertainty in the model, which is primarily a function of the uncertainty in the data used to develop the model, did not lead to a sufficient level of confidence in the model to define the magnitude and extent of risks to the benthic community.

Therefore, a weight of evidence (WOE) approach was developed in the BERA to assess benthic risk. This WOE approach included the review and analysis of Site-specific bulk sediment chemistry data, sediment bioassay data, and benthic community data as LOEs. The

objective of the WOE approach was to use the apparent correspondence between the values or metrics assigned to the LOEs, and the overall strength of the correspondence, where it existed, to identify areas of the Site where measurable incremental risks to the benthic community due to exposure to Site-related COPCs are deemed probable, indeterminate, or low. The way in which the degree and strength of correspondence among the three LOEs was factored into the consensus-based ranking of different areas of the Site is considered to be conservative (i.e., biased toward identifying areas as probable or indeterminate, rather than low). Twelve different locations within the Site with co-located synoptic bulk sediment chemistry, bioassay data, and benthic community were included in the analysis. Based on the WOE approach, two of these locations were identified as areas where incremental Site-related risks to the benthic community are probable, five locations were identified as indeterminate areas, and five locations were identified as low. PCBs were identified as a primary driver for probable risk locations and are designated as a chemical of concern (COC) for the benthic community.

Finally, the BERA Work Plan identified PCBs as a surface water COPC for benthic and aquatic invertebrate communities. Surface water levels of PCBs did not exceed relevant effect levels for invertebrates. Thus, no risks to invertebrates from PCBs in surface water are identified.

Conclusions and Risk Management Recommendations

The following risk management recommendations are made for the Site based on the outcome of the BERA:

1. PCB TEQ HQs for the sediment-probing and piscivorous bird receptor groups[3] are equal to 1.0 and 1.7 for spotted sandpiper and belted kingfisher, respectively. However, uncertainty analyses indicate that HQs for these COPC-receptor pairs may be above or below the threshold of concern (HQ = 1.0) depending on the assumptions used to characterize risk. Thus, within the ranges of exposure and effects variables evaluated, risks may or may not exceed a threshold of concern for individuals exposed to PCBs in Site media.

[3] Based on risks to the belted kingfisher.

2. Risks to fish populations at the Site are negligible and no risk management for this receptor group is necessary.
3. Using a WOE approach, areas of probable benthic risk were identified. Although a quantitative risk characterization for the benthic community could not be performed within the acceptable range of uncertainty, it is apparent that probable risks to the benthic community are likely associated with bulk sediment PCBs. Although no specific risk management recommendations are provided herein, risk management for this receptor group should be considered within the overall context of other risk management considerations (e.g., water quality standards) during the Feasibility Study (FS).
4. Ecological and human health risks occur along a continuum and there is not a quantifiable bright line for those risks. Remedial alternatives will be evaluated in the FS that lower the overall Site and sub-area risk for areas that are characterized as indeterminate and probable risks. In concert with USEPA, quantitative tools will be developed to assess the ultimate risk reduction expected from a specific remedial alternative and that risk reduction score will be used as part of the effectiveness assessment for each alternative, along with USEPA's other FS criteria. In addition, the evaluation of surface water impacts as related to sediment concentrations will be a part of the evaluation of remedial alternatives.

1 INTRODUCTION

This document presents the *Baseline Ecological Risk Assessment* (BERA) component of the Patrick Bayou Superfund Site (Site) *Remedial Investigation/Feasibility Study* (RI/FS). It describes the approach, data, and results used to complete the baseline risk assessment for ecological receptors required in Task 4 of the Statement of Work (SOW) of the Administrative Order on Consent (AOC) entered into with the U.S. Environmental Protection Agency (USEPA) for the RI/FS dated on January 31, 2006.

The BERA follows the ecological risk assessment (ERA) approach presented in the *Final Baseline Ecological Risk Assessment Work Plan* (BERA Work Plan; Anchor QEA 2011a). The approach is consistent with *USEPA Guidance for Conducting ERAs* (USEPA 1997, 1998), or as directed by USEPA. In addition, state guidance (Texas Natural Resource Conservation Commission [TNRCC] 2001; Texas Commission on Environmental Quality [TCEQ] 2006) is considered where appropriate.

The ERA process at Superfund sites is described as a series of eight-steps (Figure 1-1; USEPA 1997). The screening-level problem formulation and ecological effects evaluation (Steps 1 and 2 of the USEPA framework) are part of the initial ecological risk screening assessment, which have been completed along with portions of Steps 3 through 6 (problem formulation, study design and data quality objectives (DQOs), field sampling planning, and site investigation) through previous RI/FS documents described in the BERA Work Plan. The BERA Work Plan also provides a refinement of Steps 3 through 6. Step 7 (risk characterization) is performed in this BERA, which also includes summaries of the previous steps, exposure and effects assessments, and an uncertainty analysis. Step 8 (risk management) is the phase where remedial actions are considered and is part of the Feasibility Study (FS).

The general objectives of the BERA are to:

- Identify whether unacceptable ecological risks due to chemicals of potential concern (COPCs) are present at the Site.
- Describe the range and magnitude of those risks to ecological receptors in the absence of any Site remediation.

- Identify, as chemicals of concern (COCs), those chemicals that exceed an acceptable risk threshold for one or more ecological receptors.

The results of the BERA will also support the establishment of risk-based preliminary remediation goals (PRGs) during the FS. Along with other risk management considerations, the risk-based PRGs will be used in the evaluation of remedial options in the FS and, ultimately, identification of final Remediation Goals (RGs) when the remedy is selected.

1.1 Overview of Document

The remainder of this document is organized as follows:

- Section 2 – Site Description – This section provides general information about the ecological habitat types and species present at the Site.
- Section 3 – Problem Formulation – This section presents a summary of the ecological COPCs, the conceptual exposure model, and the selected assessment and measurement endpoints.
- Section 4 – BERA Data – This section presents a summary of the Site data used in the BERA.
- Section 5 – Ecological COPC Summary – This section summarizes the process used to identify ecological COPCs and presents the COPCs for each ecological receptor group.
- Section 6 – Wildlife Risk Assessment – This section presents the exposure, effects, and risk characterization evaluation for selected bird and mammal receptors.
- Section 7 – Fisk Risk Assessment – This section presents the exposure, effects, and risk characterization evaluation for selected fish receptors.
- Section 8 – Benthic Invertebrate Risk Assessment – This section presents the exposure, effects, and risk characterization evaluation for the benthic invertebrate community.
- Section 9 – Aquatic Plants, Reptiles, and Amphibians Uncertainty Discussion – This section provides a qualitative discussion of uncertainty regarding risks to these receptors.
- Section 10 – Conclusions and Risk Management Recommendations – This section presents the overall risk conclusions of the BERA and risk management recommendations.

The following Appendices and Attachments are also included as part of this BERA:

- Appendix A – BERA Dataset
- Appendix B – Surface Sediment Interpolation and Averaging
- Appendix C – Wildlife Risk Assessment Supporting Information
- Appendix D – Fish Risk Assessment Supporting Information
- Appendix E – Benthic Invertebrate Risk Assessment Supporting Information
- Appendix F - Comments and Responses Matrix for TCEQ, NOAA, and USEPA – Draft Baseline Ecological Risk Assessment
- Attachment 1 – Ecological Fish and Invertebrate Tissue Sampling Data Report

2 SITE DESCRIPTION

Patrick Bayou is a tributary of the Houston Ship Channel (HSC) in Harris County, Texas (Figure 2-1). Patrick Bayou discharges into the south side of the HSC approximately 2.3 miles upstream of its confluence with the San Jacinto River. The Site, its history, and its physical features are described in more detail in the *Preliminary Site Characterization Report* (PSCR; Anchor Environmental 2006), a brief summary is provided in the following paragraphs.

The Site is located north of State Highway (SH) 225 downstream of the City of Deer Park Waste Water Treatment Plant (WWTP) and flows north approximately 10,200 feet (1.9 miles) to the HSC. The drainage upstream of the Site originates in the City of Deer Park and consists of trapezoidal, concrete-lined ditches, which transition into large culverts underneath SH 225. These culverts emerge into a gunite-lined channel at the upstream Site boundary. The gunite-lined portion of the Site extends approximately 1,800 feet north (downstream) and ends near an east-west trending railroad bridge crossing. This gunite-lined portion of the Site has an unconsolidated, earthen bottom. Downstream of the gunite-lined portion of the Site, the channel is composed of natural and armored banks. Nearly the entire Site is tidally influenced. A tributary of Patrick Bayou referred to as the East Fork, joins the Site approximately 6,500 feet upstream of the mouth of Patrick Bayou. The East Fork is a small intermittent stream approximately 5,500 feet long that flows in a northwesterly direction.

To support consistent spatial referencing, the Site is segmented by stations from the mouth of Patrick Bayou at its confluence with the HSC (Station PB-000[4]), up to the Site boundary at the culverts under SH 225 (Station PB-102). These stations provide the approximate linear distance from downstream to upstream in hundreds of feet (e.g., Station PB-102 is approximately 10,200 linear feet from the mouth of Patrick Bayou).

[4] PB – 'Patrick Bayou'

3 PROBLEM FORMULATION

This section presents the problem formulation for the BERA. The BERA problem formulation is developed in Step 3 of the eight-step risk assessment process and identifies specific factors to be addressed in the ERA (USEPA 1997).

The problem formulation step of the ERA process includes the following:

- Refinement of preliminary COPCs
- Further characterization of the ecological effects of COPCs at the Site
- Review and refinement of information on fate and transport, complete exposure pathways, and ecosystems potentially at risk
- Selection of assessment and measurement endpoints
- Development of a Conceptual Site Model (CSM) and risk questions
- Development of an analysis plan

Detailed information on the BERA problem formulation is presented in the BERA Work Plan and the elements of the problem formulation are summarized here as follows:

- Refined screening process for identifying COPCs (Section 3.1)
- Refined CSM (Section 3.2)
- Refined assessment and measurement endpoints (Section 3.3)
- Analysis plan outlining the methods for conducting the BERA (Section 3.4)

3.1 Identification of Ecological COPCs

As part of the refined screen conducted following the procedures described by USEPA (1997, 2001), data from the Site were screened to identify the BERA COPCs. Refinement of the ecological COPCs was performed in an iterative fashion; refinements were performed as additional relevant data became available during the RI (Anchor Environmental 2006; Anchor 2008a, 2008b). The most recent refinement was conducted as part of the BERA problem formulation presented in the BERA Work Plan. The most recent round of sediment and surface water data (Anchor QEA 2010) was used to refine the final list of COPCs for the BERA. A general summary of the refined screen and ecological COPCs that were identified for each ecological receptor group are presented in a separate section (Section 5).

3.2 Refined Ecological Conceptual Site Model

The ecological CSM for the BERA is one of the four primary products of Step 3 of the eight-step ERA process (USEPA 1997), along with assessment endpoints, exposure pathways, and risk questions. An ecological CSM describes predicted relationships between receptors potentially at risk and the stressors to which they may be exposed.

Consistent with Superfund guidance (USEPA 1997), ecological receptors were identified in the BERA Work Plan to represent the range of organisms exposed to COPCs at the Site. For the BERA, the following species or groups of species (communities) were identified as representative ecological receptors:

- Benthic invertebrate community
- Fish community
- Sediment-probing birds and omnivorous/herbivorous birds – spotted sandpiper
- Carnivorous wading birds – composite avian receptor[5]
- Piscivorous birds – belted kingfisher
- Omnivorous/herbivorous mammals - raccoon

Elements of the ecological CSM include information about source media, transport pathways, exposure media, routes of exposure, and receptors. An exposure pathway is considered complete if a chemical of interest (COI) can travel from a source to ecological receptors and is available to the receptors via one or more exposure routes (e.g., ingestion; USEPA 1997). The ecological CSM provides a basis for identifying those exposure pathways and provides a framework for characterizing those risks associated with potentially complete pathways.

Complete pathways can be of varying relevance, so it is important to identify key pathways that reflect the greatest potential exposures to ecological receptors sensitive to the COPCs being considered (USEPA 1997). Exposure pathways for COPCs at the Site were designated in the BERA Work Plan in one the following four ways for each receptor relative to their exposure potential:

[5] A composite avian receptor based on several different species was chosen to represent the range of life histories, physical descriptions (e.g., body weight), and feeding strategies of species within this guild.

1. Complete and significant - Complete and significant pathways have a direct link between receptor and COI, and the specific pathway is considered a potentially important contributor to risk. These pathways are quantitatively addressed in the BERA.
2. Complete and uncertain - Complete and uncertain pathways have a direct link between receptor and COI; however, there are insufficient scientific data available to quantify the significance of the pathway in overall assessment of exposure. These pathways are addressed qualitatively to a level of certainty dependent on available toxicological studies and exposure data.
3. Complete and minor - Complete and minor pathways have a direct link between receptor and COI; however, the significance of this pathway in terms of overall exposure is not considered significant or is negligible relative to other exposure pathways. These pathways are qualitatively discussed in the risk characterization section for each receptor group.
4. Incomplete - Incomplete pathways do not have a direct link between receptor and COI. An assessment of these pathways is not performed in the BERA.

The BERA Work Plan identified the following exposure pathways as complete and significant:

- Benthic and aquatic invertebrates:
  - Direct contact and ingestion of sediment and sediment porewater
  - Biota ingestion
  - Direct contact and ingestion of surface water
- Fish populations
  - Direct contact and ingestion of sediment and sediment porewater
  - Ingestion of biota
  - Direct contact with surface water
- Sediment-probing birds
  - Ingestion of biota
  - Incidental sediment ingestion
- Carnivorous wading birds
  - Ingestion of biota
  - Incidental sediment ingestion

- Piscivorous birds
  - Ingestion of biota
- Omnivorous/herbivorous mammals
  - Ingestion of biota
  - Incidental sediment ingestion

The complete ecological CSM showing source media, transport, exposure media, routes of exposure, and receptors is diagramed in Figure 3-1. A simplified version illustrating exposure media, routes of exposure, and receptors associated with complete and significant pathways is provided in Figure 3-2.

3.3 Assessment Endpoints and Measurement Endpoints

Assessment endpoints are the valued attributes of ecological entities upon which risk management actions are focused (USEPA 1998). The assessment endpoints for all receptors selected in the BERA Work Plan are based on protection and maintenance of the communities or populations they represent. Although the goal of the assessment endpoints is based on protection of communities and/or populations, the assessment endpoints for all ecological receptors evaluated in the BERA concern the survival, growth, and reproduction of the organisms in each receptor group. This practice, which is common in Superfund ERA (primarily for practical reasons), requires the extrapolation of individual level effects to assess potential risks to the community or population being considered[6]. This is considered a generally conservative approach. As such, thresholds for effects in this BERA are set at a level that may cause adverse effects on some individuals, but, if not exceeded, are not expected to result in adverse effects to the community or population overall.

Measurement endpoints are measureable (i.e., quantitative) ecological characteristics that are used to evaluate if the assessment endpoint is protected by addressing a series of risk questions. Measurement endpoints are evaluated with one or more lines of evidence (LOEs).

[6] An exception to this practice includes the assessment endpoints for threatened or endangered species. In such cases, protection of the individual (in addition to the community or population) is the basis for the assessment and measurement endpoints. As discussed in the BERA Work Plan, no threatened or endangered species were selected as ecological receptors for the BERA due to their absence from the Site.

A LOE is a set of data and associated analyses that can be used to estimate ecological risks. One or more LOE were selected for each measurement endpoint. The assessment endpoints, risk questions, measurement endpoints, and LOE selected for ecological receptors identified in the BERA Work Plan are summarized in Table 3-1.

3.4 Analysis Plan

The analysis plan describes the specific approaches and methods for conducting the risk calculations used to evaluate the risk questions and assessment endpoints (USEPA 1997). Details on the analytical approaches used to evaluate risks to each ecological receptor group are provided in the effects and exposure sections of Sections 6 through 10. A summary of the major components described in the BERA analysis plan is provided below.

Exposure Assessment – All exposure pathways classified as complete and significant in the ecological CSM (Figure 3-2) were evaluated quantitatively. The exposure assessment quantified the magnitude and spatial and temporal patterns of exposure to COPCs for ecological receptors identified during problem formulation. For the BERA, the exposure assessment includes the replacement of many assumptions included in the previous screening level evaluations (Anchor Environmental 2006; Anchor 2008a, 2008b, Anchor QEA 2011a) with Site-specific data to provide a more robust analysis of potential risks.

Effects Assessment – The effects assessment primarily includes an integration of literature derived ecological effects information with any Site-specific data developed during the RI (e.g., toxicity testing). For the wildlife and fish effects assessments, literature derived effects information was used to identify appropriate toxicity reference values (TRVs) and benchmarks. For the benthic invertebrate effects assessment, sediment chemistry, site specific toxicity tests, and data on the condition of the benthic community (e.g., abundance, diversity, etc.) were used to assess effects to benthic invertebrates exposed to sediment COPCs.

Risk Characterization – As part of the risk characterization, information on contaminant exposure and effects were integrated to estimate risks to the receptors. Several different risk estimation methods were used for the various measurement endpoints and LOEs in this

BERA. In addition to presenting quantitative descriptions of ecological risks and threshold concentrations for adverse ecological effects, the risk characterization also presents information on the significance of the identified risks, including: 1) the location and spatial extent of Site contamination exceeding adverse effect thresholds; and 2) the magnitude of or degree to which adverse effect thresholds are exceeded.

Uncertainty Analysis – Several sources of uncertainties are associated with all Superfund risk estimates (USEPA 1997). Although all sources of uncertainty cannot be identified and described within the context of the risk assessment, the major sources of uncertainty in the risk estimates are identified, described, and where possible, quantified. Uncertainty in this BERA is primarily addressed through sensitivity analysis, whereby different point estimates of parameter uncertainty (e.g., treatment of non-detects) are used to bracket a range of risk estimates around the baseline scenario.

4 BERA DATASET

Numerous datasets have been compiled in support of the Patrick Bayou RI/FS over the course of several years. Additional data relevant to the Site were compiled from other sources and screened for inclusion in the RI dataset.

As described in the BERA Work Plan, the BERA uses a subset of the data that comprise the RI dataset (hereafter referred to as the BERA dataset). The BERA utilizes only data collected from within the Site boundaries. The following data are included in the BERA dataset:

- Chemistry data for 52 surface sediment samples collected in 2009 and 2011
- Chemistry data for 26 surface water samples collected in 2009 and 2011
- Chemistry data for 83 whole-body fish and invertebrate tissue samples collected in 2011
- Co-located whole sediment bioassay data and surface sediment chemistry for 51 samples collected between 2001 and 2006

The BERA dataset includes only those media relevant for ecological exposure pathways: surface sediment (0 to 10 centimeter [cm]), surface water, and invertebrate and fish tissue. The BERA dataset, which includes data generated as part of the RI and historical data, is summarized, by medium, in Table 4-1, shown by location in Figures 4-1 through 4-4, and described in detail in the following subsections.

4.1 Data Evaluation

This section summarizes the data quality review process for the BERA dataset and describes the data reduction, summation, and normalization procedures.

4.1.1 Data Quality and Management

Methods for performing data quality reviews for data generated by the Joint Defense Group (JDG) are described in the project Quality Assurance Project Plan (QAPP) (Anchor 2007) and in task specific sampling plans. In addition, detailed review of the quality of the non-JDG datasets were performed prior to acceptance in the project database according to the criteria established for the project (Anchor Environmental 2006). All field data, physical

measurements, and chemical data generated by the JDG or other parties (non-JDG data) were maintained and managed as directed by the project *Data Management Plan* (Anchor 2007). All chemical data were maintained in a relational project database (i.e., EQuiS®) and validated by the Anchor QEA project chemist or qualified third party validator.

4.1.2 Data Treatment, Summation, and Reduction

Rules for the treatment of chemical data in the BERA dataset are described below.

4.1.2.1 General Data Treatment Rules

General data treatment rules for the risk assessment are as follows:

1. Sediment data were presented on a dry weight (DW) basis unless stated otherwise.
2. Tissue data were presented on a wet weight (WW) basis unless stated otherwise.
3. For risk estimation purposes, sediment data generated through duplicate analysis (i.e., field duplicates) were treated as quality control samples and were not included in subsequent calculations or data analysis steps.
4. For individual analyte results, a concentration equal to one-half the sample-specific detection limit (DL; as reported by the laboratory) was used for undetected analytes.

4.1.2.2 Summation Rules

Unless stated otherwise, for total values (e.g., total polychlorinated biphenyls [PCBs]) where at least one analyte included in the summation was detected, all detected values were included and non-detect values were included at one-half the DL in the total. For total values where none of the analytes included in the summation were detected, the DL was set to the highest DL for an individual analyte and the total result was labeled as non-detect.

Selected individual analytes included in totals are as follows:

- Total PCBs – Total PCBs represent the sum of all reported PCB Congeners (n=209) for all JDG generated data in the BERA dataset. The exception to this general rule applies to the benthic risk assessment. Development of the benthic model (Section 8) utilized non-JDG data that were analyzed for PCB Aroclors.
- Total LPAH – Total low molecular weight polycyclic aromatic hydrocarbons [PAHs]

(LPAHs) are the sum of 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorine, naphthalene, and phenanthrene.

- Total HPAH – Total high molecular weight PAHs (HPAH) are the sum of fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzofluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, and benzo(g,h,i)perylene.
- Total PAH – Sum of LPAH and HPAH.

4.1.2.3 *Toxic Equivalency Quotients*

The 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) toxic equivalency quotient (TEQ) was the primary expression used to assess exposure of wildlife and fish to complex mixtures of polychlorinated dibenzo-p-dioxin/polychlorinated dibenzofuran (PCDDs/PCDFs), and dioxin-like PCBs[7] (USEPA 2008a). TEQs were calculated using the formula:

$$TEQ = \sum_{n=1}^{k} C_n \times TEF_n$$

where:

C_n	=	concentration of dioxin-like chemical *n* in organism or its diet
TEF_n	=	Toxic equivalency factor for dioxin-like chemical *n*
K	=	number of dioxin-like chemicals in mixture

TEQs were calculated using fish, bird, and mammalian toxic equivalency factors (TEFs) provided by USEPA (2008). TEFs used to calculate TEQ values are provided in Table 4-2. TEQs were calculated separately for sum PCDD/PCDFs (PCDF/PCDD TEQ) and sum dioxin-like PCBs (PCB TEQ). If at least one congener was detected in a sum, all detected values were included and non-detect values at one-half the DL. If no congeners in a sample were detected, the DL was set to the highest TEF-adjusted congener TEQ DL and the total result was labeled as a non-detect.

[7] The dioxin-like PCBs include a subset of 12 co-planar PCB Congeners. They are: PCB-77, PCB-81, PCB-105, PCB-114, PCB-118, PCB-123, PCB-126, PCB-156, PCB-157, PCB-167, PCB-169, and PCB-189 (USEPA 2008a).

4.2 Sediment

Surface sediment chemistry from the Site used for the BERA dataset include sediment data collected in October and November of 2009[8] and August of 2011 (Anchor QEA 2010; 2012). Table 4-3 presents a summary of the sediment samples included in the BERA dataset. These data represent the most recent, comprehensive assessment of conditions at the Site. Previous investigations include data collected between 2000 and 2008. However, the collection methods, field protocols, and quality control protocols differed between sampling events due to the varied purposes (e.g., total maximum daily loading [TMDL] evaluations, sediment transport modeling, etc.), DQOs, and sampling entities (e.g., TCEQ, potentially responsible party [PRP], etc.). The differences represent a potential source of uncertainty in the dataset, which is absent or controlled in the 2009 and 2011 data. Samples from both sampling events were collected from the sediment mixing-zone layer (0 to 10 cm).

The sediment mixing-zone layer is the surface-layer of the sediment bed where active physical mixing occurs due to biological burrowing (bioturbation) and hydrodynamic forces. The thickness of the mixing-zone layer is important because it affects the rate of natural attenuation of surface-layer COPC concentrations at the Site, and it is representative of the depth of the bioactive zone where exposure is likely to occur. Within the mixing-zone layer, bioturbation and hydrodynamic forces tend to homogenize the sediment and chemicals, which produces vertical profiles of chemical concentration that are nearly constant. Results of the Patrick Bayou sediment mixing-zone layer study concluded that the mixing-zone layer depth at the Site, and thus depth of exposure to benthos, is less than 10 cm (Anchor QEA 2009b).

The 2009 data provide a spatially robust characterization of the distribution of COPCs at the Site. Sediment samples were collected in a systematic grid pattern across the Site, and therefore provide a synchronous set of Site-wide data with which to develop surface concentration maps for the risk assessment (Figure 4-1). Forty-six surface sediment samples were collected and analyzed for the list of COPCs identified in the *Ecological COPC Report Addendum* (Anchor QEA 2008b), including metals, semi-volatile organic compounds

[8] Data collected in October – November 2009 were included in the refinement of COPCs performed in the BERA Work Plan. Data collected in 2011 were subsequent to the BERA Work Plan.

(SVOCs), volatile organic compounds (VOCs), pesticides, PCB Congeners, and PCDDs/PCDFs. The objective of this sampling was to collect a spatially representative sediment dataset for use in the exposure assessment of the BERA. Detailed results of this sampling are provided in the *Sediment and Surface Water COPC Delineation Data Report* (Anchor QEA 2010).

One of the purposes of the 2011 sampling event was to provide additional information on the distribution of PCBs and PAHs in sediments within the upstream portion of the Site (the investigation was conducted from PB-066 to PB-101 and sediment samples were collected between Stations PB-068 and PB-082[9]; Figure 4-1). Six samples were collected from areas of soft sediment accumulation and analyzed for PAHs and PCB Aroclors. Detailed results of this sampling event are provided in the *Upstream Patrick Bayou Characterization Data Report* (Anchor QEA 2012a).

Surface sediment data were used in the BERA to estimate exposure concentrations for relevant ecological receptors based on direct contact (i.e., benthic invertebrates and fish) and dietary exposure (i.e., fish and wildlife). The compiled results of surface sediment samples from the 2009 and 2011 sampling events included in the BERA dataset are provided in Appendix A-1.

4.3 Surface Water

Surface water chemistry from the Site used for the BERA dataset include surface water data collected in October and November of 2009 and August of 2011. Table 4-4 presents a summary of the surface water samples included in the BERA dataset. These data represent the most recent comprehensive assessment of the conditions at the Site. Sample locations for the 2009 and 2011 sampling events are provided in Figure 4-2.

Four locations within the Site boundary were included in the October-November 2009 sampling effort for a comprehensive list of COPCs, including conventional parameters, metals, SVOCs, VOCs, pesticides, PCBs, and PCDDs/PCDFs. A total of 14 samples were

[9] Soft-sediments suitable for sampling were not identified upstream of PB-082.

collected from the mid-depth of the water column, as determined in the field, and approximately 6 inches from the bottom at each location. Collection occurred during two tidal conditions: one at approximately slack low tide and the second at approximately mid-tide (on an outgoing, or ebb tide). Detailed results of this sampling are provided in the *Sediment and Surface Water COPC Delineation Report* (Anchor QEA 2010).

One of the purposes of the 2011 sampling event was to provide additional surface water data for PCBs in the upstream portion (PB-066 to PB-101) of the Site. Because detectable concentrations of PCBs were reported at Station PB-076, the upstream-most surface water station within Site boundaries during the 2009 sampling event, additional data were required to better characterize the distribution of PCBs in surface water. Detailed surface water sampling results are provided in the *Upstream Patrick Bayou Characterization Report* (Anchor QEA 2012a).

Surface water data are used in the BERA to estimate exposure concentrations for relevant ecological receptors based on direct contact (i.e., benthic invertebrates and fish) and bioaccumulative surface water COPCs. The chemistry results of surface water samples from the 2009 and 2011 sampling events included in the BERA dataset are provided in Appendix A-2.

4.4 Tissue

Tissue chemistry data from the Site included in the BERA dataset were collected during June of 2011 to evaluate risks to selected ecological receptors of concern. Table 4-5 presents a summary of the fish and invertebrate tissue samples included in the BERA dataset. The detailed results of this sampling event have not been reported previously and are therefore attached as a complete data report (Attachment 1) to the BERA.

Invertebrate tissue data included in the BERA dataset include samples for blue crabs (*Callinectes sapidus*), brown shrimp (*Penaeus aztecus*), white shrimp (*Penaeus setiferus*), and oysters (*Crassostrea virginica*). A total of 33 invertebrate samples were collected: 21 blue crab samples, eight brown shrimp samples, three white shrimp samples, and one oyster sample (Table 4-5; Figure 4-3). Invertebrates were divided into two size classes, 2 – 7.5 cm

and 7.5 – 13 cm; representing the prey sizes ingested by the wildlife receptors identified in the BERA Work Plan. Samples were analyzed for wildlife COPCs identified in the BERA Work Plan, including lead, total mercury, PCB Congeners, PCDDs/PCDFs, PAHs, hexachlorobenzene, 1,3-dichlorobenzene, hexachlorobutadiene, and 1,4-dichlorobenzene[10].

Fish tissue data included in the BERA dataset include samples of Gulf killifish (*Fundulus grandis*), Gulf menhaden (*Brevoortia patronus*), pinfish (*Lagodon rhomboides*), sand seatrout (*Cynoscion arenarius*), and striped mullet (*Mugil cephalus*). A total of 50 fish samples were collected: 25 Gulf killifish, ten Gulf menhaden, four pinfish, two sand seatrout, and nine striped mullet (Table 4-5; Figure 4-4). All fish collected for analysis were less than 15 cm (total length) based on the assumed prey size for the wildlife receptors identified in the BERA Work Plan. Fish tissue were analyzed for both fish and wildlife COPCs identified in the BERA Work Plan, including total mercury, hexachlorobenzene, 1,3-dichlorobenzene, PCB Congeners, and PCDDs/PCDFs.

Individual organisms of the same species were composited together to meet analytical tissue volume requirements. If the required amount of tissue volume was not collected from a fishing effort, then samples were either composited over time (i.e., from the same location over the course of several hours or days), or composited spatially from within pre-defined sampling areas. The sampling areas were based on the approximate foraging ranges of the target species. The sampling area for juvenile (2 – 7.5 cm) blue crab, oyster, and killifish was 30 meters. Large juvenile blue crab (7.5 – 13 cm), brown shrimp, white shrimp, Gulf menhaden, pinfish, sand seatrout, and striped mullet had a sampling area of 300 meters. Organisms collected outside of these limits were not composited together.

4.5 Bioassay/Sediment Chemistry Data

Sediment toxicity results and synoptic sediment chemistry analyses from previous studies within the Site boundary provided a foundation for assessing the potential risks to the benthic community resulting from direct exposure to contaminated Site sediments.

[10] Not all samples were analyzed for all COPCs. The target analytes for different size classes were based on expected dietary constituents of wildlife receptors and COPCs identified for wildlife receptors. See Section 6 for more details on wildlife dietary COPCs.

The data included in the BERA benthic toxicity dataset include 51 samples (Table 4-6; Figure 4-5) with co-located whole sediment bioassay data and surface sediment chemistry collected primarily in support of TMDL studies for Patrick Bayou (Parsons et al. 2002, 2004), as well as routine and special studies performed by TCEQ (no date). Of the surface sediment samples, 44 samples were collected within the Site, three samples were collected downstream of the Site in the HSC, and four samples were collected upstream of the Site boundary. Samples were collected between September 2000 and August 2006 and analyzed for metals, PAHs, SVOCs, and PCBs.

4.6 Porewater Data

Porewater data were collected as part of the *Supplemental Work Plan, Patrick Bayou Superfund Site, Deer Park, Texas* (Anchor 2007c). Sixteen porewater samples collected by centrifugation of bulk sediment from the 0-10 cm interval were analyzed for selected SVOCs, metals (total and dissolved), pesticides, PCB Congeners[11], ammonia, total sulfide, total organic carbon (TOC), and dissolved organic carbon (DOC). Eight porewater samples collected using passive diffusion sampling were analyzed for VOCs. One-hundred porewater samples collected at ten stations were submitted for mercury speciation (total mercury, methylmercury, and alkylated mercury)[12].

Porewater data were used to identify and refine the list of benthic invertebrate COPCs (Anchor 2008a, 2008b) but was not selected as a LOE to assess risks in this BERA based on the USEPA approved Work Plan (Anchor QEA 2011a). Mercury speciation data were used in this BERA to assess the bioavailability of mercury in sediments consumed by wildlife receptors (Section 6).

4.7 Benthic Community Data

Benthic community data were collected during previous investigations within Patrick Bayou. Site data were collected during third party TMDL investigations performed by the Patrick

[11] Only 11 of 16 samples were analyzed for PCB Congeners.

[12] Samples were collected at 2 cm intervals per station to a depth of 20 cm. Every other interval was submitted for analysis.

Bayou Lead Organization (PBLO; Parsons et al. 2002; Parsons et al. 2004)[13]. These samples were collected concomitantly with the sediment samples utilized in the bioassay tests described in Section 4.5.

Sample locations are identified in Figure 4-5. In September 2000, samples were collected from 19 locations. Fifteen stations were located within Patrick Bayou, two stations were located upstream of the Site (i.e., south of SH 225), one station was located in the East Fork Tributary, and one station was located in the HSC just east of the mouth of Patrick Bayou. These locations were sampled again in April 2001. A limited sampling event at four stations[14] within Patrick Bayou was performed in October 2001 and six stations were sampled within Patrick Bayou again in August 2003[15]. Records included in the BERA dataset are summarized in Table 4-7.

[13] Details on sample collection and processing can be found in these documents.
[14] Stations Q, 4A, G, and E.
[15] Stations E, 7, R, 6A, 4A, and 3.

5 ECOLOGICAL COPC SUMMARY

As stated in Section 3.1, ecological COPCs were refined in the BERA Work Plan problem formulation using the Site dataset identified for the BERA (Section 4). COPCs were identified in order to focus the list of chemicals for evaluation of ecological risks. COPCs initially were identified by conducting a screening-level analysis during which the maximum concentrations in various media are compared to conservative thresholds of toxicity. Chemicals with maximum concentrations that did not exceed conservative thresholds of toxicity or were not otherwise identified as COPCs were ruled out as posing unacceptable risk to ecological receptors (Anchor 2008a, 2008b).

In addition, a comprehensive COPC refinement screen was conducted as part of the BERA Work Plan. The initial list of target analytes based on the *COPC Report and Amendment* (Anchor 2008a, 2008b) contained 100 different chemicals.[16] This list was not a likely reflection of the list of chemicals that pose a significant unacceptable risk for adverse effects on ecological receptors. A refinement of the chemicals carried into this BERA was conducted to focus on likely indicator chemicals[17] and to avoid diverting effort in pursuit of chemicals with little likely incremental or measureable contribution to unacceptable risks to ecological receptors.

A total of 44 ecological COPCs were identified for the Site at the conclusion of the BERA Work Plan and are listed by class for each receptor group in Table 5-1. They include eight metals, 19 PAHs (including calculated totals), PCBs[18], PCDD/PCDF[19], three SVOCs, and 12 VOCs. The following sections summarize the selection of COPCs for the BERA for each representative receptor group.

[16] Not including all 209 PCB Congeners, which were treated as one analyte for purposes of the tally.

[17] An indicator chemical or chemical group is one that is the most toxic, persistent, and/or mobile among those substances likely to contribute significantly to the overall risk at the Site (USEPA 1988).

[18] As total congeners and as TEQs using the toxicity equivalent methodology for 2,3,7,8-TCDD and dioxin-like compounds.

[19] As total TEQ using the toxicity equivalent methodology for 2,3,7,8-TCDD and dioxin-like compounds.

5.1 Benthic and Aquatic Invertebrate COPCs

The list of benthic and aquatic invertebrate COPCs was developed through a series of screening and refinement steps prior to the BERA (Anchor 2008a, 2008b, Anchor QEA 2010). A complete description of this screening assessment is provided in the BERA Work Plan.

Based on this refinement, 43 chemicals were identified as sediment COPCs for benthic invertebrates. This included eight metals, 19 individual PAHs or PAH sums, three SVOCs, total PCBs, and 12 VOCs. Only one surface water COPC, total PCBs, was identified for benthic and aquatic invertebrates. Table 5-2 provides a complete list of the benthic and aquatic invertebrate COPCs.

5.2 Fish COPCs

Per the *COPC Report and Amendment* (Anchor 2008a, 2008b), sediment COPCs identified for benthic invertebrates served as a proxy for identifying direct sediment exposure COPCs for fish. For direct surface water exposure, total PCBs were identified as a COPC based on a comparison to screening benchmarks (Anchor QEA 2010). PCDD/PCDF, which lacked a relevant surface water screening value for fish, were retained as a COPC in the BERA and evaluated using an empirical body burden approach (i.e., whole body tissue).

In addition, detected COPCs in surface water and sediment were compared to the list of potentially bioaccumulative chemicals in surface water in TCEQs *Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas* update (2006). Chemicals detected in surface water that were included in this list were identified as bioaccumulative COPCs for the BERA. They include mercury, selenium, PCBs, and PCDD/PCDF. For potentially bioaccumulative COPCs in sediment, estimated tissue concentrations of each COPC was calculated using the 95 percent upper confidence limit (95 UCL) of the BERA sediment data multiplied by the geometric mean biota-sediment accumulation factor (BSAF)[20]. COPCs were compared to their respective TRV[21] using a hazard quotient (HQ)

[20] BSAFs were derived from literature sources and similar sites in the Gulf of Mexico (GOM) region. Details are provided in the COPC Report and Amendment (Anchor 2008a, 2008b).

approach (Anchor 2008b, Anchor QEA 2010). A COPC was retained for the BERA if the Midpoint TRV-based HQ exceeded 1.0. Based on the refined exposure and effects assessment, mercury and total PCBs were identified as bioaccumulative sediment COPCs for fish and were carried forward into the BERA. Table 5-3 provides a complete list of fish COPCs.

5.3 Aquatic-Dependent Wildlife COPCs

The primary route of exposure for aquatic-dependent wildlife is through the ingestion of biota. For some receptors, incidental ingestion of sediment also is considered a complete and significant pathway. During the COPC refinement, TRVs were refined to include recent toxicological data. Specifically, the USEPA's ecological soil screening level (Eco-SSL) documents (USEPA 2005a, 2005b, 2008a, 2007a, 2005c, 2007b, 2007c, and 2007d) were reviewed for arsenic, cadmium, chromium, copper, lead, zinc, dichlorodiphenyltrichloroethane (DDT) and metabolites, and PAHs; respectively. A single TRV based on the arithmetic average of the NOAEL and LOAEL was used (i.e., Midpoint TRV). A COPC was retained for the BERA if the Midpoint TRV based HQ exceeded 1.0, based on the refined exposure assessment.

The Site-wide 95 UCL of the sediment data collected in 2009 was calculated and used as the exposure concentration for the incidental sediment ingestion pathway and was the basis to estimate tissue concentrations using the BSAF approach. Tissue exposure concentrations were estimated using previously calculated geometric mean BSAFs (Anchor 2008a, 2008b) in conjunction with the updated Site-wide 95 UCL. A full explanation of the variables used in the total daily intake (TDI) equation for the ingestion of biota is provided in the BERA Work Plan.

The refined TDI estimates for the aquatic-dependent wildlife receptor (spotted sandpiper, carnivorous wading birds, belted kingfisher, and raccoon) COPCs were compared to their respective Midpoint TRV using a HQ approach. A COPC was retained for the BERA if the Midpoint TRV-based HQ exceeded 1.0. Based on the refined risk characterization, nine

[21] For the refinement screen of fish bioaccumulative COPCs, a single TRV based on the arithmetic average of the no observed adverse effects level (NOAEL) and lowest observed adverse effects level (LOAEL) was used (i.e., Midpoint TRV).

COPCs: lead, mercury, total PAHs, total PCB Congeners, total PCDD/PCDF, 1,3-dichlorobenzene, 1,4-dichlorobenzene, hexachlorobenzene, and hexachlorobutadiene (Table 5-4), were identified as aquatic-dependent wildlife COPCs for this BERA.

6 WILDLIFE RISK ASSESSMENT

This section presents the risk assessment for wildlife (birds and mammals) at the Site. Dietary exposure is the main pathway by which wildlife receptors are exposed to Site COPCs. To address the different ways wildlife may be exposed to COPCs through their diets, four receptors representing four general feeding guilds were evaluated. They are:

- Sediment-probing birds - spotted sandpiper
- Carnivorous birds[22]
- Piscivorous birds – belted kingfisher
- Omnivorous mammal – raccoon

Dietary exposure and potential risks to wildlife receptors were evaluated using TDI as a LOE for all four wildlife receptors. Both prey tissue ingestion and incidental sediment ingestion were accounted for in dietary-dose estimates[23]. Several factors had to be accounted for to estimate exposure levels. These included information about feeding rates, foraging areas, prey home ranges, and diets. The sum of exposure from biota and incidental sediment ingestion (i.e., TDI_{ALL}) was compared to TRVs expressed as dietary effect thresholds. TRVs were selected from published studies. The TRVs provide the basis for evaluating whether exposure concentrations are at or above a level that may cause an effect on survival, growth, or reproduction of most, but not all, individual organisms in experimentally exposed populations. This follows the conventional practice of using organism-level TRVs defined in this manner to evaluate the potential effects on populations. For the BERA, the LOAEL-based TRVs were used as the effects level.

A HQ was calculated for each COPC and receptor. The HQ was expressed as the ratio of the TDI from all sources (TDI_{ALL}) to the LOAEL TRV. A HQ_{LOAEL} of 1.0 was considered the point of departure for identifying potentially unacceptable risks to wildlife populations (USEPA 1992, 1997). A HQ_{LOAEL} less than 1.0 indicates adverse ecological effects at the population level are unlikely for that receptor group. A HQ_{LOAEL} greater than or equal to one indicates

[22] Carnivorous birds were evaluated as a composite receptor representing several species (Anchor QEA 2011a).
[23] Ingestion of surface water was not identified as a complete and significant pathway for wildlife receptors in the BERA Work Plan.

that adverse ecological effects may potentially occur. The ecological significance of COPCs with HQ_{LOAEL} equal to or greater than 1.0 are considered in the risk conclusions.
The details of this risk assessment for wildlife are presented as follows:

- Section 6.1 presents an overview of the assumptions used to derive exposure concentrations, including how 95 UCLs and area use factors (AUFs) were derived.
- Section 6.2 presents a summary of the effects data. Effects data in this assessment are represented by LOAEL TRVs.
- Section 6.3 presents the risk characterization results and COC-receptor pairs.
- Section 6.4 presents the risk conclusions and uncertainty analyses.

6.1 Exposure Assessment

This section presents the methods and assumptions that were used to estimate wildlife exposures to COPCs[24]. The measure of exposure selected for wildlife is the dietary ingestion route of exposure. The primary route of exposure for aquatic-dependent wildlife is through the ingestion of biota. For some receptors, incidental ingestion of sediment is considered a complete and significant pathway as well. Thus, the exposure media in the wildlife exposure assessment are prey tissue and surface sediment and the potential risks to each receptor group were evaluated using measured or estimated COPC concentrations in these two media at the Site. Ultimately, the prey tissue and sediment exposure point concentrations (EPCs) were combined (using an assumed fraction of sediment in the diet) to provide a single dietary exposure assessment for each COPC-receptor pair.

The ingested dose received by each representative receptor was estimated by multiplying species-specific food and incidental sediment ingestion rates (normalized to body weight) by the concentrations of COPCs in prey species (fish and invertebrates) and sediment. Modifications based on behavioral factors (i.e., foraging range) were applied where appropriate.

[24] COPC-receptor pairs for the BERA were identified in the BERA Work Plan and were summarized in Section 5 (see Table 5-4).

6.1.1 Dietary Exposure Parameters

Ingestion exposure was characterized using a TDI model of the COPCs on a body weight-normalized basis (milligram [mg] of COPC/kilogram [kg] body weight/day). The exposure model representing TDI from environmental media was the sum of incidental sediment TDI and biota TDI:

$$TDI_{all} = TDI_{biota} + TDI_{sediment}$$

The exposure model for biota ingestion was adapted from the USEPA (1993; Equation 4-8) and is represented as:

$$TDI_{biota} = \left[\sum_{k=1}^{m}(C_{k,TS} \times NIR_k)\right] \times AUF$$

where:

TDI_{biota} = potential average daily dose (mg COPC/kg body weight/day)

$C_{k,TS}$ = contaminant concentration in k^{th} type of food (mg COPC/kg food)

NIR_k = normalized ingestion rate of kth type of food on WW basis (kg food/kg body weight/day)

AUF = area use factor

m = number of contaminated food types

To account for incidental sediment ingestion, the following equation was adopted from USEPA (1993; Equation 4-23):

$$TDI_{sediment} = \left[\left(\sum_{k=1}^{m}\left(C_{k,SD} \times FS \times IR_{total}\right)\right) \Big/ BW\right] \times AUF$$

where:

$TDI_{sediment}$ = total daily intake of COPCs through incidental ingestion of sediment (mg COPC/kg body weight/day)

$C_{k,SD}$ = concentration in the kth foraging area sediment on a DW basis (mg/kg)

FS = faction of sediment in diet (as percentage of diet on a DW basis; unitless)

IR_{total}	=	food ingestion rate on a DW basis. For equations using IR_{total} on a WW basis, conversion to DW ingestion rates would be necessary (mg food/kg body weight/day)
BW	=	body weight (kg)
AUF	=	area use factor
m	=	number of foraging areas[25]

A complete discussion of these equations and their input variables is provided in the BERA Work Plan. Parameterization of each variable for representative receptors is also discussed in the BERA Work Plan[26]. Body weights, food ingestion rates, and sediment ingestion rates vary among bird and mammal receptors. Table 6-1 presents the dietary parameters for bird and mammal receptors. Details and rationale for selected receptor-specific exposure parameters and uncertainties are presented in the BERA Work Plan.

6.1.2 Exposure Point Concentrations

Prey tissue and sediment EPCs were calculated for each COPC-receptor pair. Prey tissue EPCs were determined by calculating the 95 UCL. Estimates of sediment exposure within the foraging area were calculated using surface weighted average concentrations (SWACs). EPCs based on tissue 95 UCLs and sediment SWACs were used to calculate HQs as described below.

[25] For the baseline risk characterization, the number of unique foraging areas (m) was set to 1. Receptors were assumed to average their exposure equally across all available habitat.

[26] The incidental sediment ingestion rate for the spotted sandpiper is an exception to this statement. A review of the source document for this parameter (Beyer et al. 1994) during preparation of the BERA noted that sediment ingestion by four sandpiper species (i.e., stilt sandpiper, semipalmated sandpiper, least sandpiper, and western sandpiper) ranged from 7 to 30 percent of the dry diet, with an average incidental ingestion rate of 18 percent. The BERA Work Plan listed an incidental sediment ingestion rate of 30 percent for this receptor. However, the average rate of 18 percent was selected for the baseline risk assessment consistent with the selection of more realistic exposure parameters in the BERA and consistent with recent Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites (i.e., Portland Harbor). This represents a change from the BERA Work Plan.

6.1.2.1 *Fish and Shellfish*

Concentrations of COPCs in the diet were estimated using field-collected fish and shellfish tissue data representative of the diets for wildlife receptors. Tissue data were grouped based on the diet composition of the representative receptors; including consideration of species of fish or shellfish and the size class of the organism(s). A discussion of the methods for determining the prey groupings is provided below.

6.1.2.1.1 Prey Groupings

Fish and shellfish tissue data used in the wildlife exposure assessment were collected during a field investigation conducted in 2011 in accordance with the approved *Tissue Sampling and Analysis Plan* (SAP) attached to the BERA Work Plan. The results of this investigation are provided in a data report as an attachment to the BERA (Attachment 1). Prior to estimating tissue EPCs for the wildlife BERA, these results were evaluated using graphical and statistical methods to determine if different prey subgroups existed within the dataset that warranted independent treatment when developing EPCs. Specifically, the data were analyzed to determine whether the different species that were collected and analyzed demonstrated significant differences in the concentration of COPCs in their tissue and/or whether significant spatial trends were apparent in the data. If so, pooling all tissue data prior to calculating the EPC (i.e., 95 UCL) would not be recommended. If multiple populations are present, it is recommended that they be separated and evaluated independently (USEPA 2007).

For each COPC, tissue concentrations in fish and shellfish were evaluated according to the following steps:

1. Box plots and histograms of the distribution of COPCs in each species/size class of fish and shellfish collected were constructed.
2. Statistical tests (i.e., analysis of variance [ANOVA]) were performed to identify significant differences in COPCs among each species/size class.
3. Spatial plots of COPCs results for each species/size class were constructed and evaluated for trends.
4. Species were pooled according to the results of steps #1-3 above.
5. EPCs were calculated using the pooled groups according to the procedures described in Section 6.1.2.1.2.

Full results of the graphical and statistical analyses are provided as Appendix C-1. COPCs included in the analyses are: PCB TEQ, PCDD/PCDF TEQ, total PCB Congeners, total PAHs, hexachlorobenzene, mercury, and lead. Hexachlorobutadiene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene were not detected in any tissue samples and were not included. Box plots and quantile-quantile plots were constructed on natural logarithms of the tissue data. Statistical tests included ANOVA on natural logarithm transformed data at a significance level (α) of 0.05. Means testing among species were performed using Tukey's HSD.

Analysis by Prey Species

For fish, visual and statistical differences were apparent among species for mercury, total PCB congeners, and PCB TEQ. Gulf menhaden had statistically higher mercury concentrations than other species. Gulf killifish demonstrated significantly higher total PCB Congeners and PCB TEQ concentrations than other fish species and were treated as separate prey groups for the purposes of EPC calculations. Gulf menhaden and striped mullet demonstrated significantly higher PCB TEQ concentrations than pinfish or sand seatrout and were treated as separate groups in EPC calculations as well. For invertebrates, few differences were observed. When both size classes of invertebrates (i.e., 2 to 7.5 cm and 7.5 to 12.5 cm) were pooled, total PCB Congener concentrations in brown shrimp were significantly higher than other species. No other COPCs demonstrated significant differences among invertebrate species. For small size class invertebrates (< 7.5 cm) which constitute the diet of the spotted sandpiper, too few results were available to perform a meaningful comparison among species in this size class. As a result, all species within this size class were pooled for calculating EPCs for spotted sandpiper prey items.

Using the results of this analysis, prey groups were determined for each wildlife receptor in accordance with their expected diets. Prey groups for each receptor are summarized in Table 6-2. The proportion of fish and or shellfish in each receptor's diet was divided evenly among the corresponding prey groups identified for each receptor. For example, a belted kingfisher's diet is assumed to be 89 percent fish (Table 6-1). If two fish prey groups were identified, they were assumed to each be 44.5 percent of the belted kingfisher's diet. Next, an EPC (i.e., 95 UCL) for each prey group was determined as described in the following section.

Spatial Trend Analysis

Plots of tissue results by distance were created to evaluate potential spatial trends. Plots of each COPC by species are located in Appendix C-1. Significant spatial patterns were not apparent for most COPCs and species. Statistically significant linear regressions of concentration by distance were observed for mercury in Gulf killifish, total PCBs and PCB TEQs in Gulf menhaden, and PCDD/PCDF TEQs and PCB TEQs in blue crabs. However, the relationship between concentration and distance was generally weak (e.g., $r^2 < 0.30$ and p-values between 0.05 and 0.01) for most COPC – species pairs. The most significant trends were mercury in Gulf killifish (decreasing downstream to upstream; $r^2 = 0.68$) and total PCBs in Gulf menhaden (increasing downstream to upstream; $r^2 = 0.64$). However, even these trends were not dramatic with less than an order of magnitude difference between downstream and upstream locations. Therefore, for estimating risk to wildlife receptors, no prey subgroups were identified based on spatial differences in COPC concentrations in prey tissue.

6.1.2.1.2 95 UCL

Prey tissue EPCs were calculated using ProUCL Version 4.0 software (USEPA 2007). USEPA's ProUCL software tests the goodness of fit for a given dataset and then computes the appropriate 95 UCL. The ProUCL software used for this analysis allows detected and non-detected values to be considered and creates interpolated values for non-detects based on the perceived distribution of the detected concentrations. Once any necessary interpolation is performed, the software conducts an analysis of the data to determine the most appropriate 95 UCL and makes a recommendation, which was then used as the EPC for the risk calculations. A minimum of six detected concentrations are required to derive a 95 UCL (USEPA 2007). In the case where an insufficient number of detected values were available, the maximum concentration was used to represent the EPC. Table 6-3 presents the EPCs for each receptor and their respective prey groups. All ProUCL outputs for the 95 UCL computations for each prey subgroup are provided in Appendix C-2.

Based on the foraging ranges of the receptors, their prey, and the distribution of habitat types, it was assumed that most aquatic and mammalian receptors would generally average their exposure to fish, invertebrates, and other prey items across the Site. Therefore, the

95 UCLs were calculated based on Site-wide exposure and sub-areas were not defined for the baseline scenario.

6.1.2.2 Sediment

It was assumed that receptors would only have access to the supratidal and intertidal areas for wading based on the size (due to constraints with water depth), foraging habits, and life history of the receptors and the guilds they represent. Therefore, the Site was divided into three areas: 1) subtidal (< 0.5 feet elevation[27]); 2) intertidal (≥ 0.5 feet to < 1.5 feet elevation); and 3) supratidal (≥ 1.5 feet elevation) (Figure 6-1). These elevations represent the mean lower low water (MLLW) (0.5 feet) and mean higher high water (MHHW) (1.5 feet) for the Site.

6.1.2.2.1 Sediment Surface Weighted Average Concentration

Receptors were assumed to average their exposure across the supratidal and intertidal zones. Thus, SWACs were calculated for each COPC for the combined supratidal and intertidal zones as defined above. This SWAC was used as the sediment EPC for incidental sediment ingestion calculations. Table 6-4 presents the results of the SWAC calculations.

Methylmercury Estimates in Sediment

Mercury in sediments occurs in two general forms, organic and inorganic. Organic mercury is primarily present as methylmercury (CH_3Hg^+) (MeHg). MeHg occurs as an aqueous species and can be adsorbed on to sediment organic carbon through equilibrium partitioning processes. It is the most prevalent and most biochemically active form of organic mercury in sediments. Relative to inorganic forms of mercury, MeHg is significantly more toxic (Wolfe et al. 1998).

During the selection of COPCs for the BERA (Anchor 2008a, 2008b), measures of total mercury in bulk sediment were conservatively estimated to be in the methylated form. As

[27] In North American Vertical Datum 1988 (NAVD88). These values were derived from the gauge datum's for the NOAA/TCOON station located at Battleship Texas State Park (Station ID 8770743). Station information can be located at:
http://tidesandcurrents.noaa.gov/data_menu.shtml?stn=8770743%20Battleship%20Texas%20State%20Park,%20TX&type=Datums

such, estimates of incidentally ingested mercury in sediment were compared to a MeHg TRV. This was a highly conservative assumption as MeHg is typically present as only a small proportion of total mercury in sediment (USEPA 1997). Based on previous investigations for the Site (Anchor 2008a, 2008b), methylation in Site sediments is limited, due to high concentrations of sulfur present in surface sediments. Because there was a concern that mercury methylation could occur at centimeter scale intervals, a detailed evaluation of mercury in pore water was conducted over 2 cm intervals in the top 20 cm of surface sediments throughout the Site (Anchor 2007c). These measurements were taken in lieu of determining the concentration of MeHg in bulk sediment to determine if there were any vertical zones of higher potential MeHg production, and to determine the speciation of mercury in porewater and sediment including MeHg, mercury chloride, divalent mercury, and mercury sulfide. Because MeHg occurs as an aqueous species, actual pore water measurements versus bulk sediment measurements provide more accurate and conservative estimates of the methylation potential, location, and bioavailability. Equilibrium partitioning theory allows the calculation of MeHg measured in porewater to MeHg in bulk sediment if DOC and TOC are known.

To limit the uncertainty in the exposure assessment for mercury in sediments, available Site data were evaluated to estimate the proportion of MeHg to total mercury in Site sediments on a bulk sediment basis using the existing sediment and porewater data. These proportions were used to estimate bulk sediment concentrations of MeHg and inorganic mercury for the incidental sediment ingestion pathway exposure assessment. TRVs for MeHg and inorganic mercury were developed in Section 6.3 for each form of mercury ingested by wildlife receptors.

Estimates of MeHg in sediments were developed using simple equilibrium partitioning models and Site-specific measurements of porewater MeHg, DOC, and bulk sediment TOC. Results of MeHg porewater analysis (0-10 cm interval) at nine locations within the Site were evaluated. Estimates of bulk sediment MeHg results were then compared to observed bulk sediment total mercury results in co-located or nearby surface sediment samples. Results of this analysis are provided in Appendix C-3. This analysis concluded that rates of methylation in Site surface sediments are low; estimated MeHg did not exceed 0.2 percent of total mercury in samples evaluated. Uncertainty analysis using the most conservative observed

Site values for DOC, TOC, and total mercury[28] did not result in any estimates of MeHg exceeding 2.3 percent of total mercury.

For the exposure assessment, the total mercury SWAC was divided into MeHg and inorganic forms for estimates of total daily intake. One percent of the total mercury SWAC was assumed to be MeHg and the remainder (99 percent) inorganic mercury. Thus, the $TDI_{sediment}$ for total mercury included MeHg and inorganic mercury. In the risk characterization step, the MeHg $TDI_{sediment}$ was compared to the MeHg TRV[29]. Similarly, the inorganic mercury $TDI_{sediment}$ was compared to an inorganic mercury TRV. Risk estimates for total mercury were then calculated as the sum of the HQ for MeHg and inorganic mercury in Section 6.4.

6.1.2.3 Terrestrial Animals and Plant Matter

Carnivorous birds and raccoons are the only receptors that may be exposed to possible Site COPCs through ingestion of terrestrial animals and plant matter at the Site. Terrestrial animal components of carnivorous bird and raccoon diets are expected to include primarily insects and occasional small mammals, reptiles, and amphibians. Empirical data to estimate concentrations in terrestrial animals at the Site are not available. To account for carnivorous bird and raccoon COPC exposure due to ingestion of contaminated terrestrial animal matter, COPC concentrations in a hypothetical omnivorous mammal, the marsh rice rat, were estimated using Equation 5-12 from the *Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (USEPA 1999). The marsh rice rat is a small, semi-aquatic omnivore that inhabits marshy areas, is common in eastern Texas and is often used as target receptors or prey items in risk assessment (Anchor QEA 2011a). It was assumed that half of the marsh rice rats consumed by carnivorous birds and raccoons were exposed to the Site (i.e., FR_{animal} =0.5).

USEPA (1999) Equation 5-12 utilizes bioconcentration factors (BCFs) and prey-item trophic level information to estimate marsh rice rat COPC tissue concentrations from consumption of contaminated prey items, plants, sediment and water. Site surface water is brackish and is generally unsuitable for drinking (Anchor QEA 2011a). Because of this, the contribution of

[28] Within the dataset used for the evaluation of mercury partitioning in Appendix C-3.

[29] The MeHg $TDI_{sediment}$ is in addition to the MeHg TDI_{biota}. All mercury ingested by a receptor through ingestion of food (i.e., biota) was assumed to be MeHg.

Site water ingestion to marsh rice rat tissue COPC concentrations was not quantified. Equation input variables included BCFs and default factors included in USEPA (1999)[30], Site-specific information (e.g., sediment and fish COPC concentrations), or were estimated using best professional judgment. Equation 5-12 accounts for the proportion that each contaminated animal or plant item contributes to the marsh rice rat diet. These omnivores typically consume equal parts vegetation and animal matter (Anchor QEA 2011a). The marsh rice rat diet was therefore assumed to be composed of 50 percent vegetation and 50 percent animal matter (25 percent invertebrates and 25 percent fish). The marsh rice rat PCB Congener TEQ tissue concentration was preliminarily calculated using either the default Aroclor 1254 BCFs or the 2,3,7,8-TCDD BCFs (USEPA 1999). The 2,3,7,8-TCDD BCFs resulted in a more conservative estimate of PCB Congener TEQ tissue concentration. For this reason, the 2,3,7,8-TCDD BCFs were used for estimating both marsh rice rat and plant tissue concentrations. The variables used for calculating marsh rice rat mercury and PCB Congener TEQ tissue concentrations are included in Appendix C-4 (Table C-4.2).

For plant matter, carnivorous birds and raccoons were assumed to ingest rooted aquatic plants. Mercury and PCBs were identified as COPCs for raccoon and carnivorous birds (Section 6.1).

Mercury and PCB Congener TEQ uptake by plants was assessed using a simple bioaccumulation factor (BAF) approach. Soil-to-plant BAFs for inorganic mercury (as mercuric chloride) and PCB congener TEQ (as 2,3,7,8-TCDD) were selected from USEPA (1999). The recommended BAF is 0.0375 kg/kg for mercuric chloride and 0.0056 kg/kg for 2,3,7,8-TCDD. The BAFs for mercury and PCB Congener TEQ were used to estimate exposure through ingestion of plant matter according to the following equation:

$$C_{PLANT} = C_{SED} \times BAF_{PLANT}$$

[30] Some equation variables were based on the knowledge of a COPC's log octanol-water partition coefficient (Log K_{ow}) which was included in USEPA (1999). No methylmercury Log K_{ow} was available in the USEPA (1999). A methylmercury Log K_{ow} was alternatively adopted from the *Canadian Tissue Residue Guidelines for the Protection of Wildlife Consumers of Aquatic Biota: Methylmercury* (Environment Canada 2002). The highest Log K_{ow} in the range provided Table 2 (Environment Canada 2002) was conservatively used.

where:

C_{PLANT} = Concentration of mercury in plant tissue

C_{SED} = Concentration of mercury in sediment

BAF_{PLANT} = Bioaccumulation factor for mercury (kg_{SED} / kg_{PLANT})

C_{PLANT} was converted to a WW basis prior to estimating total daily intake for plant matter assuming an average water content of 63 percent[31] (USEPA 1993) according to the following equation:

$$C_{PLANT,WW} = C_{PLANT,DW} \times \left(\frac{(100 - \%\, moisture)}{100}\right)$$

where:

$C_{PLANT,WW}$ = Concentration in plant tissue as WW

$C_{PLANT,DW}$ = Concentration in plant tissue as DW

% moisture = Moisture content of plant tissue

The sediment EPC based on the SWAC for total mercury and PCB Congener TEQs (Section 6.2.2.2) were used as the C_{SED} term to estimate C_{PLANT}. Estimates of C_{PLANT} for mercury and PCB Congener TEQs are provided in Appendix C-4 for raccoon and carnivorous birds.

6.1.3 Area Use Factors

An AUF represents a ratio of the total area available to a receptor to forage, roost, breed, etc. within a site relative to its entire home range. In some cases, it may also represent the proportion of time a receptor may spend at a site due to migratory considerations and other factors. In this analysis, all receptors are assumed to be non-migratory and non-habitat selective due to breeding status (e.g., breeding, rearing, dispersal, etc.). Only differences in home range relative to habitat available at the Site were considered[32].

[31] Mid-point of emergent aquatic vegetation values from Table 4-2 of USEPA (1993).

[32] Temporal use was not considered because: 1) within each guild there are some species that are non-migratory and; 2) quantitative assessment of temporal use due to breeding status is highly uncertain based on available data.

In the BERA Work Plan, an extensive review of each receptor's life history and habitat requirements was performed and compared to the available habitat within the Site. In general, the Site provides medium to poor quality habitat for most wildlife receptors due to the lack of natural conditions within the riparian and upland habitats which provide suboptimal conditions for denning, nesting, roosting, foraging, and cover. Sufficient intertidal zone habitat for wading, gleaning, and probing is generally limited as well.

Table 6-5 provides an estimate of foraging ranges for ecological receptors based on available literature. This analysis is in addition to what was performed in the BERA Work Plan and was used to develop AUFs based on relative habitat available for each receptor. Because the Site itself provides relatively poor quality habitat to the receptor groups identified, the upper quartile (i.e., 75th percentile) of the home ranges identified in Table 6-5 was used for the baseline exposure assessment[33]. In general, higher quality habitat results in smaller home ranges; particularly for territorial species. Conversely, poor quality habitat requires larger home ranges to meet the minimum requirements (e.g., food, water) for most species; meaning that species that utilize the Site are likely to be near the upper bound limit of their home ranges. The home ranges from the reported studies were compared to the available habitat in terms of tidal stream distance in kilometers (km) or foraging area in square kilometers (km^2) consistent with the home ranges reported in the literature. Given the previously described habitat quality at the Site, the AUFs presented in Table 6-5 are considered reasonable estimates of the proportion of habitat that is available to meet the needs of the ecological receptors evaluated in this BERA.

6.2 Effects Assessment

This section presents the selected TRVs used to characterize potential effects for wildlife COPC-receptor pairs. The evaluation used dietary-based TRVs, which were based on LOAELs derived from toxicological literature and approved by USEPA in the BERA Work Plan. The effects data presented in this section are used in combination with the exposure data presented in Section 6.1 to complete the risk characterization step (Section 6.3).

[33] The exception is the raccoon which had too few relevant home range studies (n=2) to estimate a percentile. The Midpoint (e.g., media) value was used for this receptor.

The identification of threshold effect concentrations focused on ecologically relevant effects such as survival, reproduction, and growth. Derivation of the TRVs is provided in the *COPCs Report and Amendment* (Anchor 2008a, 2008b) and the BERA Work Plan. All TRVs were approved by USEPA in the BERA Work Plan. The TRVs for birds and mammals are presented in Tables 6-6 and 6-7, respectively.

6.2.1 Development of Inorganic Mercury TRV

As discussed in Section 6.1.2.2.1, incidental ingestion of mercury in sediment was evaluated for both methylmercury and inorganic mercury. The mammalian and avian TRV in the BERA Work Plan were based on studies performed using methylmercury (e.g., methylmercury chloride). To address the uncertainty associated with applying a methylmercury TRV to an ingested dose of inorganic mercury, the literature was reviewed to identify an appropriate inorganic mercury TRV.

Organic mercury and inorganic forms of ingested mercury have distinctly different toxicokinetics. MeHg is readily absorbed in the gut (90-95 percent for mammals and nearly 100 percent in birds) while inorganic mercury is less readily absorbed (7-15 percent for mammals and only a few percent for birds) and tends to pass through the digestive tract and is excreted in feces (Wolfe et al. 1998). Once absorbed, MeHg acts primarily as a neurotoxicant and can readily cross the blood-brain barrier; inorganic mercury cannot. Both forms can exert immunotoxic and genotoxic effects on mammals with MeHg being a much more potent form (Wolfe et al. 1998). In birds, MeHg acts primarily as a potent neurological and embryo toxicant while inorganic salts tend to affect the kidneys.

Hill et al. (1981) observed that in studies with Japanese quail (Coturnix), MeHg was always more toxic than inorganic mercury (mercury chloride). Similarly, mammals are more sensitive to MeHg than inorganic forms of mercury in all studied cases (Wolfe et al. 1998; Eisler 1987).

Hill and Shaffner (1976) exposed Japanese quail to mercury chloride in the diet for one year at five dose levels (2 – 32 milligrams per kilogram [mg/kg]) and measured reproductive success. Adverse effects to fertility and hatchability were observed at the 8 mg/kg dose but were not apparent at 4 mg/kg. Thus, the 8 mg/kg dose was selected as a chronic LOAEL.

Food consumption rates and body weights were not specified in the study. A body weight of 0.15 kg and food ingestion rate of 0.0169 kg/day were assumed per Sample et al. (1996). Using these assumptions, a chronic LOAEL can be expressed as 0.9 mg/kg/day. This LOAEL was selected as the avian TRV for assessing risks to birds from incidental sediment ingestion of inorganic mercury. This TRV is listed in Table 6-6.

Auerlich et al. (1974) conducted a study with pregnant mink exposed to mercury chloride through the diet at a daily dosage of 7.39 mg/kg food for six months. They observed significant reductions in kit weight but no reductions in fertility or kit survival. Based on a food ingestion rate of 0.137 kg/d (Bleavins and Aulerich 1981) and an assumed body weight of 1.0 kg (USEPA 1993), a NOAEL based on a reproductive endpoint of 1.01 mg/kg body weight/day can be derived. Using the allometric scaling equations of Sample et al. (1996)[34] and an assumed raccoon body weight of 3.99 kg, a body-weight adjusted NOAEL TRV for raccoon is 0.715 mg inorganic mercury/kg body weight/day. Converting this NOAEL to a LOAEL based value using a factor of five results in a LOAEL TRV of 3.58 mg/kg body weight /day[35]. This TRV was selected to assess risks to raccoon from incidental ingestion of inorganic mercury in sediment. This TRV is listed in Table 6-7.

6.3 Risk Characterization and Uncertainty Analysis

This section presents the risk characterization process and results for aquatic-dependent wildlife receptors based on the dietary-dose exposure. A deterministic risk characterization was completed to characterize risks to wildlife receptors. Specifically, a risk characterization of wildlife COPC-receptor pairs based on a dietary-dose exposure compared to a dietary-based TRV was conducted using a HQ approach that integrated exposure and effects data. All baseline risk characterization calculations are provided in Appendix C-4.

6.3.1 Characterizing PCB Risks

In the exposure and effects assessments, PCBs were considered both as a sum of total congeners, and as TEQ based on toxicity relative to 2,3,7,8-TCDD. For the baseline risk characterization, PCB risks are estimated using TEQ for dioxin-like PCB Congeners only.

[34] Scaling was performed for all mammalian TRVs in the approved BERA Work Plan.

[35] A NOAEL to LOAEL conversion factor of five was used in the approved BERA Work Plan TRV derivations.

USEPA (2008) notes that "large uncertainty may be introduced in assessing exposure and effects by assuming that congener profiles present in commercial mixtures used in toxicity tests (e.g., Aroclors) are representative of PCB profiles in weathered environmental samples (either exposure media or biota)." Unfortunately, effects information in the literature is primarily defined in terms of commercial mixtures. In addition, USEPA (2003) observed that while data currently available provide evidence to indicate that wildlife species are susceptible to effects from non-dioxin like PCBs, the existing data are inadequate for use in quantitative risk assessment. They conclude that the lack of data regarding dose-response relationships for non-dioxin like PCBs preclude performing quantitative ERAs for these congeners, either individually or cumulatively.

Based on this information, risk characterization for birds and mammals was not performed on a total PCB basis but rather was assessed for the dioxin-like PCBs using the TEQ approach. The HQs associated with the TEQ of dioxin-like PCBs were used to make conclusions regarding PCB risk and to identify COC. The uncertainty associated with this approach was evaluated as part of the uncertainty analysis by estimating HQs using the exposure and effects data for total PCBs that were developed in Sections 6.2 and 6.3.

6.3.2 Risk Estimates

6.3.2.1 Belted Kingfisher

Five COPCs were identified for the belted kingfisher in the BERA Work Plan: mercury, total PCB Congeners, hexachlorobenzene, 1,3-dichlorobenzene, and PCB Congener TEQ. The kingfisher diet included fish and invertebrates. Eighty-nine percent of the diet was assumed to be made up of fish, and 11 percent was assumed to be made up of invertebrates. No incidental sediment ingestion was assumed for this receptor. Only PCB Congener TEQ has a HQ that exceeds 1.0 (Table 6-8).

6.3.2.2 Carnivorous Birds

Three COPCs were identified for the carnivorous bird receptor group in the BERA Work Plan: mercury, total PCB Congeners, and PCB Congener TEQ. The carnivorous bird diet included fish, invertebrates, and terrestrial mammals. Thirty-three percent of the diet was assumed to be made up of fish, 33 percent was assumed to be made up of invertebrates, and 34 percent made up of mammals. Incidental sediment ingestion was included as 1 percent of

the total daily intake of food. None of the COPCs were retained as COCs for carnivorous birds based on the HQ calculations (Table 6-8).

6.3.2.3 Raccoon

Three COPCs were identified for the raccoon in the BERA Work Plan, mercury, total PCB Congeners, and PCB Congener TEQ. The raccoon diet included fish, invertebrates, terrestrial mammals, and plants. The diet was assumed to be 23 percent fish, 23 percent invertebrates, 30 percent plants, and 24 percent mammals. Incidental sediment ingestion was included as 9.4 percent of the total daily intake of food. None of the COPCs were retained as COCs for raccoons based on the HQ calculations (Table 6-8).

6.3.2.4 Spotted Sandpiper

Ten COPCs were identified for the spotted sandpiper in the BERA Work Plan: lead, mercury, total PAH, total PCB Congeners, hexachlorobenzene, hexachlorobutadiene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, PCDD/PCDF TEQ, and PCB Congener TEQ. One-hundred percent of the spotted sandpiper diet was assumed to be made up of invertebrates. Incidental sediment ingestion was included at 18 percent of the total daily intake of food. PCB Congener TEQ has a HQ of 1.0; all other COPCs HQ were less than 1.0. (Table 6-8).

6.3.3 Uncertainty Analysis

As described in the BERA Work Plan, the emphasis of the uncertainty assessment is to focus on a quantitative assessment of uncertainty in the exposure and effects assessment for each receptor group. Sources of uncertainty in the wildlife risk assessment include uncertainty in the various exposure factors selected to describe the exposure of the various receptors (e.g., body weight), potential error in the grouping of prey items that constitute the diet, estimates of Site use, TRV selection, and risk characterization for PCBs. Specific sources of uncertainty are discussed in the following subsections.

6.3.3.1 Exposure Assessment

6.3.3.1.1 Prey Item Grouping

Prey items were grouped within the diet of the receptors based on apparent and statistical differences in concentrations among the different species. The groupings of these species may affect statistical estimates of the population mean (i.e., 95 UCL). In addition, it was assumed that these species constitute equal proportions of a receptor's diet of that particular group (e.g., fish). To evaluate this uncertainty, several different scenarios were examined with regard to prey item grouping and proportion of species within the diet. The following scenarios were examined:

1. The proportion of the species groupings in the baseline scenario were adjusted based on the relative biomass of the species collected during the 2011 field investigation[36] (Appendix C-5.1).
2. All species were pooled within their respective prey types (fish, shellfish) and a 95 UCL was estimated for each group (Appendix C-5.2).
3. All species were evaluated independently and a 95 UCL (or maximum value for species represented by less than six samples) was calculated (Appendix C-5.3).

The EPCs and adjusted prey proportions, along with resulting HQs, are summarized in Table 6-9. Overall, the uncertainty associated with the prey item grouping and resultant EPC values is low with regard to changes in the risk characterization (i.e., HQ). No COC would be dropped or added from the baseline scenario in Section 6.4 for any receptor.

6.3.3.1.2 Surface Weighted Averages

Surface weighted averages of COPCs were estimated and used to develop sediment EPCs for the BERA. Surface weighted averaging methods are described in Appendix B. Several different methods were evaluated and compared prior to final interpolation, resulting in a high degree of confidence in the interpolations and resulting surface weighted averages. Definition of the foraging zones within the Site were based on empirical analysis of bathymetric data and established MHHW and MLLW datum from nearby National Oceanic and Atmospheric Administration (NOAA) gauges.

[36] Biomass proportions for prey items are summarized in Appendix C-5 (Table C-5.1) and in Attachment 1.

The supratidal and intertidal habitat were included in the baseline SWAC calculations. To evaluate the uncertainty in the identification of these tidal zones, sensitivity analysis was performed by estimating the SWAC across all tidal zones (supratidal, intertidal, and subtidal) as part of the uncertainty analysis. Results of this analysis are provided in Appendix C-5.4. The HQs for SWACs calculated using all tidal zones are also provided in Table 6.9. The inclusion of the subtidal zone in the SWAC calculations has no apparent effect on HQs for wildlife.

The gunite channel, which is defined as supratidal and intertidal habitat, was included in the baseline SWAC calculations. However, there is a lower probability that wildlife will forage in this area due to the industrial nature of the surrounding area. To assess the uncertainty in foraging within this area, SWAC were calculated excluding this portion of the Site. Results of this analysis are provided in Appendix C-5.8 and HQ based on SWAC excluding the gunite channel are presented in Table 6-9. Including or excluding the gunite channel has no apparent effect on HQs for wildlife, most likely due to the smaller area relative to the entire Site.

An analysis was also conducted to evaluate whether areas of elevated COPC sediment concentrations would lead to higher EPCs than indicated by the Site-wide SWAC. This evaluation was conducted for the spotted sandpiper and carnivorous bird receptors[37] which have complete and significant incidental sediment ingestion pathways. For each COPC, sediment sample locations with a COPC concentration equal to or higher than the 90th percentile of the Site-wide concentrations were selected. Using GIS, a buffer was created centering the minimum reported home-range distance for a given receptor (Table 6-5) on these sample locations. A SWAC was calculated for each of the areas[38]. The highest SWAC was then substituted into the risk equations as the sediment EPC to evaluate how it would affect the HQs. Use of the elevated concentration subarea SWACs as the sediment EPCs resulted in small increases (<0.1) in the HQs. A comparison of the Site-wide and elevated subarea HQs are summarized in Table 6-9. Figures depicting the hot spot areas for each COPC are included in Appendix C-5.9.

[37] The raccoon's minimum reported home-range was larger than the Site. For this reason, SWACs were not calculated for the raccoon.

[38] The hot spot SWAC was calculated for the intertidal and supratidal tidal zones.

Based on these conditions and analyses, the uncertainty in the assessment of exposure of receptors to sediment COPCs is considered low.

6.3.3.1.3 Terrestrial Animals and Plant Matter

Terrestrial animal prey (marsh rice rat) and plant matter mercury and PCB Congener TEQ concentrations were estimated using USEPA (1999) methods and included as appropriate in the carnivorous bird and raccoon risk estimation calculations. These dietary components contributed approximately 12 percent (mercury) and 3 percent (PCB Congener TEQ (Mammal)) to the raccoon HQs, and the marsh rice rat contributed approximately 18 percent (mercury) and 64 percent (PCB Congener TEQ (Avian)) to the carnivorous bird HQs.

The exposure assessment for these diet components were based on simple bioaccumulation models using USEPA derived BCFs, BAFs, and FCMs. Use of modeled COPC concentrations based on literature values in the diet of a receptor generally has a greater degree of uncertainty relative to empirical data (e.g., tissue data). However, it is expected that the uncertainty in the contribution of plant and terrestrial animal matter to the exposure of raccoons and carnivorous birds to Site COPC is not great enough to affect the risk conclusions for these receptors.

6.3.3.1.4 Area Use Factor

Predicted home ranges for representative receptors were evaluated based on literature data, empirical Site data (e.g., intertidal area, stream length), and qualitative habitat information. The 75th percentile of reported home ranges for representative receptors were compared to empirical Site data to develop AUFs for wildlife receptors. Given the poor quality habitat at the Site, this is considered a reasonable assumption.

Other exposure modifying factors such as migration, and life-cycle variables (e.g., breeding) were not considered in the baseline exposure assessment due to the uncertainty associated with quantifying such variables. However, many of the species within the avian guilds represented in the exposure assessment are migratory; particularly shorebirds and herons. In addition, several species (i.e., belted kingfisher) do not have suitable nesting sites within or adjacent to the Site itself. The result being that even resident species would likely move

off-Site for a significant portion of their life cycle. The aggregate effect of these factors would be to reduce exposure to the Site for most avian receptor groups evaluated in this BERA. Although this reduction in exposure due to exposure modifying factors has not been quantified, it would indicate that the exposure assessment is conservative with respect to these factors.

To evaluate the potential uncertainty associated with the AUF selected for the BERA, the AUF was varied for each receptor using the upper bound and lower bound home range estimates presented in Table 6-10. The lowest and highest average home range for each receptor was selected and compared to the available Site habitat to determine a range of AUFs (Table 6-10). HQs for each scenario were then determined (Table 6-11; Appendices C-5.5 and C-5.6, respectively).

Differences in HQ based on upper- and lower-bound estimates of the AUF are small. Three COPC-receptor pairs have an HQ > 1.0 based on the upper-bound AUF (smallest home range) but an HQ < 1.0 based on a lower-bound estimate of its AUF (largest home range). They include spotted sandpiper – PCB TEQ (HQ = 3.1-0.8), belted kingfisher – PCB TEQ (HQ = 3.0-1.7), and belted kingfisher – mercury (HQ = 1.0-0.58). Thus, the uncertainty associated with the range of AUF values used in the baseline risk characterization is considered low for most COPC-receptor pairs. While the AUFs for spotted sandpiper and belted kingfisher are representative of baseline conditions, the selection of the AUF term does have a significant effect on whether the baseline HQ for these COPC-receptor pairs fall above or below a HQ of 1.0.

6.3.3.2 *Effects Assessment*

By their nature, ERAs rely on limited toxicological information to evaluate the effects of contaminants in the environment. Testing is often done using laboratory or domesticated animals in a highly controlled environment which can create significant uncertainty in extrapolating those effects to wild species and populations. To address this uncertainty, effects data are chosen using conservative approaches in ERAs. However, the lack of robust datasets that allow comparisons among species (both wild and laboratory) means that assessing the degree of conservatism is a highly uncertain undertaking.

6.3.3.3 *Risk Characterization*

Risk characterization was performed using deterministic methods which do not provide any quantitative assessment of the probability that a risk threshold has been exceeded. Therefore, parameters in the risk assessment are set at conservative thresholds to allow conclusions regarding negligible risk to be made with confidence. As a result, conclusions regarding risk at or near a threshold of concern should be made considering the conservative bias of the assessment.

6.3.3.3.1 PCB Risk Characterization

As discussed in Section 6.3.1, risks from PCBs to wildlife receptors were characterized using exposure and effects assessments based on PCB TEQs rather than total PCBs due to the uncertainty in assessing risks based on environmental mixtures of dioxin like and non-dioxin like PCBs. To characterize the potential uncertainty associated with this approach, HQs were determined using exposure and effects data based on total PCBs. Exposure estimates (i.e., TDI) were estimated using total PCB Congeners (Section 6.2) and compared to effects values for total PCBs in the literature primarily based on commercial mixtures of PCB Aroclors. TRVs for birds and mammals were derived on this basis in Section 6.3. Risk estimates (HQs) were then determined for each receptor on a total PCB basis and compared to risk estimates based on PCB TEQs (Table 6-12; Appendix C-5.7).

HQs based on total PCB Aroclors are lower than those based on PCB TEQ. Reasons for this difference are not clear but may be due to a lower proportion of dioxin-like PCBs in the Aroclor mixture used to develop the total PCB TRVs relative to what is in Site media. Regardless, risk characterization based on PCB TEQs is more conservative than for total PCBs and is likely to be less uncertain (for the reasons described in Section 6.3.1). Therefore, conclusions regarding risk from PCBs to wildlife receptors have a higher degree of confidence than would be the case using total PCBs.

6.4 Risk Conclusions

Risk to avian and mammalian representative ecological receptors due to ingestion of COPCs from the Site has been evaluated and characterized in the previous sections. Results of this analysis indicate that for all COPCs, except PCBs on a TEQ basis, risks do not exceed a dietary threshold associated with adverse effects to the survival, growth, or reproduction of

wildlife communities or populations. Risks due to PCB TEQs exceed this threshold for spotted sandpiper and belted kingfisher (HQ of 1.0 and 1.7, respectively).

7 FISH RISK ASSESSMENT

This section presents the risk assessment for fish at the Site. Fish may be exposed to contaminants through direct contact with Site media (i.e., sediment and surface water) and/or ingestion of contaminated biota. Bioaccumulation based exposure is likely the most important pathway by which fish receptors are exposed to Site COPCs.

For bioaccumulative COPCs, empirical or estimated whole body tissue concentrations in fish were compared to literature-derived fish TRVs using a HQ approach. Surface water risk was evaluated using surface water benchmarks compared to Site surface water data using a HQ approach. The direct contact with sediment pathway was evaluated per the *COPC Report and Amendment* (Anchor 2008a, 2008b) using the results of the risk assessment for benthic invertebrates. Sediment COPCs identified for benthic invertebrates serve as a proxy for identifying direct sediment exposure COPCs for fish.

The details of the risk assessment for fish are presented as follows:

- Section 7.1 presents the assessment for bioaccumulation-based exposure, including:
  - An overview of the assumptions used to derive exposure concentrations, including how 95 UCLs were derived
  - A summary of the effects data. Effects data in this assessment are represented by tissue based lowest estimated dose (LOED) TRVs
  - The risk characterization results and uncertainty analysis
- Section 7.2 presents the assessment for surface water based exposure, including:
  - An overview of the assumptions used to derive exposure concentrations
  - A summary of the effects data for surface water exposure, including an alternate water quality benchmark (WQB)
  - The risk characterization results
- Section 7.3 presents the risk conclusions

7.1 Bioaccumulative COPCs Risk Assessment

Based on the screening performed by Anchor (2008a, 2008b, Anchor QEA 2011a), the potentially bioaccumulative COPCs included in the BERA for fish are:

- Mercury[39]
- PCBs
- Selenium
- PCDD/PCDFs

Mercury and PCBs were identified as potentially bioaccumulative COPCs for both sediment and surface water. Selenium was identified as a potentially bioaccumulative COPC for fish based on its presence in surface water but was eliminated as a bioaccumulative COPC in sediment (Anchor QEA 2011a). PCDD/PCDFs were identified as a fish COPC based on its presence in surface water. Mercury, PCBs, and PCDD/PCDFs were evaluated using empirical tissue data collected from the Site in 2011, as described in Section 4.4. Similar to the wildlife risk assessment, exposure and effects assessment for PCBs was performed using both PCB TEQ and total PCBs, but risk was characterized based on PCB TEQ only. PCDD/PCDFs were evaluated on a TEQ basis. Selenium, which was not included in the tissue sampling program (Anchor QEA 2011a), was evaluated using estimated tissue concentrations based on a simple bioaccumulation modeling approach. Methods and results of these risk analyses are described in the following subsections.

7.1.1 Exposure Assessment

Fish tissue samples used in the fish exposure assessment were collected during a field investigation conducted in 2011 in accordance with the approved SAP attached to the BERA Work Plan. The results of this investigation are provided in a data report as an attachment to the BERA (Attachment 1). Prior to estimating tissue EPCs for the BERA, these results were evaluated using graphical and statistical methods to determine if different subgroups existed within the dataset that warranted independent treatment when developing EPCs (please review Section 6.1.2.1.1 for the detail on the prey grouping evaluation for the wildlife risk assessment). Similar groupings are used for the fish exposure estimate. Table 7-1 presents the fish grouping for fish tissue EPC calculations. For PCB TEQ and total PCBs, exposure

[39] Mercury in tissue was analyzed as total mercury (i.e., USEPA Method 7471A). It has been shown that the ratio of methylmercury to total mercury in estuarine fish can range between 71 – 97 percent (USEPA 2010). For purposes of the exposure assessment for fish, mercury in tissue was assumed to be 100 percent methylmercury.

estimates were evaluated for 1) Gulf killifish[40] and 2) all fish without Gulf killifish. For PCDD/PCDF TEQ, exposure estimates were determined for 1) Gulf menhaden; 2) pinfish, striped mullet, and Gulf killifish; and 3) sand seatrout (Appendix D-1.1). For mercury, exposure estimates were evaluated for 1) Gulf menhaden and 2) all fish without Gulf menhaden. In addition, exposure estimates were estimated by pooling all five species for each COPC. Finally, selenium, which was evaluated using estimated fish tissue concentrations, was not evaluated on a species specific basis (see Section 7.1.1.1).

For fish tissue EPCs, 95 UCLs were calculated using ProUCL Version 4.0 software (Appendix D-1.2). As with the wildlife exposure assessment, ProUCL software used for this analysis allowed detected and non-detected values to be considered and creates interpolated values for non-detects based on the perceived distribution of the detected concentrations. The ProUCL software analyzed the data to determine the most appropriate UCL and made a recommendation, which was then used as the EPC for the fish tissue risk calculations. Table 7-2 presents the fish tissue EPCs for mercury, total PCBs, PCB TEQs, and PCDD/PCDF TEQs.

7.1.1.1 Selenium Exposure Assessment

For selenium, the fish tissue EPC was estimated using a simple bioaccumulation model due to the lack of empirical selenium tissue data. The fish tissue EPC for selenium is based on the 95 UCL EPC for dissolved selenium in surface water at the Site and a literature based BCF. The dissolved concentration of selenium was selected as it best reflects the bioavailable fraction for fish (USEPA 2004). The literature based BCF selected is 129 liters per kilogram (L/kg) as WW tissue which was derived from the USEPA report, *Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities - Volume One* (USEPA 1999). USEPA recommends the use of this BCF, which is based on the geometric mean of the 12 BCFs listed in the report. This BCF was also adopted by TCEQ during their evaluation to identify potentially bioaccumulative COPCs in surface water (Reat 2008).

[40] PCBs had statistically significant higher concentrations in Gulf killifish than other species sampled. Similarly, Gulf menhaden had significantly higher mercury concentrations than other species.

The UCL 95 for dissolved selenium in Site surface water is 12 micrograms per liter (µg/L) (Appendix D-1.2). The tissue concentration is calculated as follows:

$$Tissue\ Residue_{Fish}\frac{mg}{kg} = 95\ \text{UCL}_{surface\ water} \times BCF_{fish} \times CF$$

where:

95 UCL-$_{\text{surface water}}$ = Dissolved selenium 95 UCL at the Site, µg/L

BCF-$_{\text{fish}}$ = USEPA recommended value, L/kg (WW tissue)

CF = Conversion factor is 0.001 (mg/1000 micrograms [µg])

The estimated tissue EPC for selenium is 1.55 mg/kg WW. This EPC was used to estimate risks to fish using a HQ approach.

7.1.2 Tissue Based Effects Assessment

For fish, the measure of effect for this endpoint is a tissue-based threshold effect concentration. The primary source of tissue-based effects concentrations is the Environmental Residue-Effects Database (ERED) (http://el.erdc.usace.army.mil/ered/). The ERED is a compilation of literature effects data from over 2,000 studies published between 1964 and 2007 where tissue concentrations were measured in fish for the targeted effect. A copy of the most current database (last downloaded September 2011) was obtained from the U.S. Army Corps of Engineers (USACE). At present, the database contains only those results where an observed effect is reported as being directly related to a chemical in the tissue. The ERED includes the effects data presented in Jarvinen and Ankley (1999), as well as multiple other sources.

To identify an appropriate tissue-based threshold effect concentration, the geometric mean of reported LOED-equivalent fish tissue residues found in the ERED was used. The ERED dataset used for the BERA was evaluated using the following data requirements defined for the purposes of identifying an appropriate effects concentration for whole body fish tissue:

- Exposure route of 'ingestion' ('water', 'food', 'combined') or 'absorption'
- 'Whole-body' or 'carcass' tissue concentrations
- Endpoints of 'reproduction', 'growth', 'mortality', or 'survival'
- Exposure medium of 'sediment', 'water', 'water/food', 'food', or 'combined'

- LOED for low effect results

The geometric mean of the derived or measured LOED values from the final list of studies was used as the TRV for the effects endpoint. This database was the primary source for selection of effects thresholds for the BERA. A review of the ERED database sources, as well as other literature sources, was performed during the BERA to identify any additional studies that could add to the body of information currently available for selecting measures of effect. Table 7-3 presents the Fish LOED TRVs. Effects on fish due to 2,3,7,8-TCDD exposure were used as the surrogate for effects due to exposure to PCB TEQ and PCDD/PCDF TEQ. Details on the data used to derive the mercury, PCB and PCDD/PCDF TEQ, total PCB, and selenium TRVs are presented in Appendices D-2 through D-5.

7.1.3 Risk Characterization and Uncertainty Analysis

This section presents the risk characterization and uncertainty analysis for fish receptors based on a bioaccumulation exposure. A deterministic risk characterization was conducted to characterize risks to fish receptors. A COPC with a HQ greater than 1.0 was retained as a COC.

7.1.3.1 Risk Characterization

All HQs for mercury, PCB TEQ, and PCDD/PCDF TEQ were less than 1.0 for each fish receptor grouping. For selenium, the HQ based on the estimated tissue EPC is 0.81. Therefore, none of the COPCs were retained as COCs for any of fish receptor groups based on the HQ calculations (Table 7-4).

7.1.3.2 Uncertainty Analysis

7.1.3.2.1 PCB Risk Characterization

As discussed in Section 6.3.1, there is significant uncertainty in assessing risks to fish and wildlife using total PCBs effects data and environmental mixtures of PCBs. In the previous section, risks to fish were characterized using PCB TEQ exposure and effects data. To assess the potential uncertainty associated with risks due to non dioxin-like PCBs, HQs were calculated using total PCB exposure and effects data. The HQs based on total PCBs for the different prey groupings defined in the exposure assessment were all less than 1.0

(Table 7-5). Thus, the uncertainty associated with concluding there is negligible risk to fish from PCBs is low.

7.1.3.2.2 Risk to Larger Size Class Fish

Risk characterization for bioaccumulative COPC is based on empirical tissue data for fish less than 15 cm in total length. There is some concern that risks to larger, higher trophic level fish may be higher due to biomagnification of COPC in prey items consumed by these higher trophic levels. Biomagnification through the food chain to higher trophic levels can be expressed using a biomagnification factor (BMF; USEPA 1999). Estimation of a BMF for higher trophic level organisms can be performed using the ratio of food chain multipliers[41] (FCM) for the receptor and prey using the following formula (USEPA 1999):

$$BMF = \frac{FCM_{receptor}}{FCM_{prey}}$$

where:

BMF = biomagnification factor between prey and receptor

$FCM_{receptor}$ = food chain multiplier to account for dietary uptake of a COPC by the receptor of interest

FCM_{prey} = food chain multiplier to account for dietary uptake of a COPC by a receptor's prey

USEPA (1999) provides FCM values for a range of trophic levels and K_{ow} values. To evaluate the uncertainty associated with risks to higher trophic level fish, BMFs were estimated using the FCM values in USEPA (1999) and used to estimate potential whole body COPC concentrations. It was assumed that the fish collected for the BERA were trophic level (TL) 2 and that larger size class fish would be TL 4 fish. The estimated BMFs were then applied to

[41] Food chain multipliers are used to account for dietary uptake of a COPC for an ecological receptor based on its trophic level. The FCM is generally used in conjunction with a BCF and media specific COPC concentration (i.e., surface water) to estimate a receptor's or its prey's whole body tissue concentration.

the fish tissue EPC[42] in Table 7-2 to estimate potential exposure of larger, higher trophic level fish using the following equation:

$$C_{TL4} = C_{TL2} \times BMF$$

where:

C_{TL4} = Estimated tissue concentration in larger TL 4 fish

C_{TL2} = Empirically measured or estimated[43] tissue EPC for small size class (TL 2) fish

BMF = Biomagnification factor

Finally, the estimated COPC concentrations in TL 4 fish were compared to their respective whole body fish tissue TRVs in Table 7-3 to estimate an HQ for each COPC. Results are provided in Table 7-6. No HQ based on estimated whole body tissue concentrations for larger, higher trophic level fish exceed 1.0. Thus, the uncertainty that fish risk characterization based on empirically measured tissue in smaller size class fish are not protective of larger size class fish is considered low.

7.2 Surface Water Direct Contact Risk Assessment

Total PCBs were identified as the only direct contact COPCs for fish based on a comparison of Site surface water concentrations of total PCBs to the USEPA saltwater ambient water quality criteria (AWQC) (USEPA 1980). However, this criterion is for the protection of a fish eating mammals that use aquatic systems (USEPA 1985). This criterion has little ecological relevance for protection of fish populations at the Site.

Rather, the most appropriate approach to assess risks to fish populations from PCBs in surface water is through the body burden approach described in Section 7.1. Unlike some organic chemicals (e.g., PAHs), PCBs are not readily metabolized by fish and, therefore, can provide useful information on both exposure and toxicity. Field (2008) noted that tissue residues of PCBs play an integral role in assessing exposure via all pathways (i.e., sediment, surface water, and diet) and provides a time- and location-integrated assessment of exposure, which

[42] The pooled tissue EPC was selected for this analysis. It was assumed that larger size class fish would feed opportunistically across all species of smaller size class fish.

[43] In the case of selenium

abiotic samples generally do not. Finally, early life-stage effects based on larval fish exposed to PCBs through maternal transfer of PCBs to eggs is one of the most sensitive toxicity endpoints for PCB effects on fish. These particular effects are related to the tissue body burden of fish rather than direct contact with PCBs in surface water. Thus, use of a tissue residue approach to assess risks to fish from all potential sources, including surface water, is a more robust approach to assessing risk. As a result, the bioaccumulative COPCs risk assessment in Section 7.1, which concluded that risks to fish from PCBs is negligible, demonstrates that risk to fish from PCBs in surface water is, therefore, negligible.

7.3 Risk Conclusions

Based on the assessment of bioaccumulation-based and surface water exposures for fish, there are no COCs for fish.

8 BENTHIC INVERTEBRATE RISK ASSESSMENT

This section presents the baseline risk assessment for benthic invertebrates at the Site. The CSM identified direct contact with sediment and surface water as the primary exposure pathways for benthic invertebrates. Risks to benthic invertebrates from sediment and surface water are evaluated in the following sections.

8.1 Sediment Risk Assessment

As described in the BERA Work Plan, the primary approach to evaluate potential risks to the benthic community included the development of a site-specific predictive benthic toxicity model for Patrick Bayou. Both sediment quality guidelines (SQGs) and benthic toxicity predictive tools have been developed from paired toxicity and chemistry data for national and site-specific programs to allow for the estimation of toxicological impacts. Several predictive toxicity models were evaluated in the development of the BERA in an attempt to define the relationship between site surface sediment chemistry and toxic responses in sediment bioassays.

The models evaluated generally fall into two groups: 1) generic sediment quality guideline quotient (SQG-Q) models (Long et al. 1998; Ingersoll et al. 2001; MacDonald et al. 1996); and 2) mechanistic models (USEPA 2003b, 2005, 2008). Each of these approaches are considered 'generalized' models in the sense that they rely on data from a compilation of sites and/or studies performed under a wide range of locations and conditions. Thus, they are intended to be representative of a broad range of conditions but may not account for potentially unique or confounding conditions that may be present at a site to which the model is extrapolated. To overcome this potential shortcoming, site-specific toxicity and chemical information was integrated into a generalized model framework to evaluate the applicability of a site-specific benthic toxicity predictive model for the Site.

Specifically, the performance of the generalized models was evaluated in the BERA Work Plan using 51 samples with co-located sediment chemistry and toxicity test data from the Site. In the BERA Work Plan, predictive model development focused on survival of *Leptocheirus plumulosus* in 10-day whole sediment bioassay tests as the effect endpoint for the model.

The predictive abilities of SQG-Q and Equilibrium Partitioning Sediment Benchmark Toxic Unit (ESBTU) models were evaluated by comparing the observed toxicity in the bioassay tests and the predicted toxicity based on chemistry data for each sample. Models that failed to meet the acceptability criteria identified in the Work Plan were dropped from further consideration. Only two models, the mean probable effect level-quotient (PEL-Q) and mean probable effect concentration-quotient (PEC-Q), met the acceptability criteria set forth in the Work Plan for one species, *Leptocheirus plumulosus*. Additional optimization steps were performed to improve the model performance. Ultimately, four COPCs were included in the optimized model based on *Leptocheirus plumulosus*: total PAHs, total PCBs, lead, and bis(2-ethylhexyl) phthalate (BEHP). Appendix E-1 summarizes the benthic toxicity modeling effort performed in the BERA Work Plan.

As noted above, this benthic toxicity model was identified as the the primary LOE to characterize the risk to the benthic community in the BERA Work Plan. However, during preparation of the BERA it became apparent that the toxicity model had several limitations that could not be resolved as initially conceived in the BERA Work Plan; leading to a significant amount of uncertainty in its utility and relevance as a primary line of evidence. Specifically, and in no particular order of priority, these limitations are: 1) the lack of reference area toxicity tests to account for naturally occurring stressors and the presence of confounding factors (e.g., salinity acclimation, porewater ammonia, etc.) that may result in an unknown but potentially significant amount of conservative bias in the toxicity attributed to Site COPCs; 2) the model, when applied to other test species, results in a high percentage of false positives, leading to a potentially significant amount of Site sediments to be falsely predicted as toxic; and 3) the analytical uncertainty in the PCB analysis in the toxicity sample dataset confounds the extrapolation of the sediment chemistry data to more recent samples. In this case, the uncertainty in the model, which is primarily a function of the uncertainty in the data used to develop the model, did not lead to a sufficient level of confidence in the model to define the magnitude and extent of risks to the benthic community using this LOE alone. Additional model evaluations performed as part of the BERA are described and presented in Appendix E-1 and reflects additional evaluations requested by USEPA.

As a result of these uncertainties in the predictive ability of the model identified during the development of the BERA, a more comprehensive alternative approach including several

LOE within a weight of evidence (WOE) framework was considered more appropriate for this Site. This WOE approach is described in detail in the following section.

8.1.1 Overview of the Benthic Invertebrate WOE Approach

Assessments of contaminant-related impacts to the benthic community in estuarine and marine environments may include chemical, toxicological, and biological evaluations to determine whether: 1) contaminants are present at the Site at concentrations that may be associated with adverse effects; 2) the sediment is toxic to benthic organisms; and 3) the benthic community structure is adversely affected. These multiple LOEs provide a WOE approach that can be used to estimate the likelihood of contaminant-related impacts. This type of approach was first proposed by Long and Chapman (1985) to define sediment quality and is often termed a sediment quality triad (SQT) approach. Chemical, toxicological, and biological evaluations are independent measures; therefore, any causal relationships can only be implied by correlations between the chemical, toxicological, and biological endpoints. For example, the dynamic nature of estuarine environments, where non-chemical related factors (e.g., salinity, temperature, dissolved oxygen) often drive the structure and health of the benthic community, can lead to difficulties in detecting chemical-related impacts in this system.

To evaluate benthic risk at the Site, three LOEs were considered: toxicity, chemistry, and benthic community data within a SQT approach. Specifically, risk associated with each independent LOE was determined using categorical criteria – low, indeterminate, or high – based on the relative response (i.e., toxicity, benthic community) or magnitude (i.e., sediment chemistry) of each LOE. Next, all three LOE were considered together for each sampling location using a WOE framework. It should be recognized that ecological risks occur along a continuum and there is not a quantifiable bright line for those risks. In cases where there may be a high degree of uncertainty in risk estimates, the term "indeterminate" has been used by USEPA Region 6 at other aquatic based sites (e.g., Calcasieau Estuary Remedial Investigation). In the FS, remedial alternatives will be evaluated that lower the overall site and sub-area risk for areas that are characterized as indeterminate or probable risk. The WOE approach is based on the following simple premises:

- Consensus among the three LOE indicating adverse effects is a strong indication that COPC in sediments potentially pose a significant incremental risk to the benthic

community. Likewise, consensus among the three LOE that adverse risks are not apparent is a strong indication that COPC in sediments do not pose an incremental risk to the benthic community.

- Lack of consensus among the three LOE indicate that COPC in sediments may or may not pose a significant incremental risk to the benthic community but there are insufficient data to conclusively identify the source of apparent adverse effects (environmental vs. anthropogenic). Thus, risks at these locations are indeterminate with respect to CERCLA related releases.

The following sections describe the dataset used to evaluate benthic risk, the evaluation and characterization of risk for each LOE, and the consensus based risk characterization using the WOE framework for each location within the Site.

8.1.2 Data Used for the WOE Approach

The benthic invertebrate risk assessment is based on co-located sediment toxicity, chemistry, and benthic community samples collected between 2000 and 2006 as part of historical investigations (Parsons Engineering et al. 2002, 2004; TCEQ n.d.).

The dataset includes the following:

- 12 stations (gunite and upstream samples excluded; see Figure 4-5)
- 30 discrete bulk sediment samples
- 30 sediment chemistry analyses[44]
- 75 toxicity test results[45]
- 23 benthic community evaluations

Stations located outside the site boundaries (2, 8, 9, 10) and those within the gunite channel portion of the Site were excluded from this risk assessment. The gunite stations (7, Y, R) were not included in the evaluation, as this section of the Site does not provide appropriate habitat for a benthic community.

[44] Not all chemical analytes were analyzed in all samples.

[45] Multiple species were frequently tested for each discrete sediment sample.

8.1.3 Benthic Toxicity Line of Evidence

To evaluate benthic toxicity as a LOE, test species survival in the 75 toxicity test results in the dataset listed above was used as the endpoint of concern. Data used in the benthic toxicity LOE are provided in Appendix E-2. A test result was considered to be toxic when the control-adjusted survival was less than 60 percent. The selection of a 60 percent control-adjusted survival threshold to define a toxic response was intended to account for the lack of reference area results, which would likely indicate survival levels significantly less than control tests, and to account for the fact that small differences between reference area test results and Site results are not likely to be ecologically significant and should not solely drive remedial decision-making. The control-adjusted 60 percent survival threshold should account for these adjustments. Species tested included: the amphipod, *Leptocheirus plumulosus*; the polychaete, *Neanthes arenaceodentanta*; the amphipod, *Ampelisca abdita*; and the mysid, *Americamysis bahia*[46].

To characterize toxicity for a specific location, the proportion of toxic samples was determined for each location. The proportion toxic was calculated as follows:

Proportion toxic = Toxic results / Total results

Proportion toxicity estimates for each sample are presented in Appendix E-2. Next, overall incremental risk to the benthic community due to sediment toxicity was categorized for each location using the proportion of toxic samples according to the following criteria:

- Probable Risk – the proportion of toxic samples was equal to or exceeded fifty percent
- Indeterminate Risk – the proportion of toxic samples was between 25 and 50 percent (exclusive)
- Low Risk – the proportion of toxic samples was less than or equal to 25 percent

The results of this evaluation are presented in Table 8-1. For two stations, 4A and 6A, there is probable risk to the benthic community as the proportion toxic exceeded 50 percent. For station 3, the risk is indeterminate as the proportion toxic was less than 50 percent but greater than or equal to 25 percent. All other stations were characterizes as low benthic

[46] Test conditions (e.g., duration, etc.) are described in the BERA Work Plan.

toxicity risk (less than 25 percent toxic). The degree to which risks to the benthic community at locations identified using this LOE are caused by exposure to Site-related COPCs, and the degree to which exposure to COPCs or other stressors is causing measureable adverse responses in the benthic community, and are evaluated through the two other LOEs, as described below.

8.1.4 Sediment Chemistry Line of Evidence

The mean PEL-Q model developed in the BERA Work Plan was considered an appropriate tool to characterize the relative risk to the benthic community based on the 30 sediment chemistry analyses in the WOE dataset for the four COPC included in the model (PAHs, PCBs, lead, BEHP). To evaluate the mean PEL-Q as a LOE, a comparison of relative differences in optimized mean PEL-Q by station was conducted within the Site. For each sample and station, the relative percent difference from the median of the optimized mean PEL-Q was calculated:

$$PEL\text{-}Q\ \%\Delta = ([PEL\text{-}Q]\text{-}[PEL\text{-}Q]_{median}) / [PEL\text{-}Q]_{median} * 100$$

The relative percent difference from the median was used in lieu of an absolute value for the mean PEL-Q at a given station because of the uncertainty associated with attributing a specific mean PEL-Q value with a specific adverse response due to limitations in the benthic toxicity model discussed above (e.g., lack of a reference area, etc.). The use of an absolute value would imply a level of precision that does not exist. Sediment chemistry data and calculations of percent difference from median of the optimized mean PEL-Q estimates are presented in Appendix E-2.

The overall incremental risk to the benthic community due to exposure to sediment-based COPCs was categorized for each location according to the following criteria:

- Probable Risk – relative optimized mean PEL-Q exceeded the 85th percentile (highest 15 percent) of locations within the Site
- Indeterminate Risk – relative optimized mean PEL-Q was less than the 85th percentile but was equal to or greater than the Site-wide average
- Low Risk – relative optimized mean PEL-Q was less than the Site-wide average

The results of this evaluation are presented in Table 8-2. Two stations, 4A and 6A, are characterized as probable risk based on sediment chemistry LOE. All other stations are characterized as low risk[47].

8.1.5 Benthic Community Line of Evidence

To evaluate benthic community as a LOE, relative Engle and Summers Biotic Index (ES-BI) scores were calculated for each of the 23 benthic community evaluations in the WOE dataset. Samples included in this LOE were collected from Patrick Bayou in 2000 and 2001. This difference in collection period may create an uncertainty in the interpretation of the results as salinity, dissolved oxygen and flushing flows may have been different before each monitoring event. As summarized in Appendix E-3, these physical factors have an important influence on benthic community condition. Nevertheless, in order to maximize the use of the available data, and not bias the data seasonally, and because the Patrick Bayou data were not being compared to off-Site reference areas, the average ES-BI score was then calculated for each of the twelve stations included in the analysis. Details on how the ES-BI scores are calculated and averaged is described in Appendix E-4. Next, overall incremental risk to the benthic community as measured by the overall composition and health of the benthic community risk was categorized for each location according to the following criteria:

- Probable Risk – the average relative ES-BI score was less than the 15th percentile (lowest 15 percent) of locations within the Site
- Indeterminate Risk – the average relative ES-BI score was greater than the 15th percentile but was equal to or less than the Site-wide average
- Low Risk – relative ES-BI score was greater than the Site-wide average

The results of this evaluation are presented in Table 8-3. Two stations, 6A and Q, are classified as representing a probable risk to the benthic community as the ES-BI scores were less than the 15th percentile of all stations. For four other stations, there is indeterminate risk. Finally, for all other stations there is low risk.

[47] Due to the relatively high values at Station 4A and 6A, no stations exceeded the average but were less than the 85th percentile (i.e., indeterminate risk).

8.1.6 Weight of Evidence Risk Characterization

To evaluate the overall risk to the benthic community the three LOEs were evaluated together using a consensus based approach. The overall by station-specific benthic invertebrate risk characterization is based on these LOE categorizations:

- Low Risk – If all three LOE were characterized as low risk, then that location was characterized as low risk.
- Indeterminate Risk – If none of the LOE was categorized as probable risk but were categorized as indeterminate or a mix of indeterminate and low risk, then that location was characterized as indeterminate risk.
- Probable Risk – If any one of the three LOE was categorized as probable risk for a location, then that location was characterized as representing a probable risk to the benthic community.

The results of the assessment for all three LOE are presented in Table 8-4 and Figure 8-1. Five of 12 stations are categorized as low risk based on toxicity, chemistry, and benthic community condition. Four of 12 stations are categorized as indeterminate risk based on these LOE. Three of 12 locations (4A, 6A, and Q) demonstrate probable risk based on these LOE.

As noted in Section 8.1.1, ecological and human health risks occur along a continuum and there is not a quantifiable bright line for those risks. Remedial alternatives will be evaluated in the FS that lower the overall site and sub-area risk for areas that are characterized as indeterminate and probable risks. In concert with USEPA, quantitative tools will be developed to assess the ultimate risk reduction expected from a specific remedial alternative and that risk reduction score will be used as part of the effectiveness assessment for each alternative, along with USEPA's other FS criteria. In addition, the evaluation of surface water impacts as related to sediment concentrations will be a part of the evaluation of remedial alternatives.

8.1.7 Benthic Invertebrate Risk Assessment Uncertainty Analysis

To evaluate the potential uncertainty in the benthic risk characterization, sensitivity analysis was conducted on all three LOE. The analysis was performed as follows:

- The benthic toxicity LOE was evaluated using a higher (80 percent) survival

threshold for identifying toxic and non-toxic samples

- The probable risk based on the mean PEL-Q was categorized using a more conservative threshold (75th percentile)[48]
- The benthic community LOE and used more conservative threshold (25th percentile) to categorize a location as probable risk. In addition, this LOE considered the draft TCEQ Index (L. Broach, 2012) as a LOE.

8.1.7.1 *Sensitivity Analysis for Benthic Toxicity*

For the benthic toxicity sensitivity analysis, a higher threshold was used to evaluate benthic toxicity. In the baseline assessment, the threshold for identifying toxic and non-toxic samples was 60 percent control-adjusted survival. For the sensitivity analysis, an 80 percent control-adjusted survival threshold was used for identifying toxic and non-toxic samples. For comparison purposes, two other thresholds were also evaluated, 50 percent and 70 percent.

The results of the benthic toxicity sensitivity analyses are presented in Table 8-5. Selection of a higher survival threshold to categorize a test as non-toxic does not dramatically affect outcome. Only one station (T) would be re-categorized from low to indeterminate risk based on the WOE framework in Section 8.2.

8.1.7.2 *Sensitivity Analysis for Optimized Mean Probable Effect Level-Quotient*

For the baseline relative optimized mean PEL-Q risk characterization, the threshold for probable risk was the 15th percentile of the average station mean PEL-Q values. For the sensitivity analysis, the threshold was set to a more conservative value, the 25th percentile, to identify probable risk. The results of the sensitivity analysis are presented in Table 8-6. Selection of a higher threshold to identify probable risk has minimal effect on outcome for the relative optimized mean PEL-Q. One station (3) would be re-categorized from indeterminate to probable risk.

[48] The upper 25th percentile.

8.1.7.3 *Sensitivity Analysis Benthic Community*

A second benthic invertebrate community index was selected for a sensitivity analysis to evaluate Site benthic invertebrate community data. A BI currently under development by TCEQ (L. Broach 2012) for tidal streams in Texas was used in this evaluation. The TCEQ BI is in draft form and has not yet been peer-reviewed. However, this index was used here as requested by USEPA. This index has six different metrics that are described in Appendix E-4. The benthic community data were scored using the approach described by TCEQ (see Appendix E-4). However, the evaluation of a score for a station was not based on a comparison to a reference condition (e.g., stressed or not stressed) but in the context of the other scores at the Site (a relative analysis).

In addition, for the sensitivity analysis of the benthic community, the ES-BI and TCEQ relative benthic indices were also evaluated using a more conservative threshold, the lower 25th percentile, to identify probable risk. The results of the sensitivity analyses are presented in Table 8-7. The selection of a higher threshold, 25 percent, for the ES-BI affected one station. Station U would be re-categorized from indeterminate to probable risk.

The addition of TCEQ BI adds some uncertainty to the assessment. Two stations (U and 5) would be re-categorized from indeterminate to probable risk. One station (V) would be re-categorized from indeterminate to low risk. One station (Q) would be re-categorized from probable to indeterminate risk. In addition, there is no difference between 15 percent and 25 percent threshold for TCEQ BI. The differences between the ES-BI and TCEQ BI scores may be due to the different factors that have been demonstrated to affect benthic community structure and the metrics used to evaluate that structure. Direct causal relationships are typically not evident (Long and Chapman 1985; Gaston and Edds 1994). However, the influence of grain size and salinity on the distribution of benthic infauna in soft-sediments has been well documented and may have an influence on the metrics used with the two BI's (see Appendix E-3).

8.2 Surface Water Risk Assessment

Benthic invertebrates may be directly exposed to surface water at the sediment-water interface or, for some burrowing organisms, through irrigation of their burrows. Risks to

benthic invertebrates exposed to surface water were assessed by comparing the concentration of Site surface water COPCs to effects values using a HQ approach.

Surface water data collected in 2009 were evaluated in the BERA Work Plan to identify COPCs. Total PCBs was the only surface water COPC identified for benthic invertebrates based on the initial and refined risk-based screening.

8.2.1 Exposure Assessment

The exposure assessment for surface water COPCs includes surface water sampling conducted in 2009 and 2011. Samples were collected at eight stations (see Figure 4-2). Discrete samples were collected at mid-depth and within six inches of the bottom. Stations sampled in 2009 (n=4) included two sampling events. One round of sampling was conducted during low-tide, while the second was collected on an outgoing tide to capture any potential upstream flow and to avoid potential flow-reversal conditions from the HSC. Stations sampled in 2011 (n=4) were sampled at mid-depth during a single event. The total fraction (i.e., unfiltered) samples were analyzed for PCB Congeners (n=209). A more detailed discussion of the surface water dataset is provided in Section 4.4.2.

The EPC for total PCBs was calculated as the 95 UCL of the surface water dataset. Total PCB Congeners were calculated using all 209 congeners with non-detect results set at one-half the DL. Using USEPA's ProUCL software (Version 4.0; (USEPA 2002), the recommended total PCB UCL 95 was calculated to be 193 nanograms/liter (ng/L). Calculations are summarized in Appendix E-5.

8.2.2 Effects Assessment

The national recommended AWQC saltwater criteria continuous concentration (USEPA 2012) of 30 ng/L[49] was initially selected as the effects value for total PCBs in surface water in the BERA Work Plan. The narrative intent of the national recommended AWQC is to be protective of 95 percent of all aquatic receptors, including benthic invertebrates. However, the PCB AWQC for aquatic receptors (USEPA 1980) was derived using a tissue-based final

[49] The Texas Surface Water Quality Standard for PCBs (TCEQ 2012) has adopted USEPA's recommended AWQC CCC.

residue value approach intended to be protective of mink exposed to PCB through ingestion of aquatic biota (e.g., fish and invertebrates). Thus, risk estimates using this effects value are associated with substantial uncertainty for direct effects on benthic invertebrates.

Fuchsman, et al. (2006) derived an alternative WQB specifically for aquatic invertebrates based on published data obtained from USEPA's online Aquatic Toxicity Information Retrieval (AQUIRE) database. Although derivation of WQBs and criteria typically incorporates toxicity data for both fish and invertebrates, the authors limited their analysis to invertebrates due to concerns over differences in the mechanism(s) of toxicity exerted by PCBs in fish and invertebrates. While both groups are susceptible to PCBs via narcosis, invertebrates lacking the Ah receptor are not as susceptible to co-planar PCBs, which can act as ligands for the Ah receptor found in most vertebrates, resulting in production of toxic metabolites or alteration of gene transcription. The authors applied the USEPA guidelines (Stephan, et al. 1985) to identify appropriate data and to develop a final acute value (FAV). Aroclor 1254 was selected as the commercial PCB mixture for their analysis due to: 1) the availability of data meeting USEPA guidelines; and 2) generally greater toxicity relative to less or more-chlorinated Aroclor mixtures. They derived an FAV of 6,960 ng/L for Aroclor 1254. Again, using the USEPA guidelines, an acute-to-chronic ratio (ACR) of 13 was derived using paired acute and chronic tests. Finally, they calculated a final chronic value (FCV) of 540 ng/L by dividing the FAV by the ACR. This FCV is nearly equal to the lowest chronic effect concentration reported for mortality and is lower than most chronic values identified for reproduction, growth, or development. Therefore, the authors concluded, "the FCV of [540 ng/L] is a reasonable estimate of a chronic toxicity threshold for sensitive invertebrate taxa."

This FCV, based on aquatic invertebrate toxicity data, represents a more ecologically relevant effects threshold for benthic invertebrates compared to the USEPA WQC. As such, this alternative TRV was used to derive surface water HQs and identify COC for benthic invertebrates.

8.2.3 Surface Water Risk Characterization

The surface water exposure risk characterization for benthic invertebrates was conducted by comparing the 95 UCL to the alternative TRV using a HQ approach. Using the alternative

TRV specific for benthic invertebrates the HQ is 0.4. In fact, none of the surface water samples from the Site exceeded the alternative effects value for benthic invertebrates.

8.2.4 Surface Water Uncertainty Analysis

Uncertainty in the benthic invertebrate risk assessment for exposure to surface water includes uncertainty in the exposure and effects assessment. Sampling for the exposure assessment consisted of two different sampling events. The first event involved multiple locations, depths, and tidal cycles and is considered representative of Site conditions. The second event was based on a biased design to target areas with potentially elevated concentrations based on the results of sediment testing. Thus, the data are considered representative but biased conservatively. Therefore, the uncertainty associated with the effects assessment is considered low.

During the initial screen of the surface water data in the BERA Work Plan, conservative screening values were selected to identify COPCs. The only COPC to exceed its screening benchmark was PCBs. Thus, the selection was conservative and the uncertainty associated with the screening is low. The TRV selected in the effects assessment is based on a comprehensive review of available studies on the effects of PCBs to benthic invertebrates. The derivation of the TRV was based on methods and principles similar to the derivation of water quality criteria (WQC). Thus, the derivation of the TRV is considered robust and conservative. As a result, the uncertainty associated with the selection of the benthic invertebrate surface water TRV for PCBs is considered low as well.

There is some potential uncertainty associated with the comparison of a PCB Aroclor based TRV to an EPC based on total PCB congeners due to differences in the analytical basis for the two values. The FAV and ACR values identified by Fuchsman et al. (2006) to calculate the TRV are based on Aroclor 1254 and Aroclor 1242, 1248, and 1254; respectively. These Aroclors, particularly Aroclor 1254 and 1248 are typically dominated by tri-chlorinated and tetra-chlorinated PCB congeners (Frame, et al. 1996). Surface water data for the Site used in the exposure assessment (Appendix A) indicates that tri-chlorinated and tetra-chlorinated PCB congeners predominate. In addition, surface sediments and historical surface water data analyzed for PCB Aroclors frequently had only detectable levels of Aroclor-1248 (and to a lesser extent, Aroclor-1254). This suggests that the congener profiles of the effects data used

to derive the TRV and the exposure assessment for surface water are comparable and would not be expected to contribute a significant degree of uncertainty in the risk characterization for PCBs in surface water.

Overall, the uncertainty associated with the surface water risk assessment for benthic invertebrates is considered low and decisions regarding risk for this receptor-pathway pair can be made with an acceptable degree of confidence.

8.3 Risk Conclusions

This section presents overall conclusions regarding risks to benthic invertebrates from direct contact with sediment using a WOE approach and direct contact with surface water using a deterministic comparison to TRVs.

8.3.1 Sediment

The condition of the benthic community at the Site reflects primarily the temporal and spatial gradients and dynamics of non-chemical stressors that are present in a tidal stream located in a highly developed, industrialized watershed, as well as CERCLA related releases. The Site has been significantly modified from its natural state (e.g., channelized, armored), which has likely increased the variability of many non-chemical stressors (e.g., salinity, dissolved oxygen, temperature). Upstream urbanization contributes to the benthic conditions at the Site through organic enrichment and increased flow during storm events. Thus, interpretation of the LOE for risks to the benthic community are problematic with respect to environmental conditions vis-à-vis CERCLA related releases.

Nonetheless, areas of probable risk to the benthic community have been identified using a WOE approach. Higher mean PEL-Q values are associated with areas of probable risk. Of the four COPC (PCBs, PAHs, lead, BEHP) represented by the mean PEL-Q, the contribution of PCBs generally exceeds those of other COPC and, in the case of stations identified as probable risk, accounts for a significant proportion of the mean PEL-Q value (Figure 8-2). This suggests that PCBs are the primary risk driver for sediment benthic risk. As such, PCBs are identified as sediment COC for the benthic community.

8.3.2 Surface Water

Risk to benthic invertebrates from PCBs in surface water is determined to be negligible and no surface water COCs are identified.

9 AQUATIC PLANTS, REPTILES, AND AMPHIBIANS UNCERTAINTY DISCUSSION

Risks to aquatic plants, reptiles, and amphibians were not addressed quantitatively per the problem formulation and ecological CSM (Anchor QEA 2011a). In general, relevant exposure and effects data for these receptors groups are not available to quantify risk. Rather, a qualitative assessment of the uncertainty associated with potential risks was performed for these groups.

9.1 Aquatic Plants

Evaluating risks to aquatic plants is uncertain primarily due to: 1) the lack of standardization in test endpoints available for aquatic plants (e.g., test duration, effect type, etc.); and 2) unknown sensitivity of test species to a chemical relative to other aquatic plant species (USEPA 2010). Relationships between sublethal biochemical effects observed in many plant studies (e.g., carbon fixation, lipid peroxidation, etc.) and typical assessment endpoints regarding survival, growth, or reproduction are poorly defined. Thus, the pool of ecologically relevant studies is quite limited (USEPA 2010). In addition, many of the available toxicity studies with aquatic plants are limited to macroalgae or *Lemna* sp. (i.e., duckweed; a free-floating aquatic plant). In addition, very few tests have been performed with marine or brackish water species most relevant to the Site. A review performed in 2008 of the nearly 23,000 aquatic plant entries in the ECOTOX database (USEPA 2010) indicated that less than 10 percent were performed using submerged grasses or vascular plants (other than *Lemna* sp.). Similarly, only 14 percent were performed using marine species (primarily marine algae). Finally, there are no widely accepted approaches to developing or validating extrapolation factors that may be used to address interspecies sensitivity or differences in test endpoints.

Thus, while there are effects thresholds for aquatic plants reported in the literature, the uncertainty associated with applying those values to quantitatively assess risks to aquatic plant communities at the Site is high enough to preclude a meaningful characterization of risk. However, many of the WQB (i.e., state and federal WQC) used to identify COPCs for other receptor groups (e.g., fish, benthic invertebrates) are based on criteria considered protective of aquatic plants. Thus, risk conclusions and risk management decisions based on other receptor groups are likely to be protective of aquatic plants.

9.2 Reptiles and Amphibians

Reptiles and amphibians were not selected as receptors of concern due to the insufficient toxicological data for detailed quantitative evaluation of potential adverse effects on this group. In addition, amphibians are not an ecologically relevant receptor group given the brackish nature of the Site; few amphibians that are potentially present in this area are tolerant of brackish waters. Thus, exposure to Site COPCs is considered negligible, risks are therefore negligible as well, and the uncertainty associated with this conclusion is considered low.

As ectothermic vertebrates, reptiles have different anatomies, physiologies, metabolisms, behaviors, exposures, and responses to environmental contaminants compared to birds and (even more distantly related) mammals that would, by necessity, be used as surrogates in the BERA due to the lack of availability of toxicity reference values for reptiles. This is recognized as a potentially important uncertainty, as the relatively sedentary behavior of many reptiles may increase their vulnerability to exposures (compared to birds and mammals). However, because reptile metabolic demands are relatively lower than birds or mammals, exposure through ingestion would be expected to be less than similar sized birds or mammals. Finally, dermal exposure may be a relatively more important exposure route for reptiles than birds or mammals. Weir et al. (2010) observed that reptiles may receive a higher daily dose of lipid soluble contaminants due to the lack of feathers and fur and the higher lipid content of reptile skin. Unfortunately, there are no means to evaluate this statement quantitatively with regards to assessing exposure to Site COPCs.

In conclusion, risks associated with most wildlife COPCs are considered negligible for reptiles given the negligible risks for birds and mammals. Because some avian receptors have estimated exposures to PCBs at the Site in excess of potentially adverse effects levels (i.e., LOAEL TRVs), it may also be expected that some reptiles, assuming similar exposures, would have similar risks. However, there are no means to quantify potential risks to reptiles, given the lack of relevant exposure and effects information for PCBs.

10 CONCLUSIONS AND RISK MANAGEMENT RECOMMENDATIONS

This section summarizes the results of the risk characterization and conclusions to identify Site COCs that might cause potentially unacceptable ecological risk and to provide risk management recommendations based on magnitude and extent of risks and their associated uncertainties.

Potential unacceptable ecological risks are associated with protection and maintenance of piscivorous and shorebird populations[50]. Baseline PCB TEQ HQs for these receptor groups are equal to 1.0 and 1.7 for spotted sandpiper and belted kingfisher, respectively. However, uncertainty analyses indicate that HQs for these COPC-receptor pairs may be above or below the threshold of concern (HQ = 1.0) depending on the assumptions used to characterize risk. Thus, within the ranges of exposure and effects variables evaluated, risks may or may not exceed a threshold of concern for individuals exposed to PCBs in Site media.

Using a WOE approach that included three LOE (sediment chemistry, sediment toxicity tests, and benthic community data), PCBs were identified as COC for the benthic community. Areas of probable risk were identified based on a consensus of the three LOE evaluated. However, the available data did not support a quantitative estimate of the magnitude of risk within these areas.

In summary incremental risk to benthos and wildlife are driven primarily by exposure to PCBs. Although no specific risk management recommendations are provided herein, risk management based on risks to ecological receptors should be considered within the overall context of other risk management considerations (e.g., water quality standards) during the FS.

[50] No potentially unacceptable risks from Site COPCs were identified for carnivorous birds, raccoons, fish populations, or benthic invertebrate populations.

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TABLES

Table 3-1

Assessment Endpoints, Measurement Endpoints, and Lines of Evidence

Assessment Endpoint	Ecological Receptor	Risk Questions	Measurement Endpoint	Lines of Evidence
Survival, growth, and reproduction of the benthic and aquatic invertebrate community	Benthic and Aquatic Invertebrates	Is the survival of benthic invertebrates observed or predicted from sediment COPCs below acceptable thresholds?	Bulk surface sediment concentrations	Predicted toxicity of Site sediments based on Site-specific empirical sediment chemistry and bioassay data (i.e. Site-specific predictive toxicity model).
		Is the condition of the benthic community below acceptable thresholds due to exposure to sediment COPC?	Bulk surface sediment concentrations	Benthic community indices describing the condition of the observed benthic community relative to regional and local reference conditions.
		Do COPC concentrations in surface water exceed benchmarks protective of the benthic invertebrate community?	Surface water concentrations	Concentrations of surface water COPC compared to effects-based values that are protective of benthic invertebrate communities.
Survival, growth, and reproduction of the fish community	Fish	Do COPC concentrations in surface water exceed benchmarks protective of the fish community?	Surface water concentrations	Comparison of surface water COPC concentrations compared to effects-based benchmarks protective of the survival, growth, and reproduction of fish communities.
		Do COPC concentrations in whole body tissues of fish exceed benchmarks protective of the fish community?	Whole body fish tissue concentrations	Comparison of whole body fish tissue to appropriate tissue residue levels protective of the survival, growth, and reproduction of fish communities.
		Do COPC concentrations in sediment exceed benchmarks protective of the fish community?	Bulk surface sediment concentrations	Comparison of sediment COPC concentrations compared to effect levels predicted to reduce survival of fish communities[a].
Survival growth and reproduction of sediment probing and omnivorous/herbivorous bird communities	Spotted Sandpiper	Does the dietary dose of COPCs received due to consumption of prey species captured at the Site, as well as incidental ingestion of Site sediment, exceed TRVs for survival, growth, and reproduction?	Species-specific dietary dose of COPC in prey and incidentally ingested sediment	Comparison of estimated dietary dose to dietary TRVs protective of sediment probing and omnivorous/herbivorous bird communities.

Table 3-1

Assessment Endpoints, Measurement Endpoints, and Lines of Evidence

Assessment Endpoint	Ecological Receptor	Risk Questions	Measurement Endpoint	Lines of Evidence
Survival growth and reproduction of carnivorous wading bird communities	Composite carnivorous wading bird[b]	Does the dietary dose of COPCs received due to consumption of prey species captured at the Site, as well as incidental ingestion of Site sediment, exceed TRVs for survival, growth, and reproduction?	Species-specific dietary dose of COPC in prey and incidentally ingested sediment	Comparison of estimated dietary dose to dietary TRVs protective of carnivorous wading bird communities.
Survival growth and reproduction of piscivorous bird communities	Belted Kingfisher	Does the dietary dose of COPCs received due to consumption of prey species captured at the Site, as well as incidental ingestion of Site sediment, exceed TRVs for survival, growth, and reproduction?	Species-specific dietary dose of COPC in prey	Comparison of estimated dietary dose to dietary TRVs protective of piscivorous bird communities.
Survival growth and reproduction of aquatic-associated omnivorous mammal communities	Raccoon	Does the dietary dose of COPCs received due to consumption of prey species captured at the Site, as well as incidental ingestion of Site sediment, exceed TRVs for survival, growth, and reproduction?	Species-specific dietary dose of COPC in prey and incidentally ingested sediment	Comparison of estimated dietary dose to dietary TRVs protective of omnivorous mammals.

Notes:

[a] - Benthic invertebrate LOE for sediment used as proxy for fish. See text for explanation.

[b] - A composite receptor representing the average or mid-point exposure factors (e.g., body weight) of the species in this guild were used (see Anchor QEA 2009).

Table 4-1
Summary of BERA Dataset

Medium	Data Type	Number of Samples
Surface Sediment	Chemical concentrations in all surface sediment collected within the 0 - 10 cm depth interval in the Site.	52
Surface Water	Chemical concentrations in surface water collected using a peristaltic pump and horizontal van Dorn bottle from within the Site.	26
Invertebrate, Whole Body Fish Tissue	Chemical concentrations in oyster, blue crab, brown shrimp, white shrimp, Gulf killifish, Gulf menhaden, pinfish, sand seatrout, and striped mullet collected from within the Site.	83
Sediment Toxicity	Toxicity response endpoints for surface sediment samples tested with four invertebrate species.	51
Benthic Community	Invertebrates from each sample were identified to the lowest practical taxon and enumerated. The data were used to calculate various indices including richness, diversity, and indices of relative abundance (e.g., relative abundance of Bivalvia).	48[a]
		26[b]

Notes:

a - Patrick Bayou Lead Organization Site samples (Parsons et al. 2002, 2004)

b - Comparison bayou samples (Dobberstine 2007)

Table 4-2

Toxic Eqivalency Factors for Toxicity Equivalent Calculations

Congener	TEF		
	Mammals[1]	Birds[2]	Fish[2]
Dioxins			
2,3,7,8-TCDD	1	1	1
1,2,3,7,8-PeCDD	1	1	1
1,2,3,4,7,8-HxCDD	0.1	0.05	0.5
1,2,3,6,7,8-HxCDD	0.1	0.01	0.01
1,2,3,7,8,9-HxCDD	0.1	0.1	0.01
1,2,3,4,6,7,8-HpCDD	0.01	0.001	0.001
OCDD	0.0003	0.0001	0.0001
Furans			
2,3,7,8-TCDF	0.1	1	0.05
1,2,3,7,8-PeCDF	0.03	0.1	0.05
2,3,4,7,8-PeCDF	0.3	1	0.5
1,2,3,4,7,8-HxCDF	0.1	0.1	0.1
1,2,3,6,7,8-HxCDF	0.1	0.1	0.1
1,2,3,7,8,9-HxCDF	0.1	0.1	0.1
2,3,4,6,7,8-HxCDF	0.1	0.1	0.1
1,2,3,4,6,7,8-HpCDF	0.01	0.01	0.01
1,2,3,4,7,8,9-HpCDF	0.01	0.01	0.01
OCDF	0.0003	0.0001	0.0001
Non-*ortho* PCBs			
3,3',4,4'-TCB (77)	0.0001	0.05	0.0001
3,4,4',5-TCB (81)	0.0003	0.1	0.0005
3,3',4,4',5-PeCB (126)	0.1	0.1	0.005
3,3',4,4',5,5'-HxCB (169)	0.03	0.001	0.00005
Mono-*ortho* PCBs			
2,3,3',4,4'-PeCB (105)	0.00003	0.0001	0.000005
2,3,4,4',5-PeCB (114)	0.00003	0.0001	0.000005
2,3',4,4',5-PeCB (118)	0.00003	0.00001	0.000005
2',3,4,4',5-PeCB (123)	0.00003	0.00001	0.000005
2,3,3',4,4',5-HxCB (156)	0.00003	0.0001	0.000005
2,3,3',4,4',5'-HxCB (157)	0.00003	0.0001	0.000005
2,3',4,4',5,5'-HxCB (167)	0.00003	0.00001	0.000005
2,3,3',4,4',5,5'-HeCB (189)	0.00003	0.00001	0.000005

Sources:

1 - Van den Berg et al., 2006

2 - Van den Berg et al., 1998

Table 4-3
Summary of Site Surface Sediment Data Evaluated in the BERA Dataset

Station ID	Sample ID	Mercury	Total Metals[a]	Dioxins/Furans	PCB Congeners	Pesticides	SVOCs	VOCs	Ammonia	TOC	Grain Size	Specific Gravity	AVS/SEM	PCB Aroclors	PAHs
PB001.1	PB001.1-1SS010-091027-N	X	X	X	X	X	X	X	X	X	X		X		
PB001.2	PB001.2-1SS010-091027-N	X	X	X	X	X	X	X	X	X					
PB001.3	PB001.3-1SS010-091027-N	X	X	X	X	X	X	X	X	X	X	X	X		
PB002	PB002-1SS010-091027-N	X	X	X	X	X	X	X	X	X					
PB004	PB004-1SS010-091027-N	X	X	X	X	X	X	X	X	X	X		X		
PB005	PB005-1SS010-091027-N	X	X	X	X	X	X	X	X	X					
PB007.1	PB007.1-1SS010-091028-N	X	X	X	X	X	X	X	X	X	X		X		
PB007.2	PB007.2-1SS010-091028-N	X	X	X	X	X	X	X	X	X					
PB009	PB009-1SS010-091028-N	X	X	X	X	X	X	X	X	X	X		X		
PB011	PB011-1SS010-091028-N	X	X	X	X	X	X	X	X	X					
PB013.1	PB013.1-1SS010-091028-N	X	X	X	X	X	X	X	X	X	X		X		
PB013.2	PB013.2-1SS010-091028-N	X	X	X	X	X	X	X	X	X					
PB015	PB015-1SS010-091028-N	X	X	X	X	X	X	X	X	X	X		X		
PB016	PB016-1SS010-091101-N	X	X	X	X	X	X	X	X	X					
PB018	PB018-1SS010-091101-N	X	X	X	X	X	X	X	X	X	X		X		
PB019	PB019-1SS010-091101-N	X	X	X	X	X	X	X	X	X					
PB022	PB022-1SS010-091101-N	X	X	X	X	X	X	X	X	X	X		X		
PB023	PB023-1SS010-091030-N	X	X	X	X	X	X	X	X	X					
PB024	PB024-1SS010-091030-N	X	X	X	X	X	X	X	X	X	X	X	X		
PB026	PB026-1SS010-091030-N	X	X	X	X	X	X	X	X	X					
PB028	PB028-1SS010-091030-N	X	X	X	X	X	X	X	X	X	X		X		
PB032	PB032-1SS010-091030-N	X	X	X	X	X	X	X	X	X					
PB034	PB034-1SS010-091030-N	X	X	X	X	X	X	X	X	X	X		X		
PB037	PB037-1SS010-091030-N	X	X	X	X	X	X	X	X	X					
PB041	PB041-1SS010-091030-N	X	X	X	X	X	X	X	X	X	X		X		
PB043	PB043-1SS010-091030-N	X	X	X	X	X	X	X	X	X					
PB044	PB044-1SS010-091030-N	X	X	X	X	X	X	X	X	X	X		X		
PB047.1	PB047.1-1SS010-091030-N	X	X	X	X	X	X	X	X	X					
PB047.2	PB047.2-1SS010-091030-N	X	X	X	X	X	X	X	X	X	X		X		
PB048	PB048-1SS010-091031-N	X	X	X	X	X	X	X	X	X					
PB049	PB049-1SS010-091031-N	X	X	X	X	X	X	X	X	X	X	X	X		
PB053	PB053-1SS010-091031-N	X	X	X	X	X	X	X	X	X					
PB056	PB056-1SS010-091031-N	X	X	X	X	X	X	X	X	X	X		X		
PB057	PB057-1SS010-091031-N	X	X	X	X	X	X	X	X	X					
PB059.1	PB059.1-1SS010-091102-N	X	X	X	X	X	X	X	X	X	X		X		
PB059.2	PB059.2-1SS010-091031-N	X	X	X	X	X	X	X	X	X					
PB063.1	PB063.1-1SS010-091031-N	X	X	X	X	X	X	X	X	X	X		X		
PB063.2	PB063.2-1SS010-091102-N	X	X	X	X	X	X	X	X	X					
PB064	PB064-1SS010-091102-N	X	X	X	X	X	X	X	X	X	X		X		
PB066	PB066-1SS010-091101-N	X	X	X	X	X	X	X	X	X					

Table 4-3
Summary of Site Surface Sediment Data Evaluated in the BERA Dataset

Station ID	Sample ID	Mercury	Total Metals[a]	Dioxins/Furans	PCB Congeners	Pesticides	SVOCs	VOCs	Ammonia	TOC	Grain Size	Specific Gravity	AVS/SEM	PCB Aroclors	PAHs
PB069	PB069-1SS010-091101-N	X	X	X	X	X	X	X	X	X	X	X	X		
PB074	PB074-1SS010-091101-N	X	X	X	X	X	X	X	X	X					
PB081	PB081-1SS010-091103-N	X	X	X	X	X	X	X	X	X	X		X		
PB093	PB093-1SS010-091103-N	X	X	X	X	X	X	X	X	X	X		X		
PB097	PB097-1SS010-091103-N	X	X	X	X	X	X	X	X	X					
PB101	PB101-1SS010-091103-N	X	X	X	X	X	X	X	X	X	X		X		
PB076.1	PB076.1-1SS010-20110802-N													X	X
PB070A	PB070A-1SS010-20110802-N													X	X
PB081.1	PB081.1-1SS010-20110803-N													X	X
PB082	PB082-1SS010-20110803-N													X	X
PB069.1	PB069.1-1SS008-20110804-N													X	X
PB068	PB068-1SS010-20110804-N													X	X

Notes:
PCB - polychlorinated biphenyl
SVOC - semi-volatile organic compound
VOC - volatile organic compound
TOC - total organic carbon
AVS - acid volatile sulfide
SEM - simultaneously extracted metals
PAH - polycyclic aromatic hydrocarbon
a - Metals include arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, and zinc

Table 4-4

Summary of Site Surface Water Data Evaluated in the BERA Dataset

Station ID	Sample ID	Mercury	Dioxins/Furans	PCB Congeners	Pesticides	SVOCs	VOCs	TSS	TDS	TOC	DOC	Phosphorous	TKN	Total Cyanide	Alkalinity	Chloride, Fluoride, Sulfate, Nitrate	Selenium
PB006	PB006-1SWMID-091104-N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	PB006-1SWMID-091105-N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	PB006-1SWNBT-091104-N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	PB006-1SWNBT-091105-N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PB031	PB031-1SWMID-091104-N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	PB031-1SWMID-091105-N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	PB031-1SWNBT-091104-N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	PB031-1SWNBT-091105-N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PB059	PB059-1SWMID-091104-N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	PB059-1SWMID-091105-N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PB076	PB076-1SWMID-091104-N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	PB076-1SWMID-091105-N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	PB076-1SWNBT-091104-N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	PB076-1SWNBT-091105-N	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PB066B	PB066B-1SWMID-20110808-N			X				X		X							
PB101C	PB101C-1SWMID-20110808-N			X				X		X							
PB082.1	PB082.1-1SWMID-20110808-N			X				X		X							
PB080	PB080-1SWMID-20110808-N			X				X		X							

Notes:
PCB - polychlorinated biphenyl
SVOC - semi-volatile organic compound
VOC - volatile organic compound
TSS - total suspended solids
TDS - total dissolved solids
TOC - total organic carbon
DOC - dissolved organic carbon
TKN - total kjeldahl nitrogen

Table 4-5
Summary of Site Tissue Data Evaluated in the BERA Dataset

Species	Size Class	Number of Samples	Mercury	Lead	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Hexachlorobenzene	Hexachlorbutadiene	PAHs	Dioxins/Furans	PCB Congeners	Lipid	Percent Moisture
Fish													
Gulf Killifish	A (<15 cm)	25	X		X		X			X	X	X	X
Gulf Menhaden	A (<15 cm)	10	X		X		X			X	X	X	X
Pinfish	A (<15 cm)	4	X		X		X			X	X	X	X
Sand Seatrout	A (<15 cm)	2	X		X		X			X	X	X	X
Striped Mullet	A (<15 cm)	9	X		X		X			X	X	X	X
Invertebrates													
Blue Crab	A (2-7.5 cm)	18	X	X	X	X	X	X	X	X	X	X	X
Blue Crab	B (7.5-13 cm)	3	X		X		X			X	X	X	X
Brown Shrimp	B (7.5-13 cm)	8	X		X		X				X	X	X
Oyster	A (2-7.5 cm)	1	X	X	X	X	X	X	X	X	X	X	X
White Shrimp	A (2-7.5 cm)	1	X	X	X	X	X	X	X	X	X	X	X
White Shrimp	B (7.5-13 cm)	2	X		X		X				X	X	X

Notes:
PCB - polychlorinated biphenyl
PAH - polycyclic aromatic hydrocarbon

Table 4-6

Summary of Bioassay/Sediment Toxicity Data Evaluated in the BERA Dataset

Agency/Entity	Activity	Station ID	Sample ID	Matrix	Sample Date	*Lephtocheirus plumulosus*	*Neanthes arenaceodentata*	*Americamysis bahia*	*Ampelisca abdita*
TCEQ/USEPA	SS	3	3-8/12/2003-EPA/TCEQ	Whole Sediment	8/12/2003	--	--	X	X
TCEQ/USEPA	SS	3	3-8/31/2006-TCEQ	Whole Sediment	8/31/2006	--	--	X	X
TCEQ/USEPA	SS	4A	4A-8/12/2003-EPA/TCEQ	Whole Sediment	8/12/2003	--	--	X	X
TCEQ/USEPA	SS	4A	4A-8/31/2006-TCEQ	Whole Sediment	8/12/2003	--	--	X	X
TCEQ/USEPA	SS	6A	6A-8/12/2003-EPA/TCEQ	Whole Sediment	8/31/2006	--	--	X	X
TCEQ/USEPA	SS	6A	6A-8/31/2006-TCEQ	Whole Sediment	8/12/2003	--	--	X	X
TCEQ/USEPA	SS	7	7-8/12/2003-EPA/TCEQ	Whole Sediment	8/31/2006	--	--	X	X
TCEQ/USEPA	SS	9	9-8/12/2003-TCEQ	Whole Sediment	8/12/2003	--	--	X	X
PBLO	TMDL	2	2-4/23/2001	Whole Sediment	4/23/2001	X	X	--	--
PBLO	TMDL	2	2-9/5/2000	Whole Sediment	9/5/2001	X	X	--	--
PBLO	TMDL	2.5	2.5-4/23/2001	Whole Sediment	4/23/2001	X	X	--	--
PBLO	TMDL	2.5	2.5-9/5/2000	Whole Sediment	9/5/2000	X	X	--	--
PBLO	TMDL	3	3-4/24/2001	Whole Sediment	4/24/2001	X	X	--	--
PBLO	TMDL	3	3-8/12/2003	Whole Sediment	8/12/2003	X	--	X	X
PBLO	TMDL	3	3-9/6/2000	Whole Sediment	9/6/2000	X	X	--	--
PBLO	TMDL	5	5-4/24/2001	Whole Sediment	4/24/2001	X	X	--	--
PBLO	TMDL	5	5-9/5/2000	Whole Sediment	9/5/2000	X	X	--	--
PBLO	TMDL	7	7-4/26/2001	Whole Sediment	4/26/2001	X	X	--	--
PBLO	TMDL	7	7-8/12/2003	Whole Sediment	8/12/2003	X	--	X	X
PBLO	TMDL	7	7-9/6/2000	Whole Sediment	9/6/2000	X	X	--	--
PBLO	TMDL	8	8-4/25/2001	Whole Sediment	4/25/2001	X	X	--	--
PBLO	TMDL	8	8-9/6/2000	Whole Sediment	9/6/2000	X	X	--	--
PBLO	TMDL	9	9-8/12/2003	Whole Sediment	8/12/2003	X	--	X	X
PBLO	TMDL	9	9-9/6/2000	Whole Sediment	9/6/2000	X	X	--	--
PBLO	TMDL	10	10-4/25/2001	Whole Sediment	4/25/2001	X	X	--	--
PBLO	TMDL	10	10-9/5/2000	Whole Sediment	9/5/2001	X	X	--	--
PBLO	TMDL	4A	4A-4/24/2001	Whole Sediment	4/24/2001	X	X	--	--
PBLO	TMDL	4A	4A-8/12/2003	Whole Sediment	8/12/2003	X	--	X	X
PBLO	TMDL	4A	4a-9/5/2000	Whole Sediment	9/5/2000	X	X	--	--
PBLO	TMDL	6A	6A-4/25/2001	Whole Sediment	4/25/2001	X	X	--	--
PBLO	TMDL	6A	6A-8/12/2003	Whole Sediment	8/12/2003	X	--	X	X
PBLO	TMDL	6A	6a-9/5/2000	Whole Sediment	9/5/2000	X	X	--	--
PBLO	TMDL	E	E-4/23/2001	Whole Sediment	4/23/2001	X	X	--	--
PBLO	TMDL	E	E-9/6/2000	Whole Sediment	9/6/2000	X	X	--	--
PBLO	TMDL	G	G-4/24/2001	Whole Sediment	4/24/2001	X	X	--	--
PBLO	TMDL	G	G-9/6/2000	Whole Sediment	9/6/2000	X	X	--	--

Table 4-6

Summary of Bioassay/Sediment Toxicity Data Evaluated in the BERA Dataset

Agency/Entity	Activity	Station ID	Sample ID	Matrix	Sample Date	*Lephtocheirus plumulosus*	*Neanthes arenaceodentata*	*Americamysis bahia*	*Ampelisca abdita*
PBLO	TMDL	Q	Q-4/25/2001	Whole Sediment	4/25/2001	X	X	--	--
PBLO	TMDL	Q	Q-9/5/2000	Whole Sediment	9/5/2000	X	X	--	--
PBLO	TMDL	R	R-4/26/2001	Whole Sediment	4/26/2001	X	X	--	--
PBLO	TMDL	R	R-8/12/2003	Whole Sediment	8/12/2003	X	--	X	X
PBLO	TMDL	R	R-9/5/2000	Whole Sediment	9/5/2000	X	X	--	--
PBLO	TMDL	S	S-4/24/2001	Whole Sediment	4/24/2001	X	X	--	--
PBLO	TMDL	S	S-9/5/2000	Whole Sediment	9/5/2000	X	X	--	--
PBLO	TMDL	T	T-4/25/2001	Whole Sediment	4/25/2001	X	X	--	--
PBLO	TMDL	T	T-9/5/2000	Whole Sediment	9/5/2000	X	X	--	--
PBLO	TMDL	U	U-4/24/2001	Whole Sediment	4/24/2001	X	X	--	--
PBLO	TMDL	U	U-9/6/2000	Whole Sediment	9/6/2000	X	X	--	--
PBLO	TMDL	V	V-4/23/2001	Whole Sediment	4/23/2001	X	X	--	--
PBLO	TMDL	V	V-9/5/2000	Whole Sediment	9/5/2000	X	X	--	--
PBLO	TMDL	Y	Y-4/26/2001	Whole Sediment	4/26/2001	X	X	--	--
PBLO	TMDL	Y	Y-9/6/2000	Whole Sediment	9/6/2000	X	X	--	--

Notes:

-- No Testing Performed

TMDL - Total Maximum Daily Load

PBLO - Patrick Bayou Lead Organization

TCEQ - Texas Commission on Environmental Quality

USEPA - U.S. Environmental Protection Agency

SS - Special Study

Table 4-7

Summary of Benthic Community Data in BERA Dataset

Agency/Entity	Location	Station ID	Sample ID	Matrix	Sample Date	Benthic Community Data
PBLO	Patrick Bayou	2	2-4/23/2001	Whole Sediment	4/23/2001	X
PBLO	Patrick Bayou	2	2-9/5/2000	Whole Sediment	9/5/2000	X
PBLO	Patrick Bayou	2.5	2.5-4/23/2001	Whole Sediment	4/23/2001	X
PBLO	Patrick Bayou	2.5	2.5-9/5/2000	Whole Sediment	9/5/2000	X
PBLO	Patrick Bayou	3	3-4/24/2001	Whole Sediment	4/24/2001	X
PBLO	Patrick Bayou	3	3-8/12/2003	Whole Sediment	8/12/2003	X
PBLO	Patrick Bayou	3	3-9/6/2000	Whole Sediment	9/6/2000	X
PBLO	Patrick Bayou	5	5-4/24/2001	Whole Sediment	4/24/2001	X
PBLO	Patrick Bayou	5	5-9/5/2000	Whole Sediment	9/5/2000	X
PBLO	Patrick Bayou	7	7-4/26/2001	Whole Sediment	4/26/2001	X
PBLO	Patrick Bayou	7	7-8/12/2003	Whole Sediment	8/12/2003	X
PBLO	Patrick Bayou	7	7-9/6/2000	Whole Sediment	9/6/2000	X
PBLO	Patrick Bayou	8	8-4/25/2001	Whole Sediment	4/25/2001	X
PBLO	Patrick Bayou	8	8-9/6/2000	Whole Sediment	9/6/2000	X
PBLO	Patrick Bayou	9	9-8/12/2003	Whole Sediment	8/12/2003	X
PBLO	Patrick Bayou	9	9-9/6/2000	Whole Sediment	9/6/2000	X
PBLO	Patrick Bayou	10	10-4/25/2001	Whole Sediment	4/25/2001	X
PBLO	Patrick Bayou	10	10-9/5/2000	Whole Sediment	9/5/2000	X
PBLO	Patrick Bayou	4A	4A-4/24/2001	Whole Sediment	4/24/2001	X
PBLO	Patrick Bayou	4A	4A-10/1/2001	Whole Sediment	10/1/2001[a]	X
PBLO	Patrick Bayou	4A	4A-8/12/2003	Whole Sediment	8/12/2003	X
PBLO	Patrick Bayou	4A	4a-9/5/2000	Whole Sediment	9/5/2000	X
PBLO	Patrick Bayou	6A	6A-4/25/2001	Whole Sediment	4/25/2001	X
PBLO	Patrick Bayou	6A	6A-8/12/2003	Whole Sediment	8/12/2003	X
PBLO	Patrick Bayou	6A	6a-9/5/2000	Whole Sediment	9/5/2000	X
PBLO	Patrick Bayou	E	E-4/23/2001	Whole Sediment	4/23/2001	X
PBLO	Patrick Bayou	E	E-10/1/2001	Whole Sediment	10/1/2001	X
PBLO	Patrick Bayou	E	E-9/6/2000	Whole Sediment	9/6/2000	X
PBLO	Patrick Bayou	E	E-8/12/2003	Whole Sediment	8/12/2003	X
PBLO	Patrick Bayou	G	G-4/24/2001	Whole Sediment	4/24/2001	X
PBLO	Patrick Bayou	G	G-10/1/2001	Whole Sediment	10/1/2001	X
PBLO	Patrick Bayou	G	G-9/6/2000	Whole Sediment	9/6/2000	X

Table 4-7

Summary of Benthic Community Data in BERA Dataset

Agency/Entity	Location	Station ID	Sample ID	Matrix	Sample Date	Benthic Community Data
PBLO	Patrick Bayou	Q	Q-4/25/2001	Whole Sediment	4/25/2001	X
PBLO	Patrick Bayou	Q	Q-10/1/2001	Whole Sediment	10/1/2001	X
PBLO	Patrick Bayou	Q	Q-9/5/2000	Whole Sediment	9/5/2000	X
PBLO	Patrick Bayou	R	R-4/26/2001	Whole Sediment	4/26/2001	X
PBLO	Patrick Bayou	R	R-8/12/2003	Whole Sediment	8/12/2003	X
PBLO	Patrick Bayou	R	R-9/5/2000	Whole Sediment	9/5/2000	X
PBLO	Patrick Bayou	S	S-4/24/2001	Whole Sediment	4/24/2001	X
PBLO	Patrick Bayou	S	S-9/5/2000	Whole Sediment	9/5/2000	X
PBLO	Patrick Bayou	T	T-4/25/2001	Whole Sediment	4/25/2001	X
PBLO	Patrick Bayou	T	T-9/5/2000	Whole Sediment	9/5/2000	X
PBLO	Patrick Bayou	U	U-4/24/2001	Whole Sediment	4/24/2001	X
PBLO	Patrick Bayou	U	U-9/6/2000	Whole Sediment	9/6/2000	X
PBLO	Patrick Bayou	V	V-4/23/2001	Whole Sediment	4/23/2001	X
PBLO	Patrick Bayou	V	V-9/5/2000	Whole Sediment	9/5/2000	X
PBLO	Patrick Bayou	Y	Y-4/26/2001	Whole Sediment	4/26/2001	X
PBLO	Patrick Bayou	Y	Y-9/6/2000	Whole Sediment	9/6/2000	X

Notes:

PBLO - Patrick Bayou Lead Organization

[a] - Exact date is not known for the PBLO samples collected in October 2001.

Table 5-1
Receptor Group COPCs

Receptor Group	Chemicals of Potential Concern		
	Surface Water	Sediment	Bioaccumulative
Benthic Invertebrates	PCBs	Metals, PAHs, PCBs, and SVOCs[a]	--
Fish	PCBs	Metals, PAHs, PCBs, and SVOCs[a]	Mercury, Selenium, PCBs, Dioxin/Furans
Wildlife (birds and mammals)	--	Mercury, Metals, PAHs, PCBs, Dioxin/Furans, and SVOCs[b]	Mercury, Metals, PAHs, PCBs, Dioxin/Furans, and SVOCs[b]

[a] - See Table 5-3 for complete list.

[b] - See Table 5-4 for complete list.

Notes:

PAH - polycyclic aromatic hydrocarbon

PCBs - polychlorinated biphenyl

SVOC - semi-volatile organic compound

-- no COPCs

Table 5-2
Complete List of Benthic and Aquatic Invertebrate COPCs

COPC	Sediment	Surface Water
Metals		
Barium	X	
Cadmium	X	
Chromium	X	
Lead	X	
Mercury	X	
Nickel	X	
Silver	X	
Zinc	X	
PAHs		
2-Methylnaphthalene	X	
Acenaphthene	X	
Acenaphthylene	X	
Anthracene	X	
Benzo(a)anthracene	X	
Benzo(a)pyrene	X	
Benzo(e)pyrene	X	
Chrysene	X	
Dibenzo(a,h)anthracene	X	
Fluoranthene	X	
Fluorene	X	
Indeno(1,2,3-cd)pyrene	X	
Naphthalene	X	
Perylene	X	
Phenanthrene	X	
Pyrene	X	
Total HMW PAH	X	
Total LMW PAH	X	
Total PAH	X	
PCBs		
PCB Congeners	X	X
SVOC / VOC		
Benzene	X	
Benzidine	X	
Bis(2-Chloroisopropyl)ether	X	
Bis(2-Ethylhexyl)phthalate	X	
Chlorobenzene	X	
Ethylbenzene	X	
Hexachlorobenzene	X	
Hexachlorobutadiene	X	
Isopropylbenzene	X	
n-Butylbenzene	X	
n-Propylbenzene	X	
Sec-Butylbenzene	X	
Tert-Butylbenzene	X	
Toluene	X	
Total xylene	X	

Notes:

[a] List of COPC taken from Table 7 of BERA Work Plan

Table 5-3

Complete List of Fish COPC

Sediment	Surface Water	Bioaccumulative
Same as Table 5-2	Total PCBs	Total PCBs
		PCB TEQ
		PCDD/PCDF TEQ[1]
		Mercury
		Selenium

Notes:

PCB - polychlorinated biphenyl

TEQ - 2,3,7,8-TCDD toxic equivalency quotient

[1] Based on detected levels in surface water

Table 5-4

Complete List of Aquatic-Dependent Wildlife COPCs

COPC	Belted Kingfisher	Sandpiper	Carnivorous Wading Bird	Raccoon
Lead		X		
Mercury	X	X	X	X
Total PAHs		X		
Total PCB Congeners	X	X	X	X
PCB Congeners TEQ (Avian)	X	X	X	
PCB Congeners TEQ (Mammal)				X
Hexachlorobenzene	X	X		
Hexachlorobutadiene		X		
1,3-Dichlorobenzene	X	X		
1,4-Dichlorobenzene		X		
Dioxin/Furan TEQ (Avian)		X		

Notes:
COPC - chemical of potential concern
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
TEQ - toxic equivalent

Table 6-1

Summary of Exposure Parameters for Wildlife Dietary Exposure Assessment

Receptor[a]	BW (kg)	FS	IR (mg food/kg BW/day)	NIR (kg food/kg BW/day)	Proportion in Diet				Tissue EPC (C_{TS}; mg/kg)	Sediment EPC (C_{SD}; mg/kg)	AUF
					Fish	Invertebrate	Plant Matter	Terrestrial Animal			
Belted Kingfisher	0.136	0	0.024	0.682	0.89	0.11	0	0	See Table 6-3	See Table 6-4	See Table 6-5
Carnivorous Bird	0.87	0.01	0.074	0.327	0.33	0.33	0	0.34			
Spotted Sandpiper	0.043	0.18	0.012	0.992	0	1	0	0			
Raccoon	3.99	0.094	0.094	0.09	0.232	0.234	0.3	0.234			

[a] - Sources for all exposure parameters and exposure parameter calculations are provided in the BERA Work Plan.

Notes:
kg - kilogram
mg - milligram
BW - body weight
FS - fraction of sediment in the diet
IR - food ingestion rate
FR - fraction of food intake from the Site
NIR - normalized ingestion rate
EPC - exposure point concentration
AUF - area use factor

Table 6-2

Prey Grouping for Fish and Invertebrate Exposure Point Concentration Calculations

		Fish			Invertebrates	
Receptor	**COPC**	**Group 1**	**Group 2**	**Group 3**	**Group 1**	**Group 2**
Belted Kingfisher	Mercury	GM	GKF, STM, PNF, SAS	--	BCR, BRS, WHS, OYS	--
	Total PCB Congeners	GKF	GM, STM, PNF, SAS	--	BRS	BCR,WHS, OYS
	Hexachlorobenzene	GKF, GM, STM, PNF, SAS	--	--	BCR, BRS, WHS, OYS	--
	1,3-Dichlorobenzene	GKF, GM, STM, PNF, SAS	--	--	BCR, BRS, WHS, OYS	--
	PCB TEQ	GKF	GM, STM	PNF, SAS	BCR, BRS, WHS, OYS	--
Carnivorous Bird	Mercury	GM	GKF, STM, PNF, SAS	--	BCR, BRS, WHS, OYS	--
	Total PCB Congeners	GKF	GM, STM, PNF, SAS	--	BRS	BCR,WHS, OYS
	PCB TEQ	GKF	GM, STM	PNF, SAS	BCR, BRS, WHS, OYS	--
Raccoon	Mercury	GM	GKF, STM, PNF, SAS	--	BCR, BRS, WHS, OYS	--
	Total PCB Congeners	GKF	GM, STM, PNF, SAS	--	BRS	BCR,WHS, OYS
	PCB TEQ	GKF	GM, STM, PNF, SAS	--	BCR, BRS, WHS, OYS	--
Spotted Sandpiper	Lead	--	--	--	BCR, OYS, WHS[a]	--
	Mercury	--	--	--	BCR, OYS, WHS[a]	--
	Total PAH	--	--	--	BCR, OYS, WHS[a]	--
	Total PCB Congeners	--	--	--	BCR, OYS, WHS[a]	--
	Dioxin/furan TEQ	--	--	--	BCR, OYS, WHS[a]	--
	PCB TEQ	--	--	--	BCR, OYS, WHS[a]	--
	Hexachlorobenzene	--	--	--	BCR, OYS, WHS[a]	--
	Hexachlorobutadiene	--	--	--	BCR, OYS, WHS[a]	--
	1,3-Dichlorobenzene	--	--	--	BCR, OYS, WHS[a]	--
	1,4-Dichlorobenzene	--	--	--	BCR, OYS, WHS[a]	--

[a] Individuals 2 to 7.5 cm total length only.

Notes:

COPC - chemical of potential concern
PCB - polychlorinated biphenyl
TEQ - toxic equivalent
PAH - polycyclic aromatic hydrocarbon
BCR - Blue crab
OYS - Oyster
WHS - White shrimp
BRS - Brown shrimp
GKF - Gulf killifish
GM - Gulf menhaden
STM - Striped mullet
PNF - Pinfish
SAS - Sand seatrout

Table 6-3

95 UCLs for Fish and Invertebrate Prey Groups

Prey Grouping	Chemical of Potential Concern[a,b]										
	Lead	Mercury	Total PCB Congener	Hexachlorobenzene	1,3-Dichlorobenzene	PCB Congener TEQ (Avian)	PCB Congener TEQ (Mammal)	Total PAH	Dioxin/Furan TEQ	Hexachlorobutadiene	1,4-Dichlorobenzene
GM	--	0.145	--	--	--	--	--	--	--	--	--
GKF	--	--	5.75	--	--	0.000868	0.0000870	--	--	--	--
GKF, GM, STM, PNF, SAS	--	--	--	0.646	0.769[d]	--	--	--	--	--	--
GKF, STM, PNF, SAS	--	0.0580	--	--	--	--	--	--	--	--	--
GM, STM, PNF, SAS	--	--	2.88	--	--	--	0.0000319	--	--	--	--
GM, STM	--	--	--	--	--	0.000482	--	--	--	--	--
PNF, SAS	--	--	--	--	--	0.000160	--	--	--	--	--
BCR, BRS, WHS, OYS	--	0.0515	--	0.976	0.758[d]	0.000452	0.0000279	--	--	--	--
BRS	--	--	2.01	--	--	--	--	--	--	--	--
BCR,WHS, OYS	--	--	0.813	--	--	--	--	--	--	--	--
BCR, OYS, WHS[c]	0.292	0.0533	0.821	1.13	0.373[d]	0.000430	--	0.140	0.0000223	0.373[d]	0.373[d]

[a] - All units are mg/kg.

[b] - All totals and TEQs calculated using non-detects at 1/2 the detection limit.

[c] - Individuals 2 to 7.5 cm total length only.

[d] - Maximum non-detect value used

Notes:

TEQ - toxic equivalent

PCB - polychlorinated biphenyl

PAH - polycyclic aromatic hydrocarbon

BCR - Blue crab

OYS - Oyster

WHS - White shrimp

BRS - Brown shrimp

GKF - Gulf killifish

GM - Gulf menhaden

STM - Striped mullet

PNF - Pinfish

SAS - Sand seatrout

Table 6-4
Surface Weighted Average COPC Concentrations in the Intertidal and Supratidal Areas

COPC	Units	Intertidal SWAC	Supratidal SWAC	Intertidal and Supratidal Weighted Average[a]
Lead	mg/kg	45.0	53.5	48.9
Mercury (Total)	mg/kg	6.01	3.38	4.79
Total PAH	µg/kg	6660	8040	7310
1,3-Dichlorobenzene	µg/kg	78.6	67.9	73.6
1,4-Dichlorobenzene	µg/kg	76.2	72.5	74.4
Hexachlorobenzene	µg/kg	2140	2130	2140
Hexachlorobutadiene	µg/kg	3570	4130	3830
Total PCB Congener	µg/kg	9240	6300	7870
PCB Congener TEQ (Avian)	ng/kg	2530	1570	2080
PCB Congener TEQ (Mammal)	ng/kg	137	84.0	112
Dioxin/Furan TEQ (Avian)	ng/kg	122	91.1	108

[a] - Intertidal and Supratidal Weighted Average is the sediment exposure point concentration.

Notes:
COPC - chemical of potential concern
SWAC - surface weighted average concentration
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
TEQ - toxic equivalent
mg/kg - milligram per kilogram
µg/kg - microgram per kilogram

Table 6-5

Area Use Factor Summary for Wildlife Receptors

Receptor	Surrogate Species	Home Range[d]	Units	Source	Comments
Spotted Sandpiper	Buff-breasted Sandpiper	3.4	km	Lanctot and Laredo (1994)	Average breeding home range
	Killdeer	4.6	km	Sanzenbacher 2002	Average linear distance traveled from capture site
	Stilt Sandpiper	8	km	Klima and Jehl (1998)	Maximum flight distance from nest
	Piping Plover	3.3	km	Drake (2001)	Average of all seasons and locations
	Western Sandpiper	4.9	km	Butler et al. (2002), Warnock and Takekawa (1995)	--
	Sanderling	1.5	km	MacWhirter et al. (2002)	Average non-breeding range
	Willet	9.6	km	Haig et a.l (2002)	Average non-breeding home range
	Long-billed Curlew	1.95	km	Colwell et al. (2002)	Midpoint of reported home range for observed individuals
	Average home range:	4.7	km		
	Upper 75th Percentile[b]	7.3	km		
	Tidal stream within Site[a]	2.5	km		
	AUF_{mean}:	0.54	--		
	AUF_{75th}:	0.34	--		
Belted Kingfisher	Belted Kingfisher	2.2	km	Brooks and Davis (1987)	Breeding range
	Belted Kingfisher	1.0	km	Brooks and Davis (1987)	Breeding range
	Belted Kingfisher	1.0	km	Brooks and Davis (1987)	Non-breeding range
	Belted Kingfisher	0.4	km	Brooks and Davis (1987)	Non-breeding range
	Belted Kingfisher	3.6	km	Prose (1985)	Reported as range (2.4 - 4.8 km). Midpoint of range taken as average
	Belted Kingfisher	1.6	km	Mazeika et al. 2006	
	Belted Kingfisher	4.4	km	Cromwell (1963)	Distance observed from nest site; midpoint of reported range (0.81 - 8.0 km)
	Average home range:	2.0	km		
	Upper 75th Percentile[b]	3.6	km		
	Tidal stream within Site[a]	2.5	km		
	AUF_{mean}:	1.3	--		
	AUF_{75th}:	0.69	--		
Carnivorous Birds	Great Blue Heron	2.7	km	Custer and Galli (2002)	Median flight distance for Minnesota population
	Great Blue Heron	1.8	km	Mathisen and Richards (1978)	Taken from USEPA (1993)
	Great Blue Heron	7	km	Parnell and Soots, 1978, cited in Short and Cooper, 1985	Taken from USEPA (1993)
	Great Blue Heron	15	km	Gibbs et al., 1987; Gibbs, 1991; Peifer, 1979	Taken from USEPA (1993)
	Yellow-crowned Night Heron	1.4	km	Watts 2011	Breeding population
	Tri-colored Heron	5.6	km	Frederick 1997	Breeding population
	Little Blue Heron	6.55	km	Rodgers and Smith 1995	Breeding population; midpoint of reported average home ranges (2.9 - 10.2 km)
	Snowy Egret	2.8	km	Parsons and Master 2000	Breeding population
	Great Egret	6.3	km	Mccrimmon et al. 2011	Colonial population
	Great Blue Heron	4.4	km	Vennesland and Butler 2011	Midpoint of reported average home ranges (2.3 - 6.5 km)
	Roseate Spoonbill	12	km	Dumas 2000	Breeding population
	White Ibis	2.7	km	Heath et al. 2009	--

Table 6-5

Area Use Factor Summary for Wildlife Receptors

Receptor	Surrogate Species	Home Range[d]	Units	Source	Comments
Carnivorous Birds	Average home range:	5.7	km		
	Upper 75th Percentile[b]	6.9	km		
	Tidal stream within Site[a]	2.5	km		
	AUF_{mean}:	0.44	--		
	AUF_{75th}:	0.36	--		
Raccoon	Raccoon	1.56	km^2	Stuewer (1943)	Average riparian habitat range for males and females; taken from USEPA (1993)
	Raccoon	1.33	km^2	Fisher (2007)	Weighted average of both sexes in riverine habitat during breeding, rearing, and dispersal
	Average home range[c]:	1.45	km^2		
	Area of intertidal/supratidal zone within Site[a]:	0.03	km^2		
	AUF_{mean}:	0.021	--		

[a] Gunite channel at south end of site not included in available habitat calculations. Represents approximately 0.6 km of tidal stream and 0.006 km^2 of intertidal habitat.

[b] Upper 75th percentile based on untransformed data. See Appendix C for derivation.

[c] Insufficient data to derive percentiles.

[d] Home Range Distribution Analysis provided in Appendix C-4, Exhibit C-4.2

Notes:
km - kilometer
AUF - area use factor
USEPA - U.S. Environmental Protection Agency
km^2 - square kilometers

Table 6-6
Avian LOAEL TRVs

COPC	LOAEL (mg/kg BW/day)	Source
Lead	3.26	Eco-SSL (USEPA 2005d)
Mercury (Methyl)	0.064	Heinz (1979)
Mercury (Inorganic)	0.9	Hill and Schaffner (1976)
Total PAH	325	Patton and Dieter (1980); Petroleum Hydrocarbon Mixtures
Total PCB Congener	2.05	Sample et al. (1996) as Aroclor 1242
Dioxin/furan Congener TEQ	0.00014	Sample et al. (1996); 2,3,7,8-TCDD
Hexachlorobenzene	3.35	Vos et al. (1971)
Hexachlorobutadiene	20	ECOTOX (ref 35430) (USEPA 2007b)
1,3-Dichlorobenzene	160.8	1,4-Dichlorobenzene used as surrogate
1,4-Dichlorobenzene	160.8	ECOTOX (ref 344) (USEPA 2007b)
PCB Congener TEQ	0.00014	Sample et al. (1996); 2,3,7,8-TCDD

Notes:
LOAEL - lowest observed apparent effects level
TRV - toxicity reference value
mg/kg - milligram per kilogram
BW - body weight
COPC - chemical of potential concern
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
TEQ - toxic equivalent

Table 6-7
Mammalian LOAEL TRVs

COPC	LOAEL (mg/kg BW/day)	Source
Mercury (Methyl)	0.0177	Sample et al. (1996)
Mercury (Inorganic)	3.54	Aulerich et al. (1974)
Total PCB Congener	0.106	Sample et al. (1996); as Aroclor 1248
PCB Congener TEQ	5.4E-07	Sample et al. (1996); 2,3,7,8-TCDD

Notes:
LOAEL - lowest observed apparent effects level
TRV - toxicity reference value
COPC - chemical of potential concern
mg/kg - milligram per kilogram
BW - body weight
PCB - polychlorinated biphenyl
TEQ - toxic equivalent

Table 6-8
HQs For Wildife Receptors

COPC	Spotted Sandpiper	Carnivorous Birds	Belted Kingfisher	Raccoon
Lead	0.04	--	--	--
Mercury (Methyl)	0.28	0.11	0.71	0.0049
Mercury (Inorganic)	0.004	0.0014	NA	0.00026
Total Mercury (Methyl & Inorganic)[a]	0.28	0.11	0.71	0.0052
Total PAH	0.00016	--	--	--
Dioxin/Furan Congéner TEQ	0.05	--	--	--
Hexachlorobenzene	0.11	--	0.10	--
Hexachlorobutadiene	0.006	--	--	--
1,3-Dichlorobenzene	0.0008	--	0.0022	--
1,4-Dichlorobenzene	0.0008	--	--	--
PCB Congener TEQ	1.0	0.51	1.7	0.16

[a] Sum of methylmercury and inorganic mercury HQs.

Notes:
Highlighted cells have HQ greater than or equal to 1.0
-- Not assessed; Belted Kingfisher are not assumed to incidentally ingest sediment from the Site
HQ - hazard quotient
COPC - chemical of potential concern
PAH - polycyclic aromatic hydrocarbon
TEQ - toxic equivalent

Table 6-9

HQ Uncertainty Analysis

COPC	Baseline	Uncertainty Analysis Scenario 1	Uncertainty Analysis Scenario 2	Uncertainty Analysis Scenario 3	Uncertainty Analysis Scenario 4	Uncertainty Analysis Scenario 5	Uncertainty Analysis Scenario 6
Raccoon							
Mercury (Methyl)	0.0044	0.0044	0.0045	0.0040	0.0054	0.005	--
Mercury (Inorganic)	0.00026	0.00026	0.00026	0.00026	0.00054	0.00031	--
PCB Congener TEQ (Mammal)	0.16	0.140	0.17	0.16	0.16	0.16	--
Kingfisher							
Mercury (Methyl)	0.7	0.60	0.62	0.49	0.71	0.71	--
Mercury (Inorganic)	NA	NA	NA	NA	NA	NA	--
Hexachlorobenzene	0.10	0.13	0.09	0.10	0.10	0.10	--
1,3-Dichlorobenzene	0.0022	0.0020	0.0022	0.0022	0.0022	0.0022	--
PCB Congener TEQ (Avian)	1.7	1.5	2.4	2.0	1.7	1.7	--
Carnivorous Bird							
Mercury (Methyl)	0.11	0.080	0.410	0.080	0.11	0.11	0.11
Mercury (Inorganic)	0.0014	0.0014	0.0014	0.0014	0.0030	0.0017	0.0017
PCB congener TEQ (Avian)	0.51	0.48	0.59	0.55	0.51	0.51	0.76
Spotted Sandpiper							
Lead	0.04	0.04	0.05	0.04	0.04	0.04	0.04
Mercury (Methyl)	0.28	0.26	0.28	0.28	0.28	0.28	0.28
Mercury (Inorganic)	0.0040	0.006	0.006	0.0040	0.008	0.005	0.005
Total PAH	0.00016	0.00030	0.00017	0.00016	0.00017	0.00016	0.00016
Dioxin/Furan Congener TEQ (Avian)	0.05	0.06	0.06	0.05	0.06	0.05	0.05
Hexachlorobenzene	0.11	0.08	0.11	0.11	0.11	0.11	0.11
Hexachlorobutadiene	0.006	0.010	0.010	0.010	0.006	0.006	0.006
1,3-Dichlorobenzene	0.0008	0.0015	0.008	0.0008	0.0008	0.0008	0.0008
1,4-Dichlorobenzene	0.0008	0.0015	0.008	0.0008	0.0008	0.0008	0.0008
PCB Congener TEQ (Avian)	1.0	0.91	1.1	1.1	1.1	1.0	1.0

Table 6-9
HQ Uncertainty Analysis

Notes:

Baseline Analysis: Original fish and invertebrate species groupings; sediment concentration is weighted average of intertidal and supratidal SWACs. See Appendix C-4.

Uncertainty Analysis 1: Each prey species entered into risk sheets individually; sediment concentration is weighted average of intertidal and supratidal SWACs. See Appendix C-5.3

Uncertainty Analysis 2: All fish species grouped and all invert species grouped; sediment concentration is weighted average of intertidal and supratidal SWACs. See Appendix C-5.2

Uncertainty Analysis 3: Original fish and invertebrate species groupings but proportions entered dependent upon catch biomass ratios; sediment concentration is weighted average of intertidal and supratidal SWACs. See Appendix C-5.1

Uncertainty Analysis 4: Original fish and invertebrate species groupings; sediment concentration is weighted average of subtidal, intertidal, and supratidal SWACs. See Appendix C-5.4

Uncertainty Analysis 5: Original fish and invertebrate species groupings; sediment concentration is weighted average of intertidal and supratidal SWACs excluding the gunite channel portion of Patrick Bayou. See Appendix C-5.8

Uncertainty Analysis 6: Original fish and invertebrate species groupings; sediment concentration is weighted average of intertidal and supratidal SWACs based on hot spot analysis. See Appendix C-5.9

HQ - hazard quotient

COPC - chemical of potential concern

PCB - polychlorinated biphenyl

TEQ - toxic equivalent

PAH - polycyclic aromatic hydrocarbon

-- Not assessed

NA - Not applicable - Belted Kingfisher are not assumed to incidentally ingest sediment from the Site

Table 6-10

Upper and Lower Bound Area Use Factor Estimates for Wildlife Receptors

Receptor	Upper Bound Home Range[a]	Lower Bound Home Range[a]	Site Habitat[a]	Units	AUF_{LOWER}	AUF_{UPPER}
Spotted Sandpiper	9.6	1.5	2.5	km	0.26	1.0
Carnivorous Bird	15	1.4	2.5	km	0.17	1.0
Belted Kingfisher	4.4	0.7	2.5	km	0.57	1.0
Raccoon	1.56	1.33	0.03	km^2	0.019	0.023

[a] Taken from Table 6-5.

Notes:

AUF - area use factor

km - kilometer

km^2 - square kilometers

Table 6-11

Area Use Factor Uncertainty Analysis for Wildlife Receptors

COPC	Spotted Sandpiper		Carnivorous Birds		Belted Kingfisher		Raccoon	
	AUF_{UPPER} HQ	AUF_{LOWER} HQ	AUF_{UPPER} HQ	AUF_{LOWER} HQ	AUF_{UPPER} HQ	AUF_{LOWER} HQ	AUF_{UPPER} HQ	AUF_{LOWER} HQ
Lead	0.12	0.031	--	--	--	--	--	--
Mercury (Methyl)	0.83	0.22	0.29	0.050	1.0	0.58	0.0053	0.0044
Mercury (Inorganic)	0.011	0.0028	0.0039	0.00070	NA	NA	0.00028	0.00023
Total Mercury (Methyl & Inorganic)	0.84	0.22	0.29	0.051	1.0	0.58	0.0056	0.0046
Total PAH	0.00047	0.00012	--	--	--	--	--	--
Dioxin/Furan Congener TEQ	0.16	0.042	--	--	--	--	--	--
Hexachlorobenzene	0.34	0.09	--	--	0.14	0.080	--	--
Hexachlorobutadiene	0.019	0.0049	--	--	--	--	--	--
1,3-Dichlorobenzene	0.0023	0.00060	--	--	0.0033	0.0019	--	--
1,4-Dichlorobenzene	0.0023	0.00060	--	--	--	--	--	--
PCB Congener TEQ	3.1	0.80	1.42	0.24	2.5	1.4	0.17	0.14

Notes:

COPC - chemical of potential concern

AUF - area use factor

HQ - hazard quotient

PAH - polycyclic aromatic hydrocarbon

TEQ - toxic equivalent

PCB - polychlorinated biphenyl

AUF_{LOWER} HQ - See Appendix C-5.5

AUF_{UPPER} HQ - See Appendix C-5.6

-- Not assessed

NA - Not applicable - Belted Kingfisher are not assumed to incidentally ingest sediment from the Site

Table 6-12
PCB Uncertainty Analysis for Wildlife Receptors

Receptor	PCB TEQ HQ	Total PCB Congener HQ
Spotted Sandpiper	1.0	0.14
Carnivorous Bird	0.51	0.16
Belted Kingfisher	1.7	0.92
Raccoon	0.16	0.049

Notes:
PCB - polychlorinated biphenyl
TEQ - toxic equivalent
HQ - hazard quotient
Total PCB Congener HQ - see Appendix C-5.7

Table 7-1

Fish Groupings for Fish Exposure Point Concentration Calculations

		Fish Group			
Receptor	**COPC**	**Group 1**	**Group 2**	**Group 3**	**Group 3 (All Species)**
Fish	Mercury	GM	GKF, STM, PNF, SAS	NA	GKF, GM, STM, PNF, SAS
	Total PCBs	GKF	GM, STM, PNF, SAS	NA	GKF, GM, STM, PNF, SAS
	PCDD/PCDF TEQ (Fish)	GM	GKF, STM, PNF	SAS	GKF, GM, STM, PNF, SAS
	PCB Congener TEQ (Fish)	GKF	GM, STM, PNF, SAS	NA	GKF, GM, STM, PNF, SAS

Notes:
COPC - chemical of potential concern
GKF - Gulf killifish
GM - Gulf menhaden
STM - Striped mullet
PNF - Pinfish
SAS - Sand seatrout
TEQ - toxic equivalent
NA - Not applicable; grouping determined by ANOVA with post-hoc testing (see Section 7.1.1)

Table 7-2

Tissue EPCs for Fish Bioaccumulation Pathways

Prey Grouping	Chemical of Potential Concern[a,b]				
	Mercury	PCB Congener TEQ (Fish)	Total PCBs	PCDD/PCDF TEQ	Selenium[c]
GKF	NA	0.0000072	5.8	NA	NA
GM	0.15	NA	NA	0.000016	NA
GM, STM, PNF, SAS	NA	0.0000029	2.9	NA	NA
GKF, STM, PNF, SAS	0.06	NA	NA	NA	NA
GKF, STM, PNF	NA	NA	NA	0.0000090	NA
SAS	NA	NA	NA	0.0000013[d]	NA
All Species	0.09	0.0000053	4.3	0.000010	1.6

[a] - All units are mg/kg ww.

[b] - All totals and TEQs calculated using non-detects at 1/2 the detection limit.

[c] - All COPC with exception of selenium based on empirical measurements in whole body tissue. Selenium EPC based on simple surface water bioaccumulatio model. See Section 7.1.1.1 for derivation.

[d] - EPC based on maximum detected value.

Notes:
GKF - Gulf killifish
GM - Gulf menhaden
STM - Striped mullet
PNF - Pinfish
SAS - Sand seatrout
PCB - polychlorinated biphenyl
TEQ - toxic equivalent
NA - Not applicable; prey grouping not indicated by ANOVA analysis (see Table 7-1)

Table 7-3
Fish LOED TRVs

COPC	LOED (mg/kg ww)	Source
Mercury (Methyl)	3.8	ERED (2011)
Total PCBs	13	ERED (2011)
PCB Congener TEQ (Fish)	0.00090	ERED (2011) as 2,3,7,8-TCDD
PCDD/PCDF TEQ (Fish)	0.00090	ERED (2011) as 2,3,7,8-TCDD
Selenium	1.9	ERED (2011)

Notes:
COPC - chemical of potential concern
LOED - lowest observable effects dose
mg/kg - milligram per kilogram
ww - wet weight
PCB - polychlorinated biphenyl
TEQ - toxic equivalent

Table 7-4
HQs for Fish Receptors

COPC	HQ_{GKF}	HQ_{GM}	$HQ_{(GM, STM, PNF, SAS)}$	$HQ_{(GKF, STM, PNF, SAS)}$	$HQ_{(GKF, STM, PNF)}$	$HQ_{(SAS)}$	$HQ_{All\ Fish}$
Mercury (Methyl)	NA	0.038	NA	0.015	NA	NA	0.024
PCB Congener TEQ (Fish)	0.0081	NA	0.0033	NA	NA	NA	0.0059
PCDD/PCDF TEQ (Fish)	NA	0.018	NA	NA	0.010	0.0014	0.011
Selenium	NA	NA	NA	NA	NA	NA	0.82

Notes:
COPC - chemical of potential concern
GKF - Gulf killifish
GM - Gulf menhaden
STM - Striped mullet
PNF - Pinfish
SAS - Sand seatrout
PCB - polychlorinated biphenyl
TEQ - toxic equivalent

Table 7-5
PCB Risk Characterization Uncertainty Assessment For Fish

COPC	HQ_{GKF}	$HQ_{(GM, STM, PNF, SAS)}$	$HQ_{All\ Fish}$
Total PCBs	0.43	0.21	0.32

Notes:
COPC - chemical of potential concern
GKF - Gulf killifish
GM - Gulf menhaden
STM - Striped mullet
PNF - Pinfish
SAS - Sand seatrout
PCB - polychlorinated biphenyl

Table 7-6
Biomagnification Uncertainty Analysis

COPC	LOGKow[a]	FCM_{TL2}	FCM_{TL4}	BMF[c]	EPC_{TL2}[d]	EPC_{TL4}[e]	TRV[f]	HQ[g]
Mercury (methyl)	0.0763	1	1	1	0.09	0.09	3.8	0.02
PCB TEQ	7.02[b]	1	26	26	5.3E-06	1.4E-04	9.0E-04	0.15
PCDD/PCDF TEQ	7.02[b]	1	26	26	1.0E-05	2.6E-04	9.0E-04	0.29
Selenium	0.24	1	1	1	1.6	1.6	1.9	0.84

Notes:

a Taken from TCEQ (2012)

b As 2,3,7,8-TCDD

c BMF = FCMTL4 / FCMTL2

d Table 7-2

e EPCTL4 = EPCTL2 * BMF

f Table 7-3

g HQ = EPCTL4 / TRV

FCM - food chain multiplier

TL - trophic level

BMF - biomagnification level

EPC - exposure point concentration

TRV - toxicity reference value

HQ - hazard quotient

Table 8-1
Sediment Toxicity Line of Evidence Summary

Station	Proportion Toxic
V	0%
2.5	0%
S	0%
E	25%
U	0%
3	31%
G	25%
4A	54%
5	25%
T	0%
6A	69%
Q	25%

Notes:

	Toxicity
Low	<= 25% Toxic
Indeterminate	25-50% Toxic
Probable	> 50% Toxic

Table 8-2
Sediment Chemistry Line of Evidence Summary

Station	Relative Mean PEL-Q
V	-47%
2.5	-42%
S	38%
E	-16%
U	-94%
3	222%
G	-69%
4A	2286%
5	31%
T	-35%
6A	419%
Q	90%

Notes:

	Mean PEL-Q
Low	Below Average
Indeterminate	Above Average
Probable	Highest 15%

Table 8-3
Benthic Community Line of Evidence Summary

Station	ES Relative Benthic Index
V	3.51
2.5	4.89
S	5.25
E	6.95
U	3.18
3	6.82
G	6.12
4A	3.41
5	4.03
T	5.87
6A	0.18
Q	2.49

Notes:

	Benthic Index
Low	Above Average
Indeterminate	Below Average
Probable	Lowest 15%

Table 8-4
Weight of Evidence Risk Characterization Summary for Benthic Invertebrates

Station	Proportion Toxic	Relative Mean PEL-Q	Relative Benthic Index	WOE Risk Characterization
V	0%	-33%	3.51	Indeterminate
2.5	0%	-9%	4.89	Low
S	0%	60%	5.25	Low
E	25%	9%	6.95	Low
U	0%	-92%	3.18	Indeterminate
3	31%	233%	6.82	Indeterminate
G	25%	-64%	6.12	Low
4A	54%	2327%	3.41	Probable
5	25%	40%	4.03	Indeterminate
T	0%	-26%	5.87	Low
6A	69%	441%	0.18	Probable
Q	25%	103%	2.49	Probable

Notes:

	Toxicity	Mean PEL-Q	Benthic Index
Low	<= 25% Toxic	Below Average	Above Average
Indeterminate	25-50% Toxic	Above Average	Below Average
Probable	> 50% Toxic	Highest 15%	Lowest 15%

Table 8-5
Sediment Toxicity Sensitivity Analysis

Station	50% Survival	60% Survival (Baseline)	70% Survival	80% Survival	Relative Mean PEL-Q	Relative Benthic Index
V	0%	0%	25%	50%	-33%	3.51
2.5	0%	0%	0%	0%	-9%	4.89
S	0%	0%	25%	25%	60%	5.25
E	0%	25%	25%	25%	9%	6.95
U	0%	0%	25%	25%	-92%	3.18
3	31%	31%	31%	38%	233%	6.82
G	25%	25%	25%	25%	-64%	6.12
4A	46%	54%	62%	77%	2327%	3.41
5	25%	25%	25%	25%	40%	4.03
T	0%	0%	0%	50%	-26%	5.87
6A	69%	69%	85%	85%	441%	0.18
Q	25%	25%	25%	50%	103%	2.49

Notes:

	Toxicity	Toxicity	Toxicity	Toxicity	Mean PEL-Q	Benthic Index
Low	<= 25% Toxic	<= 25% Toxic	<= 25% Toxic	<= 25% Toxic	Below Average	Above Average
Indeterminate	25-50% Toxic	25-50% Toxic	25-50% Toxic	25-50% Toxic	Above Average	Below Average
Probable	> 50% Toxic	> 50% Toxic	> 50% Toxic	> 50% Toxic	Highest 15%	Lowest 15%

Table 8-6
Sediment Chemistry Sensitivity Analysis

Station	Proportion Toxic	Relative Mean PEL-Q (Baseline)	Relative Mean PEL-Q	Relative Benthic Index
V	0%	-33%	-33%	3.51
2.5	0%	-9%	-9%	4.89
S	0%	60%	60%	5.25
E	25%	9%	9%	6.95
U	0%	-92%	-92%	3.18
3	31%	233%	233%	6.82
G	25%	-64%	-64%	6.12
4A	54%	2327%	2327%	3.41
5	25%	40%	40%	4.03
T	0%	-26%	-26%	5.87
6A	69%	441%	441%	0.18
Q	25%	103%	103%	2.49

Notes:

	Toxicity	Mean PEL-Q	Mean PEL-Q	Benthic Index
Low	<= 25% Toxic	Below Average	Below Average	Above Average
Indeterminate	25-50% Toxic	Above Average	Above Average	Below Average
Probable	> 50% Toxic	Highest 15%	Highest 25%	Lowest 15%

Table 8-7
Benthic Community Sensitivity Analysis

Station	Proportion Toxic	Relative Mean PEL-Q	Relative Benthic Index (Baseline)	Relative Benthic Index	TCEQ Benthic Index	TCEQ Benthic Index
V	0%	-33%	3.51	3.51	21.41	21.41
2.5	0%	-9%	4.89	4.89	16.25	16.25
S	0%	60%	5.25	5.25	22.93	22.93
E	25%	9%	6.95	6.95	22.01	22.01
U	0%	-92%	3.18	3.18	10.07	10.07
3	31%	233%	6.82	6.82	26.74	26.74
G	25%	-64%	6.12	6.12	19.24	19.24
4A	54%	2327%	3.41	3.41	18.15	18.15
5	25%	40%	4.03	4.03	11.07	11.07
T	0%	-26%	5.87	5.87	20.81	20.81
6A	69%	441%	0.18	0.18	11.33	11.33
Q	25%	103%	2.49	2.49	12.63	12.63

Notes:

	Toxicity	Mean PEL-Q	Benthic Index	Benthic Index	Benthic Index	Benthic Index
Low	<= 25% Toxic	Below Average	Above Average	Above Average	Above Average	Above Average
Indeterminate	25-50% Toxic	Above Average	Below Average	Below Average	Below Average	Below Average
Probable	> 50% Toxic	Highest 15%	Lowest 15%	Lowest 25%	Lowest 15%	Lowest 25%

FIGURES

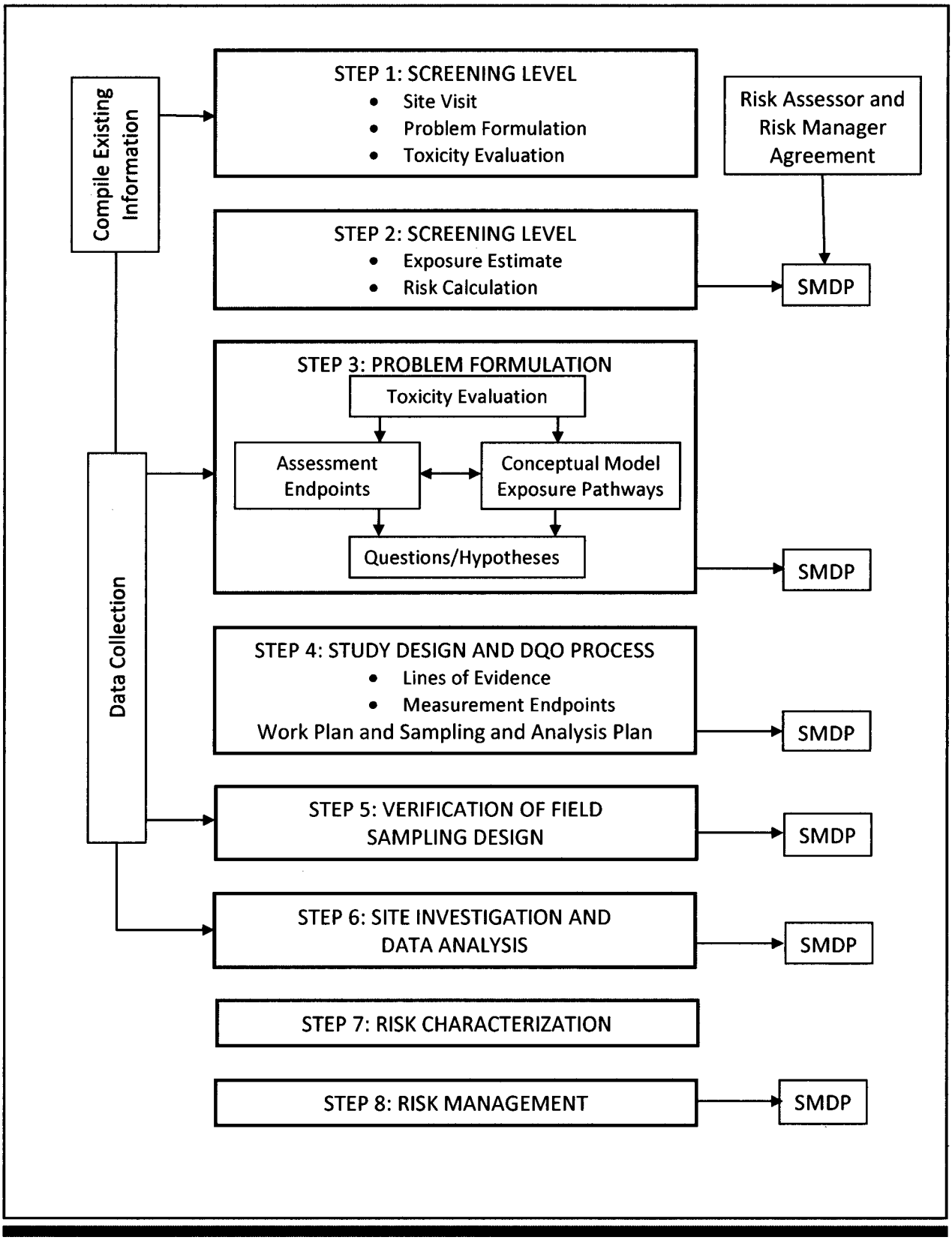

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Figure 1-1
USEPA Eight-Step Process for Ecological Risk Assessment
(Adapted from USEPA 1997)
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

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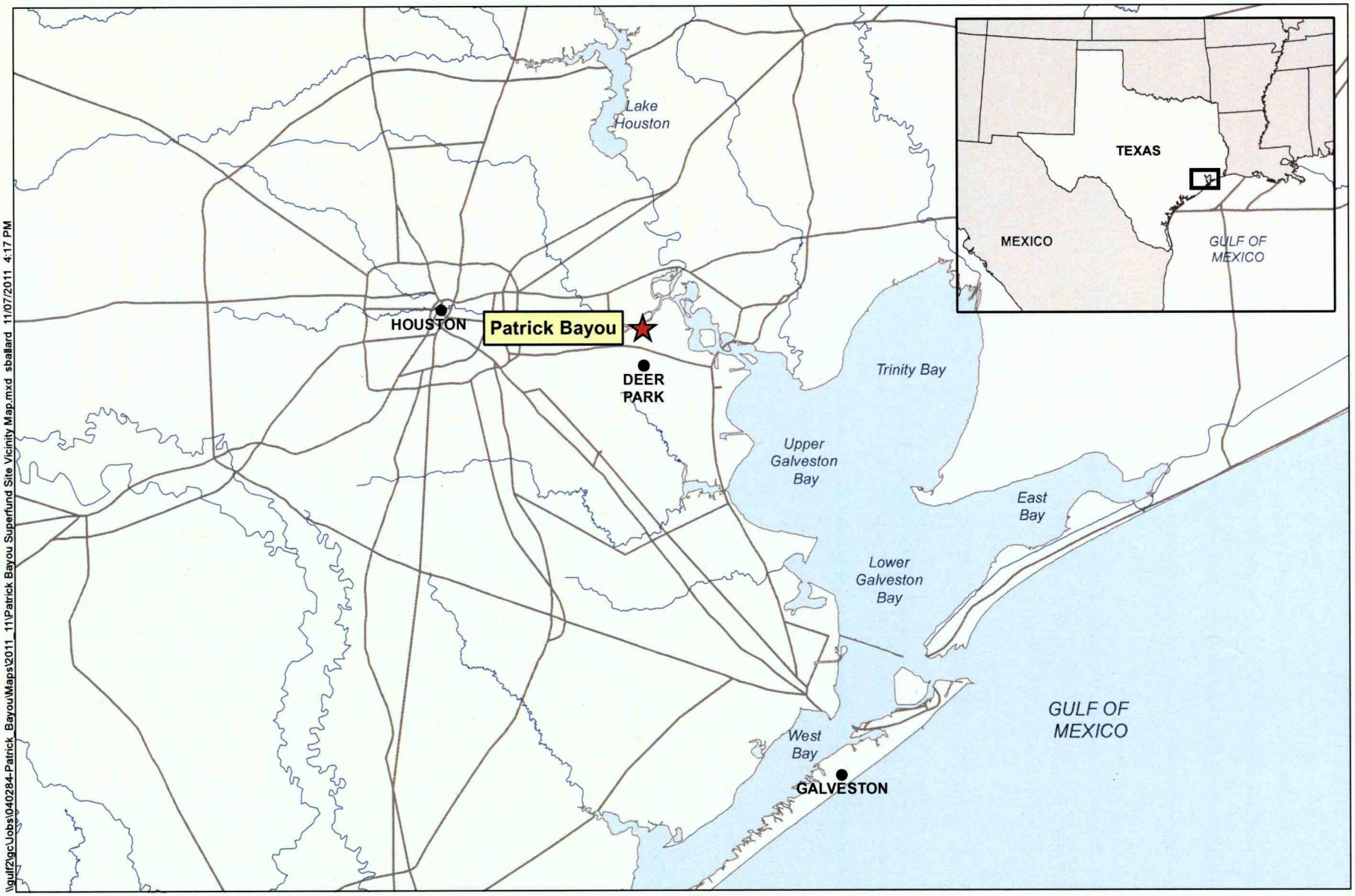

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Miles

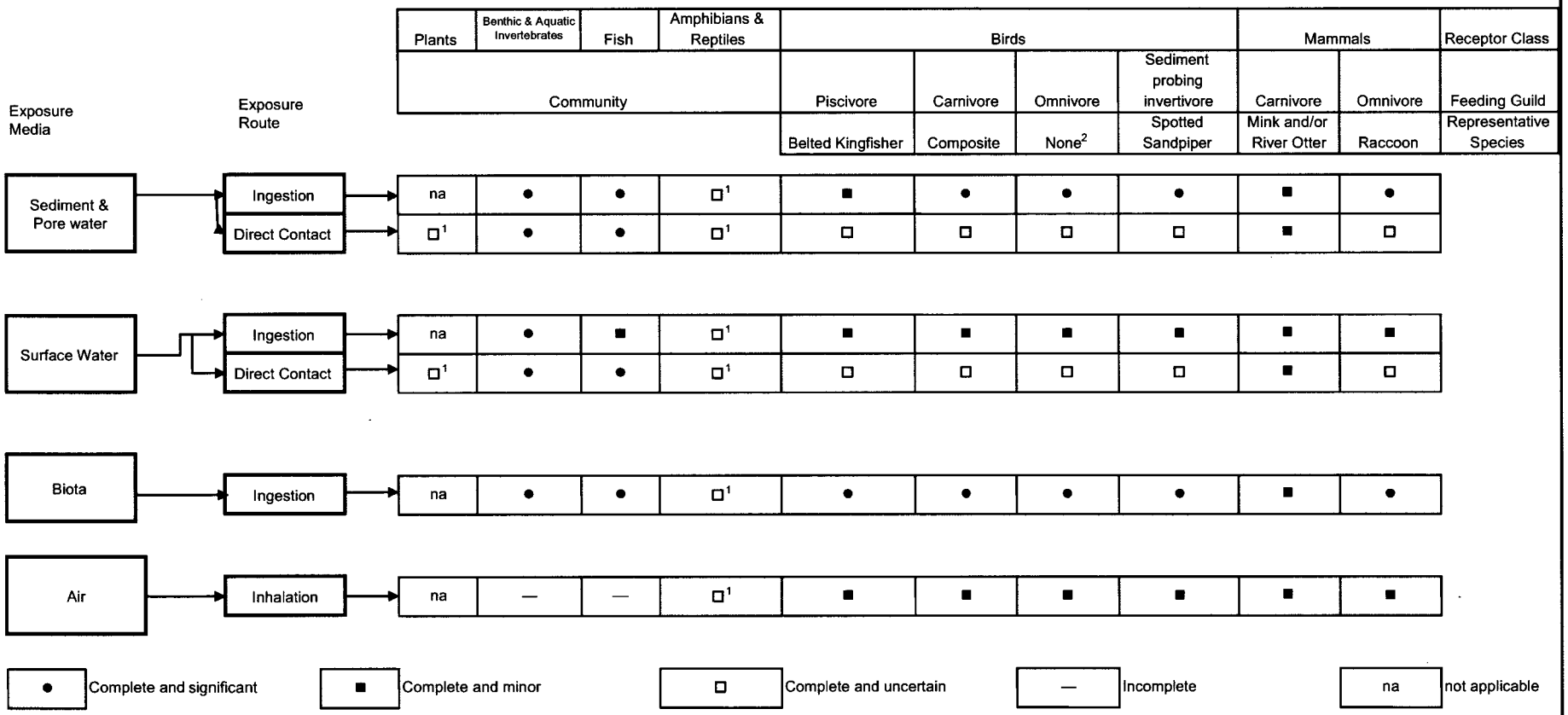
0 10

Figure 2-1

Patrick Bayou Superfund Site Vicinity Map

Baseline Ecological Risk Assessment

Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



1 Due to the lack of exposure and effects information for this receptor group, it will not be quantitatively assessed in the BERA
2 An omnivorous avian representative receptor was not selected; other avian feeding guilds are considered protective of this feeding guild

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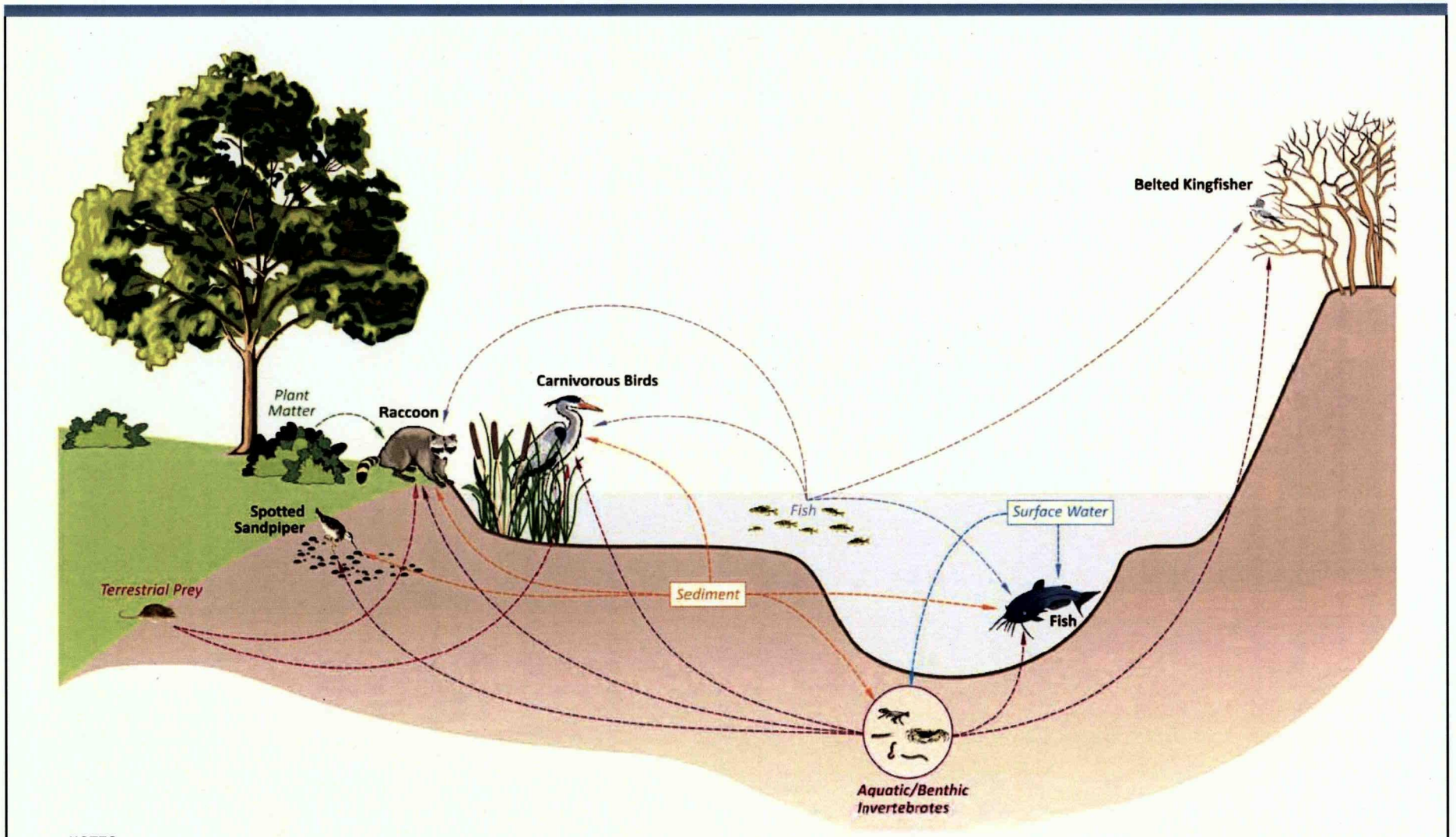
Figure 3-1
Baseline Ecological Risk Assessment Conceptual Site Model
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



NOTES:

1. Only complete and significant pathways are illustrated. Receptors (i.e., mink/otter, omnivorous birds, reptiles/amphibians), media (i.e., air), and incomplete/minor pathways that are not illustrated will not be assessed quantitatively in the BERA.
2. Aquatic/Benthic Invertebrates are both prey items and receptors.

LEGEND:

Exposure Media/Prey are *Italicized*

Receptors are **Bolded**

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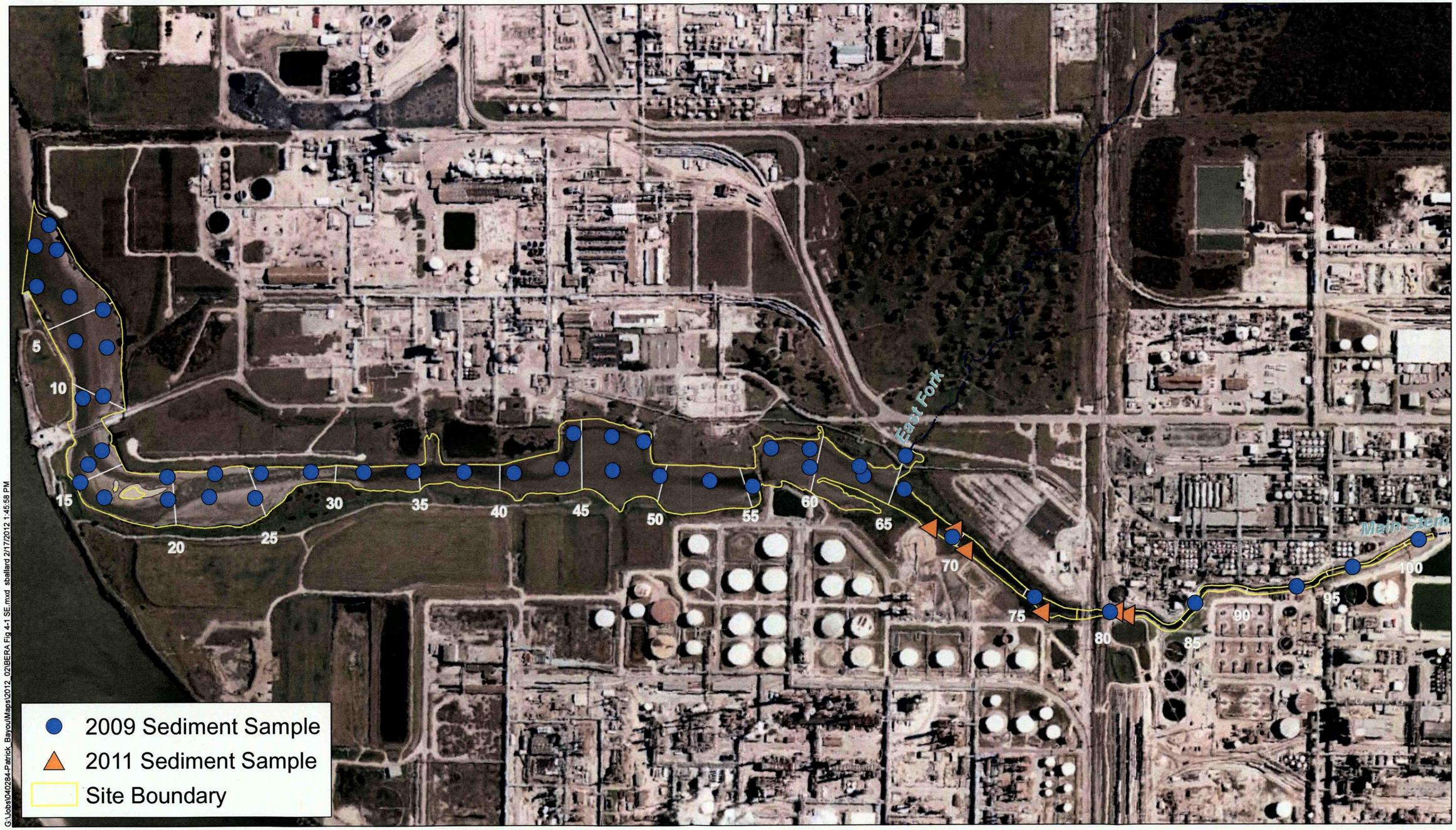
Figure 3-2
Simplified Ecological Conceptual Site Model
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: December 2007.

Feet
0 275 550 825 1,100

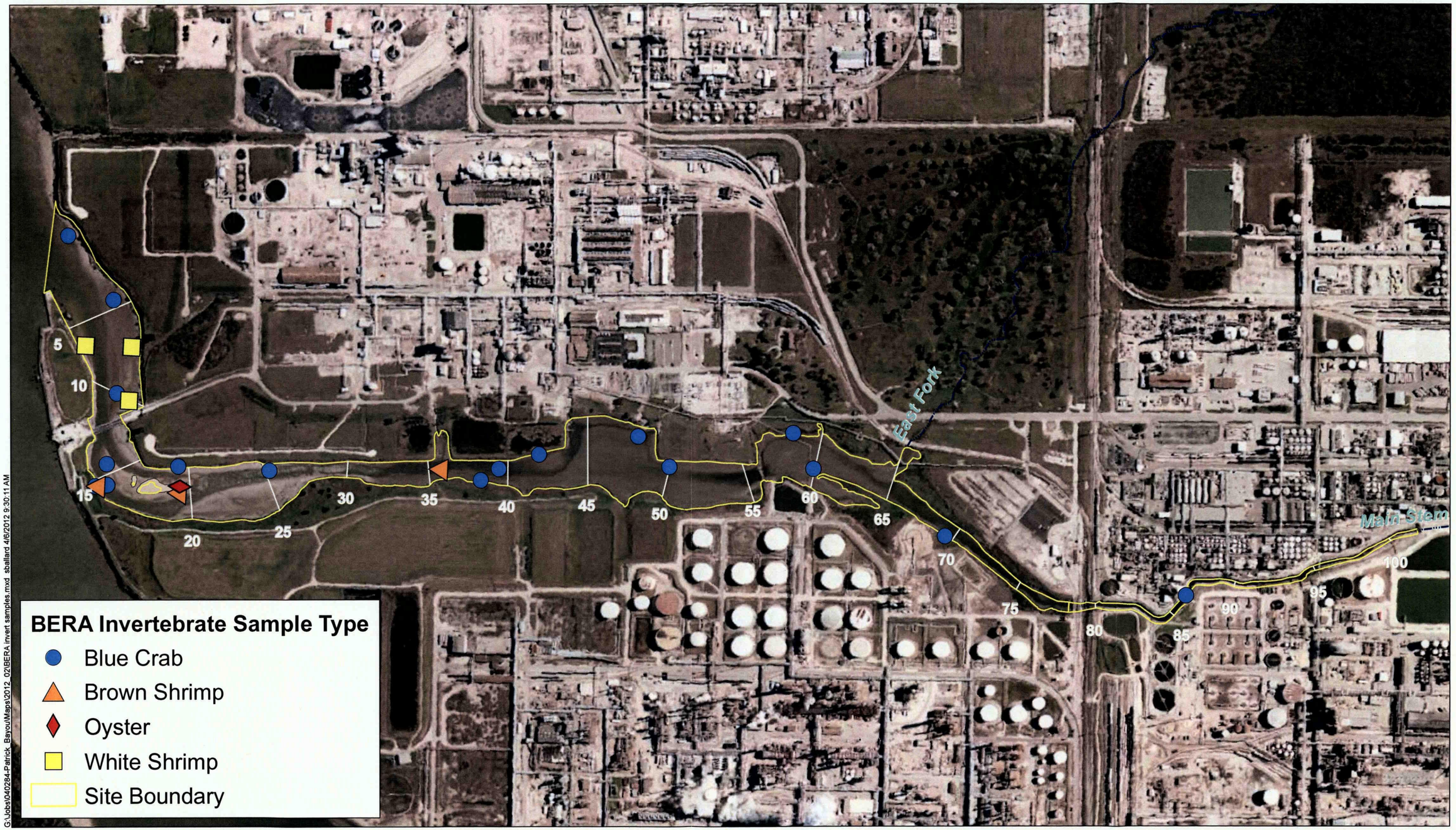
Figure 4-1
BERA Dataset Sediment Sample Locations
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: December 2007.

Feet
0 275 550 825 1,100

Figure 4-2
BERA Dataset Surface Water Sample Locations
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



Notes:
Multiple samples may be associated with some sample locations.
Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: December 2007.

ANCHOR QEA

Feet
0 280 560 840 1,120

Figure 4-3
BERA Dataset Invertebrate Tissue Sample Locations
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

Notes:
Multiple samples may be associated with some sample locations.
Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: December 2007.

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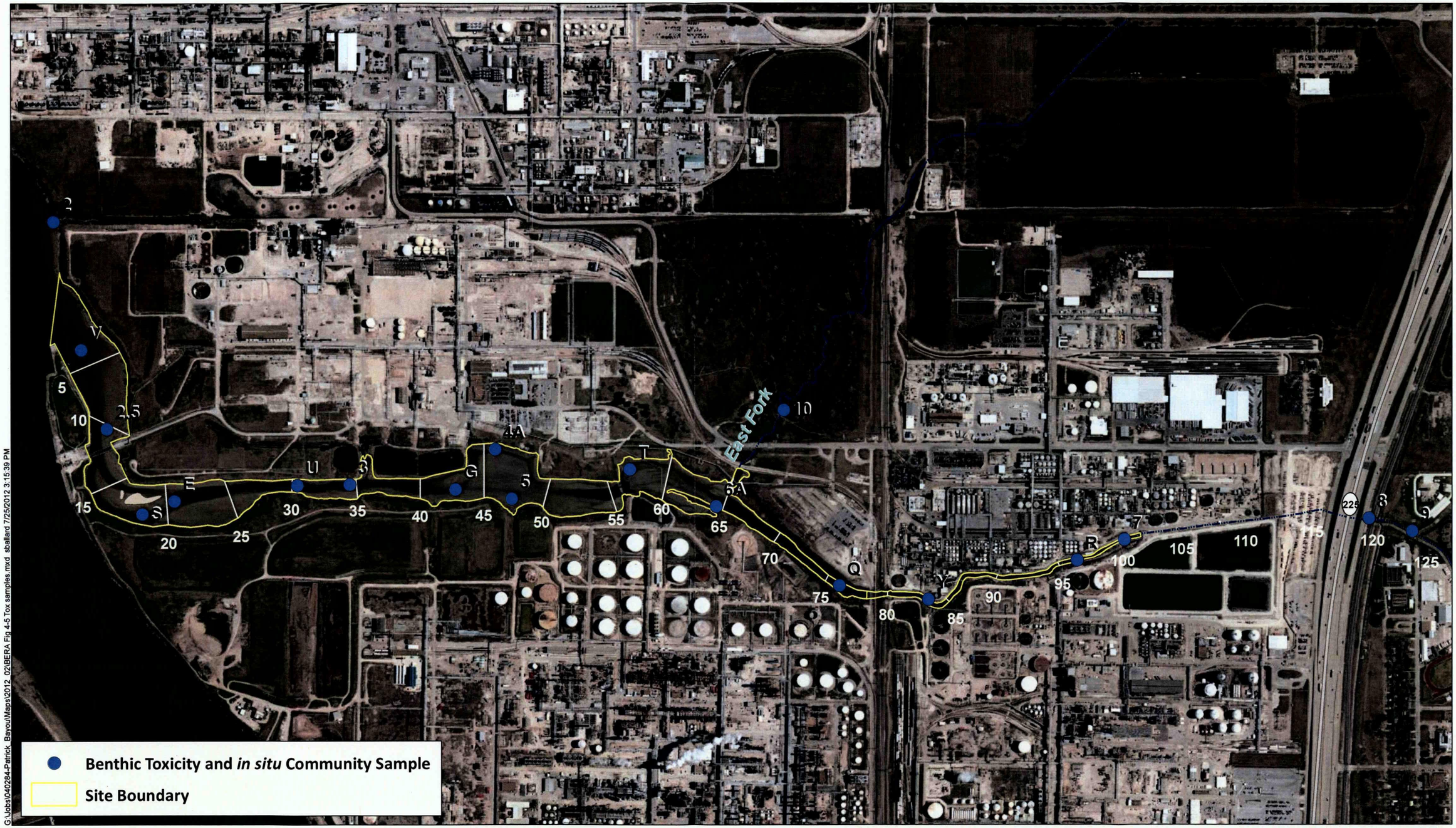
Feet
0 280 560 840 1,120

Figure 4-4
BERA Dataset Fish Tissue Sample Locations
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



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Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: December 2007.

ANCHOR QEA

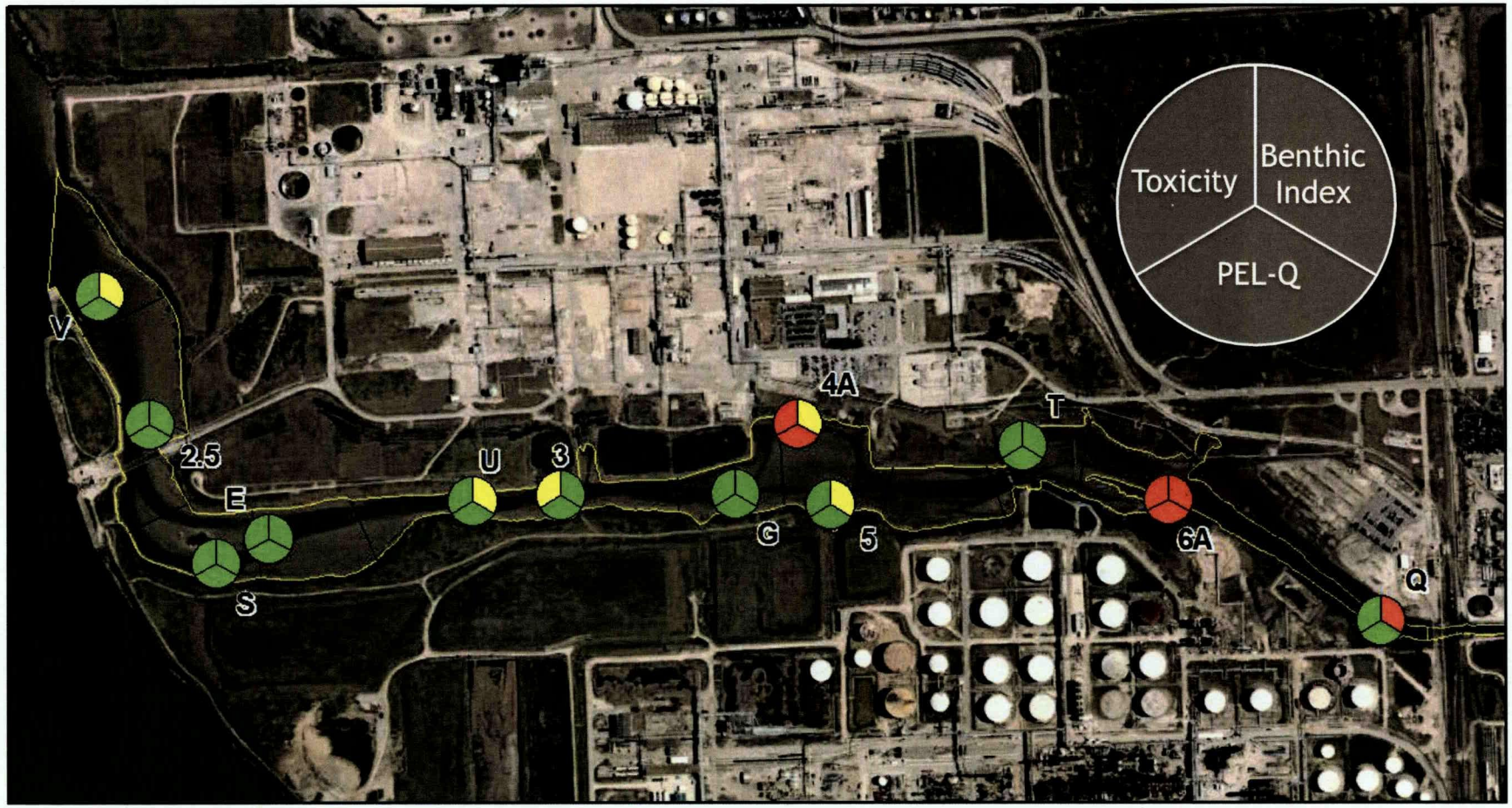
Figure 4-5
BERA Dataset Benthic Toxicity and *in situ* Community Sample Locations
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure 6-1
Patrick Bayou Tidal Zones
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



Key:	Toxicity	Mean PEL-Q	Benthic Index
Low	<= 25% Toxic	Below Average	Above Average
Indeterminate	> 25-50% Toxic	Above Average	Below Average
Probable	> 50% Toxic	Highest 15%	Lowest 15%

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Figure 8-1
Benthic Invertebrate Risk Characterization for Sediment
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

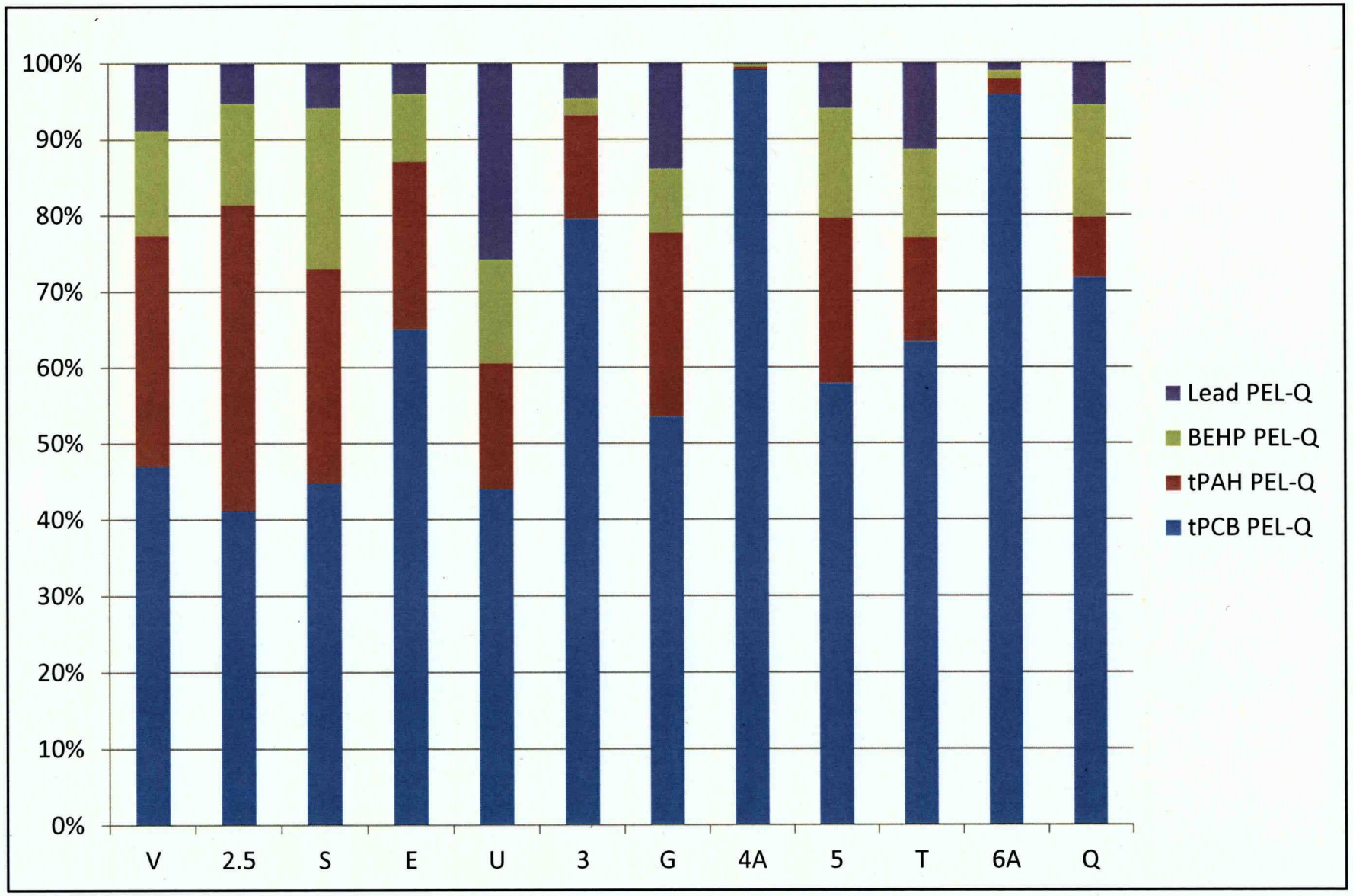

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Figure 8-2
Relative Contribution of COPC to Optimized Mean PEL-Q by Station
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

APPENDIX A
BERA DATASET

APPENDIX A-1
BERA SEDIMENT DATASET

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB001.1	PB001.2	PB001.3	PB002	PB004	PB005	PB007.1	PB007.2	PB009
Sample ID:	PB001.1-1SS010-091027-N	PB001.2-1SS010-091027-N	PB001.3-1SS010-091027-N	PB002-1SS010-091027-N	PB004-1SS010-091027-N	PB005-1SS010-091027-N	PB007.1-1SS010-091028-N	PB007.2-1SS010-091028-N	PB009-1SS010-091028-N
Sample Date:	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/28/2009	10/28/2009	10/28/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3202382.3842	3202624.0211	3202754.9026	3202606.9920	3202330.4788	3202262.1385	3202065.5011	3202037.3755	3201747.2539
Y:	13836546.3402	13836566.3557	13836489.4987	13836435.6794	13836348.7826	13836144.2614	13836300.0036	13836110.2965	13836119.3947
Conventional Parameters (µmol/g)									
Sulfide, Acid Volatile/SEM	**0.071 J**	--	**0.096 J**	--	**0.075 J**	--	**0.06 J**	--	**0.174 J**
Acid volatile sulfide	**53.8 J**	--	**14.7 J**	--	**52.8 J**	--	**103 J**	--	**13.2 J**
Conventional Parameters (mg/kg)									
Ammonia	**58**	**90**	**35**	**19**	**78**	**16**	**240**	**20**	**12**
Conventional Parameters (pct)									
Specific gravity	--	--	**2.58**	--	--	--	--	--	--
Total organic carbon	**1.64**	**1.46**	**1.09**	**1.11**	**1.47**	**1.15**	**2.01**	**1.26**	**1**
Grain Size (pct)									
Granule	**0**	--	0.1 U	--	0.1 U	--	**0**	--	0.1 U
Cobbles	**0**	--	0.1 U	--	0.1 U	--	**0**	--	0.1 U
Gravel, Coarse	**0**	--	0.1 U	--	0.1 U	--	**0**	--	0.1 U
Gravel, Fine	**0**	--	0.1 U	--	0.1 U	--	**0**	--	0.1 U
Sand	**46.6**	--	**45.3**	--	**13.7**	--	**42.5**	--	**42.4**
Sand, Coarse	**3.5**	--	**0.1**	--	0.1 U	--	**13.9**	--	**0.1**
Sand, Medium	**9.2**	--	**0.5**	--	**0.3**	--	**18**	--	**2.2**
Sand, Fine	**33.9**	--	**44.7**	--	**13.4**	--	**10.6**	--	**40.1**
Silt, Fine	**42.2**	--	**42.7**	--	**71.6**	--	**33.6**	--	**45.2**
Clay, Fine	**10.4**	--	**12**	--	**14.7**	--	**9.3**	--	**12.4**
Fines (silt + clay)	**52.6**	--	**54.7**	--	**86.3**	--	**42.9**	--	**57.6**
Metals (mg/kg)									
Arsenic	**3.99**	**4.32**	**2.52**	**3.34**	**4.24**	**3.52**	**6.35**	**3.21**	**1.95**
Cadmium	**0.495**	**0.696**	**0.296**	**0.535**	**0.776**	**0.641**	**1.17**	**0.597**	**0.424**
Chromium	**44.5 J**	**54.5 J**	**21.6 J**	**67.7 J**	**50.6 J**	**42.8 J**	**58.5 J**	**37.3 J**	**27.1 J**
Copper	**36.3 J**	**48.1 J**	**21.1 J**	**39.9 J**	**58.1 J**	**44.1 J**	**68 J**	**40.9 J**	**23.8 J**
Lead	**45 J**	**37.6 J**	**18.6 J**	**43.2 J**	**41 J**	**33.1 J**	**52.3 J**	**32.3 J**	**23.9 J**
Mercury	**4.48**	**3.93**	**1.73**	**7.96**	**5.24**	**4.32**	**5.95**	**3.84**	**2.35**
Nickel	**21.9 J**	**25 J**	**12.9 J**	**23.5 J**	**25.8 J**	**20 J**	**31.8 J**	**17.8 J**	**11.1 J**
Selenium	**1.2**	**1.13**	**0.478**	**0.816**	**1.53**	**1.25**	**1.58**	**1.22**	**0.935**
Zinc	**296 J**	**342 J**	**142 J**	**229 J**	**359 J**	**298 J**	**597 J**	**280 J**	**187 J**
Metals (umol/g)									
Cadmium-SEM	**0.00462 J**	--	**0.00212 J**	--	**0.00505 J**	--	**0.00862 J**	--	**0.00284 J**
Copper-SEM	0.232 UJ	--	0.123 UJ	--	0.266 UJ	--	0.311 UJ	--	**0.0839 J**
Lead-SEM	**0.179 J**	--	**0.0852 J**	--	**0.165 J**	--	**0.241 J**	--	**0.0963 J**
Mercury-SEM	0.000367 UJ	--	0.000195 UJ	--	0.000422 UJ	--	0.000493 UJ	--	0.000114 UJ
Nickel-SEM	0.126 UJ	--	0.0666 UJ	--	0.144 UJ	--	**0.191 J**	--	**0.0634 J**
Silver-SEM	0.00341 UJ	--	0.00181 UJ	--	0.00392 UJ	--	0.00458 UJ	--	0.00106 UJ
Zinc-SEM	**3.63 J**	--	**1.32 J**	--	**3.78 J**	--	**5.76 J**	--	**2.05 J**
Volatile Organics (µg/kg)									
1,2-Dichlorobenzene	2.88 U	2.28 U	101 U	89 U	2.68 U	1.99 U	4.39 UJ	1.47 U	1.16 U
1,3-Dichlorobenzene	**281**	**63.6**	**4090**	**382**	**22.9**	**18.1**	**244 J**	**28.4**	**25.4 J**
1,4-Dichlorobenzene	**114**	**62.8**	**1260**	**243**	**39.1**	**16.5**	**118 J**	**22.7**	**18.4 J**
4-Isopropyltoluene (4-Cymene)	**8.02**	**2.47**	101 U	89 U	**1.88 J**	1.99 U	**3.68 J**	1.47 U	1.16 U
Benzene	2.88 U	2.28 U	101 U	89 U	2.68 U	1.99 U	**2.22 J**	1.47 U	1.16 U

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB011	PB013.1	PB013.2	PB015	PB016	PB016	PB018	PB019	PB022
Sample ID:	PB011-1SS010-091028-N	PB013.1-1SS010-091028-N	PB013.2-1SS010-091028-N	PB015-1SS010-091028-N	PB016-1SS010-091101-N	PB016-1SS010-091102-N	PB018-1SS010-091101-N	PB019-1SS010-091101-N	PB022-1SS010-091101-D
Sample Date:	10/28/2009	10/28/2009	10/28/2009	10/28/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	FD
X:	3201727.2504	3201333.4751	3201420.5786	3201223.8464	3201140.0114	3201140.0114	3201146.8550	3201281.6017	3201174.1294
Y:	13836239.7593	13836187.7023	13836111.1432	13836229.0694	13836081.5392	13836081.5392	13835702.1476	13835711.9947	13835456.7389
Conventional Parameters (µmol/g)									
Sulfide, Acid Volatile/SEM	--	**0.246 J**	--	**0.082 J**	--	--	**2.47 J**	--	**0.774 J**
Acid volatile sulfide	--	**8.6 J**	--	**71.1 J**	--	--	**2.53 J**	--	**1.64 J**
Conventional Parameters (mg/kg)									
Ammonia	**29**	12 U	9.7 U	**190**	10 UJ	--	**10 J**	11 UJ	9.8 UJ
Conventional Parameters (pct)									
Specific gravity	--	--	--	--	--	--	--	--	--
Total organic carbon	**1.24**	**0.936**	**0.574**	**2**	**0.858**	--	**0.716**	**1.07**	**0.636**
Grain Size (pct)									
Granule	--	0.1 U	--	0.1 U	--	--	**0**	--	0.1 U
Cobbles	--	0.1 U	--	0.1 U	--	--	**0**	--	0.1 U
Gravel, Coarse	--	0.1 U	--	0.1 U	--	--	**0**	--	0.1 U
Gravel, Fine	--	0.1 U	--	0.1 U	--	--	**0**	--	0.1 U
Sand	--	**58.1**	--	**6**	--	--	**39.4**	--	**69.3**
Sand, Coarse	--	**0.3**	--	**0.1**	--	--	**4.7**	--	**0.3**
Sand, Medium	--	**3.1**	--	**0.6**	--	--	**10.8**	--	**1.9**
Sand, Fine	--	**54.7**	--	**5.3**	--	--	**23.9**	--	**67.1**
Silt, Fine	--	**32.3**	--	**63.3**	--	--	**21.2**	--	**26.6**
Clay, Fine	--	**9.6**	--	**30.7**	--	--	**3.2**	--	**4.1**
Fines (silt + clay)	--	**41.9**	--	**94**	--	--	**24.4**	--	**30.7**
Metals (mg/kg)									
Arsenic	**4.43**	**2.45**	**1.42**	**5.15**	**1.83**	--	**4.45**	**2.37**	**1.55**
Cadmium	**0.733**	**0.371**	**0.179**	**0.994**	**0.232**	--	**0.307**	**0.41**	**0.245**
Chromium	**116 J**	**28.9 J**	**14.4 J**	**68 J**	**20.9 J**	--	**29.7 J**	**29.1 J**	**21.8 J**
Copper	**61.7 J**	**50.6 J**	**16.9 J**	**73.3 J**	**22.9 J**	--	**26.8 J**	**31 J**	**24.1 J**
Lead	**220 J**	**26.9 J**	**13.9 J**	**52.8 J**	**57.2 J**	--	**234 J**	**23.9 J**	**26.9 J**
Mercury	**5.28**	**3.38**	**1.24**	**6.98**	**2.62 J**	--	**5.18 J**	**2.56 J**	**2.25 J**
Nickel	**25.7 J**	**16.3 J**	**8.29 J**	**31.7 J**	**10.4 J**	--	**17 J**	**14.6 J**	**11.2 J**
Selenium	**1.19**	**1.13**	**0.538**	**1.96**	**0.626**	--	**0.661**	**0.811**	**0.584**
Zinc	**325 J**	**203 J**	**103 J**	**527 J**	**137 J**	--	**530 J**	**237 J**	**151 J**
Metals (umol/g)									
Cadmium-SEM	--	**0.00215 J**	--	**0.00782 J**	--	--	**0.00366 J**	--	**0.00138 J**
Copper-SEM	--	0.054 UJ	--	0.35 UJ	--	--	0.402 UJ	--	**0.0986 J**
Lead-SEM	--	**0.0908 J**	--	**0.237 J**	--	--	**0.119 J**	--	**0.0507 J**
Mercury-SEM	--	8.6E-05 UJ	--	0.000555 UJ	--	--	6.4E-05 UJ	--	7.5E-05 UJ
Nickel-SEM	--	**0.0692 J**	--	**0.193 J**	--	--	0.218 UJ	--	**0.0411 J**
Silver-SEM	--	0.0008 UJ	--	0.00515 UJ	--	--	0.00059 UJ	--	0.00069 UJ
Zinc-SEM	--	**1.95 J**	--	**5.39 J**	--	--	**6.12 J**	--	**1.08 J**
Volatile Organics (µg/kg)									
1,2-Dichlorobenzene	122 U	1.38 U	62 U	2.59 U	1.3 U	--	1.16 U	1.51 U	1.27 U
1,3-Dichlorobenzene	**246**	**35.3**	**1030**	**72.8**	**10.1**	--	**38.6**	**10.2**	**10.8 J**
1,4-Dichlorobenzene	**594**	**31.5**	**1150**	**55.2**	**7.73**	--	**43.7**	**7.96**	**9.6 J**
4-Isopropyltoluene (4-Cymene)	122 U	1.38 U	62 U	**10.2**	1.3 U	--	1.16 U	1.51 U	1.27 U
Benzene	122 U	1.38 U	62 U	2.59 U	**0.836 J**	--	1.16 U	1.51 U	1.27 U

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB022	PB023	PB023	PB024	PB026	PB028	PB032	PB034	PB037
Sample ID:	PB022-1SS010-091101-N	PB023-1SS010-091030-D	PB023-1SS010-091030-N	PB024-1SS010-091030-N	PB026-1SS010-091030-N	PB028-1SS010-091030-N	PB032-1SS010-091030-N	PB034-1SS010-091030-N	PB037-1SS010-091030-N
Sample Date:	11/1/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N	N	N	N	N	N
X:	3201174.1294	3201315.1973	3201315.1973	3201180.8567	3201331.5617	3201355.6226	3201368.6522	3201387.6450	3201399.4292
Y:	13835456.7389	13835429.2411	13835429.2411	13835181.4775	13835155.0673	13834855.4834	13834541.6071	13834242.2769	13833936.8351
Conventional Parameters (µmol/g)									
Sulfide, Acid Volatile/SEM	**0.448 J**	--	--	**0.525 J**	--	0.054 UJ	--	0.054 UJ	--
Acid volatile sulfide	**3.6 J**	--	--	**4.08 J**	--	**97.6 J**	--	**183 J**	--
Conventional Parameters (mg/kg)									
Ammonia	9.8 UJ	11 UJ	11 UJ	**14 J**	**160 J**	**150 J**	**34 J**	**70 J**	**52 J**
Conventional Parameters (pct)									
Specific gravity	--	--	--	**2.59**	--	--	--	--	--
Total organic carbon	**0.567**	**0.837**	**0.637**	**0.923**	**1.78**	**2.71**	**1.13**	**1.31**	**2.4**
Grain Size (pct)									
Granule	**0**	--	--	0.1 U	--	**0**	--	0.1 U	--
Cobbles	**0**	--	--	0.1 U	--	**0**	--	0.1 U	--
Gravel, Coarse	**0**	--	--	0.1 U	--	**0**	--	0.1 U	--
Gravel, Fine	**0**	--	--	0.1 U	--	**0**	--	0.1 U	--
Sand	**67.1**	--	--	**47.6**	--	**14.9**	--	**14**	--
Sand, Coarse	**0.2**	--	--	**0.1**	--	**1.3**	--	**1**	--
Sand, Medium	**1.4**	--	--	**1.5**	--	**6.4**	--	**2.8**	--
Sand, Fine	**65.5**	--	--	**46**	--	**7.2**	--	**10.2**	--
Silt, Fine	**28**	--	--	**44.7**	--	**74.3**	--	**73.6**	--
Clay, Fine	**4.7**	--	--	**7.7**	--	**10.4**	--	**12.4**	--
Fines (silt + clay)	**32.7**	--	--	**52.4**	--	**84.7**	--	**86**	--
Metals (mg/kg)									
Arsenic	**1.56**	**3.01**	**2.73**	**1.92**	**8.04**	**6.8**	**3.81**	**6.98**	**5**
Cadmium	**0.268**	**0.411**	**0.263**	**0.389**	**1.47**	**0.35**	**0.418**	**2.14**	**1.14**
Chromium	**31.3 J**	**35.4 J**	**39.5 J**	**39.4 J**	**142 J**	**33.4 J**	**32 J**	**83.9 J**	**65.2 J**
Copper	**37.2 J**	**20.6 J**	**20.2 J**	**33.1 J**	**71.5 J**	**30.1 J**	**52 J**	**99.7 J**	**59.5 J**
Lead	**25.4 J**	**20.4 J**	**20.8 J**	**32.3 J**	**187 J**	**41.9 J**	**112 J**	**142 J**	**47.5 J**
Mercury	**2.52 J**	**2.55 J**	**2.87 J**	**5.44 J**	**64.2 J**	**2.54 J**	**24.7 J**	**9.11 J**	**5.4 J**
Nickel	**9.6 J**	**17.5 J**	**18.3 J**	**14.2 J**	**79.4 J**	**20.4 J**	**25.4 J**	**71.7 J**	**35 J**
Selenium	**0.641**	**0.675**	**0.585**	**0.996**	**1.29**	**1.28**	**0.634**	**1.67**	**1.54**
Zinc	**172 J**	**141**	**138**	**208**	**400**	**189**	**124**	**616**	**603**
Metals (umol/g)									
Cadmium-SEM	**0.00138 J**	--	--	**0.00238 J**	--	**0.00535 J**	--	**0.0167 J**	--
Copper-SEM	**0.108 J**	--	--	0.0601 UJ	--	**-- R**	--	0.299 UJ	--
Lead-SEM	**0.0567 J**	--	--	**0.101 J**	--	**0.23 J**	--	**0.432 J**	--
Mercury-SEM	7.3E-05 UJ	--	--	9.5E-05 UJ	--	0.000454 UJ	--	0.000473 UJ	--
Nickel-SEM	**0.0485 J**	--	--	**0.0689 J**	--	**0.247 J**	--	**0.528 J**	--
Silver-SEM	0.00068 UJ	--	--	0.00088 UJ	--	0.00422 UJ	--	0.0044 UJ	--
Zinc-SEM	**1.4 J**	--	--	**1.97 J**	--	**4.17 J**	--	**6.74 J**	--
Volatile Organics (µg/kg)									
1,2-Dichlorobenzene	1.23 U	1.25 U	1.18 U	1.16 U	360 U	3.84 U	1620 U	6.35 U	283 U
1,3-Dichlorobenzene	**26.1 J**	**7.56**	**6.31**	**32.3 J**	**7880**	**106**	**1290 J**	**200**	**283**
1,4-Dichlorobenzene	**25.8 J**	**3.58**	**3.21**	**5.39 J**	**6940**	**43.2**	**1050 J**	**976**	**150 J**
4-Isopropyltoluene (4-Cymene)	1.23 U	1.25 U	1.18 U	1.16 UJ	360 U	3.84 U	1620 U	**19.9**	283 U
Benzene	1.23 U	1.25 U	1.18 U	1.16 U	360 U	3.84 U	1620 U	**4.5 J**	283 U

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB041	PB043	PB044	PB047.1	PB047.2	PB048	PB049	PB049	PB053
Sample ID:	PB041-1SS010-091030-N	PB043-1SS010-091030-N	PB044-1SS010-091030-N	PB047.1-1SS010-091030-N	PB047.2-1SS010-091030-N	PB048-1SS010-091031-N	PB049-1SS010-091031-D	PB049-1SS010-091031-N	PB053-1SS010-091031-N
Sample Date:	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/31/2009	10/31/2009	10/31/2009	10/31/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	FD	N	N
X:	3201410.6060	3201451.0315	3201663.5416	3201454.2006	3201656.8574	3201635.5547	3201435.3433	3201435.3433	3201421.7211
Y:	13833634.6932	13833347.5606	13833285.4731	13833042.2356	13833055.7842	13832859.6311	13832751.7292	13832751.7292	13832443.5506
Conventional Parameters (µmol/g)									
Sulfide, Acid Volatile/SEM	**0.12 J**	--	**0.079 J**	--	**0.684 J**	--	**0.354 J**	**0.25 J**	--
Acid volatile sulfide	**42.1 J**	--	**62.1 J**	--	**6.7 J**	--	**10.4 J**	**16.2 J**	--
Conventional Parameters (mg/kg)									
Ammonia	**32 J**	**28 J**	**53 J**	**18 J**	**21 J**	**37 J**	**25 J**	**20 J**	**97 J**
Conventional Parameters (pct)									
Specific gravity	--	--	--	--	--	--	**2.63**	**2.65**	--
Total organic carbon	**1.35**	**1.04**	**1.26**	**0.978**	**1.14**	**1.69**	**1.49**	**1.16**	**2.06**
Grain Size (pct)									
Granule	**0**	--	0.1 U	--	0.1 U	--	**0**	**0**	--
Cobbles	**0**	--	0.1 U	--	0.1 U	--	**0**	**0**	--
Gravel, Coarse	**0**	--	0.1 U	--	0.1 U	--	**0**	**0**	--
Gravel, Fine	**0**	--	0.1 U	--	0.1 U	--	**0**	**0**	--
Sand	**56.5**	--	**37.8**	--	**14.8**	--	**57**	**54.9**	--
Sand, Coarse	**1.7**	--	**1.1**	--	0.1 U	--	**2.6**	**2.3**	--
Sand, Medium	**18.9**	--	**6.6**	--	**1.1**	--	**17.2**	**16.6**	--
Sand, Fine	**35.9**	--	**30.1**	--	**13.7**	--	**37.2**	**36**	--
Silt, Fine	**37.4**	--	**56.1**	--	**75.8**	--	**33.9**	**38**	--
Clay, Fine	**5.9**	--	**6.1**	--	**9.4**	--	**6.5**	**4.2**	--
Fines (silt + clay)	**43.3**	--	**62.2**	--	**85.2**	--	**40.4**	**42.2**	--
Metals (mg/kg)									
Arsenic	**5.2**	**2.68**	**4.66**	**3.26**	**3.82**	**5.57**	**4.09**	**3.5**	**6.06**
Cadmium	**0.999**	**0.361**	**0.853**	**0.69**	**0.81**	**1.34**	**0.75**	**0.685**	**0.861**
Chromium	**48.4 J**	**28.4 J**	**62.4 J**	**50.3 J**	**55.2 J**	**72.1 J**	**83.6 J**	**72.4 J**	**322 J**
Copper	**47.4 J**	**25.3 J**	**53.5 J**	**32.8 J**	**55.4 J**	**73.2 J**	**45.3 J**	**42.6 J**	**74.3 J**
Lead	**52.4 J**	**24.6 J**	**37.7 J**	**24.9 J**	**34.6 J**	**43.2 J**	**38 J**	**34.9 J**	**70.9 J**
Mercury	**3.82 J**	**1.23 J**	**13.7 J**	**2.02 J**	**5.14 J**	**8.55 J**	**3.15 J**	**2.97 J**	**843 J**
Nickel	**52.3 J**	**16.8 J**	**73.3 J**	**17.6 J**	**32 J**	**52.2 J**	**20.8 J**	**19.4 J**	**55.4 J**
Selenium	**1.47**	**0.717**	**1.16**	**0.93**	**1.42**	**2.12**	**1.02**	**0.985**	**0.792**
Zinc	**1020**	**306**	**424**	**281**	**429**	**578 J**	**383 J**	**350 J**	**628 J**
Metals (umol/g)									
Cadmium-SEM	**0.00414 J**	--	**0.00482 J**	--	**0.00505 J**	--	**0.0029 J**	**0.00291 J**	--
Copper-SEM	**0.278 J**	--	0.213 UJ	--	**0.378 J**	--	**0.163 J**	**0.15 J**	--
Lead-SEM	**0.153 J**	--	**0.133 J**	--	**0.125 J**	--	**0.0811 J**	**0.0888 J**	--
Mercury-SEM	0.000133 UJ	--	0.000338 UJ	--	0.000127 UJ	--	0.000119 UJ	0.000112 UJ	--
Nickel-SEM	**0.292 J**	--	**0.702 J**	--	**0.219 J**	--	**0.106 J**	**0.112 J**	--
Silver-SEM	0.00124 UJ	--	0.00314 UJ	--	0.00118 UJ	--	0.0011 UJ	0.00104 UJ	--
Zinc-SEM	**4.3 J**	--	**4.09 J**	--	**3.86 J**	--	**3.31 J**	**3.69 J**	--
Volatile Organics (µg/kg)									
1,2-Dichlorobenzene	2.99 U	2.18 U	2.54 U	1.74 U	2.42 U	3.18 U	102 U	1.48 U	893 U
1,3-Dichlorobenzene	**14.5**	**3.03**	**41.7**	**1.67 J**	**3.31**	**2.07 J**	102 U	**1.07 J**	893 U
1,4-Dichlorobenzene	**19.5**	**1.75 J**	**19.2**	**0.973 J**	**2.27 J**	**2.05 J**	102 U	1.48 U	893 U
4-Isopropyltoluene (4-Cymene)	2.99 U	2.18 U	**5.28**	1.74 U	2.42 U	3.18 U	102 U	**1.24 J**	**1160**
Benzene	2.99 U	2.18 U	2.54 U	1.74 U	2.42 U	3.18 U	102 U	1.48 U	**3410**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB056	PB057	PB059.1	PB059.2	PB063.1	PB063.2	PB064	PB066	PB069
Sample ID:	PB056-1SS010-091031-N	PB057-1SS010-091031-N	PB059.1-1SS010-091102-N	PB059.2-1SS010-091031-N	PB063.1-1SS010-091031-N	PB063.2-1SS010-091102-N	PB064-1SS010-091102-N	PB066-1SS010-091101-N	PB069-1SS010-091101-N
Sample Date:	10/31/2009	10/31/2009	11/2/2009	10/31/2009	10/31/2009	11/2/2009	11/2/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3201402.6901	3201634.7257	3201531.6282	3201640.7239	3201497.4803	3201553.0822	3201628.7185	3201431.2755	3201160.2007
Y:	13832184.9773	13832087.9098	13831850.4179	13831857.0149	13831523.9045	13831552.2764	13831275.6688	13831275.6811	13830971.1845
Conventional Parameters (µmol/g)									
Sulfide, Acid Volatile/SEM	0.054 UJ	--	**0.671 J**	--	**0.055 J**	--	**0.311 J**	--	**0.148 J**
Acid volatile sulfide	**127 J**	--	**4.48 J**	--	**57.1 J**	--	**5.25 J**	--	**15.8 J**
Conventional Parameters (mg/kg)									
Ammonia	**220 J**	**24 J**	9.2 UJ	**27 J**	**21 J**	**35 J**	**31 J**	**41 J**	8.3 UJ
Conventional Parameters (pct)									
Specific gravity	--	--	--	--	--	--	--	--	**2.61**
Total organic carbon	**1.79**	**1.03**	**1.09**	**1**	**1.51**	**0.977**	**0.549**	**0.71**	**2.9**
Grain Size (pct)									
Granule	**0**	--	**0**	--	**0**	--	**0**	--	**0**
Cobbles	**0**	--	**0**	--	**0**	--	**0**	--	**0**
Gravel, Coarse	**0**	--	**0**	--	**0**	--	**0**	--	**0**
Gravel, Fine	**0**	--	**0**	--	**0**	--	**0**	--	**0**
Sand	**39.3**	--	**84.3**	--	**71.6**	--	**56.1**	--	**68.3**
Sand, Coarse	**0.2**	--	**11.1**	--	**12**	--	**0.4**	--	**29.1**
Sand, Medium	**6.7**	--	**40.1**	--	**38.3**	--	**3.9**	--	**33.7**
Sand, Fine	**32.4**	--	**33.1**	--	**21.3**	--	**51.8**	--	**5.5**
Silt, Fine	**53.3**	--	**7.8**	--	**11.3**	--	**37.3**	--	**5.7**
Clay, Fine	**7.3**	--	**0.9**	--	**1.8**	--	**5.9**	--	**0.7**
Fines (silt + clay)	**60.6**	--	**8.7**	--	**13.1**	--	**43.2**	--	**6.4**
Metals (mg/kg)									
Arsenic	**3.68**	**2.86**	**6.11**	**3.4**	**6.37**	**3.62**	**4.07**	**2.3**	**9.61 J**
Cadmium	**0.56**	**0.458**	**0.537**	**0.577**	**0.406**	**0.562**	**0.236**	**0.285**	**1.05**
Chromium	**47 J**	**44.8 J**	**57.9 J**	**94.7 J**	**305 J**	**161 J**	**25.6 J**	**23.6 J**	**34.5 J**
Copper	**42 J**	**35.7 J**	**83.8 J**	**43.9 J**	**37.6 J**	**57 J**	**29.9 J**	**45.4 J**	**48.2 J**
Lead	**31.9 J**	**22.9 J**	**33.3 J**	**37 J**	**57 J**	**39 J**	**9.72 J**	**24.5 J**	**22.7 J**
Mercury	**2.08 J**	**1.13 J**	**0.795 J**	**1.12 J**	**0.567 J**	**0.769 J**	**0.124 J**	**0.48 J**	**1.32 J**
Nickel	**21.8 J**	**13.8 J**	**26.2 J**	**16.8 J**	**21.6 J**	**25.2 J**	**11.4 J**	**10.6 J**	**23.6 J**
Selenium	**0.891**	**0.785**	**0.563**	**0.766**	**0.669**	**0.919**	**0.299**	**0.27**	**0.426 J**
Zinc	**464 J**	**249 J**	**784 J**	**299 J**	**630 J**	**353 J**	**124 J**	**264 J**	**1750 J**
Metals (umol/g)									
Cadmium-SEM	**0.00438 J**	--	**0.00235 J**	--	**0.00294 J**	--	**0.00163 J**	--	0.00324 UJ
Copper-SEM	0.258 UJ	--	0.224 UJ	--	0.0597 UJ	--	**0.139 J**	--	0.229 UJ
Lead-SEM	**0.128 J**	--	**0.0776 J**	--	**0.0862 J**	--	**0.0335 J**	--	**0.117 J**
Mercury-SEM	0.000409 UJ	--	7.1E-05 UJ	--	9.5E-05 UJ	--	0.0011 UJ	--	7.3E-05 UJ
Nickel-SEM	**0.171 J**	--	**0.167 J**	--	**0.162 J**	--	**0.0584 J**	--	**0.208 J**
Silver-SEM	0.0038 UJ	--	0.00066 UJ	--	0.00088 UJ	--	0.00103 UJ	--	0.00337 UJ
Zinc-SEM	**5.14 J**	--	**2.76 J**	--	**2.87 J**	--	**1.4 J**	--	**2.02 J**
Volatile Organics (µg/kg)									
1,2-Dichlorobenzene	2.38 U	1.59 U	1.32 U	1.47 U	93.8 U	1.44 U	1.08 U	1.33 U	**0.629 J**
1,3-Dichlorobenzene	**3.15**	1.59 U	1.32 U	**0.847 J**	93.8 U	**0.979 J**	1.08 U	1.33 U	1.02 U
1,4-Dichlorobenzene	**1.34 J**	1.59 U	1.32 U	1.47 U	93.8 U	1.44 U	1.08 U	1.33 U	**0.822 J**
4-Isopropyltoluene (4-Cymene)	**2.77**	1.59 U	**2.19**	**1.89**	**144**	**1.14 J**	1.08 U	**1.6**	**5.95**
Benzene	**7.52**	1.59 U	1.32 U	1.47 U	93.8 U	1.44 U	1.08 U	1.33 U	**1.75**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	2011 USC	2011 USC	2011 USC
Location ID:	PB074	PB081	PB093	PB097	PB101	PB068	PB069.1	PB070A
Sample ID:	PB074-1SS010-091101-N	PB081-1SS010-091103-N	PB093-1SS010-091103-N	PB097-1SS010-091103-N	PB101-1SS010-091103-N	PB068-1SS010-20110804-N	PB069.1-1SS008-20110804-N	PB070A-1SS010-20110802-N
Sample Date:	11/1/2009	11/3/2009	11/3/2009	11/3/2009	11/3/2009	8/4/2011	8/4/2011	8/2/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 8 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N
X:	3200828.0183	3200761.3787	3200970.4291	3201103.1242	3201287.2658	3201209.861	3201205.859	3201087.255
Y:	13830463.2171	13830005.1879	13828894.7843	13828566.1540	13828181.2285	13831121.51	13830973.3	13830903.51
Conventional Parameters (µmol/g)								
Sulfide, Acid Volatile/SEM	--	0.054 UJ	**0.159 J**	--	**0.244 J**	--	--	--
Acid volatile sulfide	--	**96.3 J**	**6.04 J**	--	**3.97 J**	--	--	--
Conventional Parameters (mg/kg)								
Ammonia	**13 J**	11 UJ	9.1 UJ	**50 J**	9 UJ	--	--	--
Conventional Parameters (pct)								
Specific gravity	--	--	--	--	--	--	--	--
Total organic carbon	**0.507**	**1.67**	**1.47**	**0.411**	**0.686**	--	--	--
Grain Size (pct)								
Granule	--	**0**	**0**	--	**0**	--	--	--
Cobbles	--	**0**	**0**	--	**0**	--	--	--
Gravel, Coarse	--	**0**	**0**	--	**0**	--	--	--
Gravel, Fine	--	**0**	**0**	--	**0**	--	--	--
Sand	--	**47**	**53.8**	--	**76.5**	--	--	--
Sand, Coarse	--	**21.2**	**35.1**	--	**31.9**	--	--	--
Sand, Medium	--	**20.3**	**17.9 J**	--	**37.9**	--	--	--
Sand, Fine	--	**5.5**	**0.8**	--	**6.7**	--	--	--
Silt, Fine	--	**17.6**	**1.7**	--	**5.8**	--	--	--
Clay, Fine	--	**2.2**	**0.1**	--	**0.6**	--	--	--
Fines (silt + clay)	--	**19.8**	**1.8**	--	**6.4**	--	--	--
Metals (mg/kg)								
Arsenic	**7.12**	**10.1**	**10.8**	**5.62**	**2.82**	--	--	--
Cadmium	**0.265**	**0.537**	**0.246**	**0.214**	**0.19**	--	--	--
Chromium	**22.6 J**	**242 J**	**23 J**	**99.9 J**	**13 J**	--	--	--
Copper	**38.6 J**	**69.5**	**13.5**	**25**	**14.3**	--	--	--
Lead	**26.3 J**	**335 J**	**36.3 J**	**13.1 J**	**172 J**	--	--	--
Mercury	**7.54 J**	**0.659 J**	**0.026 J**	**0.042 J**	**0.0121 J**	--	--	--
Nickel	**15 J**	**59**	**17.6**	**15**	**7.69**	--	--	--
Selenium	**0.377**	**0.953 J**	**0.707 J**	**0.723 J**	**0.427 J**	--	--	--
Zinc	**198 J**	**390 J**	**120 J**	**145 J**	**82.4 J**	--	--	--
Metals (umol/g)								
Cadmium-SEM	--	**0.00234 J**	0.00329 UJ	--	0.00322 UJ	--	--	--
Copper-SEM	--	0.797 UJ	0.466 UJ	--	0.455 UJ	--	--	--
Lead-SEM	--	**0.226 J**	**0.0372 J**	--	**0.0472 J**	--	--	--
Mercury-SEM	--	0.000252 UJ	7.4E-05 UJ	--	7.2E-05 UJ	--	--	--
Nickel-SEM	--	0.431 UJ	0.252 UJ	--	0.246 UJ	--	--	--
Silver-SEM	--	0.00235 UJ	0.00343 UJ	--	0.00335 UJ	--	--	--
Zinc-SEM	--	**2.84 J**	**0.921 J**	--	**0.923 J**	--	--	--
Volatile Organics (µg/kg)								
1,2-Dichlorobenzene	1.33 U	**-- R**	1.07 U	1.04 U	0.816 U	--	--	--
1,3-Dichlorobenzene	1.33 U	**-- R**	1.07 U	1.04 U	0.816 U	--	--	--
1,4-Dichlorobenzene	**0.842 J**	**-- R**	1.07 U	1.04 U	0.816 U	--	--	--
4-Isopropyltoluene (4-Cymene)	**3.15**	**776 J**	1.07 U	1.04 U	0.816 U	--	--	--
Benzene	1.33 U	**3360 J**	1.07 U	1.04 UJ	**0.615 J**	--	--	--

Appendix A-1
BERA Sediment Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB076.1	PB081.1	PB081.1	PB082
Sample ID:	PB076.1-1SS010-20110802-N	PB081.1-1SS010-20110803-D	PB081.1-1SS010-20110803-N	PB082-1SS010-20110803-N
Sample Date:	8/2/2011	8/3/2011	8/3/2011	8/3/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N
X:	3200744.033	3200772.123	3200772.123	3200751.881
Y:	13830426.95	13829983.6	13829983.6	13829914.32
Conventional Parameters (µmol/g)				
Sulfide, Acid Volatile/SEM	--	--	--	--
Acid volatile sulfide	--	--	--	--
Conventional Parameters (mg/kg)				
Ammonia	--	--	--	--
Conventional Parameters (pct)				
Specific gravity	--	--	--	--
Total organic carbon	--	--	--	--
Grain Size (pct)				
Granule	--	--	--	--
Cobbles	--	--	--	--
Gravel, Coarse	--	--	--	--
Gravel, Fine	--	--	--	--
Sand	--	--	--	--
Sand, Coarse	--	--	--	--
Sand, Medium	--	--	--	--
Sand, Fine	--	--	--	--
Silt, Fine	--	--	--	--
Clay, Fine	--	--	--	--
Fines (silt + clay)	--	--	--	--
Metals (mg/kg)				
Arsenic	--	--	--	--
Cadmium	--	--	--	--
Chromium	--	--	--	--
Copper	--	--	--	--
Lead	--	--	--	--
Mercury	--	--	--	--
Nickel	--	--	--	--
Selenium	--	--	--	--
Zinc	--	--	--	--
Metals (umol/g)				
Cadmium-SEM	--	--	--	--
Copper-SEM	--	--	--	--
Lead-SEM	--	--	--	--
Mercury-SEM	--	--	--	--
Nickel-SEM	--	--	--	--
Silver-SEM	--	--	--	--
Zinc-SEM	--	--	--	--
Volatile Organics (µg/kg)				
1,2-Dichlorobenzene	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--
4-Isopropyltoluene (4-Cymene)	--	--	--	--
Benzene	--	--	--	--

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB001.1	PB001.2	PB001.3	PB002	PB004	PB005	PB007.1	PB007.2	PB009
Sample ID:	PB001.1-1SS010-091027-N	PB001.2-1SS010-091027-N	PB001.3-1SS010-091027-N	PB002-1SS010-091027-N	PB004-1SS010-091027-N	PB005-1SS010-091027-N	PB007.1-1SS010-091028-N	PB007.2-1SS010-091028-N	PB009-1SS010-091028-N
Sample Date:	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/28/2009	10/28/2009	10/28/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3202382.3842	3202624.0211	3202754.9026	3202606.9920	3202330.4788	3202262.1385	3202065.5011	3202037.3755	3201747.2539
Y:	13836546.3402	13836566.3557	13836489.4987	13836435.6794	13836348.7826	13836144.2614	13836300.0036	13836110.2965	13836119.3947
Chlorobenzene	**92.6**	**62.8**	**790**	**144**	**13**	**4.04**	**97.3 J**	**1.97**	**3.12 J**
Ethylbenzene	**9.01**	**2.86**	101 U	89 U	2.68 U	1.99 U	**5.44 J**	1.47 U	1.16 U
Isopropylbenzene (Cumene)	**272**	**24**	101 U	89 U	**2.51 J**	**1.17 J**	**42.8 J**	**1.18 J**	**1.22 J**
m,p-Xylene	**8.48**	**2.96 J**	202 U	178 U	5.37 U	3.99 U	**6.06 J**	2.94 U	2.32 U
n-Butylbenzene	**4.08**	2.28 U	101 U	89 U	2.68 U	1.99 U	4.39 UJ	1.47 U	1.16 U
n-Propylbenzene	**7.99**	**1.19 J**	101 U	89 U	2.68 U	1.99 U	**2.48 J**	1.47 U	1.16 U
o-Xylene	**3.67**	2.28 U	101 U	89 U	2.68 U	1.99 U	4.39 U	1.47 U	1.16 U
sec-Butylbenzene	**5.73**	2.28 U	101 U	89 U	2.68 U	1.99 U	4.39 UJ	1.47 U	1.16 U
tert-Butylbenzene	**17.7**	**1.3 J**	101 U	89 U	2.68 U	1.99 U	**2.5 J**	1.47 U	1.16 U
Toluene	**3.11 J**	4.56 U	202 U	178 U	5.37 U	3.99 U	**24 J**	2.94 U	2.32 U
Total Xylene (U = 1/2)	**12.15**	**4.1 J**	202 U	178 U	5.37 U	3.99 U	**8.255 J**	2.94 U	2.32 U
Aromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	**526**	**356**	**266**	**382**	**180**	**289**	**103**	**218**	**554 J**
Acenaphthene	**1610**	**777**	**492**	**1340**	**332**	**854**	**260**	**748**	**2730 J**
Acenaphthylene	**2170**	**1530**	**890**	**3810**	**781**	**1480**	**541**	**1210**	**1370**
Anthracene	**1440**	**489**	**381**	**982**	**267**	**471**	**334**	**449**	**4040 J**
Benzo(a)anthracene	**1040**	**476**	**631**	**759**	**389**	**458**	**569**	**498**	**8520 J**
Benzo(a)pyrene	**1350**	**690**	**663**	**1710**	**544**	**742**	**796**	**896**	**7550 J**
Benzo(b)fluoranthene	**1050**	**624**	**628**	**832**	**610**	**639**	**737**	**745**	**7370 J**
Benzo(e)pyrene	**1100**	**663**	**564**	**1390**	**619**	**666**	**688**	**841**	**5270 J**
Benzo(g,h,i)perylene	**2350**	**1390**	**949**	**5540**	**1130**	**1370**	**1180**	**2330**	**6150 J**
Benzo(k)fluoranthene	**838**	**547**	**544**	**654**	**551**	**580**	**673**	**620**	**6510 J**
C1-Chrysene	**725**	**342**	**244**	**560**	**331**	**325**	**385**	**292**	**1780 J**
C1-Fluoranthenes/Pyrenes	**3250**	**1350**	**1020**	**3120**	**1110**	**1270**	**1180**	**1260**	**5620 J**
C1-Fluorenes	**1440**	**457**	**727**	**880**	**250**	**436**	**240**	**418**	**755 J**
C1-Naphthalenes	**881**	**458**	**343**	**526**	**244**	**390**	**143**	**304**	**636 J**
C1-Phenanthrenes/Anthracenes	**1830**	**537**	**375**	**851**	**339**	**469**	**449**	**452**	**2220 J**
C2-Chrysenes	**481**	**264**	**138**	**519**	**260**	**240**	**286**	**209**	**597 J**
C2-Fluorenes	**850**	**260**	**145**	**539**	**179**	**230**	**189**	**201**	**307 J**
C2-Naphthalenes	**1480**	**589**	**404**	**797**	**258**	**426**	**239**	**357**	**585 J**
C2-Phenanthrenes/Anthracenes	**1060**	**378**	**227**	**508**	**251**	**296**	**375**	**242**	**656 J**
C3-Chrysenes	**496**	**262**	**118**	**537**	**261**	**225**	**280**	**213**	**485 J**
C3-Fluorenes	**670**	**259**	**126**	**448**	**201**	**198**	**255**	**172**	**698 J**
C3-Naphthalenes	**4520**	**967**	**474**	**2930**	**650**	**807**	**988**	**729**	**715**
C3-Phenanthrenes/Anthracenes	**743**	**272**	**113**	**408**	**205**	**191**	**342**	**182**	**286 J**
C4-Chrysenes	**322**	**175**	**93.2**	**352**	**188**	**154**	**192**	**132**	**203**
C4-Naphthalenes	**1220**	**448**	**224**	**820**	**268**	**330**	**344**	**271**	**333**
C4-Phenanthrenes/Anthracenes	**671**	**286**	**105**	**435**	**291**	**224**	**392**	**198**	**217**
Chrysene	**1400**	**714**	**819**	**856**	**614**	**679**	**856**	**688**	**8150 J**
Dibenzo(a,h)anthracene	**155**	**97.5**	**99.1**	**80.4**	**103**	**98.8**	**126**	**114**	**1300 J**
Fluoranthene	**5400**	**2950**	**2500**	**6980**	**1900**	**2960**	**2170**	**3310**	**27300 J**
Fluorene	**981**	**620**	**590**	**932**	**284**	**593**	**184**	**535**	**2540 J**
Indeno(1,2,3-c,d)pyrene	**1080**	**671**	**553**	**1830**	**578**	**681**	**676**	**1010**	**5880 J**
Naphthalene	**1240**	**1430**	**3490**	**1670**	**568**	**1220**	**304**	**957**	**2540**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB011	PB013.1	PB013.2	PB015	PB016	PB016	PB018	PB019	PB022
Sample ID:	PB011-1SS010-091028-N	PB013.1-1SS010-091028-N	PB013.2-1SS010-091028-N	PB015-1SS010-091028-N	PB016-1SS010-091101-N	PB016-1SS010-091102-N	PB018-1SS010-091101-N	PB019-1SS010-091101-N	PB022-1SS010-091101-D
Sample Date:	10/28/2009	10/28/2009	10/28/2009	10/28/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	FD
X:	3201727.2504	3201333.4751	3201420.5786	3201223.8464	3201140.0114	3201140.0114	3201146.8550	3201281.6017	3201174.1294
Y:	13836239.7593	13836187.7023	13836111.1432	13836229.0694	13836081.5392	13836081.5392	13835702.1476	13835711.9947	13835456.7389
Chlorobenzene	**1610**	1.38 U	**43.5 J**	**9.26**	**0.903 J**	--	**1.08 J**	**0.856 J**	1.27 U
Ethylbenzene	122 U	1.38 U	62 U	**1.32 J**	1.3 U	--	1.16 U	1.51 U	1.27 U
Isopropylbenzene (Cumene)	**83.2 J**	1.38 U	62 U	**4.65**	1.3 U	--	**0.865 J**	1.51 U	1.27 U
m,p-Xylene	243 U	2.76 U	124 U	5.18 U	2.59 U	--	2.32 U	3.02 U	2.54 U
n-Butylbenzene	122 U	1.38 U	62 U	2.59 U	1.3 U	--	1.16 U	1.51 U	1.27 U
n-Propylbenzene	122 U	1.38 U	62 U	2.59 U	1.3 U	--	1.16 U	1.51 U	1.27 U
o-Xylene	122 U	1.38 U	62 U	2.59 U	1.3 U	--	1.16 U	1.51 U	1.27 U
sec-Butylbenzene	122 U	1.38 U	62 U	2.59 U	1.3 U	--	1.16 U	1.51 U	1.27 U
tert-Butylbenzene	122 U	1.38 U	62 U	2.59 U	1.3 U	--	1.16 U	1.51 U	1.27 U
Toluene	243 U	2.76 U	124 U	**4.34 J**	2.59 U	--	2.32 U	3.02 U	2.54 U
Total Xylene (U = 1/2)	243 U	2.76 U	124 U	5.18 U	2.59 U	--	2.32 U	3.02 U	2.54 U
Aromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	**301**	**204**	**115**	**152**	**218**	--	**256**	**200**	**187**
Acenaphthene	**1090**	**604**	**283**	**291**	**605**	--	**873**	**603**	**326**
Acenaphthylene	**1990**	**971**	**569**	**781**	**1200**	--	**1630**	**1140**	**806**
Anthracene	**702**	**300**	**161**	**342**	**393**	--	**588**	**355**	**300**
Benzo(a)anthracene	**610**	**411**	**242**	**379**	**481**	--	**2830**	**395**	**548**
Benzo(a)pyrene	**919**	**580**	**363**	**679**	**917**	--	**2990**	**701**	**804**
Benzo(b)fluoranthene	**658**	**606**	**353**	**506**	**659**	--	**2640**	**552**	**693**
Benzo(e)pyrene	**824**	**636**	**342**	**564**	**682**	--	**2050**	**570**	**625**
Benzo(g,h,i)perylene	**2280**	**1500**	**746**	**1190**	**1680**	--	**3100**	**1320**	**1040**
Benzo(k)fluoranthene	**490**	**533**	**298**	**423**	**561**	--	**2220**	**454**	**614**
C1-Chrysene	**424**	**250**	**130**	**343**	**285**	--	**895**	**231**	**318**
C1-Fluoranthenes/Pyrenes	**1930**	**1040**	**499**	**1180**	**1140**	--	**2740**	**954**	**968**
C1-Fluorenes	**664**	**385**	**262**	**266**	**371**	--	**562**	**402**	**289**
C1-Naphthalenes	**458**	**284**	**160**	**213**	**293**	--	**359**	**285**	**258**
C1-Phenanthrenes/Anthracenes	**616**	**355**	**187**	**411**	**456**	--	**674**	**381**	**375**
C2-Chrysenes	**334**	**169**	**82**	**275**	**173**	--	**438**	**154**	**196**
C2-Fluorenes	**390**	**146**	**74.3**	**193**	**194**	--	**263**	**154**	**139**
C2-Naphthalenes	**618**	**277**	**162**	**260**	**322**	--	**371**	**331**	**250**
C2-Phenanthrenes/Anthracenes	**458**	**180**	**105**	**309**	**257**	--	**528**	**218**	**198**
C3-Chrysenes	**346**	**182**	**73.1**	**286**	**164**	--	**359**	**158**	**190**
C3-Fluorenes	**315**	**141**	**69.5**	**205**	**175**	--	**234**	**138**	**139**
C3-Naphthalenes	**1290**	**554**	**240**	**933**	**758**	--	**1330**	**426**	**525**
C3-Phenanthrenes/Anthracenes	**376**	**115**	**67.3**	**246**	**174**	--	**317**	**139**	**137**
C4-Chrysenes	**253**	**118**	**57.9**	**199**	**106**	--	**188**	**112**	**113**
C4-Naphthalenes	**549**	**205**	**102**	**312**	**251**	--	**330**	**198**	**188**
C4-Phenanthrenes/Anthracenes	**396**	**164**	**76.5**	**347**	**182**	--	**232**	**145**	**151**
Chrysene	**814**	**606**	**379**	**560**	**677**	--	**3300**	**571**	**767**
Dibenzo(a,h)anthracene	**81.5**	**97**	**53.7**	**81**	**116**	--	**400**	**90.4**	**144**
Fluoranthene	**4220**	**2400**	**1290**	**1770**	**3250**	--	**8060**	**2520**	**2190**
Fluorene	**780**	**437**	**248**	**245**	**440**	--	**614**	**490**	**335**
Indeno(1,2,3-c,d)pyrene	**847**	**718**	**367**	**546**	**836**	--	**1980**	**652**	**694**
Naphthalene	**1920**	**838**	**960**	**477**	**936**	--	**2060**	**1530**	**606**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB022	PB023	PB023	PB024	PB026	PB028	PB032	PB034	PB037
Sample ID:	PB022-1SS010-091101-N	PB023-1SS010-091030-D	PB023-1SS010-091030-N	PB024-1SS010-091030-N	PB026-1SS010-091030-N	PB028-1SS010-091030-N	PB032-1SS010-091030-N	PB034-1SS010-091030-N	PB037-1SS010-091030-N
Sample Date:	11/1/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N	N	N	N	N	N
X:	3201174.1294	3201315.1973	3201315.1973	3201180.8567	3201331.5617	3201355.6226	3201368.6522	3201387.6450	3201399.4292
Y:	13835456.7389	13835429.2411	13835429.2411	13835181.4775	13835155.0673	13834855.4834	13834541.6071	13834242.2769	13833936.8351
Chlorobenzene	1.23 U	**0.783 J**	1.18 U	**2.42**	**14400**	**14.7**	1620 U	**329**	**231 J**
Ethylbenzene	1.23 U	1.25 U	1.18 U	1.16 U	**361**	3.84 U	1620 U	**58.3**	283 U
Isopropylbenzene (Cumene)	**0.858 J**	1.25 U	1.18 U	**2.27**	**4780**	**7.04**	**1380 J**	**17.2**	**2330**
m,p-Xylene	2.45 U	2.5 U	2.36 U	2.31 U	**688 J**	7.68 U	3250 U	**22.6**	566 U
n-Butylbenzene	1.23 U	1.25 U	1.18 U	1.16 UJ	**201 J**	3.84 U	1620 U	**6.75**	283 U
n-Propylbenzene	1.23 U	1.25 U	1.18 U	1.16 U	**216 J**	3.84 U	1620 U	**28**	283 U
o-Xylene	1.23 U	1.25 U	1.18 U	1.16 U	**256 J**	3.84 U	1620 U	**5.48 J**	283 U
sec-Butylbenzene	1.23 U	1.25 U	1.18 U	1.16 UJ	360 U	3.84 U	1620 U	**7.24**	283 U
tert-Butylbenzene	1.23 U	1.25 U	1.18 U	1.16 U	**369**	3.84 U	1620 U	6.35 U	283 U
Toluene	2.45 U	2.5 U	2.36 U	2.31 U	719 U	7.68 U	3250 U	12.7 U	566 U
Total Xylene (U = 1/2)	2.45 U	2.5 U	2.36 U	2.31 U	**944 J**	7.68 U	3250 U	**28.08 J**	566 U
Aromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	**289**	**101**	**110**	**252**	**3830**	**55.2**	**1320**	**266**	**164**
Acenaphthene	**316**	**331**	**278**	**595**	**6410**	**133**	**641**	**1690**	**439**
Acenaphthylene	**709**	**651**	**711**	**1520**	**6860**	**193**	**1420**	**2190**	**852**
Anthracene	**307**	**230**	**218**	**511**	**3570**	**99.3**	**1120**	**3290**	**812**
Benzo(a)anthracene	**668**	**217**	**215**	**677 J**	**1210**	**137**	**1430**	**1000**	**809**
Benzo(a)pyrene	**850**	**504**	**517**	**1020**	**2500**	**221**	**13600**	**803**	**909**
Benzo(b)fluoranthene	**712**	**271**	**261**	**766**	**697**	**153**	**2770**	**562**	**822**
Benzo(e)pyrene	**702**	**380**	**393**	**818**	**1160**	**197**	**6410**	**622**	**716**
Benzo(g,h,i)perylene	**951**	**1320**	**1420**	**1400**	**3350**	**343**	**29000**	**847**	**827**
Benzo(k)fluoranthene	**584**	**220**	**227**	**676 J**	**583**	**146**	**2440**	**519**	**650**
C1-Chrysene	**672**	**124**	**122**	**572**	**919**	**175**	**312**	**803**	**585**
C1-Fluoranthenes/Pyrenes	**1230**	**656**	**708**	**1630**	**5800**	**480**	**5390**	**5200**	**2340**
C1-Fluorenes	**280**	**286**	**311**	**483**	**4820**	**119**	**1380**	**3440**	**718**
C1-Naphthalenes	**334**	**138**	**147**	**372**	**6440**	**76.6**	**1620**	**1410**	**259**
C1-Phenanthrenes/Anthracenes	**879**	**203**	**210**	**732**	**5580**	**202 J**	**1150 J**	**4450 J**	**1250 J**
C2-Chrysenes	**324**	**91.7**	**86.1**	**338**	**713**	**138**	**205**	**490**	**393**
C2-Fluorenes	**218**	**104**	**114**	**265**	**2420**	**158**	**453**	**2120**	**587**
C2-Naphthalenes	**315**	**167**	**174**	**454**	**6810**	**106**	**1420**	**4810**	**837**
C2-Phenanthrenes/Anthracenes	**428**	**129**	**136**	**350**	**2950**	**188 J**	**642 J**	**1810 J**	**875 J**
C3-Chrysenes	**220**	**88.9**	**92.4**	**296**	**714**	**123**	**227**	**462**	**491**
C3-Fluorenes	**229**	**88.4**	**97.9**	**208**	**1430**	**151**	**332**	**1140**	**559**
C3-Naphthalenes	**502**	**426**	**480**	**1110**	**19000**	**594**	**2660**	**33600**	**3560**
C3-Phenanthrenes/Anthracenes	**167**	**78.5**	**83.4**	**213**	**1610**	**185 J**	**346 J**	**817 J**	**939 J**
C4-Chrysenes	**135**	**76.6**	**81.5**	**187**	**2550**	**92.2**	**1240**	**319**	**305**
C4-Naphthalenes	**172**	**157**	**174**	**379**	**5460**	**294**	**1080**	**4880**	**873**
C4-Phenanthrenes/Anthracenes	**160**	**87.1**	**101**	**233**	**1020**	**153 J**	**240 J**	**677 J**	**823 J**
Chrysene	**996**	**289**	**307**	**990**	**1320**	**221**	**1590**	**1170**	**1120**
Dibenzo(a,h)anthracene	**160**	**33.8**	**28.1**	**147**	**51.6**	**28.1**	**345**	**94.4**	**152**
Fluoranthene	**1980**	**1760**	**1830**	**3050**	**12700**	**536**	**28800**	**3880**	**2200**
Fluorene	**306**	**261**	**291**	**570**	**7570**	**81.9**	**1980**	**613**	**267**
Indeno(1,2,3-c,d)pyrene	**638**	**479**	**506**	**787**	**1050**	**163**	**9910**	**475**	**621**
Naphthalene	**633**	**1250**	**1990**	**795**	**11300**	**133**	**4580**	**487**	**252**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB041	PB043	PB044	PB047.1	PB047.2	PB048	PB049	PB049	PB053
Sample ID:	PB041-1SS010-091030-N	PB043-1SS010-091030-N	PB044-1SS010-091030-N	PB047.1-1SS010-091030-N	PB047.2-1SS010-091030-N	PB048-1SS010-091031-N	PB049-1SS010-091031-D	PB049-1SS010-091031-N	PB053-1SS010-091031-N
Sample Date:	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/31/2009	10/31/2009	10/31/2009	10/31/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	FD	N	N
X:	3201410.6060	3201451.0315	3201663.5416	3201454.2006	3201656.8574	3201635.5547	3201435.3433	3201435.3433	3201421.7211
Y:	13833634.6932	13833347.5606	13833285.4731	13833042.2356	13833055.7842	13832859.6311	13832751.7292	13832751.7292	13832443.5506
Chlorobenzene	**4.87**	2.18 U	2.54 U	1.74 U	2.42 U	3.18 U	102 U	1.48 U	893 U
Ethylbenzene	2.99 U	2.18 U	**2.07 J**	1.74 U	2.42 U	3.18 U	102 U	1.48 U	**4090**
Isopropylbenzene (Cumene)	**9.99**	**16.9**	**169**	**7.73**	**1.67 J**	3.18 U	**338 J**	**57.2 J**	**106000**
m,p-Xylene	5.98 U	4.37 U	**4.19 J**	3.49 U	4.83 U	6.36 U	204 U	2.96 U	**8960**
n-Butylbenzene	2.99 U	2.18 U	**4.12**	1.74 U	2.42 U	3.18 U	102 U	**1.01 J**	**1410**
n-Propylbenzene	2.99 U	2.18 U	**5.46**	1.74 U	2.42 U	3.18 U	102 U	**1.74**	**1280**
o-Xylene	2.99 U	2.18 U	**2.16 J**	1.74 U	2.42 U	3.18 U	102 U	1.48 U	**5210**
sec-Butylbenzene	2.99 U	2.18 U	**4.24**	1.74 U	2.42 U	3.18 U	102 U	**0.825 J**	**1320**
tert-Butylbenzene	**2.2 J**	2.18 U	**15.6**	1.74 U	2.42 U	3.18 U	102 U	**1.65**	**3300**
Toluene	5.98 U	4.37 U	5.08 U	3.49 U	4.83 U	6.36 U	204 U	2.96 U	1780 U
Total Xylene (U = 1/2)	5.98 U	4.37 U	**6.35 J**	3.49 U	4.83 U	6.36 U	204 U	2.96 U	**14170**
Aromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	**231**	**52.5**	**137**	**106**	**55.6**	**46.1**	**108 J**	**52.9**	**32000**
Acenaphthene	**686**	**176**	**714**	**113**	**49.1**	**47.8**	**166 J**	**140**	**9770**
Acenaphthylene	**969**	**638**	**1010**	**1340**	**310**	**329**	**522 J**	**329**	**10900**
Anthracene	**1230**	**447**	**1370**	**453**	**128**	**136**	**604 J**	**327**	**15700**
Benzo(a)anthracene	**1370**	**995**	**988**	**1340**	**410**	**406**	**431 J**	**600**	**3780**
Benzo(a)pyrene	**1350**	**1160**	**1080**	**1440**	**637**	**625**	**400 J**	**703**	**2590**
Benzo(b)fluoranthene	**1330**	**1020**	**990**	**1160**	**638**	**638**	**358 J**	**629**	**1190**
Benzo(e)pyrene	**1030**	**823**	**821**	**1040**	**539**	**557**	**368**	**500**	**1470**
Benzo(g,h,i)perylene	**1010**	**890**	**826**	**988**	**624**	**646**	**308 J**	**517**	**944**
Benzo(k)fluoranthene	**1130**	**920**	**894**	**1050**	**603**	**579**	**282 J**	**541**	**1020**
C1-Chrysene	**800**	**537**	**611**	**880**	**301**	**340**	**440**	**351**	**2640**
C1-Fluoranthenes/Pyrenes	**2930**	**1690**	**2800**	**3030**	**783**	**956**	**1430**	**1140**	**22500**
C1-Fluorenes	**1220**	**397**	**1190**	**448**	**95.9**	**104**	**471 J**	**262**	**14600**
C1-Naphthalenes	**379**	**89.5**	**434**	**162**	**75.3**	**57.8**	**259 J**	**125**	**36400**
C1-Phenanthrenes/Anthracenes	**1620 J**	**600 J**	**1640 J**	**741 J**	**197 J**	**207**	**762 J**	**431**	**24500**
C2-Chrysenes	**595**	**311**	**326**	**542**	**223**	**254**	**286**	**209**	**1230**
C2-Fluorenes	**892**	**381**	**693**	**553**	**107**	**144**	**464 J**	**237**	**9030**
C2-Naphthalenes	**1200**	**452**	**1370**	**352**	**114**	**114**	**571 J**	**307**	**23200**
C2-Phenanthrenes/Anthracenes	**1240 J**	**451 J**	**854 J**	**1010 J**	**193 J**	**249**	**779 J**	**419**	**13900**
C3-Chrysenes	**543**	**286**	**312**	**567**	**231**	**253**	**288**	**207**	**1160**
C3-Fluorenes	**763**	**342**	**438**	**669**	**156**	**209**	**453 J**	**241**	**5960**
C3-Naphthalenes	**5700**	**4760**	**4820**	**2160**	**473**	**690**	**2120**	**985**	**41600**
C3-Phenanthrenes/Anthracenes	**911 J**	**374 J**	**481 J**	**1010 J**	**176 J**	**247**	**615 J**	**326**	**6960**
C4-Chrysenes	**325**	**149**	**176**	**326**	**134**	**195**	**190**	**124**	**698**
C4-Naphthalenes	**1210**	**639**	**861**	**657**	**169**	**217**	**649**	**344**	**15100**
C4-Phenanthrenes/Anthracenes	**782 J**	**354 J**	**424 J**	**988 J**	**262 J**	**358**	**570 J**	**317**	**4100**
Chrysene	**1660**	**1260**	**1350**	**1630**	**618**	**596**	**608 J**	**728**	**3760**
Dibenzo(a,h)anthracene	**239**	**217**	**188**	**227**	**126**	**121**	**75**	**120**	**200**
Fluoranthene	**3220**	**2460**	**2730**	**2740**	**1020**	**1140**	**984 J**	**1410**	**12100**
Fluorene	**236**	**181**	**150**	**119**	**66.2**	**56.8**	**119 J**	**77**	**21500**
Indeno(1,2,3-c,d)pyrene	**964**	**853**	**763**	**915**	**541**	**526**	**250 J**	**475**	**670**
Naphthalene	**448**	**70.8**	**269**	**174**	**109**	**125**	**187 J**	**103**	**45100**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB056	PB057	PB059.1	PB059.2	PB063.1	PB063.2	PB064	PB066	PB069
Sample ID:	PB056-1SS010-091031-N	PB057-1SS010-091031-N	PB059.1-1SS010-091102-N	PB059.2-1SS010-091031-N	PB063.1-1SS010-091031-N	PB063.2-1SS010-091102-N	PB064-1SS010-091102-N	PB066-1SS010-091101-N	PB069-1SS010-091101-N
Sample Date:	10/31/2009	10/31/2009	11/2/2009	10/31/2009	10/31/2009	11/2/2009	11/2/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3201402.6901	3201634.7257	3201531.6282	3201640.7239	3201497.4803	3201553.0822	3201628.7185	3201431.2755	3201160.2007
Y:	13832184.9773	13832087.9098	13831850.4179	13831857.0149	13831523.9045	13831552.2764	13831275.6688	13831275.6811	13830971.1845
Chlorobenzene	2.38 U	1.59 U	1.32 U	1.47 U	93.8 U	1.44 U	1.08 U	1.33 U	**0.856 J**
Ethylbenzene	**2.06 J**	1.59 U	**0.933 J**	1.47 U	**76.1 J**	1.44 U	1.08 U	1.33 U	**34.1**
Isopropylbenzene (Cumene)	**25.7**	1.59 U	**37**	**2.52**	**7760**	**18.7**	1.08 U	**69.3**	**6530**
m,p-Xylene	**2.52 J**	3.18 U	2.63 U	2.94 U	188 U	2.88 U	2.16 U	2.66 U	**17**
n-Butylbenzene	**1.49 J**	1.59 U	**1.25 J**	1.47 U	**128**	**0.875 J**	1.08 U	**1.8**	**4.1**
n-Propylbenzene	2.38 U	1.59 U	**3.44**	1.47 U	**236**	**0.825 J**	1.08 U	**3.45**	**11.1**
o-Xylene	2.38 U	1.59 U	**0.725 J**	1.47 U	93.8 U	1.44 U	1.08 U	**0.793 J**	**20.1**
sec-Butylbenzene	2.38 U	1.59 U	**2.04**	1.47 U	**151**	1.44 U	1.08 U	**2.08**	**5.08**
tert-Butylbenzene	**1.48 J**	1.59 U	**9.23**	1.47 U	**448**	**0.969 J**	1.08 U	**5.44**	**17.8**
Toluene	4.76 U	3.18 U	2.63 U	2.94 U	**96.6 J**	2.88 U	2.16 U	2.66 U	6.38 U
Total Xylene (U = 1/2)	**3.71 J**	3.18 U	**2.04 J**	2.94 U	188 U	2.88 U	2.16 U	**2.123 J**	**37.1**
Aromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	**78.6**	**23.5**	**324**	**280**	**486**	**49.1**	**560**	**55.8**	**2520**
Acenaphthene	**122**	**28.4**	**711**	**199**	**4470**	**54.1**	**672**	**66.5**	**6160**
Acenaphthylene	**333**	**89.4**	**3210**	**284**	**3200**	**162**	**125**	**330**	**9830**
Anthracene	**284**	**102**	**1510**	**281**	**4780**	**178**	**675**	**211**	**7040**
Benzo(a)anthracene	**1260**	**692**	**2600**	**312**	**5310**	**457**	**889**	**850**	**2130**
Benzo(a)pyrene	**1650**	**971**	**3060**	**401**	**4780**	**593**	**897**	**1020**	**1240**
Benzo(b)fluoranthene	**1740**	**1070**	**2070**	**384**	**3860**	**648**	**751**	**1070**	**689**
Benzo(e)pyrene	**1240**	**755**	**2070**	**321**	**3000**	**516**	**579**	**814**	**802**
Benzo(g,h,i)perylene	**1180**	**821**	**2840**	**311**	**2990**	**525**	**552**	**844**	**476**
Benzo(k)fluoranthene	**1540**	**861**	**1820**	**312**	**3580**	**592**	**759**	**950**	**585**
C1-Chrysene	**703**	**293**	**1830**	**248**	**1990**	**289**	**257**	**412**	**1730**
C1-Fluoranthenes/Pyrenes	**1600**	**741**	**6800**	**849**	**7740**	**943**	**680**	**1220**	**8730**
C1-Fluorenes	**163**	**50.1**	**2040**	**218**	**3000**	**119**	**72.6**	**279**	**6460**
C1-Naphthalenes	**117**	**29.3**	**530**	**378**	**1610**	**68.3**	**640**	**86.9**	**9040**
C1-Phenanthrenes/Anthracenes	**440**	**153**	**2580**	**294**	**4880**	**183**	**328**	**362**	**8950**
C2-Chrysenes	**432**	**168**	**1190**	**207**	**919**	**188**	**152**	**232**	**1070**
C2-Fluorenes	**217**	**108**	**1730**	**234**	**1900**	**225**	**77**	**265**	**3270**
C2-Naphthalenes	**254**	**53.1**	**1640**	**308**	**4060**	**142**	**268**	**207**	**9690**
C2-Phenanthrenes/Anthracenes	**545**	**202**	**2740**	**323**	**3150**	**296**	**135**	**396**	**4780**
C3-Chrysenes	**425**	**174**	**830**	**240**	**648**	**211**	**174**	**227**	**634**
C3-Fluorenes	**303**	**174**	**1740**	**279**	**1570**	**276**	**146**	**307**	**2680**
C3-Naphthalenes	**663**	**192**	**6990**	**675**	**6870**	**613**	**115**	**855**	**14800**
C3-Phenanthrenes/Anthracenes	**431**	**175**	**2480**	**341**	**2180**	**266**	**82.9**	**364**	**3480**
C4-Chrysenes	**230**	**102**	**348**	**184**	**240**	**171**	**116**	**122**	**287**
C4-Naphthalenes	**309**	**165**	**1960**	**399**	**1990**	**416**	**64.8**	**286**	**3270**
C4-Phenanthrenes/Anthracenes	**415**	**210**	**2360**	**405**	**1560**	**327**	**105**	**321**	**2920**
Chrysene	**1850**	**1050**	**2810**	**473**	**5160**	**726**	**866**	**1180**	**2290**
Dibenzo(a,h)anthracene	**288**	**201**	**470**	**71.5**	**827**	**130**	**133**	**204**	**126**
Fluoranthene	**2260**	**2020**	**5730**	**909**	**13000**	**1320**	**3010**	**2310**	**5090**
Fluorene	**99.6**	**34.7**	**443**	**220**	**1320**	**40.2**	**536**	**75.7**	**1800**
Indeno(1,2,3-c,d)pyrene	**1210**	**846**	**2130**	**279**	**3080**	**510**	**546**	**857**	**392**
Naphthalene	**94.3**	**34.3**	**605**	**622**	**967**	**31.2**	**90**	**93.8**	**4810**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	2011 USC	2011 USC	2011 USC
Location ID:	PB074	PB081	PB093	PB097	PB101	PB068	PB069.1	PB070A
Sample ID:	PB074-1SS010-091101-N	PB081-1SS010-091103-N	PB093-1SS010-091103-N	PB097-1SS010-091103-N	PB101-1SS010-091103-N	PB068-1SS010-20110804-N	PB069.1-1SS008-20110804-N	PB070A-1SS010-20110802-N
Sample Date:	11/1/2009	11/3/2009	11/3/2009	11/3/2009	11/3/2009	8/4/2011	8/4/2011	8/2/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 8 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N
X:	3200828.0183	3200761.3787	3200970.4291	3201103.1242	3201287.2658	3201209.861	3201205.859	3201087.255
Y:	13830463.2171	13830005.1879	13828894.7843	13828566.1540	13828181.2285	13831121.51	13830973.3	13830903.51
Chlorobenzene	1.33 U	-- R	1.07 U	1.04 U	0.816 U	--	--	--
Ethylbenzene	**3.76**	**6290 J**	1.07 U	1.04 U	0.816 U	--	--	--
Isopropylbenzene (Cumene)	**244**	**71400 J**	1.07 U	1.04 U	**5.81**	--	--	--
m,p-Xylene	**3.6**	**9080 J**	2.14 U	2.08 U	1.63 U	--	--	--
n-Butylbenzene	**3.65**	**2370 J**	1.07 U	1.04 U	0.816 U	--	--	--
n-Propylbenzene	**10.8**	**2890 J**	1.07 U	1.04 U	0.816 U	--	--	--
o-Xylene	**1.24 J**	**3790 J**	1.07 U	1.04 U	**0.555 J**	--	--	--
sec-Butylbenzene	**3.83**	**618 J**	1.07 U	1.04 U	0.816 U	--	--	--
tert-Butylbenzene	**8.26**	**665 J**	1.07 U	1.04 U	0.816 U	--	--	--
Toluene	2.66 U	**7140 J**	2.14 U	2.08 U	1.63 U	--	--	--
Total Xylene (U = 1/2)	**4.84 J**	**12870 J**	2.14 U	2.08 U	**1.37 J**	--	--	--
Aromatic Hydrocarbons (µg/kg)								
2-Methylnaphthalene	**40.9**	**179000**	**9.61**	**4.27 J**	**12.9**	**1710**	**81.1**	**43.4**
Acenaphthene	**172**	**41900**	**29.8**	**6.4**	**55.1**	**8800**	**202**	**113**
Acenaphthylene	**283**	**88300**	**60.8**	**28.3**	**43.4**	**7240**	**1310**	**302**
Anthracene	**204**	**54200**	**23.9**	**18.2**	**73.4**	**6690**	**859**	**239**
Benzo(a)anthracene	**279**	**15100**	**121**	**106**	**415**	**1930**	**1190**	**384**
Benzo(a)pyrene	**250**	**8710**	**176**	**102**	**460**	**1570**	**1060**	**551 J**
Benzo(b)fluoranthene	**255**	**3530**	**201**	**145**	**515**	**1300**	**973**	**675 J**
Benzo(e)pyrene	**201**	**5130**	**140**	**100**	**368**	**1400**	**771**	**527**
Benzo(g,h,i)perylene	**172**	**2360**	**157**	**112**	**376**	**802**	**650**	**510 J**
Benzo(k)fluoranthene	**216**	**4120**	**154**	**111**	**412**	**959**	**846**	**513 J**
C1-Chrysene	**183**	**8190**	**59.2**	**40.8**	**163**	**1520**	**605**	**279**
C1-Fluoranthenes/Pyrenes	**664**	**60500**	**114**	**82.9**	**276**	**9530**	**2450**	**743**
C1-Fluorenes	**245**	**49100**	**18.8**	**5.82**	**19.9**	**7200**	**428**	**249**
C1-Naphthalenes	**90.2**	**201000**	**22.7**	**5.76**	**20.4**	**6480**	**107**	**76.4**
C1-Phenanthrenes/Anthracenes	**313**	**78500**	**46.2**	**30.9**	**171**	**11300**	**1060**	**906**
C2-Chrysenes	**116**	698 U	**59.1**	**21**	**82.1**	**930**	**359**	**212**
C2-Fluorenes	**198**	**17400**	**21.1**	**11.6**	**26.6**	**7690**	**732**	**481**
C2-Naphthalenes	**262**	**65700**	**34.1**	**9.22**	**28.7**	**10200**	**411**	**542**
C2-Phenanthrenes/Anthracenes	**329**	**16300**	**44.4**	**28.3**	**86**	**8740**	**1320**	**848**
C3-Chrysenes	**144**	698 U	**113**	**45.6**	**104**	**913**	**316**	**231**
C3-Fluorenes	**233**	**6510**	**25**	4.36 U	**76.1**	**6740**	**980**	**531**
C3-Naphthalenes	**539**	**121000**	**40.1**	**15.1**	**34.1**	**19000**	**1440**	**800**
C3-Phenanthrenes/Anthracenes	**307**	**4200**	**35.9**	**21.6**	**44.4**	**6430**	**1210**	**482**
C4-Chrysenes	**92.6**	698 U	**86**	4.36 U	**68.2**	107 U	23.4 U	**192**
C4-Naphthalenes	**206**	**10000**	**19.8**	**8.2**	**13.7**	**6960**	**414**	**611**
C4-Phenanthrenes/Anthracenes	**268**	**2200**	**27.9**	**8.94**	**25.7**	**4070**	**860**	**253**
Chrysene	**345**	**13400**	**185**	**138**	**551**	**2260**	**1300**	**696 J**
Dibenzo(a,h)anthracene	**43.2**	**668 J**	**36.7**	**26.3**	**96.3**	**176**	**165**	**116**
Fluoranthene	**856**	**36500**	**263**	**248**	**1070**	**5710**	**2650**	**1150**
Fluorene	**84.5**	**112000**	**13.4**	**4.38**	**33.6**	**10400**	**214**	**94.3**
Indeno(1,2,3-c,d)pyrene	**168**	**1830**	**158**	**118**	**400**	**749**	**615**	**505 J**
Naphthalene	**62.8**	**413000**	**32.8**	**5.14**	**11.7**	**6660**	**102**	**70**

Appendix A-1
BERA Sediment Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB076.1	PB081.1	PB081.1	PB082
Sample ID:	PB076.1-1SS010-20110802-N	PB081.1-1SS010-20110803-D	PB081.1-1SS010-20110803-N	PB082-1SS010-20110803-N
Sample Date:	8/2/2011	8/3/2011	8/3/2011	8/3/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N
X:	3200744.033	3200772.123	3200772.123	3200751.881
Y:	13830426.95	13829983.6	13829983.6	13829914.32
Chlorobenzene	--	--	--	--
Ethylbenzene	--	--	--	--
Isopropylbenzene (Cumene)	--	--	--	--
m,p-Xylene	--	--	--	--
n-Butylbenzene	--	--	--	--
n-Propylbenzene	--	--	--	--
o-Xylene	--	--	--	--
sec-Butylbenzene	--	--	--	--
tert-Butylbenzene	--	--	--	--
Toluene	--	--	--	--
Total Xylene (U = 1/2)	--	--	--	--
Aromatic Hydrocarbons (µg/kg)				
2-Methylnaphthalene	**63**	**53000**	**41000**	**44.8**
Acenaphthene	**293**	**23700**	**19800**	**548 J**
Acenaphthylene	**332**	**39400**	**32800**	**1460 J**
Anthracene	**896**	**31800**	**23600**	**1190 J**
Benzo(a)anthracene	**2050**	**5870**	**5060**	**508 J**
Benzo(a)pyrene	**2070**	**3100**	**2880**	**349 J**
Benzo(b)fluoranthene	**2400**	**1400**	**1180**	**254 J**
Benzo(e)pyrene	**1690**	**1840**	**1700**	**287 J**
Benzo(g,h,i)perylene	**1510**	**830**	**819**	**182 J**
Benzo(k)fluoranthene	**2020**	**1230**	**1220**	**193 J**
C1-Chrysene	**721**	**3320**	**2890**	**480 J**
C1-Fluoranthenes/Pyrenes	**2570**	**26200**	**22000**	**2260 J**
C1-Fluorenes	**539**	**23600**	**19500**	**1310 J**
C1-Naphthalenes	**79.2**	**74400**	**58700**	**123**
C1-Phenanthrenes/Anthracenes	**1030**	**36700**	**29100**	**1190 J**
C2-Chrysenes	**384**	**1310**	**1160**	**434 J**
C2-Fluorenes	**1230**	**10400**	**9020**	**1160 J**
C2-Naphthalenes	**404**	**36800**	**31200**	**1040 J**
C2-Phenanthrenes/Anthracenes	**1470**	**11600**	**9350**	**1790 J**
C3-Chrysenes	**326**	**924**	**699**	**380 J**
C3-Fluorenes	**1080**	**5790**	**4620**	**1160 J**
C3-Naphthalenes	**1120**	**76000**	**64000**	**3560 J**
C3-Phenanthrenes/Anthracenes	**836**	**5450**	**4190**	**1580 J**
C4-Chrysenes	**188**	108 U	102 U	**292**
C4-Naphthalenes	**911**	**7250**	**5860**	**835 J**
C4-Phenanthrenes/Anthracenes	**361**	**2900**	**2420**	**942 J**
Chrysene	**2830**	**5580**	**4810**	**622 J**
Dibenzo(a,h)anthracene	**413**	**227**	**202**	**34.8 J**
Fluoranthene	**5610**	**16800**	**13600**	**1410 J**
Fluorene	**132**	**43200**	**33900**	**78.3**
Indeno(1,2,3-c,d)pyrene	**1740**	**709**	**636**	**136**
Naphthalene	**93.3**	**96300**	**73800**	**114**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB001.1	PB001.2	PB001.3	PB002	PB004	PB005	PB007.1	PB007.2	PB009
Sample ID:	PB001.1-1SS010-091027-N	PB001.2-1SS010-091027-N	PB001.3-1SS010-091027-N	PB002-1SS010-091027-N	PB004-1SS010-091027-N	PB005-1SS010-091027-N	PB007.1-1SS010-091028-N	PB007.2-1SS010-091028-N	PB009-1SS010-091028-N
Sample Date:	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/28/2009	10/28/2009	10/28/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3202382.3842	3202624.0211	3202754.9026	3202606.9920	3202330.4788	3202262.1385	3202065.5011	3202037.3755	3201747.2539
Y:	13836546.3402	13836566.3557	13836489.4987	13836435.6794	13836348.7826	13836144.2614	13836300.0036	13836110.2965	13836119.3947
Perylene	285	223	178	309	187	185	226	210	2240 J
Phenanthrene	3710	2570	2510	3960	1230	2530	1240	2360	21500 J
Pyrene	9990	5450	3620	17800	3260	5450	3150	6110	22800 J
Total 10 of 17 HPAH (U = 1/2)	24653	13609.5	11006.1	37041.4	9679	13657.8	10933	16321	101530 J
Total 17 PAH (U = 1/2)	36330	21381.5	19625.1	50117.4	13321	21094.8	13899	22798	136804 J
Total 7 of 17 LPAH (U = 1/2)	11677	7772	8619	13076	3642	7437	2966	6477	35274 J
Total cPAH TEF (7 minimum) (U = 1/2)	1780.3	938.69	916.7	2134.1	773.24	994.47	1082.66	1201.58	10589.5 J
Semivolatile Organics (µg/kg)									
2,2'-Oxybis (1-chloropropane)	528 U	488 U	321 U	366 U	514 U	406 U	766 U	360 U	313 U
Benzidine	1060 UJ	976 UJ	641 UJ	731 UJ	1030 UJ	812 UJ	-- R	720 UJ	625 UJ
Bis(2-ethylhexyl) phthalate	5370	1460	693	2060	1070	1240	11800 J	1040	963 J
Cholesterol	--	--	--	--	--	--	--	--	--
Di-n-octyl phthalate	528 U	488 U	321 U	366 U	514 U	406 U	766 U	360 U	313 U
Coprostanol	--	--	--	--	--	--	--	--	--
Hexachlorobenzene	7300	2400	150000	8900	520 J	1800 J	2900 J	1200	20000
Hexachlorobutadiene	19000	16000	310000	32000	1900 J	6800 J	1300 J	5400	27000
Hexachloroethane	860	1200	21000	1400	170 J	540 J	110 J	410	4100
PCB Congeners (ng/kg)									
PCB-001	11400	4270	2140	8390	1760	3480	1550	2940	2770
PCB-002	585	481	265	635	187	380	182	276	490
PCB-003	5970	3160	1420	6420	1420	2770	1350	2220	2360
PCB-004	40900 J	9320 J	4070 J	17900 J	7500 J	10900 J	6910 J	13600 J	6010 J
PCB-005	1070 J	276 J	138 J	434 J	134 J	247 J	213 J	281 J	260 J
PCB-006	14700 J	11400 J	3030 J	11100 J	2990 J	4300 J	2630 J	4220 J	2810 J
PCB-007	2480 J	687 J	313 J	1250 J	364 J	611 J	419 J	676 J	521 J
PCB-008	81500 J	21300 J	9420 J	38800 J	13200 J	20300 J	15400 J	21300 J	14300 J
PCB-009	3600 J	1040 J	456 J	1920 J	578 J	928 J	630 J	998 J	744 J
PCB-010	1400 J	247 J	113 J	366 J	148 J	206 J	188 J	264 J	157 J
PCB-011	841 J	680 J	8.93 U	499 J	315 J	464 J	314 J	8.47 U	390 J
PCB-012/013	6980 J	3900 J	1410 J	3970 J	1470 J	2200 J	1400 J	1960 J	1810 J
PCB-014	210 J	8.93 U	537 J	251 J	62.4 J	128 J	51.4 J	79.7 J	205 J
PCB-015	42700 J	14700 J	7240 J	24400 J	9260 J	13600 J	10700 J	13900 J	11800 J
PCB-016	129000 J	25600 J	8570	32500 J	15100	19100 J	25900 J	20800 J	12700
PCB-017	148000 J	39600 J	13500	62000 J	30800 J	36700 J	37800 J	38800 J	23600 J
PCB-018/030	17.9 UJ	86600 J	26800 J	119000 J	60300 J	75600 J	90900 J	71900 J	41900 J
PCB-019	33200 J	6290	2140	9130	4680	5950	6890	7320	3620
PCB-020/028	381000 J	105000 J	38800 J	160000 J	78100 J	96600 J	101000 J	106000 J	70500 J
PCB-021/033	219000 J	46400 J	19900 J	87700 J	44900 J	54800 J	44500 J	56300 J	35200 J
PCB-022	125000 J	25700 J	9590	36900 J	16200	22000 J	26900 J	22700 J	16400 J
PCB-023	8.93 U	40.3	43	54.3	9.62 U	31.4	46 J	42.6	7.58 U
PCB-024	8.93 U	8.93 U	194	746	413	393	469 J	461	317
PCB-025	19800 J	11300	2830	10200	4180	5050	5000	4870	3390
PCB-026/029	60100 J	24200 J	7510	27400 J	12600	15700	16000	16100	11300
PCB-027	21100 J	4690	1650	6560	3610	4160	5030	4850	2820

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB011	PB013.1	PB013.2	PB015	PB016	PB016	PB018	PB019	PB022
Sample ID:	PB011-1SS010-091028-N	PB013.1-1SS010-091028-N	PB013.2-1SS010-091028-N	PB015-1SS010-091028-N	PB016-1SS010-091101-N	PB016-1SS010-091102-N	PB018-1SS010-091101-N	PB019-1SS010-091101-N	PB022-1SS010-091101-D
Sample Date:	10/28/2009	10/28/2009	10/28/2009	10/28/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	FD
X:	3201727.2504	3201333.4751	3201420.5786	3201223.8464	3201140.0114	3201140.0114	3201146.8550	3201281.6017	3201174.1294
Y:	13836239.7593	13836187.7023	13836111.1432	13836229.0694	13836081.5392	13836081.5392	13835702.1476	13835711.9947	13835456.7389
Perylene	209	167	85	176	200	--	784	152	193
Phenanthrene	2990	1880	1060	1160	2090	--	2720	2120	1610
Pyrene	8050	4400	2220	3270	6110	--	11000	4520	3500
Total 10 of 17 HPAH (U = 1/2)	18969.5	11851	6311.7	9404	15287	--	38520	11775.4	10994
Total 17 PAH (U = 1/2)	28742.5	17085	9707.7	12852	21169	--	47261	18213.4	15164
Total 7 of 17 LPAH (U = 1/2)	9773	5234	3396	3448	5882	--	8741	6438	4170
Total cPAH TEF (7 minimum) (U = 1/2)	1195.79	822.56	498.16	878.1	1189.07	--	4030	921.05	1080.97
Semivolatile Organics (µg/kg)									
2,2'-Oxybis (1-chloropropane)	353 U	305 U	268 U	679 U	251 U	--	247 U	290 U	239 U
Benzidine	705 UJ	610 UJ	536 UJ	1360 UJ	-- R	--	-- R	-- R	-- R
Bis(2-ethylhexyl) phthalate	1660	1530	632	1280	949	--	959	991	812
Cholesterol	--	--	--	--	320 U	--	300 U	310 U	--
Di-n-octyl phthalate	353 U	305 U	268 U	679 U	251 U	--	247 U	290 U	239 U
Coprostanol	--	--	--	--	1600 U	--	340 U	310 U	--
Hexachlorobenzene	2700	10000	22000	1500 J	2400	--	8500 J	2500	5200
Hexachlorobutadiene	11000	7900	20000	3200 J	7000 J	--	4600 J	7200 J	2000 J
Hexachloroethane	960	450	1600	180 J	1000	--	470 J	2000	350
PCB Congeners (ng/kg)									
PCB-001	3830	1660	828	1640	--	2920	3710 J	3120	1340
PCB-002	391	232	204	229	--	238	444 J	362	218
PCB-003	3160	1250	781	1530	--	2050	2570	2350	1090
PCB-004	9010 J	5730 J	2750 J	5850 J	--	35500 J	8790 J	6170 J	4490 J
PCB-005	235 J	162 J	113 J	194 J	--	499 J	297 J	213 J	124 J
PCB-006	6800 J	2120 J	1090 J	2540 J	--	8220 J	3380 J	2610 J	1520 J
PCB-007	638 J	372 J	222 J	432 J	--	1320 J	668 J	471 J	263 J
PCB-008	21300 J	11400 J	5310 J	13900 J	--	54200 J	17400 J	13000 J	8090 J
PCB-009	1040 J	577 J	263 J	617 J	--	2040 J	1080 J	698 J	409 J
PCB-010	221 J	128 J	70.7 J	151 J	--	645 J	289 J	196 J	122 J
PCB-011	353 J	244 J	6.85 U	393 J	--	382 J	213 J	328 J	266 J
PCB-012/013	2690 J	1140 J	1000 J	1480 J	--	4320 J	1560 J	1640 J	1030 J
PCB-014	106 J	41.9 J	35 J	52.6 J	--	50.5 J	105 J	114 J	43.9 U
PCB-015	15400 J	8580 J	4260 J	11900 J	--	28900 J	11200 J	10900 J	7040 J
PCB-016	20600 J	11800	5500	20300 J	--	105000 J	18900 J	10900	11800
PCB-017	39300 J	22600 J	9670	35000 J	--	145000 J	26200 J	20100 J	20100 J
PCB-018/030	82300 J	45900 J	19900 J	73900 J	--	541000 J	75900 J	59000 J	52100 J
PCB-019	5340	3680	1640	5270	--	43100 J	4900	2860	3510
PCB-020/028	110000 J	68300 J	33000 J	102000 J	--	384000 J	62600 J	62000 J	59200 J
PCB-021/033	58100 J	33000 J	14500 J	43400 J	--	188000 J	31900 J	29100 J	25900 J
PCB-022	23900 J	15500	7130	23900 J	--	122000 J	15900 J	13800	14300
PCB-023	47.5	29	22.4	9.62 U	--	107	46.8	49.6	27.9
PCB-024	413	282	150	507	--	1490	428	261	251
PCB-025	6790	3050	1530	4550	--	15300	3030	2870	2660
PCB-026/029	19200 J	10100	4790	15000	--	54800 J	10000	9130	8550
PCB-027	4190	2620	1200	4410	--	20500 J	3290	2360	2490

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BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB022	PB023	PB023	PB024	PB026	PB028	PB032	PB034	PB037
Sample ID:	PB022-1SS010-091101-N	PB023-1SS010-091030-D	PB023-1SS010-091030-N	PB024-1SS010-091030-N	PB026-1SS010-091030-N	PB028-1SS010-091030-N	PB032-1SS010-091030-N	PB034-1SS010-091030-N	PB037-1SS010-091030-N
Sample Date:	11/1/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N	N	N	N	N	N
X:	3201174.1294	3201315.1973	3201315.1973	3201180.8567	3201331.5617	3201355.6226	3201368.6522	3201387.6450	3201399.4292
Y:	13835456.7389	13835429.2411	13835429.2411	13835181.4775	13835155.0673	13834855.4834	13834541.6071	13834242.2769	13833936.8351
Perylene	185	94.7	97.9	219	274	976	1750	185	224
Phenanthrene	2080	1180	1370	2730	23700	356 J	12700 J	5750 J	1270 J
Pyrene	3320	3660	3820	5580	27500	1040	66300	8320	3490
Total 10 of 17 HPAH (U = 1/2)	10859	8753.8	9131.1	15093 J	50961.6	2988.1	156185	17670.4	11600
Total 17 PAH (U = 1/2)	15499	12757.8	14099.1	22066 J	114201.6	4039.5 J	179946 J	31956.4 J	15656 J
Total 7 of 17 LPAH (U = 1/2)	4640	4004	4968	6973	63240	1051.4 J	23761 J	14286 J	4056 J
Total cPAH TEF (7 minimum) (U = 1/2)	1136.16	628.97	643.78	1335.2 J	2872.36	285.92	15305.4	1079.74	1225.6
Semivolatile Organics (µg/kg)									
2,2'-Oxybis (1-chloropropane)	242 U	262 U	265 U	284 U	589 U	520 U	339 U	584 U	534 U
Benzidine	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R	2180 J
Bis(2-ethylhexyl) phthalate	812	1010	1980	1920 J	1020 J	458 J	3320 J	1300 J	4780 J
Cholesterol	290 U	--	--	--	--	--	--	--	--
Di-n-octyl phthalate	242 U	262 U	265 U	284 U	589 U	520 U	339 U	584 U	534 U
Coprostanol	290 U	--	--	--	--	--	--	--	--
Hexachlorobenzene	7100	8200	17000	280 J	1200 J	200 J	200000	240	380
Hexachlorobutadiene	2500 J	11000 J	11000 J	1300 J	2000 J	200 J	300000 J	510 J	250 J
Hexachloroethane	410	3400 J	1800	140 J	170 UJ	150 UJ	100 U	170 U	630
PCB Congeners (ng/kg)									
PCB-001	1290 J	5150 J	2110 J	4440	178000 J	1020	23500 J	10400	3680
PCB-002	173 J	556 J	422 J	425	14700 J	125	12800	1940	281
PCB-003	983	2350 J	1610	3190	46900 J	567	17700	6700	2020
PCB-004	4800 J	7060 J	4110 J	8630 J	94800 J	1880 J	7700 J	5930 J	19500 J
PCB-005	101 J	235 J	136 J	307 J	937 J	73.3 J	172 J	300 J	702 J
PCB-006	1480 J	2310 J	1640 J	3610 J	7660 J	773 J	803 J	2520 J	8270 J
PCB-007	245 J	502 J	312 J	658 J	2510 J	143 J	563 J	583 J	1410 J
PCB-008	8380 J	12900 J	8920 J	21600 J	81000 J	4410 J	17600 J	15000 J	49600 J
PCB-009	383 J	721 J	504 J	1000 J	3570 J	238 J	599 J	819 J	2140 J
PCB-010	127 J	275 J	161 J	251 J	2180 J	66.9 J	136 J	214 J	631 J
PCB-011	172 J	255 J	187 J	322 J	3100 J	120 J	45 U	455 J	800 J
PCB-012/013	875 J	1400 J	1000 J	2060 J	18800 J	454 J	5420 J	1780 J	4940 J
PCB-014	24.3 J	269 J	247 J	59.2 J	897 J	23.3 J	267 J	138 J	39.4 J
PCB-015	7320 J	9940 J	7640 J	16300 J	89600 J	3530 J	22700 J	11500 J	27700 J
PCB-016	13100	15000 J	9160	22000 J	50700 J	6190	1240	23100 J	84000 J
PCB-017	22400 J	24100 J	15300 J	30900 J	75800 J	9280	1860	35300 J	108000 J
PCB-018/030	56800 J	70800 J	42100 J	76800 J	149000 J	23000 J	4560	86200 J	281000 J
PCB-019	3670	3430 J	1980	5430	12300 J	1420	405	5450	20800 J
PCB-020/028	62700 J	57700 J	54500 J	97800 J	72500 J	26900 J	5910	128000 J	359000 J
PCB-021/033	26900 J	21800 J	20700 J	43500 J	33200 J	11600	2370	51100 J	199000 J
PCB-022	14300	12800 J	12100	26000 J	18500 J	7030	1490	33100 J	102000 J
PCB-023	22.4	282 J	56.9	52.8	40 UJ	19.9	70.9	87.5	229
PCB-024	277	441 J	280	519	2120 J	158	47.6	582	1890
PCB-025	2700	2340 J	2130	4500	4330 J	1290	597	6060	18400 J
PCB-026/029	8460	8250 J	7850	14200 J	18400 J	4190	1120	19300 J	55300 J
PCB-027	2670	3120 J	1940	4070	12200 J	1230	279	4570	15600

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BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB041	PB043	PB044	PB047.1	PB047.2	PB048	PB049	PB049	PB053
Sample ID:	PB041-1SS010-091030-N	PB043-1SS010-091030-N	PB044-1SS010-091030-N	PB047.1-1SS010-091030-N	PB047.2-1SS010-091030-N	PB048-1SS010-091031-N	PB049-1SS010-091031-D	PB049-1SS010-091031-N	PB053-1SS010-091031-N
Sample Date:	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/31/2009	10/31/2009	10/31/2009	10/31/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	FD	N	N
X:	3201410.6060	3201451.0315	3201663.5416	3201454.2006	3201656.8574	3201635.5547	3201435.3433	3201435.3433	3201421.7211
Y:	13833634.6932	13833347.5606	13833285.4731	13833042.2356	13833055.7842	13832859.6311	13832751.7292	13832751.7292	13832443.5506
Perylene	359	282	272	308	183	195	98 J	178	344
Phenanthrene	974 J	1130 J	976 J	653 J	365 J	371	618 J	582	57300
Pyrene	4340	2890	3930	3990	1240	1490	1610 J	1650	27900
Total 10 of 17 HPAH (U = 1/2)	16613	12665	13739	15480	6457	6767	5306 J	7373	54154
Total 17 PAH (U = 1/2)	21387 J	15360.3 J	18365 J	18438 J	7539.9 J	7878.7	7630 J	8983.9	246424
Total 7 of 17 LPAH (U = 1/2)	4774 J	2695.3 J	4626 J	2958 J	1082.9 J	1111.7	2324 J	1610.9	192270
Total cPAH TEF (7 minimum) (U = 1/2)	1869.9	1573.1	1475.8	1925.5	874.98	857.96	545.68 J	946.78	3313.6
Semivolatile Organics (µg/kg)									
2,2'-Oxybis (1-chloropropane)	383 U	270 U	458 U	308 U	381 U	570 U	307 U	297 U	1530 U
Benzidine	-- R	-- R	-- R	339 J	846 J	-- R	-- R	-- R	-- R
Bis(2-ethylhexyl) phthalate	1450 J	1270 J	1880 J	1240 J	1530 J	1620	2460	2120	2300
Cholesterol	--	--	--	--	--	--	--	--	--
Di-n-octyl phthalate	383 U	270 U	458 U	308 U	381 U	570 U	307 U	297 U	1530 U
Coprostanol	--	--	--	--	--	--	--	--	--
Hexachlorobenzene	580 U	390	220	48 J	450 J	170 UJ	92 U	88 U	2200 U
Hexachlorobutadiene	360 UJ	130 J	120 J	84 J	580 J	100 UJ	57 U	54 J	1400 U
Hexachloroethane	580 U	170	130 U	210	330 UJ	170 UJ	70 J	120	2200 U
PCB Congeners (ng/kg)									
PCB-001	3770	1370	6140	5370	411	943 J	803	815	415000 J
PCB-002	355	40.3	186	166	84.5	111 J	68	62.6	15100
PCB-003	2080	758	3570	1550	409	777	522	565	142000 J
PCB-004	22000 J	12500 J	25200 J	29100 J	2840 J	6470 J	6090 J	6090 J	1380000 J
PCB-005	592 J	385 J	862 J	844 J	92.7 J	150 J	197 J	227 J	45100 J
PCB-006	7820 J	5410 J	10000 J	9670 J	1210 J	2300 J	2410 J	2820 J	366000 J
PCB-007	1320 J	808 J	1680 J	1580 J	212 J	393 J	388 J	432 J	95400 J
PCB-008	46400 J	32800 J	59400 J	59600 J	7570 J	13200 J	15200 J	17700 J	1690000 J
PCB-009	1970 J	1290 J	2530 J	2480 J	328 J	621 J	603 J	742 J	142000 J
PCB-010	652 J	372 J	714 J	935 J	98.2 J	209 J	189 J	185 J	56300 J
PCB-011	700 J	425 J	701 J	703 J	314 J	446 J	643 J	661 J	8520 J
PCB-012/013	4150 J	2570 J	4550 J	4730 J	948 J	1380 J	3390 J	3660 J	120000 J
PCB-014	42.7 J	11.7 J	47.2 J	8.4 U	9.17 U	42 U	48.5 U	47.6 U	225 J
PCB-015	27800 J	18900 J	28300 J	36800 J	7190 J	11400 J	11300 J	12000 J	462000 J
PCB-016	83300 J	61200 J	82500 J	155000 J	13800	28500 J	29500 J	33200 J	968000 J
PCB-017	107000 J	78900 J	95600 J	181000 J	24000 J	46200 J	42600 J	48800 J	1100000 J
PCB-018/030	263000 J	205000 J	248000 J	494000 J	56900 J	113000 J	104000 J	121000 J	3200000 J
PCB-019	19400 J	14800	19700 J	35200 J	3360	6860	7730	8470	356000 J
PCB-020/028	340000 J	256000 J	286000 J	580000 J	91300 J	129000 J	138000 J	160000 J	3670000 J
PCB-021/033	169000 J	128000 J	156000 J	305000 J	35500 J	51800 J	59800 J	69400 J	2360000 J
PCB-022	99300 J	77000 J	87700 J	184000 J	22700 J	32600 J	40000 J	45600 J	1410000 J
PCB-023	114	116	144	250	39.1	40.6	63	75.7	2840
PCB-024	1450	1380	1740	2410	344	682	653	720	23600 J
PCB-025	14700	12000	13900	25000 J	3930	5370	6390	7230	186000 J
PCB-026/029	48300 J	38300 J	42200 J	87600 J	12800	18100 J	19900 J	22600 J	635000 J
PCB-027	13800	11000	12900	25900 J	2970	5700	5600	6400	144000 J

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BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB056	PB057	PB059.1	PB059.2	PB063.1	PB063.2	PB064	PB066	PB069
Sample ID:	PB056-1SS010-091031-N	PB057-1SS010-091031-N	PB059.1-1SS010-091102-N	PB059.2-1SS010-091031-N	PB063.1-1SS010-091031-N	PB063.2-1SS010-091102-N	PB064-1SS010-091102-N	PB066-1SS010-091101-N	PB069-1SS010-091101-N
Sample Date:	10/31/2009	10/31/2009	11/2/2009	10/31/2009	10/31/2009	11/2/2009	11/2/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3201402.6901	3201634.7257	3201531.6282	3201640.7239	3201497.4803	3201553.0822	3201628.7185	3201431.2755	3201160.2007
Y:	13832184.9773	13832087.9098	13831850.4179	13831857.0149	13831523.9045	13831552.2764	13831275.6688	13831275.6811	13830971.1845
Perylene	410	251	624	101	1140	160	272	264	173
Phenanthrene	640	414	2030	623	8090	241	3170	675	9160
Pyrene	2220	1750	8800	1060	14400	1380	2330	2390	10200
Total 10 of 17 HPAH (U = 1/2)	15198	10282	32330	4512.5	56987	6881	10733	11675	23218
Total 17 PAH (U = 1/2)	16849.5	11008.3	41163	7021.5	80300	7636.6	16561	13182.8	64538
Total 7 of 17 LPAH (U = 1/2)	1651.5	726.3	8833	2509	23313	755.6	5828	1507.8	41320
Total cPAH TEF (7 minimum) (U = 1/2)	2272.3	1348.5	3997.1	541.58	6497.3	833.96	1213.46	1424.9	1655.1
Semivolatile Organics (µg/kg)									
2,2'-Oxybis (1-chloropropane)	441 U	302 U	937 U	319 U	237 U	313 U	260 U	241 U	826 U
Benzidine	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R	-- R
Bis(2-ethylhexyl) phthalate	2230	1470	1030	2290	577	2390	198 J	922	1140
Cholesterol	--	--	--	--	--	--	--	--	--
Di-n-octyl phthalate	441 U	302 U	937 U	319 U	237 U	313 U	260 U	241 U	826 U
Coprostanol	--	--	--	--	--	--	--	--	--
Hexachlorobenzene	130 U	89 U	1300 U	90 U	700 U	91 UJ	74 UJ	360 UJ	5900 U
Hexachlorobutadiene	80 U	56 U	820 UJ	56 U	440 UJ	57 UJ	46 UJ	220 UJ	3700 UJ
Hexachloroethane	130 U	89 U	1300 U	90 U	700 UJ	49 J	74 UJ	360 UJ	5900 U
PCB Congeners (ng/kg)									
PCB-001	1480	1140 J	15800	962	46300 J	885	67.8 J	4110	28900 J
PCB-002	73.2	92.8 J	264	79.4	1270	119	36.8 UJ	310	749
PCB-003	782	399 J	6880	409	15900	482	28.9	1880	13700 J
PCB-004	12400 J	6580 J	129000 J	6740 J	219000 J	5880 J	580 J	21700 J	201000 J
PCB-005	415 J	137 J	3370 J	178 J	6780 J	167 J	20.6 J	507 J	4520 J
PCB-006	4970 J	1510 J	42200 J	2170 J	63300 J	1810 J	201 J	6890 J	70300 J
PCB-007	727 J	241 J	6200 J	322 J	13300 J	351 J	42.4 J	943 J	8200 J
PCB-008	29800 J	8230 J	276000 J	11000 J	343000 J	9780 J	965 J	37100 J	453000 J
PCB-009	1200 J	401 J	11100 J	545 J	19200 J	541 J	61.3 J	1630 J	18200 J
PCB-010	402 J	241 J	3680 J	252 J	7840 J	233 J	28.6 J	632 J	4950 J
PCB-011	605 J	664 J	1400 J	1010 J	1680 J	442 J	75.3 UJ	600 J	1600 J
PCB-012/013	3000 J	2800 J	15600 J	5420 J	18600 J	2370 J	171 J	3680 J	17300 J
PCB-014	44.2 U	43.5 UJ	90.1 U	50 U	49.5 U	46.3 U	36.8 U	34.8 J	44.2 J
PCB-015	18800 J	7530 J	145000 J	9610 J	122000 J	8960 J	902 J	21300 J	191000 J
PCB-016	62200 J	26900 J	620000 J	31000 J	393000 J	26900 J	2530	83700 J	693000 J
PCB-017	79900 J	36100 J	666000 J	40200 J	470000 J	30500 J	3530	93500 J	674000 J
PCB-018/030	209000 J	93800 J	2020000 J	108000 J	1300000 J	81100 J	8610	263000 J	1920000 J
PCB-019	15700	7210	139000 J	8790	106000 J	6700	666	21200 J	165000 J
PCB-020/028	245000 J	79600 J	1650000 J	111000 J	1170000 J	83700 J	8680	229000 J	1810000 J
PCB-021/033	112000 J	29600 J	933000 J	39300 J	613000 J	31600 J	2870	110000 J	1130000 J
PCB-022	72500 J	20900 J	529000 J	28000 J	379000 J	21100 J	2090	65500 J	637000 J
PCB-023	112	32.1	750	40.5	592	40.1	36.8 U	105	1070
PCB-024	1320	616	9030	620	8730	46.3 U	45.4 J	1360	12900 J
PCB-025	11800	3830	68800 J	5610	50600 J	3970	422	12200	87300 J
PCB-026/029	37600 J	12500	239000 J	17700	171000 J	13100	1300	35300 J	284000 J
PCB-027	11500	5310	93500 J	6330	66500 J	4880	514	13500	100000 J

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BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	2011 USC	2011 USC	2011 USC
Location ID:	PB074	PB081	PB093	PB097	PB101	PB068	PB069.1	PB070A
Sample ID:	PB074-1SS010-091101-N	PB081-1SS010-091103-N	PB093-1SS010-091103-N	PB097-1SS010-091103-N	PB101-1SS010-091103-N	PB068-1SS010-20110804-N	PB069.1-1SS008-20110804-N	PB070A-1SS010-20110802-N
Sample Date:	11/1/2009	11/3/2009	11/3/2009	11/3/2009	11/3/2009	8/4/2011	8/4/2011	8/2/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 8 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N
X:	3200828.0183	3200761.3787	3200970.4291	3201103.1242	3201287.2658	3201209.861	3201205.859	3201087.255
Y:	13830463.2171	13830005.1879	13828894.7843	13828566.1540	13828181.2285	13831121.51	13830973.3	13830903.51
Perylene	**63.1**	**1170**	**47.2**	**37.8**	**119**	**278**	**275**	**155**
Phenanthrene	**268**	**250000**	**78.1**	**49.2**	**620**	**20000**	**1230**	**541 J**
Pyrene	**1020**	**81900**	**245**	**213**	**880**	**12700**	**3420**	**1240**
Total 10 of 17 HPAH (U = 1/2)	**3604.2**	**168118 J**	**1696.7**	**1319.3**	**5175.3**	**27980**	**12704**	**6224 J**
Total 17 PAH (U = 1/2)	**4719.4**	**1306518 J**	**1945.11**	**1435.19 J**	**6025.4**	**89480**	**16702.1**	**7626.7 J**
Total 7 of 17 LPAH (U = 1/2)	**1115.2**	**1138400**	**248.41**	**115.89 J**	**850.1**	**61500**	**3998.1**	**1402.7 J**
Total cPAH TEF (7 minimum) (U = 1/2)	**349.57**	**11368.8 J**	**244.92**	**154.01**	**649.34**	**1970.16**	**1339.1**	**708.096 J**
Semivolatile Organics (µg/kg)								
2,2'-Oxybis (1-chloropropane)	221 U	1360 U	231 U	242 U	220 U	--	--	--
Benzidine	**-- R**	**-- R**	**-- R**	**-- R**	**-- R**	--	--	--
Bis(2-ethylhexyl) phthalate	**1790**	**1220 J**	**245**	**266**	**132 J**	--	--	--
Cholesterol	--	6000 U	310 U	290 U	300 UJ	--	--	--
Di-n-octyl phthalate	221 U	1360 U	231 U	242 U	220 U	--	--	--
Coprostanol	--	6000 U	310 U	290 U	300 UJ	--	--	--
Hexachlorobenzene	320 UJ	4000 U	67 U	68 U	63 U	--	--	--
Hexachlorobutadiene	200 UJ	2500 U	42 U	43 U	40 U	--	--	--
Hexachloroethane	320 UJ	4000 U	67 U	68 U	63 U	--	--	--
PCB Congeners (ng/kg)								
PCB-001	**2670**	**137000 J**	**331**	**34.9**	**115**	--	--	--
PCB-002	**34.6**	**2540**	**94.4**	**54.3**	**46**	--	--	--
PCB-003	**1180**	**82300 J**	**293**	**126**	**81**	--	--	--
PCB-004	**12800 J**	**183000 J**	**14100 J**	**3720 J**	**3170 J**	--	--	--
PCB-005	**297 J**	**3810 J**	**224 J**	**21.9 J**	**90.5 J**	--	--	--
PCB-006	**4150 J**	**61900 J**	**15300 J**	**3060 J**	**5450 J**	--	--	--
PCB-007	**553 J**	**8020 J**	**507 J**	**58.2 J**	**175 J**	--	--	--
PCB-008	**22000 J**	**419000 J**	**13900 J**	**3740 J**	**3860 J**	--	--	--
PCB-009	**929 J**	**14400 J**	**528 J**	**40.9 J**	**190 J**	--	--	--
PCB-010	**366 J**	**3990 J**	**192 J**	**22.7 J**	**53.9 J**	--	--	--
PCB-011	**340 J**	**849 J**	**2310 J**	**1080 J**	**1010 J**	--	--	--
PCB-012/013	**1800 J**	**10900 J**	**7460 J**	**1750 J**	**2830 J**	--	--	--
PCB-014	36.8 U	46.3 U	**9.39 J**	45.9 U	48.1 U	--	--	--
PCB-015	**11500 J**	**194000 J**	**6280 J**	**1840 J**	**2220 J**	--	--	--
PCB-016	**42900 J**	**281000 J**	**24000 J**	**4980**	**4710**	--	--	--
PCB-017	**47100 J**	**377000 J**	**42400 J**	**37900 J**	**9560**	--	--	--
PCB-018/030	**125000 J**	**779000 J**	**97300 J**	**34900 J**	**19900 J**	--	--	--
PCB-019	**11000**	**97500 J**	**16100**	**17400**	**3410**	--	--	--
PCB-020/028	**103000 J**	**905000 J**	**91000 J**	**110000 J**	**26000 J**	--	--	--
PCB-021/033	**55300 J**	**606000 J**	**23800 J**	**4490**	**7460**	--	--	--
PCB-022	**32800 J**	**295000 J**	**24000 J**	**16600**	**7320**	--	--	--
PCB-023	**49.3**	**611**	**40.3**	45.9 U	**17.9**	--	--	--
PCB-024	**569**	**6140**	**297 J**	45.9 U	**124**	--	--	--
PCB-025	**6200**	**53600 J**	**21900 J**	**20100 J**	**7130**	--	--	--
PCB-026/029	**15700 J**	**141000 J**	**26800 J**	**6210**	**9310**	--	--	--
PCB-027	**6500**	**43900 J**	**5720**	**6700**	**1330**	--	--	--

Appendix A-1
BERA Sediment Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB076.1	PB081.1	PB081.1	PB082
Sample ID:	PB076.1-1SS010-20110802-N	PB081.1-1SS010-20110803-D	PB081.1-1SS010-20110803-N	PB082-1SS010-20110803-N
Sample Date:	8/2/2011	8/3/2011	8/3/2011	8/3/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N
X:	3200744.033	3200772.123	3200772.123	3200751.881
Y:	13830426.95	13829983.6	13829983.6	13829914.32
Perylene	548	367	339	61.2
Phenanthrene	1740	115000	89000	284 J
Pyrene	5790	37600	30400	2700 J
Total 10 of 17 HPAH (U = 1/2)	26020	73119	60605	6354 J
Total 17 PAH (U = 1/2)	29569.3	475519	374505	10073.1 J
Total 7 of 17 LPAH (U = 1/2)	3549.3	402400	313900	3719.1 J
Total cPAH TEF (7 minimum) (U = 1/2)	2691.83	3903.48	3572.41	439.422 J
Semivolatile Organics (µg/kg)				
2,2'-Oxybis (1-chloropropane)	--	--	--	--
Benzidine	--	--	--	--
Bis(2-ethylhexyl) phthalate	--	--	--	--
Cholesterol	--	--	--	--
Di-n-octyl phthalate	--	--	--	--
Coprostanol	--	--	--	--
Hexachlorobenzene	--	--	--	--
Hexachlorobutadiene	--	--	--	--
Hexachloroethane	--	--	--	--
PCB Congeners (ng/kg)				
PCB-001	--	--	--	--
PCB-002	--	--	--	--
PCB-003	--	--	--	--
PCB-004	--	--	--	--
PCB-005	--	--	--	--
PCB-006	--	--	--	--
PCB-007	--	--	--	--
PCB-008	--	--	--	--
PCB-009	--	--	--	--
PCB-010	--	--	--	--
PCB-011	--	--	--	--
PCB-012/013	--	--	--	--
PCB-014	--	--	--	--
PCB-015	--	--	--	--
PCB-016	--	--	--	--
PCB-017	--	--	--	--
PCB-018/030	--	--	--	--
PCB-019	--	--	--	--
PCB-020/028	--	--	--	--
PCB-021/033	--	--	--	--
PCB-022	--	--	--	--
PCB-023	--	--	--	--
PCB-024	--	--	--	--
PCB-025	--	--	--	--
PCB-026/029	--	--	--	--
PCB-027	--	--	--	--

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB001.1	PB001.2	PB001.3	PB002	PB004	PB005	PB007.1	PB007.2	PB009
Sample ID:	PB001.1-1SS010-091027-N	PB001.2-1SS010-091027-N	PB001.3-1SS010-091027-N	PB002-1SS010-091027-N	PB004-1SS010-091027-N	PB005-1SS010-091027-N	PB007.1-1SS010-091028-N	PB007.2-1SS010-091028-N	PB009-1SS010-091028-N
Sample Date:	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/28/2009	10/28/2009	10/28/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3202382.3842	3202624.0211	3202754.9026	3202606.9920	3202330.4788	3202262.1385	3202065.5011	3202037.3755	3201747.2539
Y:	13836546.3402	13836566.3557	13836489.4987	13836435.6794	13836348.7826	13836144.2614	13836300.0036	13836110.2965	13836119.3947
PCB-031	465000 J	126000 J	46100 J	188000 J	96600 J	118000 J	115000 J	122000 J	80700 J
PCB-032	115000 J	26400 J	8740	34900 J	19700 J	24100 J	28900 J	27500 J	16000 J
PCB-034	2460	1150	430	2340	928	1040	710	926	636
PCB-035	7830	2680	1080	3280	1760	2290	2210	2420	1800
PCB-036	8.93 U	48.9 J	8.93 U	68.8	9.62 U	8.55 U	9.17 U	8.47 U	53.2
PCB-037	125000 J	29400 J	13500	45100 J	23900 J	30600 J	36000 J	32900 J	24000 J
PCB-038	8.93 U	279	1990	566	111	360	168	289	439
PCB-039	1800	583	208	878	466	532	9.17 U	589	403
PCB-040/071	252000 J	52800 J	17600	66000 J	45900 J	50600 J	78000 J	54900 J	36700 J
PCB-041	8.93 U	9490	2620	4370	9.62 U	6040	15300	6360	4740
PCB-042	172000 J	40900 J	13400	50700 J	36500 J	37000 J	54800 J	37800 J	25200 J
PCB-043	8.93 U	3820	1050	3010	9.62 U	2490	6970	2710	2230
PCB-044/047/065	558000 J	138000 J	45300 J	171000 J	119000 J	129000 J	186000 J	133000 J	89400 J
PCB-045	118000 J	20000 J	5840	24600 J	21100 J	17400 J	26200 J	18400 J	11400
PCB-046	43900 J	8910	2780	11400	7080	8230	11300	8970	5320
PCB-048	107000 J	20900 J	5780	20800 J	16100	20200 J	40200 J	23300 J	15500 J
PCB-049/069	311000 J	92400 J	30000 J	119000 J	81100 J	87800 J	117000 J	91000 J	62300 J
PCB-050/053	97500 J	22100 J	6820	27200 J	18000	20900 J	29000 J	22800 J	14400
PCB-051	8.93 U	7860	2390	9970	9.62 U	7920	9860	8800	5720
PCB-052	516000 J	137000 J	46900 J	169000 J	118000 J	130000 J	183000 J	134000 J	95000 J
PCB-054	1870	388	125	459	298	347	508	380	214
PCB-055	8.93 U	1130	469	9.8 U	9.62 U	992	9.17 U	8.47 U	799 J
PCB-056	8.93 U	53100 J	17700	57100 J	9.62 U	45800 J	86200 J	44400 J	34200 J
PCB-057	8.93 U	386	117	326	9.62 U	273	732	261	238
PCB-058	8.93 U	723	273	1050	9.62 U	568	1560 J	434	350
PCB-059/062/075	34000 J	9990	3200	12500	7510	9150	14000	9560	6370
PCB-060	8.93 U	22800 J	6620	14800	9.62 U	17500 J	45500 J	17600 J	15400 J
PCB-061/070/074/076	965000 J	242000 J	86200 J	300000 J	216000 J	241000 J	350000 J	232000 J	172000 J
PCB-063	18800 J	3420	1050	3080	2110	2570	6530	2530	2260
PCB-064	223000 J	49100 J	16200	59500 J	43300 J	46200 J	73400 J	48200 J	33400 J
PCB-066	558000 J	130000 J	45900 J	168000 J	132000 J	134000 J	187000 J	133000 J	95700 J
PCB-067	11900	2280	701	2210	1660	1870	3960	2020	1560
PCB-068	1420	1010	402	1440	831	799	715	679	551
PCB-072	3580	2380	872	3470	2100	2030	1730	1780	1490
PCB-073	8.93 U	8.93 U	8.93 U	409	9.62 U	8.55 U	9.17 U	280	172 J
PCB-077	62100 J	15000	8.93 U	18600	15000	16700	24300 J	16600	12300
PCB-078	8.93 U	8.93 U	8.93 U	9.8 U	9.62 U	8.55 U	9.17 U	8.47 U	7.58 U
PCB-079	8.93 U	1280	637	1520	9.62 U	1280	9.17 U	1260	712
PCB-080	8.93 U	186	8.93 U	9.8 U	9.62 U	176	356	8.47 U	7.58 U
PCB-081	8.93 U	438	132	344	378	404	865	461	361
PCB-082	76000 J	12300	5100	10900	11000	12500	24300 J	11500	9840
PCB-083	272000 J	8.93 U	2470	5550	77400 J	8.55 U	9280	8.47 U	5720
PCB-084	8.93 U	35100 J	13700	41500 J	34700 J	35100 J	48500 J	32600 J	26000 J
PCB-085/116	83200 J	17800	7300	15300	16200	17100	29500 J	16600	14000

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB011	PB013.1	PB013.2	PB015	PB016	PB016	PB018	PB019	PB022
Sample ID:	PB011-1SS010-091028-N	PB013.1-1SS010-091028-N	PB013.2-1SS010-091028-N	PB015-1SS010-091028-N	PB016-1SS010-091101-N	PB016-1SS010-091102-N	PB018-1SS010-091101-N	PB019-1SS010-091101-N	PB022-1SS010-091101-D
Sample Date:	10/28/2009	10/28/2009	10/28/2009	10/28/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	FD
X:	3201727.2504	3201333.4751	3201420.5786	3201223.8464	3201140.0114	3201140.0114	3201146.8550	3201281.6017	3201174.1294
Y:	13836239.7593	13836187.7023	13836111.1432	13836229.0694	13836081.5392	13836081.5392	13835702.1476	13835711.9947	13835456.7389
PCB-031	135000 J	75700 J	36000 J	111000 J	--	489000 J	69000 J	66500 J	63900 J
PCB-032	24200 J	15400	7270	25900 J	--	125000 J	16500 J	14000	15500
PCB-034	1420	724	271	758	--	1940	719	580	437
PCB-035	2710	1530	1190	2330	--	6260	1240	1440	1270
PCB-036	50.3 J	27.7	6.85 U	9.62 U	--	76.9 U	39.1 U	38.5 U	43.9 U
PCB-037	32900 J	20900 J	10700	34100 J	--	126000 J	20200 J	20600 J	19300 J
PCB-038	305	130	126	178	--	698	150	453	170
PCB-039	596	383	222	584	--	76.9 U	39.1 U	216	43.9 U
PCB-040/071	58700 J	36900 J	18700 J	67200 J	--	315000 J	33500 J	30000 J	39600 J
PCB-041	5400	4340	3010	11600	--	67300 J	4820	3510	6500
PCB-042	46400 J	26700 J	13000	48900 J	--	202000 J	24700 J	21700 J	27700 J
PCB-043	2730	1960	1380	5160	--	29400 J	2320	1880	3330
PCB-044/047/065	151000 J	92100 J	46200 J	166000 J	--	680000 J	85200 J	77600 J	98500 J
PCB-045	19700 J	12900	6130	21200 J	--	112000 J	11900	8450	12400
PCB-046	8430	5510	2520	9180	--	53200 J	5380	3580	5450
PCB-048	18400 J	16000	8830	33900 J	--	150000 J	13800	12600	20600 J
PCB-049/069	109000 J	61300 J	31300 J	110000 J	--	393000 J	56500 J	55700 J	64300 J
PCB-050/053	23000 J	15100	7270	25500 J	--	134000 J	13600	11300	16100
PCB-051	9180	5120	2520	10200	--	42700 J	4590	4310	6030
PCB-052	155000 J	92000 J	47800 J	169000 J	--	663000 J	87700 J	83000 J	100000 J
PCB-054	326	215	117	385	--	2660	234	169	250
PCB-055	8.2 U	8.47 U	681	9.62 U	--	5900	477	475	776
PCB-056	45600 J	35100 J	17900 J	71100 J	--	250000 J	28300 J	26400 J	37700 J
PCB-057	288	202	167	559	--	2150	180	181	297
PCB-058	876	344	152	594	--	896	350	346	239
PCB-059/062/075	10900	6710	3390	12600	--	47800 J	6490	5670	7250
PCB-060	16000	12800	9070	33400 J	--	148000 J	9930	9810	17500
PCB-061/070/074/076	261000 J	167000 J	84500 J	319000 J	--	946000 J	132000 J	138000 J	169000 J
PCB-063	2580	1940	1320	5250	--	18100 J	1600	1580	2720
PCB-064	53000 J	34900 J	17900 J	67400 J	--	273000 J	31000 J	29400 J	38500 J
PCB-066	148000 J	91900 J	45400 J	176000 J	--	458000 J	68500 J	75600 J	84400 J
PCB-067	1860	1370	972	3360	--	10700	1260	1160	1830
PCB-068	1180	468	227	787	--	957	505	532	322
PCB-072	3000	1270	537	1900	--	2700	1220	1160	805
PCB-073	8.2 U	8.47 U	6.85 U	9.62 U	--	76.9 U	39.1 U	38.5 U	120
PCB-077	16200	11000	6570	22900 J	--	58800 J	8700	10100	10900
PCB-078	8.2 U	8.47 U	26.4 J	9.62 U	--	76.9 U	12.5	38.5 U	43.9 U
PCB-079	1440	576	380	989	--	3520	853	824	826 J
PCB-080	8.2 U	148	6.85 U	350	--	76.9 U	39.1 U	38.5 U	43.9 U
PCB-081	374	323	226	735	--	2680	221	255	335
PCB-082	11200	9590	6880	18700	--	72700 J	7750	6590	11700
PCB-083	5770	3670 J	3260	7390	--	26800 J	4040	3910	5690
PCB-084	40400 J	22600 J	13400	40800 J	--	145000 J	19500 J	16900 J	24000 J
PCB-085/116	15100	12400	9040	24600 J	--	79100 J	10300	9640	15000

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB022	PB023	PB023	PB024	PB026	PB028	PB032	PB034	PB037
Sample ID:	PB022-1SS010-091101-N	PB023-1SS010-091030-D	PB023-1SS010-091030-N	PB024-1SS010-091030-N	PB026-1SS010-091030-N	PB028-1SS010-091030-N	PB032-1SS010-091030-N	PB034-1SS010-091030-N	PB037-1SS010-091030-N
Sample Date:	11/1/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N	N	N	N	N	N
X:	3201174.1294	3201315.1973	3201315.1973	3201180.8567	3201331.5617	3201355.6226	3201368.6522	3201387.6450	3201399.4292
Y:	13835456.7389	13835429.2411	13835429.2411	13835181.4775	13835155.0673	13834855.4834	13834541.6071	13834242.2769	13833936.8351
PCB-031	67900 J	59900 J	57500 J	103000 J	74300 J	29400 J	5900	141000 J	431000 J
PCB-032	17000 J	18600 J	11700	23400 J	47600 J	7150	1360	27700 J	84700 J
PCB-034	460	620 J	574	810	784 J	233	45.7	1030	1780
PCB-035	1230	1370 J	1100	2190	3130 J	593	1680	2640	3710
PCB-036	37.6 U	231 UJ	183 U	6.94 U	596 J	9.17 U	295	83.9	8.13 U
PCB-037	20400 J	16800 J	13700 J	32000 J	21000 J	8060	3020	35300 J	89600 J
PCB-038	124	1660 J	1550	183	329 J	65.4	255	109	8.13 U
PCB-039	37.6 U	495 J	305	633	923 J	209	794	777	646
PCB-040/071	44400 J	56800 J	26600 J	44500 J	36700 J	14800	3160	76300 J	191000 J
PCB-041	7080	8190	4130	9780	3770	2870	809	15300 J	31700 J
PCB-042	31900 J	38000 J	20200 J	32200 J	30300 J	10400	2180	54300 J	141000 J
PCB-043	3770	4300	2080	3640	2150 J	1340	318	7810	36100 J
PCB-044/047/065	108000 J	135000 J	73700 J	113000 J	117000 J	37000 J	9900	193000 J	517000 J
PCB-045	14500	15500 J	9000	16400 J	13100 J	5010	1120	27800 J	73600 J
PCB-046	5810	6710	3590	6690	5370 J	1920	451	10600	35500 J
PCB-048	23200 J	23200 J	11100	22300 J	17800 J	7670	1800	41200 J	99600 J
PCB-049/069	70900 J	83700 J	49900 J	71900 J	98500 J	24000 J	5980	124000 J	294000 J
PCB-050/053	17300 J	17200 J	10600	18300 J	14300 J	5360	1380	31100 J	93900 J
PCB-051	6010	6050	3740	6180	4770 J	1720	429	10000	40900 J
PCB-052	107000 J	135000 J	80000 J	112000 J	128000 J	37900 J	14100	200000 J	377000 J
PCB-054	259	234	130	301	398 J	99.6	45 U	424	1410
PCB-055	788	2100	1090	1750	718 J	9.17 U	127	2770	8.13 U
PCB-056	37100 J	57400 J	25500 J	56200 J	30000 J	17900	3560	91900 J	273000 J
PCB-057	323	335	154	440	364 J	164	45 U	701	6150
PCB-058	265	480	416	441	821 J	124	45 U	765	8.13 U
PCB-059/062/075	8030	10200	5370	8400	13400 J	2790	860	14400	30500 J
PCB-060	17600 J	18000 J	8300	24500 J	8390	9690	1960	47000 J	123000 J
PCB-061/070/074/076	167000 J	219000 J	117000 J	226000 J	151000 J	76900 J	19800 J	385000 J	896000 J
PCB-063	2860	3370	1600	3920	2150 J	1480	45 U	7420	18700 J
PCB-064	43800 J	54000 J	27800 J	46000 J	37900 J	15200	4320	77700 J	216000 J
PCB-066	89000 J	120000 J	62300 J	123000 J	90100 J	40100 J	7760	198000 J	588000 J
PCB-067	1870	2230	914	2520	2080 J	821	45 U	4230	10300
PCB-068	368	677	502	515	3810 J	197	192	1010	1450
PCB-072	842	1620	1120	1280	6060 J	506	45 U	2300	3120
PCB-073	37.6 U	231 U	183 U	6.94 U	40 UJ	9.17 U	45 U	7.63 U	117000 J
PCB-077	11500	14000	6860	15700 J	8600	4620	1190	22200 J	55900 J
PCB-078	17.7	231 U	183 U	6.94 U	40 UJ	9.17 U	278	7.63 U	8.13 U
PCB-079	747	987	470	819	1630 J	252	319	1240	5150
PCB-080	37.6 U	231 U	183 U	6.94 U	40 UJ	9.17 U	45 U	7.63 U	8.13 U
PCB-081	386	372	136	494	257	157	429	837	3870
PCB-082	10400	17800 J	6800	14100 J	6540	4660	2310	26900 J	76600 J
PCB-083	4870	8320	4140	5290	4210	2270	1270	12700	8.13 U
PCB-084	21600 J	37100 J	18300 J	29200 J	30900 J	9130	5540	53500 J	169000 J
PCB-085/116	15600 J	22500 J	9150	18700 J	9960	6610	3260	37000 J	60700 J

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB041	PB043	PB044	PB047.1	PB047.2	PB048	PB049	PB049	PB053
Sample ID:	PB041-1SS010-091030-N	PB043-1SS010-091030-N	PB044-1SS010-091030-N	PB047.1-1SS010-091030-N	PB047.2-1SS010-091030-N	PB048-1SS010-091031-N	PB049-1SS010-091031-D	PB049-1SS010-091031-N	PB053-1SS010-091031-N
Sample Date:	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/31/2009	10/31/2009	10/31/2009	10/31/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	FD	N	N
X:	3201410.6060	3201451.0315	3201663.5416	3201454.2006	3201656.8574	3201635.5547	3201435.3433	3201435.3433	3201421.7211
Y:	13833634.6932	13833347.5606	13833285.4731	13833042.2356	13833055.7842	13832859.6311	13832751.7292	13832751.7292	13832443.5506
PCB-031	406000 J	309000 J	331000 J	729000 J	101000 J	144000 J	159000 J	182000 J	4750000 J
PCB-032	81800 J	63800 J	72100 J	156000 J	20000 J	36800 J	35500 J	40500 J	827000 J
PCB-034	1680	928	1620	2030	544	850	736	826	13800
PCB-035	8350	4820	5670	10900	2040	3140	3280	3550	157000 J
PCB-036	8.2 U	7.75 U	9.71 U	8.4 U	23.8	42 U	48.5 U	47.6 U	48.1 U
PCB-037	105000 J	79200 J	86500 J	165000 J	26900 J	40800 J	40400 J	45600 J	1240000 J
PCB-038	240	196	198	466	71.5	82	99.1	137	3560
PCB-039	2210	1740	1660	3910	614	42 U	48.5 U	47.6 U	48.1 U
PCB-040/071	216000 J	180000 J	170000 J	459000 J	55200 J	84900 J	88100 J	106000 J	2850000 J
PCB-041	53600 J	51200 J	45200 J	124000 J	11800	16100	24600 J	30500 J	829000 J
PCB-042	150000 J	122000 J	116000 J	304000 J	38900 J	56800 J	60700 J	72200 J	1810000 J
PCB-043	20900 J	19100 J	17100	46200 J	5850	7810	9940	11900	296000 J
PCB-044/047/065	524000 J	417000 J	401000 J	1080000 J	141000 J	206000 J	216000 J	257000 J	6420000 J
PCB-045	86100 J	72500 J	74000 J	202000 J	19700 J	29400 J	33700 J	40400 J	1190000 J
PCB-046	35700 J	28400 J	30600 J	84400 J	6790	10800	12900	15400	509000 J
PCB-048	122000 J	108000 J	97500 J	260000 J	32500 J	46200 J	52000 J	62600 J	1630000 J
PCB-049/069	321000 J	253000 J	232000 J	612000 J	92300 J	132000 J	134000 J	160000 J	3550000 J
PCB-050/053	90100 J	76100 J	73900 J	207000 J	23900 J	31600 J	36200 J	43100 J	1130000 J
PCB-051	28900 J	21700 J	21200 J	58900 J	7930	10200	11600	14000	343000 J
PCB-052	527000 J	405000 J	385000 J	1090000 J	150000 J	212000 J	215000 J	256000 J	5830000 J
PCB-054	1340	1060	1050	3080	278	577	618	686	16600
PCB-055	8290	9890	5120	14600	1900	3180	2640	4350	81700 J
PCB-056	247000 J	207000 J	183000 J	489000 J	69400 J	104000 J	106000 J	127000 J	2740000 J
PCB-057	2130	1910	1580	4340	566	784	967	1170	26100 J
PCB-058	1480	802	807	1810	352	521	498	594	8770
PCB-059/062/075	38900 J	31900 J	30700 J	77500 J	10400	15400	16400	19600 J	477000 J
PCB-060	145000 J	135000 J	103000 J	299000 J	38200 J	53700 J	56800 J	70400 J	1810000 J
PCB-061/070/074/076	1010000 J	805000 J	702000 J	1820000 J	279000 J	412000 J	402000 J	480000 J	9080000 J
PCB-063	19800 J	17500 J	14600	37900 J	5740	8070	8810	10500	233000 J
PCB-064	207000 J	169000 J	160000 J	417000 J	57700 J	84800 J	87000 J	104000 J	2500000 J
PCB-066	493000 J	401000 J	346000 J	853000 J	147000 J	220000 J	212000 J	251000 J	4380000 J
PCB-067	12300	10800	8940	23500 J	3290	4660	4860	5860	143000 J
PCB-068	1450	679	854	1350	430	605	570	617	8120
PCB-072	4160	2090	2350	4510	1080	1610	1490	1640	26700 J
PCB-073	8.2 U	7.75 U	9.71 U	8.4 U	9.17 U	42 U	48.5 U	47.6 U	48.1 U
PCB-077	63900 J	45900 J	39400 J	99100 J	18600 J	28900 J	23700 J	26900 J	541000 J
PCB-078	154	7.75 U	85.3	8.4 U	25.2	42 U	48.5 U	47.6 U	1860
PCB-079	3260	2350	1840	5240	874	1340	1200	1430	25600 J
PCB-080	1180	1070	890	2670	395	42 U	48.5 U	47.6 U	48.1 U
PCB-081	2830	2240	1700	4640	729	1050	1040	1220	29000 J
PCB-082	80100 J	59800 J	46300 J	169000 J	19200 J	25400 J	26500 J	32000 J	571000 J
PCB-083	31000 J	24400 J	16000	70000 J	8980	9810	10200	14600	230000 J
PCB-084	151000 J	111000 J	90800 J	339000 J	34500 J	47600 J	50000 J	57600 J	1090000 J
PCB-085/116	87300 J	63000 J	50000 J	166000 J	24900 J	33400 J	32500 J	38600 J	609000 J

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BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB056	PB057	PB059.1	PB059.2	PB063.1	PB063.2	PB064	PB066	PB069
Sample ID:	PB056-1SS010-091031-N	PB057-1SS010-091031-N	PB059.1-1SS010-091102-N	PB059.2-1SS010-091031-N	PB063.1-1SS010-091031-N	PB063.2-1SS010-091102-N	PB064-1SS010-091102-N	PB066-1SS010-091101-N	PB069-1SS010-091101-N
Sample Date:	10/31/2009	10/31/2009	11/2/2009	10/31/2009	10/31/2009	11/2/2009	11/2/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3201402.6901	3201634.7257	3201531.6282	3201640.7239	3201497.4803	3201553.0822	3201628.7185	3201431.2755	3201160.2007
Y:	13832184.9773	13832087.9098	13831850.4179	13831857.0149	13831523.9045	13831552.2764	13831275.6688	13831275.6811	13830971.1845
PCB-031	284000 J	92700 J	2040000 J	124000 J	1390000 J	91300 J	8940	262000 J	1920000 J
PCB-032	66600 J	32100 J	546000 J	36000 J	368000 J	27000 J	2950	75700 J	502000 J
PCB-034	1190	410	5090	567	3570	391	58.9	1090	6040
PCB-035	5020	2100	22300 J	3390	23600 J	2250	219	3970	20100 J
PCB-036	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	37.3 U	60.6 U
PCB-037	79300 J	22100 J	535000 J	28900 J	398000 J	24600 J	2370	69300 J	583000 J
PCB-038	173	73.1	1950	104	910	121	36.8 U	274	1610
PCB-039	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	37.3 U	11900
PCB-040/071	174000 J	58500 J	1290000 J	106000 J	859000 J	76100 J	7520	200000 J	1340000 J
PCB-041	51800 J	13100	337000 J	29300 J	297000 J	19100 J	1200	46600 J	290000 J
PCB-042	116000 J	38400 J	826000 J	70100 J	581000 J	53300 J	5190	134000 J	846000 J
PCB-043	18300 J	6210	140000 J	11100	91500 J	8480	696	20700 J	139000 J
PCB-044/047/065	419000 J	140000 J	2860000 J	249000 J	1990000 J	181000 J	17700 J	449000 J	2940000 J
PCB-045	68500 J	22200 J	496000 J	37400 J	357000 J	28600 J	2520	76700 J	486000 J
PCB-046	28500 J	8630	208000 J	16400	150000 J	12100	1070	32500 J	209000 J
PCB-048	97700 J	32400 J	719000 J	56000 J	503000 J	42500 J	3550	107000 J	686000 J
PCB-049/069	248000 J	86800 J	1640000 J	146000 J	1140000 J	107000 J	10700	256000 J	1560000 J
PCB-050/053	69100 J	22700 J	503000 J	40900 J	351000 J	30700 J	2740	80300 J	499000 J
PCB-051	21500 J	7030	142000 J	14100	105000 J	9010	868	23500 J	139000 J
PCB-052	405000 J	138000 J	2690000 J	243000 J	1890000 J	170000 J	16400 J	413000 J	2620000 J
PCB-054	1200	513	9200	683	5810	501	44.9 J	1390	10200
PCB-055	6060	2590	28900 J	3910	28100 J	1410	108	3740	23400 J
PCB-056	202000 J	69000 J	1130000 J	116000 J	894000 J	61800 J	6320	155000 J	1110000 J
PCB-057	1840	645	11800	1020	9150	589	54.2 J	1560	11300
PCB-058	801	285	3360	466	3540	292	36.9 J	724	2920
PCB-059/062/075	32400 J	10400	214000 J	18400	152000 J	13200	1330	32900 J	203000 J
PCB-060	120000 J	37100 J	745000 J	63500 J	616000 J	30700 J	3000	88700 J	646000 J
PCB-061/070/074/076	756000 J	265000 J	4430000 J	425000 J	3200000 J	233000 J	24200 J	595000 J	4050000 J
PCB-063	16300	5610	90600 J	9190	78300 J	4670	472	12500	84400 J
PCB-064	167000 J	55300 J	1150000 J	96300 J	806000 J	69100 J	7060	172000 J	1080000 J
PCB-066	388000 J	139000 J	2090000 J	226000 J	1630000 J	126000 J	13500	302000 J	1990000 J
PCB-067	9850	3150	55500 J	5040	47100 J	2980	301	7940	58300 J
PCB-068	838	315	3140	493	2640	277	41.9	646	3290
PCB-072	2460	896	9440	1440	8740	803	114	1790	9630
PCB-073	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	37.3 U	60.6 U
PCB-077	42800 J	15500	280000 J	24500 J	183000 J	15700	1530	37200 J	236000 J
PCB-078	44.2 U	43.5 U	90.1 U	50 U	352	35.1 J	36.8 U	59 J	357 J
PCB-079	2060	936	15800	1280	9820	1070	117	1870 J	11500
PCB-080	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	37.3 U	60.6 U
PCB-081	1970	749	12800	1230	9950	659	65.9	1680	12000
PCB-082	49800 J	19400 J	345000 J	35200 J	206000 J	18300	1430	42600 J	276000 J
PCB-083	21800 J	8880	144000 J	13000	84300 J	6690	618	17100 J	101000 J
PCB-084	93100 J	33600 J	628000 J	62800 J	384000 J	34600 J	3250	83800 J	456000 J
PCB-085/116	58000 J	23700 J	386000 J	38400 J	221000 J	21800 J	1930	49500 J	303000 J

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BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	2011 USC	2011 USC	2011 USC
Location ID:	PB074	PB081	PB093	PB097	PB101	PB068	PB069.1	PB070A
Sample ID:	PB074-1SS010-091101-N	PB081-1SS010-091103-N	PB093-1SS010-091103-N	PB097-1SS010-091103-N	PB101-1SS010-091103-N	PB068-1SS010-20110804-N	PB069.1-1SS008-20110804-N	PB070A-1SS010-20110802-N
Sample Date:	11/1/2009	11/3/2009	11/3/2009	11/3/2009	11/3/2009	8/4/2011	8/4/2011	8/2/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 8 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N
X:	3200828.0183	3200761.3787	3200970.4291	3201103.1242	3201287.2658	3201209.861	3201205.859	3201087.255
Y:	13830463.2171	13830005.1879	13828894.7843	13828566.1540	13828181.2285	13831121.51	13830973.3	13830903.51
PCB-031	123000 J	984000 J	91000 J	52100 J	26800 J	--	--	--
PCB-032	37700 J	248000 J	34500 J	61200 J	8140	--	--	--
PCB-034	444	3310	1080	1020	325	--	--	--
PCB-035	1690	11500	2220	622	733	--	--	--
PCB-036	36.8 U	46.3 U	36.8	45.9 U	48.1 U	--	--	--
PCB-037	30500 J	350000 J	11900	5730	4200	--	--	--
PCB-038	111	579	27.1 J	45.9 U	48.1 U	--	--	--
PCB-039	36.8 U	46.3 U	397	300	136	--	--	--
PCB-040/071	76600 J	575000 J	36700 J	63700 J	12600	--	--	--
PCB-041	16700 J	173000 J	5550	1940	1300	--	--	--
PCB-042	49900 J	365000 J	26300 J	48600 J	9160	--	--	--
PCB-043	7880	58900 J	3830	7240	1440	--	--	--
PCB-044/047/065	180000 J	1230000 J	87100 J	167000 J	29700 J	--	--	--
PCB-045	30000 J	228000 J	17700	8330	4990	--	--	--
PCB-046	13600	105000 J	9350	18100	2710	--	--	--
PCB-048	41200 J	327000 J	14400	8740	4680	--	--	--
PCB-049/069	101000 J	681000 J	57200 J	151000 J	19900 J	--	--	--
PCB-050/053	33300 J	229000 J	24000 J	60600 J	7490	--	--	--
PCB-051	10500	82600 J	6650	24700 J	2330	--	--	--
PCB-052	185000 J	1160000 J	86300 J	162000 J	29400 J	--	--	--
PCB-054	672	3900	634	1650	179	--	--	--
PCB-055	1430	20600 J	786	1430	566	--	--	--
PCB-056	55900 J	541000 J	19700	25400 J	7070	--	--	--
PCB-057	558	5780	419	452	147	--	--	--
PCB-058	216	1460	256	590	89.4	--	--	--
PCB-059/062/075	12300	102000 J	5860	7770	2080	--	--	--
PCB-060	33400 J	362000 J	6780	6100	2350	--	--	--
PCB-061/070/074/076	229000 J	1910000 J	54100 J	97500 J	26900 J	--	--	--
PCB-063	4720	43900 J	2420	4990	887	--	--	--
PCB-064	66700 J	510000 J	30200 J	29800 J	10600	--	--	--
PCB-066	107000 J	913000 J	38800 J	79100 J	13600	--	--	--
PCB-067	3020	28900 J	1240	807	426	--	--	--
PCB-068	269	1550	289	1120	122	--	--	--
PCB-072	707	4880	567	1710	237	--	--	--
PCB-073	36.8 U	46.3 U	392	1800	151	--	--	--
PCB-077	14400	101000 J	3630	7290	1400	--	--	--
PCB-078	36.8 U	46.3 U	52.1 U	45.9 U	48.1 U	--	--	--
PCB-079	1300	4190	176	338	94	--	--	--
PCB-080	36.8 U	46.3 U	52.1 U	45.9 U	48.1 U	--	--	--
PCB-081	583	6220	74.8	119	39.3	--	--	--
PCB-082	19800 J	114000 J	3210	4320	1140	--	--	--
PCB-083	10800	52300 J	1790	3760	577	--	--	--
PCB-084	48600 J	223000 J	10700	12900	3790	--	--	--
PCB-085/116	22200 J	117000 J	3910	5160	1090	--	--	--

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BERA Sediment Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB076.1	PB081.1	PB081.1	PB082
Sample ID:	PB076.1-1SS010-20110802-N	PB081.1-1SS010-20110803-D	PB081.1-1SS010-20110803-N	PB082-1SS010-20110803-N
Sample Date:	8/2/2011	8/3/2011	8/3/2011	8/3/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N
X:	3200744.033	3200772.123	3200772.123	3200751.881
Y:	13830426.95	13829983.6	13829983.6	13829914.32
PCB-031	--	--	--	--
PCB-032	--	--	--	--
PCB-034	--	--	--	--
PCB-035	--	--	--	--
PCB-036	--	--	--	--
PCB-037	--	--	--	--
PCB-038	--	--	--	--
PCB-039	--	--	--	--
PCB-040/071	--	--	--	--
PCB-041	--	--	--	--
PCB-042	--	--	--	--
PCB-043	--	--	--	--
PCB-044/047/065	--	--	--	--
PCB-045	--	--	--	--
PCB-046	--	--	--	--
PCB-048	--	--	--	--
PCB-049/069	--	--	--	--
PCB-050/053	--	--	--	--
PCB-051	--	--	--	--
PCB-052	--	--	--	--
PCB-054	--	--	--	--
PCB-055	--	--	--	--
PCB-056	--	--	--	--
PCB-057	--	--	--	--
PCB-058	--	--	--	--
PCB-059/062/075	--	--	--	--
PCB-060	--	--	--	--
PCB-061/070/074/076	--	--	--	--
PCB-063	--	--	--	--
PCB-064	--	--	--	--
PCB-066	--	--	--	--
PCB-067	--	--	--	--
PCB-068	--	--	--	--
PCB-072	--	--	--	--
PCB-073	--	--	--	--
PCB-077	--	--	--	--
PCB-078	--	--	--	--
PCB-079	--	--	--	--
PCB-080	--	--	--	--
PCB-081	--	--	--	--
PCB-082	--	--	--	--
PCB-083	--	--	--	--
PCB-084	--	--	--	--
PCB-085/116	--	--	--	--

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB001.1	PB001.2	PB001.3	PB002	PB004	PB005	PB007.1	PB007.2	PB009
Sample ID:	PB001.1-1SS010-091027-N	PB001.2-1SS010-091027-N	PB001.3-1SS010-091027-N	PB002-1SS010-091027-N	PB004-1SS010-091027-N	PB005-1SS010-091027-N	PB007.1-1SS010-091028-N	PB007.2-1SS010-091028-N	PB009-1SS010-091028-N
Sample Date:	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/28/2009	10/28/2009	10/28/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3202382.3842	3202624.0211	3202754.9026	3202606.9920	3202330.4788	3202262.1385	3202065.5011	3202037.3755	3201747.2539
Y:	13836546.3402	13836566.3557	13836489.4987	13836435.6794	13836348.7826	13836144.2614	13836300.0036	13836110.2965	13836119.3947
PCB-086/087/097/108/119/125	**275000 J**	**58500 J**	**26200 J**	**61500 J**	**57300 J**	**63400 J**	**105000 J**	**60100 J**	**51700 J**
PCB-088	8.93 U	8.93 U	8.93 U	9.8 U	9.62 U	**21800 J**	9.17 U	8.47 U	7.58 U
PCB-089	8.93 U	**2310**	**697**	**2060**	**1780**	**2010**	**4310**	**1910**	**1560**
PCB-090/101/113	**328000 J**	**89700 J**	**39800 J**	**112000 J**	**93500 J**	**98400 J**	**139000 J**	**93600 J**	**79700 J**
PCB-091	8.93 U	**18900 J**	**6800**	**23900 J**	**16900**	8.55 U	**23800 J**	**17500 J**	**13800**
PCB-092	8.93 U	**17200**	**7630**	**18200**	**13800**	**14600**	**24600 J**	**12800**	**12200**
PCB-093/100	17.9 U	**1840**	**601**	**2080**	19.2 U	**1530**	**2640**	**1550**	**1200**
PCB-094	8.93 U	**721**	**238**	**607**	**591**	**542**	**1190**	**517**	**445**
PCB-095	8.93 UJ	**77200 J**	**32100 J**	**96300 J**	**74800 J**	**81000 J**	**104000 J**	**76200 J**	**64500 J**
PCB-096	**7880**	**1850**	**618**	**2280**	**1640**	**1940**	**2730**	**1810**	**1250**
PCB-098	8.93 U	8.93 U	8.93 U	**7580**	9.62 U	**6510**	9.17 U	**6670**	7.58 U
PCB-099	8.93 UJ	**47300 J**	**18000 J**	**55800 J**	9.62 UJ	**4400 J**	**66400 J**	**3830 J**	**35900 J**
PCB-102	8.93 U	**5720**	**1940**	9.8 U	**6460**	8.55 U	**8240**	8.47 U	**4130**
PCB-103	8.93 U	**1490 J**	**483**	**2420**	**1350**	**1390**	**1500**	**1310**	**1030**
PCB-104	**104 J**	**41.7**	**13.9 J**	**52.6**	**41.6**	**38.5**	**48.3**	**36.9**	**27.5 J**
PCB-105	**181000 J**	**32700 J**	**15600 J**	**32100 J**	**31400 J**	**34700 J**	**68000 J**	**33300 J**	**30100 J**
PCB-106	8.93 U	8.93 U	8.93 U	**48.2**	9.62 U	**80.2**	**168**	**86.8**	**70.9**
PCB-107/124	**12500**	**2670**	**1380**	**2480**	**2490**	**2910**	**5050**	**2780**	**2580**
PCB-109	**22900 J**	**5320**	**2490**	**6180**	**4610**	**5280**	**9740**	**5200**	**4620**
PCB-110	**332000 J**	**90000 J**	**40600 J**	**108000 J**	**88500 J**	**94300 J**	**142000 J**	**93500 J**	**81000 J**
PCB-111	8.93 U	8.93 U	**89.5**	**162**	9.62 U	**95**	9.17 U	**105**	**89.7**
PCB-112	8.93 U	8.93 U	8.93 U	9.8 U	9.62 U	**49500 J**	9.17 U	**48600 J**	7.58 U
PCB-114	**12000**	**1970**	**813**	**1420**	**1720**	**1950**	**4280**	**1790**	**1630**
PCB-115	8.93 U	8.93 U	8.93 U	9.8 U	9.62 U	8.55 U	9.17 U	8.47 U	7.58 U
PCB-117	8.93 U	8.93 U	8.93 U	**3330**	9.62 U	**2010**	**5670**	8.47 U	7.58 U
PCB-118	**294000 J**	**68000 J**	**33000 J**	**75900 J**	**66800 J**	**73900 J**	**121000 J**	**72600 J**	**62800 J**
PCB-120	**888**	**523**	**354**	**925**	9.62 U	**538**	**539**	**486**	**427**
PCB-121	8.93 U	8.93 U	**39.1**	**74.8**	9.62 U	**24.4 J**	9.17 U	**33.5**	7.58 U
PCB-122	**7550**	**1530**	**651**	**1450**	**1450**	**1670**	**3060**	**1520**	**1320**
PCB-123	**8790**	**1870**	**824**	**1750**	**2380**	**2140**	**3570**	**1830**	**1680**
PCB-126	**2040**	**382**	**247**	**381**	**498**	**416**	**630**	**386**	**364**
PCB-127	8.93 U	8.93 U	8.93 U	9.8 U	9.62 U	8.55 U	9.17 U	8.47 U	7.58 U
PCB-128/166	**25400 J**	**8210**	**5750**	**9920**	**8170**	**9030**	**12300**	**8260**	**9010**
PCB-129/138/163	**132000 J**	**49000 J**	**31600 J**	**68900 J**	**48700 J**	**54000 J**	**69600 J**	**48700 J**	**51700 J**
PCB-130	**12300**	**5320**	**3600**	**7740**	**4870**	**5290**	**6780**	**4760**	**4970**
PCB-131	8.93 U	**805**	**542**	**951**	**819**	**879**	**1150**	**841**	**856**
PCB-132	8.93 U	**17500**	**10800**	**23100 J**	**15800**	**18500 J**	**23700 J**	**16800**	**17900 J**
PCB-133	8.93 U	**1230**	**777**	**2020**	**1040**	**1050**	**1270**	**961**	**922**
PCB-134	**8700**	**3680**	**2230**	9.8 U	**3620**	**3590**	**5420**	**3660**	**3870**
PCB-135/151	**37300 J**	**16900**	**9060**	**26800 J**	**14700**	**15900**	**21200 J**	**14100**	**14600**
PCB-136	**17800**	**7590**	**4090**	**12500**	**7020**	**8290**	**9030**	**7330**	**7120**
PCB-137	**8300**	**1800**	**1370**	**1940**	9.62 U	**2140**	**2960**	**2330**	**2190**
PCB-139/140	**2340**	**1210**	**729**	**1700**	**1120**	**1210**	**1580**	**1210**	**1170**
PCB-141	**19500 J**	**7120**	**4510**	**9920**	**7490**	**8300**	**11300**	**7580**	**8050**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB011	PB013.1	PB013.2	PB015	PB016	PB016	PB018	PB019	PB022
Sample ID:	PB011-1SS010-091028-N	PB013.1-1SS010-091028-N	PB013.2-1SS010-091028-N	PB015-1SS010-091028-N	PB016-1SS010-091101-N	PB016-1SS010-091102-N	PB018-1SS010-091101-N	PB019-1SS010-091101-N	PB022-1SS010-091101-D
Sample Date:	10/28/2009	10/28/2009	10/28/2009	10/28/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	FD
X:	3201727.2504	3201333.4751	3201420.5786	3201223.8464	3201140.0114	3201140.0114	3201146.8550	3201281.6017	3201174.1294
Y:	13836239.7593	13836187.7023	13836111.1432	13836229.0694	13836081.5392	13836081.5392	13835702.1476	13835711.9947	13835456.7389
PCB-086/087/097/108/119/125	**65200 J**	**46200 J**	**32400 J**	**88200 J**	--	**276000 J**	**39500 J**	**38200 J**	**55700 J**
PCB-088	8.2 U	8.47 U	6.85 U	9.62 U	--	76.9 U	39.1 U	38.5 U	43.9 U
PCB-089	**1860**	**1580**	**1030**	**3330**	--	**13400**	**1290**	**986**	**1860**
PCB-090/101/113	**110000 J**	**68600 J**	**45500 J**	**126000 J**	--	**312000 J**	**60100 J**	**60400 J**	**76100 J**
PCB-091	**22700 J**	**11900**	**6870**	**21700 J**	--	**65900 J**	**11400**	**10400**	**13100**
PCB-092	**17500 J**	**10600**	**7310**	**21000 J**	--	**56100 J**	**9740**	**9280**	**12900**
PCB-093/100	**2280**	**1100**	**702**	**2380**	--	**6450**	**1110**	**858**	**1140**
PCB-094	**660**	**434**	**281**	**931**	--	**3270**	**373**	**293**	**533**
PCB-095	**96700 J**	**53600 J**	**32000 J**	**93200 J**	--	**284000 J**	**48800 J**	**44200 J**	**56400 J**
PCB-096	**1970**	**1170**	**706**	**2380**	--	**8600**	**1100**	**936**	**1440**
PCB-098	8.2 U	8.47 U	6.85 U	9.62 U	--	76.9 U	39.1 U	38.5 U	43.9 U
PCB-099	**52800 J**	**33000 J**	**20600 J**	**63100 J**	--	**143000 J**	**26600 J**	**27300 J**	**32900 J**
PCB-102	**6210**	**3820**	**2320**	**7070**	--	**20700 J**	**2920**	**2760**	**3750**
PCB-103	**2030**	**842**	**459**	**1500**	--	**2620**	**935**	**748**	**659**
PCB-104	**44.4**	**22**	**10.9 J**	**40.8**	--	**117 J**	**33.5 J**	**21.3 J**	**28.3 J**
PCB-105	**31900 J**	**27500 J**	**21700 J**	**57700 J**	--	**170000 J**	**22100 J**	**22800 J**	**37700 J**
PCB-106	8.2 U	8.47 U	**38.7 J**	9.62 U	--	**301**	39.1 U	38.5 U	43.9 U
PCB-107/124	**2720**	**2150**	**1820**	**4400**	--	**12300**	**1790**	**1880**	**3030**
PCB-109	**5710**	**4090**	**3300**	**8670**	--	**20600 J**	**3490**	**3670**	**5190**
PCB-110	**116000 J**	**68900 J**	**46900 J**	**127000 J**	--	**328000 J**	**56000 J**	**55600 J**	**71700 J**
PCB-111	**73.8**	**43.7**	**41.2 J**	9.62 U	--	**77.4**	**71.6**	**56.8**	**32.2 J**
PCB-112	8.2 U	8.47 U	6.85 U	9.62 U	--	76.9 U	39.1 U	38.5 U	43.9 U
PCB-114	**1740**	**1520**	**1290**	**3310**	--	**11700**	**1170**	**1220**	**2400**
PCB-115	8.2 U	8.47 U	6.85 U	9.62 U	--	76.9 U	39.1 U	38.5 U	43.9 U
PCB-117	**2230 J**	**2290**	**1220**	**4150**	--	**9570**	**1710**	**1270**	**2500**
PCB-118	**75500 J**	**55200 J**	**42300 J**	**110000 J**	--	**277000 J**	**47700 J**	**51400 J**	**75200 J**
PCB-120	**605**	**314**	**204**	**555**	--	76.9 U	**409**	**373**	**220**
PCB-121	8.2 U	8.47 U	6.85 U	9.62 U	--	76.9 U	39.1 U	**19.5**	43.9 U
PCB-122	**1500**	**1270**	**946**	**2480**	--	**7350**	**919**	**896**	**1580**
PCB-123	**2040**	**1580**	**1150**	**3140**	--	**7950**	**1230**	**1250**	**1840**
PCB-126	**403**	**307**	**268**	**637**	--	**1140**	**246**	**282**	**345**
PCB-127	8.2 U	8.47 U	6.85 U	9.62 U	--	76.9 U	39.1 U	38.5 U	43.9 U
PCB-128/166	**11100**	**6900**	**5460**	**11000**	--	**25600 J**	**5870**	**5920**	**8720**
PCB-129/138/163	**62000 J**	**38900 J**	**29300 J**	**67400 J**	--	**146000 J**	**42900 J**	**41500 J**	**56600 J**
PCB-130	**5940**	**3880**	**2810**	**6580**	--	**13000**	**4020**	**3930**	**4970**
PCB-131	**957**	**662**	**494**	**1050**	--	**2980**	**626**	**579**	**888**
PCB-132	**21500 J**	**13900**	**10200**	**22100 J**	--	**55200 J**	**13800**	**12600**	**17800 J**
PCB-133	**1280**	**718**	**489**	**1330**	--	**1750**	**864**	**739**	**773**
PCB-134	**5130**	**3000**	**2160**	**4800**	--	**10600**	**2640**	**2310**	**3170**
PCB-135/151	**21400 J**	**11700**	**7890**	**20900 J**	--	**38600 J**	**12900**	**11000**	**13300**
PCB-136	**11200**	**5570**	**3620**	**8940**	--	**20800 J**	**7140**	**5750**	**6680**
PCB-137	**2650**	**1730**	**1430**	**2620**	--	**7640**	**1630**	**1740**	**2750**
PCB-139/140	**1470**	**907**	**640**	**1470**	--	**3090**	**846**	**812**	**1040**
PCB-141	**9490**	**6160**	**4770**	**10800**	--	**23900 J**	**6670**	**6220**	**8780**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB022	PB023	PB023	PB024	PB026	PB028	PB032	PB034	PB037
Sample ID:	PB022-1SS010-091101-N	PB023-1SS010-091030-D	PB023-1SS010-091030-N	PB024-1SS010-091030-N	PB026-1SS010-091030-N	PB028-1SS010-091030-N	PB032-1SS010-091030-N	PB034-1SS010-091030-N	PB037-1SS010-091030-N
Sample Date:	11/1/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N	N	N	N	N	N
X:	3201174.1294	3201315.1973	3201315.1973	3201180.8567	3201331.5617	3201355.6226	3201368.6522	3201387.6450	3201399.4292
Y:	13835456.7389	13835429.2411	13835429.2411	13835181.4775	13835155.0673	13834855.4834	13834541.6071	13834242.2769	13833936.8351
PCB-086/087/097/108/119/125	**48600 J**	**75000 J**	**37200 J**	**62800 J**	**60500 J**	**21200 J**	**16700**	**148000 J**	**298000 J**
PCB-088	37.6 U	231 U	183 U	6.94 U	40 U	9.17 U	45 U	7.63 U	8.13 U
PCB-089	**1810**	**3330**	**1080**	**2390**	**1390**	**815**	**1000**	**4440**	**13700**
PCB-090/101/113	**64600 J**	**105000 J**	**62700 J**	**88000 J**	**144000 J**	**30700 J**	**24600 J**	**171000 J**	**373000 J**
PCB-091	**11500**	**19100 J**	**10100**	**14700 J**	**17700 J**	**5010**	**2260**	**26800 J**	**44100 J**
PCB-092	**10900**	**18300 J**	**10700**	**15200 J**	**24200 J**	**5450**	**4150**	**31400 J**	**67200 J**
PCB-093/100	**1050**	**2150**	**960**	**1440**	**4930**	**572**	90.1 U	**3110**	16.3 U
PCB-094	**499**	**778**	**341**	**623**	**495**	**229**	**70.7**	**1280**	**4240**
PCB-095	**47800 J**	**83600 J**	**50700 J**	**67100 J**	**101000 J**	**20900 J**	**17000**	**120000 J**	**273000 J**
PCB-096	**1420**	**2130**	**852**	**1720**	**1580**	**621**	**183**	**2690**	**7670**
PCB-098	37.6 U	231 U	183 U	**192**	**1760**	**76.6**	45 U	**639**	8.13 U
PCB-099	**32000 J**	**48400 J**	**26600 J**	**41200 J**	**96900 J**	**15300**	**7710**	**78300 J**	**200000 J**
PCB-102	**4070**	**6580**	**2690**	**4830**	**3600**	**1640**	45 U	**8210**	**30000 J**
PCB-103	**639**	**1320**	**942**	**839**	**8120**	**335**	**131**	**1740**	**2360**
PCB-104	**26.9 J**	**51.4**	183 U	**23.8**	**177**	**7.97 J**	45 U	**48.9**	**93.5**
PCB-105	**32100 J**	**41500 J**	**19400 J**	**39300 J**	**20700 J**	**13700**	**8120**	**72700 J**	**175000 J**
PCB-106	37.6 U	231 U	183 U	6.94 U	40 U	9.17 U	**388**	**603 J**	8.13 U
PCB-107/124	**2420**	**3350**	**1600**	**3040**	**2000**	**1060**	**966**	**5840**	**13100**
PCB-109	**4370**	**6720**	**3670**	**6030**	**9030**	**2220**	**1350**	**11300**	**32300 J**
PCB-110	**57400 J**	**97200 J**	**55500 J**	**82400 J**	**99500 J**	**27100 J**	**19600 J**	**155000 J**	**370000 J**
PCB-111	**32.9**	231 U	**72.3**	**48.3**	**2980**	9.17 U	**56**	**136**	8.13 U
PCB-112	37.6 U	**405**	**237**	6.94 U	**1330**	9.17 U	45 U	**749**	8.13 U
PCB-114	**2010**	**1910**	**798**	**2040**	**2020**	**761**	**1870**	**3950**	**11600**
PCB-115	37.6 U	**3270**	**1440**	**1970**	**910**	**864**	**409**	7.63 U	8.13 U
PCB-117	37.6 U	**2100**	**2010**	**2520**	**4300**	**813**	**1760**	7.63 U	8.13 U
PCB-118	**61400 J**	**77500 J**	**41800 J**	**73500 J**	**82100 J**	**25300 J**	**17600**	**121000 J**	**294000 J**
PCB-120	**208**	**490**	**403**	**289**	**8050**	**132**	**308**	**816**	8.13 U
PCB-121	37.6 U	231 U	183 U	6.94 U	**1790**	9.17 U	**96.1**	7.63 U	8.13 U
PCB-122	**1360**	**2310**	**936**	**1500**	**1200 J**	**556**	**429 J**	**3400 J**	**7450**
PCB-123	**1710**	**2390**	**979**	**1900**	**1100**	**629**	**557**	**4620**	8.13 U
PCB-126	**299**	**525**	**251**	**388**	40 U	**155**	**180**	**647**	**2340**
PCB-127	37.6 U	231 U	183 U	6.94 U	40 U	9.17 U	45 U	**92.4**	8.13 U
PCB-128/166	**5810**	**8800**	**6740**	**9360**	**8680**	**2680**	**3800**	**18000 J**	**28300 J**
PCB-129/138/163	**35400 J**	**64900 J**	**49400 J**	**59300 J**	**89500 J**	**18000**	**27800 J**	**104000 J**	**154000 J**
PCB-130	**3300**	**6810**	**5070**	**5080**	**19500 J**	**1710**	**2500**	**9680**	**13100**
PCB-131	**607**	**969**	**646**	**892**	**911**	9.17 U	**388**	**1640**	**2910**
PCB-132	**12000**	**21900 J**	**16100 J**	**19900 J**	**42700 J**	**5730**	**8790**	**33700 J**	**55300 J**
PCB-133	**583**	**1340**	**1080**	**892**	**23100 J**	**357**	**11100**	**1850**	**2100**
PCB-134	**2100**	**4270**	**3240**	**3570**	**8390**	**1170**	**1560**	**6780**	**12100**
PCB-135/151	**9970**	**21200 J**	**16700 J**	**16700 J**	**58200 J**	**5570**	**8630**	**30500 J**	**43000 J**
PCB-136	**4740**	**9410**	**8150**	**7880**	**28400 J**	**2360**	**3640**	**12700**	**18700 J**
PCB-137	**1750**	**2090**	**1540**	**2160**	**1330**	**666**	**1530**	**3820**	**18600 J**
PCB-139/140	**731**	**1350**	**968**	**1080**	**6320**	**349**	**613**	**1980**	**3290**
PCB-141	**5990**	**10200**	**7880**	**9780**	**7860**	**2780**	**5650**	**16700 J**	**21100 J**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB041	PB043	PB044	PB047.1	PB047.2	PB048	PB049	PB049	PB053
Sample ID:	PB041-1SS010-091030-N	PB043-1SS010-091030-N	PB044-1SS010-091030-N	PB047.1-1SS010-091030-N	PB047.2-1SS010-091030-N	PB048-1SS010-091031-N	PB049-1SS010-091031-D	PB049-1SS010-091031-N	PB053-1SS010-091031-N
Sample Date:	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/31/2009	10/31/2009	10/31/2009	10/31/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	FD	N	N
X:	3201410.6060	3201451.0315	3201663.5416	3201454.2006	3201656.8574	3201635.5547	3201435.3433	3201435.3433	3201421.7211
Y:	13833634.6932	13833347.5606	13833285.4731	13833042.2356	13833055.7842	13832859.6311	13832751.7292	13832751.7292	13832443.5506
PCB-086/087/097/108/119/125	**326000 J**	**236000 J**	**181000 J**	**671000 J**	**85500 J**	**109000 J**	**111000 J**	**129000 J**	**2060000 J**
PCB-088	8.2 U	7.75 U	9.71 U	8.4 U	9.17 U	42 U	48.5 U	47.6 U	48.1 U
PCB-089	**13900**	**11100**	**8520**	**29700 J**	**3380**	**4640**	**4970**	**5980**	**124000 J**
PCB-090/101/113	**421000 J**	**284000 J**	**229000 J**	**822000 J**	**113000 J**	**143000 J**	**144000 J**	**163000 J**	**2280000 J**
PCB-091	**74200 J**	**52400 J**	**41500 J**	**141000 J**	**18900 J**	**26400 J**	**25900 J**	**30700 J**	**524000 J**
PCB-092	**74600 J**	**50500 J**	**41300 J**	**152000 J**	**20200 J**	**25000 J**	**26400 J**	**29400 J**	**425000 J**
PCB-093/100	**7800**	**5570**	**4460**	**13300**	**2030**	**2520**	**2610**	**3010**	**56800 J**
PCB-094	**3570**	**2820**	**2170**	**7380**	**928**	**1220**	**1310**	**1570**	**29800 J**
PCB-095	**315000 J**	**218000 J**	**181000 J**	**682000 J**	**77900 J**	**103000 J**	**108000 J**	**121000 J**	**1970000 J**
PCB-096	**7980**	**6310**	**5480**	**18200 J**	**1900**	**3350**	**3200**	**3560**	**71800 J**
PCB-098	8.2 U	7.75 U	9.71 U	8.4 U	**6890**	**484**	**357**	47.6 U	**8830**
PCB-099	**202000 J**	**127000 J**	**107000 J**	**341000 J**	9.17 U	**69000 J**	**66300 J**	**76800 J**	**1100000 J**
PCB-102	**25500 J**	**19000 J**	**14600**	**49000 J**	9.17 U	**8780**	**8650**	**10900**	**191000 J**
PCB-103	**3890**	**2240**	**1870**	**5740**	**943**	**1260**	**1170**	**1330**	**20400 J**
PCB-104	**115**	**75.5**	**55.9**	**186**	**27.2**	**44.3**	**36.7**	**32.7 J**	**740**
PCB-105	**195000 J**	**151000 J**	**118000 J**	**394000 J**	**54300 J**	**73100 J**	**71400 J**	**84600 J**	**1220000 J**
PCB-106	**544**	7.75 U	**270**	8.4 U	**126**	42 U	**145**	**242**	**3220**
PCB-107/124	**16100**	**11000**	**9130**	**33300 J**	**4380**	**5720**	**5770**	**6500**	**93300 J**
PCB-109	**28500 J**	**26000 J**	**15800**	**51300 J**	**7810**	**9810**	**10100**	**11600**	**150000 J**
PCB-110	**383000 J**	**272000 J**	**207000 J**	**766000 J**	**99700 J**	**128000 J**	**129000 J**	**146000 J**	**2020000 J**
PCB-111	8.2 U	7.75 U	9.71 U	**1940**	9.17 U	42 U	48.5 U	47.6 U	48.1 U
PCB-112	**1680**	**6470**	**680**	8.4 U	**53200 J**	**796**	**592**	**672**	**10900**
PCB-114	**13400**	**11300**	**7690**	**27900 J**	**3520**	**4730**	**5230**	**5860**	**84300 J**
PCB-115	**10500**	7.75 U	**6570**	**26600 J**	**4200**	**5080**	**4370**	**5390**	**93100 J**
PCB-117	**18400 J**	7.75 U	**9590**	**33700 J**	**5580**	**5010**	**5440**	**6460**	**89800 J**
PCB-118	**351000 J**	**250000 J**	**207000 J**	**681000 J**	**96700 J**	**126000 J**	**135000 J**	**146000 J**	**1890000 J**
PCB-120	**1080**	**219**	**437**	**833**	**228**	**309**	**227**	**268**	**2600**
PCB-121	8.2 U	7.75 U	9.71 U	8.4 U	9.17 U	42 U	48.5 U	47.6 U	48.1 U
PCB-122	**9970**	**6510**	**5480**	**19700 J**	**2630**	**3520**	**3660**	**4030**	**57900 J**
PCB-123	**10500**	7.75 U	**5590**	**18100 J**	**2810**	**4000**	**3660**	**4280**	**70200 J**
PCB-126	**1780**	**1850**	**1030**	**3120**	**529**	**789**	**671**	**686**	**12200**
PCB-127	8.2 U	**83.8**	9.71 U	**447**	9.17 U	42 U	48.5 U	47.6 U	48.1 U
PCB-128/166	**31900 J**	**24100 J**	**25200 J**	**88100 J**	**9890**	**10900**	**12400**	**12800**	**118000 J**
PCB-129/138/163	**186000 J**	**127000 J**	**135000 J**	**434000 J**	**54100 J**	**64900 J**	**73200 J**	**70300 J**	**653000 J**
PCB-130	**16700 J**	**10900**	**11800**	**38800 J**	**4780**	**5710**	**6300**	**6070**	**65300 J**
PCB-131	**3500**	**2850**	**2260**	**8970**	**930**	**1020**	**1250**	**1240**	**16600**
PCB-132	**67400 J**	**46200 J**	**43900 J**	**165000 J**	**18200**	**20100 J**	**23700 J**	**23500 J**	**273000 J**
PCB-133	**2590**	**1490**	**1650**	**5080**	**743**	**856**	**852**	**859**	**8150**
PCB-134	**13800**	**12600**	**8460**	**33000 J**	**3540**	**4040**	**5080**	**4780**	**61200 J**
PCB-135/151	**50500 J**	**31900 J**	**30900 J**	**104000 J**	**14400**	**15500**	**16800**	**16800**	**182000 J**
PCB-136	**24800 J**	**15600 J**	**14600**	**57900 J**	**6390**	**8270**	**8570**	**8480**	**89400 J**
PCB-137	**9820**	7.75 U	**7160**	**23600 J**	**2720**	**3260**	**4190**	**3910**	**47400 J**
PCB-139/140	**4110**	**2620**	**2560**	**9170**	**1130**	**1260**	**1420**	**1450**	**18000**
PCB-141	**30100 J**	**19100 J**	**22000 J**	**70600 J**	**8890**	**10800**	**11800**	**11900**	**116000 J**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB056	PB057	PB059.1	PB059.2	PB063.1	PB063.2	PB064	PB066	PB069
Sample ID:	PB056-1SS010-091031-N	PB057-1SS010-091031-N	PB059.1-1SS010-091102-N	PB059.2-1SS010-091031-N	PB063.1-1SS010-091031-N	PB063.2-1SS010-091102-N	PB064-1SS010-091102-N	PB066-1SS010-091101-N	PB069-1SS010-091101-N
Sample Date:	10/31/2009	10/31/2009	11/2/2009	10/31/2009	10/31/2009	11/2/2009	11/2/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3201402.6901	3201634.7257	3201531.6282	3201640.7239	3201497.4803	3201553.0822	3201628.7185	3201431.2755	3201160.2007
Y:	13832184.9773	13832087.9098	13831850.4179	13831857.0149	13831523.9045	13831552.2764	13831275.6688	13831275.6811	13830971.1845
PCB-086/087/097/108/119/125	**194000 J**	**77900 J**	**1310000 J**	**136000 J**	**762000 J**	**74100 J**	**6310**	**171000 J**	**1010000 J**
PCB-088	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	37.3 U	60.6 U
PCB-089	**9550**	**3670**	**65300 J**	**6710**	**41300 J**	**3450**	**271**	**8450**	**52500 J**
PCB-090/101/113	**240000 J**	**95900 J**	**1440000 J**	**160000 J**	**869000 J**	**87900 J**	**8210**	**201000 J**	**1080000 J**
PCB-091	**45300 J**	**18100 J**	**306000 J**	**31200 J**	**180000 J**	**16600**	**1550**	**38800 J**	**212000 J**
PCB-092	**43700 J**	**17200**	**259000 J**	**28800 J**	**159000 J**	**16300**	**1530**	**36300 J**	**196000 J**
PCB-093/100	**4660**	**1930**	**32400 J**	**3310**	**20300 J**	**1840**	**160**	**4150**	**21700 J**
PCB-094	**2330**	**937**	**15600**	**1640**	**10200**	**900**	**81.9**	**2120**	**12800 J**
PCB-095	**183000 J**	**68600 J**	**1200000 J**	**124000 J**	**728000 J**	**68200 J**	**6240**	**159000 J**	**875000 J**
PCB-096	**5940**	**2390**	**37600 J**	**4090**	**26300 J**	**2310**	**230**	**5580**	**33500 J**
PCB-098	**302**	43.5 U	90.1 U	**657**	**1960**	46.3 U	36.8 U	37.3 U	60.6 U
PCB-099	**110000 J**	**44900 J**	**695000 J**	**77700 J**	**417000 J**	**44400 J**	**4300**	**103000 J**	**530000 J**
PCB-102	**15500**	**6390**	**97200 J**	**10200**	**64500 J**	**5840**	**541**	**14300**	**92800 J**
PCB-103	**1880**	**763**	**11300**	**1250**	**7550**	**710**	**75.3**	**1580**	**8480**
PCB-104	**69.6**	**27.8**	**564 J**	**41.5**	**284**	**35.2 J**	36.8 U	**90.8 J**	**456 J**
PCB-105	**124000 J**	**50900 J**	**822000 J**	**94900 J**	**487000 J**	**49900 J**	**4290**	**112000 J**	**701000 J**
PCB-106	44.2 U	43.5 U	**2130**	50 U	**1420**	**93.3**	36.8 U	**250**	**1770**
PCB-107/124	88.5 U	**3900**	**63300 J**	**6920**	**37200 J**	**3640**	**322**	**8290**	**46200 J**
PCB-109	**16500**	**6810**	**103000 J**	**11700**	**61600 J**	**6070**	**551**	**13500**	**74800 J**
PCB-110	**216000 J**	**85200 J**	**1450000 J**	**150000 J**	**803000 J**	**78900 J**	**7330**	**183000 J**	**1130000 J**
PCB-111	44.2 U	43.5 U	**165 J**	50 U	49.5 U	**31.9 J**	36.8 U	37.3 U	**139 J**
PCB-112	**918**	**526**	90.1 U	50 U	**3670**	46.3 U	36.8 U	37.3 U	60.6 U
PCB-114	**8780**	**3450**	**70400 J**	**6360**	**38200 J**	**3250**	**263**	**7790**	**56000 J**
PCB-115	**8340**	**3330**	90.1 U	**5580**	**31200 J**	46.3 U	36.8 U	37.3 U	60.6 U
PCB-117	**9670**	**3640**	**56300 J**	**7150**	**42600 J**	**3420**	**285**	**7400**	**35300 J**
PCB-118	**211000 J**	**82300 J**	**1320000 J**	**146000 J**	**795000 J**	**86400 J**	**7690**	**193000 J**	**1020000 J**
PCB-120	**317**	**131**	90.1 U	50 U	**928**	**135**	36.8 U	**281**	**1080**
PCB-121	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	37.3 U	60.6 U
PCB-122	**6000**	**2550**	**40400 J**	**4560**	**24000 J**	**2260**	**170**	**4790**	**27100 J**
PCB-123	**6140**	**2520**	**45200 J**	**4600**	**25900 J**	**2620**	**237**	**5790**	**34800 J**
PCB-126	**1020**	**471**	**6230**	**793**	**4250**	**452**	**51.6**	**841**	**4910**
PCB-127	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	37.3 U	60.6 U
PCB-128/166	**18300 J**	**6550**	**101000 J**	**12900**	**53600 J**	**6960**	**667**	**14700**	**90900 J**
PCB-129/138/163	**103000 J**	**36800 J**	**544000 J**	**66800 J**	**289000 J**	**40100 J**	**3970**	**78900 J**	**410000 J**
PCB-130	**9050**	**3250**	**50200 J**	**6190**	**26200 J**	**3550**	**349**	**7230**	**31700 J**
PCB-131	**1840**	**685**	**12700**	**1390**	**6130**	**780**	**63.4**	**1680**	**8320**
PCB-132	**34800 J**	**12600**	**206000 J**	**25600 J**	**108000 J**	**14100**	**1210**	**30200 J**	**147000 J**
PCB-133	**1170**	**405**	**6120**	**798**	**3210**	**478**	**52.9**	**981**	**4900**
PCB-134	**7010**	**2510**	**40200 J**	**5160**	**22500 J**	**2700**	**242**	**5300**	**29600 J**
PCB-135/151	**23600 J**	**8340**	**132000 J**	**15800**	**68800 J**	**10300**	**960**	**20500 J**	**106000 J**
PCB-136	**13800**	**4670**	**79200 J**	**8670**	**40300 J**	**5010**	**446**	**10600**	**67700 J**
PCB-137	**5820**	**2200**	**35100 J**	**3910**	**17700**	**2370**	**211**	**4940**	**24400 J**
PCB-139/140	**2050**	**776**	**12800**	**1550**	**6540**	**843**	**75.9**	**1830**	**9130**
PCB-141	**17500**	**6130**	**92500 J**	**11400**	**49600 J**	**7010**	**617**	**14100**	**71200 J**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	2011 USC	2011 USC	2011 USC
Location ID:	PB074	PB081	PB093	PB097	PB101	PB068	PB069.1	PB070A
Sample ID:	PB074-1SS010-091101-N	PB081-1SS010-091103-N	PB093-1SS010-091103-N	PB097-1SS010-091103-N	PB101-1SS010-091103-N	PB068-1SS010-20110804-N	PB069.1-1SS008-20110804-N	PB070A-1SS010-20110802-N
Sample Date:	11/1/2009	11/3/2009	11/3/2009	11/3/2009	11/3/2009	8/4/2011	8/4/2011	8/2/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 8 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N
X:	3200828.0183	3200761.3787	3200970.4291	3201103.1242	3201287.2658	3201209.861	3201205.859	3201087.255
Y:	13830463.2171	13830005.1879	13828894.7843	13828566.1540	13828181.2285	13831121.51	13830973.3	13830903.51
PCB-086/087/097/108/119/125	**99100 J**	**457000 J**	**12700**	**20100 J**	**4570**	--	--	--
PCB-088	36.8 U	46.3 U	52.1 U	45.9 U	48.1 U	--	--	--
PCB-089	**3140**	**21600 J**	**1010**	**854**	**375**	--	--	--
PCB-090/101/113	**136000 J**	**559000 J**	**17400**	**28000 J**	**6260**	--	--	--
PCB-091	**19600 J**	**100000 J**	**4960**	**10300**	**1710**	--	--	--
PCB-092	**25300 J**	**99900 J**	**3890**	**10900**	**1380**	--	--	--
PCB-093/100	**1630**	**9620**	**611**	**1690**	**229**	--	--	--
PCB-094	**915**	**5170**	**318**	**1110**	**123**	--	--	--
PCB-095	**109000 J**	**463000 J**	**19800**	**21900 J**	**6650**	--	--	--
PCB-096	**2410**	**12900**	**870**	**1240**	**302**	--	--	--
PCB-098	36.8 U	**2110**	**98.8**	**323**	48.1 U	--	--	--
PCB-099	**52600 J**	**238000 J**	**8230**	**15500**	**3220**	--	--	--
PCB-102	**6210**	**34000 J**	**1770**	**2570**	**642**	--	--	--
PCB-103	**815**	**4060**	**251**	**928**	**92.2**	--	--	--
PCB-104	36.8 U	**104**	**8.77 J**	**64**	48.1 U	--	--	--
PCB-105	**54900 J**	**334000 J**	**4920**	**12200**	**2140**	--	--	--
PCB-106	36.8 U	46.3 U	52.1 U	45.9 U	48.1 U	--	--	--
PCB-107/124	**4930**	**21900 J**	**389**	**959**	**144**	--	--	--
PCB-109	**7440**	**32700 J**	**984**	**3020**	**399**	--	--	--
PCB-110	**116000 J**	**503000 J**	**20200**	**27700 J**	**6720**	--	--	--
PCB-111	36.8 U	46.3 U	52.1 U	**43.6**	48.1 U	--	--	--
PCB-112	36.8 U	**2010**	52.1 U	**219**	48.1 U	--	--	--
PCB-114	**3630**	**23800 J**	**310**	**721**	**136**	--	--	--
PCB-115	36.8 U	**21800 J**	52.1 U	**1060**	48.1 U	--	--	--
PCB-117	**5070**	**26200 J**	52.1 U	**3350**	**368**	--	--	--
PCB-118	**109000 J**	**490000 J**	**11100**	**25600 J**	**4970**	--	--	--
PCB-120	**175**	**403**	**29.3 J**	**65.3**	48.1 U	--	--	--
PCB-121	36.8 U	46.3 U	52.1 U	45.9 U	48.1 U	--	--	--
PCB-122	**2220**	**13600**	**281**	**676**	**119**	--	--	--
PCB-123	**2620**	**13900**	**255**	**771**	**125**	--	--	--
PCB-126	**801**	**2200**	**47.5**	**119**	48.1 U	--	--	--
PCB-127	36.8 U	46.3 U	52.1 U	45.9 U	48.1 U	--	--	--
PCB-128/166	**16900 J**	**44600 J**	**2160**	**1590**	**286**	--	--	--
PCB-129/138/163	**93800 J**	**264000 J**	**10800**	**8650**	**1510**	--	--	--
PCB-130	**8580**	**22000 J**	**983**	**799**	**148**	--	--	--
PCB-131	**1820**	**5240**	**151**	**152**	**32.6**	--	--	--
PCB-132	**35400 J**	**103000 J**	**3990**	**3120**	**717**	--	--	--
PCB-133	**1160**	**3180**	**149**	**184**	**22.1**	--	--	--
PCB-134	**6130**	**21700 J**	**897**	**924**	**155**	--	--	--
PCB-135/151	**21500 J**	**83800 J**	**2810**	**2680**	**493**	--	--	--
PCB-136	**13000**	**44900 J**	**1400**	**1290**	**262**	--	--	--
PCB-137	**5470**	**12600**	**463**	**461**	**80.5**	--	--	--
PCB-139/140	**1880**	**5250**	**192**	**213**	**36.6**	--	--	--
PCB-141	**15300 J**	**52500 J**	**1430**	**1270**	**241**	--	--	--

Appendix A-1
BERA Sediment Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB076.1	PB081.1	PB081.1	PB082
Sample ID:	PB076.1-1SS010-20110802-N	PB081.1-1SS010-20110803-D	PB081.1-1SS010-20110803-N	PB082-1SS010-20110803-N
Sample Date:	8/2/2011	8/3/2011	8/3/2011	8/3/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N
X:	3200744.033	3200772.123	3200772.123	3200751.881
Y:	13830426.95	13829983.6	13829983.6	13829914.32
PCB-086/087/097/108/119/125	--	--	--	--
PCB-088	--	--	--	--
PCB-089	--	--	--	--
PCB-090/101/113	--	--	--	--
PCB-091	--	--	--	--
PCB-092	--	--	--	--
PCB-093/100	--	--	--	--
PCB-094	--	--	--	--
PCB-095	--	--	--	--
PCB-096	--	--	--	--
PCB-098	--	--	--	--
PCB-099	--	--	--	--
PCB-102	--	--	--	--
PCB-103	--	--	--	--
PCB-104	--	--	--	--
PCB-105	--	--	--	--
PCB-106	--	--	--	--
PCB-107/124	--	--	--	--
PCB-109	--	--	--	--
PCB-110	--	--	--	--
PCB-111	--	--	--	--
PCB-112	--	--	--	--
PCB-114	--	--	--	--
PCB-115	--	--	--	--
PCB-117	--	--	--	--
PCB-118	--	--	--	--
PCB-120	--	--	--	--
PCB-121	--	--	--	--
PCB-122	--	--	--	--
PCB-123	--	--	--	--
PCB-126	--	--	--	--
PCB-127	--	--	--	--
PCB-128/166	--	--	--	--
PCB-129/138/163	--	--	--	--
PCB-130	--	--	--	--
PCB-131	--	--	--	--
PCB-132	--	--	--	--
PCB-133	--	--	--	--
PCB-134	--	--	--	--
PCB-135/151	--	--	--	--
PCB-136	--	--	--	--
PCB-137	--	--	--	--
PCB-139/140	--	--	--	--
PCB-141	--	--	--	--

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB001.1	PB001.2	PB001.3	PB002	PB004	PB005	PB007.1	PB007.2	PB009
Sample ID:	PB001.1-1SS010-091027-N	PB001.2-1SS010-091027-N	PB001.3-1SS010-091027-N	PB002-1SS010-091027-N	PB004-1SS010-091027-N	PB005-1SS010-091027-N	PB007.1-1SS010-091028-N	PB007.2-1SS010-091028-N	PB009-1SS010-091028-N
Sample Date:	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/28/2009	10/28/2009	10/28/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3202382.3842	3202624.0211	3202754.9026	3202606.9920	3202330.4788	3202262.1385	3202065.5011	3202037.3755	3201747.2539
Y:	13836546.3402	13836566.3557	13836489.4987	13836435.6794	13836348.7826	13836144.2614	13836300.0036	13836110.2965	13836119.3947
PCB-142	**43600 J**	8.93 U	8.93 U	9.8 U	**47.4**	**44**	9.17 U	**47.2**	**56.3**
PCB-143	**2770**	8.93 U	8.93 U	**3060**	9.62 U	8.55 U	9.17 U	8.47 U	7.58 U
PCB-144	**6060**	**2170**	**1340**	**3450**	**2260**	**2530**	**3110**	**2360**	**2380**
PCB-145	8.93 U	8.93 U	**29.6**	**52.5**	**37.1**	**38.8**	**53.1**	**37**	**35.9**
PCB-146	**15800**	8.93 U	**5000**	9.8 U	**7820**	**7770**	**9630**	**7030**	**6980**
PCB-147/149	**88300 J**	**39200 J**	**21300 J**	**65900 J**	**38200 J**	**42500 J**	**47000 J**	**39000 J**	**38000 J**
PCB-148	8.93 U	8.93 U	**135**	**282**	**139**	**116**	**154**	**121**	**103**
PCB-150	8.93 U	**204**	**119**	**385**	**213**	**200**	**167**	**189**	**158**
PCB-152	8.93 U	**74.8**	**40.9**	**69.8**	**51.3**	**61.7**	**103**	**56.9**	**54.8**
PCB-153/168	**83100 J**	**35700 J**	**20400 J**	**61900 J**	**38400 J**	**41700 J**	**49700 J**	**37900 J**	**38400 J**
PCB-154	**2630**	**1670**	**709**	**2730**	**1610**	**1410**	**1600**	**1290**	**1140**
PCB-155	8.93 U	**182**	**142**	**333**	**174**	**186**	**198**	**186**	**128**
PCB-156/157	**21000 J**	**6390**	**4690**	**7250**	**6240**	**6880**	**9530**	**6490**	**7200**
PCB-158	**14400**	**5010**	**3520**	**6860**	**5160**	**5610**	**7170**	**5200**	**5490**
PCB-159	**443 J**	**229 J**	**173 J**	**510 J**	**256 J**	**285 J**	**321 J**	**236 J**	**248 J**
PCB-160	8.93 U	8.93 U	8.93 U	9.8 U	9.62 U	8.55 U	9.17 U	8.47 U	7.58 U
PCB-161	8.93 U	**7990**	8.93 U	**13600**	9.62 U	8.55 U	9.17 U	8.47 U	7.58 U
PCB-162	**631**	**299**	8.93 U	**259**	**279**	**183**	**247 J**	**212**	**189**
PCB-164	**7600**	**3820**	**2250**	**5560**	**5560**	**4170**	**4800**	**3480**	**3870**
PCB-165	8.93 U	8.93 U	**92**	**164**	9.62 U	8.55 U	9.17 U	8.47 U	**48.1**
PCB-167	**6110**	**2160**	**1660**	**2950**	**2240**	**2420**	**3280**	**2290**	**2460**
PCB-169	8.93 U	8.93 U	8.93 U	9.8 U	9.62 U	8.55 U	9.17 U	8.47 U	7.58 U
PCB-170	**13600 J**	**6570 J**	**3410 J**	**12900 J**	**7210 J**	**7520 J**	**8480 J**	**6720 J**	**7270 J**
PCB-171/173	**5740**	**2950**	**1840**	**5910**	**3170**	**3360**	**3910**	**2990**	**3030**
PCB-172	**3100**	**1740**	**1220**	**3560**	**1880**	**1850**	**2300**	**1720**	**1730**
PCB-174	**16800**	**7320**	**3420**	**15200**	**8830**	**8870**	**10600**	**7440**	**7870**
PCB-175	**1060**	**700**	**638**	**1400**	**629**	**690**	**745**	**651**	**634**
PCB-176	**2200**	**1140**	**668**	**2560**	**1190**	**1250**	**1450**	**1090**	**1070**
PCB-177	**9500**	**5100**	**2600**	**10400**	**5360**	**5640**	**6560**	**4750**	**4910**
PCB-178	**3720**	**2260**	**1380**	**4600**	**2230**	**2140**	**2650**	**1840**	**1840**
PCB-179	**6830**	**3490**	**1810**	**7350**	**3630**	**3700**	**4470**	**2990**	**3080**
PCB-180/193	**42800 J**	**21500 J**	**10600**	**45100 J**	**24800 J**	**25500 J**	**30700 J**	**21900 J**	**22400 J**
PCB-181	**270**	**195**	**218**	**289**	**207**	**193**	**207**	**182**	**183**
PCB-182	8.93 U	**130 J**	**113 J**	**225 J**	**95.8 J**	**117 J**	**142 J**	**123 J**	**106 J**
PCB-183	**10600 J**	**5630 J**	**2800 J**	**12200 J**	**6600 J**	**6590 J**	**7930 J**	**5610 J**	**5810 J**
PCB-184	**168**	**191**	**210**	**455**	**177**	**218**	**169**	**221**	**163**
PCB-185	8.93 U	**621**	**448**	**1230**	9.62 U	**716**	**882**	**1010**	**799**
PCB-186	8.93 U	8.93 U	**81.8**	9.8 U	9.62 U	8.55 U	9.17 U	**18.5**	7.58 U
PCB-187	**18500 J**	**10600 J**	**4940 J**	**21300 J**	**11200 J**	**11100 J**	**13400 J**	**9830 J**	**9470 J**
PCB-188	**116**	**139**	**201**	**186**	**86.9**	**83.4**	**97.2**	**82.6**	**71.6**
PCB-189	**1020**	**565**	**700**	**1090**	**579**	**576**	**651**	**563**	**533**
PCB-190	**3770 J**	**1750 J**	**1120 J**	**3530 J**	**1980 J**	**1960 J**	**2120 J**	**1750 J**	**1730 J**
PCB-191	**839**	**512**	**511**	**1010**	**535**	**561**	**635**	**496**	**480**
PCB-192	8.93 U	**56.7**	**147**	**107**	9.62 U	8.55 U	9.17 U	**59.9**	**43.4**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB011	PB013.1	PB013.2	PB015	PB016	PB016	PB018	PB019	PB022
Sample ID:	PB011-1SS010-091028-N	PB013.1-1SS010-091028-N	PB013.2-1SS010-091028-N	PB015-1SS010-091028-N	PB016-1SS010-091101-N	PB016-1SS010-091102-N	PB018-1SS010-091101-N	PB019-1SS010-091101-N	PB022-1SS010-091101-D
Sample Date:	10/28/2009	10/28/2009	10/28/2009	10/28/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	FD
X:	3201727.2504	3201333.4751	3201420.5786	3201223.8464	3201140.0114	3201140.0114	3201146.8550	3201281.6017	3201174.1294
Y:	13836239.7593	13836187.7023	13836111.1432	13836229.0694	13836081.5392	13836081.5392	13835702.1476	13835711.9947	13835456.7389
PCB-142	8.2 U	**41.2**	6.85 U	**52**	--	**102**	**34.8**	**22.2**	**35.4**
PCB-143	8.2 U	8.47 U	6.85 U	9.62 U	--	**533**	39.1 U	**69.4**	**190**
PCB-144	**2950**	**1820**	**1280**	**3070**	--	**6570**	**1860**	**1630**	**2200**
PCB-145	**42.6**	**30.5**	**19.9**	**55.5**	--	**132**	**33.6**	**31.8**	**41.2**
PCB-146	**9560**	**5330**	**3640**	**9870**	--	**15000**	**6060**	**5680**	**6120**
PCB-147/149	**53300 J**	**28300 J**	**19300 J**	**49300 J**	--	**88500 J**	**31000 J**	**26800 J**	**31500 J**
PCB-148	**191**	8.47 U	**52**	**167**	--	**132**	**127**	**93**	**62.6**
PCB-150	**345**	**103**	**63.7**	**200**	--	**189**	**205**	**129**	**103**
PCB-152	**81.9**	**49.9**	**34**	**80.8**	--	**266**	**55.4**	**53.2**	**71.4**
PCB-153/168	**50900 J**	**28500 J**	**20000 J**	**51200 J**	--	**92600 J**	**36300 J**	**34500 J**	**40900 J**
PCB-154	**2110**	**870**	**532**	**1780**	--	**1540**	**1200**	**943**	**893**
PCB-155	**410**	**80.9**	**69.8**	**221**	--	**74.5**	**207**	**175**	**33.8**
PCB-156/157	**8330**	**5190**	**4410**	**8990**	--	**21000 J**	**4910**	**5430**	**8140**
PCB-158	**6380**	**4010**	**3180**	**6930**	--	**15800 J**	**4150**	**4170**	**6060**
PCB-159	**331 J**	**200 J**	**142 J**	**309 J**	--	**657**	**320**	**277**	**375**
PCB-160	8.2 U	8.47 U	6.85 U	9.62 U	--	76.9 U	39.1 U	38.5 U	43.9 U
PCB-161	8.2 U	8.47 U	6.85 U	9.62 U	--	76.9 U	39.1 U	38.5 U	43.9 U
PCB-162	**223**	**144**	**110**	**208 J**	--	**427**	**147**	**142**	**164**
PCB-164	**4590**	**2820**	**1980**	**4910**	--	**9430**	**3100**	**2990**	**3680**
PCB-165	**63.8**	8.47 U	6.85 U	9.62 U	--	**50.6**	**53.3 J**	38.5 U	**26.2**
PCB-167	**2930**	**1760**	**1460**	**3050**	--	**6150**	**1850**	**1880**	**2600**
PCB-169	8.2 U	8.47 U	6.85 U	9.62 U	--	76.9 U	39.1 U	38.5 U	43.9 U
PCB-170	**10000 J**	**5300 J**	**3810 J**	**9430 J**	--	**14700**	**7060**	**5960**	**9670**
PCB-171/173	**4210**	**2190**	**1550**	**4020**	--	**5790**	**2710**	**2220**	**3090**
PCB-172	**2630**	**1270**	**924**	**2440**	--	**3080**	**1700**	**1460**	**2290**
PCB-174	**11300**	**6040**	**4090**	**11000**	--	**15600 J**	**6740**	**5280**	**7730**
PCB-175	**885**	**439**	**315**	**816**	--	**1040**	**557**	**422**	**565**
PCB-176	**1790**	**809**	**512**	**1450**	--	**2190**	**1220**	**1050**	**1200**
PCB-177	**7120**	**3630**	**2440**	**6820**	--	**9250**	**4370**	**3550**	**4870**
PCB-178	**2850**	**1340**	**863**	**2610**	--	**3560**	**2050**	**1800**	**2490**
PCB-179	**5120**	**2400**	**1520**	**4470**	--	**6790**	**3400**	**2870**	**3720**
PCB-180/193	**34400 J**	**16600**	**12100**	**32400 J**	--	**43900 J**	**23500 J**	**18800 J**	**35200 J**
PCB-181	**271**	**145**	**88**	**224**	--	**291**	**162**	**122**	**143**
PCB-182	**150 J**	**86.4 J**	6.85 U	**144 J**	--	**119**	**118**	**77.5**	**77.8**
PCB-183	**9070 J**	**4270 J**	**3050 J**	**8350 J**	--	**10000**	**4800**	**3810**	**5930**
PCB-184	**341**	**73.9**	**65.7**	**175**	--	**65.7**	**237**	**178**	**49.5**
PCB-185	**731**	**479**	**244 J**	**686**	--	**1110**	**835**	**636**	**850**
PCB-186	8.2 U	8.47 U	6.85 U	9.62 U	--	**18**	39.1 U	38.5 U	43.9 U
PCB-187	**15200 J**	**7480 J**	**4980 J**	**14200 J**	--	**16900 J**	**8660**	**7070**	**11500**
PCB-188	**163**	**44**	**36**	**98.7**	--	**50.5**	**78.9**	**88.2**	**57.1**
PCB-189	**790**	**367**	**296**	**730**	--	**807**	**534**	**438**	**695**
PCB-190	**2630 J**	**1350 J**	**938 J**	**2470 J**	--	**2860**	**2100**	**1640**	**2700**
PCB-191	**698**	**341**	**254**	**611**	--	**781**	39.1 U	**404**	**581**
PCB-192	**55.5**	**23.3 J**	**18.3 J**	9.62 U	--	76.9 U	**79.1**	38.5 U	43.9 U

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB022	PB023	PB023	PB024	PB026	PB028	PB032	PB034	PB037
Sample ID:	PB022-1SS010-091101-N	PB023-1SS010-091030-D	PB023-1SS010-091030-N	PB024-1SS010-091030-N	PB026-1SS010-091030-N	PB028-1SS010-091030-N	PB032-1SS010-091030-N	PB034-1SS010-091030-N	PB037-1SS010-091030-N
Sample Date:	11/1/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N	N	N	N	N	N
X:	3201174.1294	3201315.1973	3201315.1973	3201180.8567	3201331.5617	3201355.6226	3201368.6522	3201387.6450	3201399.4292
Y:	13835456.7389	13835429.2411	13835429.2411	13835181.4775	13835155.0673	13834855.4834	13834541.6071	13834242.2769	13833936.8351
PCB-142	**28.8**	231 U	**33.2**	**40.1**	**420**	9.17 U	**3090**	**97.9**	8.13 U
PCB-143	**118**	231 U	183 U	**189**	**188**	9.17 U	**467**	**275**	8.13 U
PCB-144	**1590**	**3090**	**2390**	**2600**	**2760**	**775**	**1460**	**4490**	**7110**
PCB-145	**27.9**	**79.5**	183 U	**35.5**	**308**	9.17 U	45 U	**65.2**	**124**
PCB-146	**4480**	**9910**	**7950**	**7160**	**59700 J**	**2710**	**3390**	**13800**	**17600 J**
PCB-147/149	**23000 J**	**48100 J**	**38300 J**	**38600 J**	**118000 J**	**12100**	**18200 J**	**65800 J**	**97500 J**
PCB-148	**58.6**	**226**	**133**	**79.8**	**9220**	**54.7**	**95.1**	**249**	**154**
PCB-150	**70**	**268**	**180**	**86.3**	**2460**	**50.2**	**112**	**198**	**194**
PCB-152	**52.7**	**113**	**48.2**	**72.2**	**200**	**22.4**	**22.9 J**	**118**	**257**
PCB-153/168	**26800 J**	**48700 J**	**39400 J**	**41400 J**	**120000 J**	**14100**	**19400 J**	**73400 J**	**103000 J**
PCB-154	**629**	**1590**	**1280**	**867**	**24600 J**	**454**	**1750**	**2080**	**2090**
PCB-155	**37.5**	**354**	**264**	**41.7**	**11200**	**83.2**	**105**	**207**	**80.9**
PCB-156/157	**5100**	**6450**	**4820**	**7550**	**7680**	**2080**	**3650**	**12900**	**22400 J**
PCB-158	**3870**	**6020**	**4560**	**5980**	**5670**	**1760**	**3070**	**10600**	**14100**
PCB-159	**242**	231 U	183 U	**287**	**1050**	**81.7**	**246**	**468**	**461**
PCB-160	37.6 U	231 U	183 U	6.94 U	**1160**	9.17 U	**1500**	7.63 U	8.13 U
PCB-161	37.6 U	231 U	183 U	6.94 U	**469**	9.17 U	**238**	7.63 U	8.13 U
PCB-162	**120**	**173**	183 U	**178**	**1300**	**53.5**	**170**	**402**	**639**
PCB-164	**2470**	**5160**	**3730**	**4270**	**12300**	**1260**	**2170**	**7520**	8.13 U
PCB-165	37.6 U	231 U	183 U	6.94 U	**4070**	9.17 U	**155**	**126**	8.13 U
PCB-167	**1640**	**2480**	**1860**	**2360**	**2790**	**713**	**1450**	**4650**	**6250**
PCB-169	37.6 U	231 U	183 U	6.94 U	40 U	9.17 U	45 U	7.63 U	8.13 U
PCB-170	**5040**	**8520**	**8600**	**7990**	**11100**	**2490**	**3580 J**	**14500**	**14100**
PCB-171/173	**1930**	**4460**	**3740**	**3630**	**13500**	**1060**	**2790**	**5710**	**6390**
PCB-172	**1200**	**2470**	**1940**	**1980**	**8650**	**646**	**1400**	**3750**	**3550**
PCB-174	**5340**	**11800**	**9750**	**9780**	**29900 J**	**2950**	**5320**	**16000 J**	**18500 J**
PCB-175	**375**	**970**	**723**	**658**	**5180**	**225**	**844**	**1350**	**1050**
PCB-176	**763**	**1880**	**1540**	**1220**	**10700**	**375**	**813**	**2200**	**2140**
PCB-177	**3250**	**7850**	**6270**	**5870**	**28900 J**	**1910**	**3590**	**9830**	**10300**
PCB-178	**1370**	**3100**	**2600**	**2030**	**40000 J**	**756**	**1370**	**4170**	**3140**
PCB-179	**2260**	**5180**	**4590**	**3690**	**19600 J**	**1270**	**2140**	**6610**	**6670**
PCB-180/193	**17000 J**	**34400 J**	**28500 J**	**27300 J**	**69000 J**	**8940**	**17200**	**47100 J**	**47100 J**
PCB-181	**108**	**512**	**187**	**181**	**1180**	**69.7**	**1330**	**307 J**	8.13 U
PCB-182	**55.8**	231 U	**143**	**110**	**11300**	9.17 U	45 U	**223**	8.13 U
PCB-183	**3740**	**8960**	**6900**	**6530**	**18200 J**	**2120**	**4360**	**10800**	**12000**
PCB-184	**47.1**	**337**	**172**	**60.4 J**	**9310**	**52.2**	**245**	**187**	8.13 U
PCB-185	**559**	**1070**	**925**	**1300**	**2560**	**314**	**3330**	**1690**	8.13 U
PCB-186	**7.01 J**	231 U	183 U	**10.2**	**253**	9.17 U	**83**	7.63 U	8.13 U
PCB-187	**6480**	**15100**	**12400 J**	**11100**	**75200 J**	**3970**	**6480**	**20500 J**	**22300 J**
PCB-188	**29.1**	**218**	**93**	**36.7**	**8150**	**32.8**	**799 J**	**200**	8.13 U
PCB-189	**328**	**863**	**560**	**528**	**3850**	**168**	**919**	**1180**	**950**
PCB-190	**1400**	**2550**	**2390**	**2280**	**5580**	**743**	**2360**	**3970**	**3580**
PCB-191	**321**	**777**	**593**	**556**	**3060**	**147**	**896**	**1010**	**913**
PCB-192	**17.3 J**	**186**	183 U	**22.9**	**937**	9.17 U	**472**	7.63 U	8.13 U

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB041	PB043	PB044	PB047.1	PB047.2	PB048	PB049	PB049	PB053
Sample ID:	PB041-1SS010-091030-N	PB043-1SS010-091030-N	PB044-1SS010-091030-N	PB047.1-1SS010-091030-N	PB047.2-1SS010-091030-N	PB048-1SS010-091031-N	PB049-1SS010-091031-D	PB049-1SS010-091031-N	PB053-1SS010-091031-N
Sample Date:	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/31/2009	10/31/2009	10/31/2009	10/31/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	FD	N	N
X:	3201410.6060	3201451.0315	3201663.5416	3201454.2006	3201656.8574	3201635.5547	3201435.3433	3201435.3433	3201421.7211
Y:	13833634.6932	13833347.5606	13833285.4731	13833042.2356	13833055.7842	13832859.6311	13832751.7292	13832751.7292	13832443.5506
PCB-142	**204**	7.75 U	**85.3**	**257**	**40.2**	**38.8**	**60.2**	**68.4**	**741**
PCB-143	**670**	7.75 U	**395**	**1640**	**198**	**246**	**130**	**310**	**4070**
PCB-144	**8190**	**5700**	**5230**	**19200 J**	**2380**	**2520**	**2930**	**2860**	**34100 J**
PCB-145	**165**	**109**	**89.9**	**339**	**34.1 J**	**67.2**	**52.2**	**61.5**	**892**
PCB-146	**20900 J**	**12600**	**13800**	**40900 J**	**6100**	**7410**	**7640**	**7600**	**67600 J**
PCB-147/149	**118000 J**	**72900 J**	**72900 J**	**244000 J**	**33400 J**	**36300 J**	**39400 J**	**38700 J**	**412000 J**
PCB-148	**188**	**76.8**	**91**	**234**	**55**	**62**	**48.2**	**51.8**	**538**
PCB-150	**395**	**136**	**155**	**407**	**95.1**	**128**	**80.7**	**75.8**	**830**
PCB-152	**307**	**212**	**174**	**672**	**79.1**	**109**	**104**	**118**	**1710**
PCB-153/168	**121000 J**	**76500 J**	**82900 J**	**239000 J**	**36100 J**	**42600 J**	**44300 J**	**42900 J**	**372000 J**
PCB-154	**3140**	**1590**	**1330**	**3590**	**806**	**900**	**667**	**673**	**6910**
PCB-155	**37.6**	7.75 U	**12.4 J**	8.4 U	**17.5**	**24.8 J**	48.5 U	47.6 U	48.1 U
PCB-156/157	**26000 J**	**19700 J**	**21300 J**	**69200 J**	**7510**	**8970**	**10900**	**10300**	**89800 J**
PCB-158	**19800 J**	**14100**	**14300**	**48900 J**	**5690**	**6730**	**8060**	**7620**	**74200 J**
PCB-159	**538**	**320**	**471**	**798**	**203**	42 U	48.5 U	47.6 U	48.1 U
PCB-160	8.2 U	7.75 U	9.71 U	8.4 U	9.17 U	42 U	48.5 U	47.6 U	48.1 U
PCB-161	8.2 U	7.75 U	9.71 U	8.4 U	9.17 U	42 U	48.5 U	47.6 U	48.1 U
PCB-162	**636**	**564**	**473**	**1440**	**197**	**212**	**235**	**260**	**2290**
PCB-164	**12700**	**14800**	**8840**	**29200 J**	**3580**	**4120**	**4400**	**4350**	**38900 J**
PCB-165	8.2 U	7.75 U	9.71 U	8.4 U	9.17 U	42 U	48.5 U	47.6 U	48.1 U
PCB-167	**7910**	**5640**	**6230**	**19800 J**	**2350**	**2890**	**3190**	**3200**	**27300 J**
PCB-169	8.2 U	7.75 U	9.71 U	8.4 U	9.17 U	42 U	48.5 U	47.6 U	48.1 U
PCB-170	**18900 J**	**11700**	**18800**	**35700 J**	**6440**	**7840**	**7100**	**7340**	**37600 J**
PCB-171/173	**7490**	**4650**	**7100**	**15000**	**2510**	**3190**	**2830**	**2930**	**16800**
PCB-172	**4310**	**2560**	**4020**	**7430**	**1530**	**2030**	**1620**	**1700**	**9730**
PCB-174	**19700 J**	**12800**	**17600**	**33300 J**	**6920**	**8330**	**6980**	**7930**	**46000 J**
PCB-175	**1270**	**774**	**1080**	**2340**	**475**	**575**	**485**	**522**	**3090**
PCB-176	**2560**	**1550**	**2050**	**4340**	**822**	**1240**	**1080**	**1150**	**6900**
PCB-177	**12100**	**7470**	**10900**	**20700 J**	**4330**	**5220**	**4320**	**4750**	**24800 J**
PCB-178	**4490**	**2390**	**3420**	**6180**	**1440**	**2280**	**1830**	**1990**	**11400**
PCB-179	**8030**	**4540**	**5950**	**11600**	**2580**	**3810**	**3140**	**3440**	**23000 J**
PCB-180/193	**58900 J**	**33100 J**	**51300 J**	**91100 J**	**20600 J**	**27400 J**	**21500 J**	**23400 J**	**120000 J**
PCB-181	**632**	**257**	**391**	**1050**	**135**	**167**	**174**	**171**	**1190**
PCB-182	**181**	7.75 U	**135**	**297**	**60.7**	**64.2**	**68**	**58.9**	**493**
PCB-183	**13200**	**8480**	**11800**	**21800 J**	**4900**	**6110**	**5150**	**5690**	**35100 J**
PCB-184	**45.7**	7.75 U	**27.9 J**	**48.3**	**20.8**	**32.7**	48.5 U	**15.2 J**	48.1 U
PCB-185	**2050**	7.75 U	**1050**	**3210**	**701**	**673**	**866**	**781**	**3920**
PCB-186	8.2 U	7.75 U	9.71 U	**31.2**	9.17 U	42 U	48.5 U	47.6 U	48.1 U
PCB-187	**24500 J**	**13600**	**19700 J**	**33700 J**	**8830**	**10700**	**8440**	**9180**	**60800 J**
PCB-188	**64.2**	7.75 U	**32.1 J**	**46.4**	**21.6**	**39.8**	**18.3**	**14.5 J**	**116**
PCB-189	**1310**	**699**	**1130**	**2290**	**396**	**548**	**510**	**497**	**2860**
PCB-190	**4910**	**2780**	**4250**	**8180**	**1540**	**2080**	**1840**	**1870**	**8300**
PCB-191	**1090**	**628**	**956**	**1890**	**370**	**487**	**413**	**431**	**2140**
PCB-192	8.2 U	7.75 U	9.71 U	8.4 U	9.17 U	42 U	48.5 U	47.6 U	48.1 U

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB056	PB057	PB059.1	PB059.2	PB063.1	PB063.2	PB064	PB066	PB069
Sample ID:	PB056-1SS010-091031-N	PB057-1SS010-091031-N	PB059.1-1SS010-091102-N	PB059.2-1SS010-091031-N	PB063.1-1SS010-091031-N	PB063.2-1SS010-091102-N	PB064-1SS010-091102-N	PB066-1SS010-091101-N	PB069-1SS010-091101-N
Sample Date:	10/31/2009	10/31/2009	11/2/2009	10/31/2009	10/31/2009	11/2/2009	11/2/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3201402.6901	3201634.7257	3201531.6282	3201640.7239	3201497.4803	3201553.0822	3201628.7185	3201431.2755	3201160.2007
Y:	13832184.9773	13832087.9098	13831850.4179	13831857.0149	13831523.9045	13831552.2764	13831275.6688	13831275.6811	13830971.1845
PCB-142	**83.8**	43.5 U	90.1 U	**51.5**	**243**	46.3 U	36.8 U	**55 J**	**289**
PCB-143	**397**	**179**	**2650**	**371**	**1570**	46.3 U	36.8 U	**404**	**2030**
PCB-144	**4090**	**1460**	**25300 J**	**2930**	**12700**	**1800**	**151**	**3730**	**19900 J**
PCB-145	**91.5**	**35.3**	**658**	**74**	**351**	46.3 U	36.8 U	**69.3**	**519**
PCB-146	**10400**	**3750**	**52300 J**	**6580**	**27500 J**	**4060**	**423**	**7900**	**41100 J**
PCB-147/149	**55900 J**	**19600 J**	**311000 J**	**37800 J**	**161000 J**	**23300 J**	**2170**	**47400 J**	**245000 J**
PCB-148	**58.3**	**23.1**	**345**	**41**	**157**	**27.6**	36.8 U	**57.9**	**234**
PCB-150	**118**	**41.3**	**649**	**78.5**	**313**	**45.6**	36.8 U	**88**	**486**
PCB-152	**186**	**70.8**	**1250**	**130**	**641**	**72**	36.8 U	**155**	**973**
PCB-153/168	**61700 J**	**21600 J**	**335000 J**	**39600 J**	**171000 J**	**26600 J**	**2730**	**50700 J**	**275000 J**
PCB-154	**904**	**344**	**4740**	**628**	**2400**	**386**	**45.9**	**776**	**2930**
PCB-155	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	37.3 U	60.6 U
PCB-156/157	**15000**	**5190**	**92500 J**	**9960**	**45900 J**	**6170**	**561**	**12700**	**74400 J**
PCB-158	**11300**	**4030**	**62300 J**	**7470**	**32700 J**	**4340**	**415**	**9180**	**47600 J**
PCB-159	44.2 U	43.5 U	**2050**	50 U	49.5 U	**191**	**17.1**	**343**	60.6 U
PCB-160	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	37.3 U	60.6 U
PCB-161	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	37.3 U	60.6 U
PCB-162	**364**	**123**	**1770**	**221**	**936**	**140**	**15.1**	**264**	**1160**
PCB-164	**6310**	**2220**	**34300 J**	**4350**	**17600**	**2510**	**256**	**5070**	**24800 J**
PCB-165	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	**35.5**	60.6 U
PCB-167	**4450**	**1570**	**25000 J**	**2980**	**12100**	**1830**	**183**	**3650**	**20300 J**
PCB-169	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	37.3 U	60.6 U
PCB-170	**11300**	**3040**	**45600 J**	**5790**	**25700 J**	**4090**	**468**	**7330**	**47300 J**
PCB-171/173	**4190**	**1240**	**18300 J**	**2160**	**9840**	**1520**	**167**	**2740**	**17200 J**
PCB-172	**2310**	**741**	**9290**	**1190**	**5300**	**894**	**102**	**1520**	**8720**
PCB-174	**10700**	**3250**	**48000 J**	**5730**	**26300 J**	**4430**	**432**	**7550**	**52600 J**
PCB-175	**719**	**219**	**3050**	**375**	**1660**	**274**	**26.2**	**467**	**2660**
PCB-176	**1500**	**537**	**6310**	**863**	**3890**	**608**	**57.2**	**1050**	**7010**
PCB-177	**6490**	**2040**	**27300 J**	**3430**	**15800**	**2520**	**264**	**4230**	**29000 J**
PCB-178	**2540**	**898**	**8900**	**1390**	**6190**	**1010**	**119**	**1680**	**10200**
PCB-179	**4670**	**1560**	**18500 J**	**2640**	**12100**	**1930**	**191**	**3130**	**22800 J**
PCB-180/193	**31400 J**	**9680**	**134000 J**	**16500**	**73700 J**	**13300**	**1480**	**21900 J**	**149000 J**
PCB-181	**198**	**67.2**	**1110**	**116**	**520**	**70.6**	36.8 U	**138**	**836**
PCB-182	**82.7**	**35**	**342**	**51.9**	**191**	**25.7**	36.8 U	**47.4**	**259**
PCB-183	**7930**	**2400**	**29900 J**	**4010**	**18000**	**3120**	**322**	**5020**	**29400 J**
PCB-184	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	37.3 U	**44**
PCB-185	**850**	**246**	**4340**	**474**	**2400**	**327**	**57.1**	**691**	**5770**
PCB-186	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	**8.67**	**27.7**
PCB-187	**12900**	**4020**	**49000 J**	**6950**	**31000 J**	**5200**	**576**	37.3 U	**57700 J**
PCB-188	44.2 U	43.5 U	90.1 U	50 U	**35.3**	46.3 U	36.8 U	37.3 U	**43.9**
PCB-189	**680**	**221**	**2790**	**389**	**1700**	**247**	**29.8**	**441**	**2710**
PCB-190	**2910**	**772**	**10500**	**1440**	**6500**	**999**	**118**	**1850**	**11000**
PCB-191	**577**	**171**	**2230**	**299**	**1290**	**214**	**22.7 J**	**367**	**2230**
PCB-192	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	37.3 U	60.6 U

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	2011 USC	2011 USC	2011 USC
Location ID:	PB074	PB081	PB093	PB097	PB101	PB068	PB069.1	PB070A
Sample ID:	PB074-1SS010-091101-N	PB081-1SS010-091103-N	PB093-1SS010-091103-N	PB097-1SS010-091103-N	PB101-1SS010-091103-N	PB068-1SS010-20110804-N	PB069.1-1SS008-20110804-N	PB070A-1SS010-20110802-N
Sample Date:	11/1/2009	11/3/2009	11/3/2009	11/3/2009	11/3/2009	8/4/2011	8/4/2011	8/2/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 8 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N
X:	3200828.0183	3200761.3787	3200970.4291	3201103.1242	3201287.2658	3201209.861	3201205.859	3201087.255
Y:	13830463.2171	13830005.1879	13828894.7843	13828566.1540	13828181.2285	13831121.51	13830973.3	13830903.51
PCB-142	36.8 U	**158**	52.1 U	45.9 U	48.1 U	--	--	--
PCB-143	**189**	**922**	52.1 U	**35.7**	**7.59 J**	--	--	--
PCB-144	**3910**	**14300**	**367**	**355**	**63**	--	--	--
PCB-145	**65.4**	**205**	**7.55 J**	45.9 U	48.1 U	--	--	--
PCB-146	**9230**	**27600 J**	**1200**	**962**	**188**	--	--	--
PCB-147/149	**52800 J**	**182000 J**	**6430**	**5820**	**1090**	--	--	--
PCB-148	**56.1**	**150**	**10.4**	**28**	48.1 U	--	--	--
PCB-150	**101**	**265**	**8.44 J**	**57.6**	48.1 U	--	--	--
PCB-152	**141**	**440**	**13.5**	**63.1**	48.1 U	--	--	--
PCB-153/168	**57200 J**	**183000 J**	**5530**	**5330**	**1010**	--	--	--
PCB-154	**833**	**2250**	**88.6**	**217**	**30.3**	--	--	--
PCB-155	36.8 U	46.3 U	52.1 U	**6.05 J**	48.1 U	--	--	--
PCB-156/157	**13200**	**37300 J**	**678**	**1170**	**189**	--	--	--
PCB-158	**11000**	**29100 J**	**1070**	**853**	**151**	--	--	--
PCB-159	**203 J**	46.3 U	52.1 U	**36.2**	48.1 U	--	--	--
PCB-160	36.8 U	46.3 U	52.1 U	45.9 U	48.1 U	--	--	--
PCB-161	36.8 U	46.3 U	52.1 U	45.9 U	48.1 U	--	--	--
PCB-162	**290**	**697**	**35.6**	**26.7**	48.1 U	--	--	--
PCB-164	**6130**	**17900**	**805**	**612**	**107**	--	--	--
PCB-165	36.8 U	46.3 U	52.1 U	45.9 U	48.1 U	--	--	--
PCB-167	**3600**	**10800**	**301**	**368**	**61.1**	--	--	--
PCB-169	36.8 U	46.3 U	52.1 U	45.9 U	48.1 U	--	--	--
PCB-170	**6610**	**34600 J**	**1070**	**738**	**126**	--	--	--
PCB-171/173	**2590**	**14600**	**466**	**287**	**50.9**	--	--	--
PCB-172	**1250**	**8150**	**251**	**179**	**29.4**	--	--	--
PCB-174	**5370**	**44100 J**	**1150**	**921**	**161**	--	--	--
PCB-175	**382**	**2550**	**78.4**	**60.8**	**12.9**	--	--	--
PCB-176	**781**	**5780**	**152**	**122**	**25.6**	--	--	--
PCB-177	**3120**	**25500 J**	**719**	**525**	**98.8**	--	--	--
PCB-178	**1030**	**9010**	**247**	**280**	**51.2**	--	--	--
PCB-179	**1890**	**19000 J**	**469**	**513**	**92.6**	--	--	--
PCB-180/193	**15200 J**	**117000 J**	**3130**	**2550**	**458**	--	--	--
PCB-181	**173**	**522**	**19.8**	**17.6**	48.1 U	--	--	--
PCB-182	**66.5 J**	**196**	**11.5**	**11.4**	48.1 U	--	--	--
PCB-183	**3850**	**28700 J**	**787**	**613**	**115**	--	--	--
PCB-184	36.8 U	46.3 U	52.1 U	45.9 U	48.1 U	--	--	--
PCB-185	**234**	**4890**	**69.5 J**	**117**	**16.2 J**	--	--	--
PCB-186	36.8 U	46.3 U	52.1 U	45.9 U	48.1 U	--	--	--
PCB-187	**4610**	**49300 J**	**1360**	**1450**	**270**	--	--	--
PCB-188	36.8 U	46.3 U	52.1 U	**21.6**	48.1 U	--	--	--
PCB-189	**370**	**2120**	**64.5**	**47.4**	48.1 U	--	--	--
PCB-190	**1470**	**8510**	**233**	**182**	**29.9**	--	--	--
PCB-191	**333**	**1920**	**68.1**	**37.6**	48.1 U	--	--	--
PCB-192	36.8 U	46.3 U	52.1 U	45.9 U	48.1 U	--	--	--

Appendix A-1
BERA Sediment Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB076.1	PB081.1	PB081.1	PB082
Sample ID:	PB076.1-1SS010-20110802-N	PB081.1-1SS010-20110803-D	PB081.1-1SS010-20110803-N	PB082-1SS010-20110803-N
Sample Date:	8/2/2011	8/3/2011	8/3/2011	8/3/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N
X:	3200744.033	3200772.123	3200772.123	3200751.881
Y:	13830426.95	13829983.6	13829983.6	13829914.32
PCB-142	--	--	--	--
PCB-143	--	--	--	--
PCB-144	--	--	--	--
PCB-145	--	--	--	--
PCB-146	--	--	--	--
PCB-147/149	--	--	--	--
PCB-148	--	--	--	--
PCB-150	--	--	--	--
PCB-152	--	--	--	--
PCB-153/168	--	--	--	--
PCB-154	--	--	--	--
PCB-155	--	--	--	--
PCB-156/157	--	--	--	--
PCB-158	--	--	--	--
PCB-159	--	--	--	--
PCB-160	--	--	--	--
PCB-161	--	--	--	--
PCB-162	--	--	--	--
PCB-164	--	--	--	--
PCB-165	--	--	--	--
PCB-167	--	--	--	--
PCB-169	--	--	--	--
PCB-170	--	--	--	--
PCB-171/173	--	--	--	--
PCB-172	--	--	--	--
PCB-174	--	--	--	--
PCB-175	--	--	--	--
PCB-176	--	--	--	--
PCB-177	--	--	--	--
PCB-178	--	--	--	--
PCB-179	--	--	--	--
PCB-180/193	--	--	--	--
PCB-181	--	--	--	--
PCB-182	--	--	--	--
PCB-183	--	--	--	--
PCB-184	--	--	--	--
PCB-185	--	--	--	--
PCB-186	--	--	--	--
PCB-187	--	--	--	--
PCB-188	--	--	--	--
PCB-189	--	--	--	--
PCB-190	--	--	--	--
PCB-191	--	--	--	--
PCB-192	--	--	--	--

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB001.1	PB001.2	PB001.3	PB002	PB004	PB005	PB007.1	PB007.2	PB009
Sample ID:	PB001.1-1SS010-091027-N	PB001.2-1SS010-091027-N	PB001.3-1SS010-091027-N	PB002-1SS010-091027-N	PB004-1SS010-091027-N	PB005-1SS010-091027-N	PB007.1-1SS010-091028-N	PB007.2-1SS010-091028-N	PB009-1SS010-091028-N
Sample Date:	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/28/2009	10/28/2009	10/28/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3202382.3842	3202624.0211	3202754.9026	3202606.9920	3202330.4788	3202262.1385	3202065.5011	3202037.3755	3201747.2539
Y:	13836546.3402	13836566.3557	13836489.4987	13836435.6794	13836348.7826	13836144.2614	13836300.0036	13836110.2965	13836119.3947
PCB-194	6420 J	4070 J	2240 J	8920 J	4470 J	4350 J	5610 J	4160 J	3820 J
PCB-195	2760	1700	999	3640	1910	1790	2260	1770	1630
PCB-196	4670	2480	1840	5120	2600	2600	3030	2380	2180
PCB-197	901	812	855	1940	814	975	675	923	705
PCB-198/199	8860	5070	3230	10900	5290	4960	6610	4640	4290
PCB-200	1290	772	718	1430	841	703	1080	734	710
PCB-201	1850	1400	1990	2460	1150	1180	1370	1120	1030
PCB-202	3520	4950	15900	7390	2630	2750	3000	2500	2450
PCB-203	4470	2440	1680	4910	2600	2570	3120	2380	2130
PCB-204	170	147	262	273	115	135	119	145	117
PCB-205	1210	875	2320	1830	740	914	734	742	721
PCB-206	18700 J	11700 J	24600 J	30400 J	10700 J	12600 J	11700 J	11600 J	16800 J
PCB-207	5940	5280	10500	9770	4680	5750	5600	5200	5110
PCB-208	8340	8760	20300 J	14800	6330	7180	8530	6660	6460
PCB-209	1450000 J	884000 J	1410000 J	1710000 J	1080000 J	1210000 J	1130000 J	994000 J	2110000 J
Total PCB Congener (U = 1/2)	10254611.615 J	3549333.095 J	2528236.635 J	5263006.6 J	3372482.64 J	3829972.525 J	4684077.285 J	3587434.36 J	4106808.25 J
Total PCB Congener minus 209 (U = 1/2)	8804611.615 J	2665333.095 J	1118236.635 J	3553006.6 J	2292482.64 J	2619972.525 J	3554077.285 J	2593434.36 J	1996808.25 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	3333.950165 J	836.836415 J	40.599855 J	1007.3988 J	842.2608 J	922.147635 J	1373.970595 J	919.635065 J	692.07152 J
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	19.03205575 J	4.19749825 J	1.58810475 J	4.549545 J	4.7360355 J	4.56504375 J	7.06428425 J	4.41502675 J	3.7627045 J
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	226.0628895 J	43.375 J	26.5926065 J	43.884 J	54.89847 J	47.19643 J	72.13638 J	44.09124 J	41.04409 J
Monochlorobiphenyls (total)	17900	7910	3830	15400	3360	6630	3080	5430	5630
Dichlorobiphenyls (total)	196000	63600	26700	101000	36000	53900	38900	57300	38900
Trichlorobiphenyls (total)	1850000	562000	204000	827000	414000	514000	544000 J	537000	346000
Tetrachlorobiphenyls (total)	4060000	1090000	361000	1320000	884000	1040000	1550000	1050000	746000 J
Pentachlorobiphenyls (total)	1920000 J	593000 J	260000	692000	607000	632000	958000	601000	510000
Hexachlorobiphenyls (total)	556000	225000	137000	341000	222000	244000	303000	223000	229000
Heptachlorobiphenyls (total)	141000	73100	39100	151000	80400 J	82600	98200	72000	73200
Octachlorobiphenyls (total)	36100	24700	32000	48800	23200	22900	27600	21500	19800
Nonachlorobiphenyls (total)	33000	25800	55400	55100	21700	25500	25900	23500	28300
PCB Aroclors (µg/kg)									
Aroclor 1260	--	--	--	--	--	--	--	--	--
Aroclor 1254	--	--	--	--	--	--	--	--	--
Aroclor 1268	--	--	--	--	--	--	--	--	--
Aroclor 1221	--	--	--	--	--	--	--	--	--
Aroclor 1232	--	--	--	--	--	--	--	--	--
Aroclor 1248	--	--	--	--	--	--	--	--	--
Aroclor 1016	--	--	--	--	--	--	--	--	--
Aroclor 1262	--	--	--	--	--	--	--	--	--
Aroclor 1242	--	--	--	--	--	--	--	--	--
Total PCB Aroclors (U = 1/2)	--	--	--	--	--	--	--	--	--
Pesticides (µg/kg)									
2,4'-DDD (o,p'-DDD)	23.7 J	11.4 J	2.06 J	12.8 J	2.07 U	12.3 J	3.11 U	1.42 U	1.27 U
2,4'-DDE (o,p'-DDE)	2.07 U	1.97 UJ	1.28 U	1.44 U	2.07 U	1.65 U	3.11 U	1.42 U	1.27 U
2,4'-DDT (o,p'-DDT)	2.07 U	1.97 UJ	1.28 U	1.44 U	2.07 U	1.65 U	3.11 U	1.42 U	1.27 U

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB011	PB013.1	PB013.2	PB015	PB016	PB016	PB018	PB019	PB022
Sample ID:	PB011-1SS010-091028-N	PB013.1-1SS010-091028-N	PB013.2-1SS010-091028-N	PB015-1SS010-091028-N	PB016-1SS010-091101-N	PB016-1SS010-091102-N	PB018-1SS010-091101-N	PB019-1SS010-091101-N	PB022-1SS010-091101-D
Sample Date:	10/28/2009	10/28/2009	10/28/2009	10/28/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	FD
X:	3201727.2504	3201333.4751	3201420.5786	3201223.8464	3201140.0114	3201140.0114	3201146.8550	3201281.6017	3201174.1294
Y:	13836239.7593	13836187.7023	13836111.1432	13836229.0694	13836081.5392	13836081.5392	13835702.1476	13835711.9947	13835456.7389
PCB-194	7470 J	2830 J	2070 J	6320 J	--	5360	3670	3120	9750
PCB-195	3040	1180	864	2490	--	2220	1540	1260	3430
PCB-196	3730	1730	1220	3490	--	3400	2520	1890	5130
PCB-197	2670	392	280	855	--	350	979	758	472
PCB-198/199	7460	3480	2260	7790	--	7260	4960	4130	9910
PCB-200	1210	553	384	1090	--	1320	726	575	1260
PCB-201	1700	684	486	1420	--	1240	1040	870	1420
PCB-202	6620	1150	944	3000	--	2040	1560	1850	1920
PCB-203	3740	1670	1170	3420	--	3300	2610	2020	5460
PCB-204	161	76.5	52.7	132 J	--	59.8	183	140	45
PCB-205	970	432	344	871	--	508	1130	742	766
PCB-206	15900 J	6240 J	4940 J	21600 J	--	5330	14900	10800	5890
PCB-207	8910	2530	1900	6020	--	1980	4650	4480	1660
PCB-208	12200	3330	2430	10100	--	2850	6030	5830	2260
PCB-209	1770000 J	563000 J	680000 J	1160000 J	--	359000 J	1340000 J	883000 J	318000 J
Total PCB Congener (U = 1/2)	4748056.5 J	2365084.895 J	1716917.05 J	4414730.6 J	--	11089736.2 J	3080039.85 J	2505587.5 J	2306206.55 J
Total PCB Congener minus 209 (U = 1/2)	2978056.5 J	1802084.895 J	1036917.05 J	3254730.6 J	--	10730736.2 J	1740039.85 J	1622587.5 J	1988206.55 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	892.7137 J	617.014305 J	381.095485 J	1290.37401 J	--	3345.22752 J	485.05069 J	562.21393 J	618.6493 J
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	4.438355 J	3.26229675 J	2.47320125 J	6.7773405 J	--	15.3949575 J	2.6089475 J	2.9705525 J	3.6264725 J
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	45.8521 J	34.81746 J	29.80573 J	71.9624 J	--	136.67571 J	28.50762 J	32.39654 J	40.20625 J
Monochlorobiphenyls (total)	7380	3140	1810	3400	--	5210	6730 J	5830	2650
Dichlorobiphenyls (total)	57800	30500	15100	37400	--	136000	45100	36400	23300
Trichlorobiphenyls (total)	567000	332000	155000	504000	--	2370000	361000	316000	302000
Tetrachlorobiphenyls (total)	1170000	736000	378000	1390000	--	5070000	636000	615000	775000 J
Pentachlorobiphenyls (total)	692000 J	446000 J	304000	845000	--	2360000	382000	374000	515000 J
Hexachlorobiphenyls (total)	297000	173000	126000	299000	--	609000	191000	178000	229000
Heptachlorobiphenyls (total)	110000	54700	38100 J	103000	--	139000	70900	57800	93400
Octachlorobiphenyls (total)	38800	14200	10100	30900 J	--	27100	20900	17300	39600
Nonachlorobiphenyls (total)	37000	12100	9260	37700	--	10200	25600	21100	9820
PCB Aroclors (µg/kg)									
Aroclor 1260	--	--	--	--	--	--	--	--	--
Aroclor 1254	--	--	--	--	--	--	--	--	--
Aroclor 1268	--	--	--	--	--	--	--	--	--
Aroclor 1221	--	--	--	--	--	--	--	--	--
Aroclor 1232	--	--	--	--	--	--	--	--	--
Aroclor 1248	--	--	--	--	--	--	--	--	--
Aroclor 1016	--	--	--	--	--	--	--	--	--
Aroclor 1262	--	--	--	--	--	--	--	--	--
Aroclor 1242	--	--	--	--	--	--	--	--	--
Total PCB Aroclors (U = 1/2)	--	--	--	--	--	--	--	--	--
Pesticides (µg/kg)									
2,4'-DDD (o,p'-DDD)	18.7 J	1.24 U	4.06 J	9.28 J	1.08 U	--	0.991 UJ	1.15 U	1.01 U
2,4'-DDE (o,p'-DDE)	1.41 U	1.24 U	1.07 U	2.74 UJ	1.08 U	--	0.991 UJ	1.15 U	1.01 U
2,4'-DDT (o,p'-DDT)	1.41 U	1.24 U	1.07 U	2.74 UJ	1.08 U	--	0.991 UJ	1.15 U	1.01 U

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BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB022	PB023	PB023	PB024	PB026	PB028	PB032	PB034	PB037
Sample ID:	PB022-1SS010-091101-N	PB023-1SS010-091030-D	PB023-1SS010-091030-N	PB024-1SS010-091030-N	PB026-1SS010-091030-N	PB028-1SS010-091030-N	PB032-1SS010-091030-N	PB034-1SS010-091030-N	PB037-1SS010-091030-N
Sample Date:	11/1/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N	N	N	N	N	N
X:	3201174.1294	3201315.1973	3201315.1973	3201180.8567	3201331.5617	3201355.6226	3201368.6522	3201387.6450	3201399.4292
Y:	13835456.7389	13835429.2411	13835429.2411	13835181.4775	13835155.0673	13834855.4834	13834541.6071	13834242.2769	13833936.8351
PCB-194	3000	5790	5400	4960	23900 J	1600	4550	9390	7980
PCB-195	1120	2800	2070	1770	8210	570	2700	3530	3120
PCB-196	1620	4010	2880	2600	33700 J	873	6300	4880	3740
PCB-197	235	1230	858	348	56400 J	210	2970	937	8.13 U
PCB-198/199	3330	8060	5810	8070	204000 J	2100	9220	11300	8470
PCB-200	550	1230	1000	940	16600 J	314	2120	1650	1950
PCB-201	622	2140	1220	939	76200 J	391	3570	2190	1530
PCB-202	986	2620	1980	1400	154000 J	780	2350	3700	2030
PCB-203	1680	4730	2890	2840	23900 J	975	11100	5480	3820
PCB-204	35.3	403	191	70.9	14700	38.9	1470	231	54.6
PCB-205	324	2370	1080	495	22400 J	204	4900	1330	563
PCB-206	4410	50700 J	20700 J	38800 J	737000 J	4120	289000 J	22800 J	6270
PCB-207	1750	9660	7460	3040	724000 J	1610	38700 J	9130	1990
PCB-208	2300	9770	7580	7330	1300000 J	2440	32600 J	14300	2910
PCB-209	346000 J	6010000 J	3700000 J	649000 J	117000000 J	423000 J	57600000 J	1770000 J	315000 J
Total PCB Congener (U = 1/2)	2183986.11 J	8604078.4 J	5288205.6 J	3161184.91 J	124178512 J	1216484.14 J	58574618.05 J	5868663.58 J	9941384.695 J
Total PCB Congener minus 209 (U = 1/2)	1837986.11 J	2594078.4 J	1588205.6 J	2512184.91 J	7178512 J	793484.14 J	974618.05 J	4098663.58 J	9626384.695 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	648.09058 J	795.63383 J	384.74529 J	878.87535 J	461.6584 J	264.126785 J	121.99176	1268.673315 J	3439.91610565 J
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	3.36038 J	4.88224 J	2.36466 J	4.3930635 J	1.6907 J	1.53248425 J	1.405455	6.97869075 J	21.776223575 J
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	34.85844 J	61.46939 J	30.67831 J	44.43764 J	7.1443 J	17.44718 J	19.94768	73.91555 J	256.17907195 J
Monochlorobiphenyls (total)	2450 J	8060 J	4130 J	8050	240000 J	1710	54100	19000	5980
Dichlorobiphenyls (total)	23900	35800 J	24900	54800	305000 J	11700	56000	39200	116000
Trichlorobiphenyls (total)	321000	320000 J	255000	488000	598000 J	138000	33300	601000	1860000
Tetrachlorobiphenyls (total)	822000	1040000	554000	969000	829000 J	321000	82500	1650000	4280000
Pentachlorobiphenyls (total)	441000	691000	372000	583000	755000 J	199000	140000 J	1110000 J	2530000
Hexachlorobiphenyls (total)	153000	286000	222000	248000	680000	77700	137000	438000	644000
Heptachlorobiphenyls (total)	51600	111000	92600	86800	376000	28200	60300 J	151000	153000
Octachlorobiphenyls (total)	13500	35400	25400	24400	635000	8050	51200	44600	33300
Nonachlorobiphenyls (total)	8470	70100	35700	49200	2760000	8180	360000	46200	11200
PCB Aroclors (µg/kg)									
Aroclor 1260	--	--	--	--	--	--	--	--	--
Aroclor 1254	--	--	--	--	--	--	--	--	--
Aroclor 1268	--	--	--	--	--	--	--	--	--
Aroclor 1221	--	--	--	--	--	--	--	--	--
Aroclor 1232	--	--	--	--	--	--	--	--	--
Aroclor 1248	--	--	--	--	--	--	--	--	--
Aroclor 1016	--	--	--	--	--	--	--	--	--
Aroclor 1262	--	--	--	--	--	--	--	--	--
Aroclor 1242	--	--	--	--	--	--	--	--	--
Total PCB Aroclors (U = 1/2)	--	--	--	--	--	--	--	--	--
Pesticides (µg/kg)									
2,4'-DDD (o,p'-DDD)	1 UJ	9.22 J	6 J	1.07 U	42.7 J	2.1 U	10.5 J	8.81 J	2.04 U
2,4'-DDE (o,p'-DDE)	1 UJ	3.51	3.46	1.07 U	15.2 J	2.1 U	1.45 U	2.31 UJ	2.04 U
2,4'-DDT (o,p'-DDT)	1 UJ	4.9 J	1.06 U	1.07 U	2.4 U	2.1 UJ	1.45 UJ	2.31 UJ	2.04 UJ

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BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB041	PB043	PB044	PB047.1	PB047.2	PB048	PB049	PB049	PB053
Sample ID:	PB041-1SS010-091030-N	PB043-1SS010-091030-N	PB044-1SS010-091030-N	PB047.1-1SS010-091030-N	PB047.2-1SS010-091030-N	PB048-1SS010-091031-N	PB049-1SS010-091031-D	PB049-1SS010-091031-N	PB053-1SS010-091031-N
Sample Date:	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/31/2009	10/31/2009	10/31/2009	10/31/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	FD	N	N
X:	3201410.6060	3201451.0315	3201663.5416	3201454.2006	3201656.8574	3201635.5547	3201435.3433	3201435.3433	3201421.7211
Y:	13833634.6932	13833347.5606	13833285.4731	13833042.2356	13833055.7842	13832859.6311	13832751.7292	13832751.7292	13832443.5506
PCB-194	10700	4750	7080	10300	3370	5250	3810	3940	16800
PCB-195	3490	1950	2830	4260	1350	1910	1390	1460	6540
PCB-196	5070	2600	3670	5360	1620	2740	1910	2130	12700
PCB-197	476	169	368	378	216	288	178	184	1130
PCB-198/199	14000	5410	7650	11500	3710	5980	4860	5230	30100 J
PCB-200	1800	996	1170	1930	546	987	756	826	5430
PCB-201	1790	956	1260	1860	638	929	675	789	6290
PCB-202	2610	1140	1630	2330	828	1330	948	1010	9100
PCB-203	5920	2770	3830	5750	1760	2880	2110	2340	13800
PCB-204	29.3 J	7.75 U	9.71 U	17	20	22 J	48.5 U	47.6 U	51
PCB-205	755	295	478	623	243	364	230	246	965
PCB-206	11100	2090	4270	5510	3200	3680	3320	3390	10500
PCB-207	1360	470	1140	801	796	1150	445	487	2610
PCB-208	2910	745	1560	1620	1180	1710	973	1000	5270
PCB-209	103000 J	24100 J	177000 J	38200 J	93100 J	140000 J	33100 J	36800 J	48200 J
Total PCB Congener (U = 1/2)	10321975.8 J	7705686.85 J	7481713.97000001 J	19864911.9 J	2819075.49 J	3980062.4 J	3966069.4 J	4575212.1 J	95025849.8499999 J
Total PCB Congener minus 209 (U = 1/2)	10218975.8 J	7681586.85 J	7304713.97 J	19826711.9 J	2725975.49 J	3840062.4 J	3932969.4 J	4538412.1 J	94977649.85 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	3683.1513 J	2724.76730375 J	2259.903355 J	5787.3261 J	1063.360145 J	1638.93538 J	1366.30085 J	1547.23957 J	31329.33765 J
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	19.730805 J	17.151908125 J	11.77494275 J	33.89166 J	5.70765925 J	8.46224 J	7.3956625 J	8.004875 J	146.5235025 J
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	203.5156 J	203.52853625 J	118.60385 J	359.7967 J	60.14383 J	89.34214 J	77.4062 J	80.01211 J	1385.0553 J
Monochlorobiphenyls (total)	6200	2170	9890	7090	904	1830 J	1390	1440	571000
Dichlorobiphenyls (total)	113000	75500	134000	146000	20800	36500	40400	44500	4370000
Trichlorobiphenyls (total)	1760000	1340000	1550000	3140000	419000	663000	693000	796000	21100000
Tetrachlorobiphenyls (total)	4440000	3600000	3270000	8690000	1220000	1780000	1820000	2180000	48500000
Pentachlorobiphenyls (total)	2870000	2010000	1620000	5730000	755000	980000	1000000	1140000	17200000
Hexachlorobiphenyls (total)	782000	519000	534000	1760000	224000	260000	288000	281000	2780000
Heptachlorobiphenyls (total)	186000	108000	162000	300000	64600	82800	68400	73900	414000
Octachlorobiphenyls (total)	46700 J	21000	30000	44300	14300	22700	16900	18200	103000
Nonachlorobiphenyls (total)	15300	3300	6960	7930	5180	6530	4740	4880	18400
PCB Aroclors (µg/kg)									
Aroclor 1260	--	--	--	--	--	--	--	--	--
Aroclor 1254	--	--	--	--	--	--	--	--	--
Aroclor 1268	--	--	--	--	--	--	--	--	--
Aroclor 1221	--	--	--	--	--	--	--	--	--
Aroclor 1232	--	--	--	--	--	--	--	--	--
Aroclor 1248	--	--	--	--	--	--	--	--	--
Aroclor 1016	--	--	--	--	--	--	--	--	--
Aroclor 1262	--	--	--	--	--	--	--	--	--
Aroclor 1242	--	--	--	--	--	--	--	--	--
Total PCB Aroclors (U = 1/2)	--	--	--	--	--	--	--	--	--
Pesticides (µg/kg)									
2,4'-DDD (o,p'-DDD)	1.55 U	1.1 UJ	1.71 U	1.16 U	1.57 U	2.39 U	1.34 U	1.2 U	1.47 U
2,4'-DDE (o,p'-DDE)	1.55 U	1.1 UJ	1.71 U	1.16 U	1.57 U	2.39 U	1.34 U	1.2 U	1.47 U
2,4'-DDT (o,p'-DDT)	1.55 UJ	1.1 UJ	1.71 UJ	1.16 UJ	1.57 UJ	2.39 U	1.34 U	1.2 U	1.47 U

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB056	PB057	PB059.1	PB059.2	PB063.1	PB063.2	PB064	PB066	PB069
Sample ID:	PB056-1SS010-091031-N	PB057-1SS010-091031-N	PB059.1-1SS010-091102-N	PB059.2-1SS010-091031-N	PB063.1-1SS010-091031-N	PB063.2-1SS010-091102-N	PB064-1SS010-091102-N	PB066-1SS010-091101-N	PB069-1SS010-091101-N
Sample Date:	10/31/2009	10/31/2009	11/2/2009	10/31/2009	10/31/2009	11/2/2009	11/2/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3201402.6901	3201634.7257	3201531.6282	3201640.7239	3201497.4803	3201553.0822	3201628.7185	3201431.2755	3201160.2007
Y:	13832184.9773	13832087.9098	13831850.4179	13831857.0149	13831523.9045	13831552.2764	13831275.6688	13831275.6811	13830971.1845
PCB-194	4820	1560	16500	2540	11200	1800	234	3040	22400 J
PCB-195	1890	584	6980	942	4490	675	90.3	1230	9070
PCB-196	2920	937	9280	1460	5800	990	112	1570	12600 J
PCB-197	276	96.9	699	139	450	83	33.8	120	644
PCB-198/199	6280	2140	20000 J	3450	12600	2150	258	3280	27300 J
PCB-200	999	374	3600	528	2260	385	36.4	621	3670
PCB-201	1010	364	3460	574	2310	402	43.1 J	593	3510
PCB-202	1310	468	4980	787	3100	596	66.6	867	5440
PCB-203	3150	1040	10100	1650	6570	1030	132	1730	14900 J
PCB-204	44.2 U	43.5 U	90.1 U	50 U	49.5 U	46.3 U	36.8 U	37.3 U	60.6 U
PCB-205	316	90	1050	154	659	111	14 J	209	1350
PCB-206	2510	918	6150	1340	4130	910	143	1230	7480
PCB-207	563	252	947	276	634	209	109	220	1010
PCB-208	984	371	1940	545	1340	363	108	391	2060
PCB-209	42200 J	20900 J	4380	7260	2760	7150	4800	3490	3300
Total PCB Congener (U = 1/2)	7107162.55 J	2553728.4 J	46631784.2 J	4165038.3 J	31807916.55 J	2646980.85 J	262392.45 J	6585980.37 J	43592345.9 J
Total PCB Congener minus 209 (U = 1/2)	7064962.55 J	2532828.4 J	46627404.2 J	4157778.3 J	31805156.55 J	2639830.85 J	257592.45 J	6582490.37 J	43589045.9 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	2456.0228 J	903.84186 J	16015.46495 J	1439.98669 J	10635.48175 J	902.96612 J	88.861198	2127.39646 J	13584.9484 J
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	12.216355 J	5.0113425 J	77.4417025 J	8.357195 J	51.5552375 J	4.9127425 J	0.511139	10.4427875 J	63.697565 J
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	118.6355 J	53.91173 J	727.5282 J	90.82467 J	489.2015 J	52.17471 J	6.282384	98.94463 J	576.3853 J
Monochlorobiphenyls (total)	2340	1630 J	22900	1450	63400	1490	103 J	6310	43300
Dichlorobiphenyls (total)	72400	28300 J	634000	37200	814000	30500	3050	95000	970000
Trichlorobiphenyls (total)	1290000	466000	10100000	590000	6910000	449000	45800 J	1340000	10600000
Tetrachlorobiphenyls (total)	3470000	1180000	22100000	2010000	16000000	1300000	128000	3260000 J	21300000
Pentachlorobiphenyls (total)	1690000	670000	11000000	1170000	6540000	641000	57900	1470000	8390000
Hexachlorobiphenyls (total)	409000	145000	2260000	273000	1180000	166000	15800	334000 J	1760000
Heptachlorobiphenyls (total)	102000	31100	420000	53800	242000	40700	4430 J	60200	456000
Octachlorobiphenyls (total)	23000	7650	76800	12200	49500	8220	1020 J	13300	101000
Nonachlorobiphenyls (total)	4050	1540	9040	2160	6110	1480	360	1840	10500
PCB Aroclors (µg/kg)									
Aroclor 1260	--	--	--	--	--	--	--	--	--
Aroclor 1254	--	--	--	--	--	--	--	--	--
Aroclor 1268	--	--	--	--	--	--	--	--	--
Aroclor 1221	--	--	--	--	--	--	--	--	--
Aroclor 1232	--	--	--	--	--	--	--	--	--
Aroclor 1248	--	--	--	--	--	--	--	--	--
Aroclor 1016	--	--	--	--	--	--	--	--	--
Aroclor 1262	--	--	--	--	--	--	--	--	--
Aroclor 1242	--	--	--	--	--	--	--	--	--
Total PCB Aroclors (U = 1/2)	--	--	--	--	--	--	--	--	--
Pesticides (µg/kg)									
2,4'-DDD (o,p'-DDD)	1.71 U	1.23 U	0.951 U	1.26 U	0.998 U	1.28 U	1.04 U	0.962 U	0.832 U
2,4'-DDE (o,p'-DDE)	1.71 U	1.23 U	0.951 U	1.26 U	0.998 U	1.28 U	1.04 U	0.962 U	0.832 U
2,4'-DDT (o,p'-DDT)	1.71 U	1.23 U	0.951 U	1.26 U	0.998 U	1.28 U	1.04 U	0.962 U	0.832 U

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	2011 USC	2011 USC	2011 USC
Location ID:	PB074	PB081	PB093	PB097	PB101	PB068	PB069.1	PB070A
Sample ID:	PB074-1SS010-091101-N	PB081-1SS010-091103-N	PB093-1SS010-091103-N	PB097-1SS010-091103-N	PB101-1SS010-091103-N	PB068-1SS010-20110804-N	PB069.1-1SS008-20110804-N	PB070A-1SS010-20110802-N
Sample Date:	11/1/2009	11/3/2009	11/3/2009	11/3/2009	11/3/2009	8/4/2011	8/4/2011	8/2/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 8 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N
X:	3200828.0183	3200761.3787	3200970.4291	3201103.1242	3201287.2658	3201209.861	3201205.859	3201087.255
Y:	13830463.2171	13830005.1879	13828894.7843	13828566.1540	13828181.2285	13831121.51	13830973.3	13830903.51
PCB-194	**983**	**16300**	**317**	**403**	**61.1**	--	--	--
PCB-195	**409**	**7030**	**132**	**165**	**19.1 J**	--	--	--
PCB-196	**589**	**9750**	**206**	**292**	**41.6**	--	--	--
PCB-197	**45.7**	**672**	**19.1**	**23.3**	48.1 U	--	--	--
PCB-198/199	**1050**	**19400 J**	**382**	**716**	**110**	--	--	--
PCB-200	**211**	**3550**	**72.6**	**125**	**21.6**	--	--	--
PCB-201	**194**	**3260**	**69.7**	**139**	**20.2**	--	--	--
PCB-202	**280**	**3790**	**104**	**241**	**34.9**	--	--	--
PCB-203	**597**	**9960**	**216**	**363**	**52.8**	--	--	--
PCB-204	36.8 U	46.3 U	52.1 U	45.9 U	48.1 U	--	--	--
PCB-205	**60.3 J**	**1030**	**21.2 J**	**15.6 J**	48.1 U	--	--	--
PCB-206	**340**	**4570**	**129**	**269**	**40.2**	--	--	--
PCB-207	**54**	**768**	**45.8**	**57.2**	**12.5**	--	--	--
PCB-208	**124**	**1230**	**61**	**122**	**25.8**	--	--	--
PCB-209	592 U	**11700**	**482**	**331**	**379**	--	--	--
Total PCB Congener (U = 1/2)	**3275873.3 J**	**21717830.3 J**	**1302666.6 J**	**1653530.6 J**	**405981.24 J**	--	--	--
Total PCB Congener minus 209 (U = 1/2)	**3275577.3 J**	**21706130.3 J**	**1302184.6 J**	**1653199.6 J**	**405602.24 J**	--	--	--
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	**866.7473 J**	**5936.70135 J**	**194.464055**	**389.999914 J**	**76.6573515**	--	--	--
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	**6.67402 J**	**28.7707575 J**	**0.727345**	**1.5890345 J**	**0.31932825**	--	--	--
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	**87.8865 J**	**260.0181 J**	**6.445795**	**14.579522 J**	**3.5076445**	--	--	--
Monochlorobiphenyls (total)	**3890**	**221000**	**719**	**215**	**242**	--	--	--
Dichlorobiphenyls (total)	**54800**	**899000**	**60800**	**15300**	**19000**	--	--	--
Trichlorobiphenyls (total)	**639000**	**5180000**	**514000**	**380000**	**137000**	--	--	--
Tetrachlorobiphenyls (total)	**1280000**	**9770000**	**541000**	**990000**	**193000**	--	--	--
Pentachlorobiphenyls (total)	**864000**	**4000000**	**130000**	**218000**	**47300**	--	--	--
Hexachlorobiphenyls (total)	**380000**	**1170000**	**41900**	**37300**	**6890**	--	--	--
Heptachlorobiphenyls (total)	**49400 J**	**376000**	**10300**	**8670**	**1540 J**	--	--	--
Octachlorobiphenyls (total)	**4420 J**	**74800**	**1540 J**	**2480 J**	**361 J**	--	--	--
Nonachlorobiphenyls (total)	**518**	**6570**	**236**	**448**	**78.5**	--	--	--
PCB Aroclors (µg/kg)								
Aroclor 1260	--	--	--	--	--	1320 U	108 U	37.2 U
Aroclor 1254	--	--	--	--	--	**15700**	**2630**	**604**
Aroclor 1268	--	--	--	--	--	1320 U	108 U	37.2 U
Aroclor 1221	--	--	--	--	--	1320 U	108 U	37.2 U
Aroclor 1232	--	--	--	--	--	1320 U	108 U	37.2 U
Aroclor 1248	--	--	--	--	--	**56000**	**6440**	**1720**
Aroclor 1016	--	--	--	--	--	1320 U	108 U	37.2 U
Aroclor 1262	--	--	--	--	--	1320 U	108 U	37.2 U
Aroclor 1242	--	--	--	--	--	1320 U	108 U	37.2 U
Total PCB Aroclors (U = 1/2)	--	--	--	--	--	**76320**	**9448**	**2454.2**
Pesticides (µg/kg)								
2,4'-DDD (o,p'-DDD)	0.898 U	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
2,4'-DDE (o,p'-DDE)	0.898 U	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
2,4'-DDT (o,p'-DDT)	0.898 U	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--

Appendix A-1
BERA Sediment Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB076.1	PB081.1	PB081.1	PB082
Sample ID:	PB076.1-1SS010-20110802-N	PB081.1-1SS010-20110803-D	PB081.1-1SS010-20110803-N	PB082-1SS010-20110803-N
Sample Date:	8/2/2011	8/3/2011	8/3/2011	8/3/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N
X:	3200744.033	3200772.123	3200772.123	3200751.881
Y:	13830426.95	13829983.6	13829983.6	13829914.32
PCB-194	--	--	--	--
PCB-195	--	--	--	--
PCB-196	--	--	--	--
PCB-197	--	--	--	--
PCB-198/199	--	--	--	--
PCB-200	--	--	--	--
PCB-201	--	--	--	--
PCB-202	--	--	--	--
PCB-203	--	--	--	--
PCB-204	--	--	--	--
PCB-205	--	--	--	--
PCB-206	--	--	--	--
PCB-207	--	--	--	--
PCB-208	--	--	--	--
PCB-209	--	--	--	--
Total PCB Congener (U = 1/2)	--	--	--	--
Total PCB Congener minus 209 (U = 1/2)	--	--	--	--
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	--	--	--	--
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	--	--	--	--
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	--	--	--	--
Monochlorobiphenyls (total)	--	--	--	--
Dichlorobiphenyls (total)	--	--	--	--
Trichlorobiphenyls (total)	--	--	--	--
Tetrachlorobiphenyls (total)	--	--	--	--
Pentachlorobiphenyls (total)	--	--	--	--
Hexachlorobiphenyls (total)	--	--	--	--
Heptachlorobiphenyls (total)	--	--	--	--
Octachlorobiphenyls (total)	--	--	--	--
Nonachlorobiphenyls (total)	--	--	--	--
PCB Aroclors (µg/kg)				
Aroclor 1260	47.2 U	1530 U	1490 U	251 U
Aroclor 1254	**1010**	**20500 J**	**23200 J**	**4300**
Aroclor 1268	47.2 U	1530 U	1490 U	251 U
Aroclor 1221	47.2 U	1530 U	1490 U	251 U
Aroclor 1232	47.2 U	1530 U	1490 U	251 U
Aroclor 1248	**2830**	**80600 J**	**83600 J**	**15000**
Aroclor 1016	47.2 U	1530 U	1490 U	251 U
Aroclor 1262	47.2 U	1530 U	1490 U	251 U
Aroclor 1242	47.2 U	1530 U	1490 U	251 U
Total PCB Aroclors (U = 1/2)	**4005.2**	**106455 J**	**112015 J**	**20178.5**
Pesticides (µg/kg)				
2,4'-DDD (o,p'-DDD)	--	--	--	--
2,4'-DDE (o,p'-DDE)	--	--	--	--
2,4'-DDT (o,p'-DDT)	--	--	--	--

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB001.1	PB001.2	PB001.3	PB002	PB004	PB005	PB007.1	PB007.2	PB009
Sample ID:	PB001.1-1SS010-091027-N	PB001.2-1SS010-091027-N	PB001.3-1SS010-091027-N	PB002-1SS010-091027-N	PB004-1SS010-091027-N	PB005-1SS010-091027-N	PB007.1-1SS010-091028-N	PB007.2-1SS010-091028-N	PB009-1SS010-091028-N
Sample Date:	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/28/2009	10/28/2009	10/28/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3202382.3842	3202624.0211	3202754.9026	3202606.9920	3202330.4788	3202262.1385	3202065.5011	3202037.3755	3201747.2539
Y:	13836546.3402	13836566.3557	13836489.4987	13836435.6794	13836348.7826	13836144.2614	13836300.0036	13836110.2965	13836119.3947
4,4'-DDD (p,p'-DDD)	**58.8 J**	**30.6 J**	**4.98 J**	**35.1 J**	**28.3 J**	**29.4 J**	**46.2 J**	**24.8 J**	**17.8 J**
4,4'-DDE (p,p'-DDE)	**12.5 J**	**11.1 J**	**1.6 J**	**11.6 J**	**10.1 J**	**10.2 J**	**16.9 J**	**7.97 J**	**6.31**
4,4'-DDT (p,p'-DDT)	**62.7 J**	**68.1 J**	1.28 U	**109 J**	**59.4 J**	**48.4 J**	3.11 UJ	**64**	1.27 U
Sum 2,4 DDT, DDE, DDD (U=1/2)	**25.77 J**	**13.37 J**	**3.34 J**	**14.24 J**	2.07 U	**13.95 J**	3.11 U	1.42 U	1.27 U
Sum 4,4 DDT, DDE, DDD (U = 1/2)	**134 J**	**109.8 J**	**7.22 J**	**155.7 J**	**97.8 J**	**88 J**	**64.655 J**	**96.77 J**	**24.745 J**
Sum DDD (U=1/2)	**82.5 J**	**42 J**	**7.04 J**	**47.9 J**	**29.335 J**	**41.7 J**	**47.755 J**	**25.51 J**	**18.435 J**
Sum DDE (U=1/2)	**13.535 J**	**12.085 J**	**2.24 J**	**12.32 J**	**11.135 J**	**11.025 J**	**18.455 J**	**8.68 J**	**6.945**
Sum DDT (U=1/2)	**63.735 J**	**69.085 J**	1.28 U	**109.72 J**	**60.435 J**	**49.225 J**	3.11 UJ	**64.71**	1.27 U
Total DDx (U = 1/2)	**159.77 J**	**123.17 J**	**10.56 J**	**169.94 J**	**100.905 J**	**101.95 J**	**69.32 J**	**98.9 J**	**26.65 J**
Aldrin	1.04 U	0.986 U	0.64 U	0.718 U	1.03 U	0.823 U	1.55 U	0.712 U	0.634 U
alpha-Chlordane (cis-Chlordane)	**34.1**	**8.89 J**	**10.7 J**	**16 J**	**12.1**	**41.9**	**24.8**	**39.5**	**54.4 NJ**
Endosulfan-alpha (I)	**66.8 NJ**	**18.2 NJ**	**7.44 NJ**	**35.4 NJ**	**25.8 NJ**	**51.5 NJ**	**46.6 J**	**70.9**	**27.5 NJ**
Endosulfan-beta (II)	1.04 U	0.986 UJ	0.64 U	0.718 U	1.03 U	0.823 U	1.55 U	0.712 U	0.634 U
Endrin	1.04 U	0.986 UJ	**5.86 NJ**	**19.7 NJ**	1.03 U	**18.7 NJ**	1.55 U	**47.9 NJ**	0.634 U
gamma-BHC (Lindane)	1.04 U	0.986 UJ	0.64 U	0.718 U	**27.4 NJ**	**57.7 NJ**	1.55 U	0.712 U	0.634 U
gamma-Chlordane	1.04 U	0.986 UJ	0.64 U	0.718 U	1.03 U	0.823 U	1.55 U	0.712 U	0.634 U
Heptachlor epoxide	1.04 U	0.986 U	0.64 U	0.718 U	1.03 U	0.823 U	1.55 U	0.712 U	0.634 U
Methoxychlor	1.04 U	0.986 UJ	0.64 U	0.718 U	1.03 U	0.823 U	1.55 U	0.712 U	0.634 U
Dioxin Furans (ng/kg)									
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	**21.3**	**27**	**9.46**	**46.9**	**26**	**21.5**	**23.7**	**17.2**	**14.3**
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	**3.85**	**3.76**	**3.24 J**	**4.21 J**	**4.8 J**	**3.9**	**4 J**	**3.57 J**	**3.34**
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	**5.46 J**	**6.5**	**4.57**	**7.62**	**9.36**	**5.72**	**8.5**	**4.13 J**	**4.27 J**
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	**19.1**	**18.8**	**11.8**	**26.4**	**18.8**	**14.5 J**	**23.8**	**12.6 J**	**13.7**
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	**10.3**	**12**	**8.8 J**	**14.8**	**18.2 J**	**13.2**	**14.4 J**	**8.42 J**	**6.02 J**
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	**501**	**414**	**280**	**555**	**460**	**398**	**682**	**349**	**367**
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	**5570**	**5100**	**2690**	**5910**	**5510**	**4890**	**8640**	**4100**	**4550**
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	**104**	**94.8**	**39.9**	**192**	**121**	**114**	**105**	**95.1**	**81.4**
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	**56.2**	**79.8**	**45.4**	**160**	**186**	**110**	**81.9**	**103**	**72.5**
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	**52.7**	**72.1**	**43.6**	**124**	**151**	**80.3**	**68.1**	**78**	**61.4**
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	**103**	**155**	**228**	**327**	**349 J**	**201**	**144**	**177**	**135**
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	**46.4**	**65.4**	**139**	**144**	**124**	**88.1**	**64**	**81.4**	**59.7**
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	**23.8**	**36.9 J**	**38.7**	**63.4**	**122 J**	**53.4**	**36.2 J**	**42.3**	**32.7 J**
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	**26.8**	**34.2**	**75.4**	**62.7**	**69.9**	**41.9**	**34.3**	**38.5**	**29.6**
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	**1150**	**1730**	**7320 J**	**3990**	**1450**	**2240**	**1410**	**1880**	**1620**
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	**102**	**147**	**604**	**356**	**133**	**221**	**113**	**184**	**127**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	**45500 J**	**67500 J**	**253000 J**	**149000 J**	**48500 J**	**81000 J**	**49600 J**	**60100 J**	**63300 J**
Total Tetrachlorodibenzo-p-dioxin (TCDD)	**58 J**	**61.1 J**	**23 J**	**89.1 J**	**65 J**	**53.7 J**	**66.7 J**	**43.4 J**	**31.8 J**
Total Pentachlorodibenzo-p-dioxin (PeCDD)	**68 J**	**53.8 J**	**34.7 J**	**82.5 J**	**64.7 J**	**54.3 J**	**60.3 J**	**43.9 J**	**41.8 J**
Total Hexachlorodibenzo-p-dioxin (HxCDD)	**238 J**	**233 J**	**147 J**	**297 J**	**286 J**	**210 J**	**289 J**	**182 J**	**170 J**
Total Heptachlorodibenzo-p-dioxin (HpCDD)	**1590**	**1160**	**680**	**1390**	**1350**	**1130**	**1990**	**1020**	**1110**
Total Tetrachlorodibenzofuran (TCDF)	**459 J**	**419 J**	**240 J**	**791 J**	**550 J**	**460 J**	**471 J**	**403 J**	**326 J**
Total Pentachlorodibenzofuran (PeCDF)	**345 J**	**412 J**	**411 J**	**765 J**	**740 J**	**490 J**	**438 J**	**468 J**	**363 J**
Total Hexachlorodibenzofuran (HxCDF)	**871**	**1500 J**	**2090 J**	**2170**	**1650 J**	**1290 J**	**1150 J**	**1200 J**	**1030 J**
Total Heptachlorodibenzofuran (HpCDF)	**1950**	**2900**	**10300**	**6050**	**2390**	**3470**	**2430**	**2930**	**2460**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB011	PB013.1	PB013.2	PB015	PB016	PB016	PB018	PB019	PB022
Sample ID:	PB011-1SS010-091028-N	PB013.1-1SS010-091028-N	PB013.2-1SS010-091028-N	PB015-1SS010-091028-N	PB016-1SS010-091101-N	PB016-1SS010-091102-N	PB018-1SS010-091101-N	PB019-1SS010-091101-N	PB022-1SS010-091101-D
Sample Date:	10/28/2009	10/28/2009	10/28/2009	10/28/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	FD
X:	3201727.2504	3201333.4751	3201420.5786	3201223.8464	3201140.0114	3201140.0114	3201146.8550	3201281.6017	3201174.1294
Y:	13836239.7593	13836187.7023	13836111.1432	13836229.0694	13836081.5392	13836081.5392	13835702.1476	13835711.9947	13835456.7389
4,4'-DDD (p,p'-DDD)	**33 J**	1.24 U	**9.56 J**	**26.4 J**	1.08 U	--	0.991 UJ	**14 J**	1.01 U
4,4'-DDE (p,p'-DDE)	**12.8 J**	**6.08**	**4.42 J**	**6.98 J**	**7.97**	--	**3.77 J**	**7.94**	**3.87**
4,4'-DDT (p,p'-DDT)	1.41 U	1.24 U	**19.6 J**	2.74 UJ	**53.5 J**	--	0.991 UJ	**20.7 J**	**21.4**
Sum 2,4 DDT, DDE, DDD (U=1/2)	**20.11 J**	1.24 U	**5.13 J**	**12.02 J**	1.08 U	--	0.991 UJ	1.15 U	1.01 U
Sum 4,4 DDT, DDE, DDD (U = 1/2)	**46.505 J**	**7.32**	**33.58 J**	**34.75 J**	**62.01 J**	--	**4.761 J**	**42.64 J**	**25.775**
Sum DDD (U=1/2)	**51.7 J**	1.24 U	**13.62 J**	**35.68 J**	1.08 U	--	0.991 UJ	**14.575 J**	1.01 U
Sum DDE (U=1/2)	**13.505 J**	**6.7**	**4.955 J**	**8.35 J**	**8.51**	--	**4.2655 J**	**8.515**	**4.375**
Sum DDT (U=1/2)	1.41 U	1.24 U	**20.135 J**	2.74 UJ	**54.04 J**	--	0.991 UJ	**21.275 J**	**21.905**
Total DDx (U = 1/2)	**66.615 J**	**9.18**	**38.71 J**	**46.77 J**	**63.63 J**	--	**6.2475 J**	**44.365 J**	**27.29**
Aldrin	0.707 U	0.622 U	0.534 U	1.37 U	0.541 U	--	0.495 UJ	0.576 U	0.507 UJ
alpha-Chlordane (cis-Chlordane)	**7.72 NJ**	**5.17 J**	**13.2 J**	**14.5 J**	**3.91**	--	**1.66 J**	**13.1 J**	**7.2 J**
Endosulfan-alpha (I)	0.707 U	**14.7 NJ**	**18.2 NJ**	**29.5 NJ**	**29.3 NJ**	--	0.495 UJ	**19.3 NJ**	**17.4 NJ**
Endosulfan-beta (II)	0.707 U	0.622 U	0.534 U	1.37 UJ	0.541 U	--	0.495 UJ	0.576 U	0.507 UJ
Endrin	0.707 U	0.622 U	0.534 U	1.37 UJ	0.541 U	--	0.495 UJ	0.576 U	0.507 UJ
gamma-BHC (Lindane)	0.707 U	**39.5 NJ**	0.534 U	**27.2 NJ**	**43.5 NJ**	--	**164 NJ**	0.576 U	**14.4 NJ**
gamma-Chlordane	0.707 U	**27.5 NJ**	0.534 U	1.37 UJ	0.541 U	--	0.495 UJ	0.576 U	0.507 UJ
Heptachlor epoxide	0.707 U	0.622 U	0.534 U	1.37 U	**11.2 NJ**	--	0.495 UJ	0.576 U	0.507 UJ
Methoxychlor	0.707 U	0.622 U	0.534 U	1.37 UJ	0.541 U	--	0.495 UJ	0.576 U	0.507 UJ
Dioxin Furans (ng/kg)									
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	**27.9**	**15.8 J**	**5.09**	**30**	**9.11 J**	--	**12.7**	**11.6 J**	**10.3**
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	**3.62 J**	**2.26 J**	**1.02 J**	**4.72 J**	3.39 U	--	3.58 U	**2.46 J**	5.34 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	**5.59 J**	**3.03 J**	**2.18**	**9.2**	**1.83 J**	--	7.75 U	**3.13 J**	6.63 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	**19.7**	**12.3**	**6.31**	**24.1**	**10.3**	--	**9.31**	**17.2**	**11.1**
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	**10.1 J**	**8.49**	**4.03 J**	**19.3**	**6.29 J**	--	**5.38 J**	**7.12**	**5.34 J**
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	**403**	**278**	**121**	**680**	**208**	--	**276**	**355**	**195**
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	**4290**	**3420**	**1340**	**7840**	**2460**	--	**2460**	**3260**	**2100**
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	**138**	**114**	**31.7**	**156**	**74**	--	**81.6**	**81.6**	**66.8**
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	**145**	**147**	**30.3**	**105**	**117**	--	**90.8**	**57**	**59.8**
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	**111**	**112**	**23.1**	**84.3**	**89.3**	--	**78.4**	**45.8**	**49.1**
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	**262**	**239**	**70.7**	**168**	**160**	--	**208**	**97.6**	**99**
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	**106**	**81.6**	**31.7**	**76.5**	**62.4**	--	**86.7**	**54.5**	**36.3**
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	**68.2**	**66.6**	**14.8 J**	**37 J**	**41.5**	--	**51.9**	**22.5 J**	**28.2 J**
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	**47.6**	**38.2**	**14.9**	**43.3**	**32.4**	--	**37.3**	**25.3 J**	**17.8**
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	**1920**	**1220**	**1250**	**1720**	**893**	--	**1630**	**1670**	**654**
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	**187**	**138**	**72.1**	**145**	**100**	--	**156**	**133**	**60.9**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	**65700 J**	**35100 J**	**27600 J**	**59700 J**	**37000 J**	--	**99300 J**	**58700 J**	**19100 J**
Total Tetrachlorodibenzo-p-dioxin (TCDD)	**52.7 J**	**44.6 J**	**13.8 J**	**76.2 J**	**22 J**	--	**26.4 J**	**30.1 J**	**21.3 J**
Total Pentachlorodibenzo-p-dioxin (PeCDD)	**59 J**	**31.6 J**	**18.1 J**	**73.4 J**	**25.8 J**	--	**51.1 J**	**46.8 J**	**21.7 J**
Total Hexachlorodibenzo-p-dioxin (HxCDD)	**231 J**	**146 J**	**78.8 J**	**319 J**	**132 J**	--	**151 J**	**187 J**	**116 J**
Total Heptachlorodibenzo-p-dioxin (HpCDD)	**1170**	**755**	**361**	**1910**	**546**	--	**731**	**955**	**523**
Total Tetrachlorodibenzofuran (TCDF)	**555 J**	**437 J**	**157 J**	**671 J**	**334 J**	--	**338 J**	**366 J**	**296 J**
Total Pentachlorodibenzofuran (PeCDF)	**603**	**541 J**	**159 J**	**537**	**442 J**	--	**457 J**	**302 J**	**252 J**
Total Hexachlorodibenzofuran (HxCDF)	**1370 J**	**979**	**493 J**	**1290 J**	**758 J**	--	**1580**	**944 J**	**494 J**
Total Heptachlorodibenzofuran (HpCDF)	**2980**	**1950**	**1670**	**2890**	**1450**	--	**2710**	**2490**	**1030**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB022	PB023	PB023	PB024	PB026	PB028	PB032	PB034	PB037
Sample ID:	PB022-1SS010-091101-N	PB023-1SS010-091030-D	PB023-1SS010-091030-N	PB024-1SS010-091030-N	PB026-1SS010-091030-N	PB028-1SS010-091030-N	PB032-1SS010-091030-N	PB034-1SS010-091030-N	PB037-1SS010-091030-N
Sample Date:	11/1/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N	N	N	N	N	N
X:	3201174.1294	3201315.1973	3201315.1973	3201180.8567	3201331.5617	3201355.6226	3201368.6522	3201387.6450	3201399.4292
Y:	13835456.7389	13835429.2411	13835429.2411	13835181.4775	13835155.0673	13834855.4834	13834541.6071	13834242.2769	13833936.8351
4,4'-DDD (p,p'-DDD)	1 UJ	**12.1 J**	**11.1 J**	**10.4 J**	**94.1 J**	**11.6 J**	**33.2 J**	**45.6 J**	2.04 U
4,4'-DDE (p,p'-DDE)	**3.34 J**	**13.8 J**	**12.8 J**	**7.2 J**	**38 J**	**4.78**	**7.75 J**	**23.7 J**	2.04 U
4,4'-DDT (p,p'-DDT)	**24 J**	**16.8 J**	1.06 U	1.07 U	**80 J**	2.1 UJ	**44.8 J**	2.31 UJ	2.04 UJ
Sum 2,4 DDT, DDE, DDD (U=1/2)	1 UJ	**17.63 J**	**9.99 J**	1.07 U	**59.1 J**	2.1 UJ	**11.95 J**	**11.12 J**	2.04 UJ
Sum 4,4 DDT, DDE, DDD (U = 1/2)	**27.84 J**	**42.7 J**	**24.43 J**	**18.135 J**	**212.1 J**	**17.43 J**	**85.75 J**	**70.455 J**	2.04 UJ
Sum DDD (U=1/2)	1 UJ	**21.32 J**	**17.1 J**	**10.935 J**	**136.8 J**	**12.65 J**	**43.7 J**	**54.41 J**	2.04 U
Sum DDE (U=1/2)	**3.84 J**	**17.31 J**	**16.26 J**	**7.735 J**	**53.2 J**	**5.83**	**8.475 J**	**24.855 J**	2.04 U
Sum DDT (U=1/2)	**24.5 J**	**21.7 J**	1.06 U	1.07 U	**81.2 J**	2.1 UJ	**45.525 J**	2.31 UJ	2.04 UJ
Total DDx (U = 1/2)	**29.34 J**	**60.33 J**	**34.42 J**	**19.74 J**	**271.2 J**	**20.58 J**	**97.7 J**	**81.575 J**	2.04 UJ
Aldrin	0.5 U	0.565 UJ	0.531 UJ	0.534 UJ	1.2 UJ	1.05 UJ	0.723 UJ	1.16 UJ	1.02 UJ
alpha-Chlordane (cis-Chlordane)	**6.48**	**4.06 J**	**19.4 NJ**	**7.48 J**	1.2 UJ	**2.07 J**	0.723 UJ	**10.7 J**	**66.9 J**
Endosulfan-alpha (I)	0.5 U	0.565 UJ	0.531 UJ	**21.2 J**	1.2 UJ	1.05 UJ	0.723 UJ	**27 J**	**87.7 J**
Endosulfan-beta (II)	0.5 U	0.565 UJ	0.531 UJ	0.534 UJ	**57.5 NJ**	1.05 UJ	**53.3 J**	1.16 UJ	**133 NJ**
Endrin	0.5 U	**16.2 NJ**	**41.4 NJ**	0.534 UJ	**54.6 NJ**	**4 J**	0.723 UJ	1.16 UJ	1.02 UJ
gamma-BHC (Lindane)	**19.4 NJ**	**76.3 NJ**	0.531 UJ	**34.8 NJ**	1.2 UJ	**24 NJ**	**86.9 J**	1.16 UJ	**6.56 J**
gamma-Chlordane	0.5 U	**5.05 J**	**15 NJ**	0.534 UJ	1.2 UJ	1.05 UJ	**74.9 J**	1.16 UJ	1.02 UJ
Heptachlor epoxide	**21.5 NJ**	0.565 UJ	0.531 UJ	0.534 UJ	1.2 UJ	1.05 UJ	0.723 UJ	1.16 UJ	1.02 UJ
Methoxychlor	0.5 UJ	0.565 UJ	0.531 UJ	0.534 UJ	1.2 UJ	1.05 UJ	0.723 UJ	1.16 UJ	1.02 UJ
Dioxin Furans (ng/kg)									
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	**9.44**	**10 J**	**14.3**	**19**	**830**	**9.3**	**158**	**63.6**	**23**
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	3.08 U	**3.08 J**	**4.45 J**	**3.11 J**	**9.66 J**	**1.29 J**	**4.06**	**6.65 J**	**5.63 J**
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	**2.13 J**	**4.23 J**	**4.31**	**4.89 J**	**7.74 J**	3.38 U	**3.55 J**	**9.6 J**	**8.15 J**
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	**8.54 J**	**11.6**	**11**	**16.4**	**49.6**	3.77 U	**18**	**74.7**	**30.1**
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	**4.86 J**	**7.59**	**6.79 J**	**9.6 J**	**17.9 J**	3.77 U	**8.83 J**	**26.2**	**16.3 J**
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	**195**	**208**	**188**	**364**	**1130**	**238**	**603**	**1800**	**773**
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	**2150**	**2290**	**2050**	**3790**	**8750**	**3680**	**4370**	**11400 J**	**8830**
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	**61.9**	**69.7**	**71.8**	**101**	**2860 J**	**40.4**	**364**	**298**	**128**
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	**54**	**74.2**	**77.6**	**114**	**154**	**26.5**	**51.6**	**143**	**111**
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	**46.3**	**62.5**	**51.3**	**91.6**	**180**	**27.3**	**48.1**	**125**	**94.8**
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	**85.2**	**206**	**120**	**206**	**556**	**73.3 J**	**116**	**292**	**165**
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	**39.8**	**99.9**	**72.1**	**85.7**	**170**	**26.9 J**	**37.4**	**120**	**67.5**
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	**19 J**	**32.4**	**34.4 J**	**52.4**	**130**	**13.1 J**	**25.2 J**	**64.3**	**37.2**
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	**14.8 J**	**45.7**	**30.7**	**36.8**	**164**	**16.6**	**23**	**93.1**	**35**
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	**638**	**2410**	**2690**	**1480**	**13100 J**	**455**	**7010 J**	**4510**	**594**
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	**58.9**	**234**	**252**	**155**	**1390**	**42.2**	**256 J**	**422**	**77.6**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	**17800 J**	**77900 J**	**110000 J**	**32200 J**	**2570000 J**	**17400 J**	**1460000 J**	**250000 J**	**13100 J**
Total Tetrachlorodibenzo-p-dioxin (TCDD)	**25.6 J**	**42.9 J**	**35.8 J**	**41 J**	**976 J**	**25.4 J**	**181 J**	**130 J**	**71.5 J**
Total Pentachlorodibenzo-p-dioxin (PeCDD)	**25.8 J**	**56.7 J**	**43.8 J**	**43.3 J**	**252 J**	**21.3 J**	**22.5 J**	**117 J**	**74.1 J**
Total Hexachlorodibenzo-p-dioxin (HxCDD)	**122 J**	**148 J**	**134 J**	**189 J**	**1100 J**	**106 J**	**209 J**	**658 J**	**304 J**
Total Heptachlorodibenzo-p-dioxin (HpCDD)	**555**	**558**	**510**	**972**	**3350**	**638**	**1340**	**4500**	**1910**
Total Tetrachlorodibenzofuran (TCDF)	**271 J**	**321 J**	**385 J**	**438 J**	**5140 J**	**169 J**	**738 J**	**1030 J**	**599 J**
Total Pentachlorodibenzofuran (PeCDF)	**248 J**	**453 J**	**447 J**	**463 J**	**1860 J**	**165 J**	**248 J**	**954**	**536 J**
Total Hexachlorodibenzofuran (HxCDF)	**467 J**	**1610**	**2640 J**	**890 J**	**74600 J**	**540 J**	**527 J**	**3960 J**	**763 J**
Total Heptachlorodibenzofuran (HpCDF)	**1040**	**3670**	**5820**	**2210**	**163000**	**933**	**8820 J**	**10600**	**1170**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB041	PB043	PB044	PB047.1	PB047.2	PB048	PB049	PB049	PB053
Sample ID:	PB041-1SS010-091030-N	PB043-1SS010-091030-N	PB044-1SS010-091030-N	PB047.1-1SS010-091030-N	PB047.2-1SS010-091030-N	PB048-1SS010-091031-N	PB049-1SS010-091031-D	PB049-1SS010-091031-N	PB053-1SS010-091031-N
Sample Date:	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/31/2009	10/31/2009	10/31/2009	10/31/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	FD	N	N
X:	3201410.6060	3201451.0315	3201663.5416	3201454.2006	3201656.8574	3201635.5547	3201435.3433	3201435.3433	3201421.7211
Y:	13833634.6932	13833347.5606	13833285.4731	13833042.2356	13833055.7842	13832859.6311	13832751.7292	13832751.7292	13832443.5506
4,4'-DDD (p,p'-DDD)	**16.6 J**	**11.3 J**	**16.9 J**	**32.4 J**	**15.2 J**	**26.7 J**	1.34 U	1.2 U	**142 J**
4,4'-DDE (p,p'-DDE)	**12.2 J**	1.1 UJ	**11.4**	1.16 U	**7.62**	**9.02**	**10.4**	**9.94**	1.47 U
4,4'-DDT (p,p'-DDT)	1.55 UJ	1.1 UJ	1.71 UJ	1.16 UJ	1.57 UJ	2.39 U	**33.1 J**	**32.7 J**	1.47 U
Sum 2,4 DDT, DDE, DDD (U=1/2)	1.55 UJ	1.1 UJ	1.71 UJ	1.16 UJ	1.57 UJ	2.39 U	1.34 U	1.2 U	1.47 U
Sum 4,4 DDT, DDE, DDD (U = 1/2)	**29.575 J**	**12.4 J**	**29.155 J**	**33.56 J**	**23.605 J**	**36.915 J**	**44.17 J**	**43.24 J**	**143.47 J**
Sum DDD (U=1/2)	**17.375 J**	**11.85 J**	**17.755 J**	**32.98 J**	**15.985 J**	**27.895 J**	1.34 U	1.2 U	**142.735 J**
Sum DDE (U=1/2)	**12.975 J**	1.1 UJ	**12.255**	1.16 U	**8.405**	**10.215**	**11.07**	**10.54**	1.47 U
Sum DDT (U=1/2)	1.55 UJ	1.1 UJ	1.71 UJ	1.16 UJ	1.57 UJ	2.39 U	**33.77 J**	**33.3 J**	1.47 U
Total DDx (U = 1/2)	**31.9 J**	**14.05 J**	**31.72 J**	**35.3 J**	**25.96 J**	**40.5 J**	**46.18 J**	**45.04 J**	**145.675 J**
Aldrin	0.777 UJ	0.55 UJ	0.857 UJ	0.578 UJ	0.784 UJ	1.2 U	0.67 U	0.6 U	0.736 U
alpha-Chlordane (cis-Chlordane)	0.777 UJ	**64.4 J**	**10.6 J**	**30.9 J**	**39.8 J**	**25.8**	**40.7**	**26.1**	0.736 U
Endosulfan-alpha (I)	**51.9 NJ**	**76.3 J**	**42.9 NJ**	**121 NJ**	**60.1 J**	**42.2 J**	**56.5 NJ**	**72.2 NJ**	0.736 U
Endosulfan-beta (II)	0.777 UJ	0.55 UJ	0.857 UJ	0.578 UJ	0.784 UJ	1.2 U	0.67 U	**112 NJ**	0.736 U
Endrin	**35.4 J**	**33.6 NJ**	0.857 UJ	0.578 UJ	0.784 UJ	1.2 U	0.67 U	0.6 U	0.736 U
gamma-BHC (Lindane)	**13.6 NJ**	**2.42 J**	**7.54 NJ**	**5.73 NJ**	**3.56 NJ**	**3.95**	**1.4 J**	**1.98**	**26.8**
gamma-Chlordane	**57.8 NJ**	0.55 UJ	0.857 UJ	0.578 UJ	0.784 UJ	1.2 U	0.67 U	0.6 U	0.736 U
Heptachlor epoxide	**38.3 J**	0.55 UJ	0.857 UJ	0.578 UJ	0.784 UJ	1.2 U	0.67 U	0.6 U	0.736 U
Methoxychlor	0.777 UJ	0.55 UJ	0.857 UJ	0.578 UJ	0.784 UJ	1.2 U	0.67 U	0.6 U	0.736 U
Dioxin Furans (ng/kg)									
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	**10**	**3.89**	**12.2**	**6.17**	**12**	**14.6**	**4.84**	**4.99**	**48.7**
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	**4.18 J**	**2.21 J**	**4.28**	**4.41**	**4.01**	**4.72**	**4.42 J**	**4.15**	**7.53 J**
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	**7.06**	**3.56**	**7.3**	**5.85**	**7.47**	**9.03**	**6.3**	**6.19**	**12.4**
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	**17.8**	**10.8**	**20.9**	**18.1**	**20**	**23.6**	**22.2**	**21.6**	**76.4**
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	**11.5**	**7.11**	**11.8**	**10.9**	**12.8**	**15.2**	**13.8**	**12.6**	**27.1**
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	**381**	**326**	**531**	**449**	**490**	**588**	**557**	**516**	**1790**
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	**4510**	**3740**	**7170**	**4850**	**5890**	**7600**	**5650**	**5910**	**19100 J**
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	**130**	**47.7**	**621**	**59.7**	**178**	**130**	**49.2**	**46.7**	**399**
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	**174**	**22.9**	**118**	**71.4**	**70**	**72.2**	**43.9**	**41.9**	**573**
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	**134**	**25**	**90.8**	**67.3**	**55.4**	**59**	**43.2**	**39.2**	**462**
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	**284**	**33.9**	**132**	**148**	**90.4**	**109**	**69.9**	**65.4**	**2000**
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	**82.7**	**14.9**	**46.5**	**55.9**	**37.7**	**45.7**	**33.5**	**30.8**	**487**
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	**58.9**	**7.32**	**27.2**	**25.1**	**19.3**	**23.2**	**14.5**	**14.4**	**358**
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	**40.1**	**9.7**	**24.8**	**22.9**	**21.4**	**25.2**	**18.2**	**17.2**	**156**
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	**377**	**135**	**331**	**544**	**326**	**387**	**211**	**200**	**1370**
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	**76.7**	**16.1**	**51.9**	**70.8**	**42.5**	**53**	**25.7**	**24.7**	**614**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	**5550**	**1580**	**5190**	**4210**	**5720**	**6410**	**1720**	**1680**	**9300**
Total Tetrachlorodibenzo-p-dioxin (TCDD)	**41.9 J**	**24.5 J**	**48.5 J**	**38.5 J**	**50.2 J**	**59.7 J**	**43.3 J**	**40.9 J**	**191 J**
Total Pentachlorodibenzo-p-dioxin (PeCDD)	**48.4 J**	**26 J**	**51.2 J**	**48.3 J**	**53.1 J**	**63.8 J**	**64 J**	**61.2 J**	**85 J**
Total Hexachlorodibenzo-p-dioxin (HxCDD)	**194 J**	**107**	**223**	**185**	**220**	**271**	**211**	**199 J**	**415**
Total Heptachlorodibenzo-p-dioxin (HpCDD)	**972**	**754**	**1480**	**1170**	**1340**	**1670**	**1400**	**1320**	**3500**
Total Tetrachlorodibenzofuran (TCDF)	**525 J**	**203 J**	**1200 J**	**372 J**	**469 J**	**476 J**	**326 J**	**300 J**	**2000 J**
Total Pentachlorodibenzofuran (PeCDF)	**660 J**	**149 J**	**447 J**	**416 J**	**316 J**	**356 J**	**297 J**	**273 J**	**2030 J**
Total Hexachlorodibenzofuran (HxCDF)	**785 J**	**175**	**481**	**540**	**391**	**482 J**	**339**	**321**	**4050**
Total Heptachlorodibenzofuran (HpCDF)	**748**	**277**	**683**	**911**	**613**	**754**	**423**	**405**	**3350**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB056	PB057	PB059.1	PB059.2	PB063.1	PB063.2	PB064	PB066	PB069
Sample ID:	PB056-1SS010-091031-N	PB057-1SS010-091031-N	PB059.1-1SS010-091102-N	PB059.2-1SS010-091031-N	PB063.1-1SS010-091031-N	PB063.2-1SS010-091102-N	PB064-1SS010-091102-N	PB066-1SS010-091101-N	PB069-1SS010-091101-N
Sample Date:	10/31/2009	10/31/2009	11/2/2009	10/31/2009	10/31/2009	11/2/2009	11/2/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3201402.6901	3201634.7257	3201531.6282	3201640.7239	3201497.4803	3201553.0822	3201628.7185	3201431.2755	3201160.2007
Y:	13832184.9773	13832087.9098	13831850.4179	13831857.0149	13831523.9045	13831552.2764	13831275.6688	13831275.6811	13830971.1845
4,4'-DDD (p,p'-DDD)	1.71 U	1.23 U	0.951 U	1.26 U	0.998 U	1.28 U	1.04 U	0.962 U	0.832 U
4,4'-DDE (p,p'-DDE)	**6.16**	**4.29**	0.951 U	**8.54**	0.998 U	**5.96**	**1.65**	0.962 U	0.832 U
4,4'-DDT (p,p'-DDT)	**43.9 J**	**20.8 J**	0.951 U	**28.2 J**	0.998 U	**37.9**	1.04 U	0.962 U	0.832 U
Sum 2,4 DDT, DDE, DDD (U=1/2)	1.71 U	1.23 U	0.951 U	1.26 U	0.998 U	1.28 U	1.04 U	0.962 U	0.832 U
Sum 4,4 DDT, DDE, DDD (U = 1/2)	**50.915 J**	**25.705 J**	0.951 U	**37.37 J**	0.998 U	**44.5**	**2.69**	0.962 U	0.832 U
Sum DDD (U=1/2)	1.71 U	1.23 U	0.951 U	1.26 U	0.998 U	1.28 U	1.04 U	0.962 U	0.832 U
Sum DDE (U=1/2)	**7.015**	**4.905**	0.951 U	**9.17**	0.998 U	**6.6**	**2.17**	0.962 U	0.832 U
Sum DDT (U=1/2)	**44.755 J**	**21.415 J**	0.951 U	**28.83 J**	0.998 U	**38.54**	1.04 U	0.962 U	0.832 U
Total DDx (U = 1/2)	**53.48 J**	**27.55 J**	0.951 U	**39.26 J**	0.998 U	**46.42**	**4.25**	0.962 U	0.832 U
Aldrin	0.854 U	0.615 U	0.476 U	0.631 U	0.499 U	0.641 U	0.519 U	0.481 U	0.416 U
alpha-Chlordane (cis-Chlordane)	**10.5**	**13.3 J**	**19.2**	**9.19**	**146**	**2.89**	0.519 U	**124**	0.416 U
Endosulfan-alpha (I)	**34.6 NJ**	**24.1 NJ**	**124 NJ**	**33.5 NJ**	**165 NJ**	**19.7 NJ**	**2.79 NJ**	**133 J**	**292 NJ**
Endosulfan-beta (II)	0.854 U	0.615 U	0.476 U	0.631 U	0.499 U	0.641 U	0.519 U	0.481 U	0.416 U
Endrin	0.854 U	0.615 U	**24.1 NJ**	0.631 U	0.499 U	0.641 U	0.519 U	0.481 U	0.416 U
gamma-BHC (Lindane)	**2.72 NJ**	**0.924**	**8.33 NJ**	0.631 U	0.499 U	0.641 U	0.519 U	**2.76**	0.416 U
gamma-Chlordane	0.854 U	0.615 U	0.476 U	0.631 U	0.499 U	0.641 U	0.519 U	0.481 U	0.416 U
Heptachlor epoxide	0.854 U	0.615 U	0.476 U	0.631 U	0.499 U	0.641 U	0.519 U	0.481 U	0.416 U
Methoxychlor	0.854 U	0.615 U	0.476 U	0.631 U	0.499 U	0.641 U	0.519 U	0.481 U	0.416 U
Dioxin Furans (ng/kg)									
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	**4.92**	**1.77**	**3.35**	**1.69**	**2.92**	**1.74**	**0.468 J**	**1.18 J**	**5.04**
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	**4.48**	**2.4 J**	**5.15 J**	**3.19**	**2.49 J**	**4.43**	**1.51 J**	**2.43**	**4.17**
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	**6.42**	**3.8**	**6.11**	**5**	**3.14**	**7.44**	**2.37 J**	**2.48 J**	**4.18**
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	**20.2**	**11.7**	**26.3**	**16.9**	**14.6**	**29.9**	**10.3**	**9.63**	**23.2**
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	**12.9**	**7.48**	**14**	**11**	**7.44**	**17.1**	**5.35**	**5.8**	**10**
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	**495**	**445**	**720**	**448**	**391**	**757**	**338**	**255**	**690**
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	**5410**	**3980**	**7090**	**4360**	**3950**	**7850**	**3710**	**2450**	**8430**
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	**34.2**	**12.8**	**60.1**	**13.1**	**42.1**	**12.2**	**1.79**	**11.4**	**87.4**
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	**34.3**	**10.5**	**48.8**	**11**	**15.9**	**10.1**	**1.23 J**	**9.75**	**31.7**
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	**29.6**	**16.7**	**106**	**12.7**	**45.7**	**11.6**	**1.78 J**	**12.8**	**109**
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	**49.3**	**39.7**	**158**	**26**	**31.8**	**31.5**	**3.26**	**27.2**	**82.1**
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	**25.7**	**15.3**	**72.3**	**15.2**	**14.4**	**21**	**3.96**	**15.9**	**35.3**
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	**10.4**	**7.33**	**26.2**	**5.79**	**7.47**	**6.82**	**1.04 J**	**5.17 J**	**19.3**
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	**16**	**9.49**	**35.9**	**10.3**	**11.9**	**15.1**	**3.71**	**8.19**	**26.8**
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	**228**	**138**	**525**	**142**	**106**	**240**	**56.2**	**153**	**220**
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	**25.1**	**21.6**	**59.6**	**16.7**	**12.8**	**30.4**	**6.83**	**17.2**	**30.3**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	**2060**	**1130**	**1170**	**612**	**308**	**822**	**299**	**690**	**537**
Total Tetrachlorodibenzo-p-dioxin (TCDD)	**44.7 J**	**20.3 J**	**38.1 J**	**22.8 J**	**27.8 J**	**23.1 J**	**7.57 J**	**15.6 J**	**45.4 J**
Total Pentachlorodibenzo-p-dioxin (PeCDD)	**54.6 J**	**25.7 J**	**47.5 J**	**31.1 J**	**28.8 J**	**41.1 J**	**13.3 J**	**21.1 J**	**43.1 J**
Total Hexachlorodibenzo-p-dioxin (HxCDD)	**208**	**123**	**185**	**151**	**118**	**246**	**109**	**87.1 J**	**159**
Total Heptachlorodibenzo-p-dioxin (HpCDD)	**1330**	**1080**	**1440**	**1060**	**890**	**1750**	**942**	**622**	**1450**
Total Tetrachlorodibenzofuran (TCDF)	**275 J**	**108 J**	**723 J**	**149 J**	**397 J**	**132 J**	**18.8 J**	**127 J**	**816 J**
Total Pentachlorodibenzofuran (PeCDF)	**271 J**	**106 J**	**638 J**	**114 J**	**242 J**	**122**	**15.5 J**	**108 J**	**520 J**
Total Hexachlorodibenzofuran (HxCDF)	**292 J**	**178 J**	**746**	**180**	**204**	**275 J**	**57 J**	**177 J**	**425**
Total Heptachlorodibenzofuran (HpCDF)	**449**	**279**	**933**	**290**	**260**	**530**	**179**	**354**	**472**

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	2011 USC	2011 USC	2011 USC
Location ID:	PB074	PB081	PB093	PB097	PB101	PB068	PB069.1	PB070A
Sample ID:	PB074-1SS010-091101-N	PB081-1SS010-091103-N	PB093-1SS010-091103-N	PB097-1SS010-091103-N	PB101-1SS010-091103-N	PB068-1SS010-20110804-N	PB069.1-1SS008-20110804-N	PB070A-1SS010-20110802-N
Sample Date:	11/1/2009	11/3/2009	11/3/2009	11/3/2009	11/3/2009	8/4/2011	8/4/2011	8/2/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 8 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N
X:	3200828.0183	3200761.3787	3200970.4291	3201103.1242	3201287.2658	3201209.861	3201205.859	3201087.255
Y:	13830463.2171	13830005.1879	13828894.7843	13828566.1540	13828181.2285	13831121.51	13830973.3	13830903.51
4,4'-DDD (p,p'-DDD)	0.898 U	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
4,4'-DDE (p,p'-DDE)	0.898 U	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
4,4'-DDT (p,p'-DDT)	**22.8**	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
Sum 2,4 DDT, DDE, DDD (U=1/2)	0.898 U	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
Sum 4,4 DDT, DDE, DDD (U = 1/2)	**23.698**	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
Sum DDD (U=1/2)	0.898 U	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
Sum DDE (U=1/2)	0.898 U	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
Sum DDT (U=1/2)	**23.249**	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
Total DDx (U = 1/2)	**25.045**	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
Aldrin	0.449 U	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
alpha-Chlordane (cis-Chlordane)	**48.2 NJ**	**126**	4.67 U	4.69 U	4.51 U	--	--	--
Endosulfan-alpha (I)	**63.3 NJ**	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
Endosulfan-beta (II)	**80.9 NJ**	**291**	4.67 U	4.69 U	4.51 U	--	--	--
Endrin	0.449 U	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
gamma-BHC (Lindane)	**2.98**	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
gamma-Chlordane	0.449 U	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
Heptachlor epoxide	0.449 U	5.33 U	4.67 U	4.69 U	4.51 U	--	--	--
Methoxychlor	0.449 U	**1780 NJ**	4.67 U	4.69 U	4.51 U	--	--	--
Dioxin Furans (ng/kg)								
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	**0.341 J**	**4.58**	**0.217 J**	**0.137 J**	0.156 U	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	**0.692 J**	**4.81 J**	**0.394 J**	**0.332 J**	0.743 UJ	--	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	**1.4 J**	**4.72**	0.33 U	**0.366 J**	0.304 U	--	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	**3.63**	**14.6**	**0.604 J**	**1.4 J**	**0.538 J**	--	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	**2.66**	**7.52**	**0.606 J**	**1.01 J**	**0.613 J**	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	**102**	**520 J**	**11.1 J**	**33**	**12.8**	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	**1520**	**4600**	**102**	**380**	**361**	--	--	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	**6.65**	**68.5**	**1.02**	**1.21**	**0.374 J**	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	**3.01**	**17.6**	**0.253 J**	**0.638 J**	0.558 U	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	**7.8**	**39**	**0.704 J**	**1.73 J**	0.404 U	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	**6.63**	**28.6**	**0.629 J**	**1.4 J**	**0.659 J**	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	**4.07**	**13.9**	**0.723 J**	**1.02 J**	**0.435 J**	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	**1.61 J**	**36.1**	**0.294 J**	**0.281 J**	**0.272 J**	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	**3.75**	**10.7**	**0.765 J**	**0.93 J**	**0.421 J**	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	**25.6**	**125**	**3.24**	**8.57**	**3.56**	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	**3.27**	**15**	**0.261 J**	**0.804 J**	**0.387 J**	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	**83.8**	**2020**	**7.01**	**21.6**	**8.17**	--	--	--
Total Tetrachlorodibenzo-p-dioxin (TCDD)	**10 J**	**54.9 J**	**3.34 J**	**3.17 J**	**3.14 J**	--	--	--
Total Pentachlorodibenzo-p-dioxin (PeCDD)	**14.7 J**	**36.1 J**	**2.25 J**	**3.53 J**	0.743 UJ	--	--	--
Total Hexachlorodibenzo-p-dioxin (HxCDD)	**51.3**	**110 J**	**6.48**	**14.4 J**	**7.28 J**	--	--	--
Total Heptachlorodibenzo-p-dioxin (HpCDD)	**603**	**1010 J**	**27.4 J**	**67.7**	**32.6**	--	--	--
Total Tetrachlorodibenzofuran (TCDF)	**72.8 J**	**358 J**	**13.6 J**	**20.1 J**	**5.93 J**	--	--	--
Total Pentachlorodibenzofuran (PeCDF)	**58.5 J**	**150 J**	**9.53 J**	**19.4 J**	**3.86 J**	--	--	--
Total Hexachlorodibenzofuran (HxCDF)	**51.4 J**	**204 J**	**10.6 J**	**15.4 J**	**5.29 J**	--	--	--
Total Heptachlorodibenzofuran (HpCDF)	**57.3**	**312**	**6.7 J**	**18.1 J**	**7.54 J**	--	--	--

Appendix A-1
BERA Sediment Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB076.1	PB081.1	PB081.1	PB082
Sample ID:	PB076.1-1SS010-20110802-N	PB081.1-1SS010-20110803-D	PB081.1-1SS010-20110803-N	PB082-1SS010-20110803-N
Sample Date:	8/2/2011	8/3/2011	8/3/2011	8/3/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N
X:	3200744.033	3200772.123	3200772.123	3200751.881
Y:	13830426.95	13829983.6	13829983.6	13829914.32
4,4'-DDD (p,p'-DDD)	--	--	--	--
4,4'-DDE (p,p'-DDE)	--	--	--	--
4,4'-DDT (p,p'-DDT)	--	--	--	--
Sum 2,4 DDT, DDE, DDD (U=1/2)	--	--	--	--
Sum 4,4 DDT, DDE, DDD (U = 1/2)	--	--	--	--
Sum DDD (U=1/2)	--	--	--	--
Sum DDE (U=1/2)	--	--	--	--
Sum DDT (U=1/2)	--	--	--	--
Total DDx (U = 1/2)	--	--	--	--
Aldrin	--	--	--	--
alpha-Chlordane (cis-Chlordane)	--	--	--	--
Endosulfan-alpha (I)	--	--	--	--
Endosulfan-beta (II)	--	--	--	--
Endrin	--	--	--	--
gamma-BHC (Lindane)	--	--	--	--
gamma-Chlordane	--	--	--	--
Heptachlor epoxide	--	--	--	--
Methoxychlor	--	--	--	--
Dioxin Furans (ng/kg)				
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	--	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	--	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	--	--	--	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	--	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	--	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	--	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	--	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	--	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	--	--	--	--
Total Tetrachlorodibenzo-p-dioxin (TCDD)	--	--	--	--
Total Pentachlorodibenzo-p-dioxin (PeCDD)	--	--	--	--
Total Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	--	--
Total Heptachlorodibenzo-p-dioxin (HpCDD)	--	--	--	--
Total Tetrachlorodibenzofuran (TCDF)	--	--	--	--
Total Pentachlorodibenzofuran (PeCDF)	--	--	--	--
Total Hexachlorodibenzofuran (HxCDF)	--	--	--	--
Total Heptachlorodibenzofuran (HpCDF)	--	--	--	--

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB001.1	PB001.2	PB001.3	PB002	PB004	PB005	PB007.1	PB007.2	PB009
Sample ID:	PB001.1-1SS010-091027-N	PB001.2-1SS010-091027-N	PB001.3-1SS010-091027-N	PB002-1SS010-091027-N	PB004-1SS010-091027-N	PB005-1SS010-091027-N	PB007.1-1SS010-091028-N	PB007.2-1SS010-091028-N	PB009-1SS010-091028-N
Sample Date:	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/27/2009	10/28/2009	10/28/2009	10/28/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3202382.3842	3202624.0211	3202754.9026	3202606.9920	3202330.4788	3202262.1385	3202065.5011	3202037.3755	3201747.2539
Y:	13836546.3402	13836566.3557	13836489.4987	13836435.6794	13836348.7826	13836144.2614	13836300.0036	13836110.2965	13836119.3947
Total Dioxin/Furan (U = 1/2)	53295.91 J	75497.26 J	264541.87 J	160984.03 J	57253.06 J	89496.52 J	61052.9 J	67274.22 J	70477.93 J
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	227.092 J	262.947 J	255.1655 J	504.451 J	412.057 J	304.488 J	260.679 J	266.6735 J	218.9645 J
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	100.662 J	134.692 J	194.455 J	254.148 J	214.881 J	151.924 J	125.313 J	133.2792 J	108.6892 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	109.383 J	141.834 J	240.506 J	272.385 J	201.539 J	160.329 J	133.129 J	136.595 J	115.969 J

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB011	PB013.1	PB013.2	PB015	PB016	PB016	PB018	PB019	PB022
Sample ID:	PB011-1SS010-091028-N	PB013.1-1SS010-091028-N	PB013.2-1SS010-091028-N	PB015-1SS010-091028-N	PB016-1SS010-091101-N	PB016-1SS010-091102-N	PB018-1SS010-091101-N	PB019-1SS010-091101-N	PB022-1SS010-091101-D
Sample Date:	10/28/2009	10/28/2009	10/28/2009	10/28/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	FD
X:	3201727.2504	3201333.4751	3201420.5786	3201223.8464	3201140.0114	3201140.0114	3201146.8550	3201281.6017	3201174.1294
Y:	13836239.7593	13836187.7023	13836111.1432	13836229.0694	13836081.5392	13836081.5392	13835702.1476	13835711.9947	13835456.7389
Total Dioxin/Furan (U = 1/2)	73444.71 J	40996.28 J	30618.93 J	70842.42 J	41266.825 J	--	104489.755 J	64543.81 J	22499.625 J
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	373.3585 J	320.1335 J	93.9611 J	346.715 J	230.3425 J	--	251.09685 J	192.7715 J	163.25475 J
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	181.115 J	149.0829 J	51.3994 J	153.518 J	109.7999 J	--	131.0964 J	90.2692 J	73.2659 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	180.986 J	140.308 J	54.694 J	162.212 J	103.825 J	--	140.2885 J	100.573 J	71.7385 J

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB022	PB023	PB023	PB024	PB026	PB028	PB032	PB034	PB037
Sample ID:	PB022-1SS010-091101-N	PB023-1SS010-091030-D	PB023-1SS010-091030-N	PB024-1SS010-091030-N	PB026-1SS010-091030-N	PB028-1SS010-091030-N	PB032-1SS010-091030-N	PB034-1SS010-091030-N	PB037-1SS010-091030-N
Sample Date:	11/1/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N	N	N	N	N	N
X:	3201174.1294	3201315.1973	3201315.1973	3201180.8567	3201331.5617	3201355.6226	3201368.6522	3201387.6450	3201399.4292
Y:	13835456.7389	13835429.2411	13835429.2411	13835181.4775	13835155.0673	13834855.4834	13834541.6071	13834242.2769	13833936.8351
Total Dioxin/Furan (U = 1/2)	21189.41 J	83668.9 J	115678.75 J	38729.5 J	2599498.9 J	22055.35 J	1473096.74 J	269448.15 J	24096.28 J
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	150.2969 J	226.8535 J	217.1475 J	285.8815 J	4403.638 J	101.53985 J	820.4205 J	645.597 J	305.0205 J
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	66.163 J	126.8989 J	120.7359 J	139.768 J	1590.81 J	48.7757 J	448.7933 J	294.809 J	132.671 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	65.017 J	134.345 J	136.493 J	135.076 J	2223.629 J	50.827 J	755.637 J	355.57 J	130.15 J

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BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB041	PB043	PB044	PB047.1	PB047.2	PB048	PB049	PB049	PB053
Sample ID:	PB041-1SS010-091030-N	PB043-1SS010-091030-N	PB044-1SS010-091030-N	PB047.1-1SS010-091030-N	PB047.2-1SS010-091030-N	PB048-1SS010-091031-N	PB049-1SS010-091031-D	PB049-1SS010-091031-N	PB053-1SS010-091031-N
Sample Date:	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/30/2009	10/31/2009	10/31/2009	10/31/2009	10/31/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	FD	N	N
X:	3201410.6060	3201451.0315	3201663.5416	3201454.2006	3201656.8574	3201635.5547	3201435.3433	3201435.3433	3201421.7211
Y:	13833634.6932	13833347.5606	13833285.4731	13833042.2356	13833055.7842	13832859.6311	13832751.7292	13832751.7292	13832443.5506
Total Dioxin/Furan (U = 1/2)	11848.94 J	5986.09 J	14390.68	10619.53	12996.98	15569.45	8487.66 J	8635.83	36781.13 J
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	349.755 J	91.038 J	770.48	178.9765	280.4795	244.4465	125.238 J	117.3175	1303.194 J
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	152.697 J	33.0401 J	131.453	86.693	82.389	90.532	56.296 J	52.909	667.635 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	134.171 J	34.153 J	149.257	80.913	85.505	91.762	56.445 J	53.33	609.87 J

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BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB056	PB057	PB059.1	PB059.2	PB063.1	PB063.2	PB064	PB066	PB069
Sample ID:	PB056-1SS010-091031-N	PB057-1SS010-091031-N	PB059.1-1SS010-091102-N	PB059.2-1SS010-091031-N	PB063.1-1SS010-091031-N	PB063.2-1SS010-091102-N	PB064-1SS010-091102-N	PB066-1SS010-091101-N	PB069-1SS010-091101-N
Sample Date:	10/31/2009	10/31/2009	11/2/2009	10/31/2009	10/31/2009	11/2/2009	11/2/2009	11/1/2009	11/1/2009
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N	N
X:	3201402.6901	3201634.7257	3201531.6282	3201640.7239	3201497.4803	3201553.0822	3201628.7185	3201431.2755	3201160.2007
Y:	13832184.9773	13832087.9098	13831850.4179	13831857.0149	13831523.9045	13831552.2764	13831275.6688	13831275.6811	13830971.1845
Total Dioxin/Furan (U = 1/2)	8466.52	5853.57 J	10126.81 J	5710.57	4967.66 J	9868.33	4446.798 J	3677.13 J	10345.49
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	92.356	45.509 J	218.0805 J	41.5602	104.4088 J	45.1312	8.9937 J	37.5023 J	230.6607
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	45.079	25.5108 J	107.035 J	23.4752	41.5122 J	29.0452	6.9267 J	20.3788 J	92.5267
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	46.543	27.834 J	97.179 J	26.9076	39.2574 J	36.9346	10.9399 J	21.5135 J	83.7821

Appendix A-1
BERA Sediment Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	2011 USC	2011 USC	2011 USC
Location ID:	PB074	PB081	PB093	PB097	PB101	PB068	PB069.1	PB070A
Sample ID:	PB074-1SS010-091101-N	PB081-1SS010-091103-N	PB093-1SS010-091103-N	PB097-1SS010-091103-N	PB101-1SS010-091103-N	PB068-1SS010-20110804-N	PB069.1-1SS008-20110804-N	PB070A-1SS010-20110802-N
Sample Date:	11/1/2009	11/3/2009	11/3/2009	11/3/2009	11/3/2009	8/4/2011	8/4/2011	8/2/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 8 cm	0 - 10 cm
Sample Type:	N	N	N	N	N	N	N	N
X:	3200828.0183	3200761.3787	3200970.4291	3201103.1242	3201287.2658	3201209.861	3201205.859	3201087.255
Y:	13830463.2171	13830005.1879	13828894.7843	13828566.1540	13828181.2285	13831121.51	13830973.3	13830903.51
Total Dioxin/Furan (U = 1/2)	1776.913 J	7530.63 J	129.985 J	454.428 J	390.3115 J	--	--	--
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	18.31338 J	131.296 J	2.733301 J	4.1361 J	1.395567 J	--	--	--
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	8.33598 J	47.2882 J	1.419361 J	2.1635 J	0.938547 J	--	--	--
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	8.29314 J	48.668 J	1.489103 J	2.31306 J	1.143091 J	--	--	--

Appendix A-1
BERA Sediment Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB076.1	PB081.1	PB081.1	PB082
Sample ID:	PB076.1-1SS010-20110802-N	PB081.1-1SS010-20110803-D	PB081.1-1SS010-20110803-N	PB082-1SS010-20110803-N
Sample Date:	8/2/2011	8/3/2011	8/3/2011	8/3/2011
Depth:	0 - 10 cm	0 - 10 cm	0 - 10 cm	0 - 10 cm
Sample Type:	N	FD	N	N
X:	3200744.033	3200772.123	3200772.123	3200751.881
Y:	13830426.95	13829983.6	13829983.6	13829914.32
Total Dioxin/Furan (U = 1/2)	--	--	--	--
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	--	--	--	--
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	--	--	--	--
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	--	--	--	--

Appendix A-1
BERA Sediment Dataset

Notes:

Bold = Detected result
J = Estimated value
U = Compound analyzed, but not detected above detection limit
UJ = Compound analyzed, but not detected above estimated detection limit
R = Rejected
-- Results not reported or not applicable
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
ng/kg = nanograms per kilogram
µmol/g = micromoles per gram
pct = percent
N = Normal Field Sample FD = Field Duplicate
TEQ values as of 2005, World Health Organization

APPENDIX A-2
BERA SURFACE WATER DATASET

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB006	PB006	PB006	PB006	PB006	PB006	PB031	PB031
Sample ID:	PB006-1SWMID-091104-D	PB006-1SWMID-091104-N	PB006-1SWMID-091105-D	PB006-1SWMID-091105-N	PB006-1SWNBT-091104-N	PB006-1SWNBT-091105-N	PB031-1SWMID-091104-N	PB031-1SWMID-091105-N
Sample Date:	11/4/2009	11/4/2009	11/5/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	FD	N	FD	N	N	N	N	N
X:	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3201366.8205	3201366.8205
Y:	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13834640.6333	13834640.6333
Conventional Parameters (mg/L)								
Alkalinity, as Calcium carbonate (CaCO3)	**91**	**94**	**88**	**86**	**110**	**96**	**200**	**130**
Chloride (total)	**1400**	**1500**	**1800**	**1800**	**1600**	**1900**	**1700**	**1900**
Cyanide	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	**0.0025 J**	0.005 U	**0.003 J**
Fluoride	**0.29**	**0.3**	**0.32**	**0.31**	**0.32**	**0.31**	**0.46**	**0.33**
Nitrate as Nitrogen	**1.1**	**1.2**	**1.1**	**1**	**1.4**	**1.2**	**4.1**	**1.9**
Phosphorus	**0.431**	**0.416**	**0.39**	**0.371**	**0.482**	**0.523**	**0.863**	**0.531**
Sulfate	**260**	**280**	**300**	**260**	**330**	**290**	**520**	**370**
Total Kjeldahl nitrogen	**1.4**	**1.6**	**1.1**	**1**	**1.4**	**1.5**	**2**	**1.2**
Conventional Parameters (pct)								
Dissolved organic carbon	**0.00069**	**0.00074**	**0.00061**	**0.0006**	**0.00074**	**0.00066**	**0.0011**	**0.00079**
Total dissolved solids	**0.27**	**0.27**	**0.31**	**0.32**	**0.28**	**0.34**	**0.35**	**0.36**
Total organic carbon	**0.00065**	**0.00064**	**0.00058**	**0.00056**	**0.00069**	**0.00058**	**0.00096**	**0.00074**
Total Suspended Solids	**0.0025**	**0.003**	**0.0024**	**0.0022**	**0.0053**	**0.0024**	**0.0028**	**0.002**
Metals (dissolved) (µg/L)								
Mercury	0.01 U	0.01 U	0.01 U	0.01 U	**0.0051 J**	0.01 U	0.01 U	0.01 U
Selenium	**11**	**11**	**14**	**14**	**11**	**15**	**3.8 J**	**12**
Metals (µg/L)								
Mercury	**0.155 J**	**0.153 J**	**0.12 J**	**0.128 J**	**0.24 J**	**0.149 J**	**0.2 J**	**0.181 J**
Selenium	**14**	**16**	**16**	**15**	**11**	**12**	**4.5 J**	**10**
Volatile Organics (µg/L)								
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichlorotrifluoroethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,2-Dibromo-3-chloropropane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane (Ethylene dibromide)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	**3.26**	**3.59**	**2.49**	**1.97**	**3.03**	**2.56**	**2.75**	**3.54**
1,2-Dichloroethene, cis-	**1.58**	**1.55**	**1.02**	**0.72 J**	**1.36**	**1.03**	**1.54**	**1.82**
1,2-Dichloroethene, trans-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4,5-Tetrachlorobenzene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropene, cis-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropene, trans-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB031	PB031	PB059	PB059	PB076	PB076	PB076	PB076
Sample ID:	PB031-1SWNBT-091104-N	PB031-1SWNBT-091105-N	PB059-1SWMID-091104-N	PB059-1SWMID-091105-N	PB076-1SWMID-091104-N	PB076-1SWMID-091105-N	PB076-1SWNBT-091104-N	PB076-1SWNBT-091105-N
Sample Date:	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	N	N	N	N	N	N	N	N
X:	3201366.8205	3201366.8205	3201646.6295	3201646.6295	3200819.7773	3200819.7773	3200819.7773	3200819.7773
Y:	13834640.6333	13834640.6333	13831831.4316	13831831.4316	13830437.4855	13830437.4855	13830437.4855	13830437.4855
Conventional Parameters (mg/L)								
Alkalinity, as Calcium carbonate (CaCO3)	**170**	**130**	**220**	**210**	**260**	**220**	**260**	**230**
Chloride (total)	**2000**	**2100**	**1700**	**1800**	**2400**	**2200**	**2400**	**2300**
Cyanide	0.005 U	0.005 U	0.005 U	0.005 U	**0.0038 J**	0.005 U	0.005 U	0.005 U
Fluoride	**0.41**	**0.37**	**0.56**	**0.5**	**0.35**	**0.47**	**0.34**	**0.43**
Nitrate as Nitrogen	**3.4**	**1.8**	**6.9**	**6.8**	**7.7**	**8.6**	**7.6**	**8.5**
Phosphorus	**0.835**	**0.548**	**1.54**	**1.44**	**1.57**	**1.88**	**1.57**	**1.95**
Sulfate	**510**	**390**	**840**	**660**	**280**	**600**	**280**	**630**
Total Kjeldahl nitrogen	**1.5**	**1.2**	**1.8**	**1.5**	**1.7**	**1.6**	**1.6**	**1.6**
Conventional Parameters (pct)								
Dissolved organic carbon	**0.0012**	**0.00078**	**0.0014**	**0.0013**	**0.0013**	**0.0013**	**0.0014**	**0.0014**
Total dissolved solids	**0.38**	**0.39**	**0.4**	**0.38**	**0.42**	**0.43**	**0.44**	**0.44**
Total organic carbon	**0.00097**	**0.00073**	**0.0012**	**0.0013**	**0.0013**	**0.0014**	**0.0013**	**0.0013**
Total Suspended Solids	**0.0029**	**0.0027**	**0.0037**	**0.0012**	**0.0011**	**0.00077**	**0.001**	**0.0012**
Metals (dissolved) (µg/L)								
Mercury	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Selenium	**8**	**14**	5 U	5 U	5 U	5 U	5 U	5 U
Metals (µg/L)								
Mercury	**0.209 J**	**0.215 J**	**0.097 J**	**0.025 J**	**0.011 J**	**0.01 J**	**0.046 J**	**0.012 J**
Selenium	**8**	**11**	5 U	5 U	5 U	5 U	5 U	5 U
Volatile Organics (µg/L)								
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichlorotrifluoroethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,2-Dibromo-3-chloropropane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane (Ethylene dibromide)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	**3.72**	**3.9**	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethene, cis-	**1.91**	**2.27**	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethene, trans-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4,5-Tetrachlorobenzene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
1,3-Dichlorobenzene	1 U	1 U	1 U	**0.837 J**	1 U	**1.11**	1 U	**0.989 J**
1,3-Dichloropropene, cis-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropene, trans-	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Appendix A-2
BERA Surface Water Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB066B	PB080	PB080	PB082.1	PB101C
Sample ID:	PB066-1SWMID-20110808-N	PB080-1SWMID-20110808-D	PB080-1SWMID-20110808-N	PB082.1-1SWMID-20110808-N	PB101C-1SWMID-20110808-N
Sample Date:	8/8/2011	8/8/2011	8/8/2011	8/8/2011	8/8/2011
Sample Type:	N	FD	N	N	N
X:	3201384.326	3200769.755	3200769.755	3200777.403	3201307.665
Y:	13831305.66	13830051.11	13830051.11	13829942.54	13828208.48
Conventional Parameters (mg/L)					
Alkalinity, as Calcium carbonate (CaCO3)	--	--	--	--	--
Chloride (total)	--	--	--	--	--
Cyanide	--	--	--	--	--
Fluoride	--	--	--	--	--
Nitrate as Nitrogen	--	--	--	--	--
Phosphorus	--	--	--	--	--
Sulfate	--	--	--	--	--
Total Kjeldahl nitrogen	--	--	--	--	--
Conventional Parameters (pct)	--	--	--	--	--
Dissolved organic carbon	--	--	--	--	--
Total dissolved solids	--	--	--	--	--
Total organic carbon	**0.0016**	**0.0016**	**0.0015**	**0.0017**	**0.002**
Total Suspended Solids	**19**	**26**	**22**	**16**	**16**
Metals (dissolved) (µg/L)					
Mercury	--	--	--	--	--
Selenium	--	--	--	--	--
Metals (µg/L)					
Mercury	--	--	--	--	--
Selenium	--	--	--	--	--
Volatile Organics (µg/L)					
1,1-Dichloroethane	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--
1,1,1-Trichloroethane	--	--	--	--	--
1,1,2-Trichloroethane	--	--	--	--	--
1,1,2-Trichlorotrifluoroethane	--	--	--	--	--
1,1,2,2-Tetrachloroethane	--	--	--	--	--
1,2-Dibromo-3-chloropropane	--	--	--	--	--
1,2-Dibromoethane (Ethylene dibromide)	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--
1,2-Dichloroethene, cis-	--	--	--	--	--
1,2-Dichloroethene, trans-	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--
1,2,3-Trichlorobenzene	--	--	--	--	--
1,2,4-Trichlorobenzene	--	--	--	--	--
1,2,4,5-Tetrachlorobenzene	--	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--	--
1,3-Dichloropropene, cis-	--	--	--	--	--
1,3-Dichloropropene, trans-	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--
2-Butanone (MEK)	--	--	--	--	--

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB006	PB006	PB006	PB006	PB006	PB006	PB031	PB031
Sample ID:	PB006-1SWMID-091104-D	PB006-1SWMID-091104-N	PB006-1SWMID-091105-D	PB006-1SWMID-091105-N	PB006-1SWNBT-091104-N	PB006-1SWNBT-091105-N	PB031-1SWMID-091104-N	PB031-1SWMID-091105-N
Sample Date:	11/4/2009	11/4/2009	11/5/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	FD	N	FD	N	N	N	N	N
X:	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3201366.8205	3201366.8205
Y:	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13834640.6333	13834640.6333
2-Hexanone (Methyl butyl ketone)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	5 U	**5.28**	5 U	5 U	**4.58 J**	5 U	**16.2**	**6.13**
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride (Tetrachloromethane)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	**0.934 J**	**0.921 J**	**1**	**0.695 J**	**0.822 J**	**0.863 J**	**0.622 J**	**0.803 J**
Chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichloromethane (Methylene chloride)	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene (Cumene)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl acetate	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Methyl isobutyl ketone (4-Methyl-2-pentanone or (MIBK))	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyl tert-butyl ether (MTBE)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylcyclohexane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
o-Xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	**1.06**	**1.18**	**0.704 J**	**0.596 J**	**1.2**	**1.04**	**1.01**	**1.72**
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Xylene (U = 1/2)	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Trichloroethene (TCE)	**0.739 J**	**0.799 J**	1 U	**0.529 J**	**0.94 J**	**0.762 J**	**0.792 J**	**1.24**
Trichlorofluoromethane (Fluorotrichloromethane)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	1 U	**0.598 J**	1 U	1 U	**0.56 J**	1 U	**0.707 J**	**0.705 J**
Aromatic Hydrocarbons (µg/L)								
Total 10 of 17 HPAH (U = 1/2)	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Total 17 PAH (U = 1/2)	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Total 7 of 17 LPAH (U = 1/2)	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Total cPAH TEF (7 minimum) (U = 1/2)	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
2-Methylnaphthalene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Acenaphthene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Acenaphthylene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Anthracene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Benzo(a)anthracene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB031	PB031	PB059	PB059	PB076	PB076	PB076	PB076
Sample ID:	PB031-1SWNBT-091104-N	PB031-1SWNBT-091105-N	PB059-1SWMID-091104-N	PB059-1SWMID-091105-N	PB076-1SWMID-091104-N	PB076-1SWMID-091105-N	PB076-1SWNBT-091104-N	PB076-1SWNBT-091105-N
Sample Date:	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	N	N	N	N	N	N	N	N
X:	3201366.8205	3201366.8205	3201646.6295	3201646.6295	3200819.7773	3200819.7773	3200819.7773	3200819.7773
Y:	13834640.6333	13834640.6333	13831831.4316	13831831.4316	13830437.4855	13830437.4855	13830437.4855	13830437.4855
2-Hexanone (Methyl butyl ketone)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	**17.7**	**9.73**	**18.7**	**18.8**	**16.9**	**16.2**	**17.7**	**18.8**
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride (Tetrachloromethane)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	**0.704 J**	**0.964 J**	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichloromethane (Methylene chloride)	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene (Cumene)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl acetate	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Methyl isobutyl ketone (4-Methyl-2-pentanone or (MIBK))	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyl tert-butyl ether (MTBE)	1 U	1 U	1 U	1 U	**0.579 J**	1 U	**0.68 J**	**0.623 J**
Methylcyclohexane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
o-Xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene (PCE)	**1.09**	**1.8**	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Xylene (U = 1/2)	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Trichloroethene (TCE)	**0.862 J**	**1.4**	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane (Fluorotrichloromethane)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	**0.904 J**	**0.94 J**	1 U	1 U	1 U	1 U	1 U	1 U
Aromatic Hydrocarbons (µg/L)								
Total 10 of 17 HPAH (U = 1/2)	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Total 17 PAH (U = 1/2)	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Total 7 of 17 LPAH (U = 1/2)	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Total cPAH TEF (7 minimum) (U = 1/2)	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
2-Methylnaphthalene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Acenaphthene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Acenaphthylene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Anthracene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Benzo(a)anthracene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U

Appendix A-2
BERA Surface Water Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB066B	PB080	PB080	PB082.1	PB101C
Sample ID:	PB066-1SWMID-20110808-N	PB080-1SWMID-20110808-D	PB080-1SWMID-20110808-N	PB082.1-1SWMID-20110808-N	PB101C-1SWMID-20110808-N
Sample Date:	8/8/2011	8/8/2011	8/8/2011	8/8/2011	8/8/2011
Sample Type:	N	FD	N	N	N
X:	3201384.326	3200769.755	3200769.755	3200777.403	3201307.665
Y:	13831305.66	13830051.11	13830051.11	13829942.54	13828208.48
2-Hexanone (Methyl butyl ketone)	--	--	--	--	--
Acetone	--	--	--	--	--
Benzene	--	--	--	--	--
Bromochloromethane	--	--	--	--	--
Bromodichloromethane	--	--	--	--	--
Bromoform	--	--	--	--	--
Bromomethane	--	--	--	--	--
Carbon disulfide	--	--	--	--	--
Carbon tetrachloride (Tetrachloromethane)	--	--	--	--	--
Chlorobenzene	--	--	--	--	--
Chloroethane	--	--	--	--	--
Chloroform	--	--	--	--	--
Chloromethane	--	--	--	--	--
Cyclohexane	--	--	--	--	--
Dibromochloromethane	--	--	--	--	--
Dichlorodifluoromethane	--	--	--	--	--
Dichloromethane (Methylene chloride)	--	--	--	--	--
Ethylbenzene	--	--	--	--	--
Isopropylbenzene (Cumene)	--	--	--	--	--
Methyl acetate	--	--	--	--	--
Methyl isobutyl ketone (4-Methyl-2-pentanone or (MIBK))	--	--	--	--	--
Methyl tert-butyl ether (MTBE)	--	--	--	--	--
Methylcyclohexane	--	--	--	--	--
m,p-Xylene	--	--	--	--	--
o-Xylene	--	--	--	--	--
Styrene	--	--	--	--	--
Tetrachloroethene (PCE)	--	--	--	--	--
Toluene	--	--	--	--	--
Total Xylene (U = 1/2)	--	--	--	--	--
Trichloroethene (TCE)	--	--	--	--	--
Trichlorofluoromethane (Fluorotrichloromethane)	--	--	--	--	--
Vinyl chloride	--	--	--	--	--
Aromatic Hydrocarbons (µg/L)					
Total 10 of 17 HPAH (U = 1/2)	--	--	--	--	--
Total 17 PAH (U = 1/2)	--	--	--	--	--
Total 7 of 17 LPAH (U = 1/2)	--	--	--	--	--
Total cPAH TEF (7 minimum) (U = 1/2)	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--
Acenaphthene	--	--	--	--	--
Acenaphthylene	--	--	--	--	--
Anthracene	--	--	--	--	--
Benzo(a)anthracene	--	--	--	--	--

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB006	PB006	PB006	PB006	PB006	PB006	PB031	PB031
Sample ID:	PB006-1SWMID-091104-D	PB006-1SWMID-091104-N	PB006-1SWMID-091105-D	PB006-1SWMID-091105-N	PB006-1SWNBT-091104-N	PB006-1SWNBT-091105-N	PB031-1SWMID-091104-N	PB031-1SWMID-091105-N
Sample Date:	11/4/2009	11/4/2009	11/5/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	FD	N	FD	N	N	N	N	N
X:	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3201366.8205	3201366.8205
Y:	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13834640.6333	13834640.6333
Benzo(a)pyrene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Benzo(b)fluoranthene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Benzo(g,h,i)perylene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Benzo(k)fluoranthene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Chrysene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Dibenzo(a,h)anthracene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Fluoranthene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Fluorene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Indeno(1,2,3-c,d)pyrene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Naphthalene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Phenanthrene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Pyrene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Semivolatile Organics (µg/L)								
2,2'-Oxybis (1-chloropropane)	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
2,3,4,6-Tetrachlorophenol	0.556 UJ	0.568 UJ	0.5 UJ	0.595 UJ	0.556 UJ	0.625 UJ	0.543 UJ	0.446 UJ
2,4,5-Trichlorophenol	0.556 UJ	0.568 UJ	0.5 UJ	0.595 UJ	0.556 UJ	0.625 UJ	0.543 UJ	0.446 UJ
2,4,6-Trichlorophenol	0.556 UJ	0.568 UJ	0.5 UJ	0.595 UJ	0.556 UJ	0.625 UJ	0.543 UJ	0.446 UJ
2,4-Dichlorophenol	0.556 UJ	0.568 UJ	0.5 UJ	0.595 UJ	0.556 UJ	0.625 UJ	0.543 UJ	0.446 UJ
2,4-Dimethylphenol	0.556 UJ	0.568 UJ	0.5 UJ	0.595 UJ	0.556 UJ	0.625 UJ	0.543 UJ	0.446 UJ
2,4-Dinitrophenol	2.22 UJ	2.27 UJ	2 UJ	2.38 UJ	2.22 UJ	2.5 UJ	2.17 UJ	1.78 UJ
2,4-Dinitrotoluene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
2,6-Dinitrotoluene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
2-Chloronaphthalene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
2-Chlorophenol	0.556 UJ	0.568 UJ	0.5 UJ	0.595 UJ	0.556 UJ	0.625 UJ	0.543 UJ	0.446 UJ
2-Methylphenol (o-Cresol)	0.556 UJ	0.568 UJ	0.5 UJ	0.595 UJ	0.556 UJ	0.625 UJ	0.543 UJ	0.446 UJ
2-Nitroaniline	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
2-Nitrophenol	0.556 UJ	0.568 UJ	0.5 UJ	0.595 UJ	0.556 UJ	0.625 UJ	0.543 UJ	0.446 UJ
3,3'-Dichlorobenzidine	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
3-Nitroaniline	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
4-Bromophenyl-phenyl ether	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
4-Chloro-3-methylphenol	0.556 UJ	0.568 UJ	0.5 UJ	0.595 UJ	0.556 UJ	0.625 UJ	0.543 UJ	0.446 UJ
4-Chloroaniline	0.556 UJ	0.568 UJ	0.5 U	0.595 U	0.556 UJ	0.625 U	0.543 UJ	0.446 U
4-Chlorophenyl phenyl ether	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
4-Methylphenol (p-Cresol)	0.556 UJ	0.568 UJ	0.5 UJ	0.595 UJ	0.556 UJ	0.625 UJ	0.543 UJ	0.446 UJ
4-Nitroaniline	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
4-Nitrophenol	1.11 UJ	1.14 UJ	1 UJ	1.19 UJ	1.11 UJ	1.25 UJ	1.09 UJ	0.893 UJ
Acetophenone	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Atrazine	**0.3 J**	**0.284 J**	**0.31 J**	**0.31 J**	**0.289 J**	**0.325 J**	0.543 U	**0.268 J**
Biphenyl (1,1'-Biphenyl)	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
bis(2-Chloroethoxy)methane	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
bis(2-Chloroethyl)ether	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Bis(2-ethylhexyl) phthalate	0.556 U	0.568 U	0.5 U	0.595 U	**0.311 J**	0.625 U	**0.37 J**	0.446 U

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB031	PB031	PB059	PB059	PB076	PB076	PB076	PB076
Sample ID:	PB031-1SWNBT-091104-N	PB031-1SWNBT-091105-N	PB059-1SWMID-091104-N	PB059-1SWMID-091105-N	PB076-1SWMID-091104-N	PB076-1SWMID-091105-N	PB076-1SWNBT-091104-N	PB076-1SWNBT-091105-N
Sample Date:	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	N	N	N	N	N	N	N	N
X:	3201366.8205	3201366.8205	3201646.6295	3201646.6295	3200819.7773	3200819.7773	3200819.7773	3200819.7773
Y:	13834640.6333	13834640.6333	13831831.4316	13831831.4316	13830437.4855	13830437.4855	13830437.4855	13830437.4855
Benzo(a)pyrene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Benzo(b)fluoranthene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Benzo(g,h,i)perylene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Benzo(k)fluoranthene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Chrysene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Dibenzo(a,h)anthracene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Fluoranthene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Fluorene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Indeno(1,2,3-c,d)pyrene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Naphthalene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Phenanthrene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Pyrene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Semivolatile Organics (µg/L)								
2,2'-Oxybis (1-chloropropane)	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
2,3,4,6-Tetrachlorophenol	0.575 UJ	0.505 UJ	0.575 UJ	0.5 UJ	0.543 UJ	0.5 UJ	0.588 UJ	0.658 UJ
2,4,5-Trichlorophenol	0.575 UJ	0.505 UJ	0.575 UJ	0.5 UJ	0.543 UJ	0.5 UJ	0.588 UJ	0.658 UJ
2,4,6-Trichlorophenol	0.575 UJ	0.505 UJ	0.575 UJ	0.5 UJ	0.543 UJ	0.5 UJ	0.588 UJ	0.658 UJ
2,4-Dichlorophenol	0.575 UJ	0.505 UJ	0.575 UJ	0.5 UJ	0.543 UJ	0.5 UJ	0.588 UJ	0.658 UJ
2,4-Dimethylphenol	0.575 UJ	0.505 UJ	0.575 UJ	0.5 UJ	0.543 UJ	**0.37 J**	0.588 UJ	0.658 UJ
2,4-Dinitrophenol	2.3 UJ	2.02 UJ	2.3 UJ	2 UJ	2.17 UJ	2 UJ	2.35 UJ	2.63 UJ
2,4-Dinitrotoluene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
2,6-Dinitrotoluene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
2-Chloronaphthalene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
2-Chlorophenol	0.575 UJ	0.505 UJ	0.575 UJ	0.5 UJ	0.543 UJ	0.5 UJ	0.588 UJ	0.658 UJ
2-Methylphenol (o-Cresol)	0.575 UJ	0.505 UJ	0.575 UJ	0.5 UJ	0.543 UJ	0.5 UJ	0.588 UJ	0.658 UJ
2-Nitroaniline	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
2-Nitrophenol	0.575 UJ	0.505 UJ	0.575 UJ	0.5 UJ	0.543 UJ	0.5 UJ	0.588 UJ	0.658 UJ
3,3'-Dichlorobenzidine	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
3-Nitroaniline	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
4-Bromophenyl-phenyl ether	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
4-Chloro-3-methylphenol	0.575 UJ	0.505 UJ	0.575 UJ	0.5 UJ	0.543 UJ	0.5 UJ	0.588 UJ	0.658 UJ
4-Chloroaniline	0.575 UJ	0.505 U	0.575 UJ	0.5 U	0.543 UJ	0.5 U	0.588 UJ	0.658 U
4-Chlorophenyl phenyl ether	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
4-Methylphenol (p-Cresol)	0.575 UJ	0.505 UJ	0.575 UJ	0.5 UJ	0.543 UJ	0.5 UJ	0.588 UJ	0.658 UJ
4-Nitroaniline	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
4-Nitrophenol	1.15 UJ	1.01 UJ	1.15 UJ	1 UJ	1.09 UJ	1 UJ	1.18 UJ	1.32 UJ
Acetophenone	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Atrazine	0.575 U	**0.283 J**	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Biphenyl (1,1'-Biphenyl)	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
bis(2-Chloroethoxy)methane	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
bis(2-Chloroethyl)ether	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Bis(2-ethylhexyl) phthalate	**0.356 J**	0.505 U	**0.621**	0.5 U	**201 J**	**0.37 J**	**0.376 J**	**0.355 J**

Appendix A-2
BERA Surface Water Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB066B	PB080	PB080	PB082.1	PB101C
Sample ID:	PB066-1SWMID-20110808-N	PB080-1SWMID-20110808-D	PB080-1SWMID-20110808-N	PB082.1-1SWMID-20110808-N	PB101C-1SWMID-20110808-N
Sample Date:	8/8/2011	8/8/2011	8/8/2011	8/8/2011	8/8/2011
Sample Type:	N	FD	N	N	N
X:	3201384.326	3200769.755	3200769.755	3200777.403	3201307.665
Y:	13831305.66	13830051.11	13830051.11	13829942.54	13828208.48
Benzo(a)pyrene	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--
Benzo(g,h,i)perylene	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--
Chrysene	--	--	--	--	--
Dibenzo(a,h)anthracene	--	--	--	--	--
Fluoranthene	--	--	--	--	--
Fluorene	--	--	--	--	--
Indeno(1,2,3-c,d)pyrene	--	--	--	--	--
Naphthalene	--	--	--	--	--
Phenanthrene	--	--	--	--	--
Pyrene	--	--	--	--	--
Semivolatile Organics (µg/L)					
2,2'-Oxybis (1-chloropropane)	--	--	--	--	--
2,3,4,6-Tetrachlorophenol	--	--	--	--	--
2,4,5-Trichlorophenol	--	--	--	--	--
2,4,6-Trichlorophenol	--	--	--	--	--
2,4-Dichlorophenol	--	--	--	--	--
2,4-Dimethylphenol	--	--	--	--	--
2,4-Dinitrophenol	--	--	--	--	--
2,4-Dinitrotoluene	--	--	--	--	--
2,6-Dinitrotoluene	--	--	--	--	--
2-Chloronaphthalene	--	--	--	--	--
2-Chlorophenol	--	--	--	--	--
2-Methylphenol (o-Cresol)	--	--	--	--	--
2-Nitroaniline	--	--	--	--	--
2-Nitrophenol	--	--	--	--	--
3,3'-Dichlorobenzidine	--	--	--	--	--
3-Nitroaniline	--	--	--	--	--
4-Bromophenyl-phenyl ether	--	--	--	--	--
4-Chloro-3-methylphenol	--	--	--	--	--
4-Chloroaniline	--	--	--	--	--
4-Chlorophenyl phenyl ether	--	--	--	--	--
4-Methylphenol (p-Cresol)	--	--	--	--	--
4-Nitroaniline	--	--	--	--	--
4-Nitrophenol	--	--	--	--	--
Acetophenone	--	--	--	--	--
Atrazine	--	--	--	--	--
Biphenyl (1,1'-Biphenyl)	--	--	--	--	--
bis(2-Chloroethoxy)methane	--	--	--	--	--
bis(2-Chloroethyl)ether	--	--	--	--	--
Bis(2-ethylhexyl) phthalate	--	--	--	--	--

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB006	PB006	PB006	PB006	PB006	PB006	PB031	PB031
Sample ID:	PB006-1SWMID-091104-D	PB006-1SWMID-091104-N	PB006-1SWMID-091105-D	PB006-1SWMID-091105-N	PB006-1SWNBT-091104-N	PB006-1SWNBT-091105-N	PB031-1SWMID-091104-N	PB031-1SWMID-091105-N
Sample Date:	11/4/2009	11/4/2009	11/5/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	FD	N	FD	N	N	N	N	N
X:	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3201366.8205	3201366.8205
Y:	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13834640.6333	13834640.6333
Diethyl phthalate	0.556 U	0.568 U	**0.37 J**	0.595 U	0.556 U	0.625 U	0.543 U	**0.393 J**
Butylbenzyl phthalate	0.556 U	**0.295 J**	0.5 U	0.595 U	**0.356 J**	0.625 U	**0.337 J**	0.688 U
Dimethyl phthalate	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Caprolactam	**0.467 J**	0.568 UJ	**0.66 J**	0.595 UJ	0.556 UJ	0.625 UJ	0.543 UJ	**0.598 J**
Di-n-butyl phthalate	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	**0.438 J**
Carbazole	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)	2.22 UJ	2.27 UJ	2 UJ	2.38 UJ	2.22 UJ	2.5 UJ	2.17 UJ	1.78 UJ
Di-n-octyl phthalate	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Hexachlorobenzene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Hexachlorobutadiene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Dibenzofuran	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Hexachlorocyclopentadiene	0.556 UJ	0.568 UJ	0.5 UJ	0.595 UJ	0.556 UJ	0.625 UJ	0.543 UJ	0.446 UJ
Hexachloroethane	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Isophorone	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Nitrobenzene	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
N-Nitrosodi-N-propylamine	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
N-Nitrosodiphenylamine	0.556 U	0.568 U	0.5 U	0.595 U	0.556 U	0.625 U	0.543 U	0.446 U
Pentachlorophenol	2.22 UJ	2.27 UJ	2 UJ	2.38 UJ	2.22 UJ	2.5 UJ	2.17 UJ	1.78 UJ
PCB Congeners (ng/L)								
PCB-001	**0.0127 J**	**0.0141 J**	**0.0118**	**0.00819 J**	**0.0226 J**	**0.00902 J**	**0.0439**	**0.017**
PCB-002	0.012 UJ	**0.00221 J**	**0.00191 J**	0.00935 U	**0.00286 J**	0.012 U	**0.00222 J**	0.0103 U
PCB-003	**0.00807 J**	**0.00774 J**	**0.00632 J**	**0.00572 J**	**0.0148 J**	**0.00571 J**	**0.0103 J**	**0.00702 J**
PCB-004	**0.494 J**	**0.507 J**	**0.403 J**	**0.435 J**	**0.923 J**	**0.529 J**	**1.89 J**	**1.04 J**
PCB-005	**0.00496 J**	0.0118 UJ	0.0106 U	0.00935 U	**0.00559 J**	0.012 U	**0.0131 J**	0.0103 U
PCB-006	**0.0517 J**	**0.0547 J**	**0.0268 J**	**0.0255 J**	**0.0716 J**	**0.0317 J**	**0.195 J**	**0.0685 J**
PCB-007	**0.00773 J**	**0.00649 J**	**0.00354 J**	**0.00339 J**	**0.00901 J**	**0.0038 J**	**0.0137 J**	0.0103 U
PCB-008	**0.145 J**	**0.147 J**	**0.0837 J**	**0.0829 J**	**0.242 J**	**0.0986 J**	**0.635 J**	**0.192 J**
PCB-009	**0.015 J**	**0.0154 J**	**0.00672 J**	**0.00716 J**	**0.0191 J**	**0.01 J**	**0.0484 J**	**0.017 J**
PCB-010	**0.0204 J**	**0.0169 J**	**0.0164 J**	**0.0154 J**	**0.0329 J**	**0.0207 J**	**0.0651 J**	**0.0373 J**
PCB-011	0.0273 UJ	0.0353 UJ	0.0259 UJ	0.0196 UJ	0.0341 UJ	0.0385 UJ	0.0445 UJ	0.0301 UJ
PCB-012/013	**0.0183 J**	**0.0181 J**	**0.0126 J**	**0.0139 J**	**0.0257 J**	**0.014 J**	**0.0359 J**	**0.0156 J**
PCB-014	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	0.0111 U	0.012 U	0.0132 U	0.0103 U
PCB-015	**0.242 J**	**0.267 J**	**0.204 J**	**0.221 J**	**0.393 J**	**0.239 J**	**0.749 J**	**0.326 J**
PCB-016	**0.92**	**0.918 J**	**0.847**	**0.911**	**2.01 J**	**0.977**	**3.58**	**1.87**
PCB-017	**1.24**	**1.25 J**	**1.12**	**1.19**	**2.44 J**	**1.31**	**3.82**	**2.3**
PCB-018/030	**4.7**	**4.58 J**	**3.46**	**3.66**	**8.81 J**	**4.18**	**13.9**	**7.43**
PCB-019	**0.372**	**0.384**	**0.345**	**0.356**	**0.692 J**	**0.431**	**1.29**	**0.791**
PCB-020/028	**2.77**	**2.89 J**	**2.88**	**2.8**	**4.63 J**	**3.28**	**7.95**	**4.87**
PCB-021/033	**0.818**	**0.827 J**	**0.613**	**0.595**	**1.38 J**	**0.713**	**2.86**	**1.37**
PCB-022	**0.561**	**0.584 J**	**0.603**	**0.583**	**0.874 J**	**0.65**	**1.78**	**0.887**
PCB-023	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	**0.00445 J**	0.0103 U
PCB-024	**0.0219**	**0.0233 J**	**0.0243**	**0.0186 J**	**0.0473 J**	**0.0289**	**0.0743**	**0.0438**

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB031	PB031	PB059	PB059	PB076	PB076	PB076	PB076
Sample ID:	PB031-1SWNBT-091104-N	PB031-1SWNBT-091105-N	PB059-1SWMID-091104-N	PB059-1SWMID-091105-N	PB076-1SWMID-091104-N	PB076-1SWMID-091105-N	PB076-1SWNBT-091104-N	PB076-1SWNBT-091105-N
Sample Date:	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	N	N	N	N	N	N	N	N
X:	3201366.8205	3201366.8205	3201646.6295	3201646.6295	3200819.7773	3200819.7773	3200819.7773	3200819.7773
Y:	13834640.6333	13834640.6333	13831831.4316	13831831.4316	13830437.4855	13830437.4855	13830437.4855	13830437.4855
Diethyl phthalate	0.575 U	**0.273 J**	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Butylbenzyl phthalate	0.575 U	0.525 U	**0.299 J**	0.5 U	**0.304 J**	0.5 U	**0.294 J**	0.658 U
Dimethyl phthalate	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Caprolactam	0.575 UJ	**0.434 J**	0.575 UJ	0.5 UJ	0.543 UJ	0.5 UJ	0.588 UJ	0.658 UJ
Di-n-butyl phthalate	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Carbazole	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)	2.3 UJ	2.02 UJ	2.3 UJ	2 UJ	2.17 UJ	2 UJ	2.35 UJ	2.63 UJ
Di-n-octyl phthalate	0.575 U	0.505 U	0.575 U	0.5 U	**0.348 J**	0.5 U	0.588 U	0.658 U
Hexachlorobenzene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Hexachlorobutadiene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Dibenzofuran	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Hexachlorocyclopentadiene	0.575 UJ	0.505 UJ	0.575 UJ	0.5 UJ	0.543 UJ	0.5 UJ	0.588 UJ	0.658 UJ
Hexachloroethane	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Isophorone	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Nitrobenzene	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
N-Nitrosodi-N-propylamine	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
N-Nitrosodiphenylamine	0.575 U	0.505 U	0.575 U	0.5 U	0.543 U	0.5 U	0.588 U	0.658 U
Pentachlorophenol	2.3 UJ	2.02 UJ	2.3 UJ	2 UJ	2.17 UJ	2 UJ	2.35 UJ	2.63 UJ
PCB Congeners (ng/L)								
PCB-001	**0.064 J**	**0.0179 J**	**0.181 J**	**0.0666 J**	**0.0401**	**0.0366 J**	**0.0503 J**	**0.0423 J**
PCB-002	0.0115 UJ	0.0106 UJ	0.0119 UJ	0.01 UJ	**0.00516 J**	**0.00267 J**	**0.00445 J**	0.0122 UJ
PCB-003	**0.0119**	**0.00728 J**	**0.0229 J**	**0.0103 J**	**0.0156**	**0.0108 J**	**0.0178 J**	**0.0118 J**
PCB-004	**1.84 J**	**1.39 J**	**3.41 J**	**1.26 J**	**0.434 J**	**0.458 J**	**0.581 J**	**0.528 J**
PCB-005	**0.0159 J**	0.0106 UJ	**0.0394 J**	**0.0112 J**	0.013 U	0.0102 UJ	**0.00943 J**	0.0122 UJ
PCB-006	**0.209 J**	**0.0771 J**	**0.498 J**	**0.195 J**	**0.204 J**	**0.156 J**	**0.234 J**	**0.155 J**
PCB-007	**0.0196 J**	0.0106 UJ	**0.0581 J**	**0.0157 J**	**0.0144 J**	0.0102 UJ	**0.0183 J**	**0.00858 J**
PCB-008	**0.751 J**	**0.209 J**	**2.06 J**	**0.608 J**	**0.321 J**	**0.265 J**	**0.432 J**	**0.289 J**
PCB-009	**0.0517 J**	**0.0208 J**	**0.128 J**	**0.038 J**	**0.0212 J**	**0.017 J**	**0.0263 J**	**0.0184 J**
PCB-010	**0.0614 J**	**0.0472 J**	**0.107 J**	**0.0418 J**	**0.0143 J**	**0.0159 J**	**0.0183 J**	**0.0176 J**
PCB-011	0.0416 UJ	0.0336 UJ	0.0541 UJ	**0.0487 J**	0.0536 UJ	0.0417 UJ	0.0639 UJ	**0.0509 J**
PCB-012/013	**0.0422 J**	**0.0178 J**	**0.156 J**	**0.071 J**	**0.0783 J**	**0.0605 J**	**0.0879 J**	**0.0682 J**
PCB-014	0.0115 U	0.0106 UJ	0.0119 UJ	0.01 UJ	0.013 U	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-015	**0.744 J**	**0.42 J**	**1.82 J**	**0.609 J**	**0.276 J**	**0.201 J**	**0.359 J**	**0.275 J**
PCB-016	**3.62**	**2.53 J**	**6.89 J**	**2.15 J**	**0.835**	**0.717 J**	**1.23 J**	**1.13 J**
PCB-017	**3.95**	**3.02 J**	**7.12 J**	**2.38 J**	**1.11**	**0.945 J**	**1.61 J**	**1.33 J**
PCB-018/030	**13.7**	**9.9 J**	**24 J**	**7.59 J**	**3.48**	**2.8 J**	**5.06 J**	**4.11 J**
PCB-019	**1.27**	**0.988 J**	**2.24 J**	**0.935 J**	**0.451**	**0.43 J**	**0.595**	**0.573 J**
PCB-020/028	**8.56**	**5.89 J**	**16.5 J**	**5.75 J**	**3.1**	**2.33 J**	**4.33 J**	**2.99 J**
PCB-021/033	**3.07**	**1.55 J**	**5.96 J**	**1.61 J**	**0.78**	**0.55 J**	**1.09 J**	**0.758 J**
PCB-022	**1.97**	**1.17 J**	**4.61 J**	**1.4 J**	**0.714**	**0.528 J**	**0.992 J**	**0.669 J**
PCB-023	0.0115 U	0.0106 UJ	0.0119 UJ	0.01 UJ	0.013 U	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-024	**0.0673**	**0.0643 J**	**0.115 J**	**0.0458 J**	**0.0192**	**0.0176 J**	**0.0261 J**	**0.0231 J**

Appendix A-2
BERA Surface Water Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB066B	PB080	PB080	PB082.1	PB101C
Sample ID:	PB066-1SWMID-20110808-N	PB080-1SWMID-20110808-D	PB080-1SWMID-20110808-N	PB082.1-1SWMID-20110808-N	PB101C-1SWMID-20110808-N
Sample Date:	8/8/2011	8/8/2011	8/8/2011	8/8/2011	8/8/2011
Sample Type:	N	FD	N	N	N
X:	3201384.326	3200769.755	3200769.755	3200777.403	3201307.665
Y:	13831305.66	13830051.11	13830051.11	13829942.54	13828208.48
Diethyl phthalate	--	--	--	--	--
Butylbenzyl phthalate	--	--	--	--	--
Dimethyl phthalate	--	--	--	--	--
Caprolactam	--	--	--	--	--
Di-n-butyl phthalate	--	--	--	--	--
Carbazole	--	--	--	--	--
Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)	--	--	--	--	--
Di-n-octyl phthalate	--	--	--	--	--
Hexachlorobenzene	--	--	--	--	--
Hexachlorobutadiene	--	--	--	--	--
Dibenzofuran	--	--	--	--	--
Hexachlorocyclopentadiene	--	--	--	--	--
Hexachloroethane	--	--	--	--	--
Isophorone	--	--	--	--	--
Nitrobenzene	--	--	--	--	--
N-Nitrosodi-N-propylamine	--	--	--	--	--
N-Nitrosodiphenylamine	--	--	--	--	--
Pentachlorophenol	--	--	--	--	--
PCB Congeners (ng/L)					
PCB-001	**0.0539**	**0.07**	**0.0547**	**0.0626**	0.00741 U
PCB-002	0.00263 U	0.00247 U	0.00366 U	0.00308 U	0.00268 U
PCB-003	0.00183 U	**0.00633 J**	0.00253 U	0.00231 U	**0.0046 J**
PCB-004	**0.992**	**1.14**	**1.17**	**0.788**	**0.0379**
PCB-005	**0.0156 J**	**0.0229 J**	**0.0153**	**0.0123**	0.00311 U
PCB-006	**0.209**	**0.242**	**0.243**	**0.199**	**0.0209**
PCB-007	**0.0162**	**0.0228**	**0.0192 J**	**0.0183**	**0.00678 J**
PCB-008	**0.35**	**0.422**	**0.437**	**0.259**	**0.0253**
PCB-009	**0.749**	**0.965**	**0.89**	**0.647**	0.0286 U
PCB-010	**0.0549**	**0.0686**	**0.0626**	**0.049**	0.00272 U
PCB-011	**0.0803**	**0.0911**	**0.0831**	**0.0517**	**0.00364 J**
PCB-012/013	0.0343 U	0.0416 U	0.0544 U	0.0382 U	0.0351 U
PCB-014	**0.0227 J**	**0.0384**	**0.0272**	**0.0279**	**0.0121 J**
PCB-015	0.00277 U	0.00265 U	0.00425 U	0.00364 U	0.00244 U
PCB-016	**1.69**	**1.96**	**2.12**	**1.23**	**0.0418**
PCB-017	**2.44**	**2.9**	**3.04**	**1.79**	**0.0742**
PCB-018/030	**6.92**	**8.04**	**8.54**	**5.01**	**0.153**
PCB-019	**0.663**	**0.73**	**0.769**	**0.493**	**0.0283**
PCB-020/028	**5.52**	**7.69**	**7.76**	**4.38**	**0.233**
PCB-021/033	**1.96**	**2.7**	**2.7**	**1.51**	**0.051**
PCB-022	**1.39**	**1.98**	**1.91**	**1.15**	**0.0591**
PCB-023	**0.00303 J**	**0.0039 J**	**0.00455 J**	**0.00298 J**	0.00117 U
PCB-024	**0.0658**	**0.0822 J**	**0.0682**	**0.0433**	**0.00221 J**

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB006	PB006	PB006	PB006	PB006	PB006	PB031	PB031
Sample ID:	PB006-1SWMID-091104-D	PB006-1SWMID-091104-N	PB006-1SWMID-091105-D	PB006-1SWMID-091105-N	PB006-1SWNBT-091104-N	PB006-1SWNBT-091105-N	PB031-1SWMID-091104-N	PB031-1SWMID-091105-N
Sample Date:	11/4/2009	11/4/2009	11/5/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	FD	N	FD	N	N	N	N	N
X:	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3201366.8205	3201366.8205
Y:	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13834640.6333	13834640.6333
PCB-025	**0.144**	**0.151 J**	**0.132**	**0.127**	**0.223 J**	**0.145**	**0.407**	**0.205**
PCB-026/029	**0.554**	**0.553 J**	**0.537**	**0.527**	**0.921 J**	**0.615**	**1.59**	**0.995**
PCB-027	**0.196**	**0.198 J**	**0.196**	**0.208**	**0.384 J**	**0.229**	**0.584**	**0.386**
PCB-031	**3.35**	**3.45 J**	**3.33**	**3.3**	**5.82 J**	**3.9**	**9.94**	**6.44**
PCB-032	**1.08**	**1.11 J**	**1.07**	**1.14**	**2.16 J**	**1.23**	**3.24**	**2.07**
PCB-034	**0.0213**	**0.0209 J**	**0.0181**	**0.0182**	**0.032 J**	**0.0204**	**0.0417**	**0.0278**
PCB-035	**0.0586**	**0.0489 J**	0.0106 U	**0.0421**	**0.0913 J**	**0.0507**	**0.158**	0.0103 U
PCB-036	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-037	**0.68**	**0.679 J**	**0.625**	**0.651**	**1.28 J**	**0.708**	**1.89**	**1.08**
PCB-038	0.012 U	**0.00913 J**	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-039	0.012 U	0.0118 UJ	**0.0232**	**0.0205**	0.0111 UJ	**0.0254**	0.0132 U	**0.0355**
PCB-040/071	**2.46 J**	**2.34 J**	**2.55**	**2.63**	**4.44 J**	**2.88**	**6.72**	0.0206 U
PCB-041	**0.469 J**	**0.511 J**	**0.382**	**0.527**	**0.983 J**	**0.545**	**1.54**	**5.99**
PCB-042	**1.66 J**	**1.67 J**	**1.56**	**1.67**	**3.09 J**	**1.81**	**4.53**	**2.65**
PCB-043	**0.256 J**	**0.255 J**	**0.297**	**0.318**	**0.493 J**	**0.365**	**0.755**	**0.505**
PCB-044/047/065	**6.23 J**	**6.11 J**	**6.42**	**6.79**	**11.2 J**	**7.37**	**16.5**	**10.4**
PCB-045	**1.09 J**	**1.05 J**	**1.22**	**1.26**	**1.82 J**	**1.4**	**3.12**	**2**
PCB-046	**0.434 J**	**0.425 J**	**0.448**	**0.453**	**0.709 J**	**0.508**	**1.18**	**0.772**
PCB-048	**1.21 J**	**1.2 J**	**1.21**	**1.27**	**2.19 J**	**1.4**	**3.44**	**2.16**
PCB-049/069	**3.79 J**	**3.69 J**	**3.86**	**4.11**	**6.73 J**	**4.47**	**9.66**	**6.19**
PCB-050/053	**1.25 J**	**1.19 J**	**1.32**	**1.33**	**2.05 J**	**1.5**	**3.46**	**2.25**
PCB-051	**0.366 J**	**0.332 J**	**0.38**	**0.32 J**	**0.605 J**	**0.416**	**0.863**	**0.626**
PCB-052	**6.25 J**	**6.06 J**	**6.7**	**7.03**	**10.8 J**	**7.67**	**16.3**	**11.1**
PCB-054	**0.0213**	**0.0209 J**	**0.0197**	**0.0214**	**0.0356 J**	**0.0218**	**0.0548**	**0.0361**
PCB-055	**0.0437 J**	**0.0443 J**	0.0106 U	0.00935 U	**0.0772 J**	0.012 U	**0.13**	0.0103 U
PCB-056	**1.82 J**	**1.84 J**	**1.87**	**2.07**	**3.55 J**	**2.19**	**5.08**	**3.14**
PCB-057	**0.0231 J**	**0.0211 J**	0.0106 U	**0.0203**	**0.0326 J**	**0.0193 J**	**0.0495**	**0.0301**
PCB-058	**0.0104 J**	**0.0151 J**	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	**0.0294**	0.0103 U
PCB-059/062/075	**0.451 J**	**0.443 J**	**0.492**	**0.513**	**0.799 J**	**0.562**	**1.18**	**0.809**
PCB-060	**0.905 J**	**0.914 J**	**0.926**	**1.01**	**1.86 J**	**1.1**	**2.81**	**1.74**
PCB-061/070/074/076	**7.44 J**	**7.26 J**	**7.61**	**8.3**	**14 J**	**8.92**	**19.4**	**12.6**
PCB-063	**0.143 J**	**0.14 J**	**0.148**	**0.154**	**0.282 J**	**0.169**	**0.403**	**0.253**
PCB-064	**2.39 J**	**2.35 J**	**2.45**	**2.59**	**4.35 J**	**2.81**	**6.29**	**4.04**
PCB-066	**3.77 J**	**3.74 J**	**3.93**	**4.27**	**7.15 J**	**4.5**	**9.85**	**6.62**
PCB-067	**0.0898 J**	**0.0897 J**	**0.0863**	**0.0886**	**0.16 J**	**0.0989**	**0.243**	**0.147**
PCB-068	**0.0182 J**	**0.0192 J**	**0.0461**	**0.0458**	**0.0409 J**	**0.0439**	**0.0323**	**0.0533**
PCB-072	**0.0401 J**	**0.0408 J**	**0.0448**	**0.0452**	**0.0688 J**	**0.0484**	**0.0707**	**0.0538**
PCB-073	0.012 UJ	0.0118 UJ	**0.0451**	0.00935 U	0.0111 UJ	0.012 U	0.0132 U	**0.0884**
PCB-077	**0.405 J**	**0.416 J**	**0.419**	**0.439**	**0.818 J**	**0.478**	**1.1**	**0.682**
PCB-078	0.012 UJ	0.0118 UJ	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-079	**0.0468 J**	**0.0351 J**	**0.0211 J**	**0.0583**	**0.0507 J**	0.012 U	**0.1**	**0.0399**
PCB-080	0.012 UJ	0.0118 UJ	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	0.0132 U	0.0103 U

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB031	PB031	PB059	PB059	PB076	PB076	PB076	PB076
Sample ID:	PB031-1SWNBT-091104-N	PB031-1SWNBT-091105-N	PB059-1SWMID-091104-N	PB059-1SWMID-091105-N	PB076-1SWMID-091104-N	PB076-1SWMID-091105-N	PB076-1SWNBT-091104-N	PB076-1SWNBT-091105-N
Sample Date:	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	N	N	N	N	N	N	N	N
X:	3201366.8205	3201366.8205	3201646.6295	3201646.6295	3200819.7773	3200819.7773	3200819.7773	3200819.7773
Y:	13834640.6333	13834640.6333	13831831.4316	13831831.4316	13830437.4855	13830437.4855	13830437.4855	13830437.4855
PCB-025	**0.435**	**0.243 J**	**0.898 J**	**0.351 J**	**0.341**	**0.227 J**	**0.425 J**	**0.251 J**
PCB-026/029	**1.65**	**1.15 J**	**2.86 J**	**1.07 J**	**0.637**	**0.46 J**	**0.854 J**	**0.576 J**
PCB-027	**0.594**	**0.511 J**	**1.09 J**	**0.434 J**	**0.189**	**0.18 J**	**0.26 J**	**0.264 J**
PCB-031	**10.5**	**7.5 J**	**18.6 J**	**6.12 J**	**3.2**	**2.32 J**	**4.37 J**	**2.91 J**
PCB-032	**3.25**	**2.75 J**	**5.8 J**	**2.15 J**	**1.12**	**0.953 J**	**1.58 J**	**1.38 J**
PCB-034	0.0115 U	**0.0314 J**	0.0119 UJ	**0.0248 J**	**0.0201**	**0.0138 J**	**0.0225 J**	**0.0169 J**
PCB-035	**0.168**	**0.092 J**	**0.264 J**	**0.0943 J**	**0.0564**	**0.0437 J**	**0.0673 J**	**0.0632 J**
PCB-036	0.0115 U	0.0106 UJ	0.0119 UJ	0.01 UJ	0.013 U	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-037	**1.96**	**1.34**	**4.25 J**	**1.15 J**	**0.544**	**0.37**	**0.78 J**	**0.614 J**
PCB-038	**0.0172**	0.0106 UJ	**0.0276 J**	**0.00705 J**	**0.0087 J**	0.0102 UJ	**0.00896 J**	0.0122 UJ
PCB-039	0.0115 U	**0.0498 J**	0.0119 UJ	**0.0366 J**	0.013 U	**0.0141 J**	0.0125 UJ	**0.0253 J**
PCB-040/071	**6.29**	**5.5 J**	**12.3 J**	**4.08 J**	**2.27**	**1.69 J**	**3.16 J**	**2.86 J**
PCB-041	**1.47**	**1.28 J**	**2.89 J**	**0.904 J**	**0.434**	**0.289 J**	**0.57 J**	**0.526 J**
PCB-042	**4.24**	**3.46 J**	**8.17 J**	**2.51 J**	**1.56**	**1.05 J**	**2.11 J**	**1.74 J**
PCB-043	**0.714**	**0.667 J**	**1.41 J**	**0.504 J**	**0.26**	0.0102 UJ	**0.356 J**	**0.334 J**
PCB-044/047/065	**15.3**	**13.6 J**	**29.7 J**	**10.1 J**	**5.91**	**4.28 J**	**8.2 J**	**6.79 J**
PCB-045	**2.94**	**2.37 J**	**5.47 J**	**1.95 J**	**0.955**	**0.782 J**	**1.34 J**	**1.19 J**
PCB-046	**1.11**	**0.943 J**	**2.19 J**	**0.858 J**	**0.423**	**0.345 J**	**0.548 J**	**0.538 J**
PCB-048	**3.27**	**2.89 J**	**6.42 J**	**2 J**	**1.05**	**0.745 J**	**1.44 J**	**1.25 J**
PCB-049/069	**9.09**	**8.07 J**	**17.2 J**	**5.73 J**	**3.59**	**2.59 J**	**4.99 J**	**3.85 J**
PCB-050/053	**3.22**	**2.69 J**	**5.87 J**	**2.22 J**	**1.23**	**0.915 J**	**1.56 J**	**1.33 J**
PCB-051	**0.816**	**0.847 J**	**1.55 J**	**0.663 J**	**0.375**	**0.274 J**	**0.428 J**	**0.435 J**
PCB-052	**15.1**	**14.2 J**	**28.3 J**	**10.2 J**	**5.7**	**4.39 J**	**7.88 J**	**6.57 J**
PCB-054	**0.0542**	**0.0455 J**	**0.0942 J**	**0.0376 J**	**0.0211 J**	**0.0187 J**	**0.0299**	**0.0264 J**
PCB-055	**0.115**	0.0106 UJ	**0.244 J**	0.01 UJ	**0.0377**	0.0102 UJ	**0.0506 J**	0.0122 UJ
PCB-056	**4.9**	**4.28 J**	**9.94 J**	**2.84 J**	**1.7**	**1.22 J**	**2.52 J**	**2.15 J**
PCB-057	**0.0474**	**0.0418 J**	**0.0961 J**	**0.0277 J**	**0.0181 J**	0.0102 UJ	**0.027 J**	0.0122 UJ
PCB-058	**0.0211**	**0.0237 J**	**0.039 J**	0.01 UJ	**0.00883 J**	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-059/062/075	**1.11**	**1.01 J**	**2.17 J**	**0.769 J**	**0.429**	**0.324 J**	**0.577 J**	**0.494 J**
PCB-060	**2.72**	**2.29 J**	**5.67 J**	**1.45 J**	**0.885**	**0.6 J**	**1.31 J**	**0.954 J**
PCB-061/070/074/076	**19.2**	**16.7 J**	**37.1 J**	**10.8 J**	**6.49**	**4.66 J**	**9.78 J**	**7.8 J**
PCB-063	**0.383**	**0.342 J**	**0.767 J**	**0.218 J**	**0.137**	**0.101 J**	**0.208 J**	**0.148 J**
PCB-064	**5.92**	**5.27 J**	**11.3 J**	**3.53 J**	**2.1**	**1.5 J**	**2.96 J**	**2.37 J**
PCB-066	**9.62**	**8.59 J**	**18.8 J**	**5.79 J**	**3.57**	**2.76 J**	**5.39 J**	**4.58 J**
PCB-067	**0.231**	**0.193 J**	**0.471 J**	**0.133 J**	**0.0844**	**0.0573 J**	**0.12 J**	**0.0928 J**
PCB-068	**0.0331**	**0.055 J**	**0.0561 J**	**0.0151 J**	**0.0172**	0.0102 UJ	**0.0249 J**	**0.0234 J**
PCB-072	**0.0717**	**0.059 J**	**0.12 J**	**0.0423 J**	**0.0282**	**0.022 J**	**0.0444 J**	**0.0334 J**
PCB-073	0.0115 U	0.0106 UJ	0.0119 UJ	0.01 UJ	0.013 U	**0.151 J**	0.0125 UJ	**0.0655 J**
PCB-077	**1.08**	**0.893**	**2.04 J**	**0.585 J**	**0.399**	**0.246 J**	**0.623 J**	**0.519**
PCB-078	0.0115 U	0.0106 UJ	0.0119 UJ	0.01 UJ	0.013 U	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-079	**0.0932**	**0.047 J**	**0.155 J**	**0.0265 J**	**0.0298 J**	**0.0157 J**	**0.0491 J**	**0.0328 J**
PCB-080	0.0115 U	0.0106 UJ	0.0119 UJ	0.01 UJ	0.013 U	0.0102 UJ	0.0125 UJ	0.0122 UJ

Appendix A-2
BERA Surface Water Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB066B	PB080	PB080	PB082.1	PB101C
Sample ID:	PB066-1SWMID-20110808-N	PB080-1SWMID-20110808-D	PB080-1SWMID-20110808-N	PB082.1-1SWMID-20110808-N	PB101C-1SWMID-20110808-N
Sample Date:	8/8/2011	8/8/2011	8/8/2011	8/8/2011	8/8/2011
Sample Type:	N	FD	N	N	N
X:	3201384.326	3200769.755	3200769.755	3200777.403	3201307.665
Y:	13831305.66	13830051.11	13830051.11	13829942.54	13828208.48
PCB-025	**0.253**	**0.355**	**0.338**	**0.224**	**0.0384**
PCB-026/029	**0.935**	**1.19**	**1.22**	**0.706**	**0.0508**
PCB-027	**0.383**	**0.44**	**0.466**	**0.285**	**0.0138**
PCB-031	**6.41**	**8.65**	**8.89**	**4.95**	**0.21**
PCB-032	**1.93**	**2.31**	**2.42**	**1.41**	**0.0647**
PCB-034	**0.0211**	**0.0281**	**0.0288**	**0.0174**	**0.00179 J**
PCB-035	**0.0609**	**0.066**	**0.0655**	**0.0391**	**0.00693 J**
PCB-036	0.00311 U	0.0045 U	0.00604 U	**0.013**	0.0027 U
PCB-037	**0.561**	**0.739**	**0.767**	**0.415**	**0.031**
PCB-038	**0.00718 J**	0.00457 U	0.00613 U	0.00337 U	0.00274 U
PCB-039	0.00295 U	0.00427 U	0.00572 U	0.00315 U	0.00255 U
PCB-040/071	**2.77**	**4.2**	**3.93**	**2.16**	**0.102**
PCB-041	**0.61**	**0.904**	**0.804**	**0.417**	**0.0209**
PCB-042	**1.58**	**2.42**	**2.26**	**1.27**	**0.0646**
PCB-043	**0.283**	**0.466**	**0.408**	**0.228**	**0.0108**
PCB-044/047/065	**6.76**	**10.4**	**9.42**	**5.75**	**0.701**
PCB-045	**1.71**	**2.41**	**2.18**	**1.5**	**0.421**
PCB-046	**0.236**	**0.363**	**0.3565**	**0.183**	**0.01395**
PCB-048	**1.31**	**2.05**	**1.85**	**1.07**	**0.0332**
PCB-049/069	**3.95**	**6.17**	**5.86**	**3.24**	**0.183**
PCB-050/053	**1.34**	**1.85**	**1.75**	**0.936**	**0.0435**
PCB-051	**0.236**	**0.363**	**0.3565**	**0.183**	**0.01395**
PCB-052	**7.92**	**12.2**	**11.4**	**6.43**	**0.341**
PCB-054	**0.0226**	**0.0352**	**0.0287**	**0.0188 J**	**0.0016 J**
PCB-055	**0.0648**	**0.118**	**0.102**	**0.0563 J**	**0.00441 J**
PCB-056	**2.18**	**3.49**	**3.33**	**1.79**	**0.088**
PCB-057	**0.0176 J**	**0.0297**	**0.0274 J**	**0.0155**	0.00208 U
PCB-058	**0.0111 J**	**0.024**	**0.0248**	**0.00855 J**	0.0021 U
PCB-059/062/075	**0.486**	**0.749**	**0.652**	**0.408**	**0.023 J**
PCB-060	**1.1**	**1.8**	**1.7**	**0.934**	**0.0482**
PCB-061/070/074/076	**8.13**	**12.7**	**12.2**	**6.59**	**0.321**
PCB-063	**0.184**	**0.3**	**0.274**	**0.149**	**0.00906 J**
PCB-064	**2.95**	**4.66**	**4.3**	**2.37**	**0.12**
PCB-066	**4.57**	**7.22**	**6.97**	**3.78**	**0.195**
PCB-067	**0.102**	**0.162**	**0.149**	**0.0807**	**0.00622 J**
PCB-068	**0.319**	**0.399**	**0.363**	**0.473**	**0.418**
PCB-072	**0.0275**	**0.0445**	**0.0431 J**	**0.0242 J**	0.002 U
PCB-073	**0.071**	0.000266 U	0.00088 U	0.00226 U	**0.00271 J**
PCB-077	**0.306**	**0.447**	**0.461**	**0.231**	**0.018**
PCB-078	0.00298 U	0.00602 U	0.00491 U	0.00471 U	0.00217 U
PCB-079	0.00251 U	**0.0493 J**	**0.046 J**	**0.0211**	0.00183 U
PCB-080	0.00269 U	0.00542 U	0.00443 U	0.00424 U	0.00195 U

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB006	PB006	PB006	PB006	PB006	PB006	PB031	PB031
Sample ID:	PB006-1SWMID-091104-D	PB006-1SWMID-091104-N	PB006-1SWMID-091105-D	PB006-1SWMID-091105-N	PB006-1SWNBT-091104-N	PB006-1SWNBT-091105-N	PB031-1SWMID-091104-N	PB031-1SWMID-091105-N
Sample Date:	11/4/2009	11/4/2009	11/5/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	FD	N	FD	N	N	N	N	N
X:	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3201366.8205	3201366.8205
Y:	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13834640.6333	13834640.6333
PCB-081	**0.0159 J**	**0.0196 J**	0.0106 U	**0.0172**	**0.0343 J**	0.012 U	**0.0454**	**0.0319**
PCB-082	**0.432**	**0.468 J**	**0.481**	**0.508**	**0.907 J**	**0.552**	**1.2**	**0.77**
PCB-083	**0.216**	**0.167 J**	**0.23**	**0.247**	**0.337 J**	**0.283**	**0.465**	**0.33**
PCB-084	**1.01**	**1.02 J**	**1.03**	**1.12**	**1.89 J**	**1.22**	**2.49**	**1.66**
PCB-085/116	**0.575**	**0.615 J**	**0.683**	**0.719**	**1.19 J**	**0.802**	**1.56**	**1.02**
PCB-086/087/097/108/119/125	**2.03**	**2.14 J**	**2.19**	**2.32**	**4.14 J**	**2.56**	**5.2**	**3.47**
PCB-088	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	0.0132 U	**0.947**
PCB-089	**0.0911**	**0.0915 J**	**0.101**	**0.112**	**0.181 J**	**0.114**	**0.254**	**0.167**
PCB-090/101/113	**2.73**	**2.81 J**	**2.88**	**3.09**	**5.2 J**	**3.38**	**6.32**	**4.49**
PCB-091	**0.538**	**0.546 J**	**0.585**	**0.645**	**0.917 J**	**0.696**	**1.16**	0.0103 U
PCB-092	**0.477**	**0.493 J**	**0.522**	**0.554**	**0.94 J**	**0.596**	**1.13**	**0.797**
PCB-093/100	**0.0607**	**0.0584 J**	**0.0749**	**0.0821**	**0.112 J**	**0.0898**	**0.132**	**0.119**
PCB-094	**0.0273**	**0.0282 J**	**0.0293**	**0.03**	**0.0499 J**	**0.0334**	**0.0648**	**0.0455**
PCB-095	**2.44**	**2.32 J**	**2.49**	**2.67**	**4.22 J**	**2.95**	**5.36**	**3.81**
PCB-096	**0.0622**	**0.0663 J**	**0.0641**	**0.0689**	**0.123 J**	**0.0764**	**0.171**	**0.111**
PCB-098	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	**0.0257**	0.0103 U
PCB-099	**1.26**	**1.37 J**	**1.39**	**1.44**	**2.6 J**	**1.61**	**3.06**	**2.05**
PCB-102	**0.172**	**0.182 J**	**0.203**	**0.216**	**0.336 J**	**0.237**	**0.406**	**0.318**
PCB-103	**0.0344**	**0.0333 J**	**0.0385**	**0.0365**	**0.0544 J**	**0.0393**	**0.0593**	**0.0441 J**
PCB-104	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	0.0111 U	0.012 U	**0.00429 J**	0.0103 U
PCB-105	**1.16**	**1.26 J**	**1.25**	**1.37**	**2.5**	**1.46**	**3.18**	**2.12**
PCB-106	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-107/124	**0.0945**	**0.0979 J**	**0.0983**	**0.105**	**0.195 J**	**0.116**	**0.244**	**0.159**
PCB-109	**0.16**	**0.177 J**	**0.175**	**0.183**	**0.324 J**	**0.212**	**0.403**	**0.269**
PCB-110	**2.59**	**2.78 J**	**2.75**	**2.91**	**5.18 J**	**3.23**	**6.13**	**4.3**
PCB-111	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-112	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-114	**0.077**	**0.0812 J**	**0.076**	**0.0852**	**0.161**	**0.096**	**0.205**	**0.134**
PCB-115	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	**0.0972**	0.0103 U
PCB-117	**0.101**	**0.0893 J**	0.0106 U	0.00935 U	**0.188 J**	0.012 U	**0.212**	**0.125**
PCB-118	**2.11**	**2.3 J**	**2.33**	**2.51**	**4.49 J**	**2.68**	**5.42**	**3.67**
PCB-120	**0.00876 J**	**0.0105 J**	**0.00942 J**	**0.0101**	0.0111 UJ	**0.0128**	**0.0119 J**	0.0103 U
PCB-121	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-122	**0.0514**	**0.0601 J**	**0.068**	**0.0706**	**0.11 J**	**0.0746**	**0.142**	**0.109**
PCB-123	**0.0633**	**0.0657 J**	**0.0675**	**0.0771**	**0.137**	**0.0785**	**0.161**	**0.106**
PCB-126	**0.0123 J**	**0.0127 J**	**0.0133 J**	0.00935 U	**0.0248 J**	**0.0128**	**0.0303**	**0.02**
PCB-127	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-128/166	**0.219 J**	**0.241 J**	**0.232 J**	**0.25 J**	**0.416 J**	**0.256**	**0.472**	**0.339**
PCB-129/138/163	**1.21 J**	**1.33 J**	**1.37 J**	**1.4 J**	**2.44 J**	**1.55**	**2.54**	**1.96**
PCB-130	**0.111 J**	**0.119 J**	**0.126 J**	**0.133 J**	**0.219 J**	**0.152**	**0.214**	**0.168**
PCB-131	**0.0151 J**	**0.0213 J**	**0.0205 J**	**0.0245 J**	**0.0386 J**	**0.0261**	**0.0412**	0.0103 U
PCB-132	**0.413 J**	**0.454 J**	**0.461 J**	**0.484 J**	**0.811 J**	**0.532**	**0.857**	**0.642**

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB031	PB031	PB059	PB059	PB076	PB076	PB076	PB076
Sample ID:	PB031-1SWNBT-091104-N	PB031-1SWNBT-091105-N	PB059-1SWMID-091104-N	PB059-1SWMID-091105-N	PB076-1SWMID-091104-N	PB076-1SWMID-091105-N	PB076-1SWNBT-091104-N	PB076-1SWNBT-091105-N
Sample Date:	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	N	N	N	N	N	N	N	N
X:	3201366.8205	3201366.8205	3201646.6295	3201646.6295	3200819.7773	3200819.7773	3200819.7773	3200819.7773
Y:	13834640.6333	13834640.6333	13831831.4316	13831831.4316	13830437.4855	13830437.4855	13830437.4855	13830437.4855
PCB-081	**0.0502**	**0.032 J**	**0.101 J**	**0.0261 J**	**0.0194**	0.0102 U	**0.0323 J**	**0.0248 J**
PCB-082	**1.19**	**1.05**	**2.48 J**	**0.653 J**	**0.445**	**0.296 J**	**0.683 J**	**0.612 J**
PCB-083	**0.537**	**0.417**	**1.02 J**	**0.256 J**	**0.185**	**0.129 J**	**0.274 J**	**0.209 J**
PCB-084	**2.5**	**2.26**	**4.92 J**	**1.46 J**	**0.907**	**0.689 J**	**1.37 J**	**1.15 J**
PCB-085/116	**1.55**	**1.45**	**3.03 J**	**0.871 J**	**0.624**	0.0204 UJ	**0.976 J**	0.0244 UJ
PCB-086/087/097/108/119/125	**5.24**	**4.66**	**10.3 J**	**2.77 J**	**2**	**1.34 J**	**3.09 J**	**2.34 J**
PCB-088	0.0115 U	0.0106 U	0.0119 UJ	0.01 UJ	0.013 U	**0.362 J**	0.0125 UJ	**0.599 J**
PCB-089	**0.25**	**0.225**	**0.5 J**	**0.138 J**	**0.0876**	**0.0694 J**	**0.126 J**	**0.119 J**
PCB-090/101/113	**6.3**	**6**	**12 J**	**3.38 J**	**2.38**	**1.67 J**	**3.69 J**	**2.77 J**
PCB-091	**1.18**	**1.16**	**2.23 J**	**0.69 J**	**0.408**	0.0102 UJ	**0.605 J**	0.0122 UJ
PCB-092	**1.14**	**1.06**	**2.17 J**	**0.606 J**	**0.446**	**0.314 J**	**0.679 J**	**0.501 J**
PCB-093/100	**0.138**	**0.138**	**0.266 J**	**0.0887 J**	**0.0572**	**0.0448 J**	**0.0783 J**	0.0244 UJ
PCB-094	**0.0688**	**0.063**	**0.129 J**	**0.0406 J**	**0.0248**	**0.0168 J**	**0.0336 J**	**0.0332 J**
PCB-095	**5.26**	**5.18**	**9.9 J**	**2.98 J**	**1.82**	**1.4 J**	**2.63 J**	**2.26 J**
PCB-096	**0.165**	**0.137**	**0.318 J**	**0.098 J**	**0.0656**	**0.0452 J**	**0.092 J**	**0.0766 J**
PCB-098	0.0115 U	0.0106 U	0.0119 UJ	0.01 UJ	0.013 U	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-099	**3.07**	**2.82**	**5.95 J**	**1.66 J**	**1.24**	**0.851 J**	**1.91 J**	**1.4 J**
PCB-102	**0.426**	**0.447**	**0.813 J**	**0.262 J**	**0.147**	**0.119 J**	**0.216 J**	**0.213 J**
PCB-103	**0.0591**	**0.0593**	**0.11 J**	**0.0355 J**	**0.0251**	**0.0175 J**	**0.029 J**	**0.0285 J**
PCB-104	**0.00345 J**	0.0106 U	**0.00639 J**	0.01 UJ	0.013 U	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-105	**3.16**	**2.77**	**6.24 J**	**1.7 J**	**1.4**	**0.804 J**	**2.19 J**	**1.61**
PCB-106	0.0115 U	0.0106 U	0.0119 UJ	0.01 UJ	0.013 U	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-107/124	**0.251**	**0.21**	**0.489 J**	**0.13 J**	**0.108**	**0.0616 J**	**0.168 J**	**0.134 J**
PCB-109	**0.405**	**0.361**	**0.797 J**	**0.207 J**	**0.179**	**0.104 J**	**0.28 J**	**0.196 J**
PCB-110	**6.4**	**5.67**	**12.1 J**	**3.26 J**	**2.45**	**1.63 J**	**3.81 J**	**2.89 J**
PCB-111	0.0115 U	0.0106 U	0.0119 UJ	0.01 UJ	0.013 U	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-112	0.0115 U	0.0106 U	0.0119 UJ	0.01 UJ	0.013 U	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-114	**0.207**	**0.185**	**0.418 J**	**0.104 J**	**0.0854**	**0.051 J**	**0.138 J**	**0.107 J**
PCB-115	0.0115 U	0.0106 U	0.0119 UJ	0.01 UJ	0.013 U	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-117	**0.262**	0.0106 U	**0.482 J**	0.01 UJ	**0.0942**	**0.682 J**	**0.131 J**	**1.19 J**
PCB-118	**5.45**	**4.79**	**10.5 J**	**2.89 J**	**2.42**	**1.41 J**	**3.74 J**	**2.78 J**
PCB-120	0.0115 U	**0.0137 J**	0.0119 UJ	0.01 UJ	0.013 U	0.0102 UJ	**0.00676 J**	0.0122 UJ
PCB-121	0.0115 U	0.0106 U	0.0119 UJ	0.01 UJ	0.013 U	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-122	**0.139**	**0.141**	**0.278 J**	**0.0956 J**	**0.0586**	**0.0424 J**	**0.0984 J**	**0.0861 J**
PCB-123	**0.165**	**0.136**	**0.311 J**	**0.0945 J**	**0.0764**	**0.0394 J**	**0.117 J**	**0.0958 J**
PCB-126	**0.0276**	**0.0227 J**	**0.0547 J**	0.01 UJ	**0.0168**	**0.00983 J**	**0.025 J**	0.0122 UJ
PCB-127	0.0115 U	0.0106 U	0.0119 UJ	0.01 UJ	0.013 U	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-128/166	**0.483 J**	**0.413 J**	**0.797 J**	**0.21 J**	**0.197 J**	**0.12 J**	**0.334 J**	**0.225 J**
PCB-129/138/163	**2.49 J**	**2.45 J**	**4.14 J**	**1.13 J**	**0.996 J**	**0.56 J**	**1.56 J**	**1.09 J**
PCB-130	**0.209 J**	**0.211 J**	**0.345 J**	**0.101 J**	**0.0904 J**	**0.0486 J**	**0.138 J**	**0.0974 J**
PCB-131	**0.0426 J**	0.0106 UJ	**0.0844 J**	**0.023 J**	**0.0191 J**	**0.0137 J**	**0.0266 J**	**0.0228 J**
PCB-132	**0.869 J**	**0.84 J**	**1.48 J**	**0.38 J**	**0.307 J**	**0.194 J**	**0.486 J**	**0.387 J**

Appendix A-2
BERA Surface Water Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB066B	PB080	PB080	PB082.1	PB101C
Sample ID:	PB066-1SWMID-20110808-N	PB080-1SWMID-20110808-D	PB080-1SWMID-20110808-N	PB082.1-1SWMID-20110808-N	PB101C-1SWMID-20110808-N
Sample Date:	8/8/2011	8/8/2011	8/8/2011	8/8/2011	8/8/2011
Sample Type:	N	FD	N	N	N
X:	3201384.326	3200769.755	3200769.755	3200777.403	3201307.665
Y:	13831305.66	13830051.11	13830051.11	13829942.54	13828208.48
PCB-081	**0.013**	**0.0215**	**0.0216 J**	**0.0129**	0.00209 U
PCB-082	**0.392**	**0.624**	**0.608**	**0.303**	**0.0176**
PCB-083	**0.14**	**0.234**	**0.22**	**0.108**	**0.0118**
PCB-084	**0.829**	**1.28**	**1.23**	**0.654**	**0.0505**
PCB-085/116	**0.393**	**0.631**	**0.617**	**0.312**	**0.023**
PCB-086/087/097/108/119/125	**1.66**	**2.63**	**2.6**	**1.32**	**0.107**
PCB-088	**0.236**	**0.363**	**0.3565**	**0.183**	**0.01395**
PCB-089	**0.0801**	**0.123**	**0.119**	**0.0626**	**0.00383 J**
PCB-090/101/113	**1.75**	**2.78**	**2.75**	**1.4**	**0.135**
PCB-091	**0.236**	**0.363**	**0.3565**	**0.183**	**0.01395**
PCB-092	**0.325**	**0.536**	**0.526**	**0.266**	**0.0259**
PCB-093/100	**0.0424**	**0.0685**	**0.0687**	**0.0333**	**0.00271 J**
PCB-094	**0.026**	**0.0383**	**0.0385**	**0.0198**	0.0028 U
PCB-095	**1.75**	**2.69**	**2.6**	**1.37**	**0.113**
PCB-096	**0.0514**	**0.0812**	**0.0792**	**0.0433**	**0.00265 J**
PCB-098	**0.07**	**0.1095**	**0.108**	**0.058**	**0.00346 J**
PCB-099	**0.98**	**1.61**	**1.61**	**0.803**	**0.0661**
PCB-102	**0.07**	**0.1095**	**0.108**	**0.058**	**0.00346 J**
PCB-103	**0.019**	**0.0264**	**0.0284**	**0.0145**	0.00239 U
PCB-104	**0.00117 J**	0.00116 U	0.00208 U	0.0013 U	0.000919 U
PCB-105	**0.808**	**1.28**	**1.31**	**0.618**	**0.0475**
PCB-106	0.00251 U	0.00495 U	0.00584 U	0.00318 U	0.00183 U
PCB-107/124	**0.0633**	**0.1**	**0.109**	**0.051**	**0.00513 J**
PCB-109	**0.121**	**0.194**	**0.205**	**0.105**	**0.00859 J**
PCB-110	**1.095**	**1.74**	**1.735**	**0.86**	**0.073**
PCB-111	0.00159 U	0.00284 U	0.00307 U	0.00244 U	0.00193 U
PCB-112	**0.0149**	**0.0151**	0.00327 U	0.00259 U	0.00205 U
PCB-114	**0.0552**	**0.0816**	**0.0835**	**0.0425**	**0.00335 J**
PCB-115	**1.095**	**1.74**	**1.735**	**0.86**	**0.073**
PCB-117	**0.197**	**0.315**	**0.309**	**0.156**	**0.011**
PCB-118	**1.39**	**2.11**	**2.21**	**1.08**	**0.104**
PCB-120	**0.00344 J**	**0.00496 J**	**0.00629 J**	0.00236 U	0.00187 U
PCB-121	0.0016 U	0.00286 U	0.0031 U	0.00246 U	0.00195 U
PCB-122	**0.033**	**0.0531**	**0.0514**	**0.0253**	0.00193 U
PCB-123	**0.0394**	**0.0643**	**0.0624**	**0.0295**	**0.00586 J**
PCB-126	**0.00663 J**	**0.00976 J**	**0.013 J**	0.00332 U	0.00196 U
PCB-127	0.00248 U	0.00489 U	0.00577 U	0.00314 U	0.00181 U
PCB-128/166	**0.108**	**0.168**	**0.176**	**0.0854**	0.0127 U
PCB-129/138/163	**0.593**	**0.94**	**0.952**	**0.476**	0.0841 U
PCB-130	**0.0413**	**0.0696**	**0.0662**	**0.0334**	0.00578 U
PCB-131	**0.0113**	**0.0166**	**0.0198**	**0.00801 J**	0.00174 U
PCB-132	**0.211**	**0.328**	**0.338**	**0.164**	0.0289 U

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB006	PB006	PB006	PB006	PB006	PB006	PB031	PB031
Sample ID:	PB006-1SWMID-091104-D	PB006-1SWMID-091104-N	PB006-1SWMID-091105-D	PB006-1SWMID-091105-N	PB006-1SWNBT-091104-N	PB006-1SWNBT-091105-N	PB031-1SWMID-091104-N	PB031-1SWMID-091105-N
Sample Date:	11/4/2009	11/4/2009	11/5/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	FD	N	FD	N	N	N	N	N
X:	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3201366.8205	3201366.8205
Y:	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13834640.6333	13834640.6333
PCB-133	**0.0232 J**	**0.0234 J**	**0.0237 J**	**0.0273 J**	**0.0435 J**	**0.0298**	**0.0327**	**0.0329**
PCB-134	**0.0756 J**	**0.092 J**	**0.0988 J**	**0.107 J**	**0.164 J**	**0.111**	**0.172**	**0.139**
PCB-135/151	**0.384 J**	**0.412 J**	**0.438 J**	**0.449 J**	**0.714 J**	**0.489**	**0.703**	**0.582**
PCB-136	**0.17 J**	**0.192 J**	**0.191 J**	**0.198 J**	**0.345 J**	**0.208**	**0.34**	**0.254**
PCB-137	**0.0562 J**	**0.0634 J**	**0.0554 J**	**0.0531 J**	**0.12 J**	**0.0764**	**0.127**	**0.0878**
PCB-139/140	**0.0237 J**	**0.0307 J**	**0.0281 J**	**0.0307 J**	**0.0479 J**	**0.0342**	**0.0514**	0.0206 U
PCB-141	**0.201 J**	**0.225 J**	**0.22 J**	**0.225 J**	**0.413 J**	**0.243**	**0.421**	**0.322**
PCB-142	0.012 UJ	0.0118 UJ	0.0106 UJ	0.00935 UJ	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-143	0.012 UJ	0.0118 UJ	0.0106 UJ	0.00935 UJ	0.0111 UJ	0.012 U	**0.00771 J**	0.0103 U
PCB-144	**0.0593 J**	**0.0614 J**	**0.061 J**	**0.066 J**	**0.11 J**	**0.0704**	**0.111**	**0.0849**
PCB-145	0.012 UJ	0.0118 UJ	0.0106 UJ	0.00935 UJ	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-146	**0.172 J**	**0.189 J**	**0.193 J**	**0.196 J**	**0.333 J**	**0.218**	**0.286**	**0.237**
PCB-147/149	**0.851 J**	**0.952 J**	**0.968 J**	**1.02 J**	**1.62 J**	**1.1**	**1.56**	**1.32**
PCB-148	0.012 UJ	0.0118 UJ	0.0106 UJ	0.00935 UJ	0.0111 UJ	0.012 U	**0.00277 J**	0.0103 U
PCB-150	0.012 UJ	0.0118 UJ	0.0106 UJ	0.00935 UJ	**0.00633 J**	0.012 U	**0.00548 J**	0.0103 U
PCB-152	0.012 UJ	0.0118 UJ	0.0106 UJ	0.00935 UJ	**0.00483 J**	0.012 U	**0.00616 J**	0.0103 U
PCB-153/168	**0.888 J**	**0.966 J**	**1.01 J**	**1.05 J**	**1.78 J**	**1.14**	**1.64**	**1.38**
PCB-154	**0.0295 J**	**0.0282 J**	**0.0365 J**	**0.034 J**	**0.0523 J**	**0.0378**	**0.0369**	**0.0368**
PCB-155	**0.0034 J**	0.0118 U	**0.00474 J**	**0.00355 J**	**0.00677 J**	0.012 U	0.0132 U	0.0103 U
PCB-156/157	**0.157**	**0.173 J**	**0.167**	**0.176**	**0.324 J**	**0.209**	**0.348**	**0.26**
PCB-158	**0.123 J**	**0.134 J**	**0.137 J**	**0.141 J**	**0.249 J**	**0.156**	**0.264**	**0.196**
PCB-159	**0.0123 J**	**0.00994 J**	0.0106 UJ	**0.00899 J**	0.0111 UJ	**0.0115 J**	**0.0178**	0.0103 U
PCB-160	0.012 UJ	0.0118 UJ	0.0106 UJ	0.00935 UJ	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-161	0.012 UJ	0.0118 UJ	0.0106 UJ	0.00935 UJ	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-162	0.012 UJ	0.0118 UJ	0.0106 UJ	**0.00351 J**	0.0111 UJ	**0.00542 J**	**0.00754 J**	0.0103 U
PCB-164	**0.0821 J**	**0.0757 J**	**0.099 J**	**0.104 J**	**0.162 J**	**0.0981**	**0.158**	**0.134**
PCB-165	0.012 UJ	0.0118 UJ	0.0106 UJ	0.00935 UJ	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-167	**0.0508**	**0.0562 J**	**0.0545**	**0.0613**	**0.102 J**	**0.0645**	**0.106**	**0.0828**
PCB-169	0.012 UJ	0.0118 UJ	0.0106 UJ	0.00935 UJ	**0.012 J**	0.012 U	**0.00566 J**	0.0103 U
PCB-170	**0.166**	**0.186 J**	**0.182**	**0.192**	**0.329 J**	**0.204**	**0.286**	**0.251**
PCB-171/173	**0.0751**	**0.0732 J**	**0.0763**	**0.0902**	**0.131 J**	**0.0903**	**0.112**	**0.106**
PCB-172	**0.042**	**0.0393 J**	**0.0463**	**0.0518**	**0.0712 J**	**0.056**	**0.0622**	**0.0588**
PCB-174	**0.188**	**0.205 J**	**0.203**	**0.23**	**0.342 J**	**0.231**	**0.301**	**0.273**
PCB-175	**0.0163**	**0.0151 J**	**0.0184 J**	**0.0192**	**0.0268 J**	**0.0229**	**0.0203**	**0.0201**
PCB-176	**0.0277**	**0.0293 J**	**0.0314**	**0.0301**	**0.0524 J**	**0.0367**	**0.0461**	**0.041**
PCB-177	**0.121**	**0.127 J**	**0.135**	**0.154**	**0.224 J**	**0.157**	**0.184**	**0.175**
PCB-178	**0.0569**	**0.0593 J**	**0.058**	**0.0589**	**0.0928 J**	**0.0616**	**0.0824**	**0.0713**
PCB-179	**0.0898**	**0.0928 J**	**0.0983**	**0.0989**	**0.166 J**	**0.107**	**0.152**	**0.127**
PCB-180/193	**0.558**	**0.592 J**	**0.613**	**0.639**	**1.04 J**	**0.685**	**0.893**	**0.819**
PCB-181	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	**0.00833 J**	**0.00563 J**	**0.00533 J**	0.0103 U
PCB-182	0.012 U	0.0118 UJ	0.0106 U	**0.00448 J**	**0.00434 J**	0.012 U	0.0132 U	0.0103 U
PCB-183	**0.142**	**0.151 J**	**0.148**	**0.166**	**0.265 J**	**0.173**	**0.221**	**0.201**

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB031	PB031	PB059	PB059	PB076	PB076	PB076	PB076
Sample ID:	PB031-1SWNBT-091104-N	PB031-1SWNBT-091105-N	PB059-1SWMID-091104-N	PB059-1SWMID-091105-N	PB076-1SWMID-091104-N	PB076-1SWMID-091105-N	PB076-1SWNBT-091104-N	PB076-1SWNBT-091105-N
Sample Date:	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	N	N	N	N	N	N	N	N
X:	3201366.8205	3201366.8205	3201646.6295	3201646.6295	3200819.7773	3200819.7773	3200819.7773	3200819.7773
Y:	13834640.6333	13834640.6333	13831831.4316	13831831.4316	13830437.4855	13830437.4855	13830437.4855	13830437.4855
PCB-133	**0.0366 J**	**0.04 J**	**0.0563 J**	**0.0134 J**	**0.0116 J**	0.0102 UJ	**0.0212 J**	0.0122 UJ
PCB-134	**0.182 J**	**0.174 J**	**0.296 J**	**0.0877 J**	**0.0699 J**	**0.053 J**	**0.103 J**	**0.0874 J**
PCB-135/151	**0.681 J**	**0.718 J**	**1.11 J**	**0.29 J**	**0.223 J**	**0.172 J**	**0.358 J**	**0.28 J**
PCB-136	**0.347 J**	**0.315 J**	**0.569 J**	**0.144 J**	**0.111 J**	**0.0713 J**	**0.175 J**	**0.133 J**
PCB-137	**0.126 J**	**0.111 J**	**0.244 J**	**0.0617 J**	**0.0577 J**	**0.032 J**	**0.0908 J**	**0.0676 J**
PCB-139/140	**0.0498 J**	**0.0518 J**	**0.0966 J**	**0.0241 J**	**0.0204 J**	**0.0149 J**	**0.033 J**	**0.0254 J**
PCB-141	**0.43 J**	**0.413 J**	**0.712 J**	**0.19 J**	**0.164 J**	**0.0847 J**	**0.26 J**	**0.184 J**
PCB-142	0.0115 UJ	0.0106 UJ	0.0119 UJ	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-143	0.0115 UJ	0.0106 UJ	**0.024 J**	0.01 UJ	0.013 UJ	0.0102 UJ	**0.00474 J**	0.0122 UJ
PCB-144	**0.113 J**	**0.108 J**	**0.195 J**	**0.0497 J**	**0.0369 J**	**0.0296 J**	**0.0635 J**	**0.0481 J**
PCB-145	0.0115 UJ	0.0106 UJ	0.0119 UJ	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-146	**0.287 J**	**0.294 J**	**0.437 J**	**0.115 J**	**0.107 J**	**0.0627 J**	**0.174 J**	**0.122 J**
PCB-147/149	**1.54 J**	**1.63 J**	**2.43 J**	**0.652 J**	**0.487 J**	**0.347 J**	**0.795 J**	**0.607 J**
PCB-148	**0.00377 J**	**0.00299 J**	0.0119 UJ	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-150	**0.00561 J**	0.0106 UJ	**0.00502 J**	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-152	**0.00662 J**	0.0106 UJ	**0.0092 J**	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-153/168	**1.63 J**	**1.66 J**	**2.5 J**	**0.704 J**	**0.607 J**	**0.361 J**	**0.984 J**	**0.673 J**
PCB-154	**0.0412 J**	**0.0481 J**	**0.0485 J**	0.01 UJ	**0.0115 J**	**0.00883 J**	**0.0219 J**	0.0122 UJ
PCB-155	0.0115 U	0.0106 U	0.0119 UJ	0.01 UJ	0.013 U	0.0102 U	0.0125 UJ	0.0122 UJ
PCB-156/157	**0.351**	**0.338**	**0.632 J**	**0.16 J**	**0.156**	**0.0823 J**	**0.24 J**	**0.167 J**
PCB-158	**0.26 J**	**0.246 J**	**0.445 J**	**0.114 J**	**0.106 J**	**0.0598 J**	**0.169 J**	**0.113 J**
PCB-159	**0.0182 J**	0.0106 UJ	**0.0233 J**	0.01 UJ	0.013 UJ	0.0102 UJ	**0.0102 J**	0.0122 UJ
PCB-160	0.0115 UJ	0.0106 UJ	0.0119 UJ	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-161	0.0115 UJ	0.0106 UJ	0.0119 UJ	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-162	**0.00829 J**	0.0106 UJ	**0.0127 J**	0.01 UJ	0.013 UJ	0.0102 UJ	**0.00675 J**	0.0122 UJ
PCB-164	**0.162 J**	**0.166 J**	**0.239 J**	**0.0693 J**	**0.0563 J**	**0.0354 J**	**0.0901 J**	**0.0615 J**
PCB-165	0.0115 UJ	0.0106 UJ	0.0119 UJ	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-167	**0.112**	**0.103**	**0.182 J**	**0.0467 J**	**0.048**	**0.0249 J**	**0.0758 J**	**0.054 J**
PCB-169	0.0115 UJ	0.0106 UJ	0.0119 UJ	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-170	**0.284 J**	**0.31**	**0.4 J**	**0.104 J**	**0.103 J**	**0.0499 J**	**0.161 J**	**0.099 J**
PCB-171/173	**0.118 J**	**0.127**	**0.162 J**	**0.0437 J**	**0.0432 J**	**0.02 J**	**0.0663 J**	**0.0425 J**
PCB-172	**0.0612 J**	**0.074**	**0.0868 J**	**0.0256 J**	**0.0231 J**	**0.0133 J**	**0.0373 J**	**0.0281 J**
PCB-174	**0.328 J**	**0.339**	**0.42 J**	**0.106 J**	**0.105 J**	**0.0548 J**	**0.167 J**	**0.11 J**
PCB-175	**0.0206 J**	**0.0268**	**0.0286 J**	**0.00745 J**	**0.00677 J**	0.0102 UJ	**0.0151 J**	0.0122 UJ
PCB-176	**0.0445 J**	**0.0466**	**0.0524 J**	**0.0136 J**	**0.011 J**	**0.00737 J**	**0.02 J**	**0.0131 J**
PCB-177	**0.201 J**	**0.217**	**0.255 J**	**0.064 J**	**0.0617 J**	**0.041 J**	**0.104 J**	**0.0689 J**
PCB-178	**0.0782 J**	**0.0776**	**0.104 J**	**0.0264 J**	**0.0261 J**	**0.0107 J**	**0.0388 J**	**0.0241 J**
PCB-179	**0.158 J**	**0.156**	**0.205 J**	**0.0483 J**	**0.0394 J**	**0.0256 J**	**0.0713 J**	**0.0505 J**
PCB-180/193	**0.899 J**	**0.98**	**1.24 J**	**0.327 J**	**0.317 J**	**0.149 J**	**0.5 J**	**0.326 J**
PCB-181	**0.0065 J**	**0.00786 J**	**0.0082 J**	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-182	0.0115 UJ	0.0106 U	0.0119 UJ	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-183	**0.245 J**	**0.239**	**0.31 J**	**0.0787 J**	**0.0851 J**	**0.0448 J**	**0.134 J**	**0.0838 J**

Appendix A-2
BERA Surface Water Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB066B	PB080	PB080	PB082.1	PB101C
Sample ID:	PB066-1SWMID-20110808-N	PB080-1SWMID-20110808-D	PB080-1SWMID-20110808-N	PB082.1-1SWMID-20110808-N	PB101C-1SWMID-20110808-N
Sample Date:	8/8/2011	8/8/2011	8/8/2011	8/8/2011	8/8/2011
Sample Type:	N	FD	N	N	N
X:	3201384.326	3200769.755	3200769.755	3200777.403	3201307.665
Y:	13831305.66	13830051.11	13830051.11	13829942.54	13828208.48
PCB-133	**0.00711 J**	**0.0125**	**0.0123**	**0.00611 J**	0.00157 U
PCB-134	**0.0339**	**0.0555**	**0.0574**	**0.0283 J**	0.00506 U
PCB-135/151	**0.146**	**0.244**	**0.246**	**0.123**	0.0237 U
PCB-136	**0.0758**	**0.12**	**0.124**	**0.0639**	0.0116 U
PCB-137	**0.0352**	**0.0562**	**0.0568**	**0.0282**	0.00417 U
PCB-139/140	**0.0137 J**	**0.02 J**	**0.0207 J**	**0.0107 J**	0.00147 U
PCB-141	**0.0916**	**0.151**	**0.152**	**0.0745**	0.0145 U
PCB-142	0.00166 U	0.00177 U	0.00275 U	0.0023 U	0.00166 U
PCB-143	**0.00307 J**	**0.00379 J**	**0.00507 J**	0.00219 U	0.00158 U
PCB-144	**0.0229**	**0.0382**	**0.0399**	**0.0197**	0.00404 U
PCB-145	0.000728 U	0.000886 U	0.00114 U	0.00184 U	0.000647 U
PCB-146	**0.0695**	**0.109**	**0.117**	**0.0555**	0.0124 U
PCB-147/149	**0.353**	**0.57**	**0.567**	**0.29**	0.0568 U
PCB-148	0.000907 U	0.0011 U	0.00141 U	0.0023 U	0.000806 U
PCB-150	0.000702 U	**0.00161 J**	**0.00193 J**	0.00177 U	0.000623 U
PCB-152	**0.00172 J**	**0.00224 J**	**0.0024 J**	0.00176 U	0.000617 U
PCB-153/168	**0.367**	**0.592**	**0.608**	**0.292**	0.0626 U
PCB-154	**0.00588 J**	**0.0101 J**	**0.00926 J**	**0.00492 J**	**0.00117 J**
PCB-155	0.000627 U	**0.000945 J**	0.000982 U	0.00159 U	**0.00076 J**
PCB-156/157	**0.0709**	**0.112**	**0.121**	**0.0555**	0.009 U
PCB-158	**0.0614**	**0.1**	**0.101**	**0.0476**	0.00833 U
PCB-159	0.00168 U	0.00188 U	0.0025 U	0.00176 U	0.00111 U
PCB-160	0.0012 U	0.00128 U	0.00198 U	0.00166 U	0.0012 U
PCB-161	0.00115 U	0.00122 U	0.00189 U	0.00159 U	0.00115 U
PCB-162	**0.0021 J**	**0.00326 J**	**0.00362 J**	0.00168 U	0.00106 U
PCB-164	**0.0387**	**0.064**	**0.0616**	**0.0313**	0.00622 U
PCB-165	0.00127 U	0.00135 U	0.00209 U	0.00175 U	0.00127 U
PCB-167	**0.0214**	**0.0346**	**0.0362**	**0.0176**	0.00315 U
PCB-169	0.00134 U	0.0016 U	0.00202 U	0.00145 U	0.000936 U
PCB-170	**0.0743**	**0.116**	**0.117**	**0.0534**	0.0128 U
PCB-171/173	**0.0229**	**0.0372**	**0.0386**	**0.0189 J**	0.005 U
PCB-172	**0.0125**	**0.0231**	**0.0207**	**0.00955 J**	**0.00239 J**
PCB-174	**0.0672**	**0.101**	**0.105**	**0.0507**	0.015 U
PCB-175	**0.00307 J**	**0.00536 J**	**0.00511 J**	**0.00276 J**	0.000755 U
PCB-176	**0.0089 J**	**0.0151**	**0.0152**	**0.00726 J**	0.00246 U
PCB-177	**0.0401**	**0.0673**	**0.0675**	**0.0313**	0.00836 U
PCB-178	**0.0146**	**0.0239**	**0.0247**	**0.0126 J**	0.0037 U
PCB-179	**0.031**	**0.049**	**0.0479**	**0.0239**	0.00734 U
PCB-180/193	**0.139**	**0.22**	**0.232**	**0.108**	0.0309 U
PCB-181	0.00138 U	0.0016 U	**0.00233 J**	0.00278 U	0.000851 U
PCB-182	0.00118 U	0.00223 U	0.00123 U	0.00197 U	0.000776 U
PCB-183	**0.02345**	**0.0367**	**0.04**	**0.0186**	0.00585 U

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB006	PB006	PB006	PB006	PB006	PB006	PB031	PB031
Sample ID:	PB006-1SWMID-091104-D	PB006-1SWMID-091104-N	PB006-1SWMID-091105-D	PB006-1SWMID-091105-N	PB006-1SWNBT-091104-N	PB006-1SWNBT-091105-N	PB031-1SWMID-091104-N	PB031-1SWMID-091105-N
Sample Date:	11/4/2009	11/4/2009	11/5/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	FD	N	FD	N	N	N	N	N
X:	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3201366.8205	3201366.8205
Y:	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13834640.6333	13834640.6333
PCB-184	0.012 U	0.0118 UJ	0.0106 U	**0.00308 J**	**0.00615 J**	0.012 U	0.0132 U	0.0103 U
PCB-185	**0.021**	**0.0269 J**	0.0106 U	**0.0324**	**0.0258 J**	**0.0206 J**	**0.0231**	**0.0247 J**
PCB-186	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-187	**0.251**	**0.276 J**	**0.281**	**0.328**	**0.437 J**	**0.324**	**0.366**	**0.355**
PCB-188	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	**0.00412 J**	**0.00283 J**	0.0132 U	0.0103 U
PCB-189	**0.0129**	**0.0133 J**	**0.00915 J**	**0.0122**	**0.02 J**	**0.0154**	**0.0184**	**0.0144**
PCB-190	**0.0496**	**0.0523 J**	**0.0469 J**	**0.0574**	**0.0804 J**	**0.0564**	**0.0697**	**0.0722**
PCB-191	**0.00789 J**	**0.0117 J**	0.0106 U	0.00935 U	**0.0203 J**	**0.0115 J**	**0.0137**	**0.0171**
PCB-192	0.012 U	0.0118 UJ	0.0106 U	0.00935 U	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-194	**0.102 J**	**0.107 J**	**0.0999**	**0.111 J**	**0.172 J**	**0.12**	**0.142**	**0.137**
PCB-195	**0.038 J**	**0.0509 J**	**0.043**	**0.0502 J**	**0.0718 J**	**0.0509**	**0.0599**	**0.0522**
PCB-196	**0.0557 J**	**0.0559 J**	**0.0519 J**	**0.0499 J**	**0.0896 J**	**0.0641**	**0.0741**	**0.0755**
PCB-197	**0.0158 J**	**0.015 J**	**0.016**	**0.015 J**	**0.0233 J**	**0.0146 J**	**0.011 J**	**0.0149**
PCB-198/199	**0.124 J**	**0.116 J**	**0.136**	**0.117 J**	**0.2 J**	**0.142**	**0.178**	**0.166**
PCB-200	**0.0188 J**	**0.0208 J**	**0.0183 J**	**0.0198 J**	**0.0324 J**	**0.0228**	**0.0282**	**0.0209 J**
PCB-201	**0.0283 J**	**0.0286 J**	**0.0309**	**0.0291 J**	**0.0462 J**	**0.0314 J**	**0.0317**	**0.0279**
PCB-202	**0.0656**	**0.0667 J**	**0.064 J**	**0.0708**	**0.0936**	**0.0729**	**0.0465**	**0.0523**
PCB-203	**0.0568 J**	**0.0589 J**	**0.0665**	**0.0514 J**	**0.101 J**	**0.0634**	**0.0812**	**0.0723**
PCB-204	0.012 UJ	0.0118 UJ	0.0106 U	0.00935 UJ	0.0111 UJ	0.012 U	0.0132 U	0.0103 U
PCB-205	**0.0137 J**	**0.0178 J**	0.0106 U	0.00935 UJ	**0.0173 J**	**0.0141**	**0.0116 J**	**0.0125 J**
PCB-206	**0.17 J**	**0.188 J**	**0.184**	**0.179 J**	**0.241 J**	**0.189**	**0.125**	**0.16**
PCB-207	**0.125 J**	**0.131 J**	**0.123**	**0.102 J**	**0.149 J**	**0.118**	**0.0515**	**0.0889**
PCB-208	**0.183**	**0.184 J**	**0.176**	**0.171**	**0.219**	**0.173**	**0.0797**	**0.127**
PCB-209	**7.78 J**	**8.14 J**	**8**	**7.97 J**	**9.52 J**	**7.6 J**	**2.1**	**4.72**
Total PCB Congener (U = 1/2)	**96.4**	**97.5**	**98.1**	**103**	**174**	**112**	**234**	**156**
Total PCB Congener minus 209 (U = 1/2)	**88.6**	**89.4**	**90.1**	**95.1**	**164**	**104**	**232**	**151**
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	**0.0232**	**0.0242**	**0.0230**	**0.0243**	**0.0472**	**0.0260**	**0.0630**	**0.0396**
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	**0.000128**	**0.000135**	**0.000131**	**9.76E-05**	**0.000262**	**0.000138**	**0.000332**	**0.000216**
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	**0.0015642**	**0.00161**	**0.00165**	**0.000786**	**0.00316**	**0.00165**	**0.00361**	**0.00242**
Monochlorobiphenyls (total)	**0.0208 J**	**0.024 J**	**0.0201 J**	**0.0139 J**	**0.0403 J**	**0.0147 J**	**0.0564 J**	**0.024**
Dichlorobiphenyls (total)	**1.03**	**1.07 J**	**0.783**	**0.823**	**1.76**	**0.985**	**3.69**	**1.73**
Trichlorobiphenyls (total)	**17.5**	**17.7 J**	**15.8**	**16.2 J**	**31.8 J**	**18.5**	**53.1**	**30.8**
Tetrachlorobiphenyls (total)	**43.1 J**	**42.3 J**	**44.4**	**47.3 J**	**78.3 J**	**51.3**	**115**	**75**
Pentachlorobiphenyls (total)	**18.6 J**	**19.3 J**	**19.8 J**	**21.2**	**36.5 J**	**23.2**	**45.3**	**31.2 J**
Hexachlorobiphenyls (total)	**5.33 J**	**5.85 J**	**5.99 J**	**6.25 J**	**10.5 J**	**6.82**	**10.5**	**8.26**
Heptachlorobiphenyls (total)	**1.83**	**1.95 J**	**1.95 J**	**2.17 J**	**3.35 J**	**2.26 J**	**2.86**	**2.63 J**
Octachlorobiphenyls (total)	**0.519 J**	**0.538 J**	**0.526 J**	**0.514 J**	**0.848 J**	**0.596 J**	**0.664**	**0.632 J**
Nonachlorobiphenyls (total)	**0.479 J**	**0.503 J**	**0.483**	**0.453 J**	**0.609 J**	**0.481**	**0.256**	**0.376**

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB031	PB031	PB059	PB059	PB076	PB076	PB076	PB076
Sample ID:	PB031-1SWNBT-091104-N	PB031-1SWNBT-091105-N	PB059-1SWMID-091104-N	PB059-1SWMID-091105-N	PB076-1SWMID-091104-N	PB076-1SWMID-091105-N	PB076-1SWNBT-091104-N	PB076-1SWNBT-091105-N
Sample Date:	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	N	N	N	N	N	N	N	N
X:	3201366.8205	3201366.8205	3201646.6295	3201646.6295	3200819.7773	3200819.7773	3200819.7773	3200819.7773
Y:	13834640.6333	13834640.6333	13831831.4316	13831831.4316	13830437.4855	13830437.4855	13830437.4855	13830437.4855
PCB-184	0.0115 UJ	0.0106 U	0.0119 UJ	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-185	**0.0316 J**	**0.0357**	**0.0511 J**	**0.0117 J**	**0.0109 J**	**0.00532 J**	**0.0195 J**	**0.0107 J**
PCB-186	0.0115 UJ	0.0106 U	0.0119 UJ	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-187	**0.416 J**	**0.445**	**0.516 J**	**0.141 J**	**0.138 J**	**0.0854 J**	**0.226 J**	**0.157 J**
PCB-188	0.0115 U	0.0106 U	0.0119 U	0.01 UJ	0.013 U	0.0102 UJ	0.0125 U	0.0122 UJ
PCB-189	**0.0175 J**	**0.0172 J**	**0.024 J**	**0.00589 J**	**0.00461 J**	0.0102 UJ	**0.0109 J**	0.0122 UJ
PCB-190	**0.0675 J**	**0.0838**	**0.0981 J**	**0.0257 J**	**0.0264 J**	**0.0137 J**	**0.0363 J**	**0.0212 J**
PCB-191	**0.0127 J**	0.0106 U	**0.0219 J**	**0.0051 J**	0.013 UJ	0.0102 UJ	**0.00969 J**	0.0122 UJ
PCB-192	0.0115 UJ	0.0106 U	0.0119 UJ	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-194	**0.135 J**	**0.159 J**	**0.183 J**	**0.0446 J**	**0.0465 J**	**0.0224 J**	**0.078 J**	**0.0487 J**
PCB-195	**0.0677 J**	**0.0635 J**	**0.0764 J**	**0.0167 J**	**0.0247 J**	**0.0104 J**	**0.033 J**	**0.0233 J**
PCB-196	**0.063 J**	**0.0834 J**	**0.0975 J**	**0.0267 J**	**0.0209 J**	**0.00964 J**	**0.0313 J**	**0.0222 J**
PCB-197	**0.00849 J**	**0.0127 J**	**0.0127 J**	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	**0.00518 J**
PCB-198/199	**0.147 J**	**0.19 J**	**0.207 J**	**0.0594 J**	**0.0506 J**	**0.0214 J**	**0.0749 J**	**0.0474 J**
PCB-200	**0.0296 J**	**0.0305 J**	**0.0338 J**	**0.0104 J**	**0.0108 J**	0.0102 UJ	**0.0114 J**	0.0122 UJ
PCB-201	**0.0313 J**	**0.0337 J**	**0.035 J**	**0.0117 J**	**0.00832 J**	0.0102 UJ	**0.0168 J**	**0.013 J**
PCB-202	**0.0479**	**0.054**	**0.0561 J**	**0.0169 J**	**0.0137**	**0.00626 J**	**0.0231 J**	**0.0148 J**
PCB-203	**0.0662 J**	**0.0801 J**	**0.102 J**	**0.0308 J**	**0.0269 J**	**0.0103 J**	**0.0361 J**	**0.0258 J**
PCB-204	0.0115 UJ	0.0106 UJ	0.0119 UJ	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-205	**0.0113 J**	0.0106 UJ	**0.011 J**	0.01 UJ	0.013 UJ	0.0102 UJ	0.0125 UJ	0.0122 UJ
PCB-206	**0.113 J**	**0.157 J**	**0.089 J**	**0.0246 J**	**0.0243 J**	0.0102 UJ	**0.0327 J**	**0.0312 J**
PCB-207	**0.0499 J**	**0.0639 J**	**0.0275 J**	**0.0075 J**	0.013 UJ	0.0102 UJ	**0.0103 J**	0.0122 UJ
PCB-208	**0.0781 J**	**0.0999**	**0.0456 J**	**0.0126 J**	**0.00989 J**	0.0102 UJ	**0.0186 J**	**0.0113 J**
PCB-209	**2.31 J**	**3.52 J**	**0.542 J**	**0.163 J**	**0.0916 J**	**0.245 J**	**0.144 J**	**0.685 J**
Total PCB Congener (U = 1/2)	**230**	**197**	**431**	**135**	**81.0**	**58.9**	**117**	**94.0**
Total PCB Congener minus 209 (U = 1/2)	**228**	**194**	**430**	**135**	**80.9**	**58.6**	**117**	**93.3**
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	**0.0622**	**0.0505**	**0.11841512**	**0.0326**	**0.0238**	**0.0139**	**0.0372**	**0.0293**
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	**0.000319**	**0.000261**	**0.000620**	**0.000122**	**0.000155**	**8.86E-05**	**0.000236**	**0.000119**
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	**0.00334**	**0.00278**	**0.00643**	**0.000866**	**0.00205**	**0.00123**	**0.00295**	**0.000997**
Monochlorobiphenyls (total)	**0.0758 J**	**0.0251 J**	**0.204 J**	**0.0769 J**	**0.0608**	**0.05 J**	**0.0726 J**	**0.0541 J**
Dichlorobiphenyls (total)	**3.77**	**2.21 J**	**8.33 J**	**2.9 J**	**1.42**	**1.21 J**	**1.83 J**	**1.41 J**
Trichlorobiphenyls (total)	**54.8**	**38.8 J**	**101 J**	**33.3 J**	**16.6**	**12.9 J**	**23.3 J**	**17.7 J**
Tetrachlorobiphenyls (total)	**109**	**96.4 J**	**211 J**	**68 J**	**39.7**	**29 J**	**56.3 J**	**46.7 J**
Pentachlorobiphenyls (total)	**45.6**	**41.5 J**	**87.7 J**	**24.5 J**	**17.7**	**12.2 J**	**27.2 J**	**21.4 J**
Hexachlorobiphenyls (total)	**10.5 J**	**10.3 J**	**17.1 J**	**4.57 J**	**3.88 J**	**2.37 J**	**6.22 J**	**4.44 J**
Heptachlorobiphenyls (total)	**2.99 J**	**3.18 J**	**3.98 J**	**1.03 J**	**1 J**	**0.521 J**	**1.62 J**	**1.04 J**
Octachlorobiphenyls (total)	**0.608 J**	**0.707 J**	**0.814 J**	**0.217 J**	**0.202 J**	**0.0803 J**	**0.304 J**	**0.2 J**
Nonachlorobiphenyls (total)	**0.241 J**	**0.321 J**	**0.162 J**	**0.0447 J**	**0.0342 J**	0 UJ	**0.0616 J**	**0.0425 J**

Appendix A-2
BERA Surface Water Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB066B	PB080	PB080	PB082.1	PB101C
Sample ID:	PB066-1SWMID-20110808-N	PB080-1SWMID-20110808-D	PB080-1SWMID-20110808-N	PB082.1-1SWMID-20110808-N	PB101C-1SWMID-20110808-N
Sample Date:	8/8/2011	8/8/2011	8/8/2011	8/8/2011	8/8/2011
Sample Type:	N	FD	N	N	N
X:	3201384.326	3200769.755	3200769.755	3200777.403	3201307.665
Y:	13831305.66	13830051.11	13830051.11	13829942.54	13828208.48
PCB-184	0.000847 U	0.00161 U	0.000883 U	0.00142 U	0.000559 U
PCB-185	**0.02345**	**0.0367**	**0.04**	**0.0186**	0.00585 U
PCB-186	0.000932 U	0.00177 U	0.000972 U	0.00156 U	0.000615 U
PCB-187	**0.0737**	**0.119**	**0.132**	**0.056**	0.0189 U
PCB-188	0.00105 U	0.00197 U	0.00111 U	0.00165 U	0.000688 U
PCB-189	**0.00327 J**	**0.00513 J**	**0.00559 J**	**0.00375 J**	**0.00116 J**
PCB-190	**0.0146**	**0.0227**	**0.0231**	**0.0107 J**	**0.00316 J**
PCB-191	**0.0031 J**	**0.00442 J**	**0.00543 J**	0.0023 U	0.000705 U
PCB-192	0.00117 U	0.00136 U	0.00158 U	0.00236 U	0.000722 U
PCB-194	**0.0257**	**0.0382**	**0.0454**	**0.0222**	0.00657 U
PCB-195	**0.00951 J**	0.0133 U	**0.0189**	**0.00825 J**	0.0028 U
PCB-196	**0.0145**	**0.0225**	**0.0233**	**0.0108 J**	0.00401 U
PCB-197	**0.00279 J**	**0.004665 J**	**0.004425 J**	**0.001975 J**	**0.000815 J**
PCB-198/199	**0.0328**	**0.0529**	**0.0586**	**0.0258**	0.00879 U
PCB-200	**0.00279 J**	**0.004665 J**	**0.004425 J**	**0.001975 J**	**0.000815 J**
PCB-201	**0.00441 J**	**0.00718 J**	**0.00776 J**	**0.00351 J**	0.00159 U
PCB-202	**0.00765 J**	**0.0128**	**0.0139**	**0.00583 J**	**0.00288 J**
PCB-203	**0.0154**	**0.0271**	**0.0258**	**0.0114 J**	0.00511 U
PCB-204	0.00058 U	0.0011 U	0.0013 U	0.001 U	0.000642 U
PCB-205	0.002 U	0.00908 U	0.00488 U	0.00213 U	0.00116 U
PCB-206	**0.0179**	**0.0431**	**0.0356**	**0.0181 J**	**0.00402 J**
PCB-207	**0.00855 J**	**0.0108 J**	**0.0131**	**0.00645 J**	0.00187 U
PCB-208	**0.00926 J**	**0.0138 J**	**0.0162 J**	**0.00662 J**	**0.00234 J**
PCB-209	**0.353**	**1.07**	**0.965**	**0.267**	0.00943 U
Total PCB Congener (U = 1/2)	**100 J**	**147 J**	**143 J**	**79.9 J**	**5.65 J**
Total PCB Congener minus 209 (U = 1/2)	--	--	--	--	--
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	**0.02**	**0.03**	**0.03**	**0.01**	**0.001**
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	--	--	--	--	--
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	**0.000789 J**	**0.00116 J**	**0.0015 J**	**0.00027 J**	**0.000119 J**
Monochlorobiphenyls (total)	**0.06**	**0.08**	**0.06**	**0.07**	**0.01**
Dichlorobiphenyls (total)	**2.51**	**3.03**	**2.98**	**2.07**	**0.14**
Trichlorobiphenyls (total)	**31.22**	**39.87**	**41.12**	**23.67**	**1.06**
Tetrachlorobiphenyls (total)	**49.28**	**75.953**	**71.167**	**40.32**	**3.21**
Pentachlorobiphenyls (total)	**13.98**	**22.01**	**21.86**	**11.03**	**0.936**
Hexachlorobiphenyls (total)	**2.391**	**3.829**	**3.904**	**1.93**	**0.187**
Heptachlorobiphenyls (total)	**0.558**	**0.89**	**0.925**	**0.43**	**0.068**
Octachlorobiphenyls (total)	**0.117**	**0.18**	**0.21**	**0.09**	**0.02**
Nonachlorobiphenyls (total)	**0.04**	**0.1**	**0.1**	**0.03**	**0.01**

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB006	PB006	PB006	PB006	PB006	PB006	PB031	PB031
Sample ID:	PB006-1SWMID-091104-D	PB006-1SWMID-091104-N	PB006-1SWMID-091105-D	PB006-1SWMID-091105-N	PB006-1SWNBT-091104-N	PB006-1SWNBT-091105-N	PB031-1SWMID-091104-N	PB031-1SWMID-091105-N
Sample Date:	11/4/2009	11/4/2009	11/5/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	FD	N	FD	N	N	N	N	N
X:	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3201366.8205	3201366.8205
Y:	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13834640.6333	13834640.6333
Pesticides (µg/L)								
2,4'-DDD (o,p'-DDD)	0.00109 U	0.00111 U	0.001 U	0.00119 U	0.00119 UJ	0.00122 U	0.00114 U	0.001 U
2,4'-DDE (o,p'-DDE)	0.00109 U	0.00111 U	0.001 U	0.00119 U	0.00119 UJ	0.00122 U	0.00114 U	0.001 U
2,4'-DDT (o,p'-DDT)	0.00109 U	0.00111 U	0.001 U	0.00119 U	0.00119 UJ	0.00122 U	0.00114 U	0.001 U
4,4'-DDD (p,p'-DDD)	0.00109 U	0.00111 U	0.001 U	0.00119 U	0.00119 UJ	0.00122 U	0.00114 U	0.001 U
4,4'-DDE (p,p'-DDE)	0.00109 U	0.00111 U	0.001 U	0.00119 U	0.00119 UJ	0.00122 U	0.00114 U	0.001 U
4,4'-DDT (p,p'-DDT)	**0.00246 J**	**0.00317 J**	0.001 U	0.00119 U	**0.00187 J**	0.00122 U	**0.00254 J**	0.001 U
Sum 2,4 DDT, DDE, DDD (U=1/2)	0.00109 U	0.00111 U	0.001 U	0.00119 U	0.00119 UJ	0.00122 U	0.00114 U	0.001 U
Sum 4,4 DDT, DDE, DDD (U = 1/2)	**0.00355 J**	**0.00428 J**	0.001 U	0.00119 U	**0.00306 J**	0.00122 U	**0.00368 J**	0.001 U
Sum DDD (U=1/2)	0.00109 U	0.00111 U	0.001 U	0.00119 U	0.00119 UJ	0.00122 U	0.00114 U	0.001 U
Sum DDE (U=1/2)	0.00109 U	0.00111 U	0.001 U	0.00119 U	0.00119 UJ	0.00122 U	0.00114 U	0.001 U
Sum DDT (U=1/2)	**0.003005 J**	**0.003725 J**	0.001 U	0.00119 U	**0.002465 J**	0.00122 U	**0.00311 J**	0.001 U
Total DDx (U = 1/2)	**0.005185 J**	**0.005945 J**	0.001 U	0.00119 U	**0.004845 J**	0.00122 U	**0.00539 J**	0.001 U
Aldrin	**0.0053 J**	**0.00261**	0.0005 U	0.0006 U	**0.00299 J**	0.00061 U	**0.0423 NJ**	0.0005 U
alpha-BHC	**0.00659 J**	**0.00527**	**0.00453 NJ**	**0.00369 NJ**	**0.0064**	**0.00576**	**0.0449 NJ**	0.0005 U
beta-BHC	0.00054 U	0.00056 U	0.0005 U	0.0006 U	0.0006 U	0.00061 U	0.00057 U	0.0005 U
alpha-Chlordane (cis-Chlordane)	**0.00226**	**0.00255**	**0.00221**	**0.0018**	**0.00251 J**	**0.00319**	**0.00226 NJ**	**0.00895 NJ**
delta-BHC	0.00054 U	0.00056 U	**0.00606**	**0.0056**	**0.00744**	**0.00531**	**0.0384**	**0.0172**
Dieldrin	**0.00582 NJ**	**0.00579 J**	**0.00416**	**0.00423**	**0.00637 J**	0.00061 U	**0.0244 NJ**	**0.0115 NJ**
Endosulfan-alpha (I)	0.00054 U	0.00056 U	0.0005 U	0.0006 U	**0.00202 J**	0.00061 U	0.00057 U	0.0005 U
Endosulfan-beta (II)	0.00054 U	0.00056 U	0.0005 U	0.0006 U	0.0006 U	0.00061 U	0.00057 U	0.0005 U
Endosulfan sulfate	0.00054 U	0.00056 U	0.0005 U	0.0006 U	0.0006 U	0.00061 U	0.00057 U	0.0005 U
Endrin	0.00054 U	0.00056 U	0.0005 U	0.0006 U	0.0006 U	0.00061 U	0.00057 U	0.0005 U
Endrin aldehyde	0.00054 U	0.00056 U	0.0005 U	0.0006 U	0.0006 U	0.00061 U	0.00057 U	0.0005 U
Endrin ketone	0.00054 U	**0.00388 NJ**	0.0005 U	0.0006 U	**0.00271 J**	0.00061 U	0.00057 U	0.0005 U
gamma-BHC (Lindane)	0.00054 U	**0.00331 NJ**	**0.00552 NJ**	**0.00576 NJ**	0.0006 U	**0.00586 NJ**	0.00057 U	0.0005 U
gamma-Chlordane	0.00054 U	0.00056 U	0.0005 U	0.0006 U	0.0006 U	0.00061 U	0.00057 U	0.0005 U
Heptachlor	**0.0066 NJ**	0.00056 U	0.0005 U	**0.00324**	**0.00693 NJ**	**0.00644 J**	**0.04 NJ**	0.0005 U
Heptachlor epoxide	**0.00113 NJ**	**0.00103 NJ**	**0.00103 NJ**	**0.00093 NJ**	**0.00153 NJ**	**0.00132 NJ**	**0.00874 NJ**	**0.00327 NJ**
Methoxychlor	0.00054 U	0.00056 U	0.0005 U	0.0006 U	0.0006 U	0.00061 U	0.00057 U	0.0005 U
Toxaphene	0.0272 U	0.0278 U	0.025 U	0.0298 U	0.0298 U	0.0305 U	0.0284 U	0.025 U
Dioxin Furans (ng/L)								
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.00227 U	0.00367 UJ	0.00206 U	**0.00102 J**	0.00247 U	0.00326 U	**0.00148 J**	0.00403 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.00272 U	0.00158 UJ	0.00289 U	0.00397 UJ	0.00368 U	0.00251 U	0.00202 U	0.00475 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.00286 UJ	0.00295 UJ	0.00583 UJ	0.00294 UJ	0.00351 UJ	0.00516 UJ	0.00189 U	0.00449 UJ
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.00279 UJ	0.00304 UJ	0.0058 UJ	0.00309 UJ	0.00373 UJ	0.00501 UJ	0.00204 U	0.00523 UJ
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.00312 UJ	0.00346 UJ	0.00661 UJ	0.00349 UJ	0.00394 UJ	0.00582 UJ	0.00197 U	0.00593 UJ
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	**0.0186 J**	**0.0197 J**	**0.0178 J**	**0.018 J**	**0.0273 J**	**0.0167 J**	**0.0213 J**	**0.0178 J**
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	**0.19 J**	**0.206 J**	**0.176 J**	**0.2 J**	**0.257 J**	**0.193 J**	**0.145 J**	**0.186 J**
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	**0.00239 J**	**0.00285 J**	0.000637 U	**0.00225 J**	**0.00417 J**	0.00167 U	**0.0031 J**	**0.0031 J**
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	**0.00139 J**	**0.0027 J**	0.00247 U	**0.00152 J**	**0.003 J**	0.00314 U	0.0024 U	**0.00303 J**
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	0.00192 U	0.002 UJ	0.00234 U	0.00326 U	**0.0016 J**	**0.000897 J**	0.00228 U	0.00317 U

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB031	PB031	PB059	PB059	PB076	PB076	PB076	PB076
Sample ID:	PB031-1SWNBT-091104-N	PB031-1SWNBT-091105-N	PB059-1SWMID-091104-N	PB059-1SWMID-091105-N	PB076-1SWMID-091104-N	PB076-1SWMID-091105-N	PB076-1SWNBT-091104-N	PB076-1SWNBT-091105-N
Sample Date:	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	N	N	N	N	N	N	N	N
X:	3201366.8205	3201366.8205	3201646.6295	3201646.6295	3200819.7773	3200819.7773	3200819.7773	3200819.7773
Y:	13834640.6333	13834640.6333	13831831.4316	13831831.4316	13830437.4855	13830437.4855	13830437.4855	13830437.4855
Pesticides (µg/L)								
2,4'-DDD (o,p'-DDD)	0.00133 UJ	0.001 U	0.00115 U	0.001 U	0.0012 U	0.001 U	0.00111 U	0.00122 U
2,4'-DDE (o,p'-DDE)	0.00133 UJ	0.001 U	0.00115 U	0.001 U	0.0012 U	0.001 U	0.00111 U	0.00122 U
2,4'-DDT (o,p'-DDT)	0.00133 UJ	0.001 U	0.00115 U	0.001 U	0.0012 U	0.001 U	0.00111 U	0.00122 U
4,4'-DDD (p,p'-DDD)	0.00133 UJ	0.001 U	0.00115 U	0.001 U	0.0012 U	0.001 U	0.00111 U	0.00122 U
4,4'-DDE (p,p'-DDE)	0.00133 UJ	0.001 U	0.00115 U	0.001 U	0.0012 U	0.001 U	0.00111 U	0.00122 U
4,4'-DDT (p,p'-DDT)	0.00133 UJ	0.001 U	0.00115 U	0.001 U	0.0012 U	0.001 U	0.00111 U	0.00122 U
Sum 2,4 DDT, DDE, DDD (U=1/2)	0.00133 UJ	0.001 U	0.00115 U	0.001 U	0.0012 U	0.001 U	0.00111 U	0.00122 U
Sum 4,4 DDT, DDE, DDD (U = 1/2)	0.00133 UJ	0.001 U	0.00115 U	0.001 U	0.0012 U	0.001 U	0.00111 U	0.00122 U
Sum DDD (U=1/2)	0.00133 UJ	0.001 U	0.00115 U	0.001 U	0.0012 U	0.001 U	0.00111 U	0.00122 U
Sum DDE (U=1/2)	0.00133 UJ	0.001 U	0.00115 U	0.001 U	0.0012 U	0.001 U	0.00111 U	0.00122 U
Sum DDT (U=1/2)	0.00133 UJ	0.001 U	0.00115 U	0.001 U	0.0012 U	0.001 U	0.00111 U	0.00122 U
Total DDx (U = 1/2)	0.00133 UJ	0.001 U	0.00115 U	0.001 U	0.0012 U	0.001 U	0.00111 U	0.00122 U
Aldrin	**0.0283 NJ**	0.0005 U	0.00058 U	0.0005 U	**0.0255 NJ**	**0.028 NJ**	0.00056 U	**0.0327 NJ**
alpha-BHC	**0.0346 J**	**0.0219**	**0.0885 NJ**	**0.0665 J**	**0.0993 NJ**	**0.0992 NJ**	**0.0985 J**	**0.116 NJ**
beta-BHC	0.00067 UJ	0.0005 U	0.00058 U	0.0005 U	0.0006 U	0.0005 U	0.00056 U	0.00061 U
alpha-Chlordane (cis-Chlordane)	**0.00209 NJ**	**0.0091**	**0.0254 NJ**	**0.0202 NJ**	**0.0432 NJ**	**0.0295 NJ**	**0.0379 NJ**	0.00061 U
delta-BHC	**0.0426 J**	0.0005 U	**0.0898**	**0.0496**	**0.123**	**0.116 J**	**0.14**	0.00061 U
Dieldrin	**0.0222 NJ**	**0.012 NJ**	**0.0309**	**0.0178 J**	**0.0361 NJ**	**0.0147**	**0.0344 NJ**	0.00061 U
Endosulfan-alpha (I)	0.00067 UJ	0.0005 U	0.00058 U	0.0005 U	0.0006 U	0.0005 U	0.00056 U	0.00061 U
Endosulfan-beta (II)	0.00067 UJ	0.0005 U	0.00058 U	0.0005 U	0.0006 U	0.0005 U	0.00056 U	0.00061 U
Endosulfan sulfate	0.00067 UJ	0.0005 U	0.00058 U	0.0005 U	0.0006 U	0.0005 U	0.00056 U	0.00061 U
Endrin	0.00067 UJ	0.0005 U	0.00058 U	0.0005 U	0.0006 U	0.0005 U	0.00056 U	0.00061 U
Endrin aldehyde	0.00067 UJ	0.0005 U	0.00058 U	0.0005 U	0.0006 U	0.0005 U	0.00056 U	0.00061 U
Endrin ketone	0.00067 UJ	0.0005 U	**0.00516**	**0.00343**	0.0006 U	**0.00837 J**	**0.00701**	0.00061 U
gamma-BHC (Lindane)	0.00067 UJ	0.0005 U	0.00058 U	0.0005 U	0.0006 U	0.0005 U	0.00056 U	0.00061 U
gamma-Chlordane	0.00067 UJ	0.0005 U	0.00058 U	0.0005 U	0.0006 U	0.0005 U	0.00056 U	0.00061 U
Heptachlor	**0.037 NJ**	0.0005 U	**0.055 J**	**0.0337**	**0.0622**	**0.061**	**0.0565**	0.00061 U
Heptachlor epoxide	**0.00762**	**0.00326 NJ**	**0.00997 NJ**	**0.00654 NJ**	**0.0148 NJ**	**0.00835 NJ**	**0.0152 NJ**	**0.0123 NJ**
Methoxychlor	0.00067 UJ	0.0005 U	0.00058 U	0.0005 U	0.0006 U	0.0005 U	0.00056 U	0.00061 U
Toxaphene	0.0333 UJ	0.025 U	0.0287 U	0.025 U	0.0301 U	0.025 U	0.0278 U	0.0305 U
Dioxin Furans (ng/L)								
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.00148 U	0.00216 UJ	0.00247 UJ	0.00402 UJ	0.00219 U	0.00331 UJ	0.00176 U	0.00251 UJ
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.00281 U	0.0032 UJ	0.00242 UJ	0.00256 UJ	0.0027 U	0.00345 UJ	0.003 UJ	0.00278 UJ
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.00511 UJ	0.00358 UJ	0.0042 UJ	0.00581 UJ	0.00674 UJ	0.0188 UJ	0.00314 UJ	0.00739 UJ
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.00559 UJ	0.00344 UJ	0.00436 UJ	0.00566 UJ	0.00683 UJ	0.0189 UJ	0.00335 UJ	0.00704 UJ
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.00631 UJ	0.00377 UJ	0.00453 UJ	0.00664 UJ	0.0072 UJ	0.0209 UJ	0.00363 UJ	0.00769 UJ
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	**0.0173 J**	**0.0289 J**	**0.0208 J**	**0.0114 J**	0.00665 UJ	0.0305 UJ	**0.00689 J**	0.0224 UJ
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	**0.193 J**	**0.192 J**	**0.187 J**	**0.0554 J**	**0.0323 J**	0.105 UJ	**0.0561 J**	**0.0622 J**
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	**0.00339 J**	**0.004 J**	0.00218 UJ	0.00203 UJ	0.00179 U	0.00335 UJ	0.00131 U	0.00174 UJ
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	**0.00275 J**	**0.00251 J**	0.00363 UJ	0.00256 UJ	0.00217 U	0.00422 UJ	0.0016 UJ	0.00254 UJ
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	**0.00155 J**	0.00218 UJ	0.00352 UJ	0.00215 UJ	0.00211 U	0.00454 UJ	0.0017 UJ	0.00238 UJ

Appendix A-2
BERA Surface Water Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB066B	PB080	PB080	PB082.1	PB101C
Sample ID:	PB066-1SWMID-20110808-N	PB080-1SWMID-20110808-D	PB080-1SWMID-20110808-N	PB082.1-1SWMID-20110808-N	PB101C-1SWMID-20110808-N
Sample Date:	8/8/2011	8/8/2011	8/8/2011	8/8/2011	8/8/2011
Sample Type:	N	FD	N	N	N
X:	3201384.326	3200769.755	3200769.755	3200777.403	3201307.665
Y:	13831305.66	13830051.11	13830051.11	13829942.54	13828208.48
Pesticides (µg/L)					
2,4'-DDD (o,p'-DDD)	--	--	--	--	--
2,4'-DDE (o,p'-DDE)	--	--	--	--	--
2,4'-DDT (o,p'-DDT)	--	--	--	--	--
4,4'-DDD (p,p'-DDD)	--	--	--	--	--
4,4'-DDE (p,p'-DDE)	--	--	--	--	--
4,4'-DDT (p,p'-DDT)	--	--	--	--	--
Sum 2,4 DDT, DDE, DDD (U=1/2)	--	--	--	--	--
Sum 4,4 DDT, DDE, DDD (U = 1/2)	--	--	--	--	--
Sum DDD (U=1/2)	--	--	--	--	--
Sum DDE (U=1/2)	--	--	--	--	--
Sum DDT (U=1/2)	--	--	--	--	--
Total DDx (U = 1/2)	--	--	--	--	--
Aldrin	--	--	--	--	--
alpha-BHC	--	--	--	--	--
beta-BHC	--	--	--	--	--
alpha-Chlordane (cis-Chlordane)	--	--	--	--	--
delta-BHC	--	--	--	--	--
Dieldrin	--	--	--	--	--
Endosulfan-alpha (I)	--	--	--	--	--
Endosulfan-beta (II)	--	--	--	--	--
Endosulfan sulfate	--	--	--	--	--
Endrin	--	--	--	--	--
Endrin aldehyde	--	--	--	--	--
Endrin ketone	--	--	--	--	--
gamma-BHC (Lindane)	--	--	--	--	--
gamma-Chlordane	--	--	--	--	--
Heptachlor	--	--	--	--	--
Heptachlor epoxide	--	--	--	--	--
Methoxychlor	--	--	--	--	--
Toxaphene	--	--	--	--	--
Dioxin Furans (ng/L)					
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	--	--	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	--	--	--	--	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	--	--	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	--	--	--	--	--

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB006	PB006	PB006	PB006	PB006	PB006	PB031	PB031
Sample ID:	PB006-1SWMID-091104-D	PB006-1SWMID-091104-N	PB006-1SWMID-091105-D	PB006-1SWMID-091105-N	PB006-1SWNBT-091104-N	PB006-1SWNBT-091105-N	PB031-1SWMID-091104-N	PB031-1SWMID-091105-N
Sample Date:	11/4/2009	11/4/2009	11/5/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	FD	N	FD	N	N	N	N	N
X:	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3202137.4168	3201366.8205	3201366.8205
Y:	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13836272.1183	13834640.6333	13834640.6333
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	**0.00252 J**	**0.00345 J**	**0.00281 J**	**0.00311 J**	**0.00395 J**	**0.00311 J**	**0.00322 J**	**0.00379 J**
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	**0.00134 J**	0.00164 UJ	0.000563 U	0.000968 UJ	**0.00275 J**	0.00114 UJ	**0.00183 J**	0.00299 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.00299 UJ	0.00276 UJ	0.000846 UJ	0.00158 UJ	0.003 UJ	0.00189 UJ	0.00233 U	0.00514 UJ
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.00229 UJ	0.00196 UJ	0.0006 UJ	0.00122 UJ	0.00228 UJ	0.00135 UJ	0.00173 UJ	0.00347 UJ
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	**0.0215 J**	**0.0262 J**	**0.0164 J**	**0.0177 J**	**0.0269 J**	**0.0206 J**	**0.0129 J**	**0.0166 J**
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.00262 UJ	0.00651 UJ	0.000881 UJ	0.00225 UJ	0.00592 UJ	0.00355 UJ	0.00262 UJ	0.00376 UJ
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	**0.358 J**	**0.416 J**	**0.33 J**	**0.373 J**	**0.429 J**	**0.318 J**	**0.0747 J**	**0.226 J**
Total Tetrachlorodibenzo-p-dioxin (TCDD)	**0.00369 J**	**0.00434 J**	**0.00463 J**	**0.00509 J**	**0.00282**	**0.00335 J**	**0.0075 J**	0.00403 U
Total Pentachlorodibenzo-p-dioxin (PeCDD)	0.00272 U	0.00158 UJ	0.00289 U	0.00397 UJ	0.00368 U	0.00251 U	**0.00266 J**	0.00475 U
Total Hexachlorodibenzo-p-dioxin (HxCDD)	**0.00422 J**	**0.00472 J**	**0.00239 J**	**0.00464 J**	**0.00606 J**	**0.00423 J**	**0.00474 J**	**0.00523 J**
Total Heptachlorodibenzo-p-dioxin (HpCDD)	**0.05 J**	**0.0518 J**	**0.0497 J**	**0.0485 J**	**0.0717 J**	**0.043 J**	**0.0522 J**	**0.0502 J**
Total Tetrachlorodibenzofuran (TCDF)	**0.00935 J**	**0.0124 J**	**0.0062 J**	**0.00635 J**	**0.0201 J**	**0.00806 J**	**0.0257 J**	**0.0108 J**
Total Pentachlorodibenzofuran (PeCDF)	**0.00139**	**0.0027 J**	**0.00158 J**	**0.00284 J**	**0.0133 J**	**0.00345 J**	**0.00176 J**	**0.00303 J**
Total Hexachlorodibenzofuran (HxCDF)	**0.0178 J**	**0.0197 J**	**0.0161 J**	**0.0215 J**	**0.028 J**	**0.0171 J**	**0.0159 J**	**0.0162 J**
Total Heptachlorodibenzofuran (HpCDF)	**0.0347 J**	**0.0399 J**	**0.0338 J**	**0.0336 J**	**0.0504 J**	**0.0356 J**	**0.0219 J**	**0.0295 J**
Total Dioxin/Furan (U = 1/2)	**0.60753 J**	**0.691685 J**	**0.5587735 J**	**0.627984 J**	**0.769935 J**	**0.569557 J**	**0.27317 J**	**0.4778 J**
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	**0.00717695 J**	**0.0080464 J**	**0.005210505 J**	**0.0080634 J**	**0.0107769 J**	**0.0060406 J**	**0.00789932 J**	**0.0110157 J**
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	**0.00486005 J**	**0.00521195 J**	**0.00527548 J**	**0.00553935 J**	**0.00647785 J**	**0.00561945 J**	**0.00466092 J**	**0.0078701 J**
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	**0.0047307 J**	**0.00510465 J**	**0.004686555 J**	**0.00528015 J**	**0.0063324 J**	**0.00515825 J**	**0.00460201 J**	**0.0074943 J**

Appendix A-2
BERA Surface Water Dataset

Task:	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009	RI/FS 2009
Location ID:	PB031	PB031	PB059	PB059	PB076	PB076	PB076	PB076
Sample ID:	PB031-1SWNBT-091104-N	PB031-1SWNBT-091105-N	PB059-1SWMID-091104-N	PB059-1SWMID-091105-N	PB076-1SWMID-091104-N	PB076-1SWMID-091105-N	PB076-1SWNBT-091104-N	PB076-1SWNBT-091105-N
Sample Date:	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009	11/4/2009	11/5/2009
Sample Type:	N	N	N	N	N	N	N	N
X:	3201366.8205	3201366.8205	3201646.6295	3201646.6295	3200819.7773	3200819.7773	3200819.7773	3200819.7773
Y:	13834640.6333	13834640.6333	13831831.4316	13831831.4316	13830437.4855	13830437.4855	13830437.4855	13830437.4855
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	**0.00294 J**	**0.00463 J**	0.00241 UJ	0.00151 UJ	0.00174 UJ	0.00294 UJ	0.000799 UJ	0.00248 UJ
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	**0.00201 J**	**0.00197 J**	0.0023 UJ	0.00137 UJ	0.00149 UJ	0.00281 UJ	0.000744 UJ	0.00254 UJ
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.0032 UJ	0.00229 UJ	0.00326 UJ	0.00225 UJ	0.00239 UJ	0.00524 UJ	0.00118 UJ	0.0041 UJ
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.00259 UJ	0.00166 UJ	0.00256 UJ	0.00161 UJ	0.00194 UJ	0.00409 UJ	0.000944 UJ	0.00297 UJ
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	**0.0129 J**	**0.015 J**	**0.00802 J**	**0.00202 J**	0.00317 UJ	0.00965 UJ	**0.00356 J**	0.00342 UJ
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.0036 UJ	0.00885 UJ	0.00261 UJ	0.0014 UJ	0.00461 UJ	0.0219 UJ	0.0078 UJ	0.00637 UJ
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	**0.07 J**	**0.162 J**	**0.0401 J**	**0.0125 J**	0.0346 UJ	**0.0458 J**	0.0234 UJ	**0.0293 J**
Total Tetrachlorodibenzo-p-dioxin (TCDD)	**0.00396 J**	**0.00258 J**	**0.00214 J**	**0.00185 J**	**0.00587 J**	**0.00196 J**	**0.00619 J**	**0.00373 J**
Total Pentachlorodibenzo-p-dioxin (PeCDD)	**0.00221 J**	0.0032 UJ	**0.00382 J**	0.00256 UJ	**0.00323 J**	0.00345 UJ	**0.00517 J**	**0.00235 J**
Total Hexachlorodibenzo-p-dioxin (HxCDD)	0.00567 UJ	**0.00444 J**	**0.00735 J**	**0.00317 J**	0.00692 UJ	0.0195 UJ	0.00337 UJ	0.00735 UJ
Total Heptachlorodibenzo-p-dioxin (HpCDD)	**0.0562 J**	**0.0726 J**	**0.0687 J**	**0.0289 J**	0.00665 UJ	0.0305 UJ	**0.028 J**	**0.0116 J**
Total Tetrachlorodibenzofuran (TCDF)	**0.0286 J**	**0.0181 J**	**0.00879 J**	0.00203 UJ	0.00179 U	0.00335 UJ	**0.00152 J**	0.00174 UJ
Total Pentachlorodibenzofuran (PeCDF)	**0.0141 J**	**0.00694 J**	**0.00104 J**	0.00235 UJ	**0.000439 J**	0.00437 UJ	0.00165 UJ	0.00246 UJ
Total Hexachlorodibenzofuran (HxCDF)	**0.0151 J**	**0.0204 J**	**0.00687 J**	0.00165 UJ	0.00185 UJ	0.00359 UJ	**0.00416 J**	0.00294 UJ
Total Heptachlorodibenzofuran (HpCDF)	**0.0251 J**	**0.0276 J**	**0.0163 J**	**0.00567 J**	0.00378 UJ	0.0142 UJ	**0.00908 J**	0.00455 UJ
Total Dioxin/Furan (U = 1/2)	**0.321185 J**	**0.426575 J**	**0.276145 J**	**0.101105 J**	**0.07646 J**	**0.1756 J**	**0.0937285 J**	**0.130675 J**
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	**0.0088063 J**	**0.00943225 J**	**0.00649306 J**	**0.00639594 J**	**0.005491335 J**	**0.01008233 J**	**0.00451337 J**	**0.00611025 J**
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	**0.0055391 J**	**0.0055976 J**	**0.00522796 J**	**0.00583864 J**	**0.005251835 J**	**0.01054008 J**	**0.00396927 J**	**0.00594195 J**
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	**0.0050654 J**	**0.00546875 J**	**0.00468683 J**	**0.00515647 J**	**0.00438708 J**	**0.00831554 J**	**0.00357769 J**	**0.005026 J**

Appendix A-2
BERA Surface Water Dataset

Task:	2011 USC	2011 USC	2011 USC	2011 USC	2011 USC
Location ID:	PB066B	PB080	PB080	PB082.1	PB101C
Sample ID:	PB066-1SWMID-20110808-N	PB080-1SWMID-20110808-D	PB080-1SWMID-20110808-N	PB082.1-1SWMID-20110808-N	PB101C-1SWMID-20110808-N
Sample Date:	8/8/2011	8/8/2011	8/8/2011	8/8/2011	8/8/2011
Sample Type:	N	FD	N	N	N
X:	3201384.326	3200769.755	3200769.755	3200777.403	3201307.665
Y:	13831305.66	13830051.11	13830051.11	13829942.54	13828208.48
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	--	--	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	--	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	--	--	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	--	--	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	--	--	--	--	--
Total Tetrachlorodibenzo-p-dioxin (TCDD)	--	--	--	--	--
Total Pentachlorodibenzo-p-dioxin (PeCDD)	--	--	--	--	--
Total Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	--	--	--
Total Heptachlorodibenzo-p-dioxin (HpCDD)	--	--	--	--	--
Total Tetrachlorodibenzofuran (TCDF)	--	--	--	--	--
Total Pentachlorodibenzofuran (PeCDF)	--	--	--	--	--
Total Hexachlorodibenzofuran (HxCDF)	--	--	--	--	--
Total Heptachlorodibenzofuran (HpCDF)	--	--	--	--	--
Total Dioxin/Furan (U = 1/2)	--	--	--	--	--
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	--	--	--	--	--
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	--	--	--	--	--
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	--	--	--	--	--

Appendix A-2
BERA Surface Water Dataset

Notes:

Bold = Detected result
J = Estimated value
U = Compound analyzed, but not detected above detection limit
UJ = Compound analyzed, but not detected above estimated detection limit
-- Results not reported or not applicable
µg/L = micrograms per liter
mg/L = milligrams per liter
ng/L = nanograms per liter
pct = percent
N = Normal Field Sample FD = Field Duplicate
TEQ values as of 2005, World Health Organization

TISSUE DATA CAN BE FOUND IN ATTACHMENT 1

APPENDIX B
SURFACE SEDIMENT INTERPOLATION AND AVERAGING

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LIST OF ACRONYMS AND ABBREVIATIONS

µg/kg	microgram/kilogram
BERA	Baseline Ecological Risk Assessment
COPC	chemical of potential concern
IDW	inverse distance weighting
mg/kg	milligram/kilogram
RMSE	root mean squared error
SWAC	surface weighted averaging concentration

1 SPATIAL INTERPOLATION OF COPCs IN SURFACE SEDIMENT

As described in the *Baseline Ecological Risk Assessment Work Plan* (BERA Work Plan), mobile (e.g., fish, wildlife) receptors are expected to average their exposure within a defined foraging area. Sessile receptors (benthic invertebrates) are generally exposed to sediment contaminants within a small radius (e.g., centimeters) which may not be well characterized by a sample collected several meters away. Spatial interpolation[1] of the 2009 and 2011 bulk surface sediment data (Anchor QEA 2010, 2012) for selected chemical of potential concern (COPC) was performed to provide a basis to calculate surface weighted average concentrations (SWACs) across the Site and to characterize exposure of stationary receptors at unsampled locations. The following subsections describe the spatial interpolation methods and results for ecological COPCs at the Site. This information was used to support the exposure assessment for ecological receptors for the BERA.

1.1 Method Selection

Two commonly used interpolation methods were assessed for their ability to accurately predict the surface concentrations for the compounds within the COPC list. The two methods evaluated were inverse distance weighting (IDW) and Kriging. IDW assumes that each measured point has a local influence that diminishes with distance. It gives greater weight to the points closer to the prediction location than to those farther away, hence the name inverse distance weighting (QEA 2007). An important principle of IDW is that it is a deterministic exact interpolator that honors all data points. This means that the interpolation at sample points will be equal and the range of interpolated values will not exceed the sample observations. In addition, because IDW is deterministic, there is no way to evaluate the quality of the predictions without collecting confirmatory samples. Kriging is a probabilistic predictor, producing for each location an estimate of the parameter of interest and the uncertainty of that estimate (i.e., the prediction error). The estimate has the property of having the minimum variance among all estimates that are linear functions of the data. Similar to IDW, Kriging assumes that closer observations have more weight on an estimated value but also considers the spatial pattern of the observations (i.e., autocorrelation).

[1] Spatial interpolation is a general method of mapping a surface using limited sample data and estimation of values from unsampled locations.

To determine the most appropriate method for application to the surface sediment observations, two COPCs were interpolated by both methods and the results compared. The two compounds interpolated by both IDW and Kriging methods were lead and hexachlorobenzene. They were chosen for comparison because they: 1) had different concentration distributions, and 2) were generally representative of the apparent distribution of several other COPC. The spatial distribution of lead observations were relatively heterogeneous (i.e., variable) with several relatively higher loci and demonstrated a linear decrease in concentration with distance. This distribution type and others like it were classified as "linear distribution". The spatial distribution of hexachlorobenzene results also showed several relatively higher loci, however the decrease in concentration was exponential with distance; this distribution type and others like it were classified as an "exponential" distribution. The lead and hexachlorbenzene results at each sample location along with the IDW and Kriging interpolations are shown in Figure B-1 and Figure B-2, respectively.

Based on visual analysis of the interpolated results for lead; the IDW and Kriging methods produced similar interpolation results. The mean IDW interpolated surface lead concentration was 47 milligram/kilogram (mg/kg), the mean Kriging interpolated surface lead concentration was 65 mg/kg, and the mean measured data point concentration was 57 mg/kg. Based on visual analysis of the interpolated results for hexachlorobenzene, the IDW and Kriging methods did not produce similar results. While the IDW produced a "bull's eye" effect at several locations, the Kriging produced a smoothed dataset with less influence from higher observations, thus creating much lower concentration than actual at those locations (i.e., under predicting at sampled locations). The mean hexachlorobenzene concentration was 3214 µg/kg from the IDW interpolated surface, 1700 µg/kg from the Kriging interpolated surface, and 9397 µg/kg from the measured data points.

Based on the results of the IDW and Kriging comparisons for lead, its seems either approach would produce a reasonable interpolation for data with a "linear distribution", however based on the results from the IDW and Kriging comparisons for hexachlorobenzene; the smoothing done by the Kriging approach is not well suited for this Site for COPCs demonstrating exponential changes in concentration within neighboring data points. For the reasons mentioned above and for the sake of consistency, IDW was the method selected to

generate the interpolated surfaces needed for the SWAC calculations. An additional practical consideration for selecting IDW over Kriging is the advantage of the IDW algorithms being more fully defined; leading to highly reproducible results. Kriging requires much more professional judgment to define the interpolation and is therefore much more subjective than IDW.

In addition, total PCB Congeners, PCB TEQ (Avian), PCB TEQ (Mammalian), and PCB TEQ (Fish) were interpolated using Kriging and IDW. These COPCs were selected for comparison due to their expected significance in characterizing risk (i.e., risk drivers) to receptors at the Site. Kriging and IDW interpolations for these COPC are shown in Figures B-3 through B-6. A comparison of the Site-wide SWAC based on the two methods is provided in Table B-1. Relative differences between IDW and Kriging range between 14-26% for PCB and PCB TEQ. In all cases, IDW estimates higher SWACs for PCB and PCB TEQ. Generally, the differences are considered acceptable for this type of analysis.

1.1.1 Inverse-Distance Weighting

IDW predicts concentration at a location as a weighted average of the surrounding measurements. The weight applied to each measurement depends on how close it is to the prediction location, with greater weight given to the closer measurements. The basic equation for IDW is:

$$\hat{Z}(s_0) = \sum_{i=1}^{N} \lambda_i Z(s_i) \qquad \text{(B-1)}$$

where:

$\hat{Z}(s_0)$ = the value being predicted at location s_0

N = the number of measured sample points in the search neighborhood of the location to be estimated

λ_i = the weights assigned to measured points in the search neighborhood

$Z(s_i)$ = the observed value at the location s_i

The formula to determine the weights is:

$$\lambda_i = d_{i0}^{-p} / \sum_{j=1}^{N} d_{j0}^{-p} \qquad \text{where} \quad \sum_{i=1}^{N} \lambda_i = 1 \tag{B-2}$$

where:

p = the power parameter that controls how much influence a measurement has on the interpolation

d_{i0} = the distance between the predicted location, s_0, and the measured locations, s_i

d_{j0} = the distance between the predicted location, s_0, and the observed location s_j within the search neighborhood

As the distance between the predicted location and a measured location increases, the weight of the measured point will decrease exponentially according to the power parameter, p. The predicted value is the sum of the product of the data points within the search neighborhood and their assigned weights. The weights for the measured locations are scaled so that their sum is equal to 1.

The search neighborhood is defined using two common methods which are "Nearest neighbors" and "elliptical neighborhood". "Nearest neighbors" incorporates a preset number of data points that are closest to the predicted location into the interpolation and uses a variable search radius to obtain the set number of data points. "Elliptical neighborhood" incorporates all data points within a prescribed elliptical area. The three parameters that define an elliptical neighborhood are:

1. Azimuth - the orientation of the ellipse
2. Minor semiaxis - half the width of the ellipse
3. Major semiaxis - half the length of the ellipse

The anisotropy ratio is defined as the ratio of the major semiaxis to the minor semiaxis. During interpolation, this parameter governs how much influence the interpolator gives to data points along the orientation of the ellipse relative to data points across the orientation of the ellipse (QEA 2007).

1.1.1.1 IDW Optimization

1.1.1.1.1 Power Parameter

The power parameter controls the significance of surrounding points on the interpolated value. A higher power results in less influence from distant points. The default value used by the ArcMap IDW interpolation tool is 2 (Esri). IDW interpolations of lead and hexachlorobenzene were "previewed[2]" using power parameters ranging from 0 to 3 at increments of 0.5. The default value of 2 was reasonable for both the lead and hexachlorobenzene IDW interpolations whereby it did not overly smooth the data (large p value) nor create large "bull's eyes" (low p value), and was therefore used for all of the COPC IDW interpolations.

1.1.1.1.2 Search Neighborhood

IDW interpolations were performed for lead and hexachlorobenzene using both an "elliptical neighborhood" and "natural neighbors" search neighborhood. The purpose of using both methods was to assess if there were major differences in the interpolated results based on search neighborhood method. Since the natural neighbor's method found in the ArcMap spatial analyst tool only has a few parameters to select when defining search neighborhood it is an easily reproducible process for performing numerous interpolations. The elliptical neighborhood method is based on correlation between data points and thus requires manual selection of parameter's using the ArcMap Geostatistical Analyst tool. The elliptical neighborhood has to be optimized for each of the 19 COPCs. While using an elliptical search radius provides a more robust analysis of the data correlation it introduces inconsistencies and analyst subjectivity between IDW methodologies for each compound. To test the significance of the difference between the two search neighborhood methods the IDW for lead and hexachlorobenzene were performed using both approaches (nearest neighbors and elliptical) and the results compared.

The parameters selected for the elliptical search neighborhood were based on cross validation results. Cross validation is a technique used to assess the accuracy of an interpolation model. The cross validation method leaves one point out and uses the rest to predict a value at that

[2] The ArcMap 10 Geostatistical Analyst tool allows a preview of the IDW interpolated surface based on selected parameters.

location. The point is then added back into the dataset, and a different one is removed. This is done for all samples in the dataset and provides pairs of predicted and known values that can be compared to assess the interpolation performance (Esri). The goal of the cross validation is to find the elliptical neighborhood which produces the smallest mean error and root mean squared error. The mean error is the averaged difference between the measured and the predicted values without regard to sign (Esri). The root mean squared error (RMSE) is the difference between predicted and measured values which are each squared and then averaged. Finally, the square root of the average is taken. Since the errors are squared before they are averaged, the RMSE gives a relatively high weight to large errors (Eumetcal). A small mean error and RMSE indicate a good model fit with the actual data, the greater the difference between the mean error and RMSE, the greater the variance in the individual errors. The optimized major range and anisotropic ratios for lead, hexachlorobenzene, PCB congeners, and PCB TEQ are shown in Figure B-7 through Figure B-12.

Parameters available using the spatial analyst tool includes the maximum neighbors and the optional max search distance. For the purposes of this analysis the max search distance was not entered and the maximum neighbors were set to 15. The maximum neighbors value was based on the optimum number of neighbors selected during the elliptical neighborhood analysis and the results of the cross validation.

The results of the lead and hexachlorobenzene search neighborhood comparison are shown in Figure B-13 and Figure B-14, respectively. The visual interpretation of the results for both analyses indicates little difference between the two methods. For the reason mentioned above and for the sake of minimizing inconsistencies in IDW methodologies between COPCs, the nearest neighbors approach was chosen as the appropriate search neighborhood method for the COPC IDW interpolations.

1.1.1.2 Data Transformation

Typically, the distribution for environmental data is skewed; characterized by a few relatively elevated sample results and many low concentration results. However, spatial interpolations produce the most accurate results when performed on normally distributed data. For this reason the data were transformed before interpolation.

1.1.1.2.1 Selecting Transformations for COPC Result Values

In an effort to normalize the data distribution, the data were transformed either by a natural log transformation (equation B-3) or Box-Cox transformation (equation B-4). The transformation changes the original variable (X) into the transformed variable (Y) (QEA 2007):

$$Y = \ln(X) \text{ for } \lambda = 0 \quad \text{(B-3)}$$

$$Y = \frac{X^{\lambda} - 1}{\lambda} \text{ for } \lambda \neq 0 \quad \text{(B-4)}$$

where:

λ = the transformation parameter

A value for λ was selected independently for each COPC so as to produce transformed data that were approximately normally distributed. Normality was optimized by minimizing skewness, kurtosis, and the standard deviation in the same order of importance. Histograms showing untransformed and transformed data for each COPC are presented in Figure B-15A through Figure B-15Q. Transformation parameters selected for each COPC are presented in Table B-2.

2 SURFACE WEIGHTED AVERAGING

Once the appropriate transformation had been determined, values were transformed according to the values in Table B-1 and interpolated using the Spatial Analysis Tool in ArcGIS. IDW was the selected interpolation method and parameterized using the following setting:

- Search Radius = Variable
- Number of nearest sample points to interpolate = 15
- Cell size = 1 foot

The resulting intermediate raster using the transformed values was translated back into the original scale of measurement using equation B-3 for natural log transformations and B-4 for Box-Cox transformations. The transformation changes the transformed variable (Y) back into the original variable (X) (QEA 2007):

$$X = e^{Y} \tag{B-5}$$

$$X = \left(\lambda Y + 1\right)^{\frac{1}{\lambda}} \tag{B-6}$$

The back-transformation is valid because the transformation (and its inverse) are monotonic and hence preserve the percentile's rankings.

Finally, the Zonal Stats tool in Spatial Analyst was used to calculate summary statistics for desired polygons representing areas of interest (e.g., Site-wide, intertidal zone, etc.). The mean value within the polygon was taken as the SWAC of the area of interest.

3 RESULTS

Rasters of the interpolated values (normal scale) for each COPC in Table B-2 are provided in Figures B-16A through B-16Q. For the purposes of mapping interpolated values the 10th percentile ranges were selected based on professional judgment.

4 REFERENCES

Anchor QEA, 2010. *Patrick Bayou Sediment and Surface Water Contaminant of Potential Concern Delineation Data Report*. Patrick Bayou Superfund Site, Deer Park, Texas.

Anchor QEA, 2012. *Upstream Patrick Bayou Characterization Data Report*. Patrick Bayou Superfund Site, Deer Park, Texas.

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QEA, 2007. *Phase 2 dredge area delineation report: Hudson River PCBs Superfund Site.*

TABLES

Table B-1

Comparison of IDW and Kriging SWACs for PCBs

COPC	Units	IDW SWAC	Kriging SWAC
Total PCB Congeners	mg/kg	7.87	6.69
PCB TEQ (Fish)	µg/kg	0.011	0.0085
PCB TEQ (Avian)	µg/kg	2.08	1.68
PCB TEQ (Mammals)	µg/kg	0.11	0.096

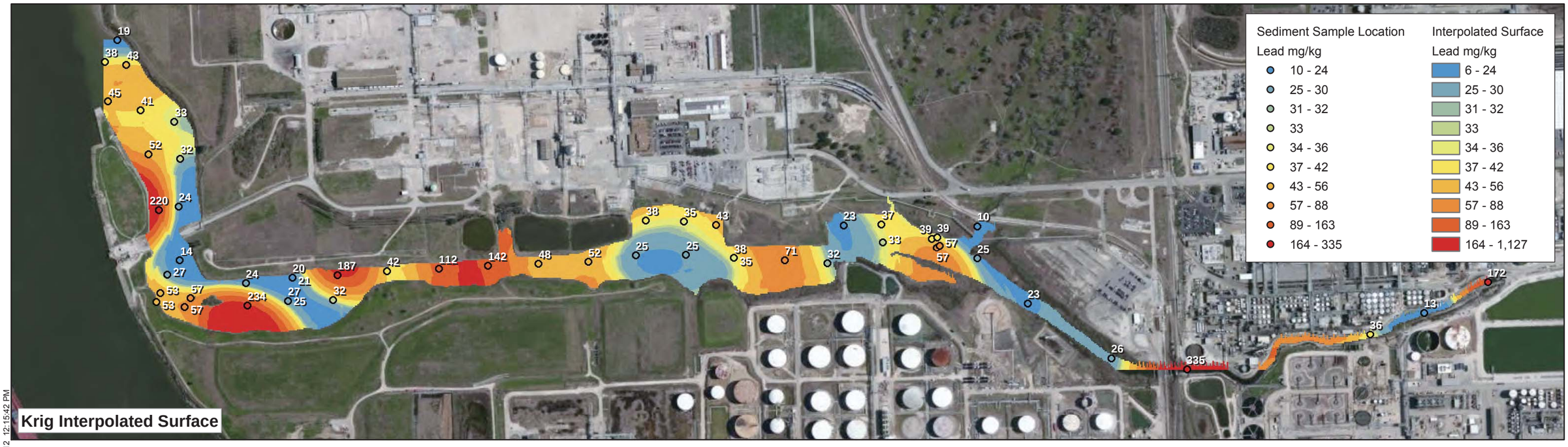
Notes:
IDW – Inverse distance weighting
SWAC – Surface weighted average
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram

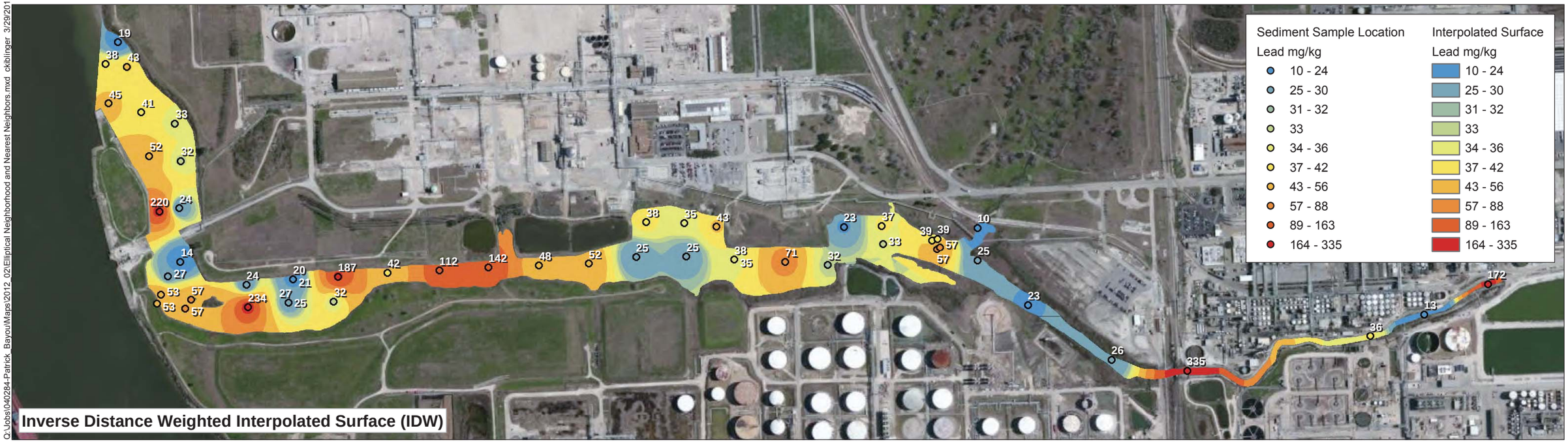
Table B-2

Transformation Parameters Selected for Each COPC

Chemical Name	Transformation Type	Transformation Parameter
1,3-Dichlorobenzene	Box-Cox	(-) 0.06
1,4-Dichlorobenzene	Box-Cox	(-) 0.1
Bis(2-ethylhexyl) phthalate	Natural Log	0
Hexachlorobenzene	Box-Cox	(-) 0.1
Hexachlorobutadiene	Box-Cox	(-) 0.1
Lead	Box-Cox	(-) 0.3
Mercury	Natural Log	0
Tetrachlorobiphenyls (total)	Box-Cox	(-) 0.09
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	Box-Cox	0.13
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	Box-Cox	0.11
Total LPAH (6 of 15) (U = 1/2)	Box-Cox	(-) 0.12
Total PAH (15) (U = 1/2)	Box-Cox	(-) 0.06
Total PCB Congener (U = 1/2)	Natural Log	0
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	Natural Log	0
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	Box-Cox	(-) 0.05
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	Natural Log	0
Trichlorobiphenyls (total)	Box-Cox	(-) 0.08

FIGURES





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Feet
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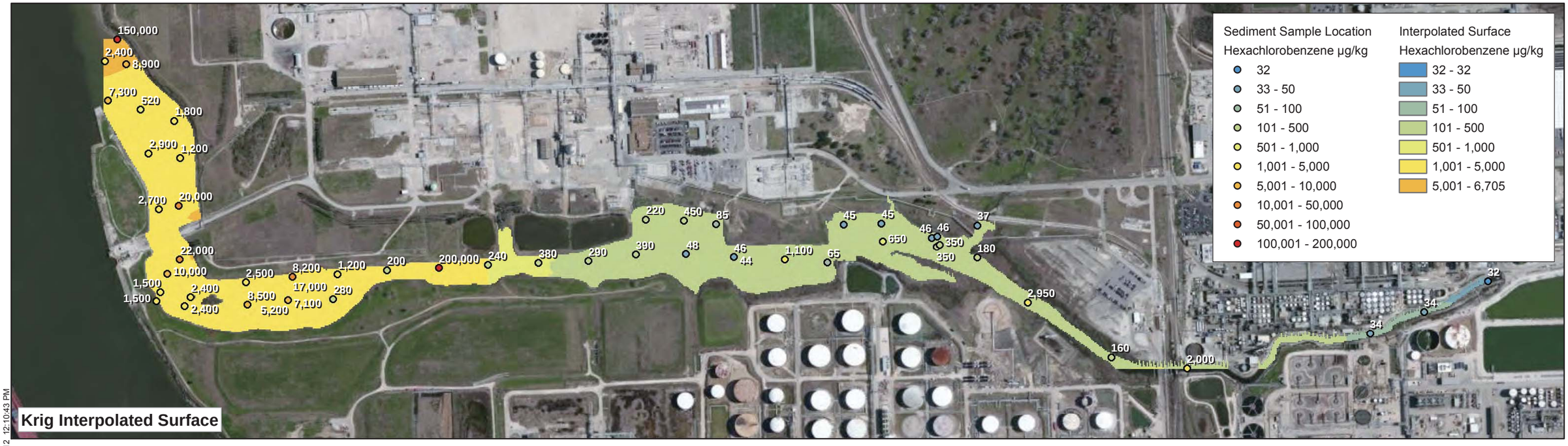
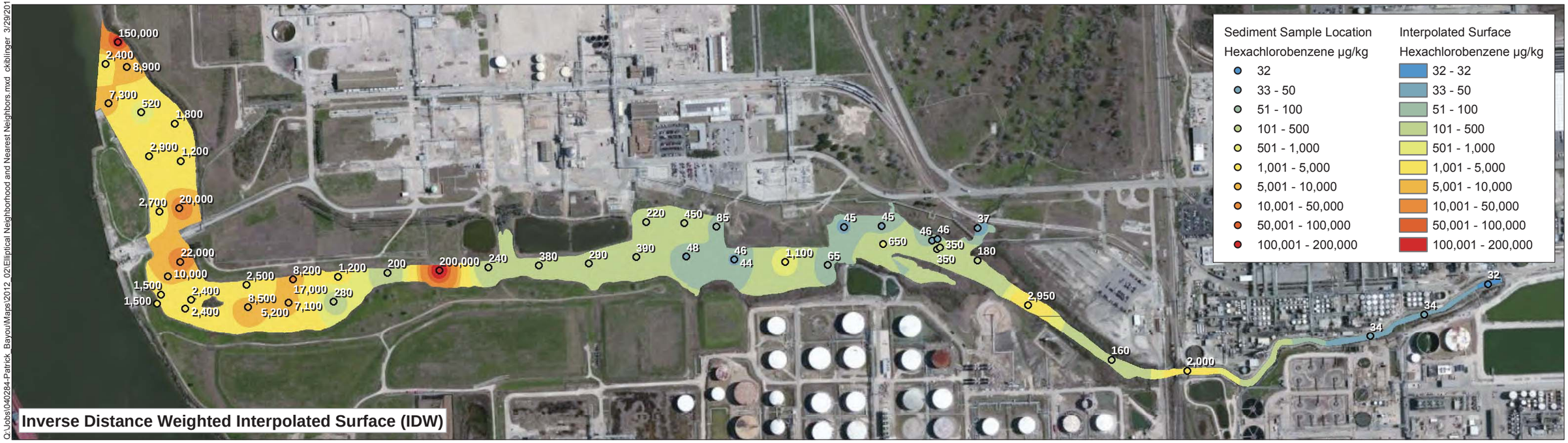
Figure B-1
Lead: Kriging and Inverse Distance Weighted
Baseline Ecological Risk Assessment Report
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas





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ANCHOR QEA

Feet
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Figure B-2
Hexachlorobenzene: Kriging and Inverse Distance Weighted
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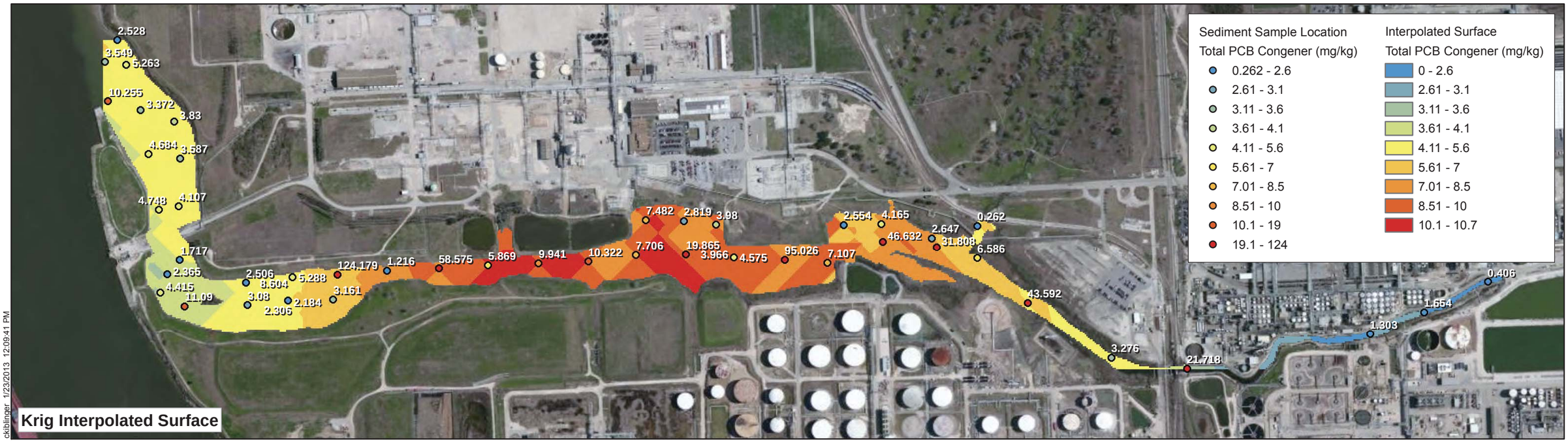
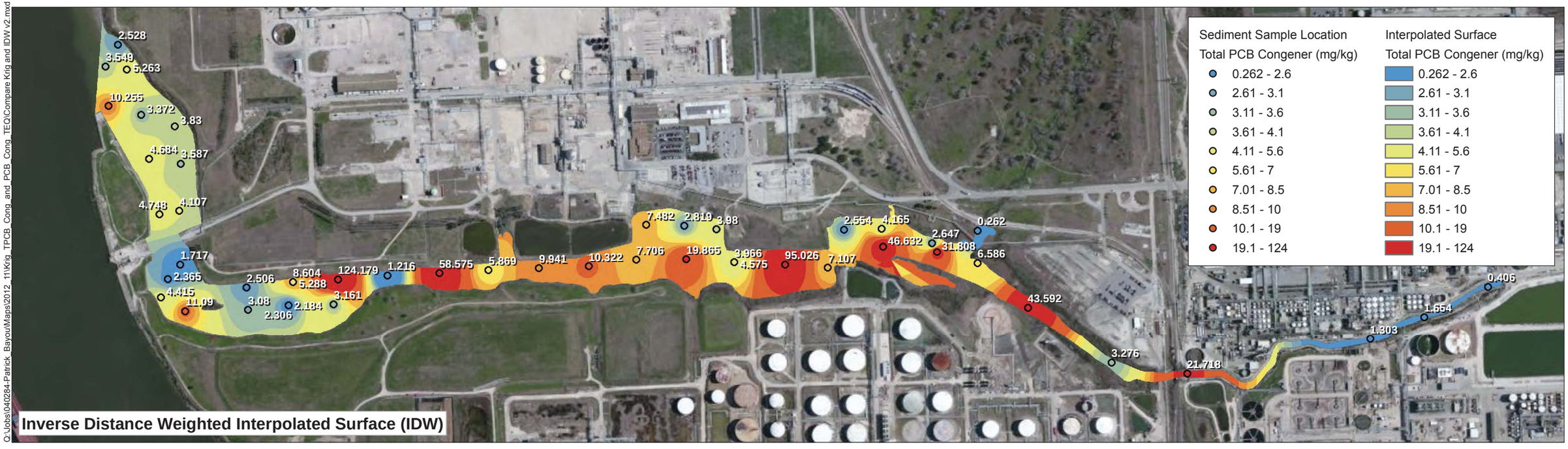
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas





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Feet
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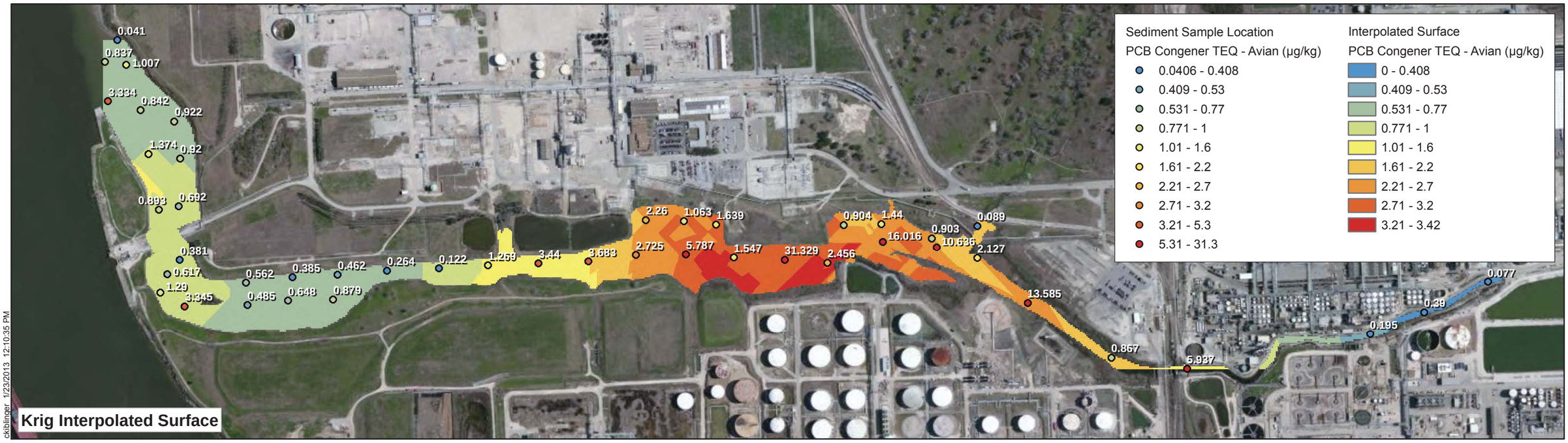
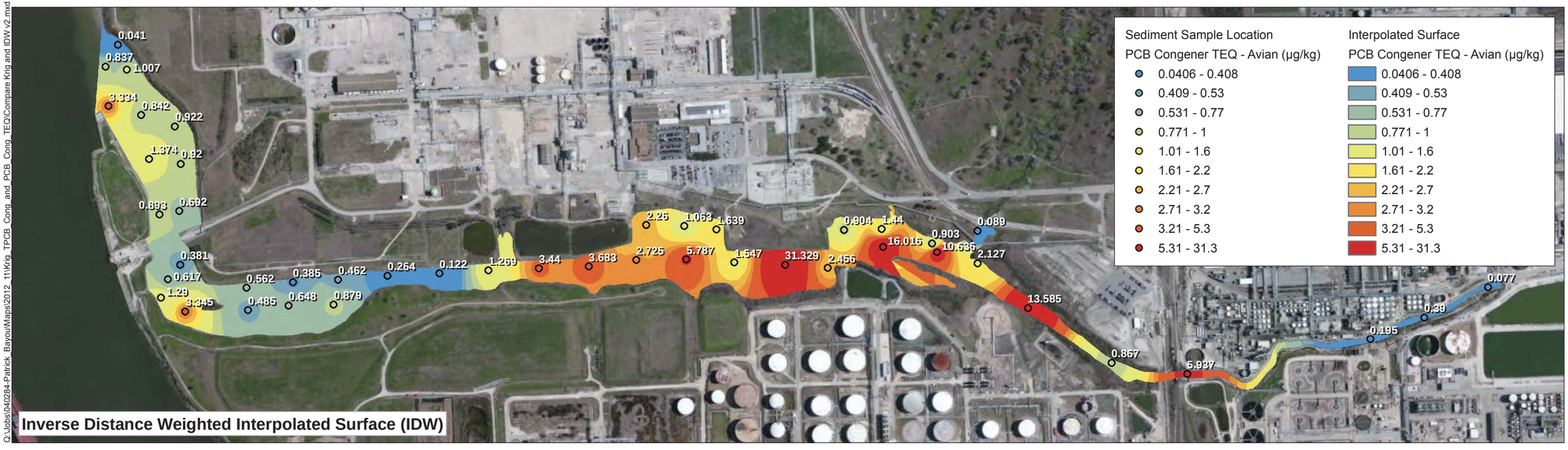
Figure B-3
Total PCB Congener: Kriging and Inverse Distance Weighted
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas





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Feet
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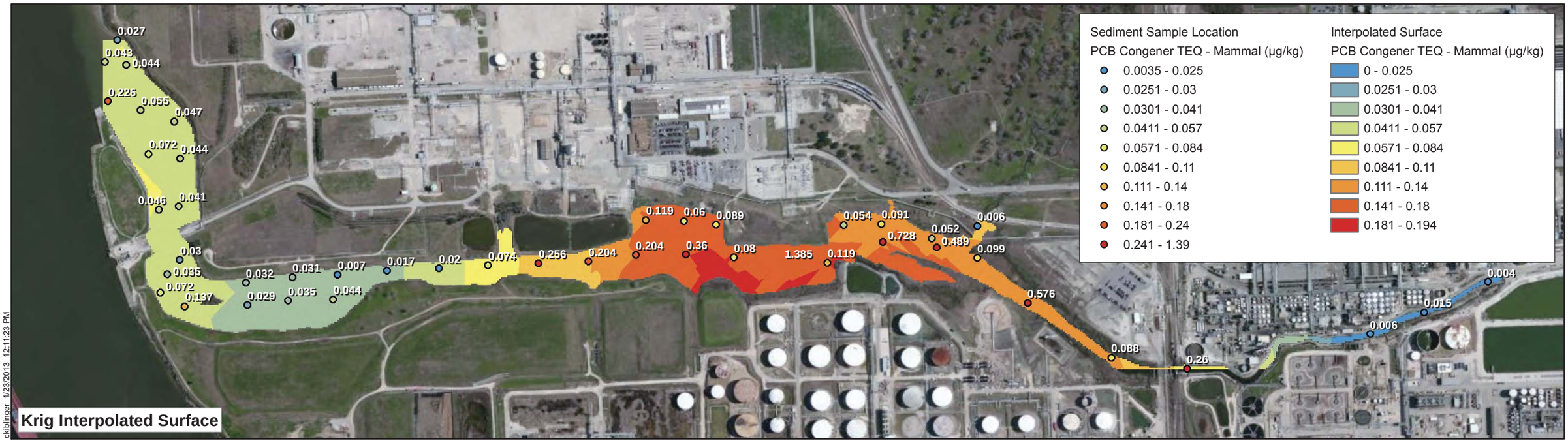
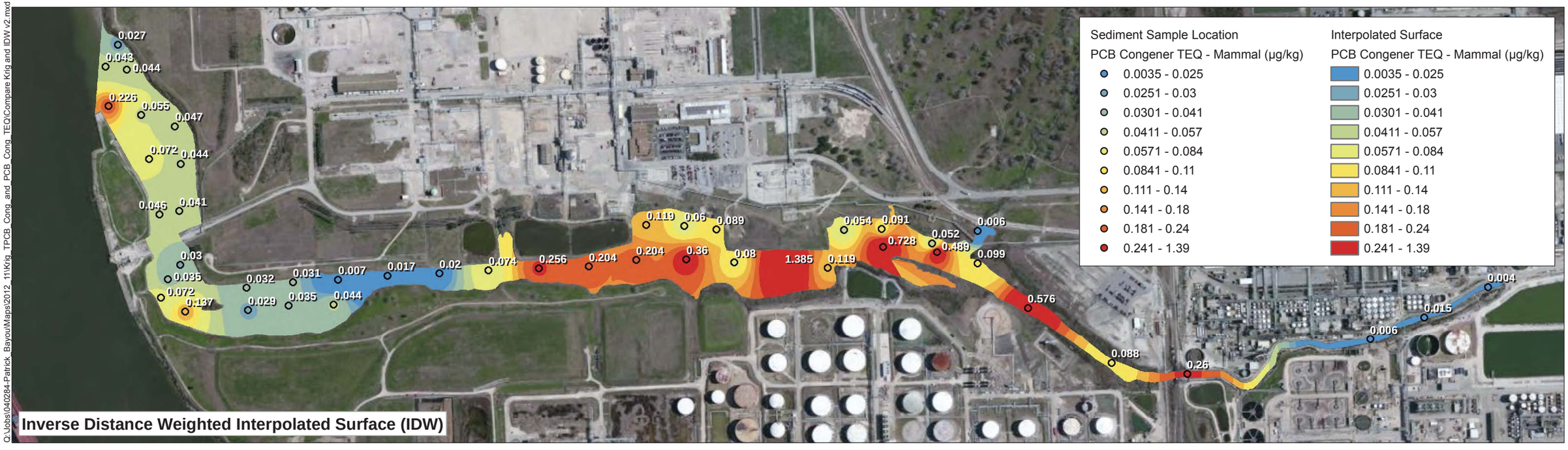
Figure B-4
Total PCB Congener TEQ (Avian): Kriging and Inverse Distance Weighted
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas





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ANCHOR QEA

Feet
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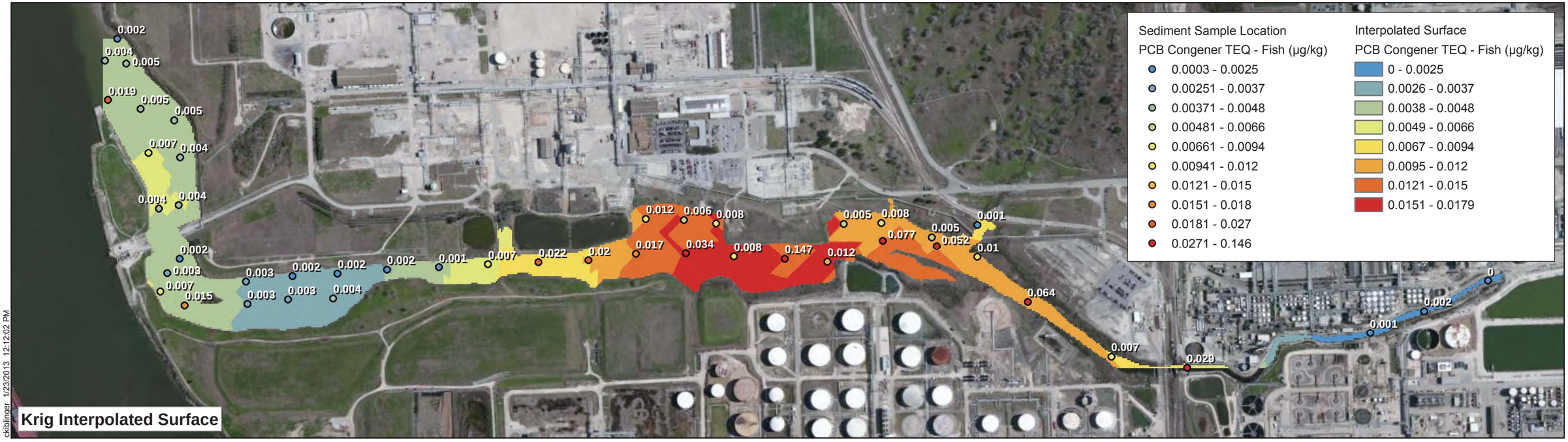
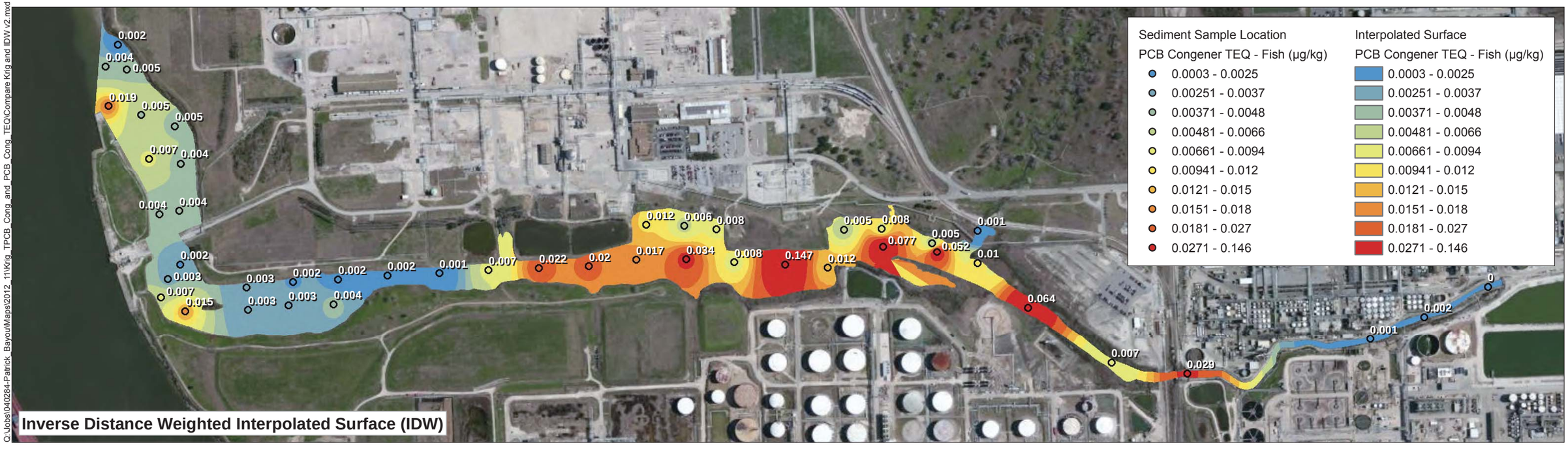
Figure B-5
Total PCB Congener TEQ (Mammal): Kriging and Inverse Distance Weighted
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas





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Feet
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Figure B-6
Total PCB Congener TEQ (Fish): Kriging and Inverse Distance Weighted
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

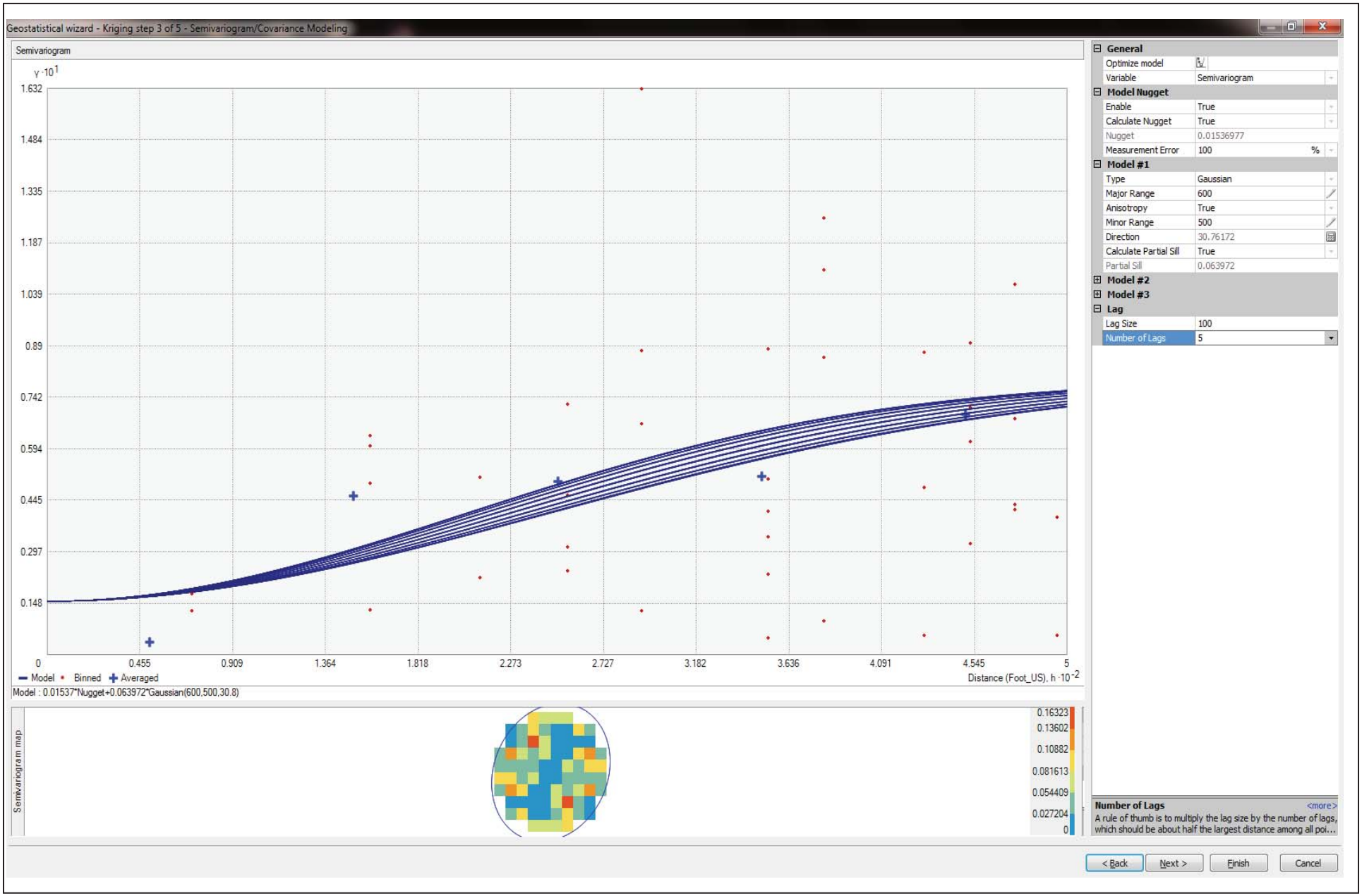

Figure B-7
Lead Variogram
Baseline Ecological Risk Assesment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

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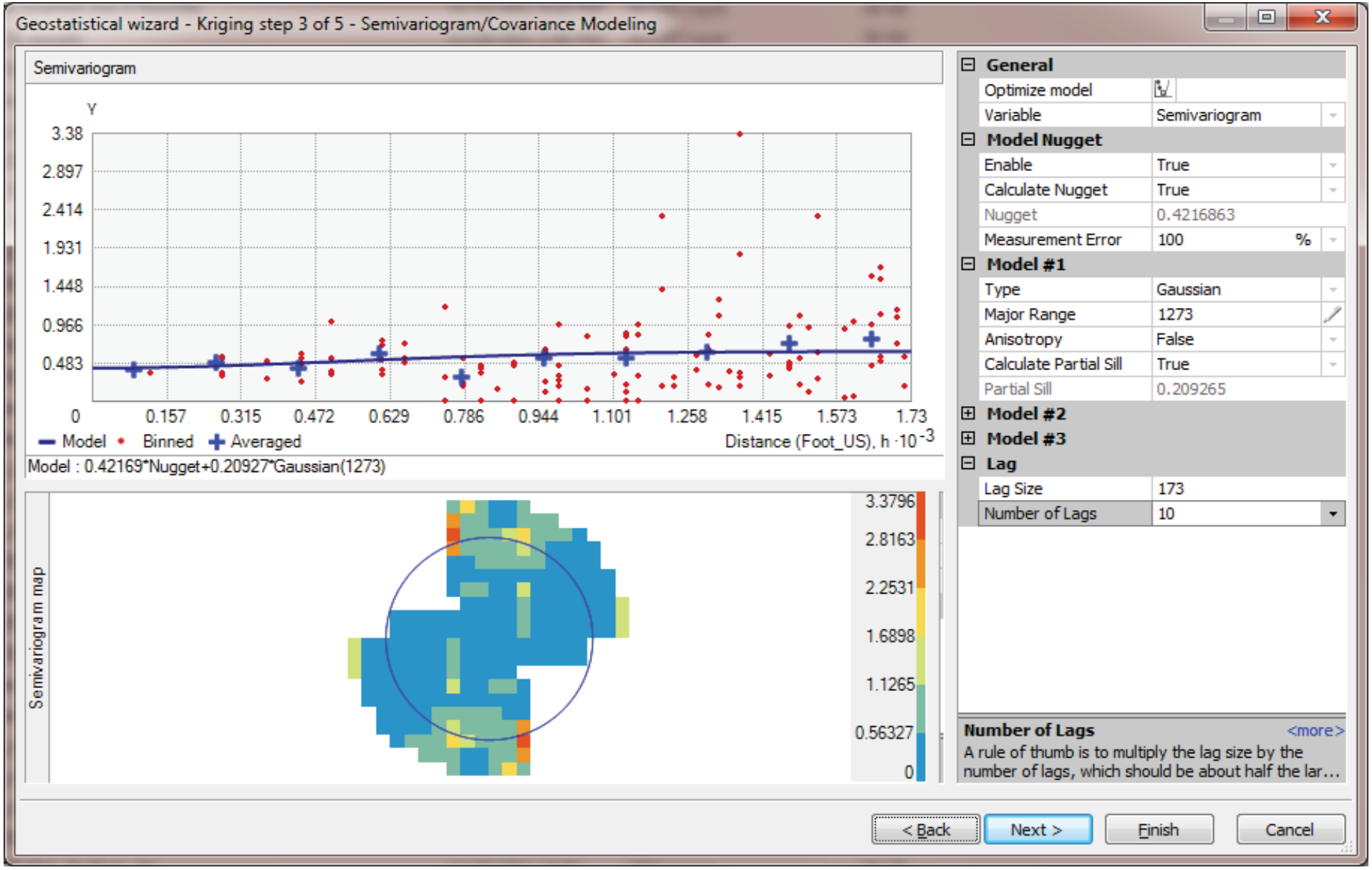

Figure B-8
Hexachlorobenzene Variogram
Baseline Ecological Risk Assesment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

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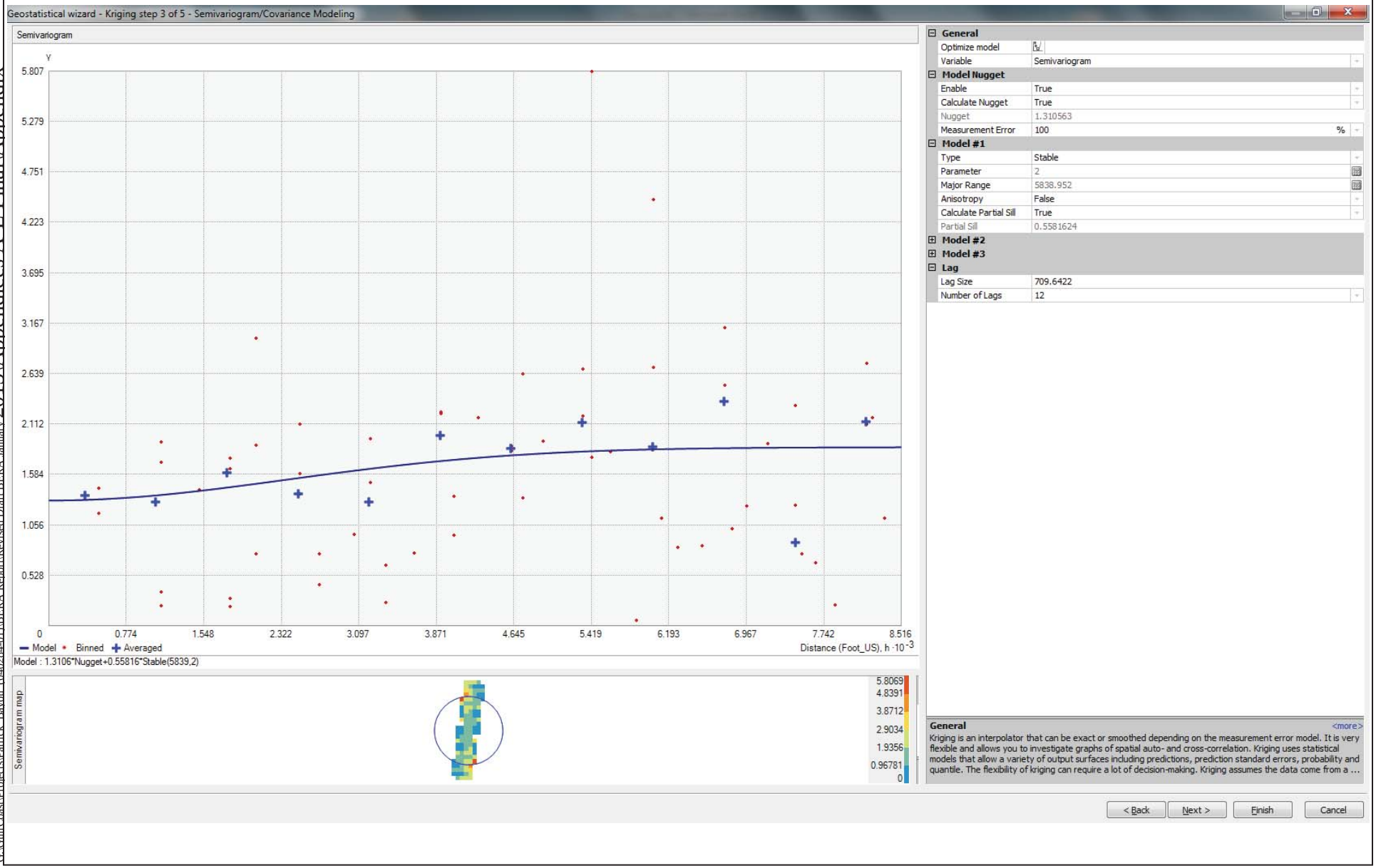

Figure B-9

Total PCB Congener Variogram

Baseline Ecological Risk Assesment

Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

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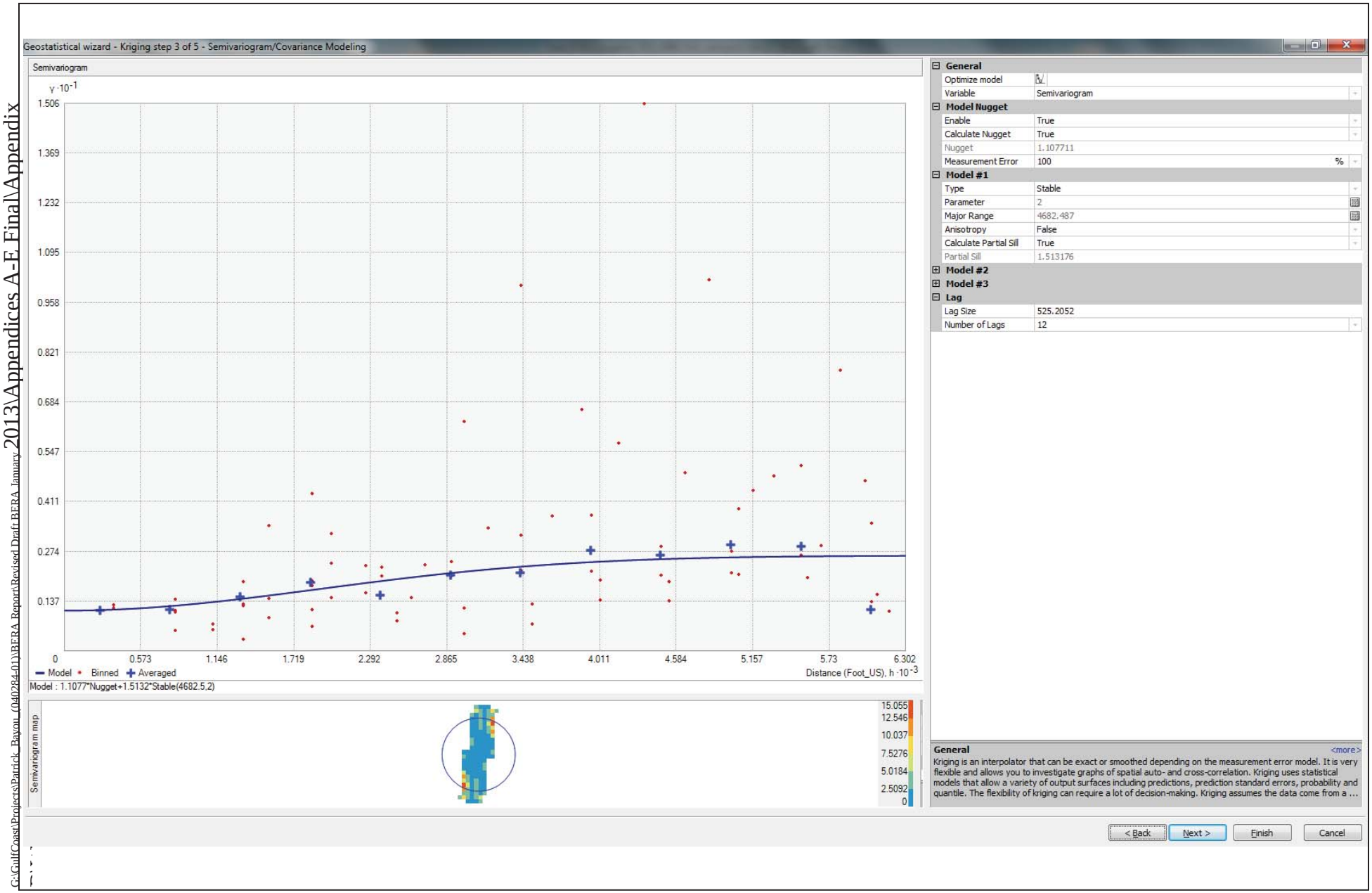

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Figure B-10
Total PCB Congener TEQ (Avian) Variogram
Baseline Ecological Risk Assesment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

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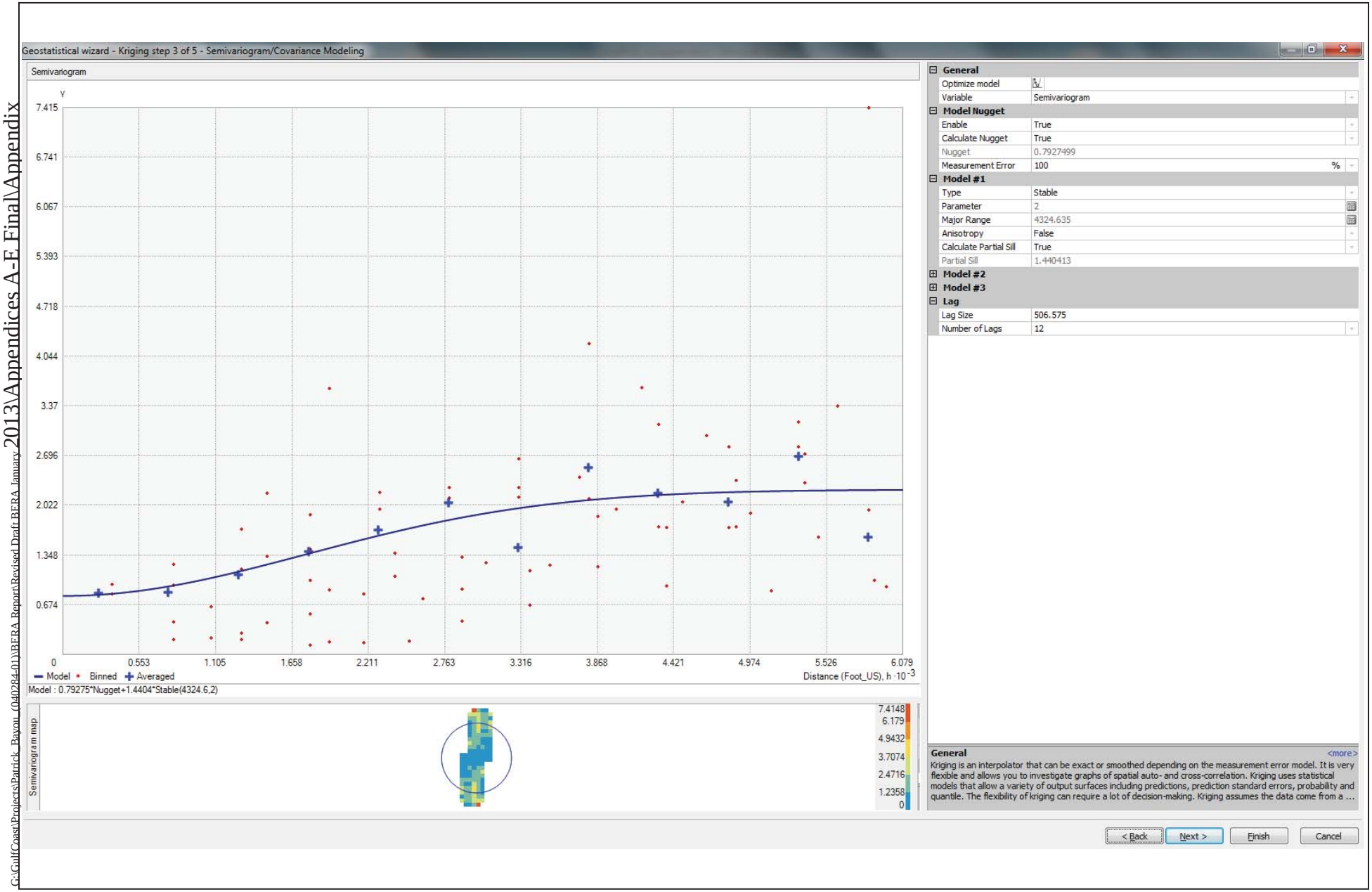

Figure B-11
Total PCB Congener TEQ (Mammal) Variogram
Baseline Ecological Risk Assesment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

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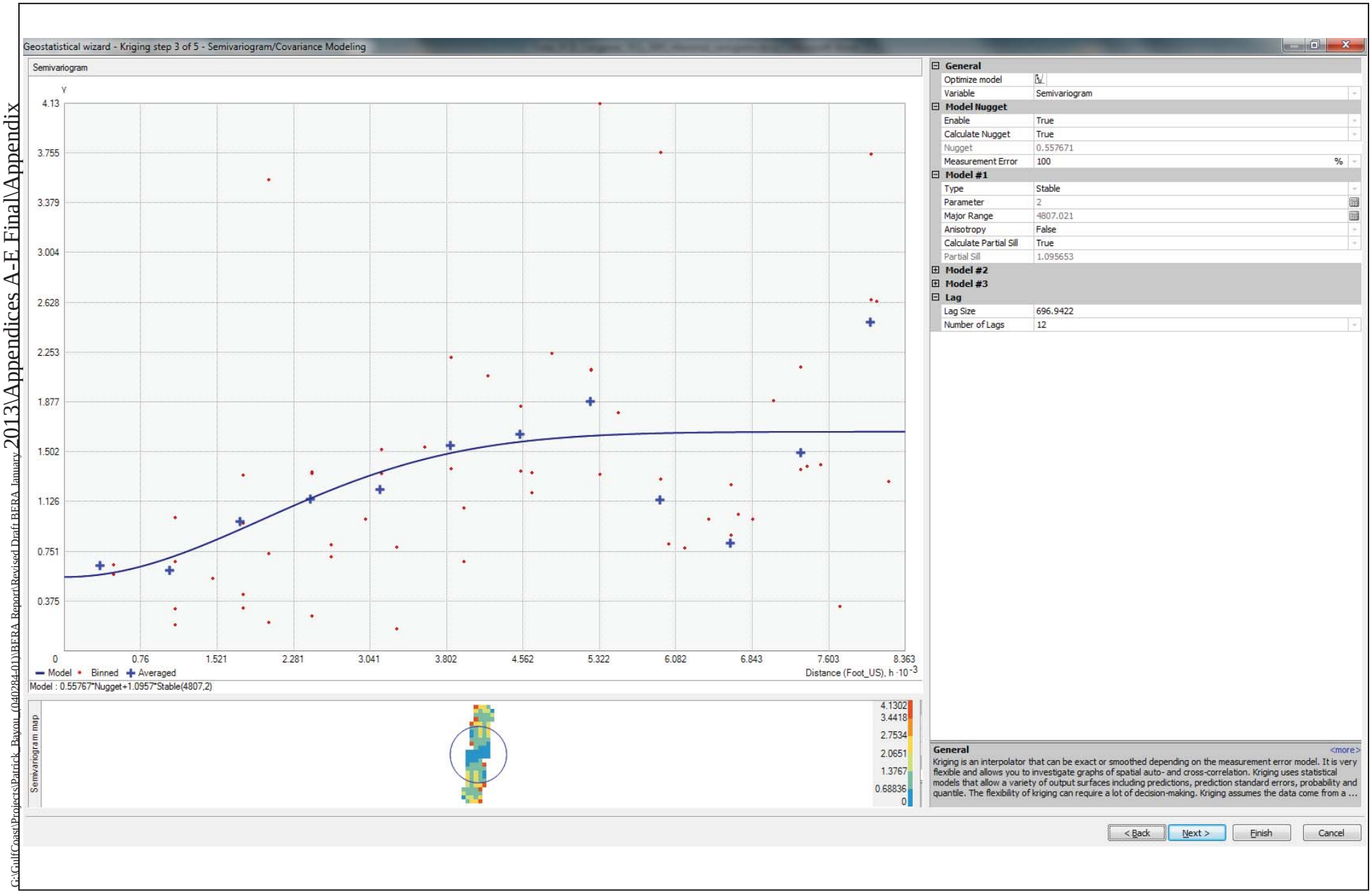

Figure B-12

Total PCB Congener TEQ (Fish) Variogram

Baseline Ecological Risk Assesment

Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

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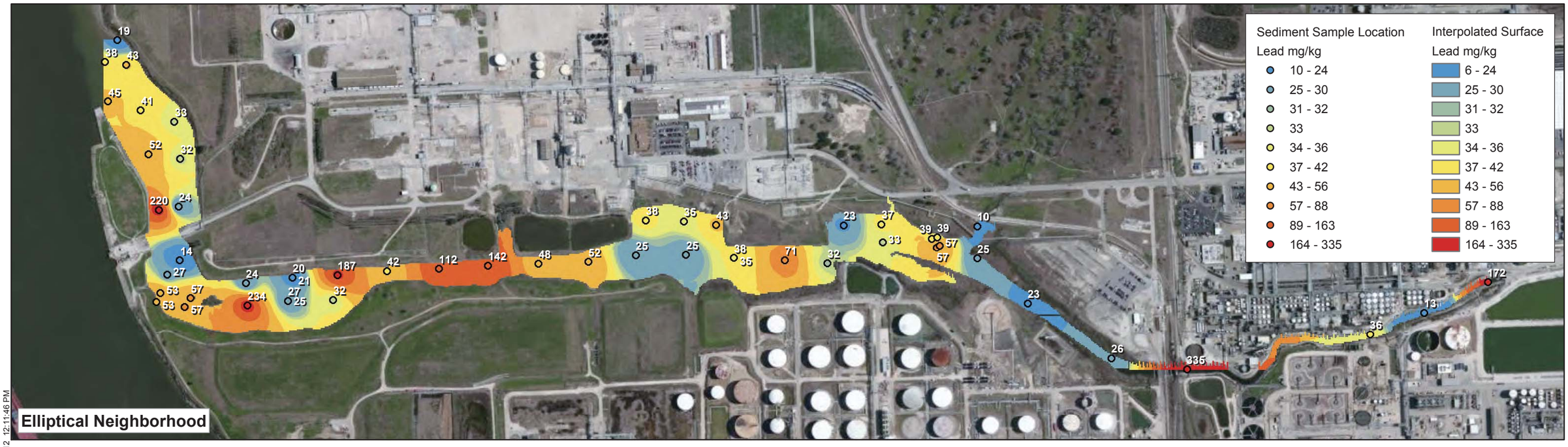

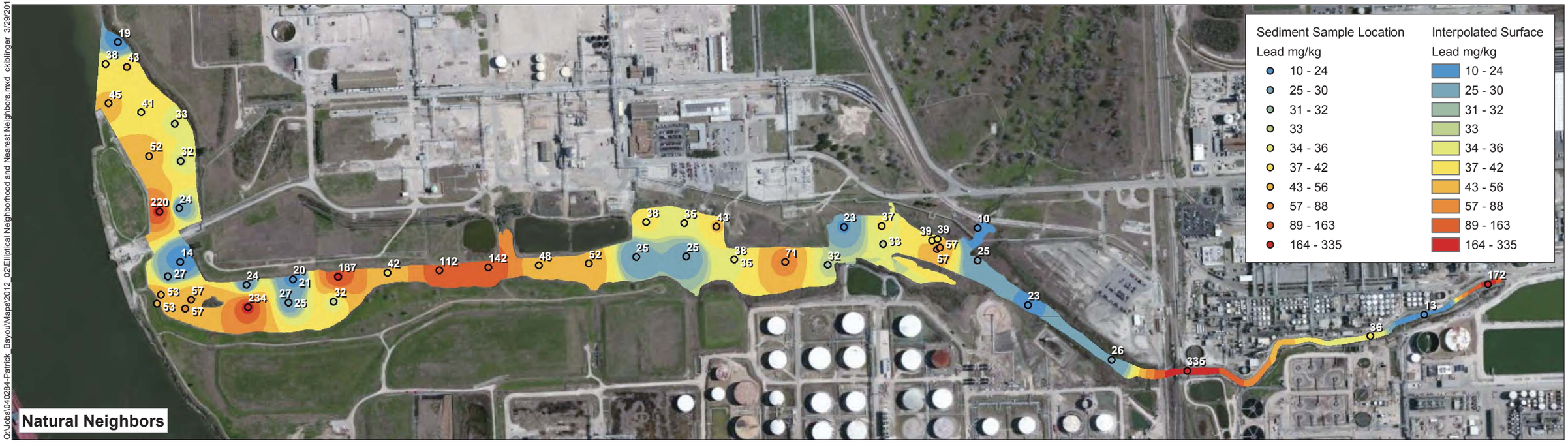

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Figure B-13
Lead Search Neighborhood Comparison
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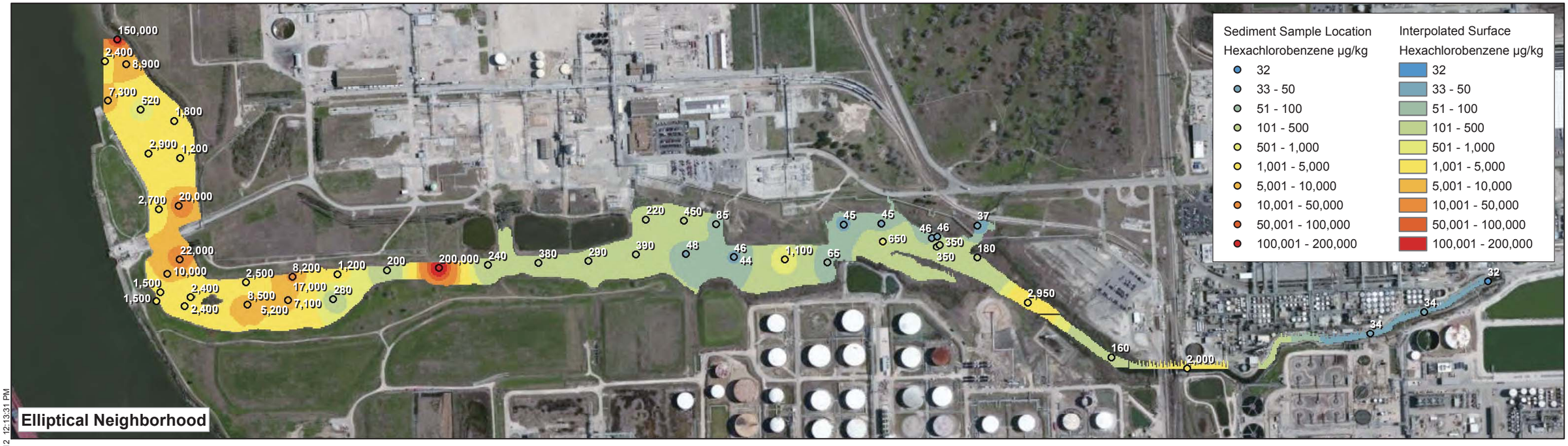
Patrick Bayou Superfund Site Remedial Alternatives, Deer Park, Texas



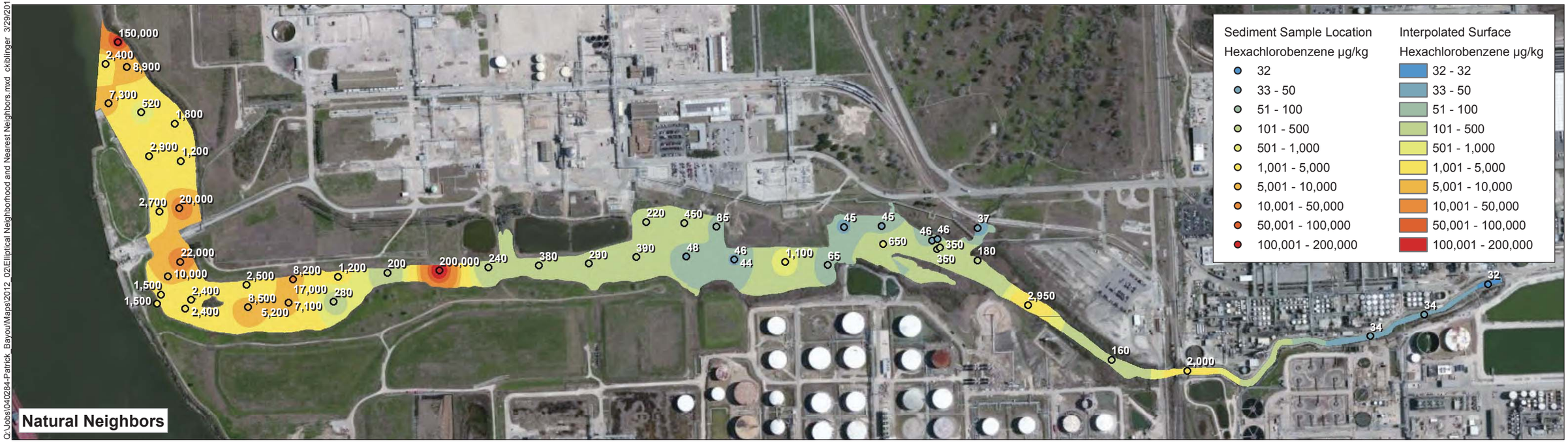


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Figure B-14
Hexachlorobenzene Search Neighborhood Comparison
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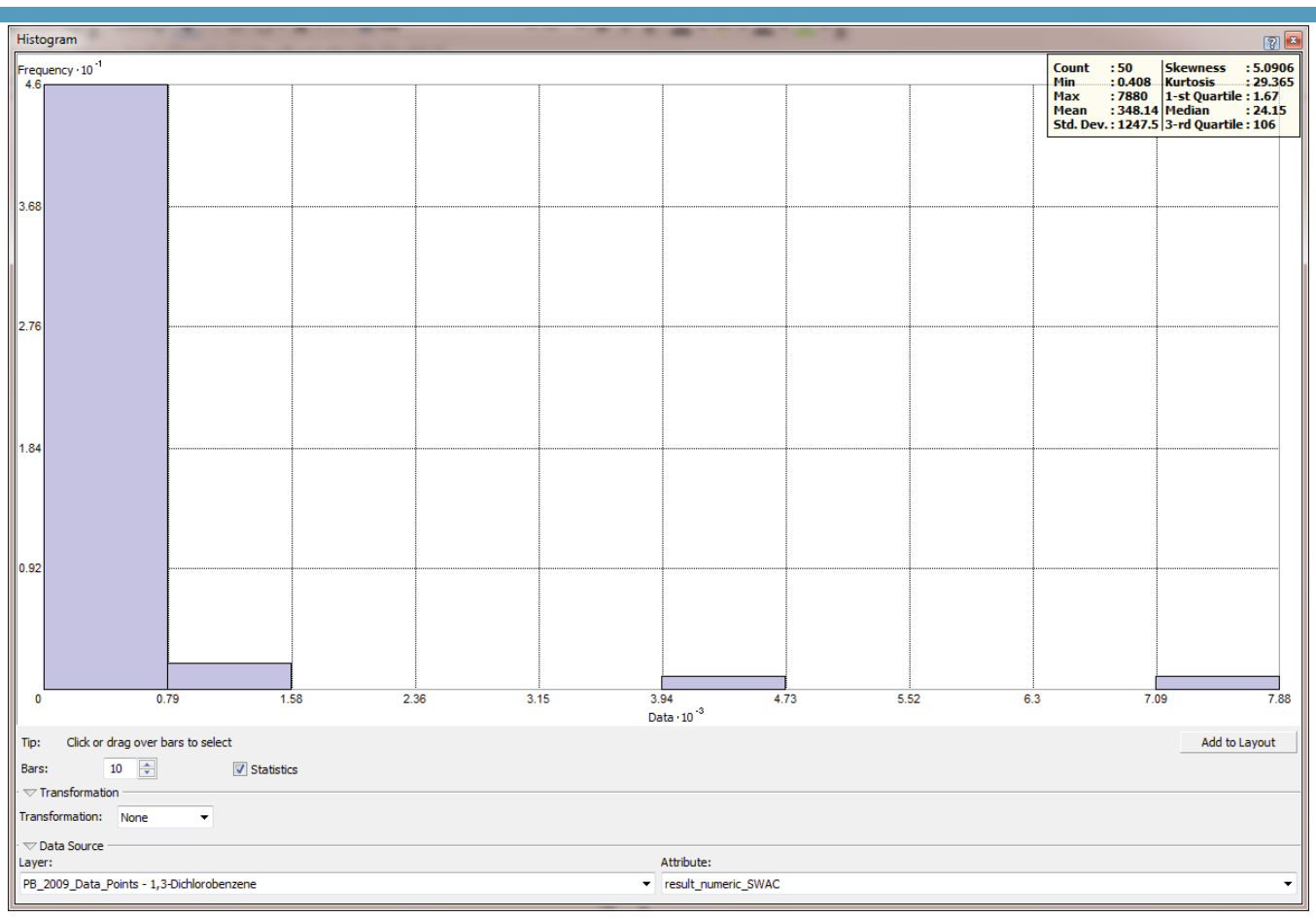
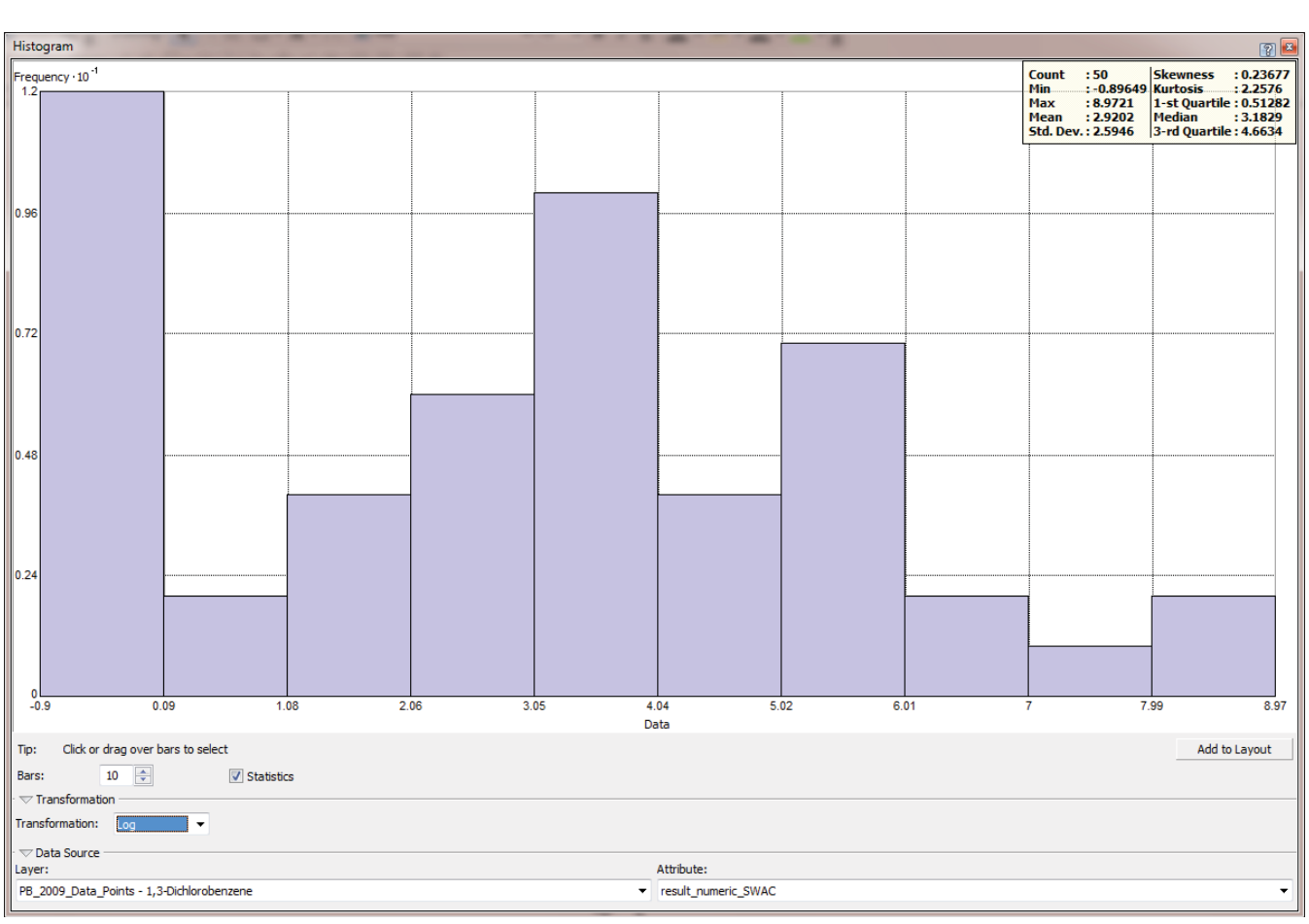
Patrick Bayou Superfund Site Remedial Alternatives, Deer Park, Texas





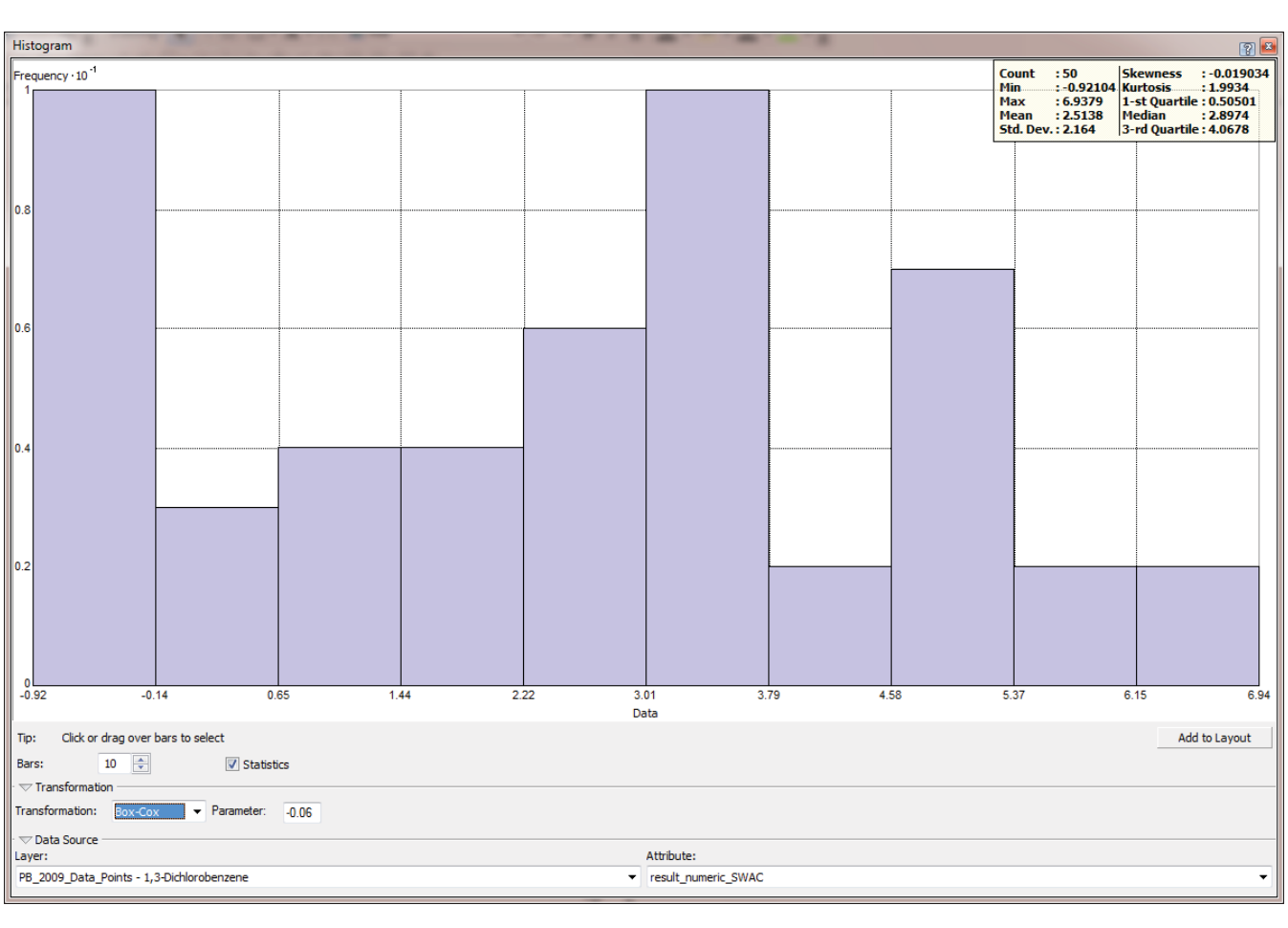
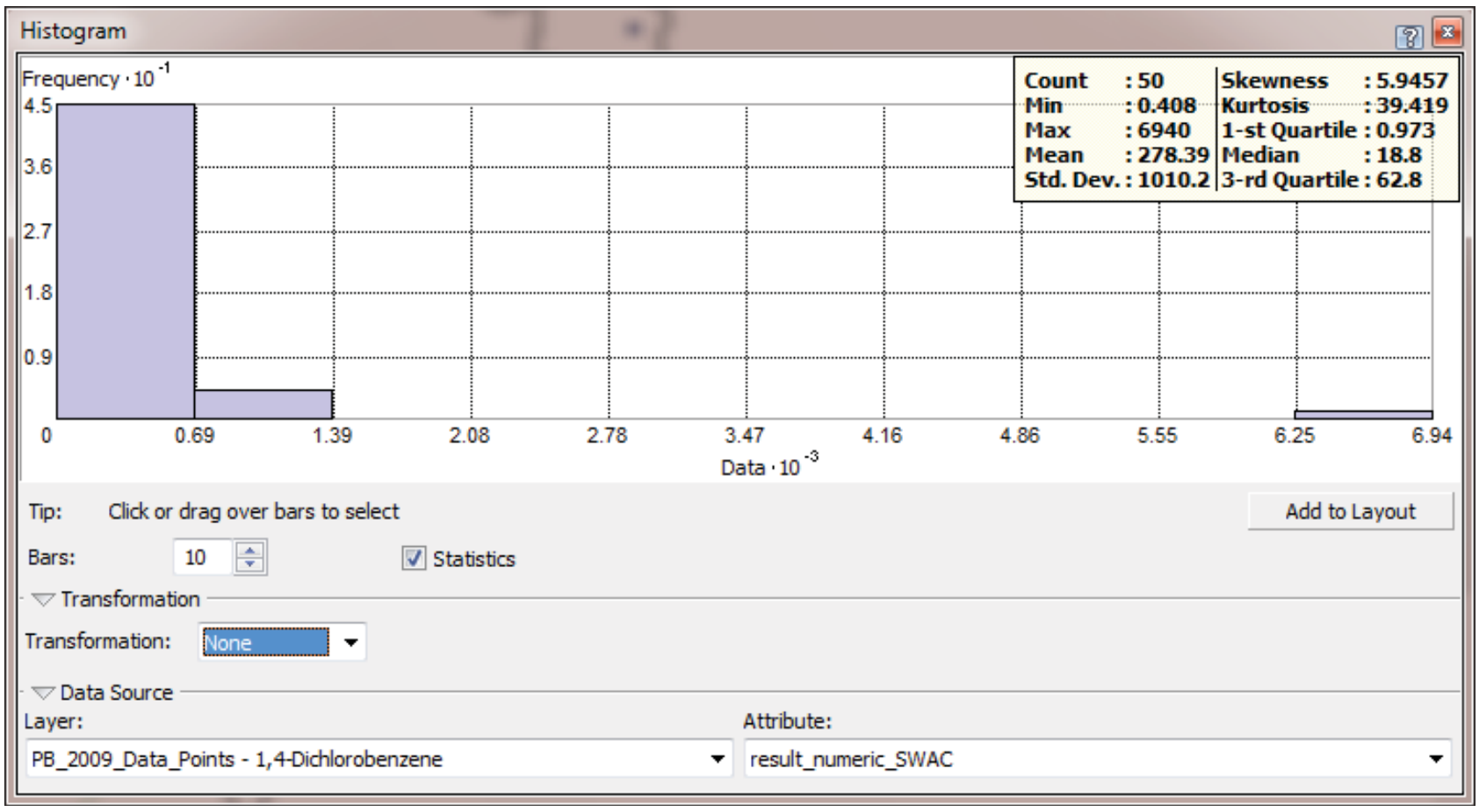
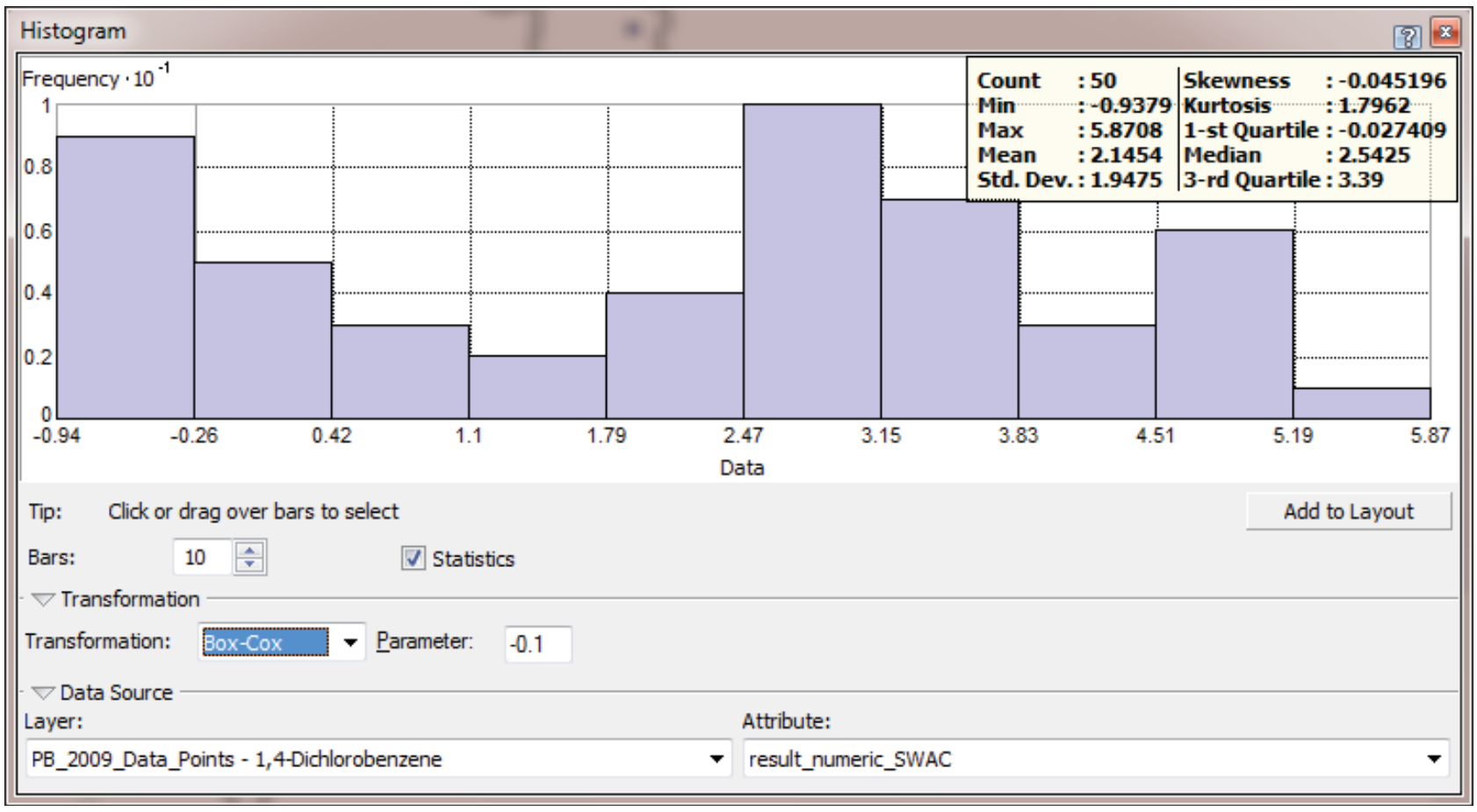


Figure B-15A
1,3-Dichlorobenzene Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas





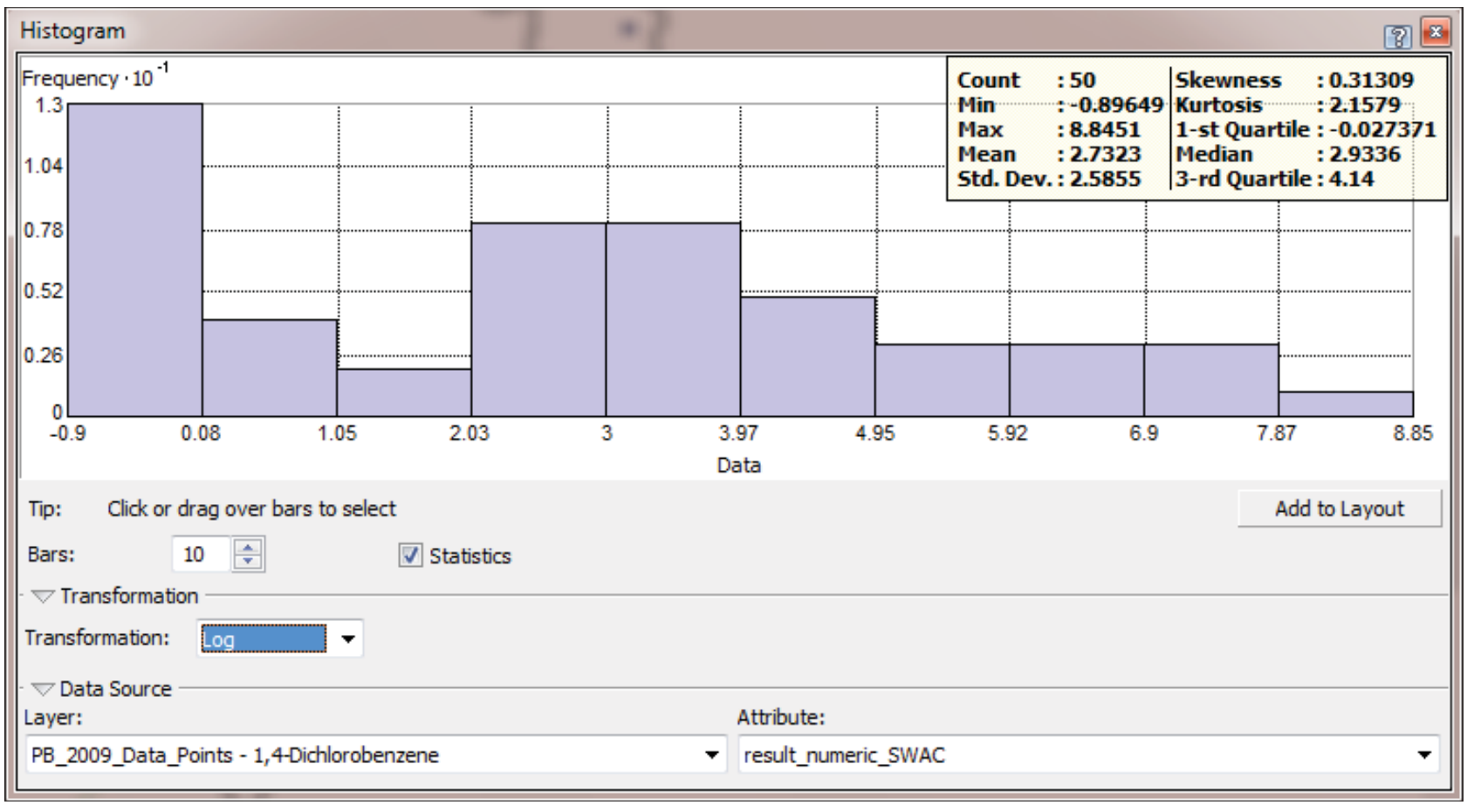


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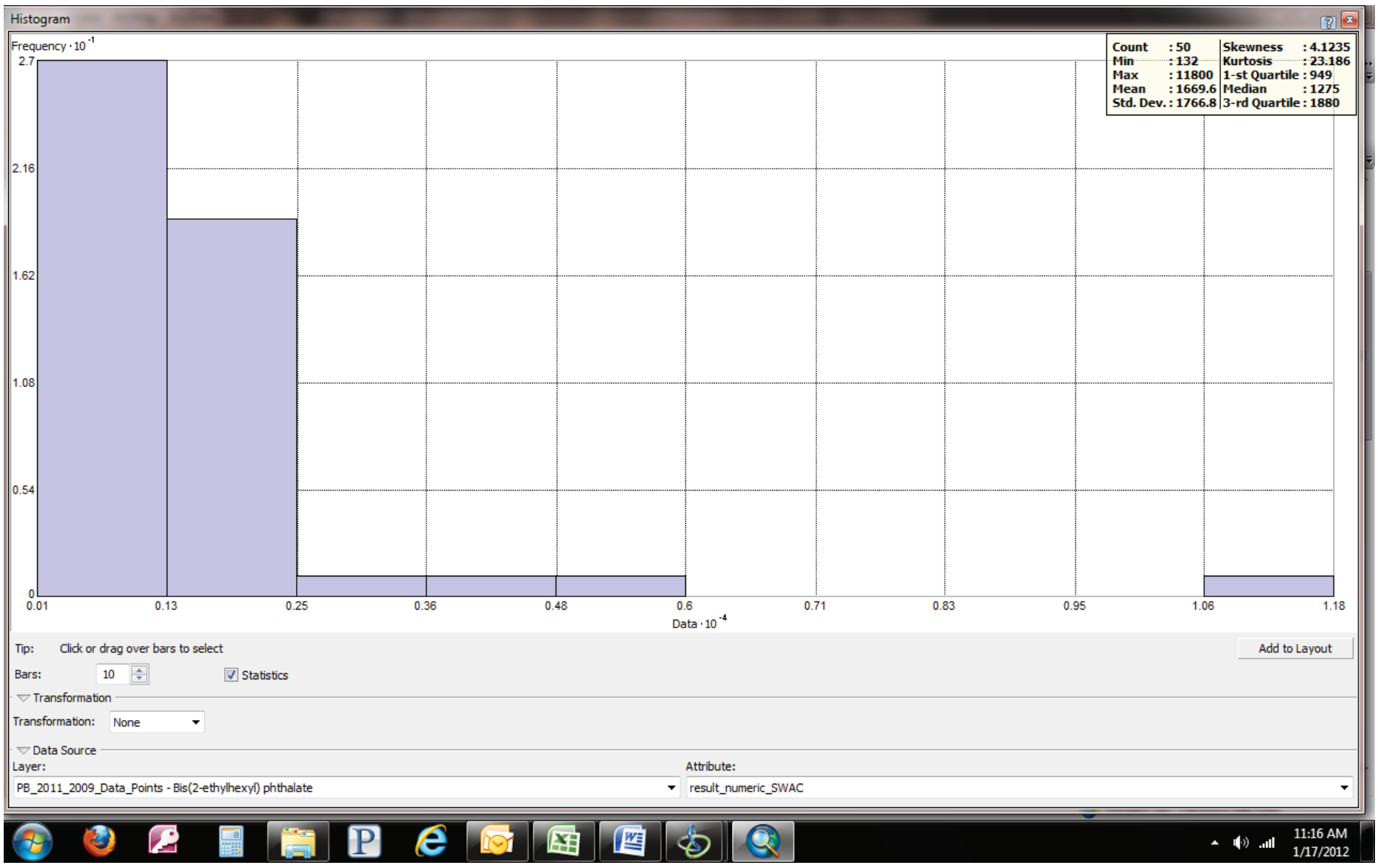
Figure B-15B
1,4 Dichlorobenzene Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



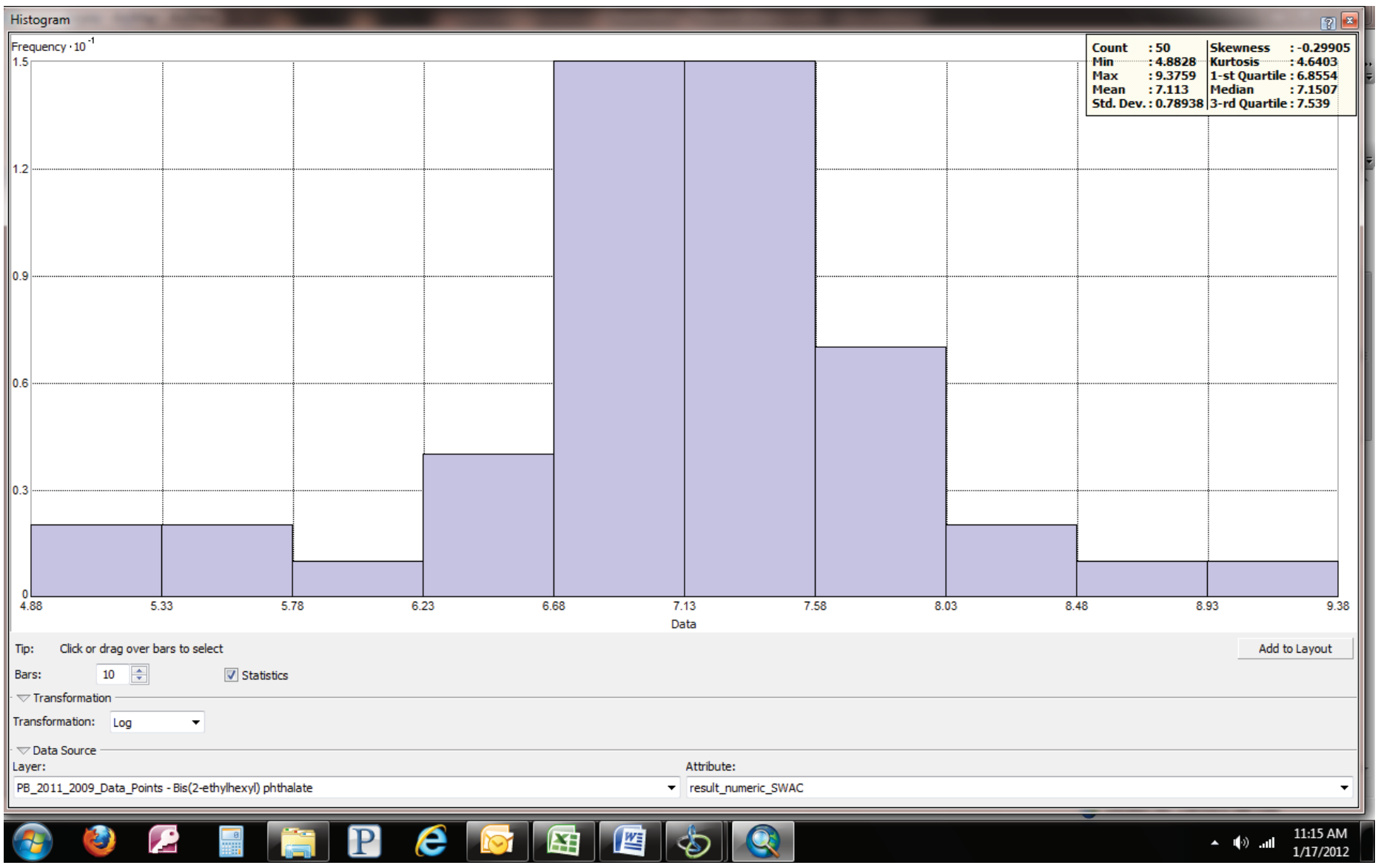
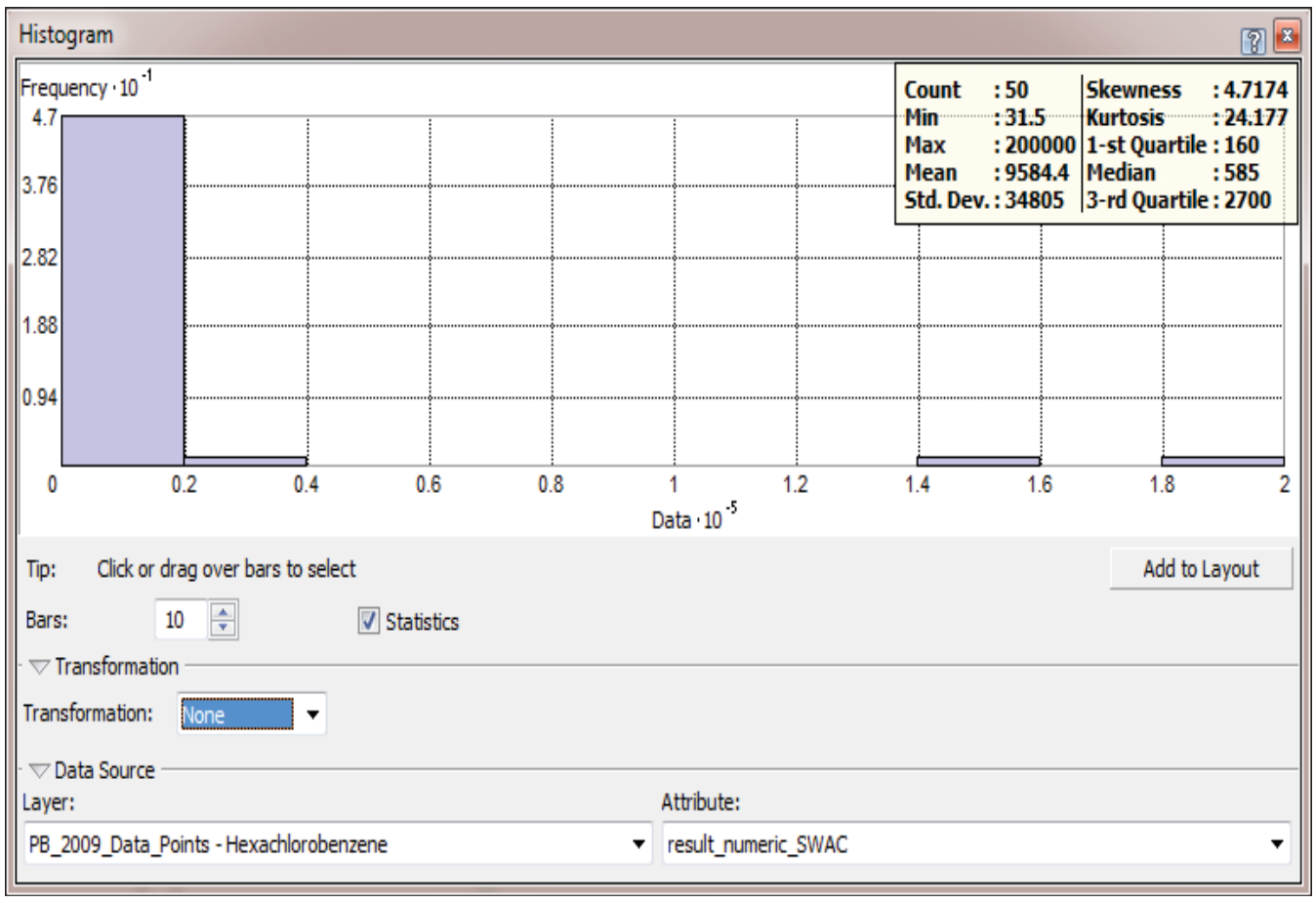
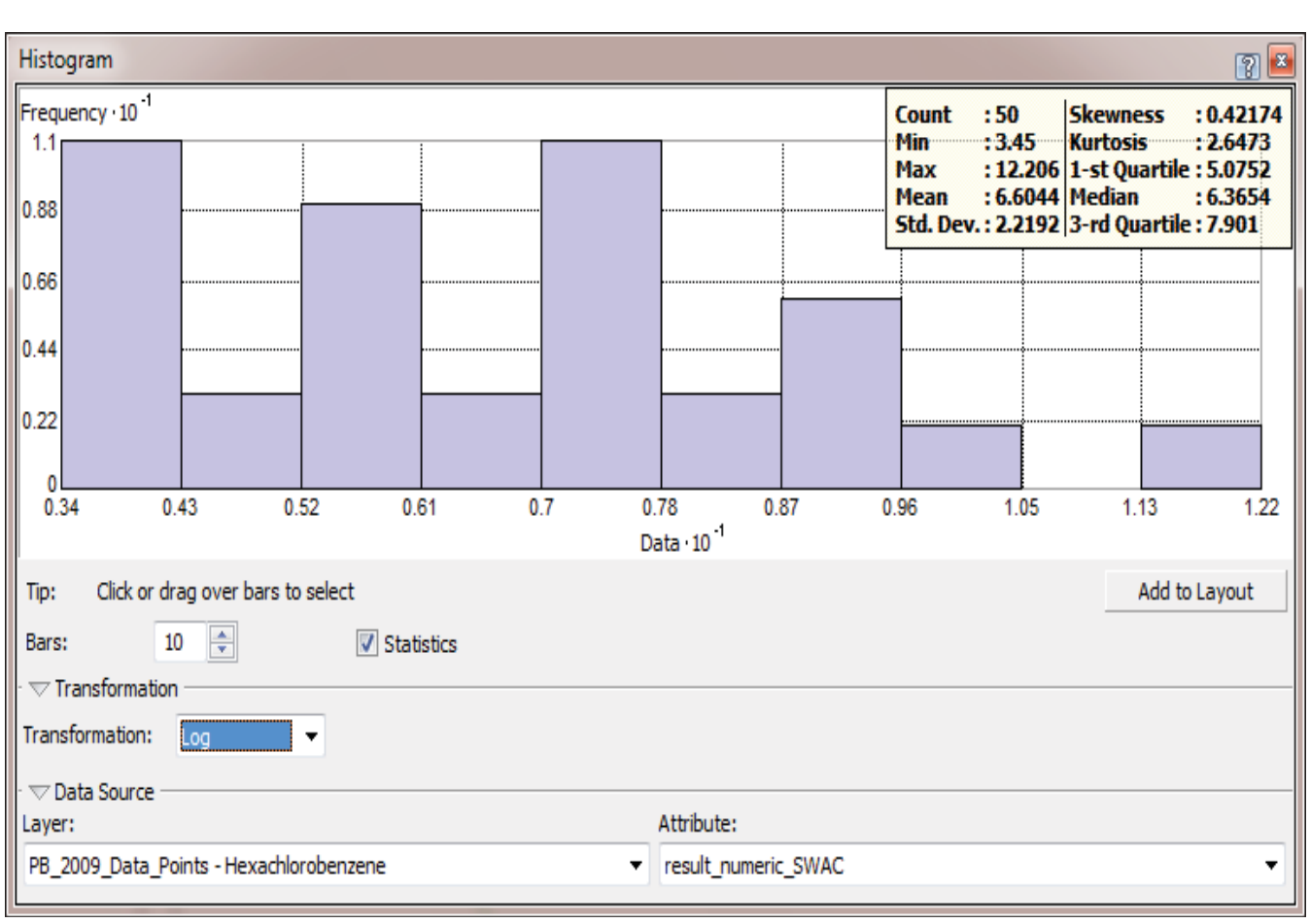


Figure B-15C
Bis(2-ethylhexyl)phthalate Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas





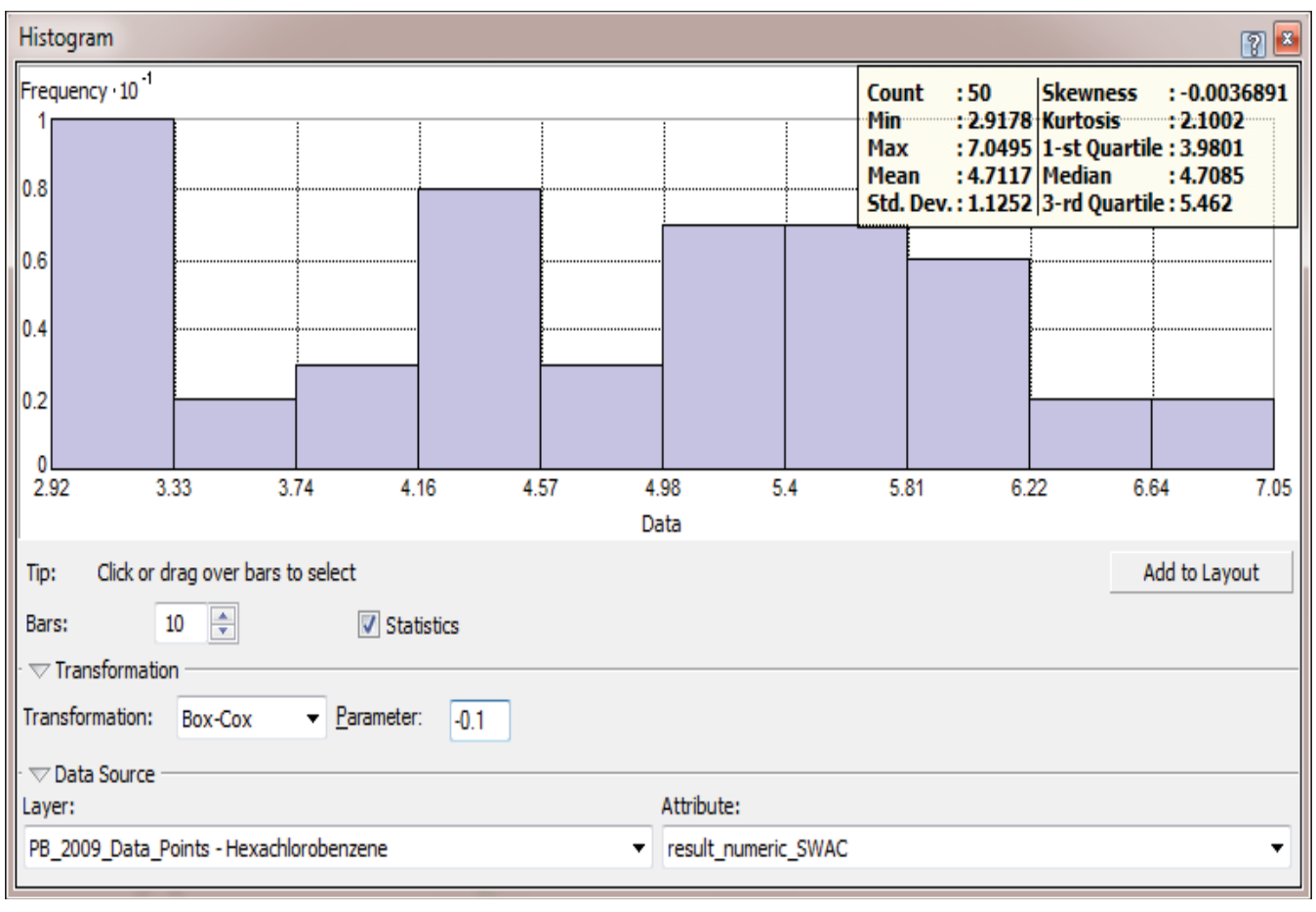


Figure B-15D
Hexachlorobenzene Histogram
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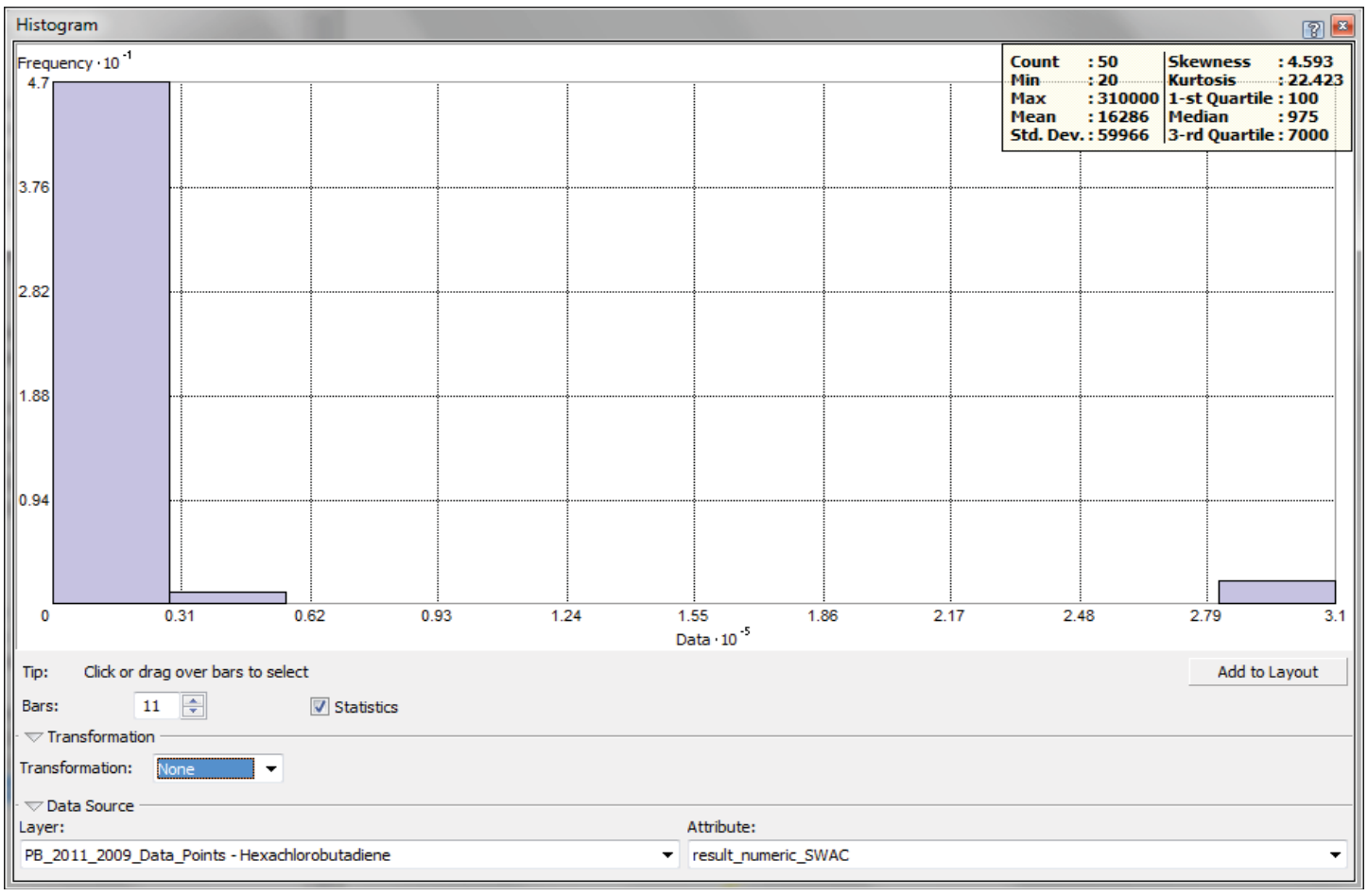
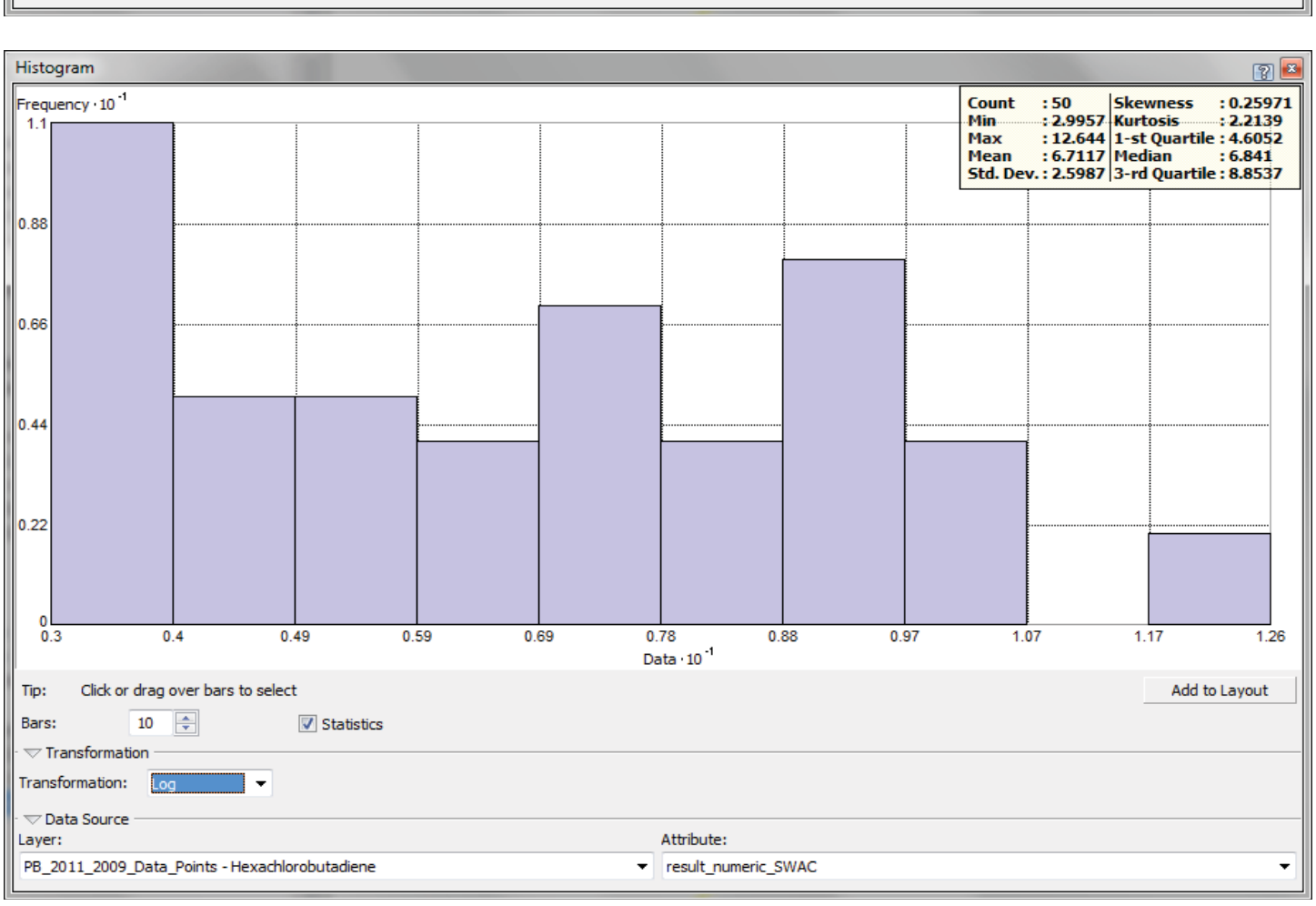
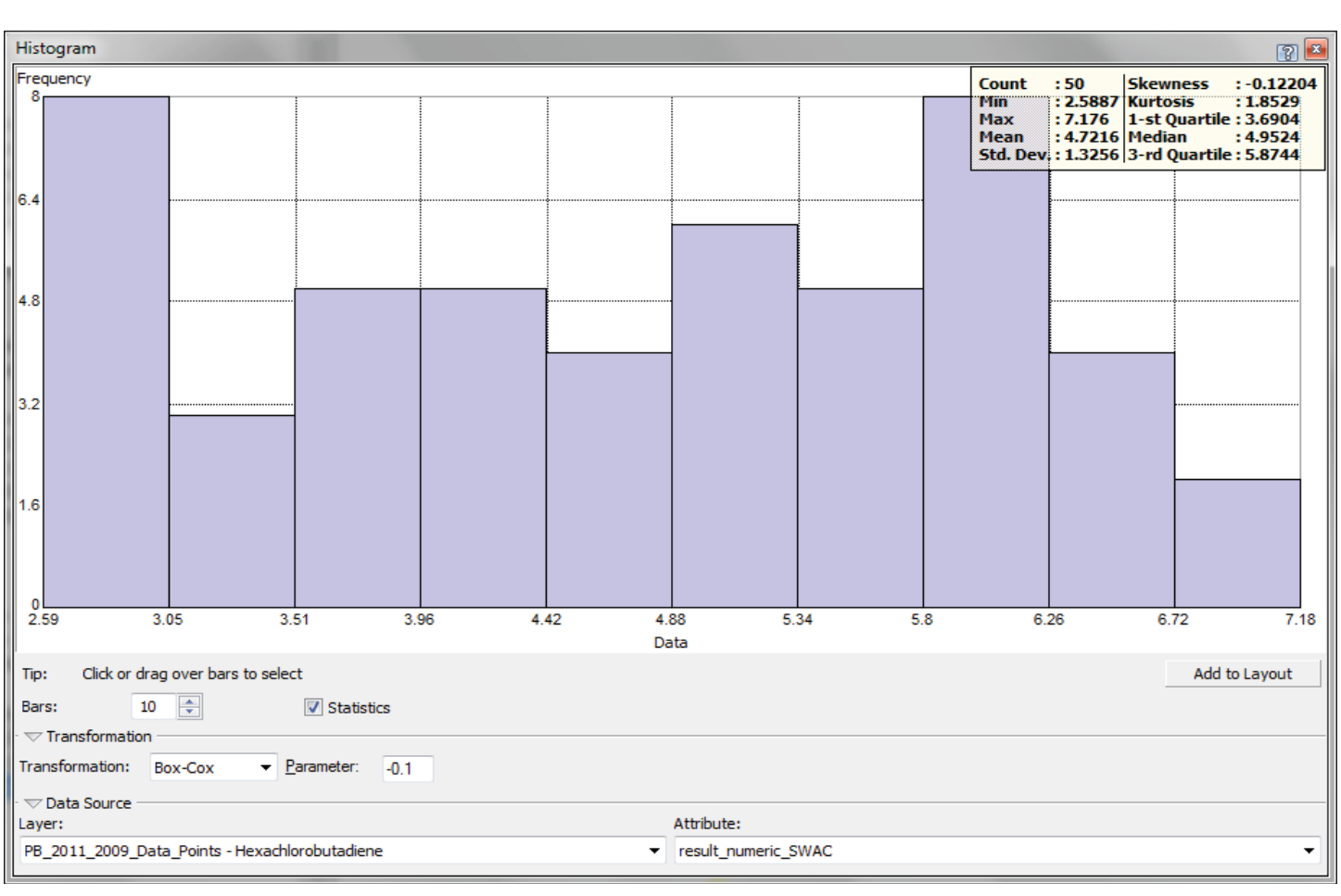
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

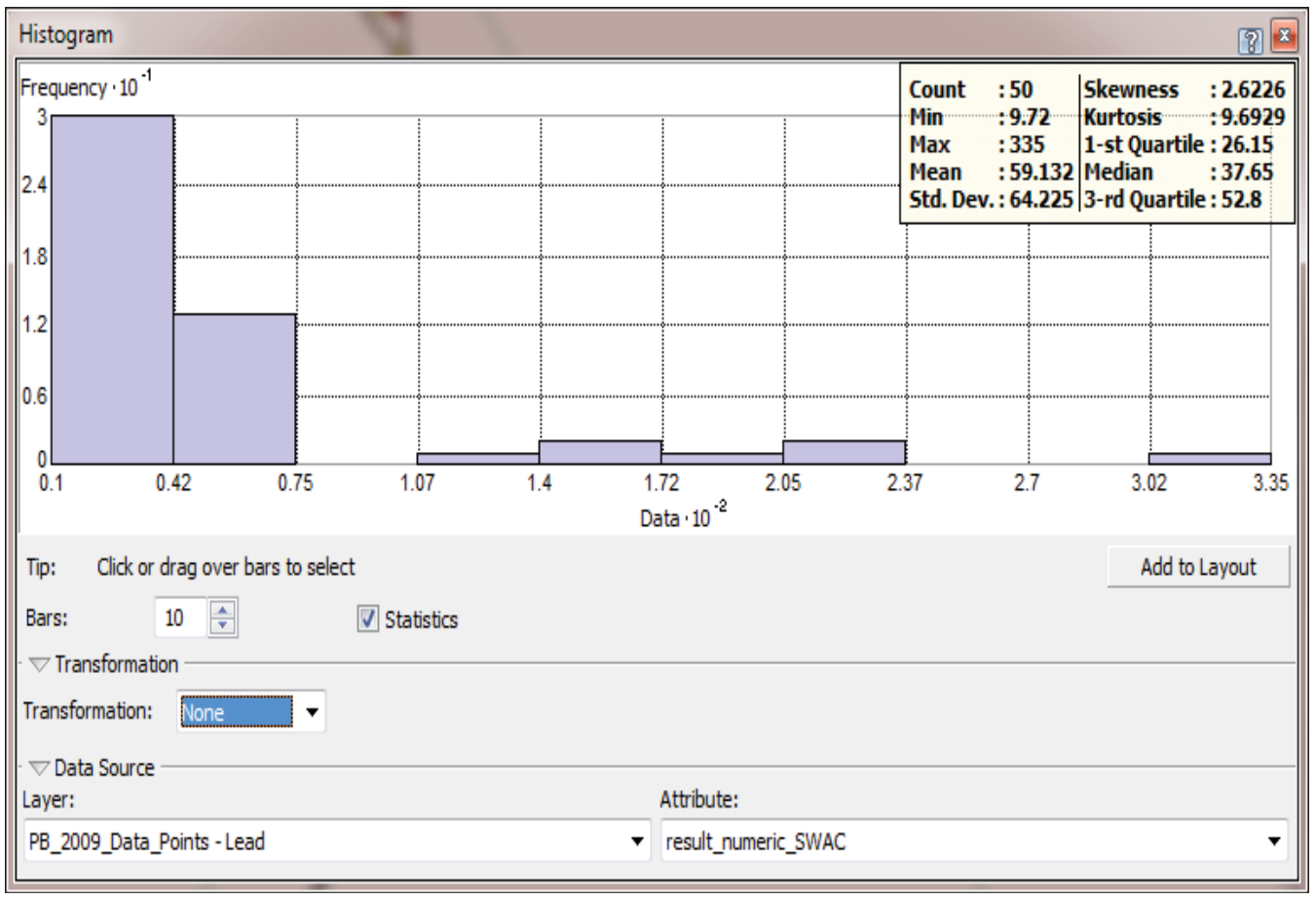


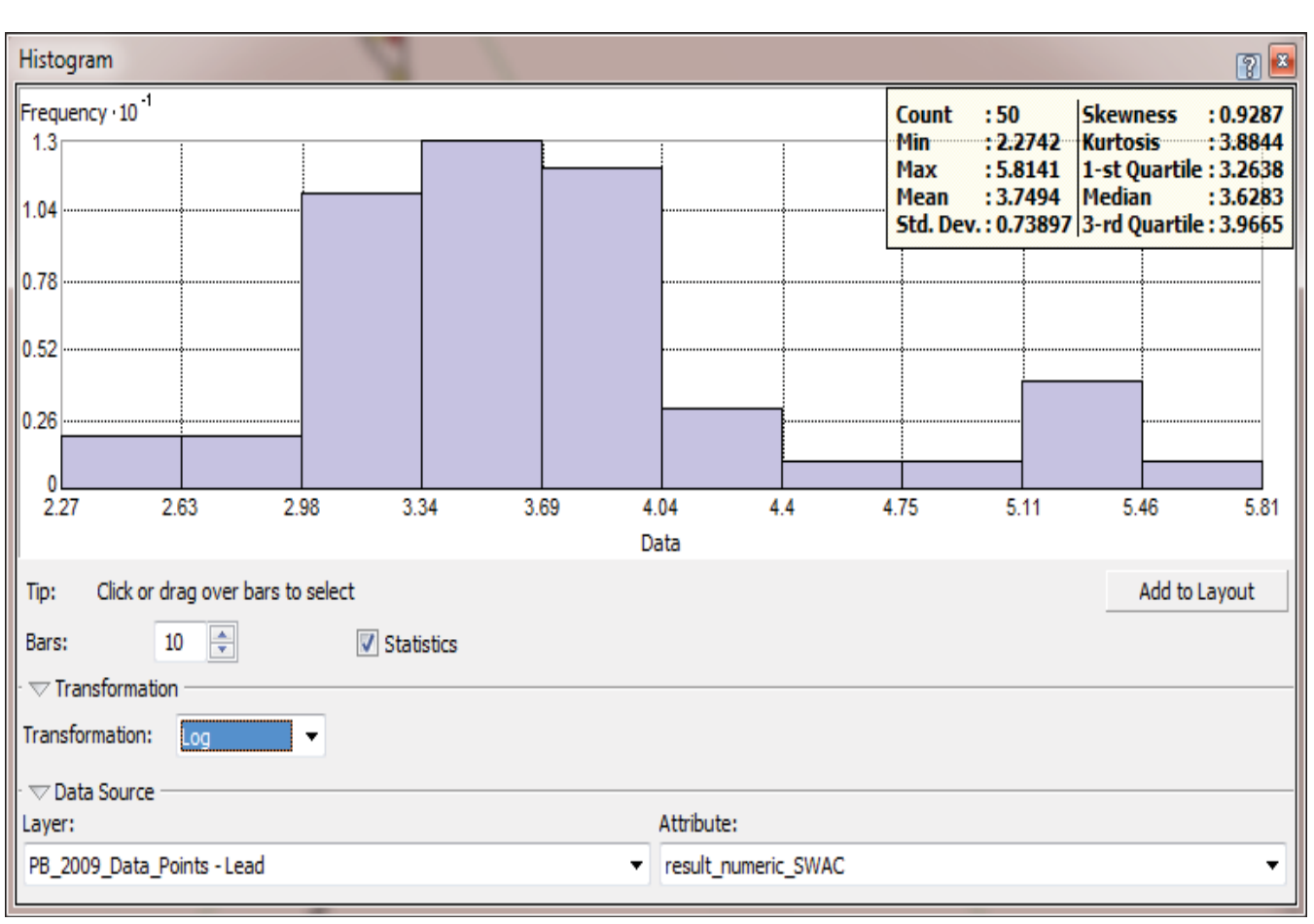




ANCHOR QEA

Figure B-15E
Hexachlorobutadiene Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas





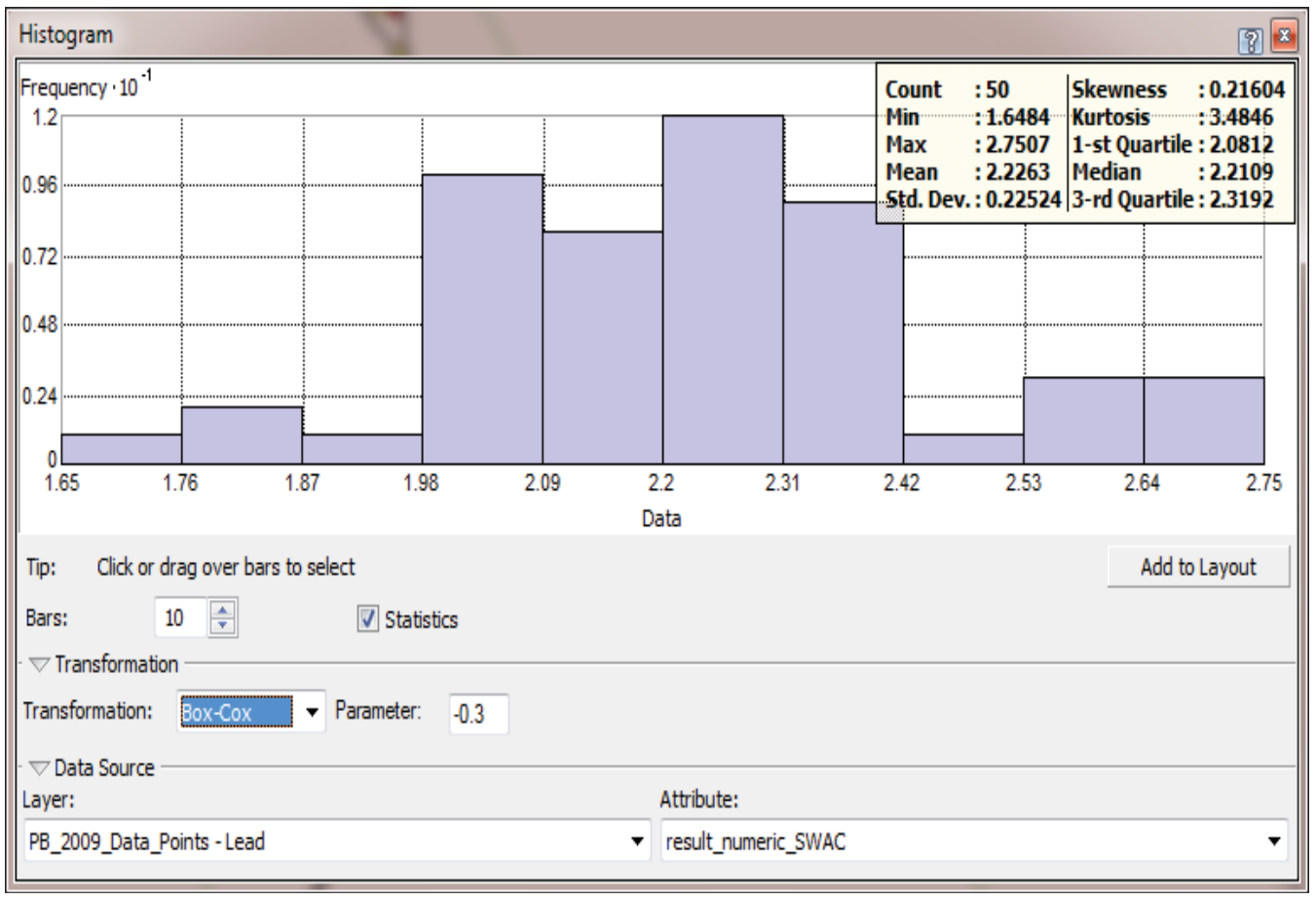
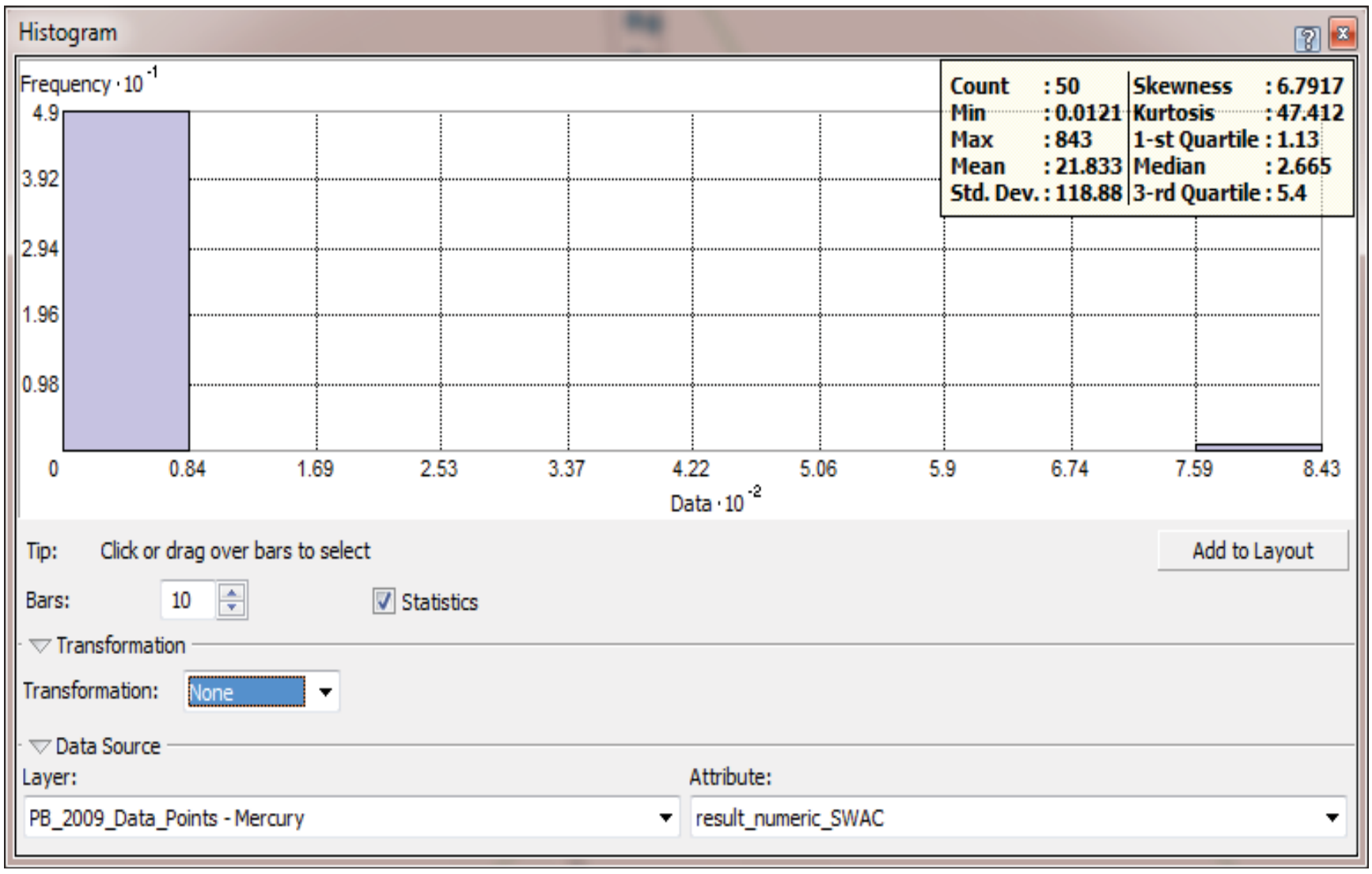
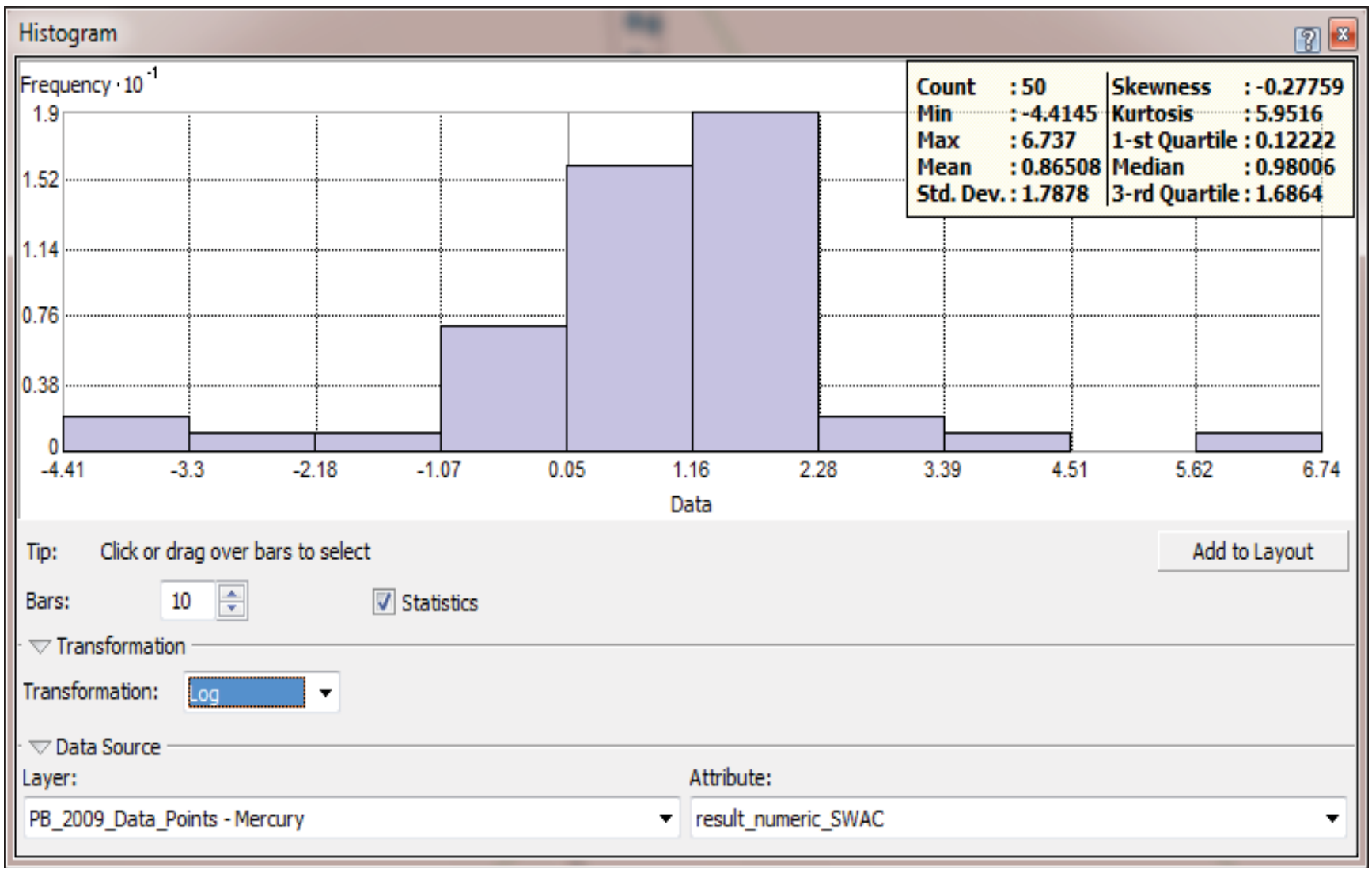


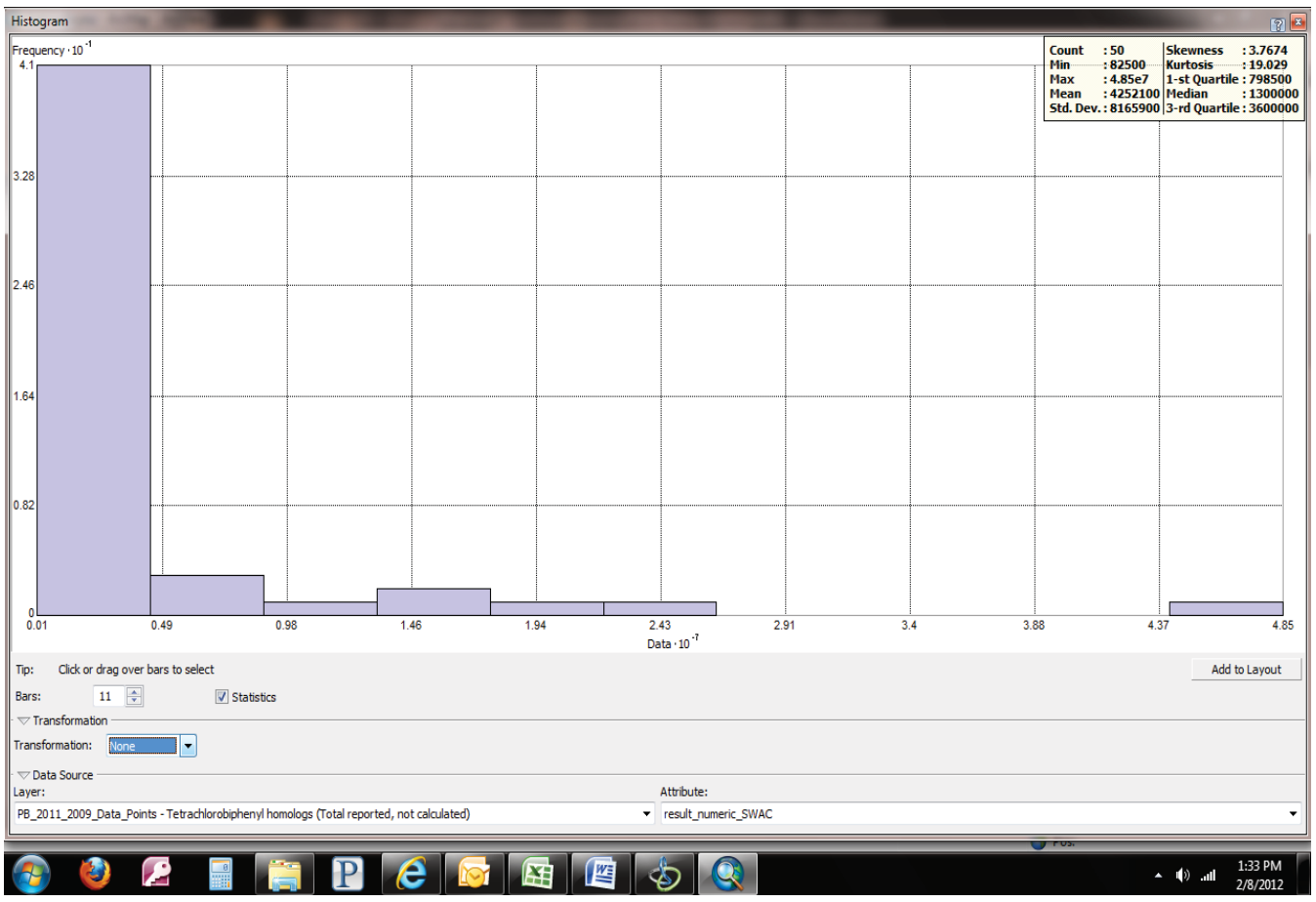
Figure B-15F
Lead Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

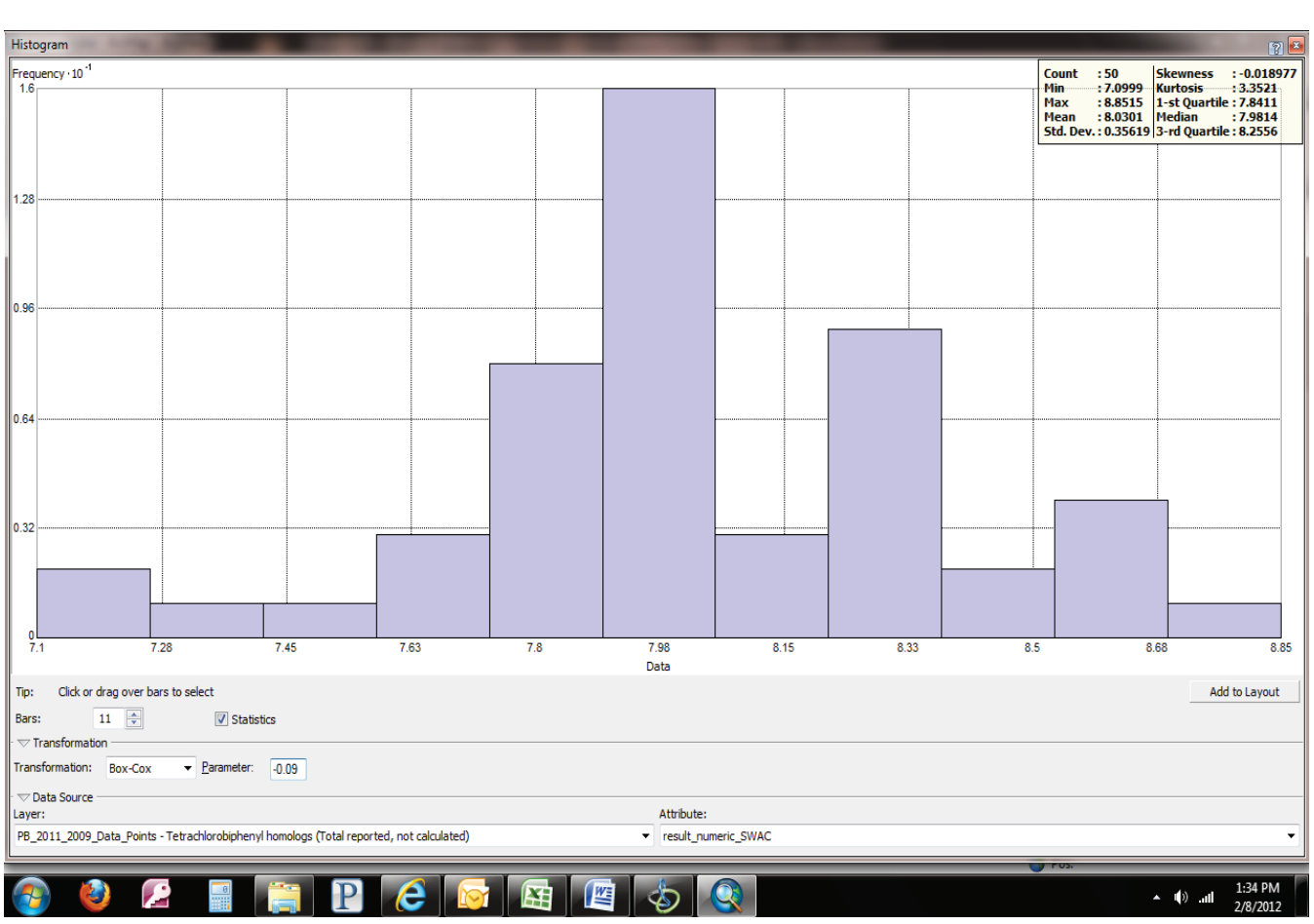


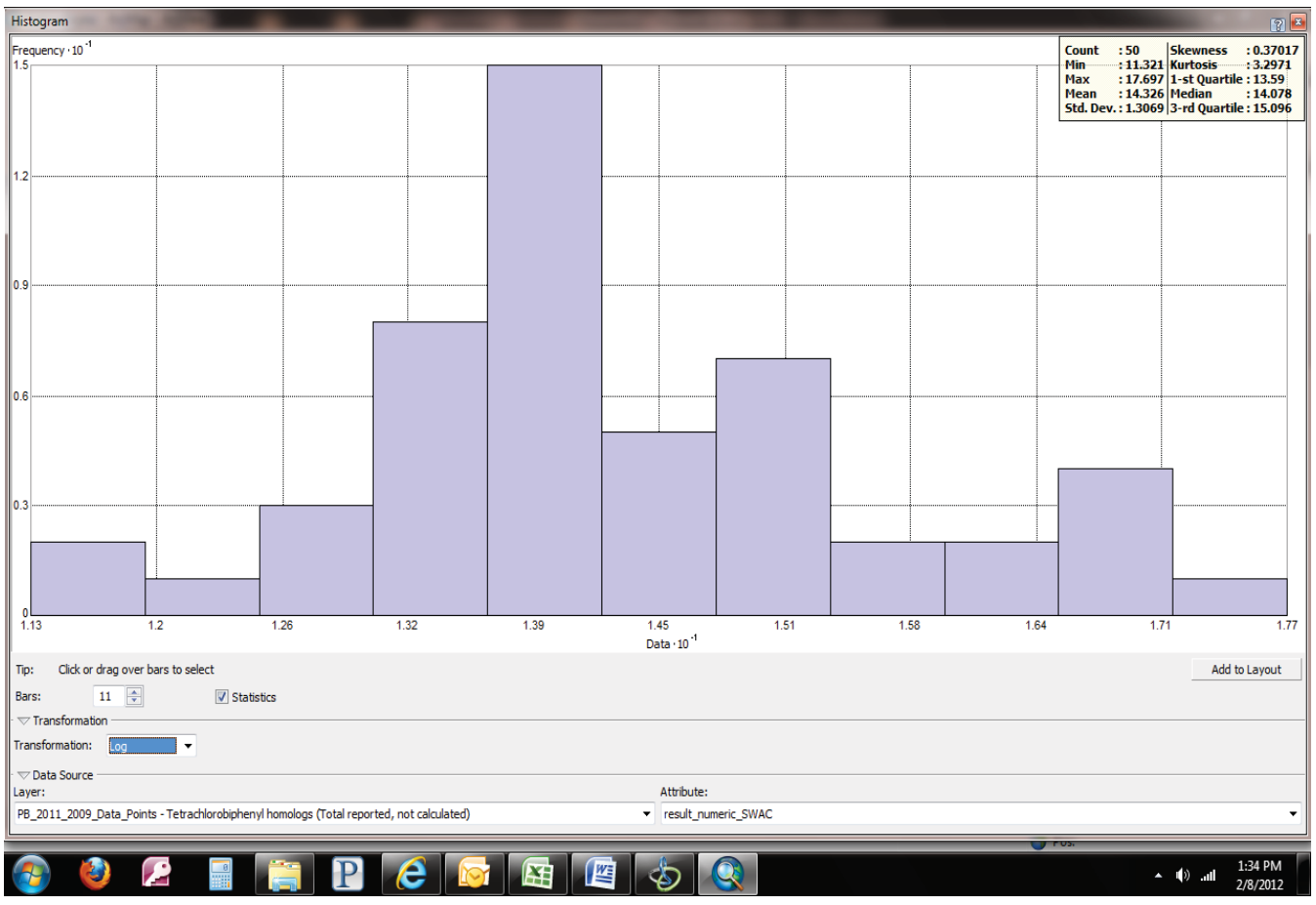


ANCHOR QEA

Figure B-15G
Mercury Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

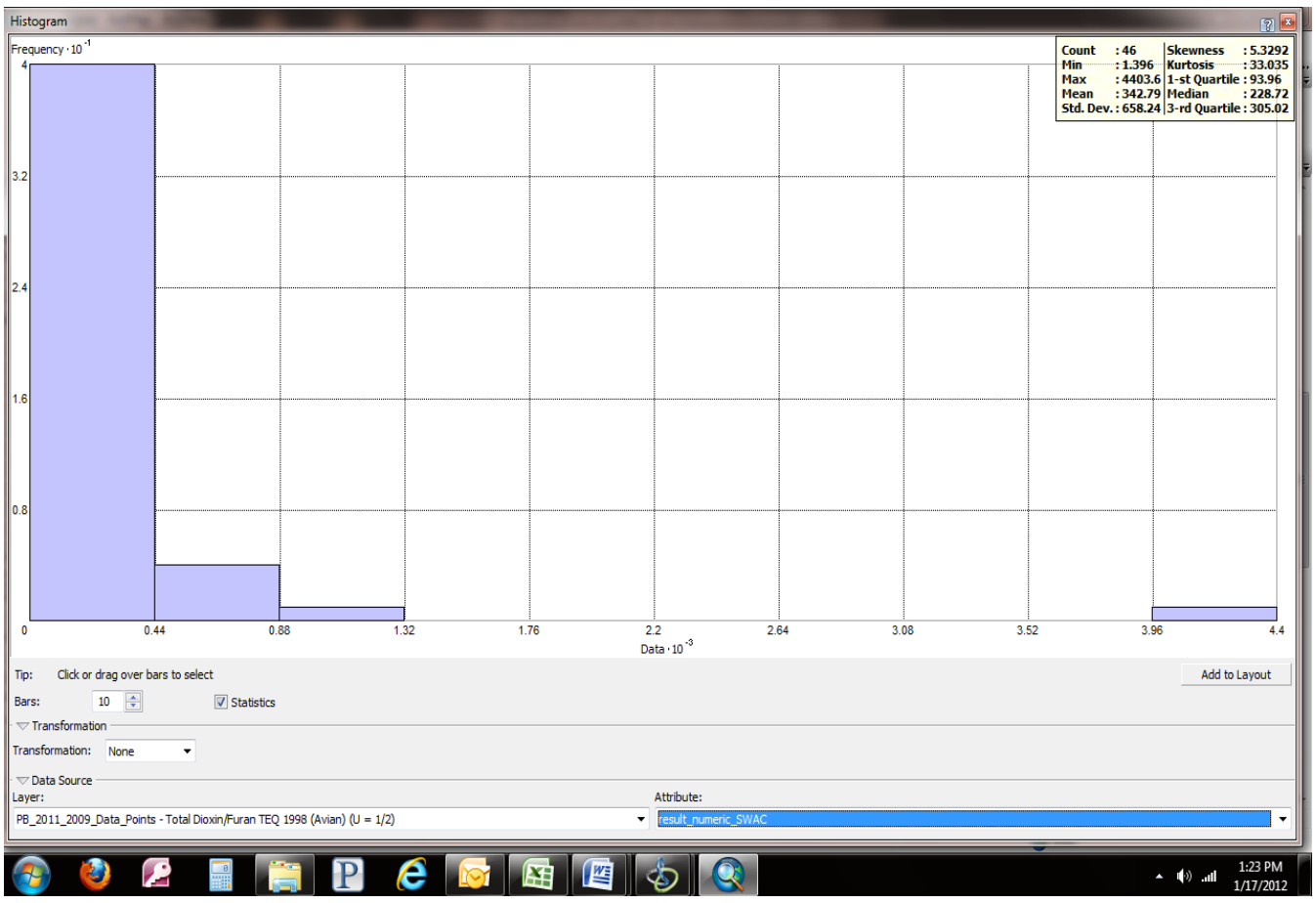


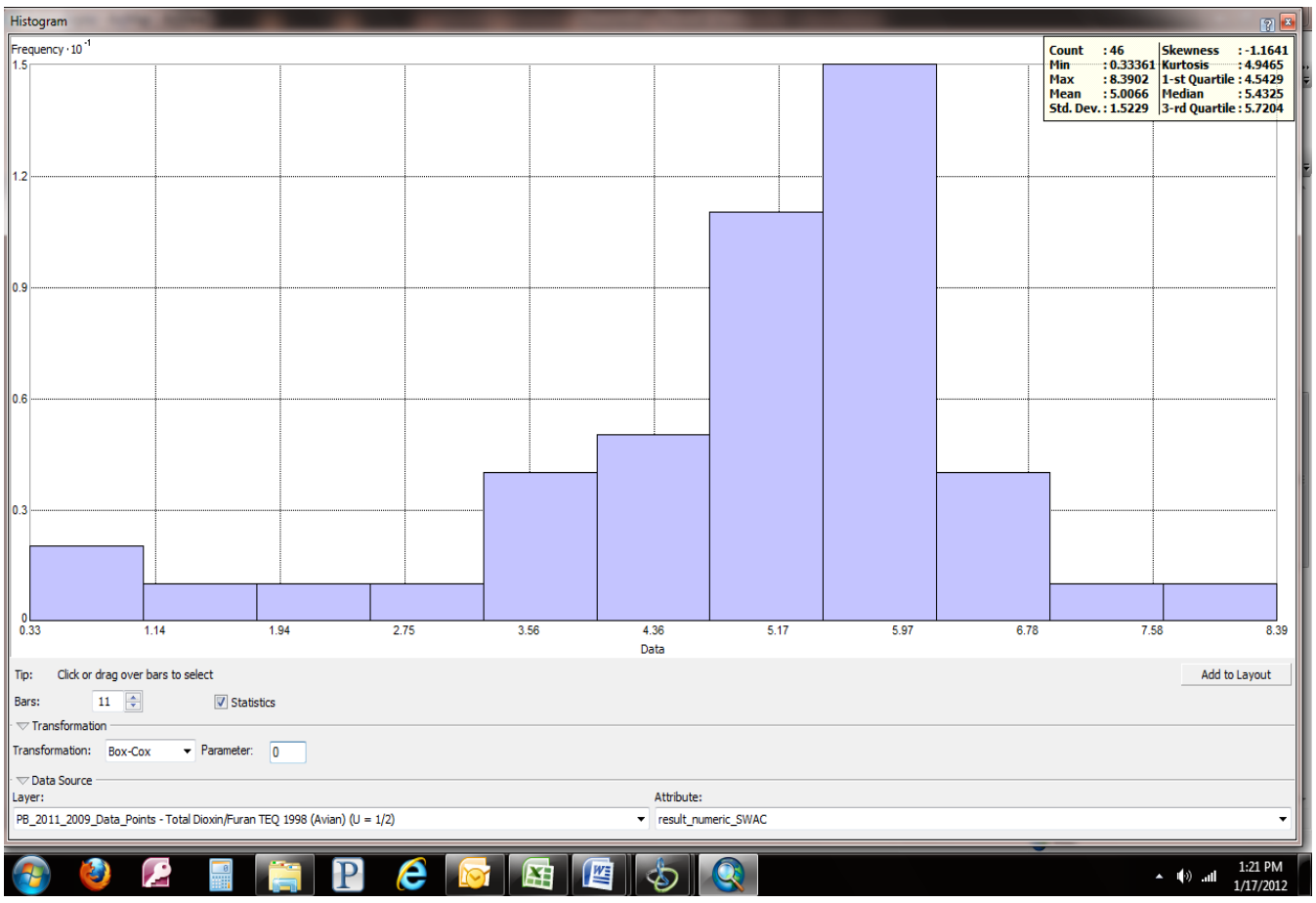


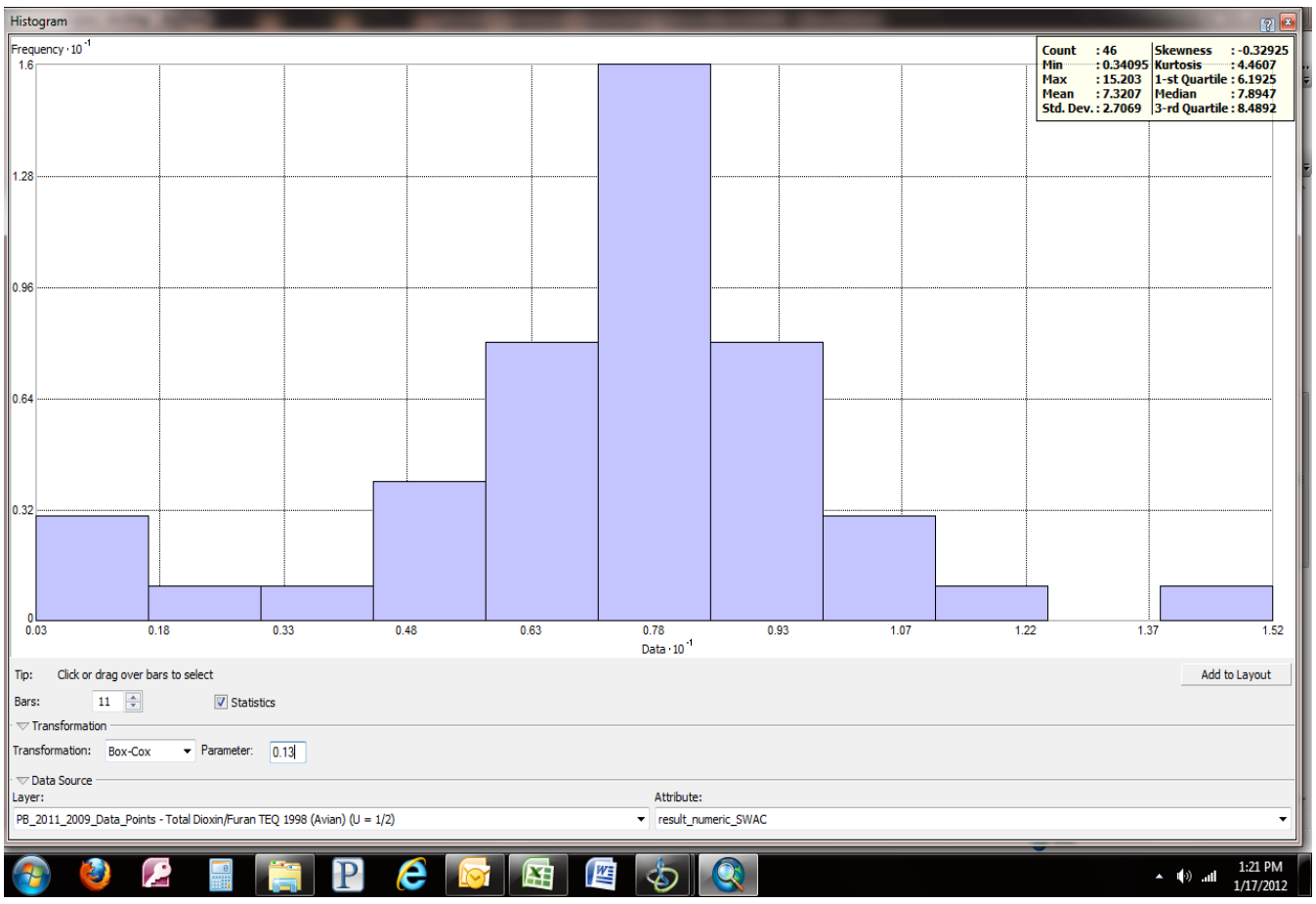


ANCHOR QEA

Figure B-15H
Tetrachlorobiphenyl Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

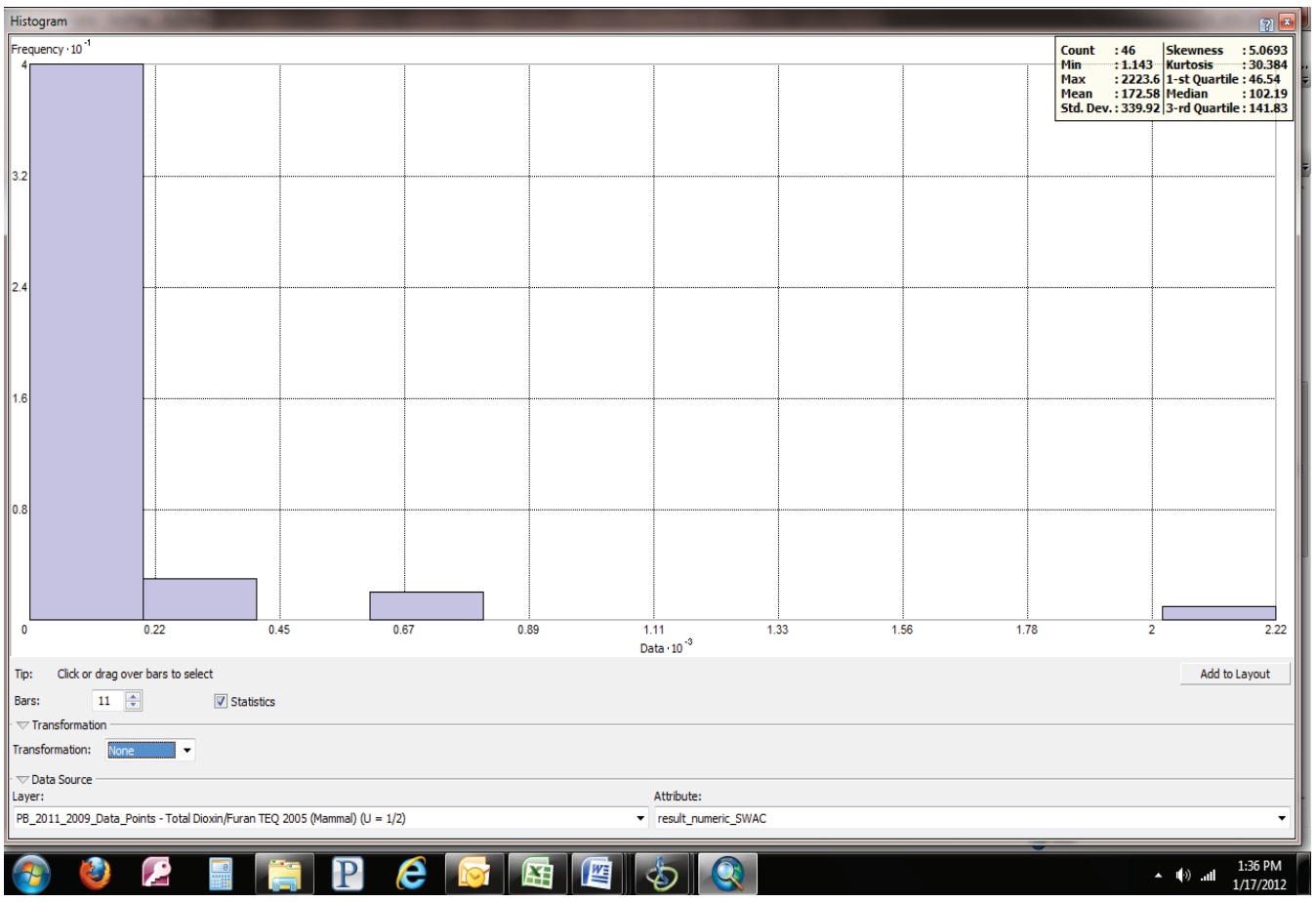


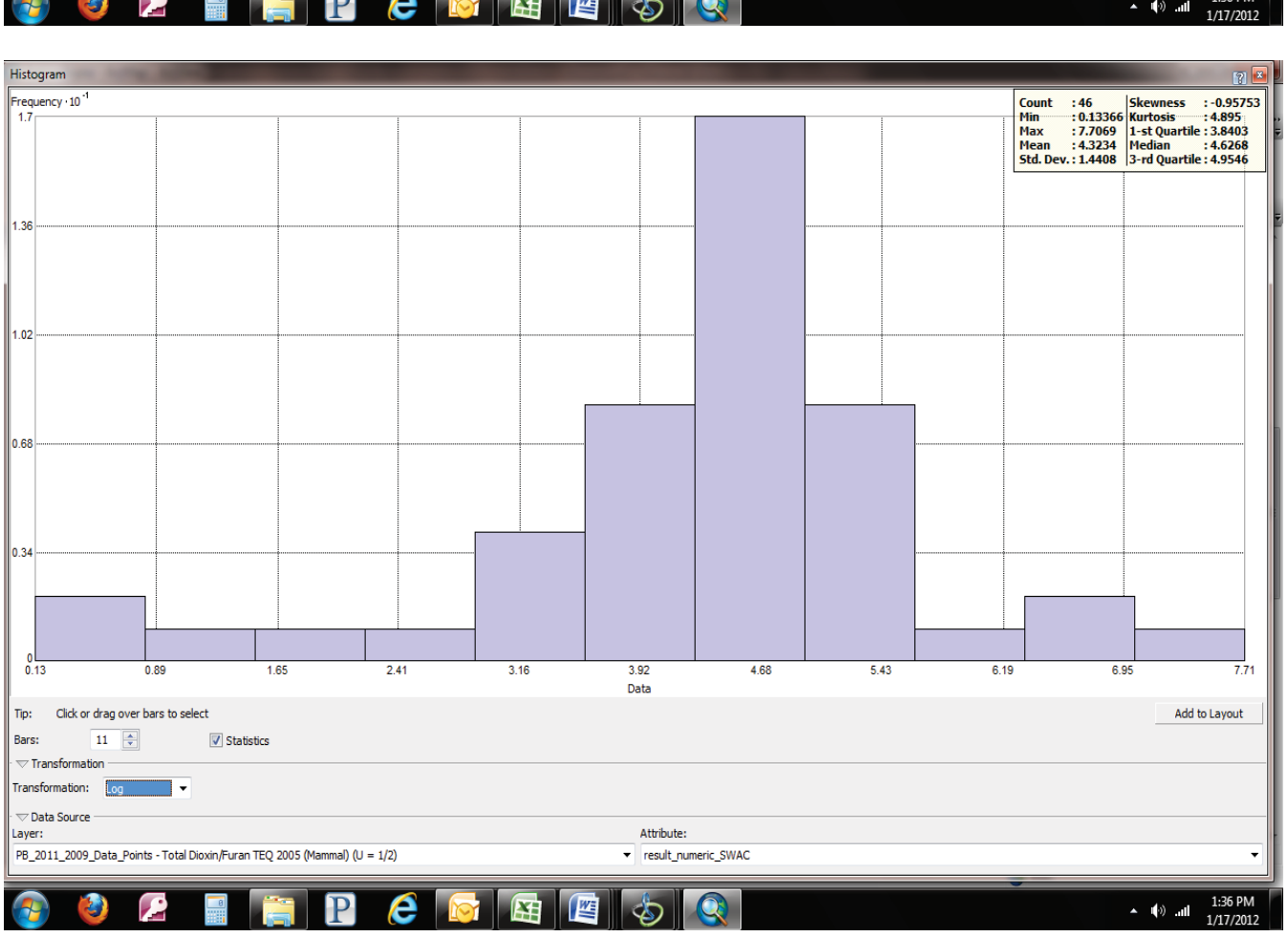


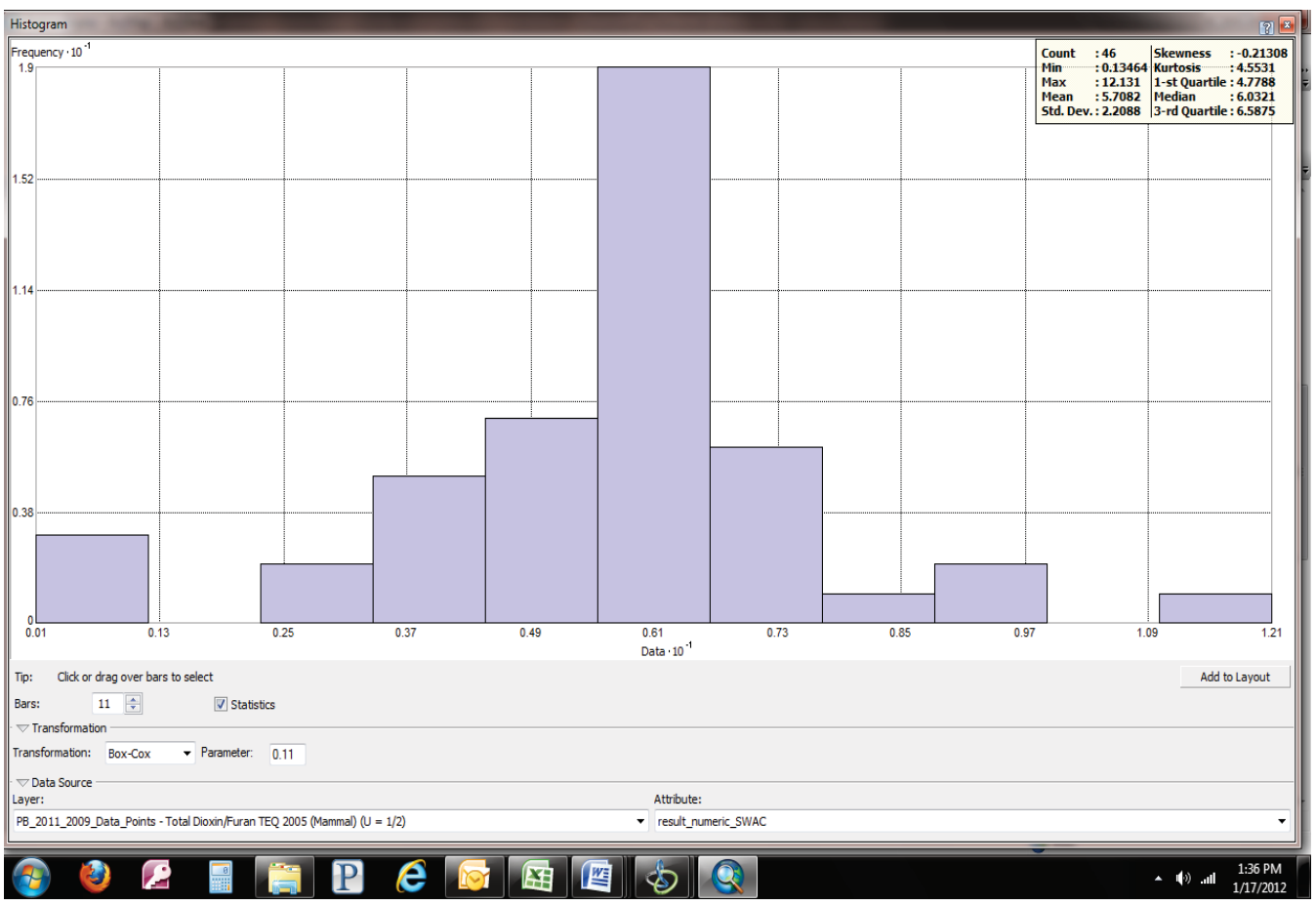


ANCHOR QEA

Figure B-15I
Total Dioxin/Furan TEQ (Avian) Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

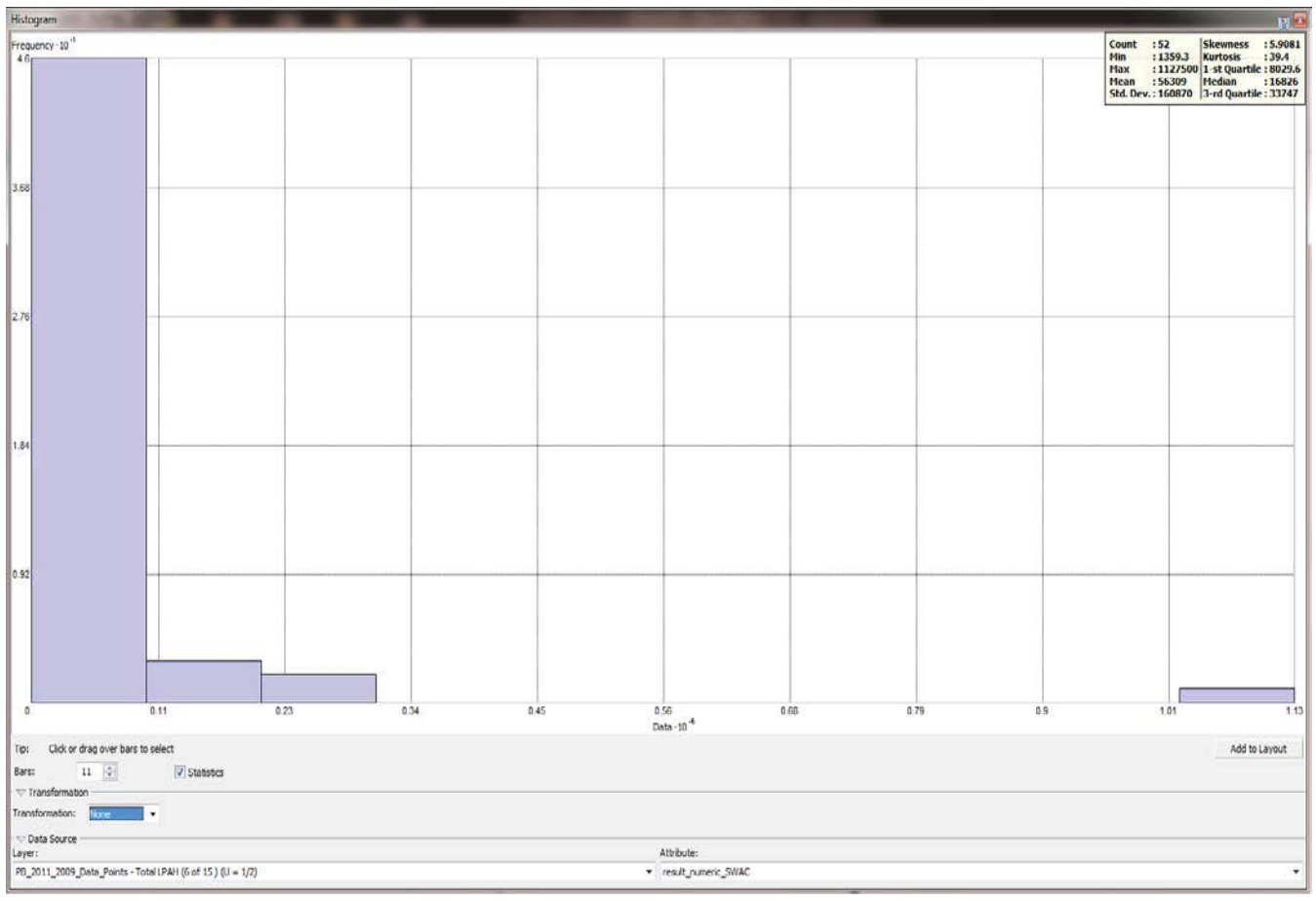


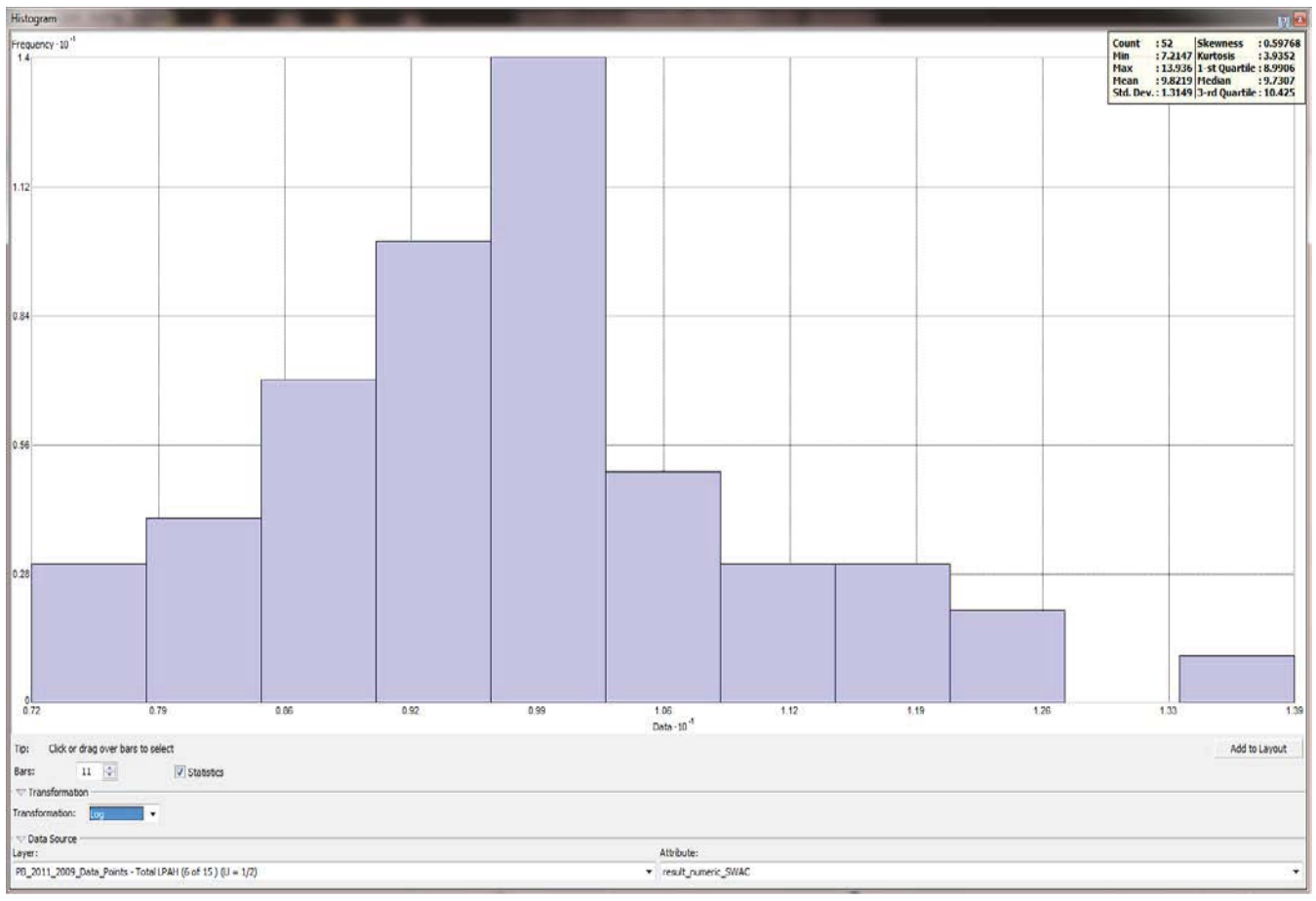


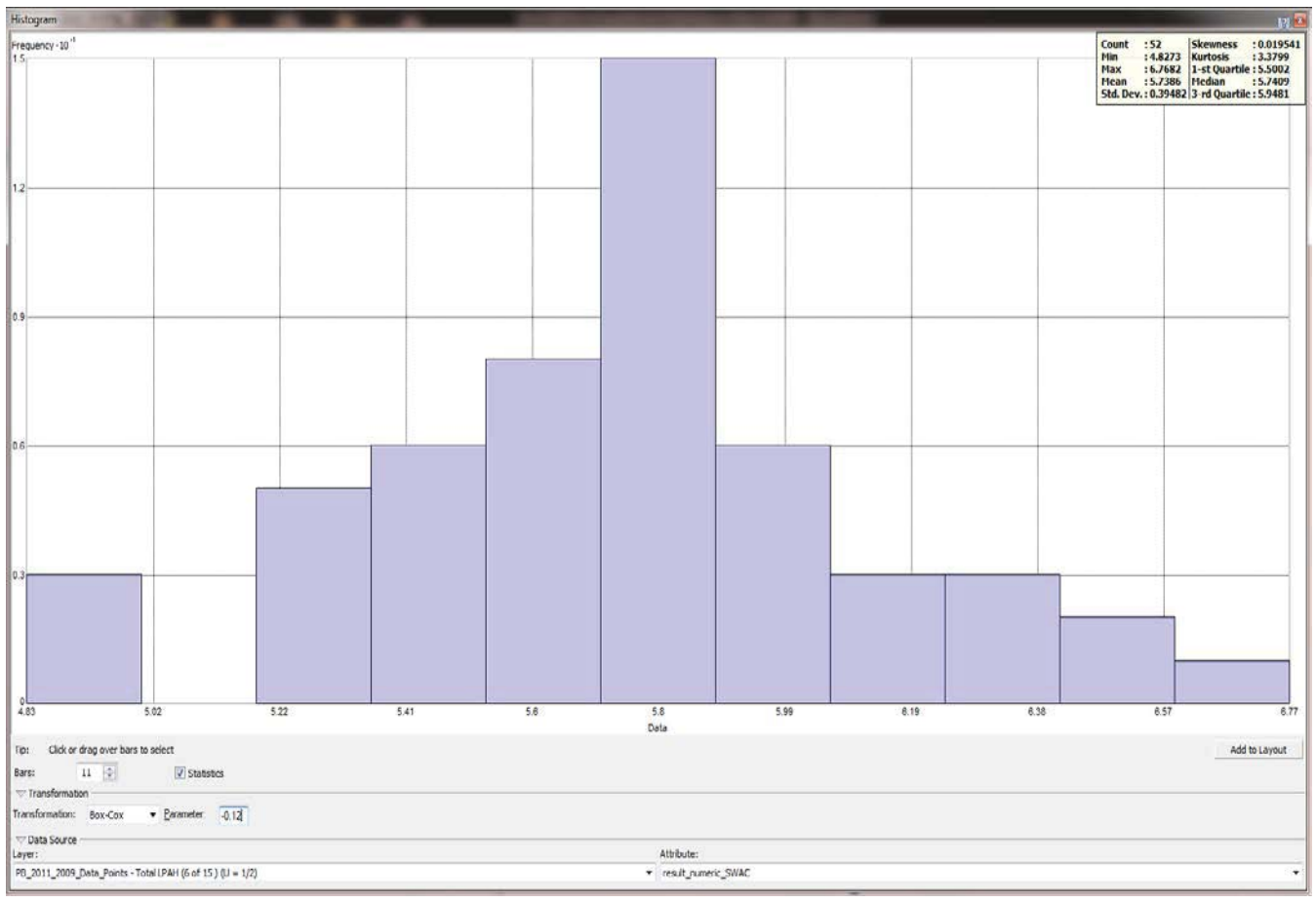


ANCHOR QEA

Figure B-15J
Total Dioxin/Furan TEQ (Mammal) Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

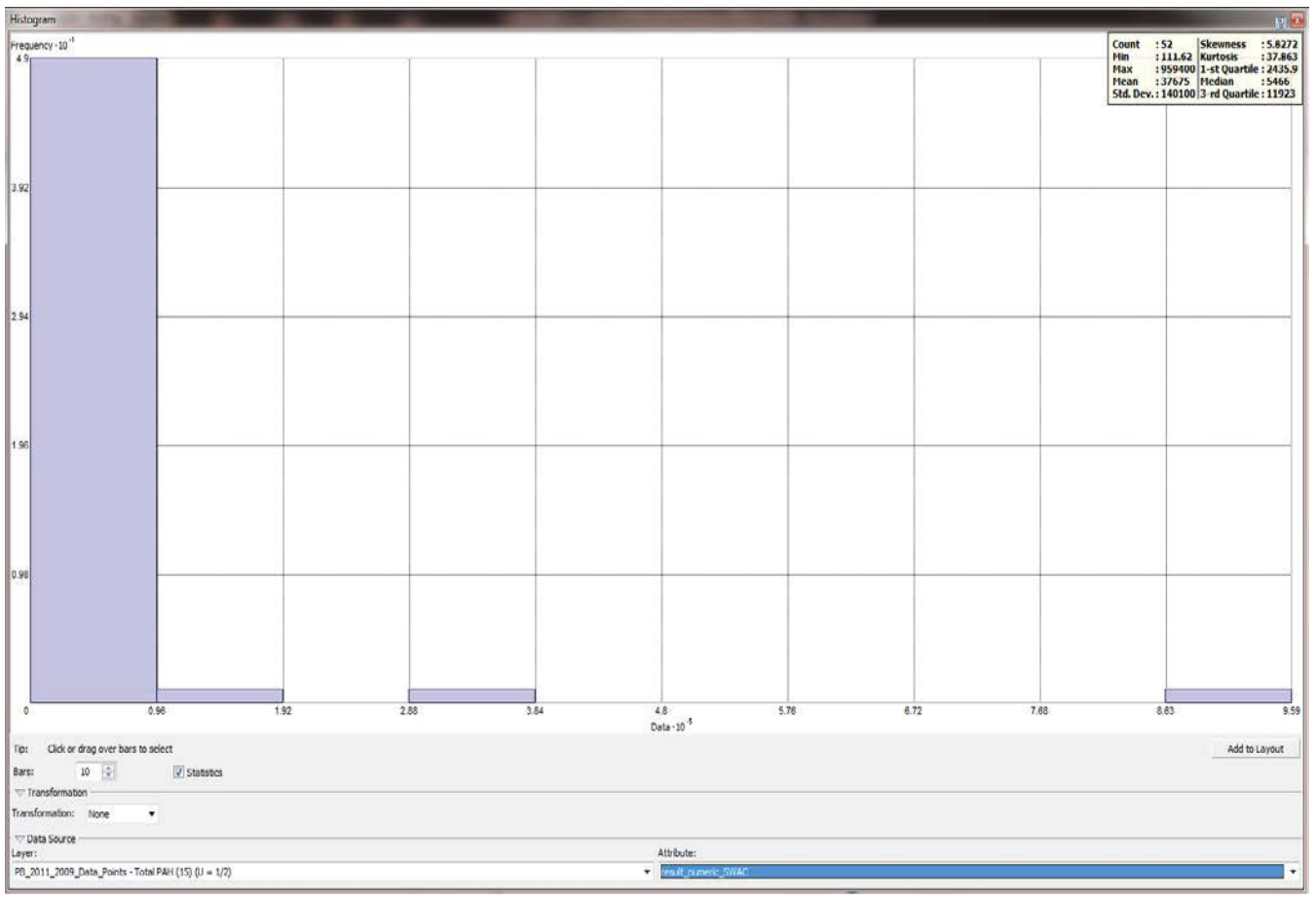


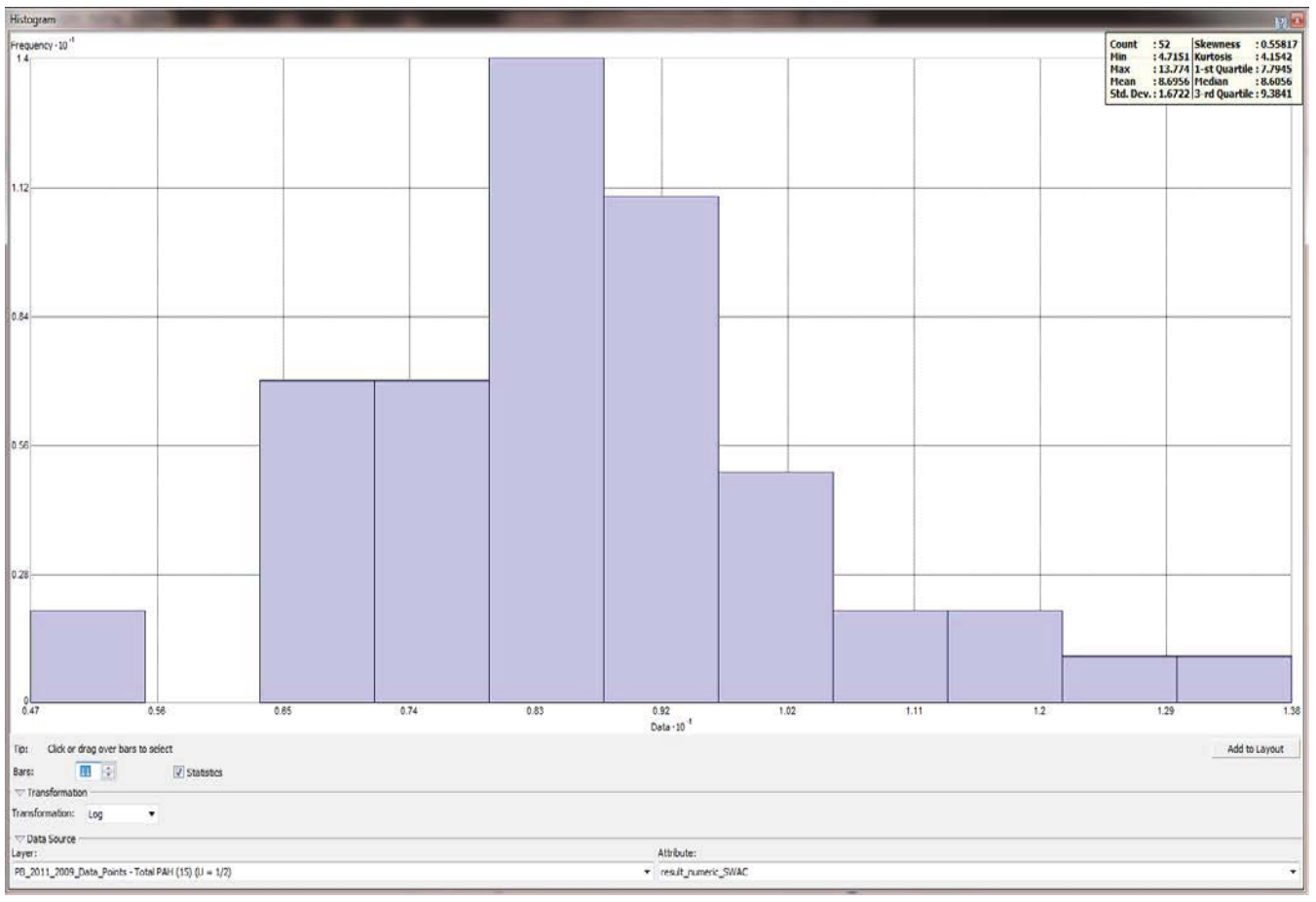


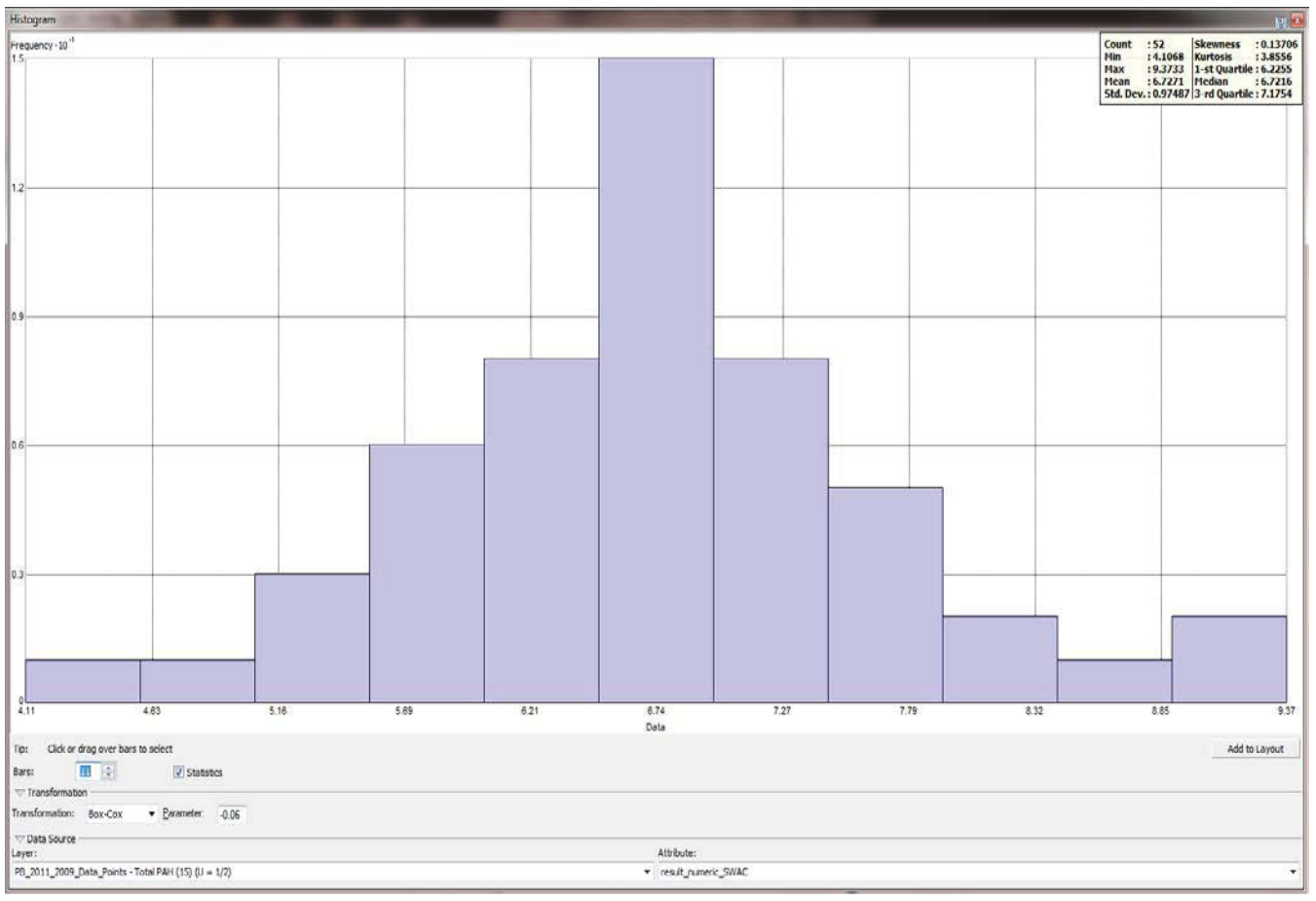


ANCHOR QEA

Figure B-15K
Total LPAH 6 of 15 Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

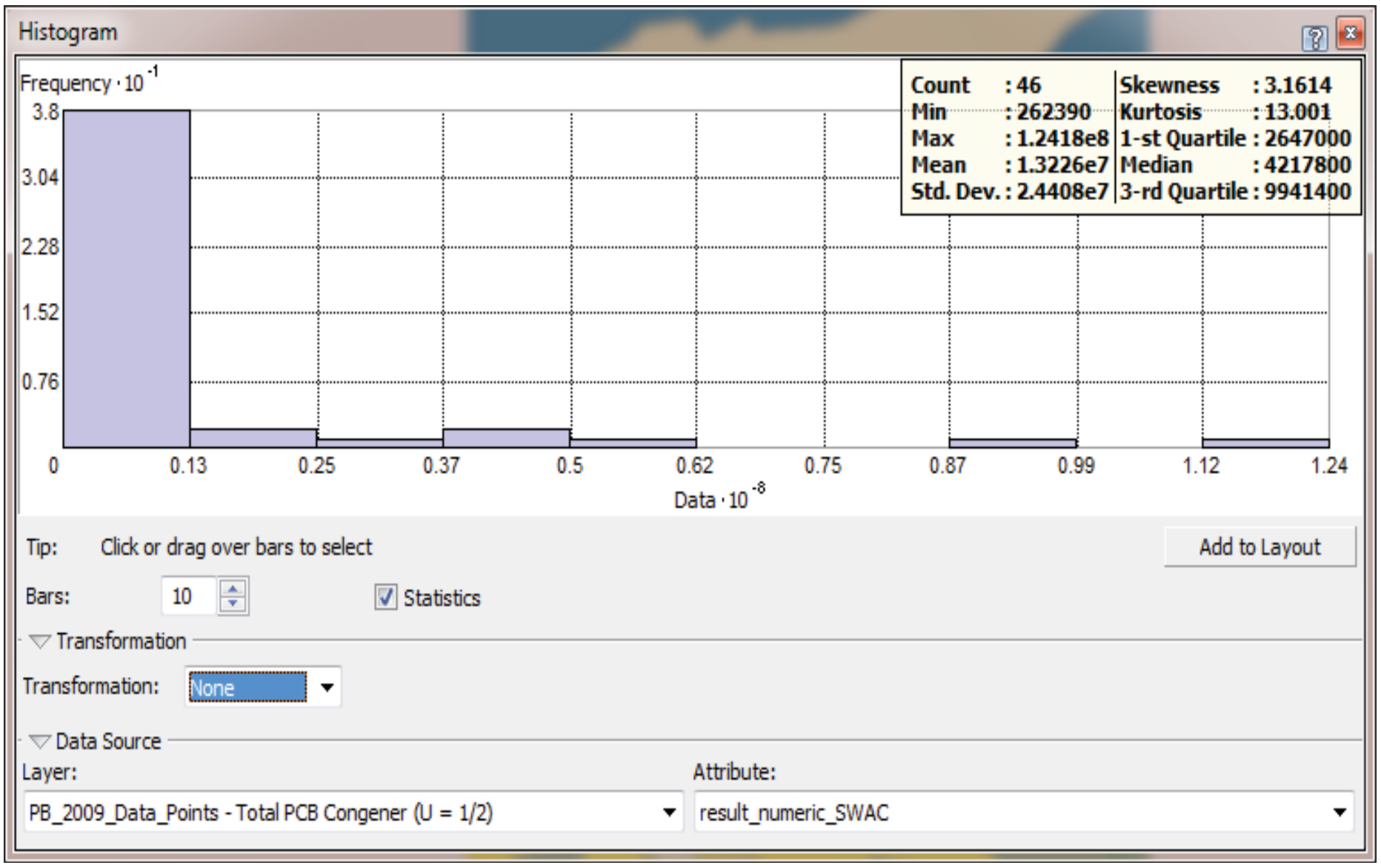






ANCHOR QEA

Figure B-15L
Total PAH 15 Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



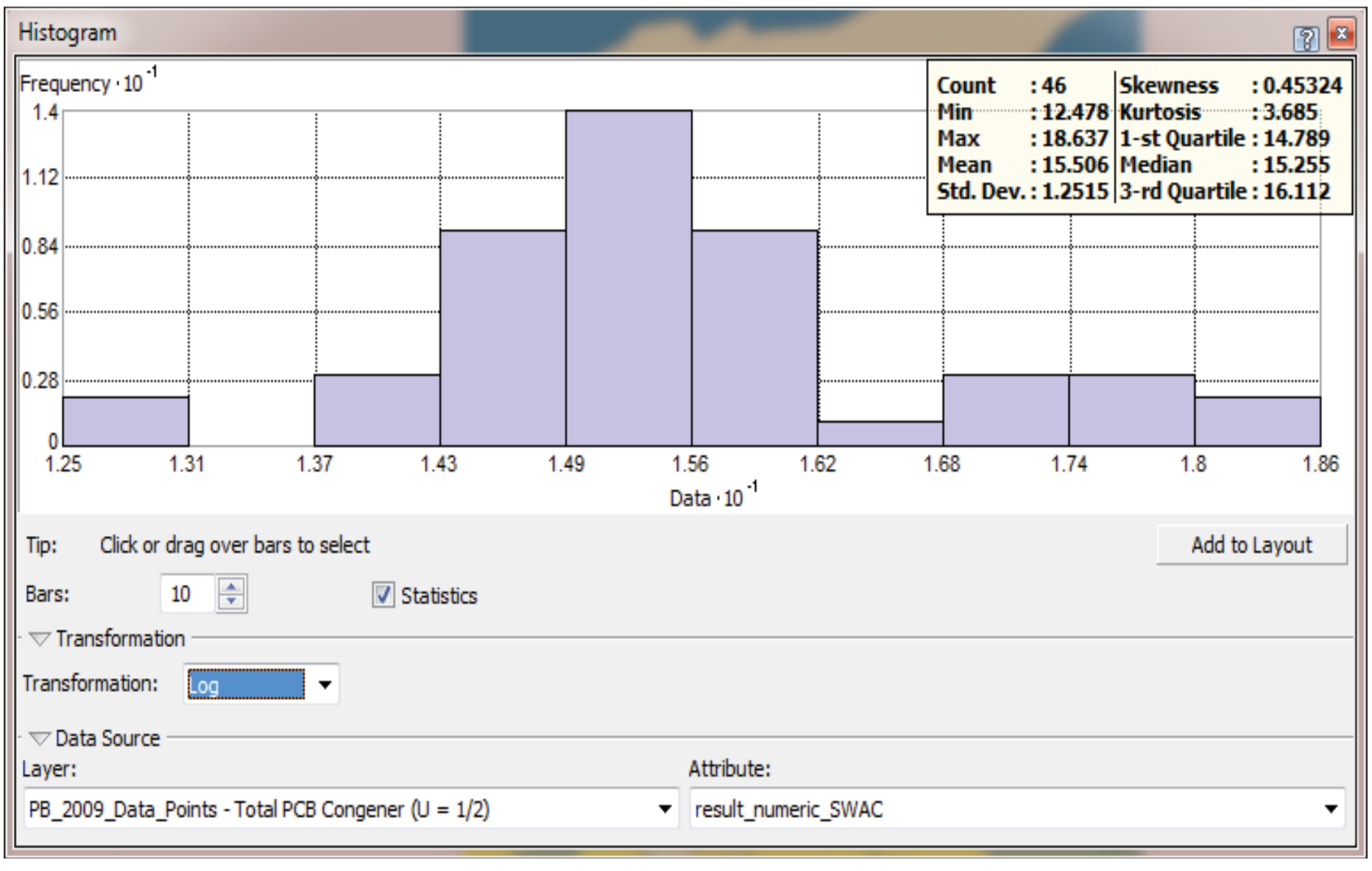
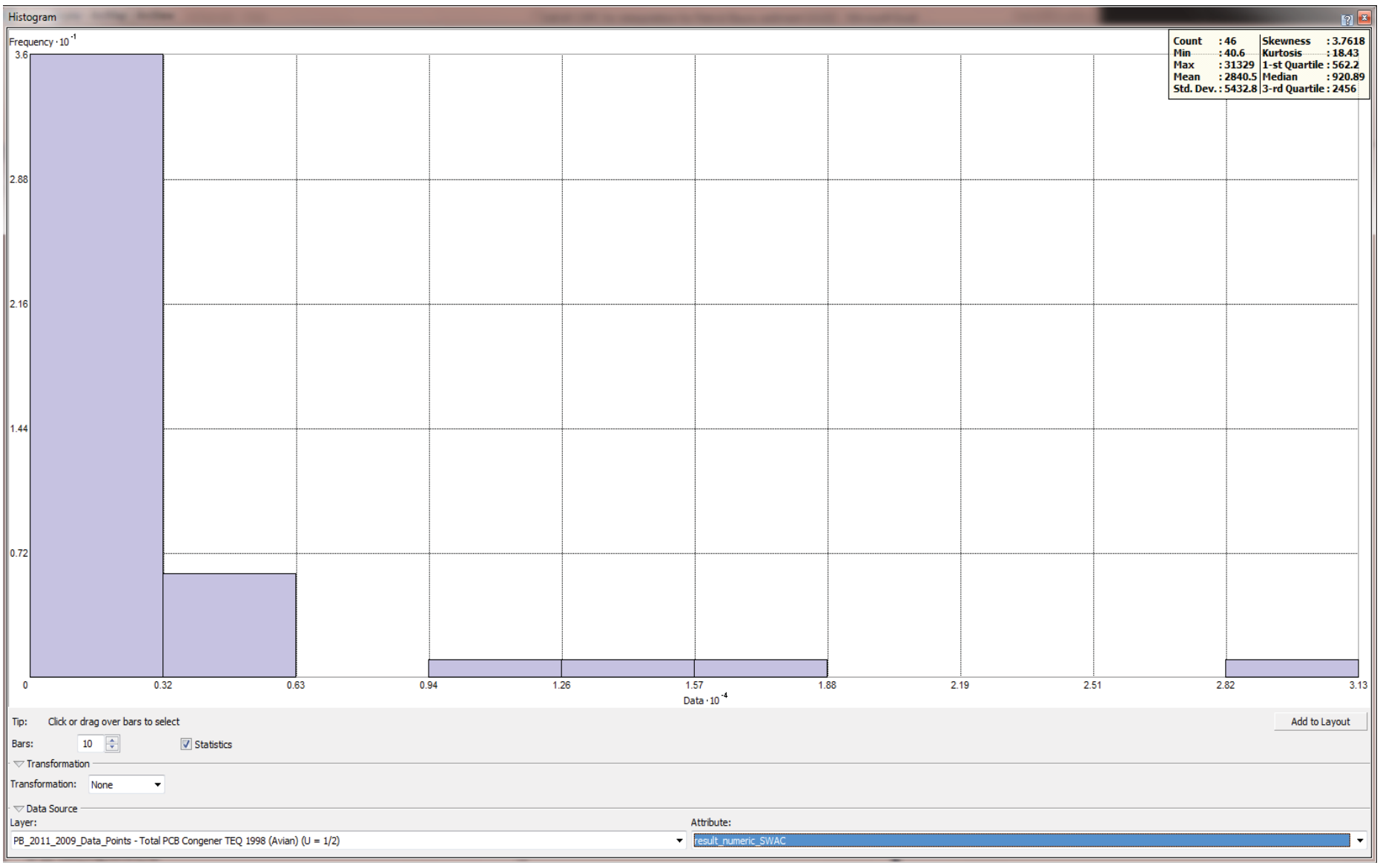
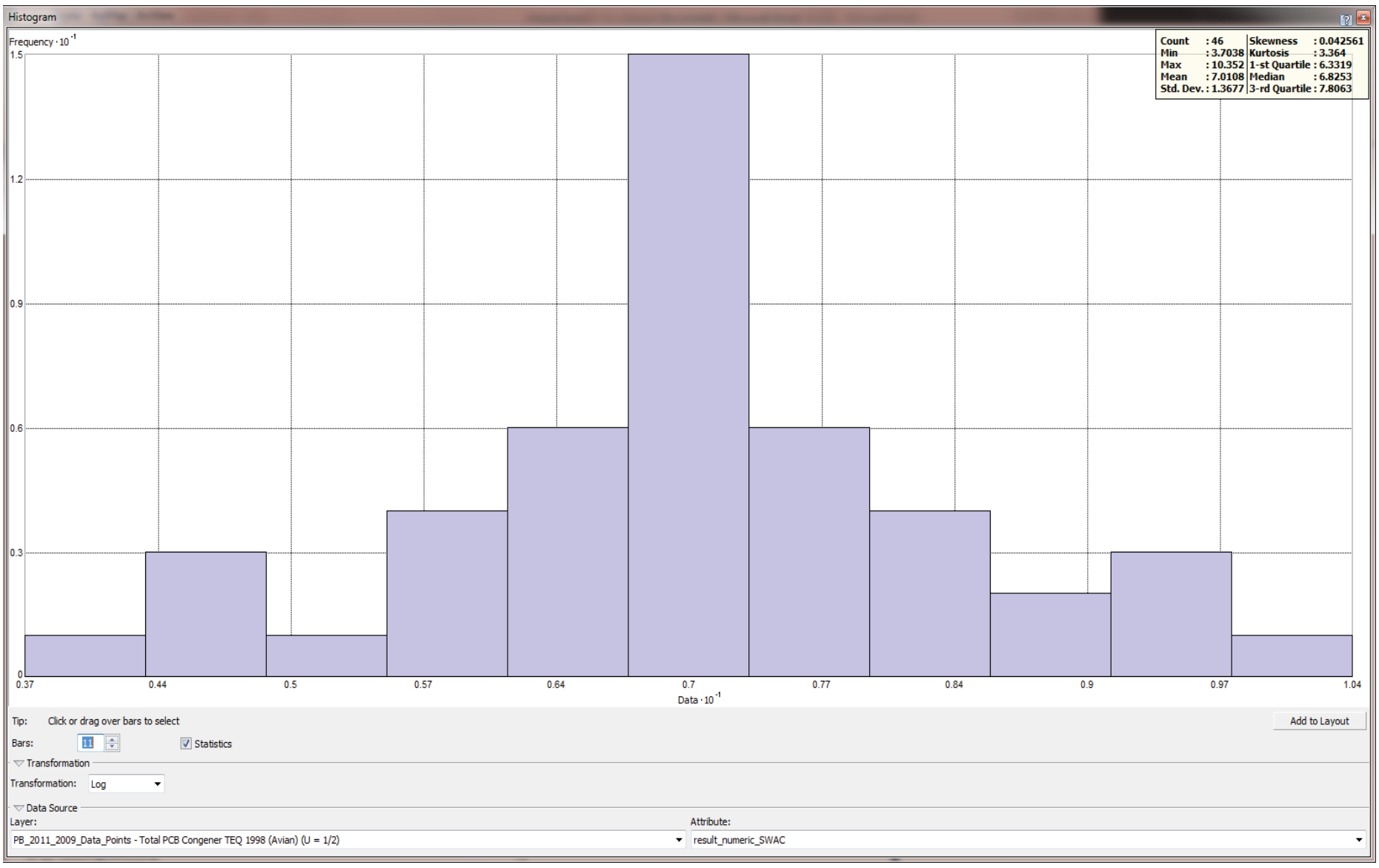


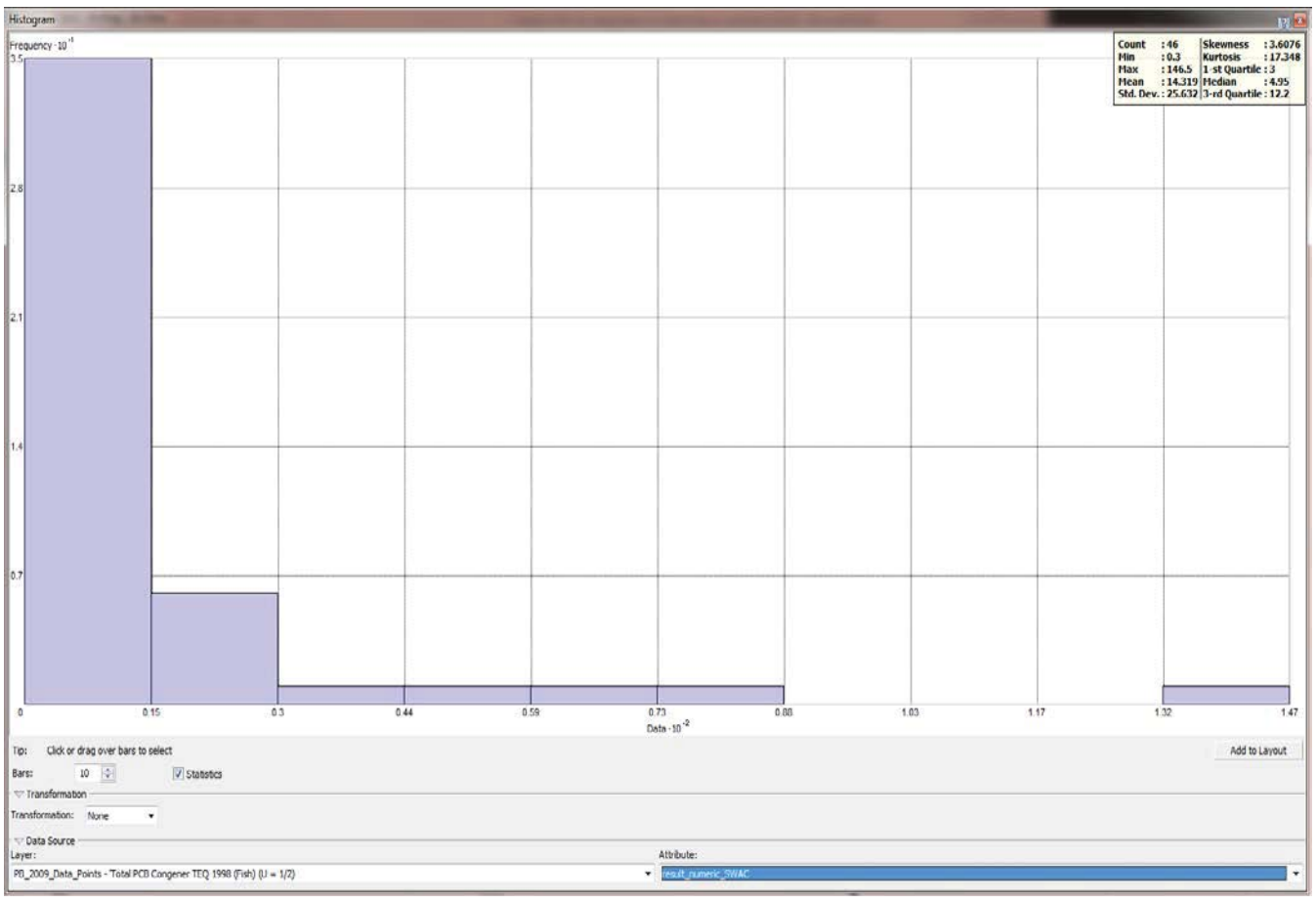
Figure B-15M
Total PCB Congener Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

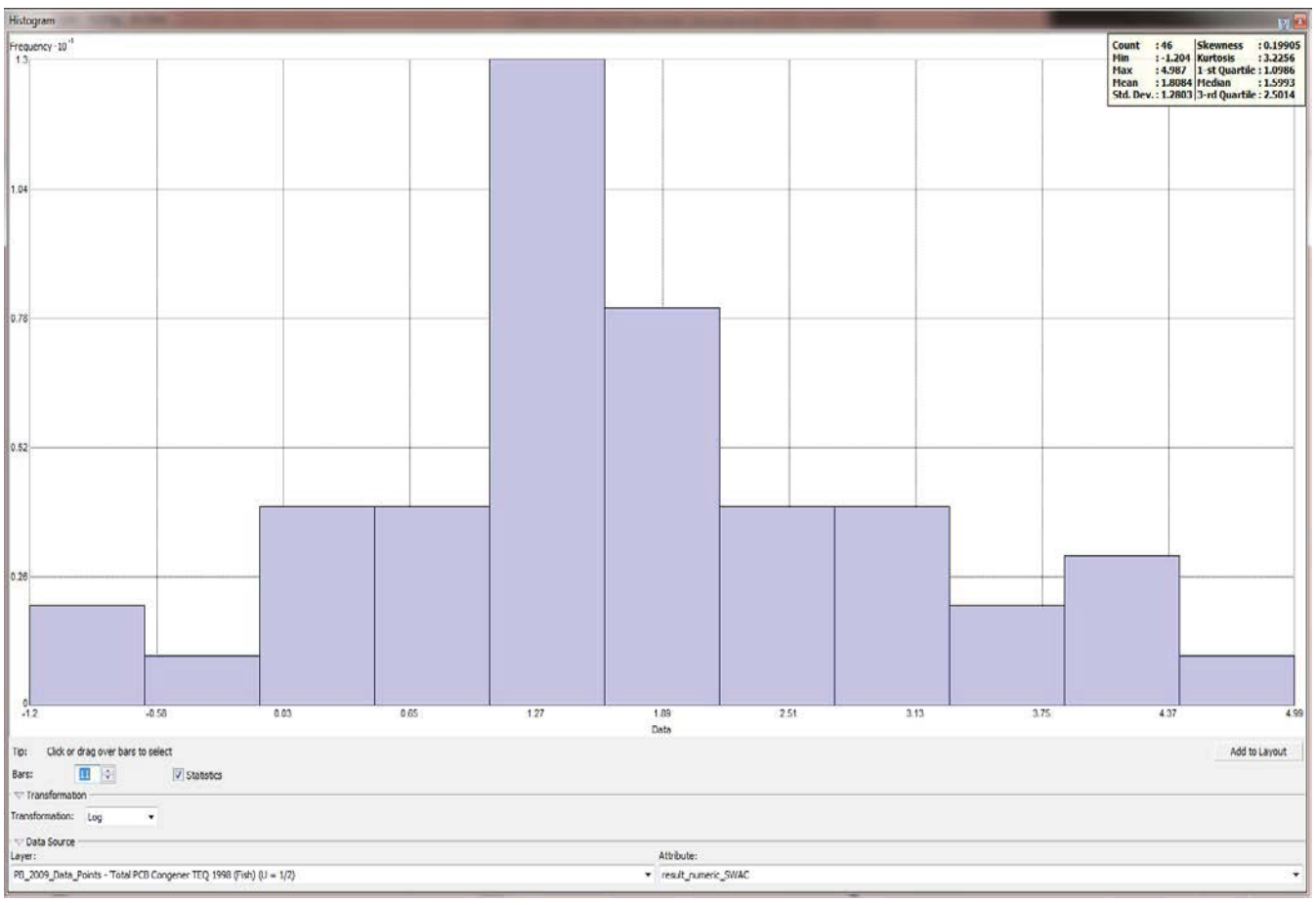




ANCHOR QEA

Figure B-15N
Total PCB Congener TEQ (Avian) Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas





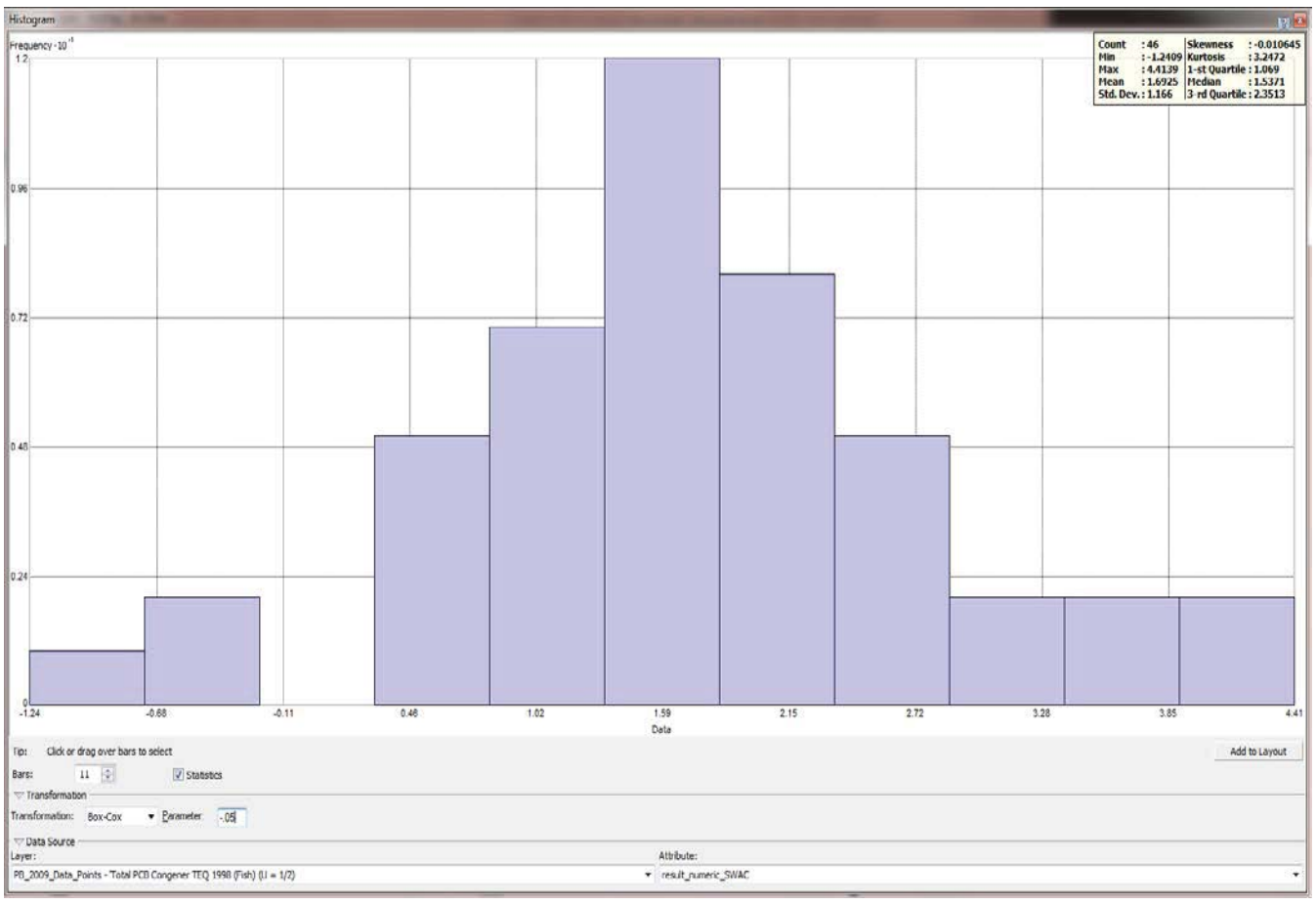
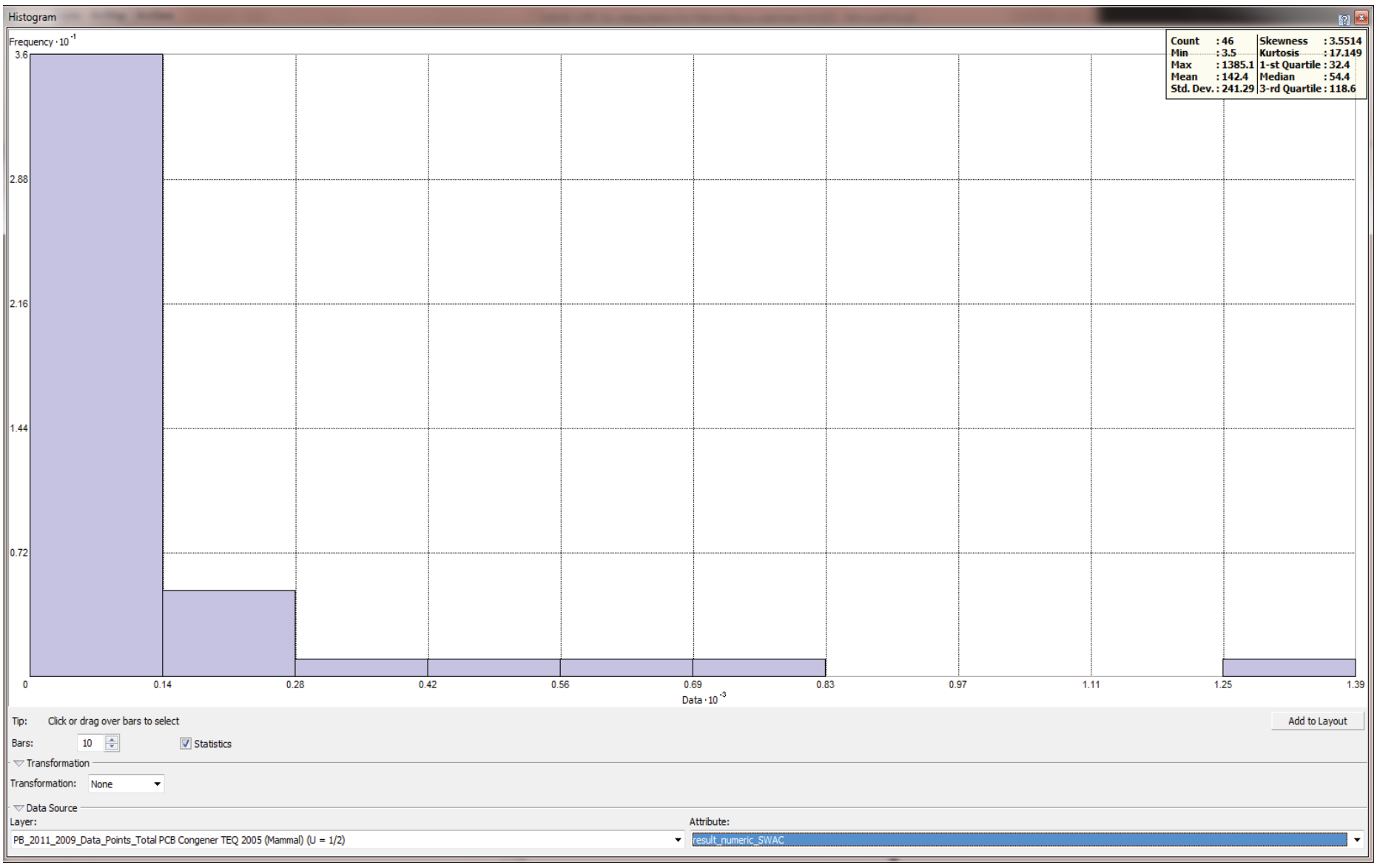
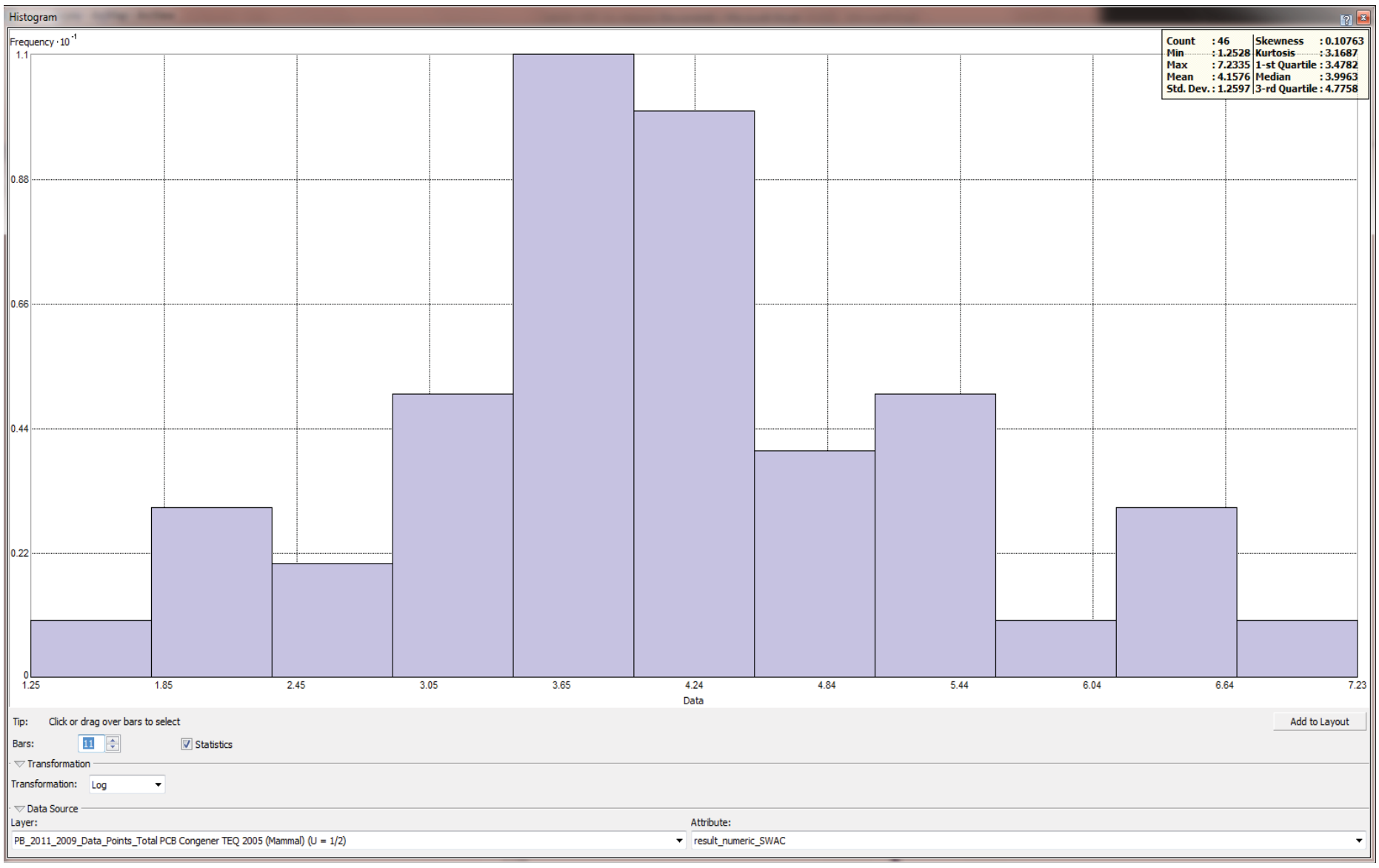


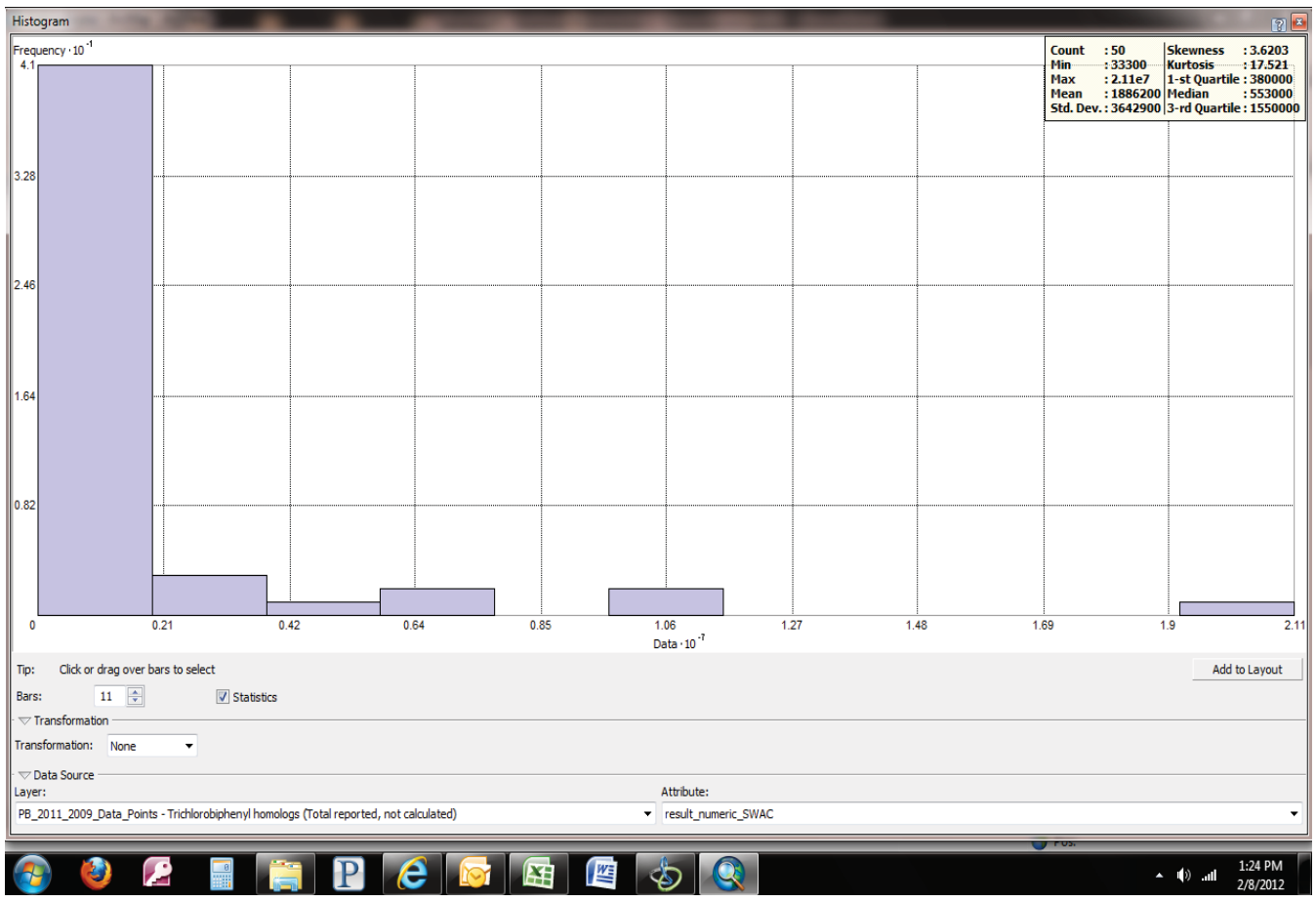
Figure B-15O
Total PCB Congener TEQ (Fish) Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

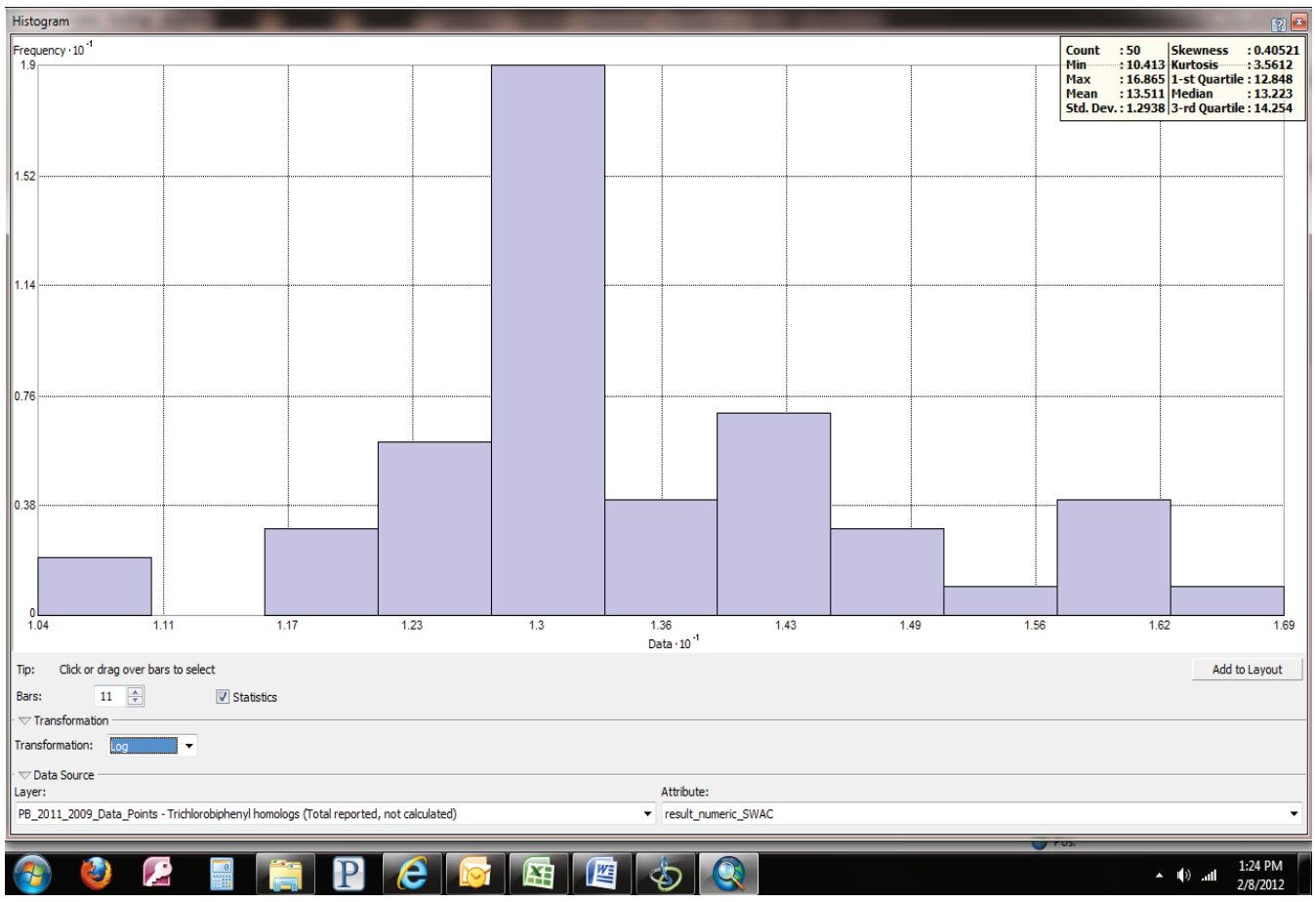


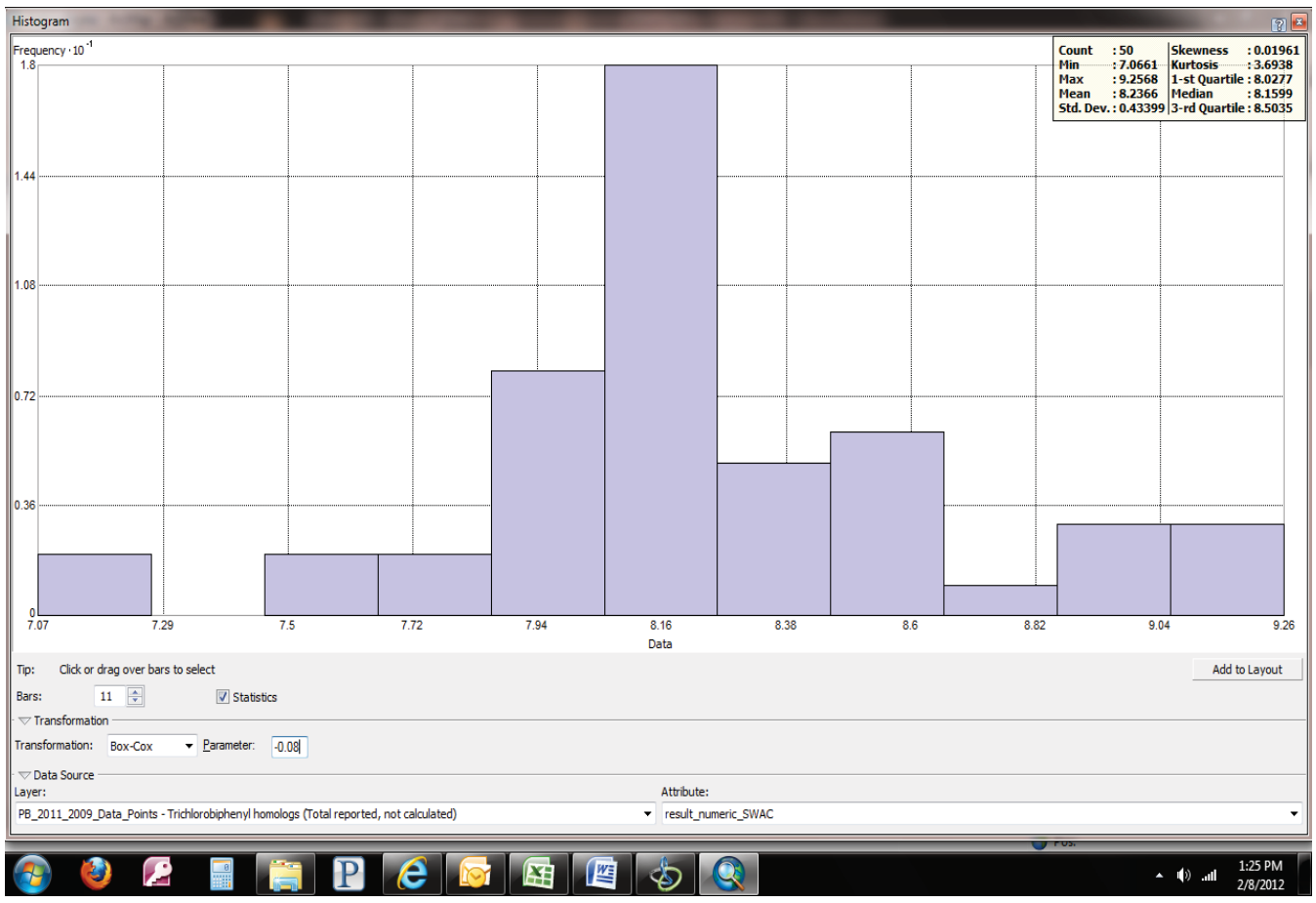


ANCHOR QEA

Figure B-15P
Total PCB Congener TEQ (Mammal) Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas







ANCHOR QEA

Figure B-15Q
Trichlorobiphenyl Histogram
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

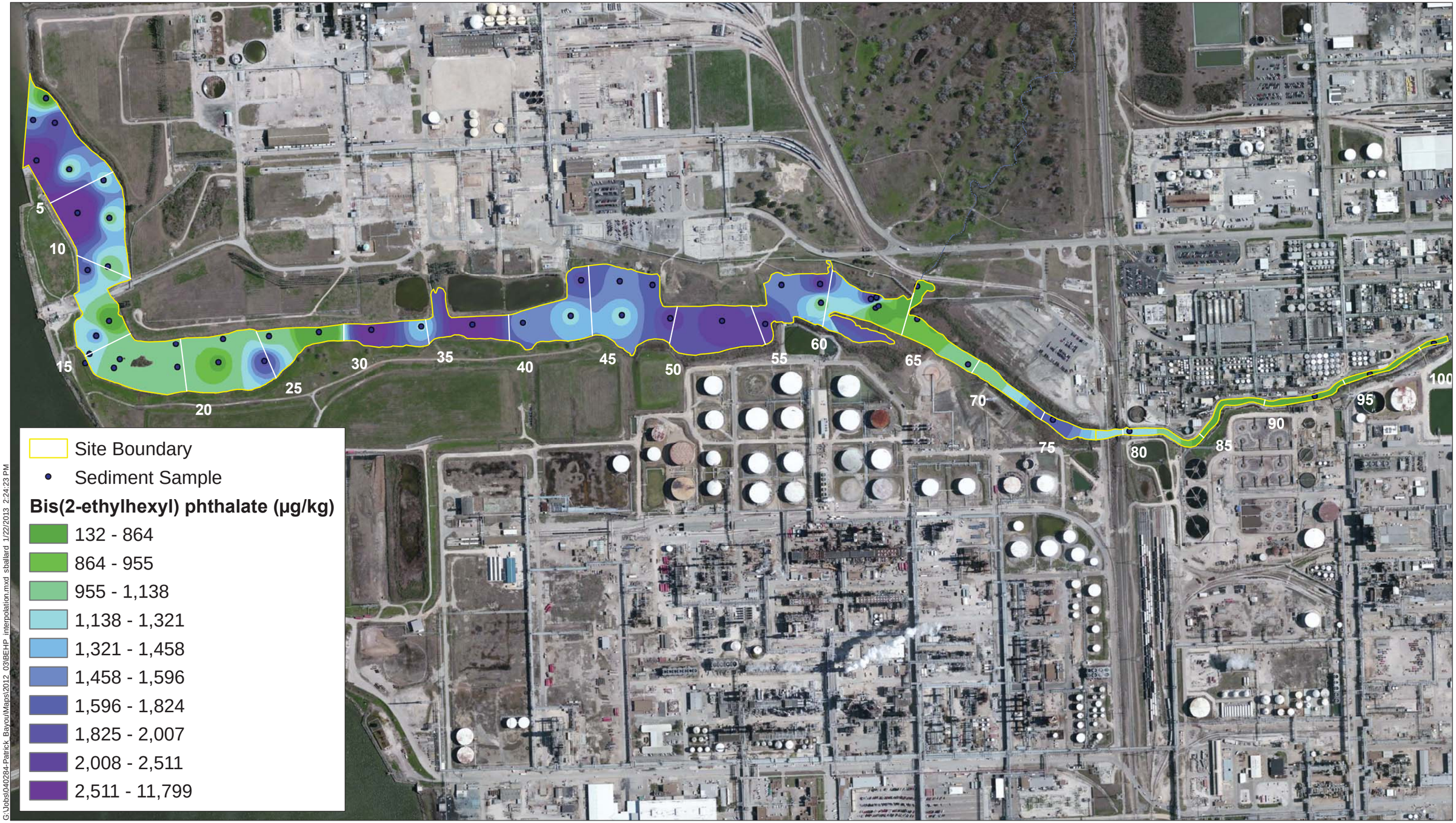
Figure B-16A
1,3-Dichlorobenzene Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure B-16B
1,4-Dichlorobenzene Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure B-16C
Bis(2-ethylhexyl)phthalate Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure B-16D
Hexachlorobenzene Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure B-16E
Hexachlorobutadiene Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure B-16F
Lead Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure B-16G
Mercury Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure B-16H
Tetrachlorobiphenyl Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure B-16l
Total Dioxin/Furan TEQ (Avian) Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure B-16J
Total Dioxin/Furan TEQ (Mammal) Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

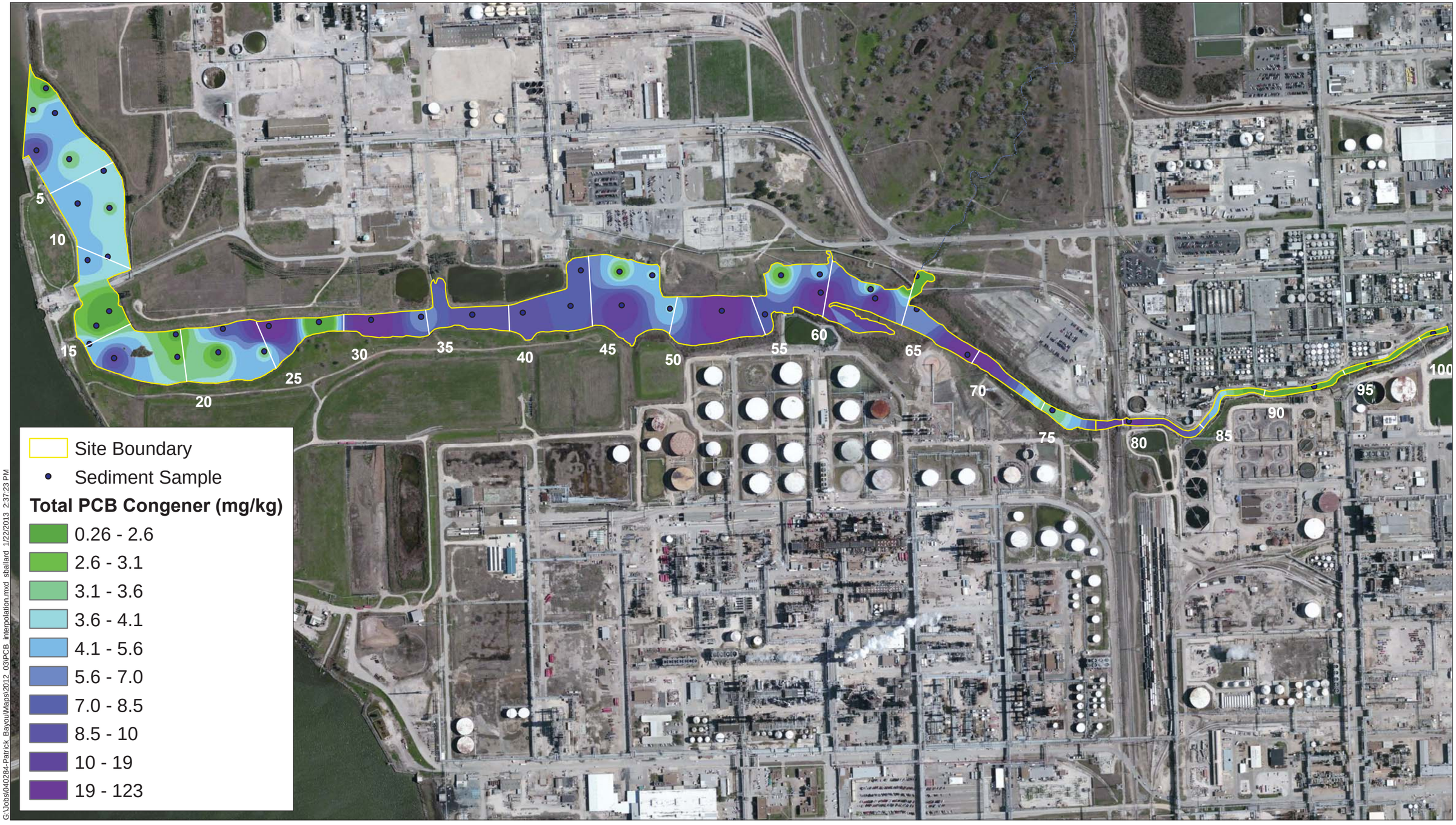
Figure B-16K
Total LPAH 6 of 15 Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure B-16L
Total PAH 15 Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

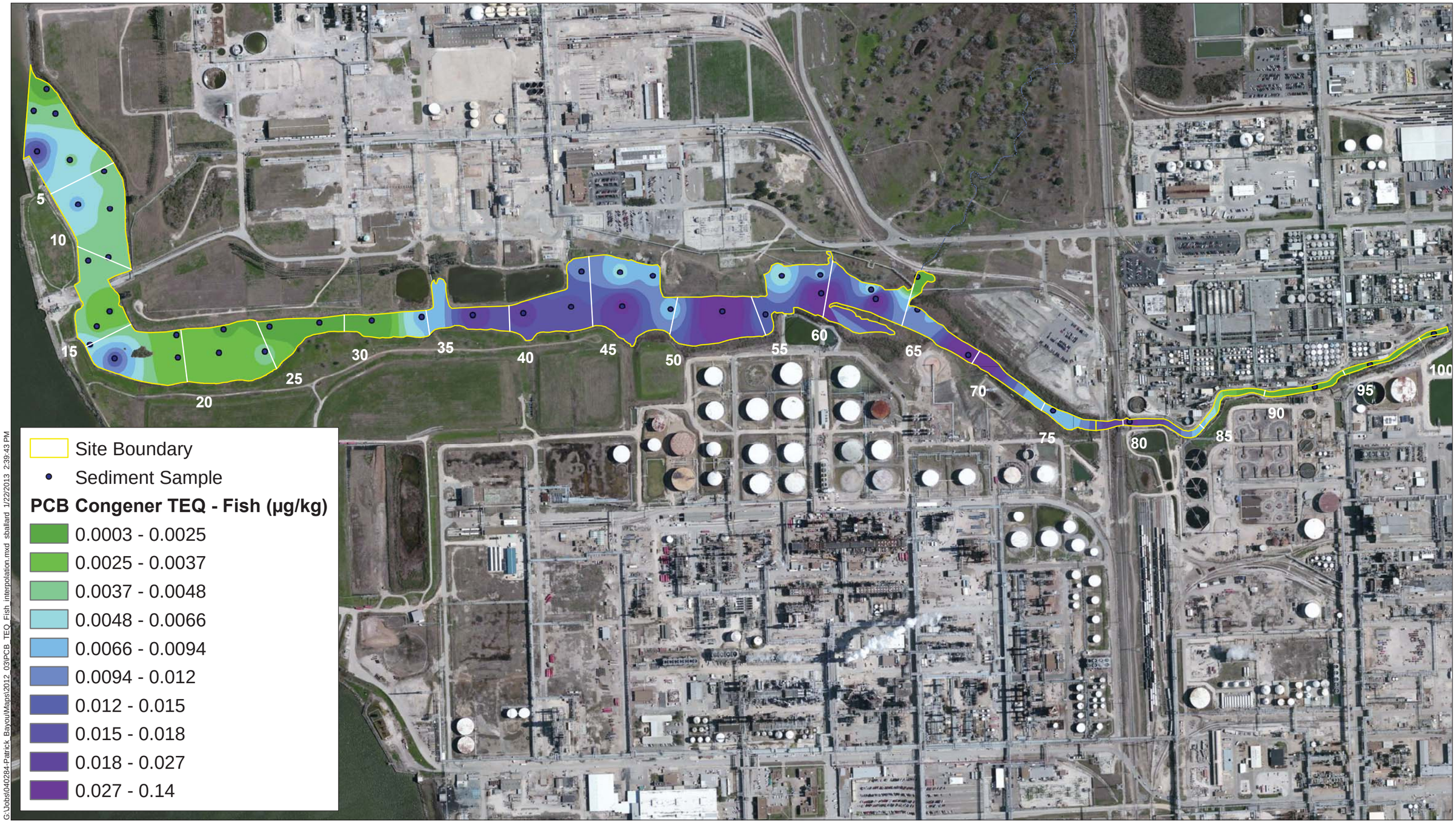
Figure B-16M
Total PCB Congener Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure B-16N
Total PCB Congener TEQ (Avian) Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure B-16O
Total PCB Congener TEQ (Fish) Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100

Site Boundary

Sediment Sample

PCB Congener TEQ - Mammal (µg/kg)

- 0.0035 - 0.025
- 0.025 - 0.030
- 0.030 - 0.041
- 0.041 - 0.057
- 0.057 - 0.084
- 0.084 - 0.11
- 0.11 - 0.14
- 0.14 - 0.18
- 0.18 - 0.24
- 0.24 - 1.3

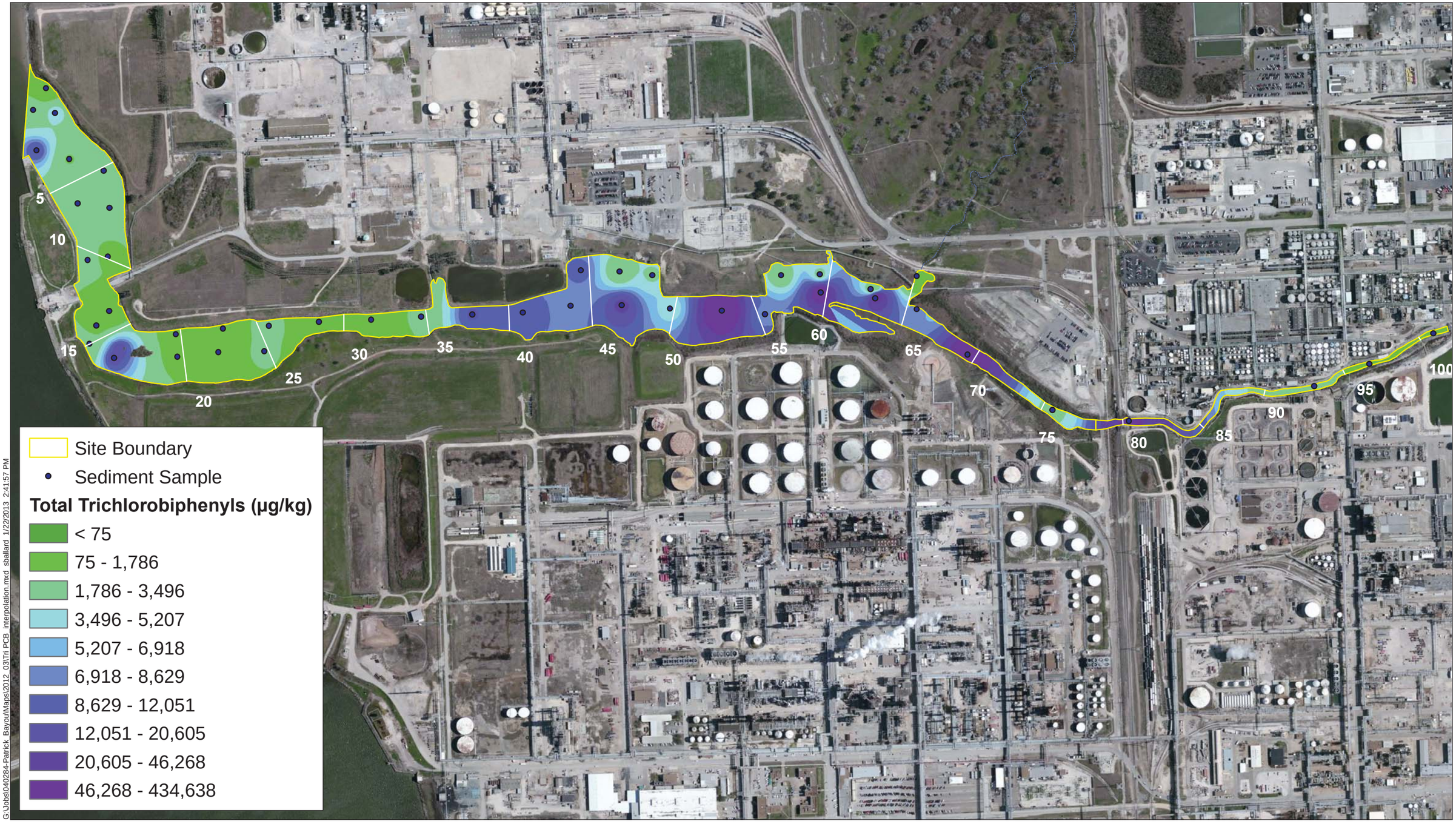
G:\Jobs\040284-Patrick_Bayou\Maps\2012_03\PCB_TEQ_Mammal_interpolation.mxd sballard 1/22/2013 2:40:56 PM

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure B-16P
Total PCB Congener TEQ (Mammal) Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

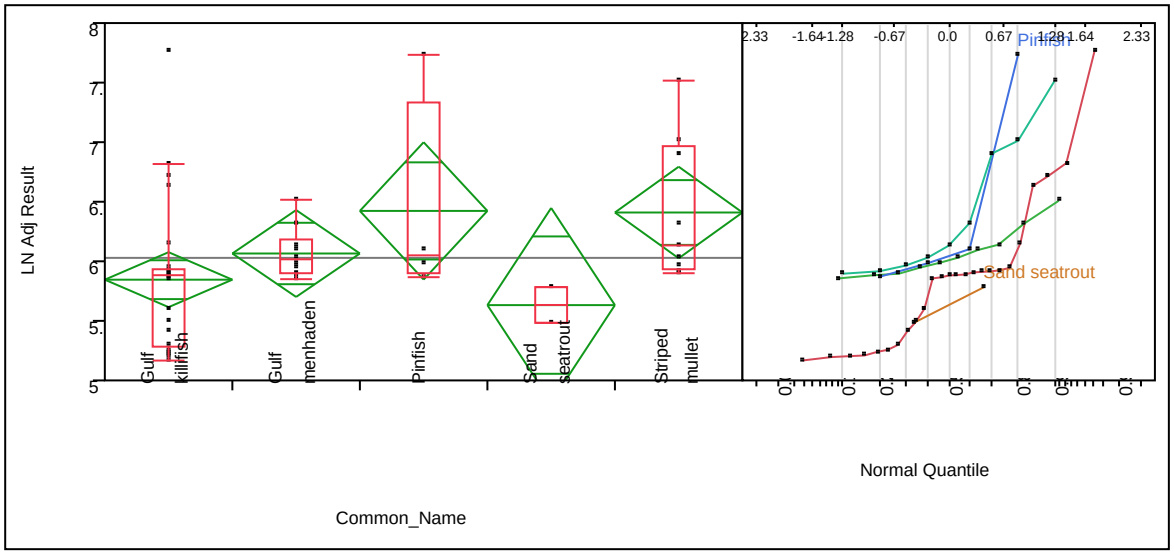
Figure B-16Q
Trichlorobiphenyl Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

APPENDIX C
WILDLIFE RISK ASSESSMENT SUPPORTING INFORMATION

APPENDIX C-1
TISSUE DATA ANALYSIS

APPENDIX C-1.1
PREY GROUP ANALYSIS

Oneway Analysis of LN Adj Result By Common_Name chemical_name=Hexachlorobenzene Size_Class_Code=FISH (<15 CM)



Oneway Anova
Summary of Fit

Rsquare	0.173362
Adj Rsquare	0.099883
Root Mean Square Error	0.572538
Mean of Response	6.028825
Observations (or Sum Wgts)	50

Analysis of Variance

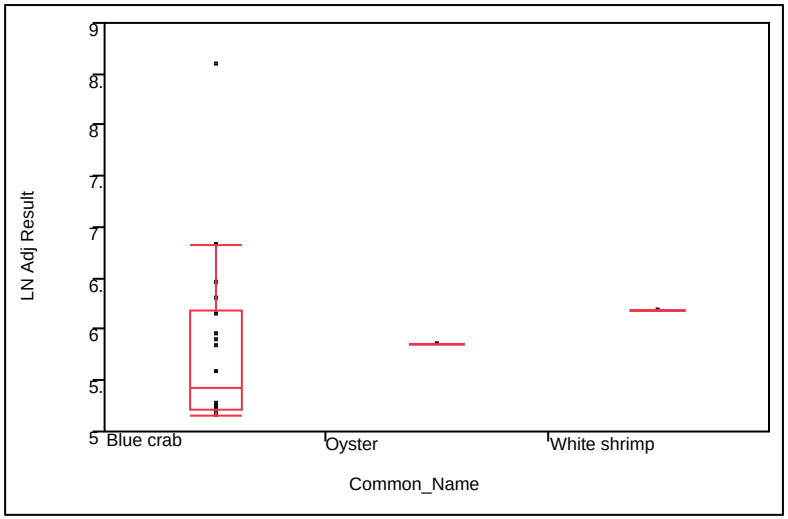
Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Common_Name	4	3.093561	0.773390	2.3593	0.0676
Error	45	14.750992	0.327800		
C. Total	49	17.844553			

Means for Oneway Anova

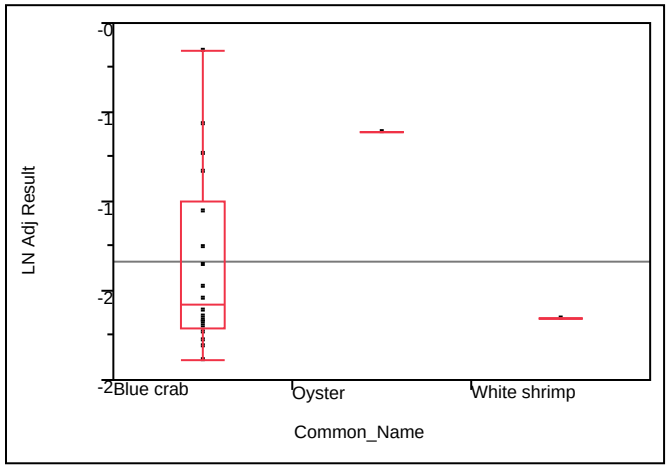
Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Gulf killifish	25	5.84569	0.11451	5.6151	6.0763
Gulf menhaden	10	6.06552	0.18105	5.7009	6.4302
Pinfish	4	6.42302	0.28627	5.8464	6.9996
Sand seatrout	2	5.63223	0.40485	4.8168	6.4476
Striped mullet	9	6.40969	0.19085	6.0253	6.7941

Std Error uses a pooled estimate of error variance

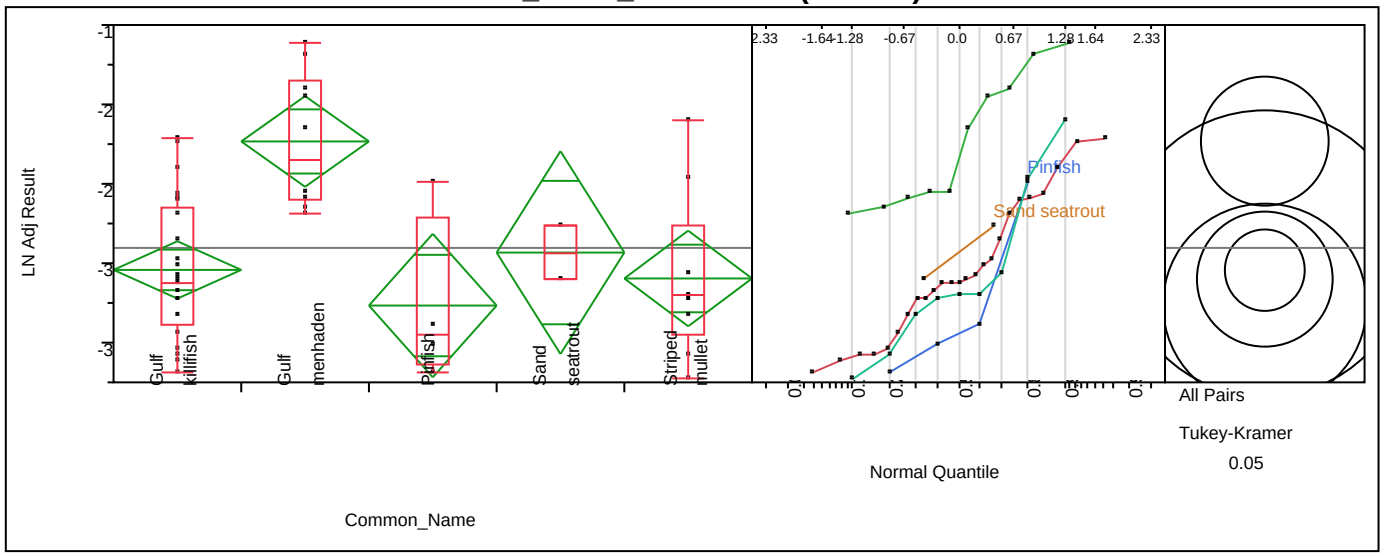
Oneway Analysis of LN Adj Result By Common_Name chemical_name=Hexachlorobenzene Size_Class_Code=INVERTEBRATES (2 - 7.5 CM)



Oneway Analysis of LN Adj Result By Common_Name chemical_name=Lead Size_Class_Code=INVERTEBRATES(2 - 7.5 CM)



Oneway Analysis of LN Adj Result By Common_Name chemical_name=Mercury Size_Class_Code=FISH (<15 CM)



Oneway Anova
Summary of Fit

Rsquare	0.392097
Adj Rsquare	0.338062
Root Mean Square Error	0.448351
Mean of Response	-2.90355
Observations (or Sum Wgts)	50

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Common_Name	4	5.834577	1.45864	7.2563	0.0001*
Error	45	9.045852	0.20102		
C. Total	49	14.880429			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Gulf killifish	25	-3.0420	0.08967	-3.223	-2.861
Gulf menhaden	10	-2.2332	0.14178	-2.519	-1.948
Pinfish	4	-3.2664	0.22418	-3.718	-2.815
Sand seatrout	2	-2.9329	0.31703	-3.571	-2.294
Striped mullet	9	-3.0959	0.14945	-3.397	-2.795

Std Error uses a pooled estimate of error variance

Means Comparisons
Comparisons for all pairs using Tukey-Kramer HSD

q*	Alpha
2.84145	0.05

Abs(Dif)-HSD	Gulf menhaden	Sand seatrout	Gulf killifish	Striped mullet	Pinfish
Gulf menhaden	-0.5697	-0.2872	0.3322	0.2774	0.2795
Sand seatrout	-0.2872	-1.2740	-0.8270	-0.8329	-0.7697
Gulf killifish	0.3322	-0.8270	-0.3603	-0.4414	-0.4617
Striped mullet	0.2774	-0.8329	-0.4414	-0.6006	-0.5950
Pinfish	0.2795	-0.7697	-0.4617	-0.5950	-0.9008

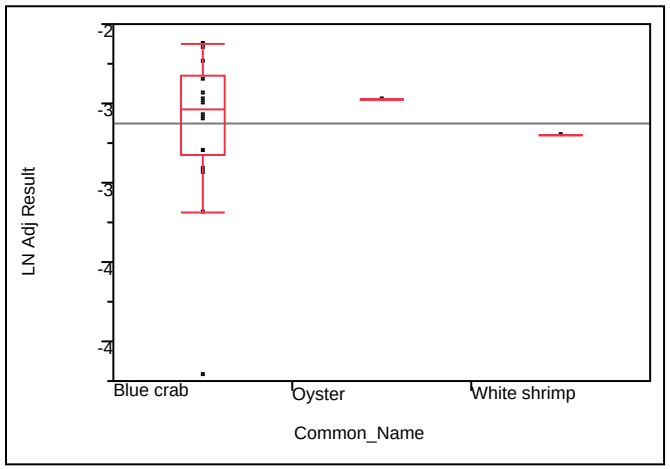
Positive values show pairs of means that are significantly different.

Level			Mean
Gulf menhaden	A		-2.233204
Sand seatrout	A	B	-2.932857
Gulf killifish		B	-3.042037
Striped mullet		B	-3.095909
Pinfish		B	-3.266437

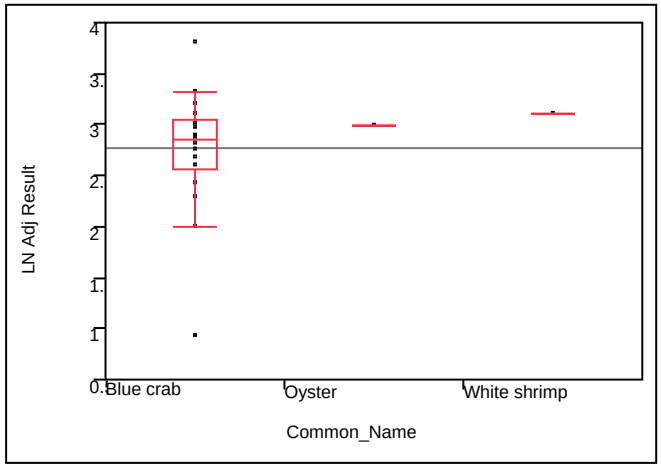
Levels not connected by same letter are significantly different.

Level	- Level	Difference	Std Err Dif	Lower CL	Upper CL	p-Value	Difference
Gulf menhaden	Pinfish	1.033232	0.2652482	0.279542	1.786922	0.0028*	
Gulf menhaden	Striped mullet	0.862704	0.2060032	0.277356	1.448052	0.0012*	
Gulf menhaden	Gulf killifish	0.808832	0.1677577	0.332157	1.285508	0.0002*	
Gulf menhaden	Sand seatrout	0.699652	0.3472915	-0.287160	1.686464	0.2758	
Sand seatrout	Pinfish	0.333580	0.3882837	-0.769709	1.436869	0.9102	
Gulf killifish	Pinfish	0.224400	0.2414446	-0.461653	0.910453	0.8840	
Striped mullet	Pinfish	0.170528	0.2694256	-0.595032	0.936088	0.9689	
Sand seatrout	Striped mullet	0.163052	0.3504924	-0.832855	1.158959	0.9901	
Sand seatrout	Gulf killifish	0.109180	0.3294696	-0.826992	1.045352	0.9973	
Gulf killifish	Striped mullet	0.053872	0.1742877	-0.441358	0.549102	0.9979	

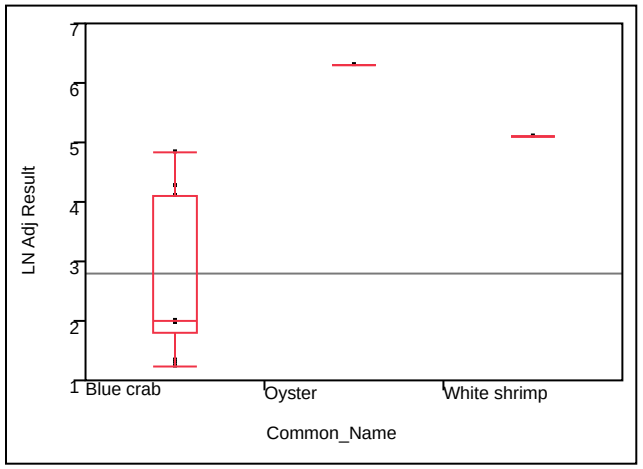
Oneway Analysis of LN Adj Result By Common_Name chemical_name=Mercury Size_Class_Code=INVERTEBRATES (2 - 7.5 CM)



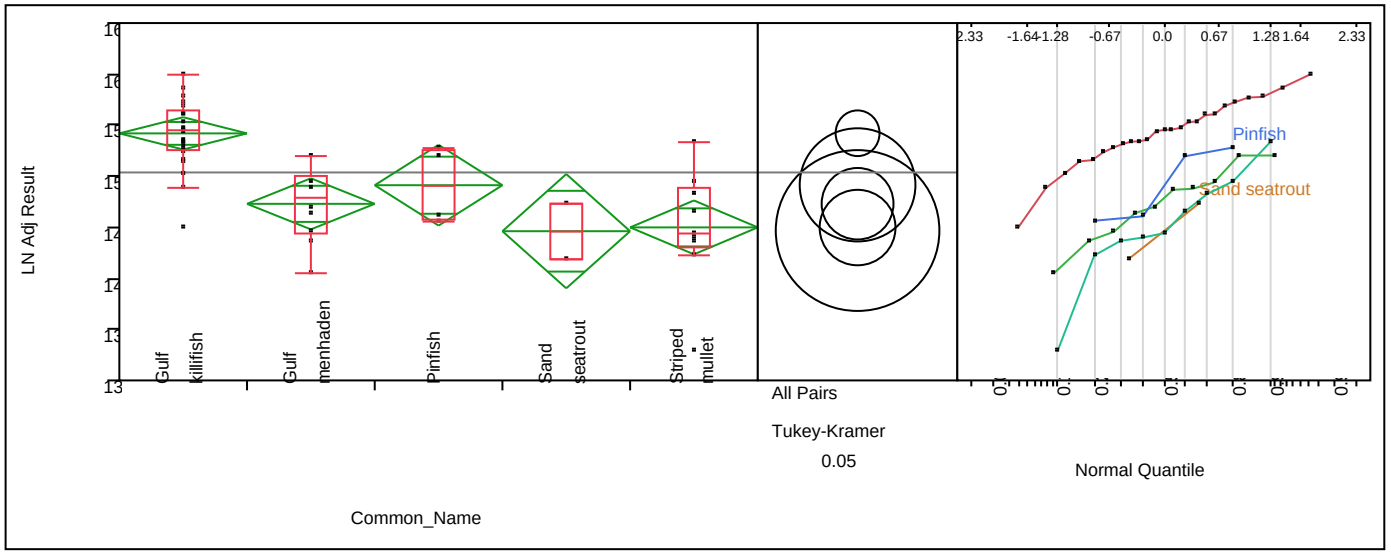
Oneway Analysis of LN Adj Result By Common_Name chemical_name=Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2), Size_Class_Code=INVERTEBRATES (2 - 7.5 CM)



Oneway Analysis of LN Adj Result By Common_Name chemical_name=Total PAH (16) (U = 1/2), Size_Class_Code=INVERTEBRATES (2 - 7.5 CM)



Oneway Analysis of LN Adj Result By Common_Name chemical_name=Total PCB Congener (U = 1/2), Size_Class_Code=FISH (<15 CM)



Oneway Anova
Summary of Fit

Rsquare	0.533399
Adj Rsquare	0.491923
Root Mean Square Error	0.392759
Mean of Response	15.03682
Observations (or Sum Wgts)	50

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Common_Name	4	7.935436	1.98386	12.8605	<.0001*
Error	45	6.941687	0.15426		
C. Total	49	14.877123			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Gulf killifish	25	15.4195	0.07855	15.261	15.578
Gulf menhaden	10	14.7295	0.12420	14.479	14.980
Pinfish	4	14.9119	0.19638	14.516	15.307
Sand seatrout	2	14.4614	0.27772	13.902	15.021
Striped mullet	9	14.4988	0.13092	14.235	14.762

Std Error uses a pooled estimate of error variance

Means Comparisons

Comparisons for all pairs using Tukey-Kramer HSD

q*	Alpha
2.84145	0.05

Abs(Dif)-HSD	Gulf killifish	Pinfish	Gulf menhaden	Striped mullet	Sand seatrout
Gulf killifish	-0.3157	-0.0934	0.2724	0.4869	0.1379
Pinfish	-0.0934	-0.7891	-0.4778	-0.2575	-0.5160
Gulf menhaden	0.2724	-0.4778	-0.4991	-0.2821	-0.5964
Striped mullet	0.4869	-0.2575	-0.2821	-0.5261	-0.8351
Sand seatrout	0.1379	-0.5160	-0.5964	-0.8351	-1.1160

Positive values show pairs of means that are significantly different.

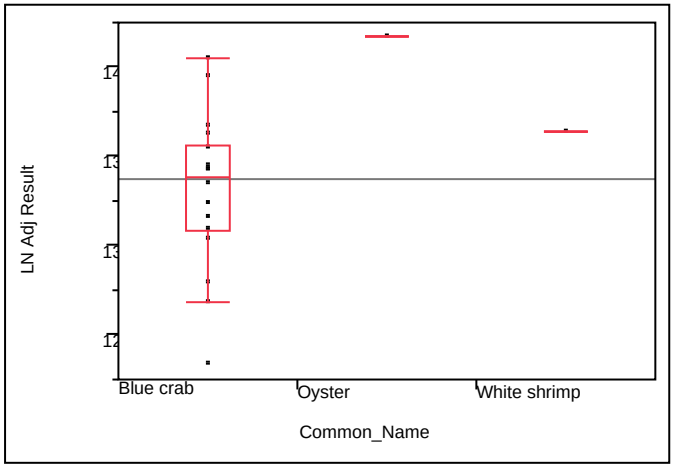
Level			Mean
Gulf killifish	A		15.419482
Pinfish	A	B	14.911909
Gulf menhaden		B	14.729462
Striped mullet		B	14.498772
Sand seatrout		B	14.461441

Levels not connected by same letter are significantly different.

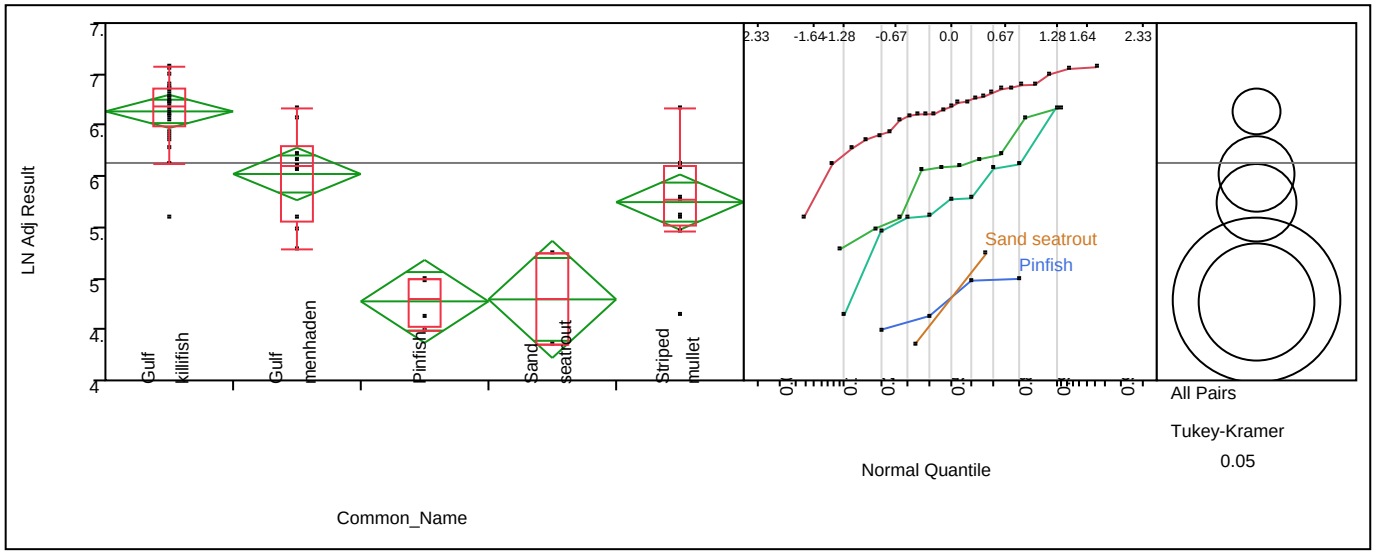
Level	- Level	Difference	Std Err Dif	Lower CL	Upper CL	p-Value	Difference
Gulf killifish	Sand seatrout	0.9580408	0.2886178	0.137947	1.778135	0.0147*	
Gulf killifish	Striped mullet	0.9207098	0.1526773	0.486885	1.354535	<.0001*	
Gulf killifish	Gulf menhaden	0.6900200	0.1469570	0.272449	1.107591	0.0002*	
Gulf killifish	Pinfish	0.5075732	0.2115072	-0.093415	1.108561	0.1341	
Pinfish	Sand seatrout	0.4504677	0.3401394	-0.516022	1.416957	0.6777	
Pinfish	Striped mullet	0.4131366	0.2360188	-0.257500	1.083773	0.4146	
Gulf menhaden	Sand seatrout	0.2680208	0.3042299	-0.596434	1.132475	0.9024	
Gulf menhaden	Striped mullet	0.2306898	0.1804604	-0.282080	0.743459	0.7056	
Pinfish	Gulf menhaden	0.1824468	0.2323594	-0.477791	0.842685	0.9336	

Level	- Level	Difference	Std Err Dif	Lower CL	Upper CL	p-Value	Difference
Striped mullet	Sand seatrout	0.0373310	0.3070339	-0.835091	0.909753	0.9999	

Oneway Analysis of LN Adj Result By Common_Name chemical_name=Total PCB Congener (U = 1/2), Size_Class_Code=INVERTEBRATES (2 - 7.5 CM)



Oneway Analysis of LN Adj Result By Common_Name chemical_name=Total PCB Congener TEQ 1998 (Avian) (U = 1/2), Size_Class_Code=FISH (<15 CM)



Oneway Anova
Summary of Fit

Rsquare	0.71961
Adj Rsquare	0.694686
Root Mean Square Error	0.402767
Mean of Response	6.129779
Observations (or Sum Wgts)	50

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Common_Name	4	18.735038	4.68376	28.8726	<.0001*
Error	45	7.299966	0.16222		
C. Total	49	26.035004			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Gulf killifish	25	6.63478	0.08055	6.4725	6.7970
Gulf menhaden	10	6.02177	0.12737	5.7652	6.2783
Pinfish	4	4.77433	0.20138	4.3687	5.1799
Sand seatrout	2	4.79363	0.28480	4.2200	5.3672
Striped mullet	9	5.74635	0.13426	5.4759	6.0168

Std Error uses a pooled estimate of error variance

Means Comparisons

Comparisons for all pairs using Tukey-Kramer HSD

q*	Alpha
2.84145	0.05

Abs(Dif)-HSD	Gulf killifish	Gulf menhaden	Striped mullet	Sand seatrout	Pinfish
Gulf killifish	-0.3237	0.1848	0.4436	1.0002	1.2441
Gulf menhaden	0.1848	-0.5118	-0.2504	0.3417	0.5704
Striped mullet	0.4436	-0.2504	-0.5395	0.0581	0.2843
Sand seatrout	1.0002	0.3417	0.0581	-1.1444	-0.9718
Pinfish	1.2441	0.5704	0.2843	-0.9718	-0.8092

Positive values show pairs of means that are significantly different.

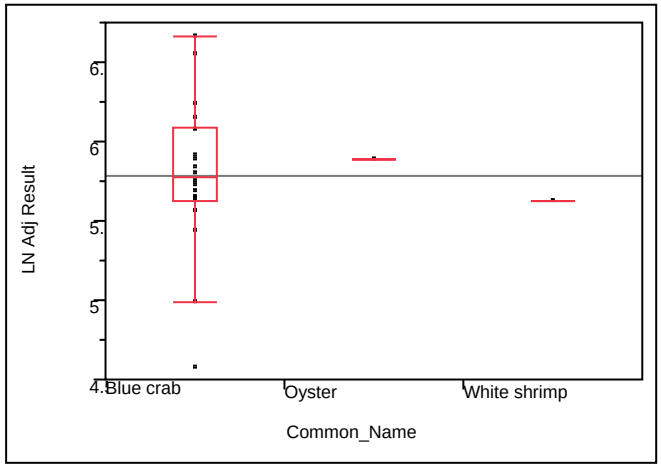
Level			Mean
Gulf killifish	A		6.6347809
Gulf menhaden		B	6.0217726
Striped mullet		B	5.7463480
Sand seatrout		C	4.7936258
Pinfish		C	4.7743339

Levels not connected by same letter are significantly different.

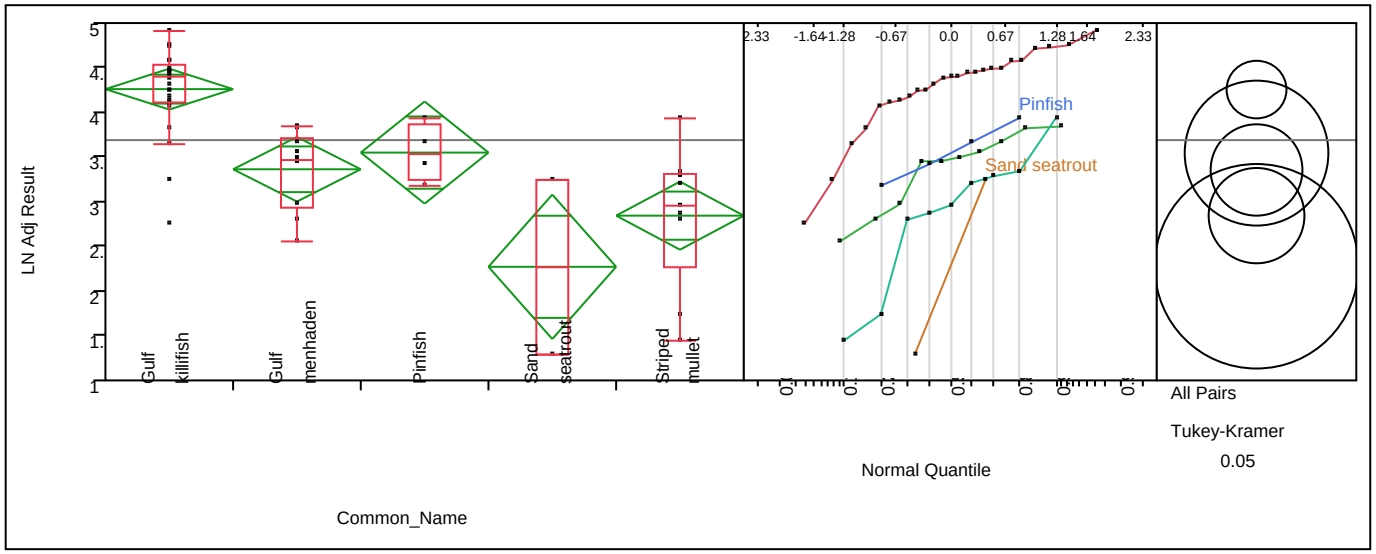
Level	- Level	Difference	Std Err Dif	Lower CL	Upper CL	p-Value	Difference
Gulf killifish	Pinfish	1.860447	0.2168968	1.24415	2.476749	<.0001*	
Gulf killifish	Sand seatrout	1.841155	0.2959723	1.00016	2.682146	<.0001*	
Gulf menhaden	Pinfish	1.247439	0.2382803	0.57038	1.924501	<.0001*	
Gulf menhaden	Sand seatrout	1.228147	0.3119822	0.34166	2.114629	0.0025*	
Striped mullet	Pinfish	0.972014	0.2420330	0.28429	1.659739	0.0020*	
Striped mullet	Sand seatrout	0.952722	0.3148577	0.05807	1.847375	0.0317*	
Gulf killifish	Striped mullet	0.888433	0.1565678	0.44355	1.333313	<.0001*	
Gulf killifish	Gulf menhaden	0.613008	0.1507017	0.18480	1.041220	0.0017*	
Gulf menhaden	Striped mullet	0.275425	0.1850588	-0.25041	0.801260	0.5752	

Level	- Level	Difference	Std Err Dif	Lower CL	Upper CL	p-Value	Difference
Sand seatrout	Pinfish	0.019292	0.3488067	-0.97183	1.010409	1.0000	

Oneway Analysis of LN Adj Result By Common_Name chemical_name=Total PCB Congener TEQ 1998 (Avian) (U = 1/2), Size_Class_Code=INVERTEBRATES (2 - 7.5 CM)



Oneway Analysis of LN Adj Result By Common_Name chemical_name=Total PCB Congener TEQ 2005 (Mammal) (U = 1/2), Size_Class_Code=FISH (<15 CM)



Oneway Anova
Summary of Fit

Rsquare	0.576592
Adj Rsquare	0.538956
Root Mean Square Error	0.567592
Mean of Response	3.689824
Observations (or Sum Wgts)	50

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Common_Name	4	19.742183	4.93555	15.3201	<.0001*
Error	45	14.497244	0.32216		
C. Total	49	34.239427			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Gulf killifish	25	4.26055	0.11352	4.0319	4.4892

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Gulf menhaden	10	3.36342	0.17949	3.0019	3.7249
Pinfish	4	3.55015	0.28380	2.9786	4.1217
Sand seatrout	2	2.27174	0.40135	1.4634	3.0801
Striped mullet	9	2.84434	0.18920	2.4633	3.2254

Std Error uses a pooled estimate of error variance

Means Comparisons

Comparisons for all pairs using Tukey-Kramer HSD

q*	Alpha
2.84145	0.05

Abs(Dif)-HSD	Gulf killifish	Pinfish	Gulf menhaden	Striped mullet	Sand seatrout
Gulf killifish	-0.4562	-0.1581	0.2937	0.7893	0.8037
Pinfish	-0.1581	-1.1404	-0.7674	-0.2634	-0.1183
Gulf menhaden	0.2937	-0.7674	-0.7213	-0.2219	-0.1576
Striped mullet	0.7893	-0.2634	-0.2219	-0.7603	-0.6882
Sand seatrout	0.8037	-0.1183	-0.1576	-0.6882	-1.6128

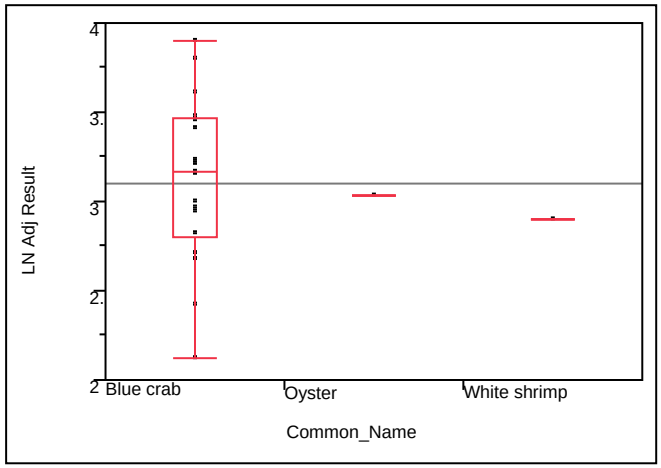
Positive values show pairs of means that are significantly different.

Level			Mean
Gulf killifish	A		4.2605524
Pinfish	A	B	3.5501546
Gulf menhaden		B	3.3634207
Striped mullet		B	2.8443424
Sand seatrout		B	2.2717378

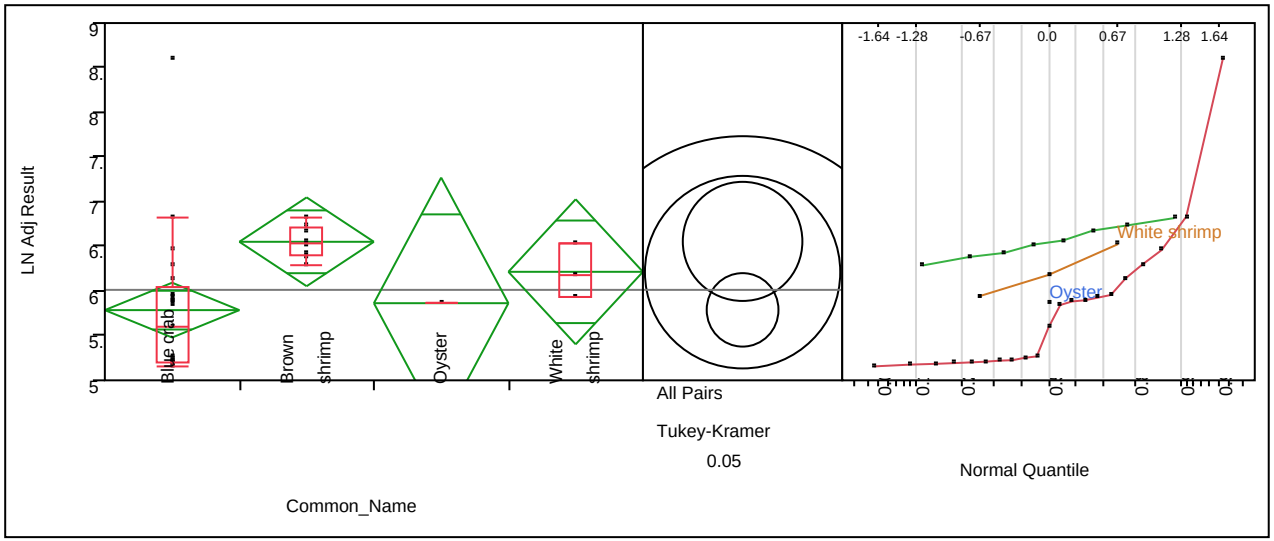
Levels not connected by same letter are significantly different.

Level	- Level	Difference	Std Err Dif	Lower CL	Upper CL	p-Value	Difference
Gulf killifish	Sand seatrout	1.988815	0.4170934	0.803664	3.173966	0.0002*	
Gulf killifish	Striped mullet	1.416210	0.2206402	0.789271	2.043149	<.0001*	
Pinfish	Sand seatrout	1.278417	0.4915493	-0.118297	2.675131	0.0873	
Gulf menhaden	Sand seatrout	1.091683	0.4396551	-0.157576	2.340942	0.1127	
Gulf killifish	Gulf menhaden	0.897132	0.2123736	0.293682	1.500581	0.0010*	
Gulf killifish	Pinfish	0.710398	0.3056578	-0.158114	1.578910	0.1562	
Pinfish	Striped mullet	0.705812	0.3410805	-0.263352	1.674976	0.2511	
Striped mullet	Sand seatrout	0.572605	0.4437073	-0.688168	1.833378	0.6983	
Gulf menhaden	Striped mullet	0.519078	0.2607906	-0.221946	1.260102	0.2871	
Pinfish	Gulf menhaden	0.186734	0.3357921	-0.767403	1.140871	0.9806	

Oneway Analysis of LN Adj Result By Common_Name chemical_name=Total PCB Congener TEQ 2005 (Mammal) (U = 1/2), Size_Class_Code=INVERTEBRATES (2 - 7.5 CM)



Oneway Analysis of LN Adj Result By Common_Name chemical_name=Hexachlorobenzene Size_Class_Group_Code=Invertebrates (2 - 12.5 cm)



Oneway Anova
Summary of Fit

Rsquare	0.205299
Adj Rsquare	0.123089
Root Mean Square Error	0.687622
Mean of Response	6.012888
Observations (or Sum Wgts)	33

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Common_Name	3	3.542270	1.18076	2.4972	0.0794
Error	29	13.711898	0.47282		
C. Total	32	17.254169			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Blue crab	21	5.78609	0.15005	5.4792	6.0930
Brown shrimp	8	6.55107	0.24311	6.0539	7.0483

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Oyster	1	5.86363	0.68762	4.4573	7.2700
White shrimp	3	6.21507	0.39700	5.4031	7.0270

Std Error uses a pooled estimate of error variance

Means Comparisons

Comparisons for all pairs using Tukey-Kramer HSD

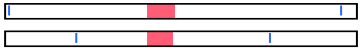
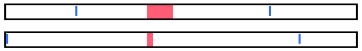
q*	Alpha
2.72451	0.05

Abs(Dif)-HSD	Brown shrimp	White shrimp	Oyster	Blue crab
Brown shrimp	-0.9367	-0.9323	-1.2996	-0.0134
White shrimp	-0.9323	-1.5297	-1.8118	-0.7273
Oyster	-1.2996	-1.8118	-2.6494	-1.8400
Blue crab	-0.0134	-0.7273	-1.8400	-0.5782

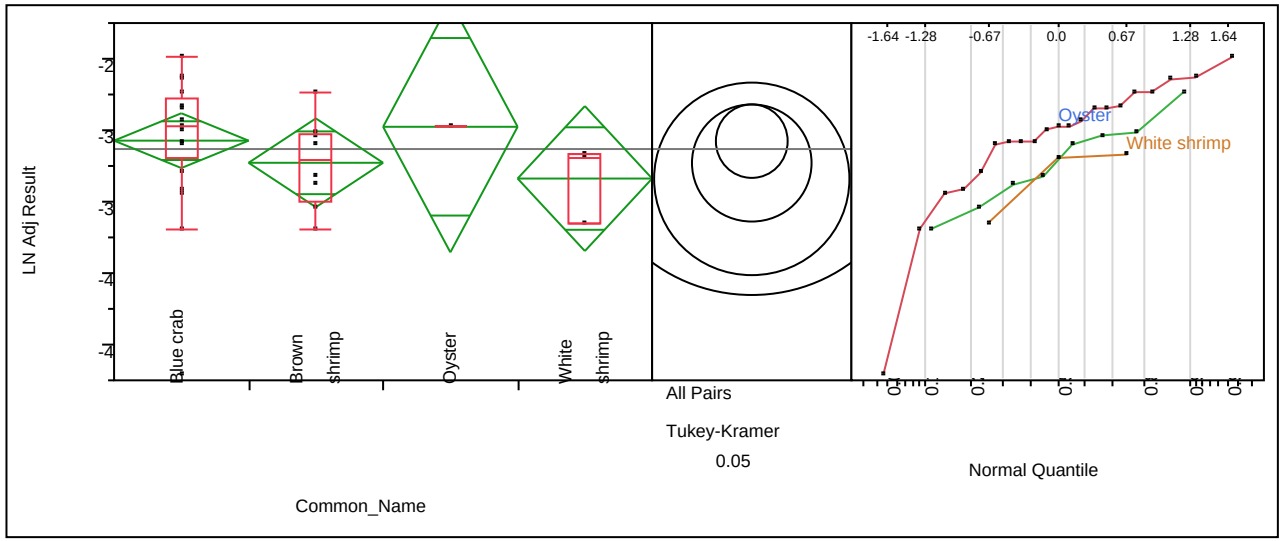
Positive values show pairs of means that are significantly different.

Level		Mean
Brown shrimp	A	6.5510750
White shrimp	A	6.2150725
Oyster	A	5.8636312
Blue crab	A	5.7860888

Levels not connected by same letter are significantly different.

Level	- Level	Difference	Std Err Dif	Lower CL	Upper CL	p-Value	Difference
Brown shrimp	Blue crab	0.7649862	0.2856894	-0.01338	1.543350	0.0554	
Brown shrimp	Oyster	0.6874438	0.7293333	-1.29963	2.674520	0.7823	
White shrimp	Blue crab	0.4289837	0.4244095	-0.72732	1.585292	0.7445	
White shrimp	Oyster	0.3514413	0.7939975	-1.81181	2.514696	0.9705	
Brown shrimp	White shrimp	0.3360024	0.4655223	-0.93232	1.604323	0.8876	
Oyster	Blue crab	0.0775424	0.7038036	-1.83998	1.995062	0.9995	

Oneway Analysis of LN Adj Result By Common_Name chemical_name=Mercury Size_Class_Group_Code=Invertebrates (2 - 12.5 cm)



Oneway Anova
Summary of Fit

Rsquare	0.052858
Adj Rsquare	-0.04512
Root Mean Square Error	0.42943
Mean of Response	-3.13156
Observations (or Sum Wgts)	33

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Common_Name	3	0.2984544	0.099485	0.5395	0.6590
Error	29	5.3478946	0.184410		
C. Total	32	5.6463490			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Blue crab	21	-3.0728	0.09371	-3.264	-2.881
Brown shrimp	8	-3.2277	0.15183	-3.538	-2.917

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Oyster	1	-2.9759	0.42943	-3.854	-2.098
White shrimp	3	-3.3380	0.24793	-3.845	-2.831

Std Error uses a pooled estimate of error variance

Means Comparisons

Comparisons for all pairs using Tukey-Kramer HSD

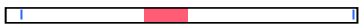
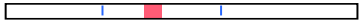
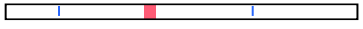
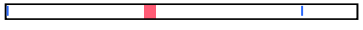
q*	Alpha
2.72451	0.05

Abs(Dif)-HSD	Oyster	Blue crab	Brown shrimp	White shrimp
Oyster	-1.6546	-1.1006	-0.9891	-0.9889
Blue crab	-1.1006	-0.3611	-0.3312	-0.4570
Brown shrimp	-0.9891	-0.3312	-0.5850	-0.6818
White shrimp	-0.9889	-0.4570	-0.6818	-0.9553

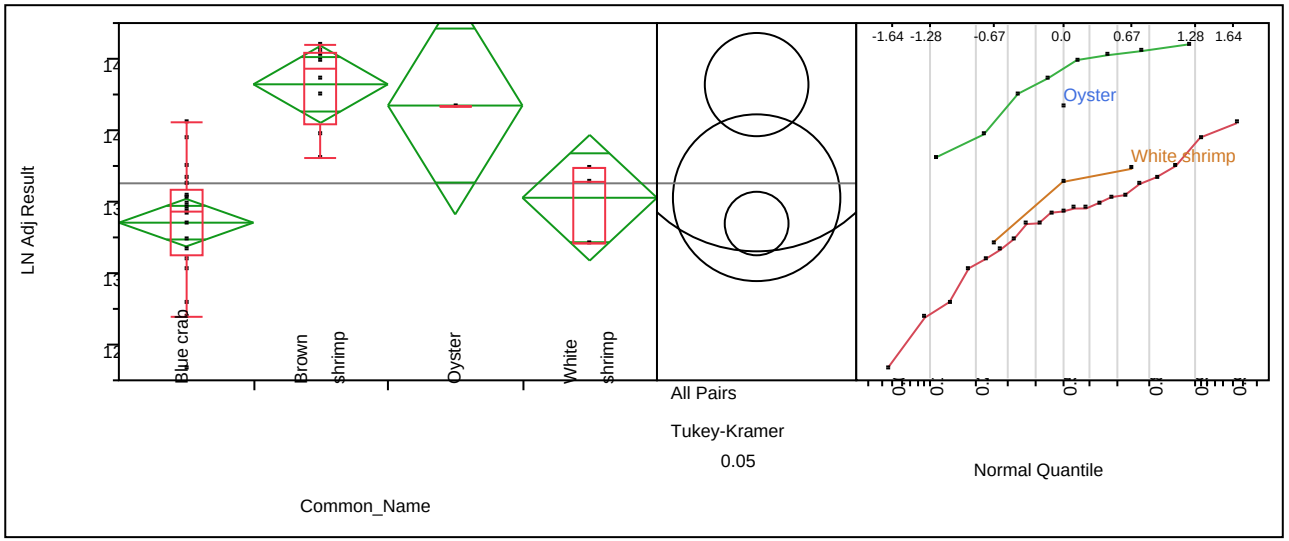
Positive values show pairs of means that are significantly different.

Level		Mean
Oyster	A	-2.975930
Blue crab	A	-3.072841
Brown shrimp	A	-3.227740
White shrimp	A	-3.337976

Levels not connected by same letter are significantly different.

Level	- Level	Difference	Std Err Dif	Lower CL	Upper CL	p-Value	Difference
Oyster	White shrimp	0.3620462	0.4958631	-0.98894	1.713030	0.8842	
Blue crab	White shrimp	0.2651348	0.2650500	-0.45700	0.987266	0.7504	
Oyster	Brown shrimp	0.2518104	0.4554793	-0.98915	1.492768	0.9450	
Blue crab	Brown shrimp	0.1548990	0.1784172	-0.33120	0.640999	0.8211	
Brown shrimp	White shrimp	0.1102359	0.2907255	-0.68185	0.902320	0.9811	
Oyster	Blue crab	0.0969114	0.4395357	-1.10061	1.294431	0.9961	

Oneway Analysis of LN Adj Result By Common_Name chemical_name=Total PCB Congener (U = 1/2) Size_Class_Group_Code=Invertebrates (2 - 12.5 cm)



Oneway Anova
Summary of Fit

Rsquare	0.588632
Adj Rsquare	0.546076
Root Mean Square Error	0.372565
Mean of Response	13.62859
Observations (or Sum Wgts)	33

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Common_Name	3	5.7599054	1.91997	13.8321	<.0001*
Error	29	4.0253392	0.13880		
C. Total	32	9.7852446			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Blue crab	21	13.3532	0.08130	13.187	13.519
Brown shrimp	8	14.3214	0.13172	14.052	14.591

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Oyster	1	14.1728	0.37257	13.411	14.935
White shrimp	3	13.5275	0.21510	13.088	13.967

Std Error uses a pooled estimate of error variance

Means Comparisons

Comparisons for all pairs using Tukey-Kramer HSD

q*	Alpha
2.72451	0.05

Abs(Dif)-HSD	Brown shrimp	Oyster	White shrimp	Blue crab
Brown shrimp	-0.5075	-0.9280	0.1068	0.5465
Oyster	-0.9280	-1.4355	-0.5268	-0.2193
White shrimp	0.1068	-0.5268	-0.8288	-0.4522
Blue crab	0.5465	-0.2193	-0.4522	-0.3133

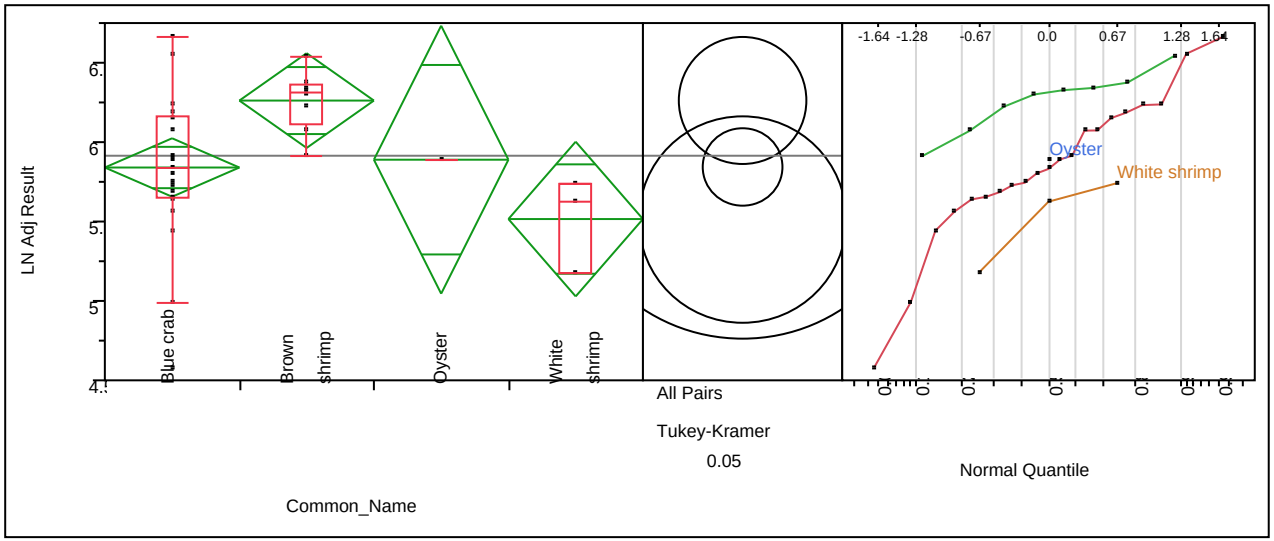
Positive values show pairs of means that are significantly different.

Level			Mean
Brown shrimp	A		14.321430
Oyster	A	B	14.172793
White shrimp		B	13.527474
Blue crab		B	13.353181

Levels not connected by same letter are significantly different.

Level	- Level	Difference	Std Err Dif	Lower CL	Upper CL	p-Value	Difference
Brown shrimp	Blue crab	0.9682494	0.1547913	0.546519	1.389980	<.0001*	
Oyster	Blue crab	0.8196116	0.3813326	-0.219333	1.858556	0.1617	
Brown shrimp	White shrimp	0.7939567	0.2522278	0.106759	1.481154	0.0188*	
Oyster	White shrimp	0.6453189	0.4302012	-0.526769	1.817406	0.4505	
White shrimp	Blue crab	0.1742927	0.2299522	-0.452214	0.800800	0.8725	
Brown shrimp	Oyster	0.1486378	0.3951650	-0.927993	1.225269	0.9815	

Oneway Analysis of LN Adj Result By Common_Name chemical_name=Total PCB Congener TEQ 1998 (Avian) (U = 1/2) Size_Class_Group_Code=Invertebrates (2 - 12.5 cm)



Oneway Anova
Summary of Fit

Rsquare	0.239998
Adj Rsquare	0.161377
Root Mean Square Error	0.41256
Mean of Response	5.914452
Observations (or Sum Wgts)	33

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Common_Name	3	1.5587055	0.519568	3.0526	0.0442*
Error	29	4.9359585	0.170205		
C. Total	32	6.4946640			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Blue crab	21	5.84026	0.09003	5.6561	6.0244
Brown shrimp	8	6.26186	0.14586	5.9635	6.5602

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Oyster	1	5.88946	0.41256	5.0457	6.7332
White shrimp	3	5.51572	0.23819	5.0286	6.0029

Std Error uses a pooled estimate of error variance

Means Comparisons

Comparisons for all pairs using Tukey-Kramer HSD

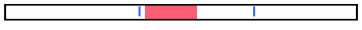
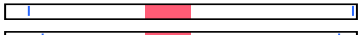
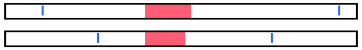
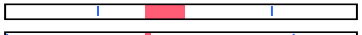
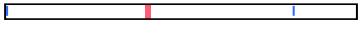
q*	Alpha
2.72451	0.05

Abs(Dif)-HSD	Brown shrimp	Oyster	Blue crab	White shrimp
Brown shrimp	-0.5620	-0.8198	-0.0454	-0.0148
Oyster	-0.8198	-1.5896	-1.1013	-0.9242
Blue crab	-0.0454	-1.1013	-0.3469	-0.3692
White shrimp	-0.0148	-0.9242	-0.3692	-0.9178

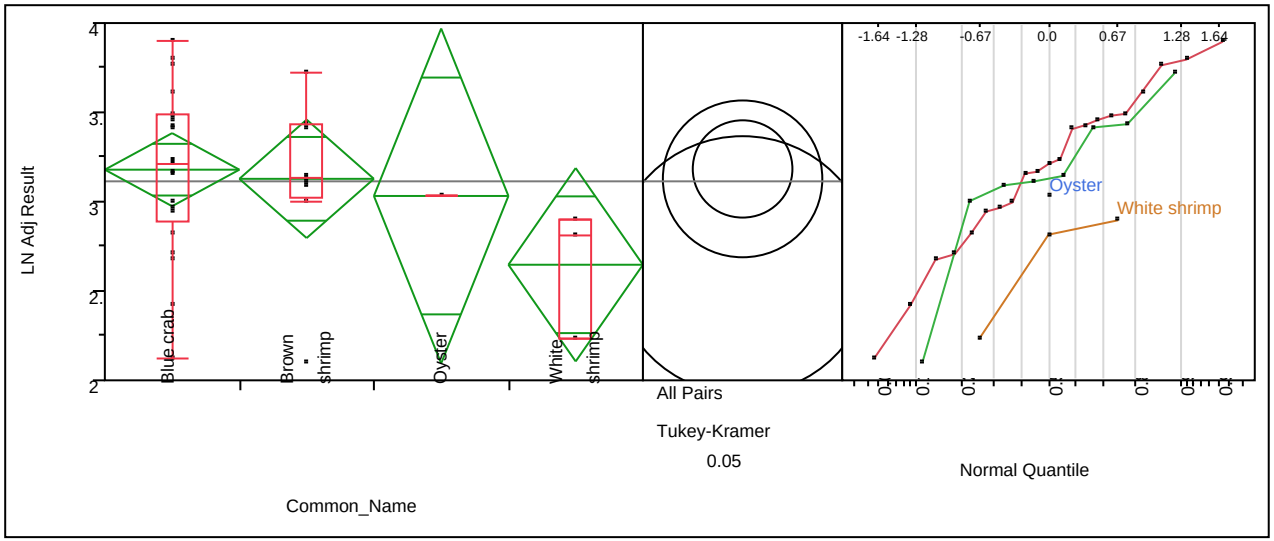
Positive values show pairs of means that are significantly different.

Level		Mean
Brown shrimp	A	6.2618561
Oyster	A	5.8894595
Blue crab	A	5.8402594
White shrimp	A	5.5157170

Levels not connected by same letter are significantly different.

Level	- Level	Difference	Std Err Dif	Lower CL	Upper CL	p-Value	Difference
Brown shrimp	White shrimp	0.7461390	0.2793042	-0.01483	1.507106	0.0562	
Brown shrimp	Blue crab	0.4215967	0.1714080	-0.04541	0.888600	0.0881	
Oyster	White shrimp	0.3737425	0.4763829	-0.92417	1.671652	0.8608	
Brown shrimp	Oyster	0.3723965	0.4375856	-0.81981	1.564603	0.8296	
Blue crab	White shrimp	0.3245424	0.2546373	-0.36922	1.018304	0.5860	
Oyster	Blue crab	0.0492001	0.4222683	-1.10127	1.199674	0.9994	

Oneway Analysis of LN Adj Result By Common_Name chemical_name=Total PCB Congener TEQ 2005 (Mammal) (U = 1/2) Size_Class_Group_Code=Invertebrates (2 - 12.5 cm)



Oneway Anova
Summary of Fit

Rsquare	0.109824
Adj Rsquare	0.017737
Root Mean Square Error	0.458341
Mean of Response	3.113981
Observations (or Sum Wgts)	33

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Common_Name	3	0.7516149	0.250538	1.1926	0.3299
Error	29	6.0922056	0.210076		
C. Total	32	6.8438204			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Blue crab	21	3.17924	0.10002	2.9747	3.3838
Brown shrimp	8	3.12799	0.16205	2.7966	3.4594

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Oyster	1	3.03206	0.45834	2.0947	3.9695
White shrimp	3	2.64711	0.26462	2.1059	3.1883

Std Error uses a pooled estimate of error variance

Means Comparisons

Comparisons for all pairs using Tukey-Kramer HSD

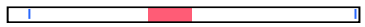
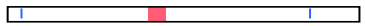
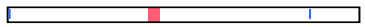
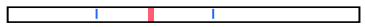
q*	Alpha
2.72451	0.05

Abs(Dif)-HSD	Blue crab	Brown shrimp	Oyster	White shrimp
Blue crab	-0.3854	-0.4676	-1.1310	-0.2386
Brown shrimp	-0.4676	-0.6244	-1.2286	-0.3645
Oyster	-1.1310	-1.2286	-1.7660	-1.0570
White shrimp	-0.2386	-0.3645	-1.0570	-1.0196

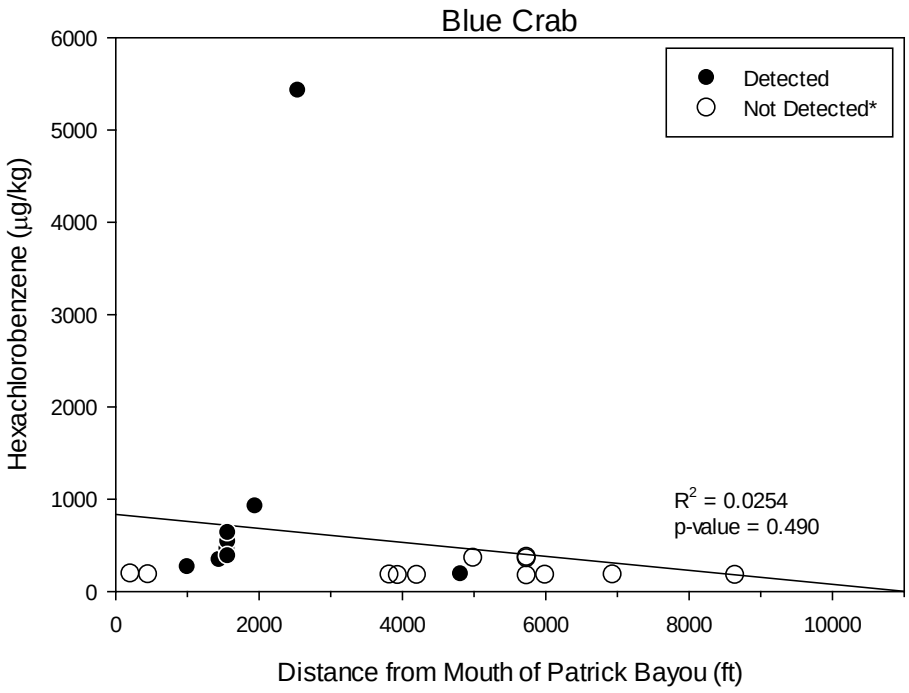
Positive values show pairs of means that are significantly different.

Level		Mean
Blue crab	A	3.1792398
Brown shrimp	A	3.1279933
Oyster	A	3.0320642
White shrimp	A	2.6471117

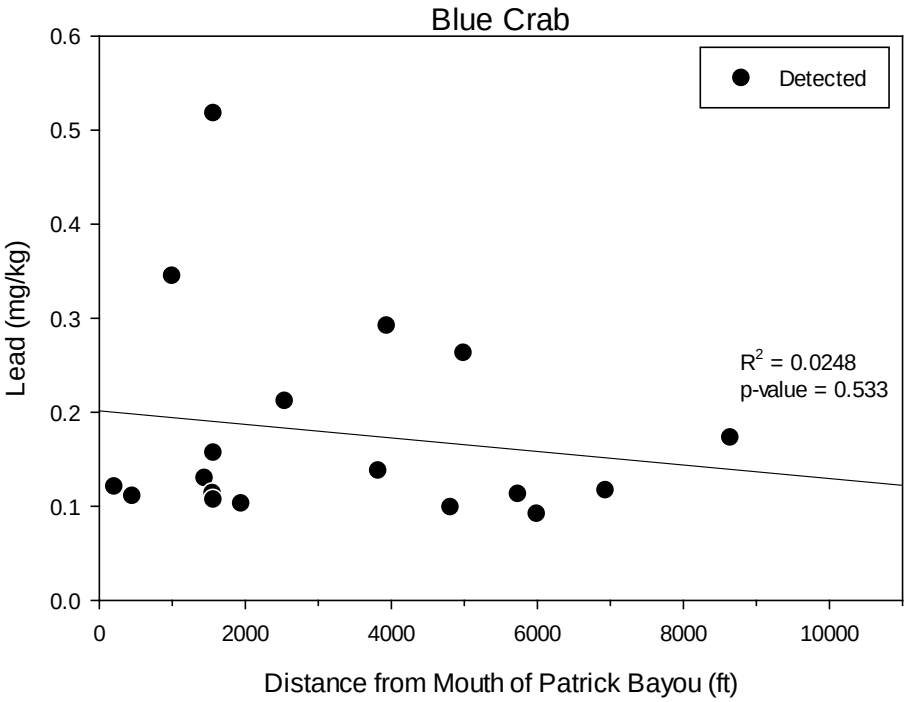
Levels not connected by same letter are significantly different.

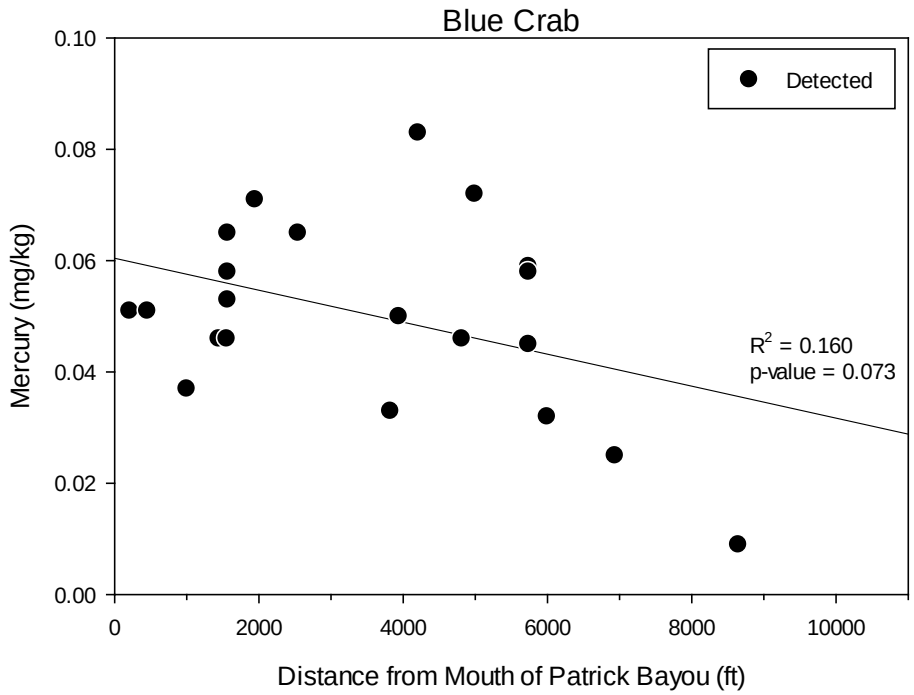
Level	- Level	Difference	Std Err Dif	Lower CL	Upper CL	p-Value	Difference
Blue crab	White shrimp	0.5321281	0.2828939	-0.23862	1.302875	0.2581	
Brown shrimp	White shrimp	0.4808817	0.3102980	-0.36453	1.326292	0.4222	
Oyster	White shrimp	0.3849525	0.5292461	-1.05698	1.826889	0.8853	
Blue crab	Oyster	0.1471756	0.4691265	-1.13096	1.425316	0.9891	
Brown shrimp	Oyster	0.0959291	0.4861436	-1.22857	1.420432	0.9972	
Blue crab	Brown shrimp	0.0512464	0.1904288	-0.46758	0.570072	0.9930	

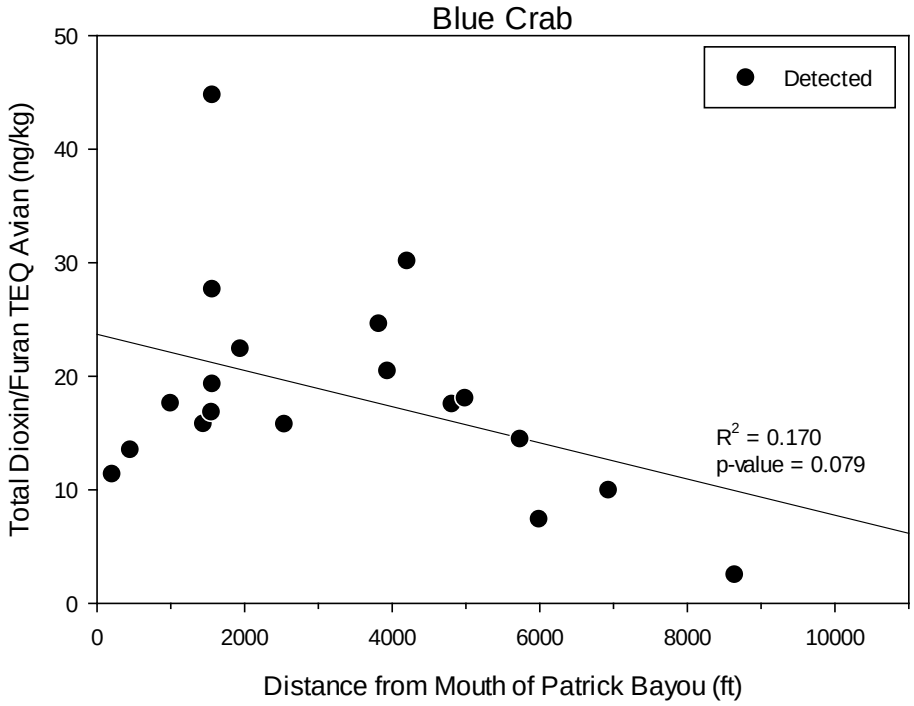
APPENDIX C-1.2
SPATIAL ANALYSIS OF TISSUE DATA

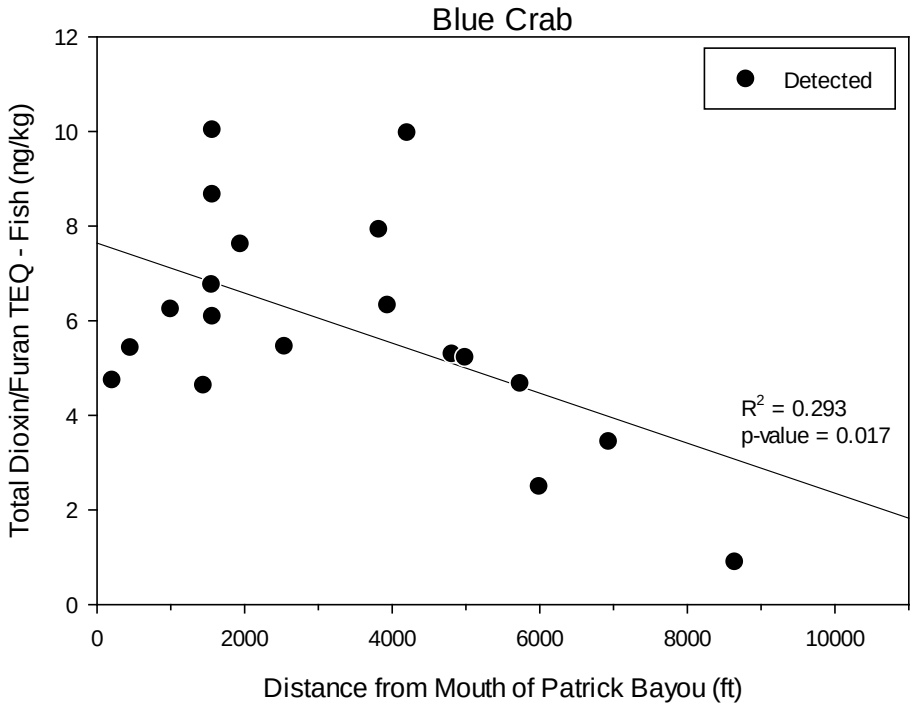


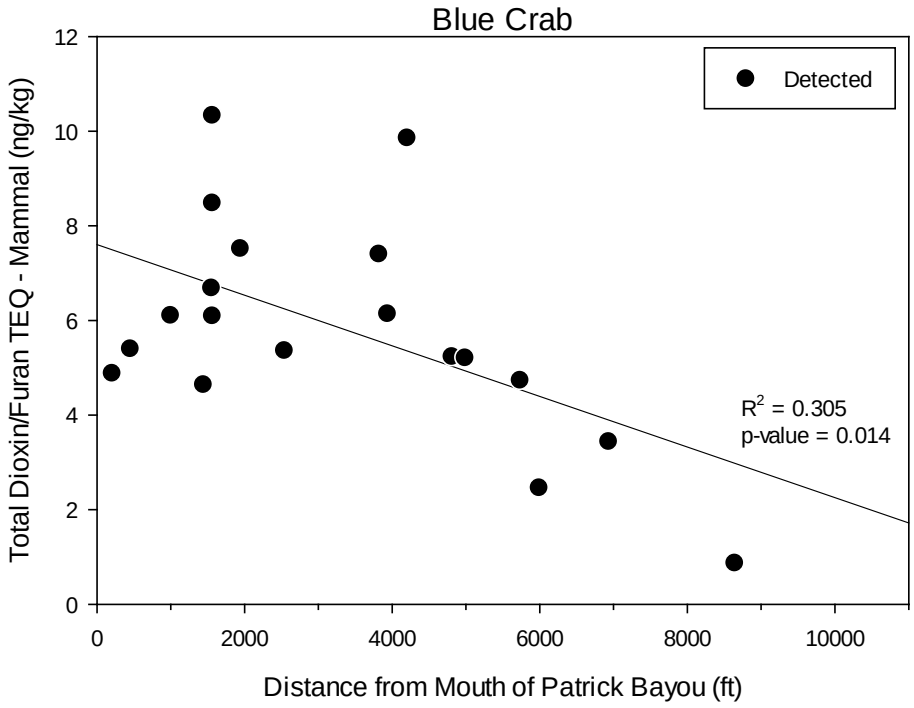
*Non-detects graphed at 1/2 the detection limit

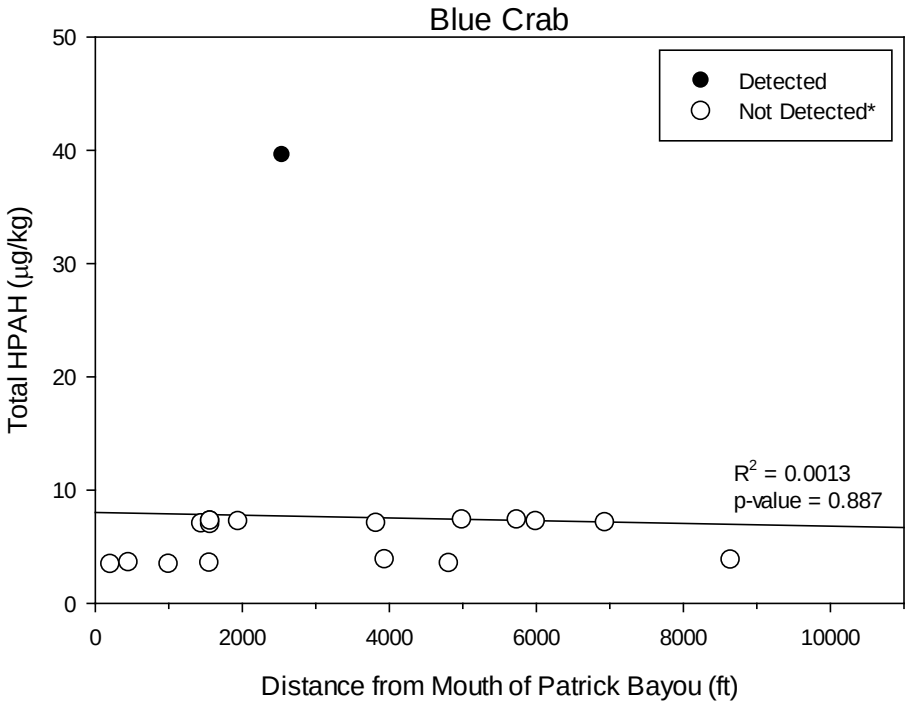



Blue Crab
Detected
Mercury (mg/kg)
0.10
0.08
0.06
0.04
0.02
0.00
0
2000
4000
6000
8000
10000
R^2 = 0.160
p-value = 0.073
Distance from Mouth of Patrick Bayou (ft)

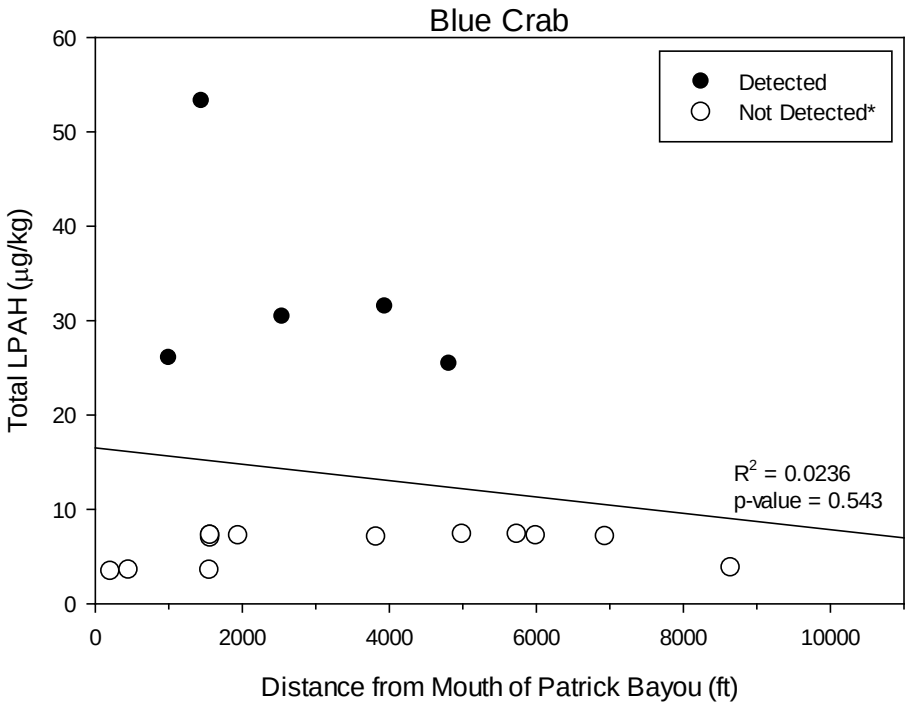

Blue Crab
Detected
Total Dioxin/Furan TEQ Avian (ng/kg)
50
40
30
20
10
0
0
2000
4000
6000
8000
10000
R^2 = 0.170
p-value = 0.079
Distance from Mouth of Patrick Bayou (ft)


Blue Crab
Detected
Total Dioxin/Furan TEQ - Fish (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
R2 = 0.293
p-value = 0.017
0
2
4
6
8
10
12
0
2000
4000
6000
8000
10000

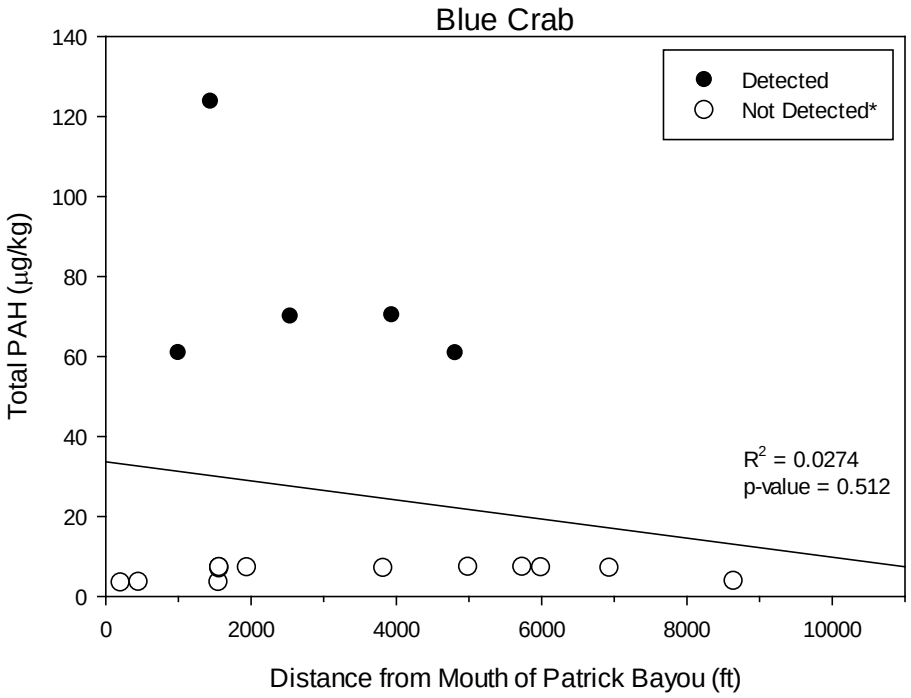

Blue Crab
Detected
Total Dioxin/Furan TEQ - Mammal (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
R2 = 0.305
p-value = 0.014
0
2
4
6
8
10
12
0
2000
4000
6000
8000
10000



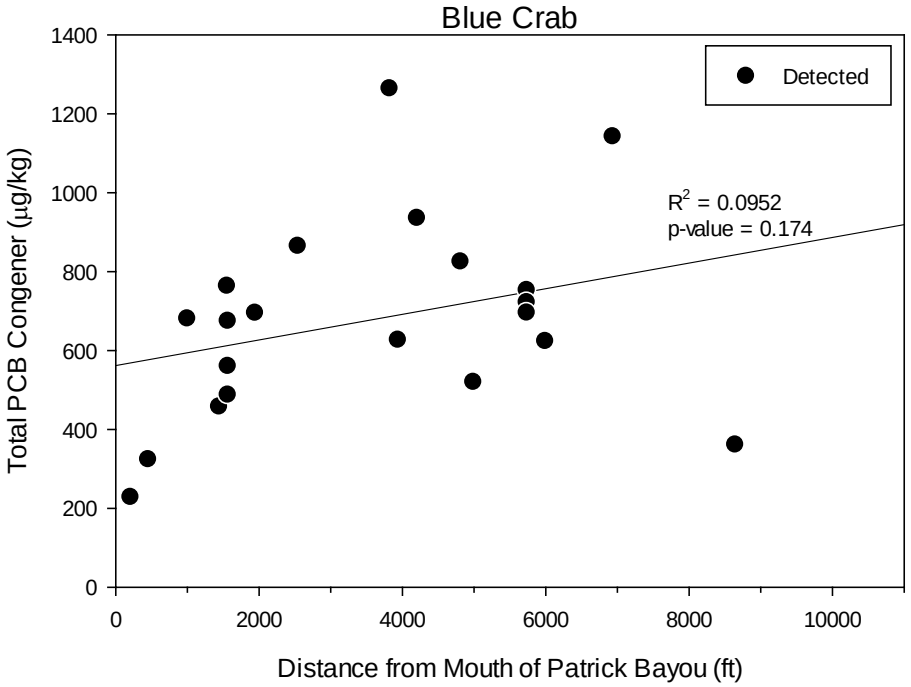
*Non-detects graphed at 1/2 the detection limit

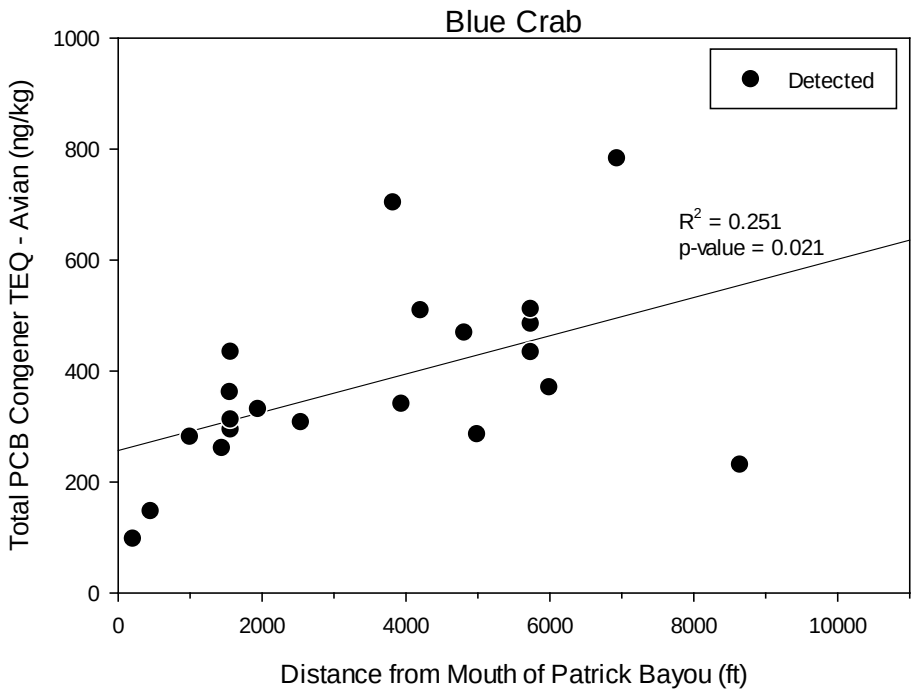


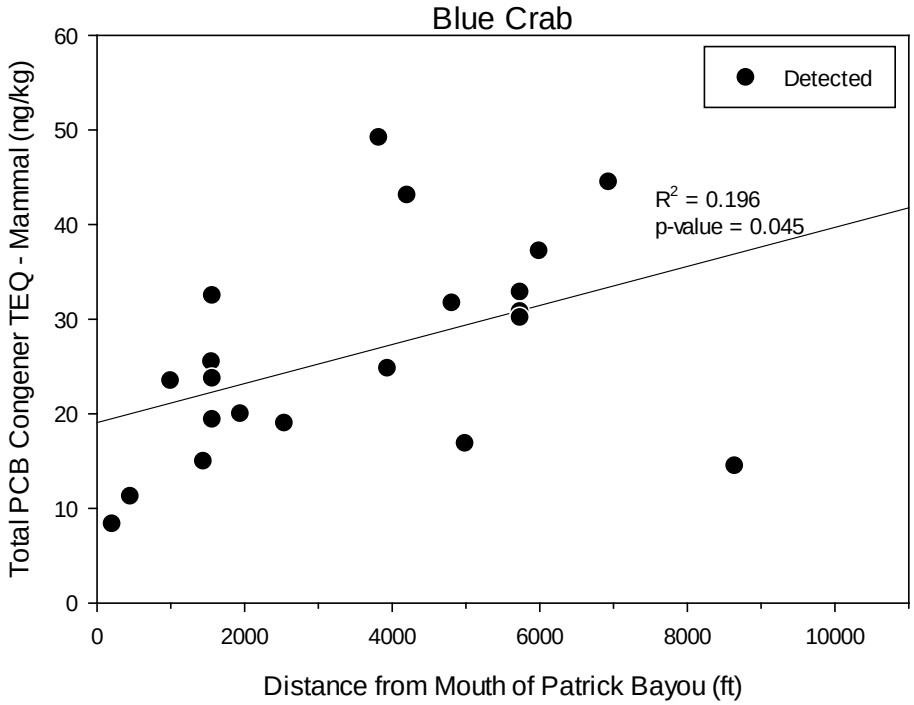
*Non-detects graphed at 1/2 the detection limit

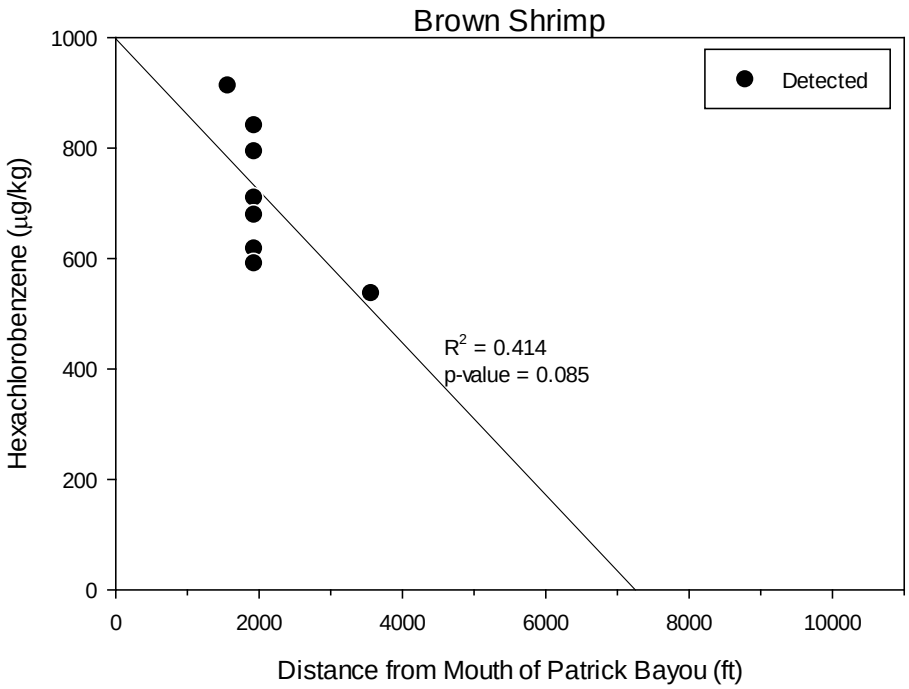


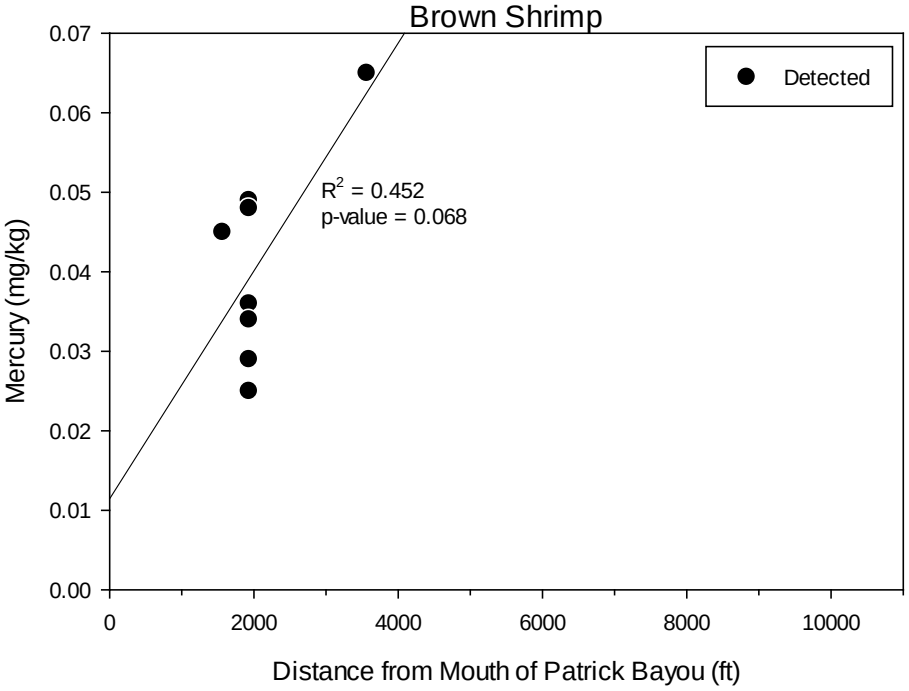
*Non-detects graphed at 1/2 the detection limit

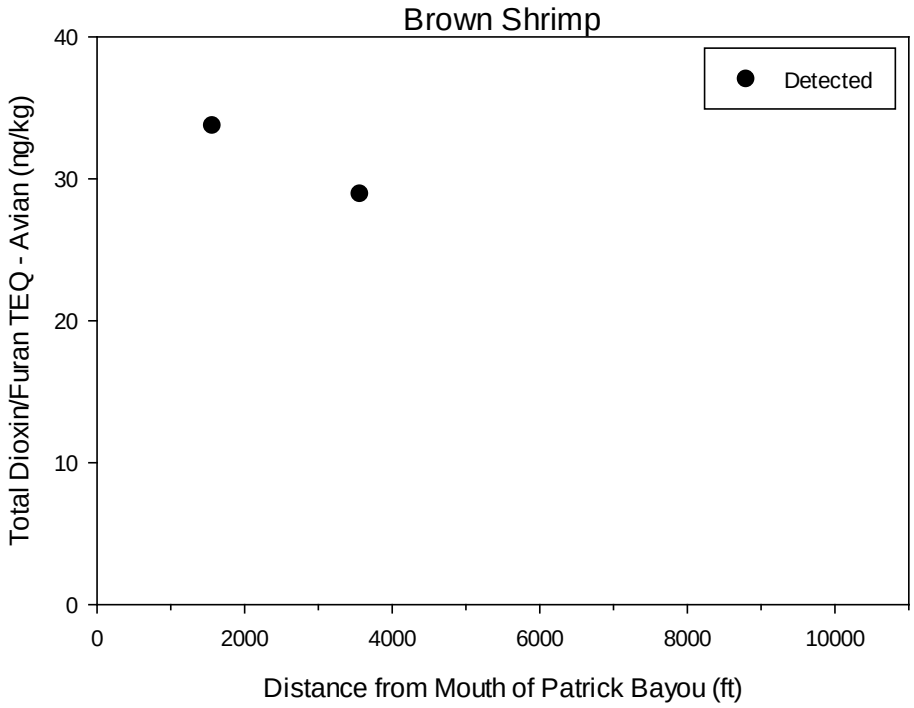


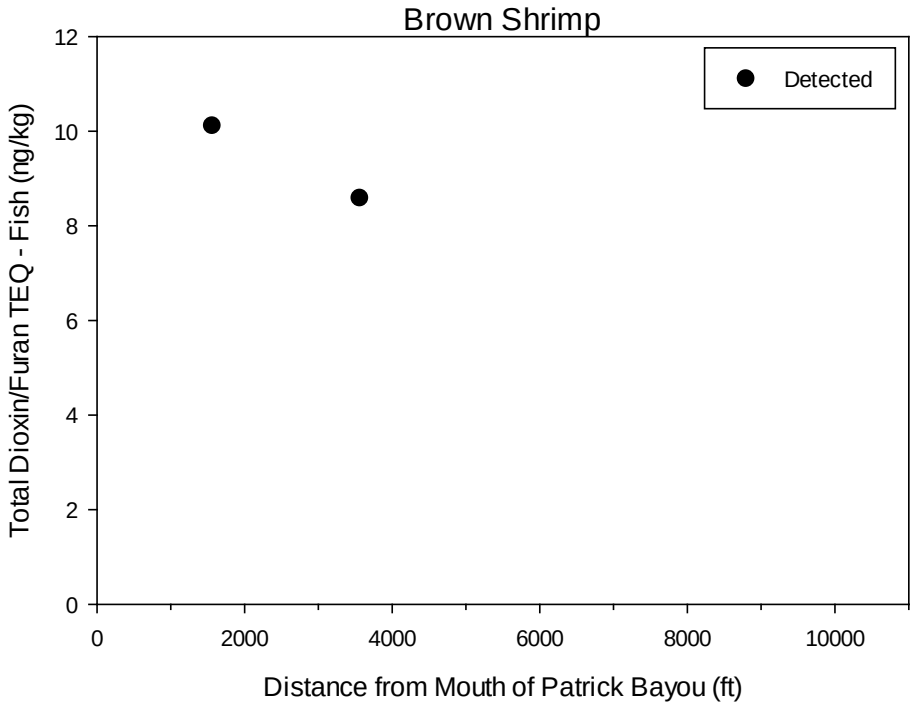

Blue Crab
Detected
R^2 = 0.251
p-value = 0.021
Total PCB Congener TEQ - Avian (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
200
400
600
800
1000
0
2000
4000
6000
8000
10000

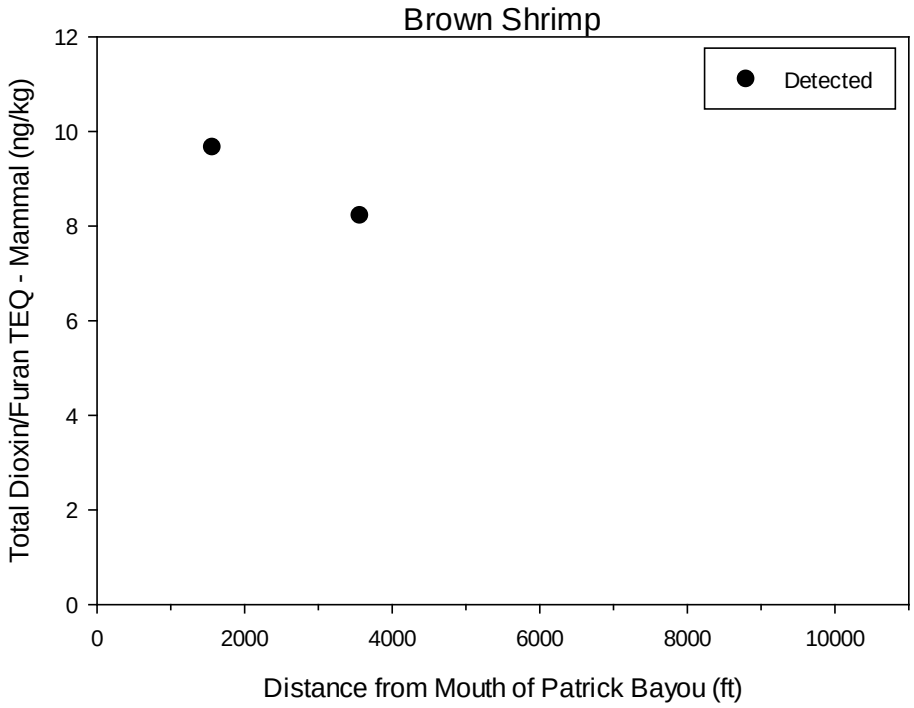

Blue Crab
Detected
R^2 = 0.196
p-value = 0.045
Total PCB Congener TEQ - Mammal (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
10
20
30
40
50
60
0
2000
4000
6000
8000
10000

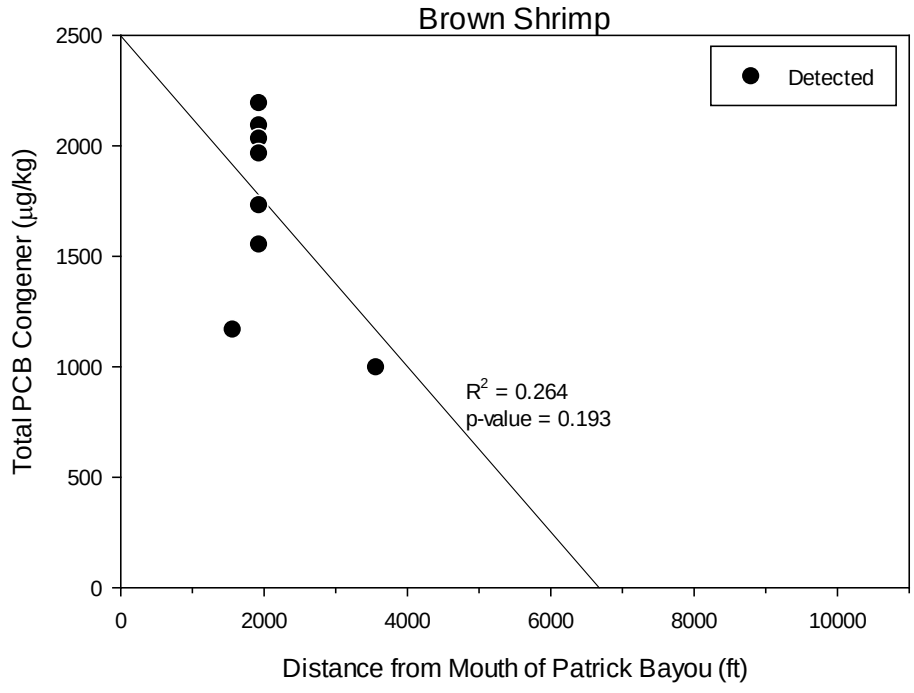

Brown Shrimp
Detected
Hexachlorobenzene (µg/kg)
1000
800
600
400
200
0
R^2 = 0.414
p-value = 0.085
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

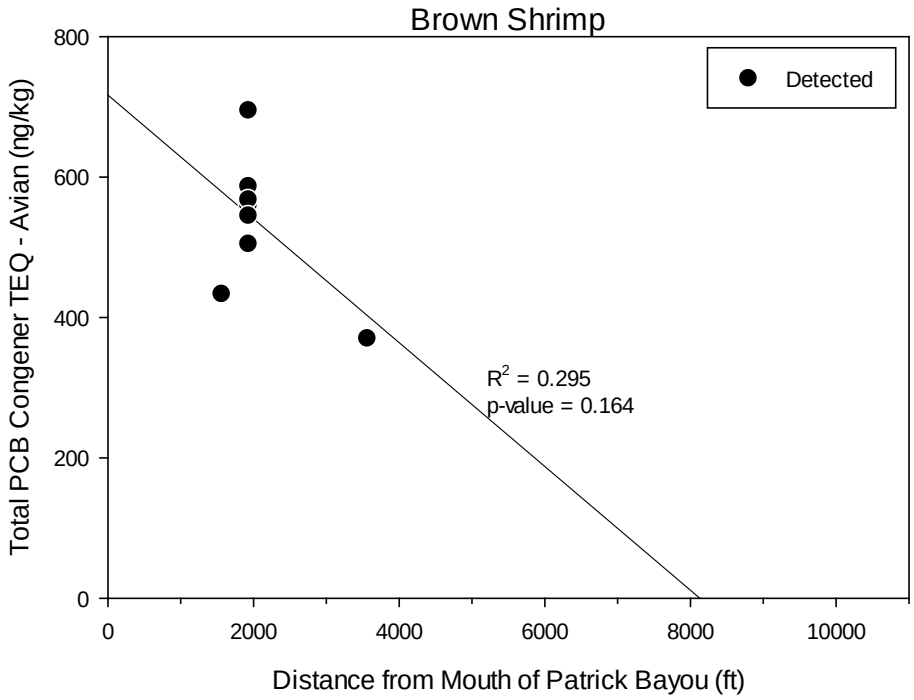

Brown Shrimp
Detected
Mercury (mg/kg)
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
R^2 = 0.452
p-value = 0.068
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

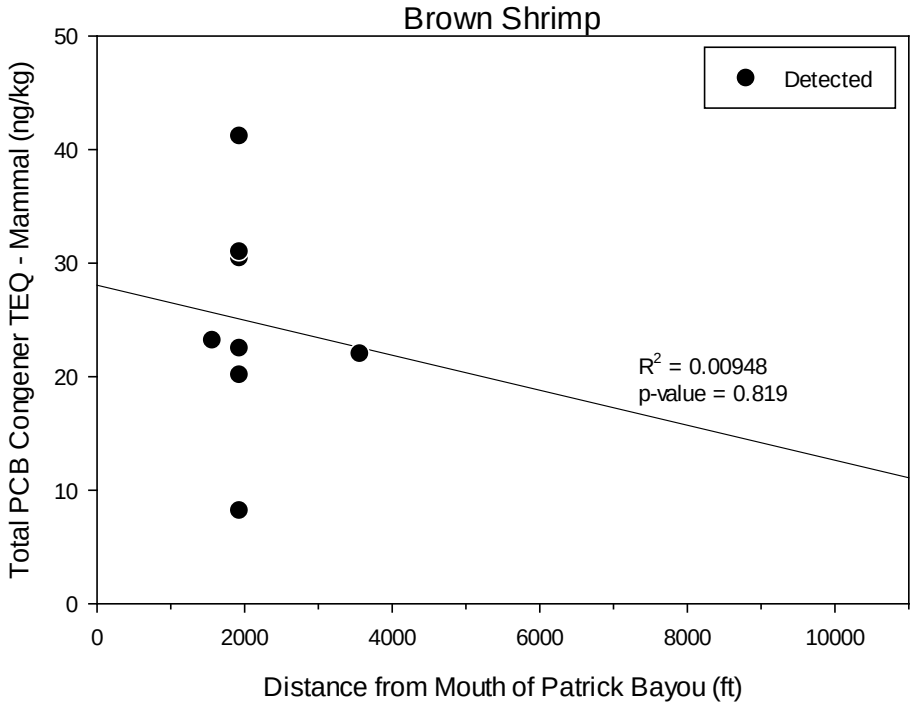

Brown Shrimp
Detected
Total Dioxin/Furan TEQ - Avian (ng/kg)
0
10
20
30
40
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

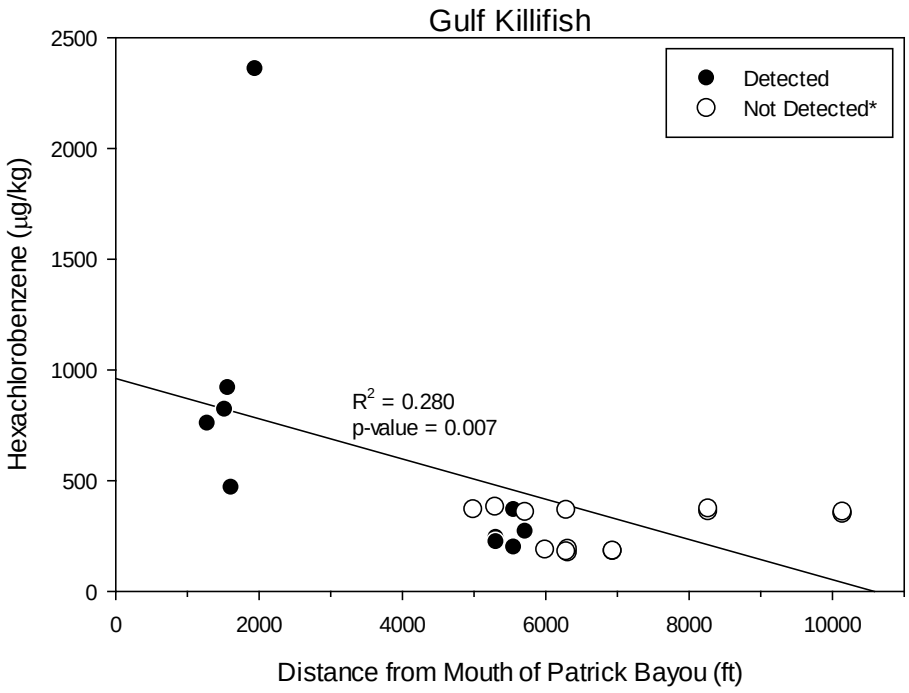

Brown Shrimp
Detected
Total Dioxin/Furan TEQ - Fish (ng/kg)
0
2
4
6
8
10
12
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)


Brown Shrimp
Detected
Total Dioxin/Furan TEQ - Mammal (ng/kg)
0
2
4
6
8
10
12
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

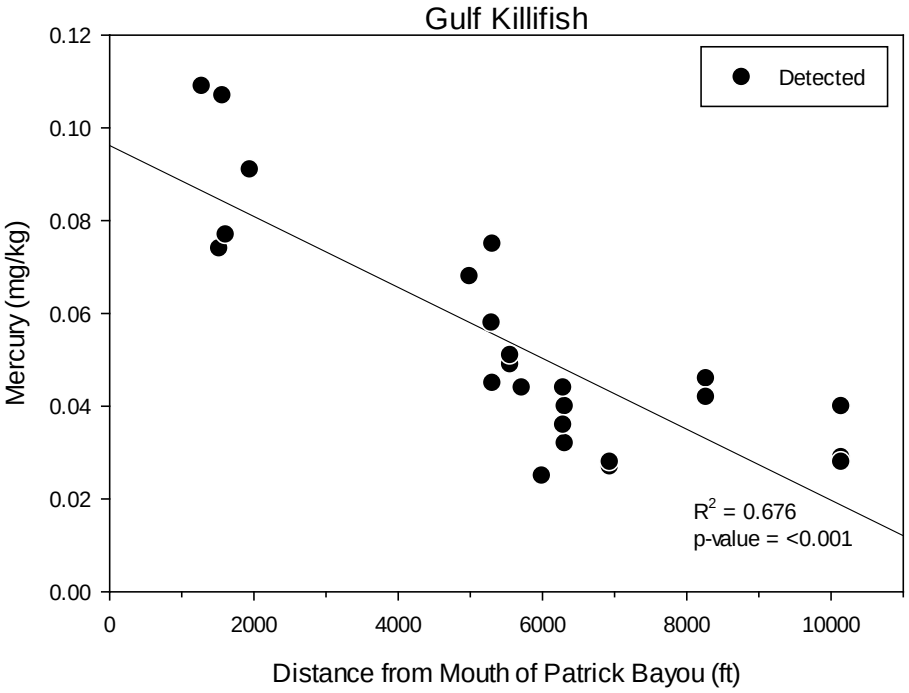

Brown Shrimp
Detected
Total PCB Congener (µg/kg)
0
500
1000
1500
2000
2500
R2 = 0.264
p-value = 0.193
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

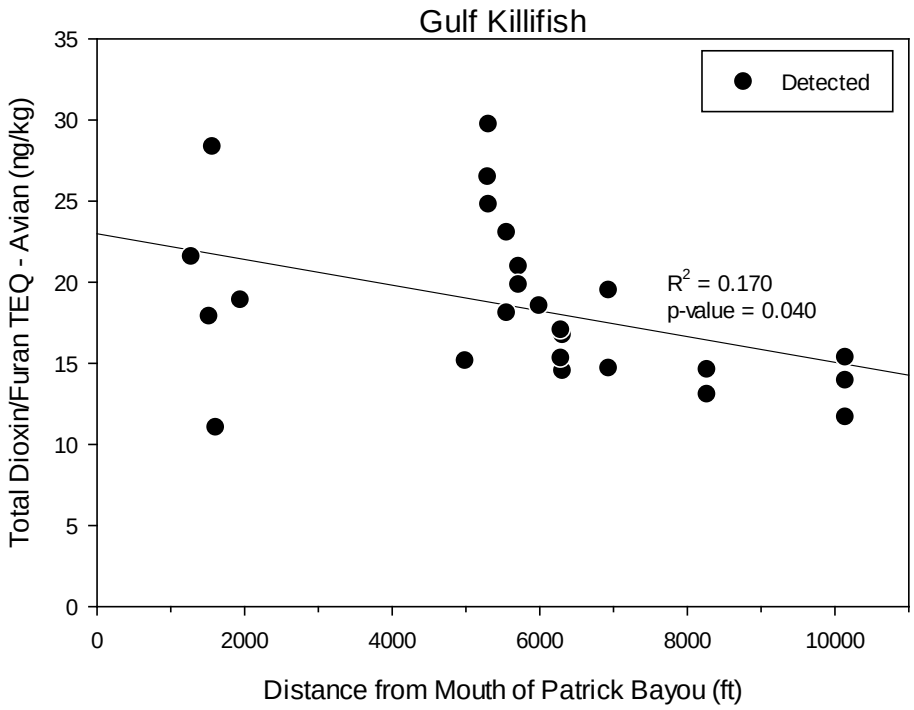

Brown Shrimp
Detected
Total PCB Congener TEQ - Avian (ng/kg)
800
600
400
200
0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)
R2 = 0.295
p-value = 0.164

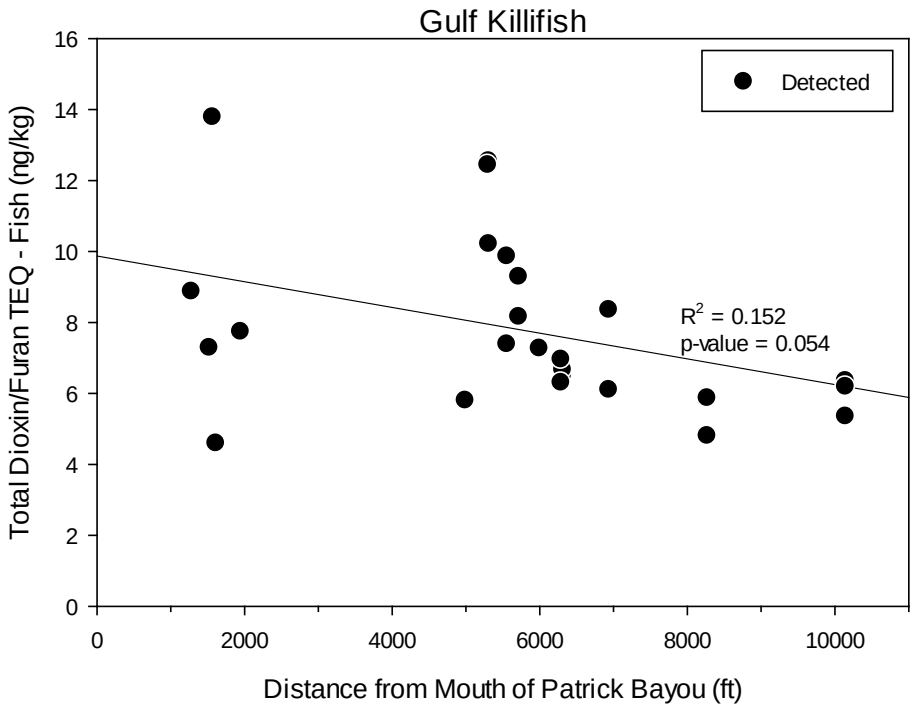

Brown Shrimp
Detected
Total PCB Congener TEQ - Mammal (ng/kg)
50
40
30
20
10
0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)
R2 = 0.00948
p-value = 0.819

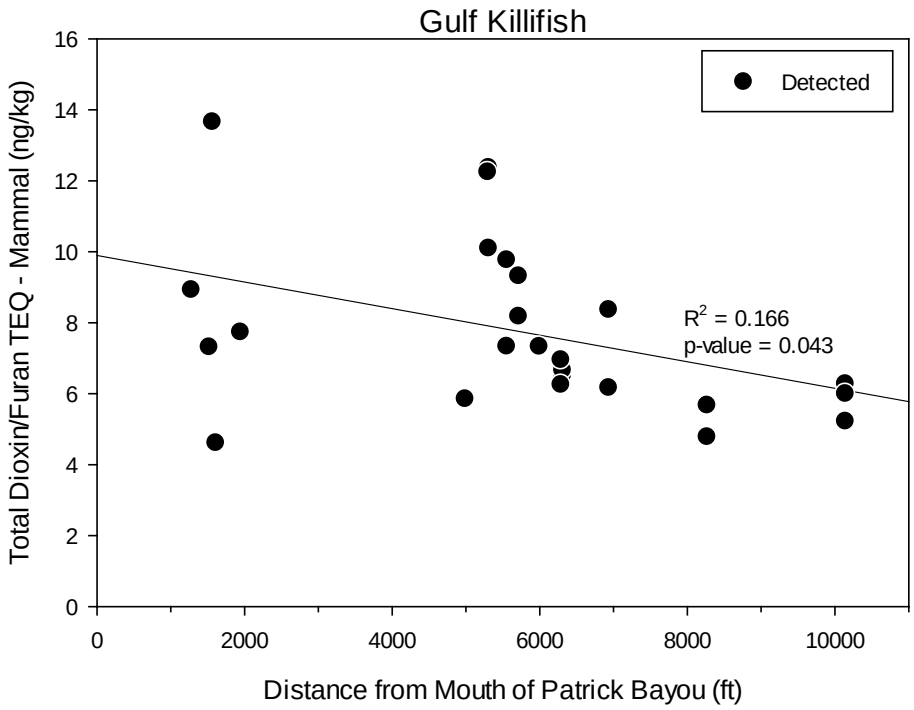


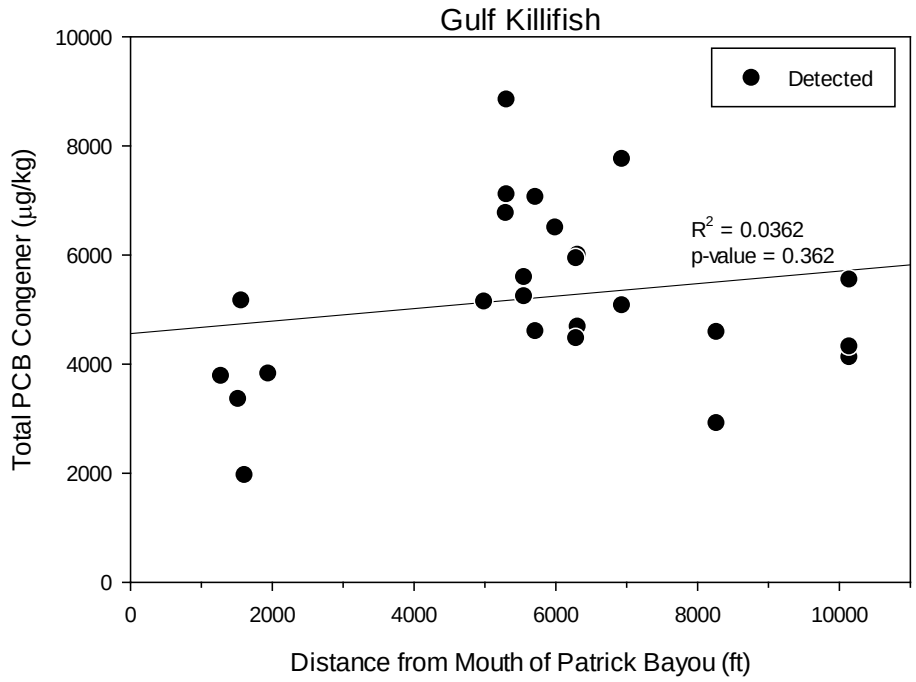
*Non-detects graphed at 1/2 the detection limit

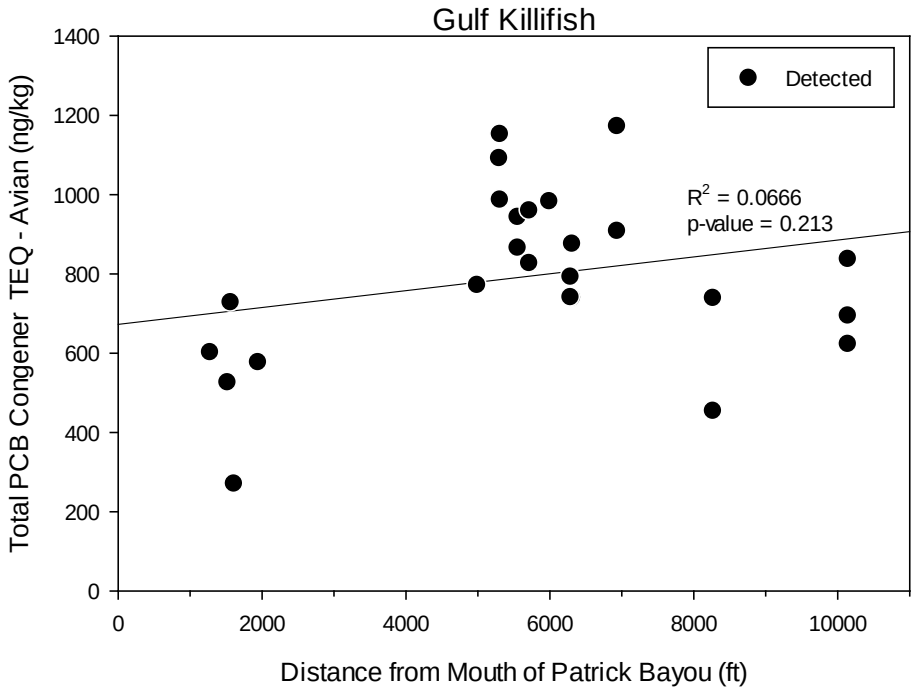


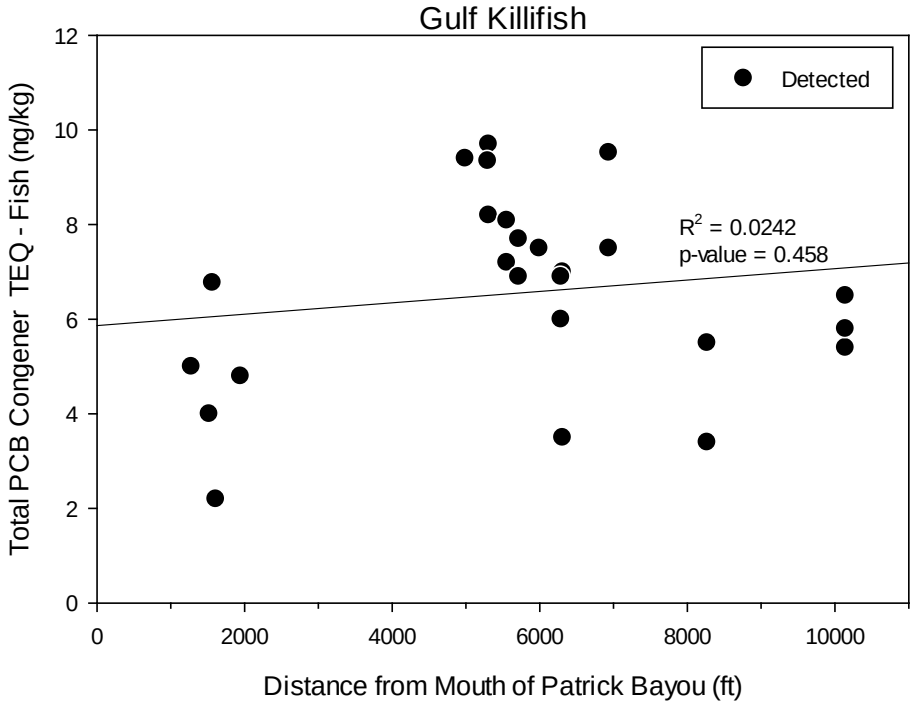

Gulf Killifish
Detected
R^2 = 0.170
p-value = 0.040
Total Dioxin/Furan TEQ - Avian (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
5
10
15
20
25
30
35
0
2000
4000
6000
8000
10000

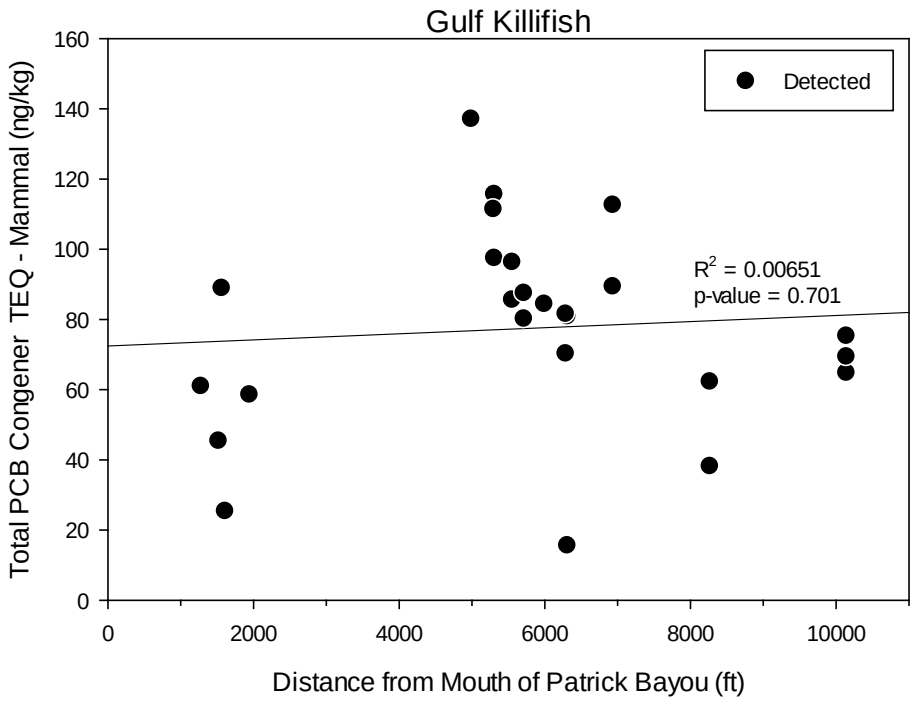

Gulf Killifish
Detected
R^2 = 0.152
p-value = 0.054
Total Dioxin/Furan TEQ - Fish (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
2
4
6
8
10
12
14
16
0
2000
4000
6000
8000
10000

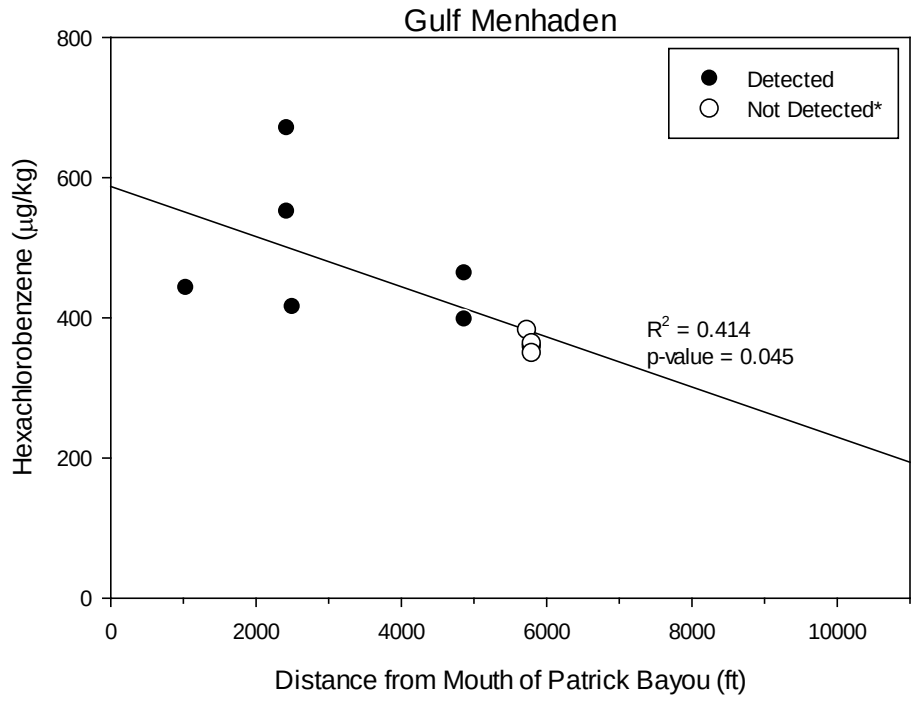

Gulf Killifish
Detected
Total Dioxin/Furan TEQ - Mammal (ng/kg)
R^2 = 0.166
p-value = 0.043
Distance from Mouth of Patrick Bayou (ft)
0
2
4
6
8
10
12
14
16
0
2000
4000
6000
8000
10000


Gulf Killifish
Detected
Total PCB Congener (µg/kg)
R^2 = 0.0362
p-value = 0.362
Distance from Mouth of Patrick Bayou (ft)
0
2000
4000
6000
8000
10000
0
2000
4000
6000
8000
10000

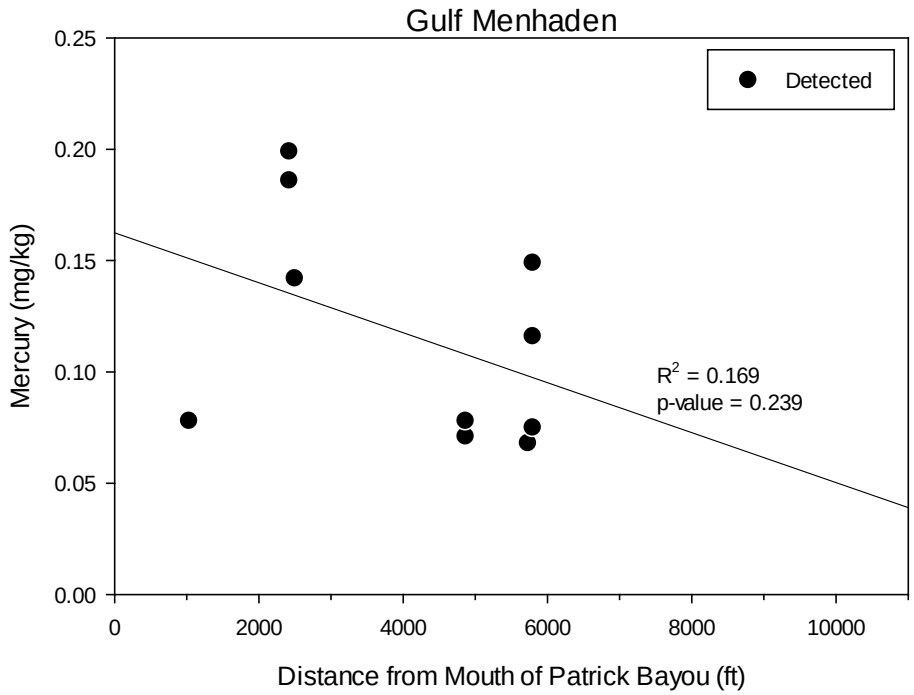

Gulf Killifish
Detected
R^2 = 0.0666
p-value = 0.213
Total PCB Congener TEQ - Avian (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
200
400
600
800
1000
1200
1400
0
2000
4000
6000
8000
10000

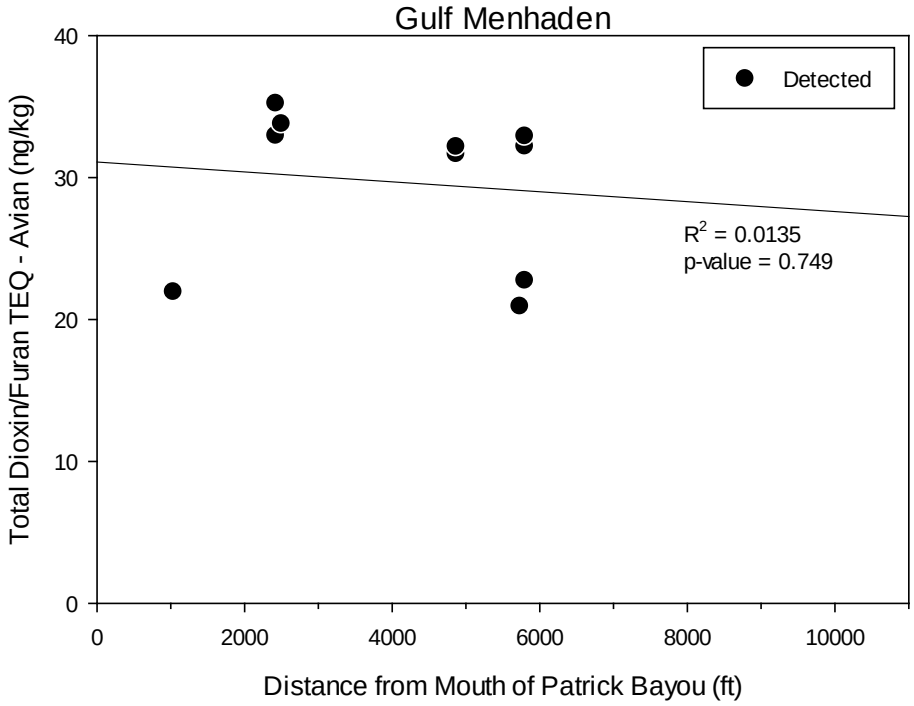

Gulf Killifish
Detected
R^2 = 0.0242
p-value = 0.458
Total PCB Congener TEQ - Fish (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
2
4
6
8
10
12
0
2000
4000
6000
8000
10000

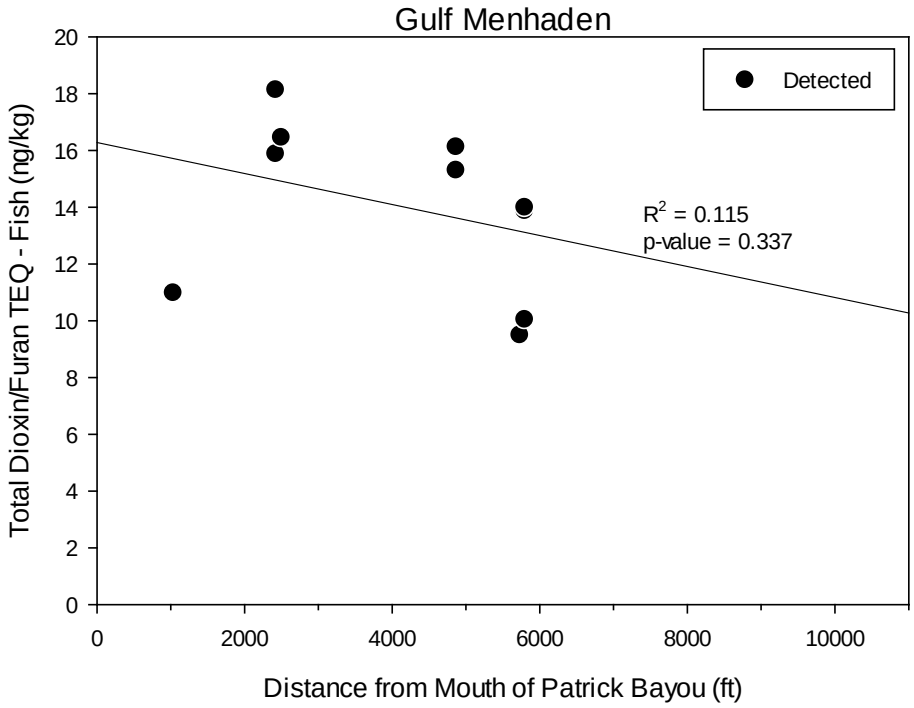


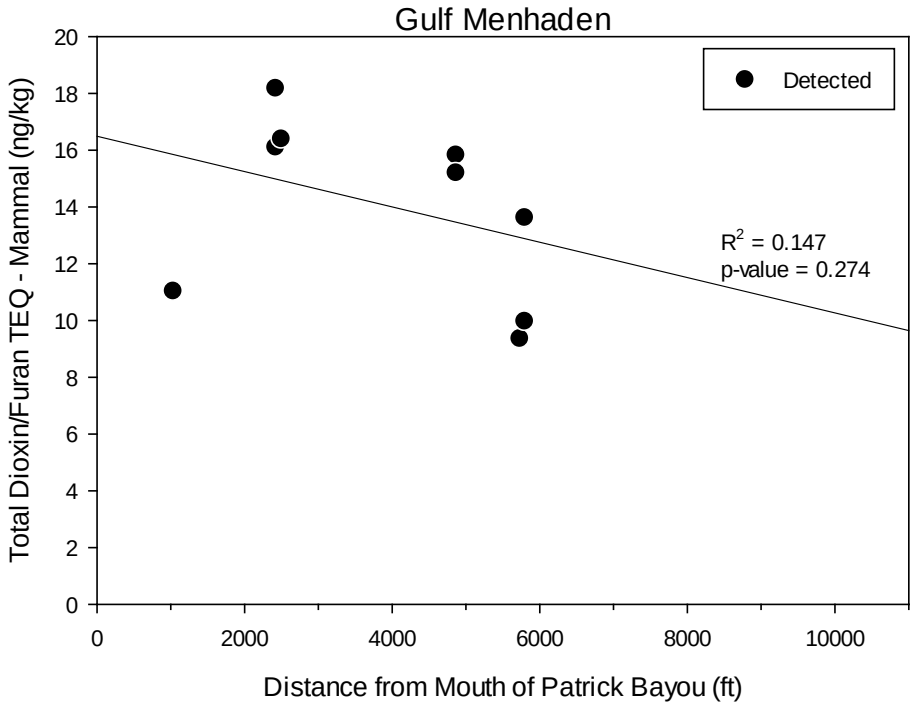


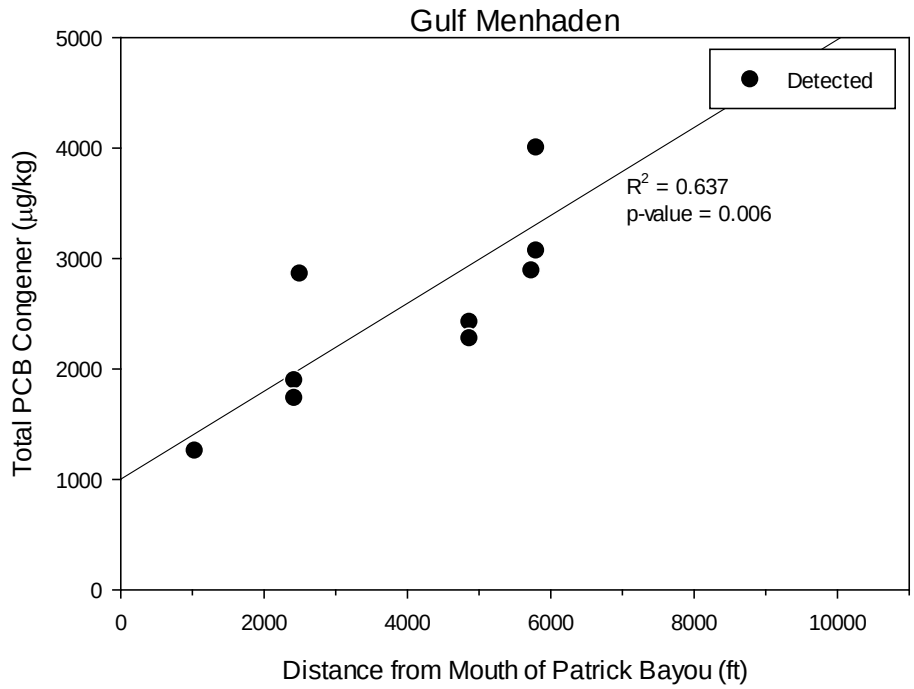
*Non-detects graphed at 1/2 the detection limit

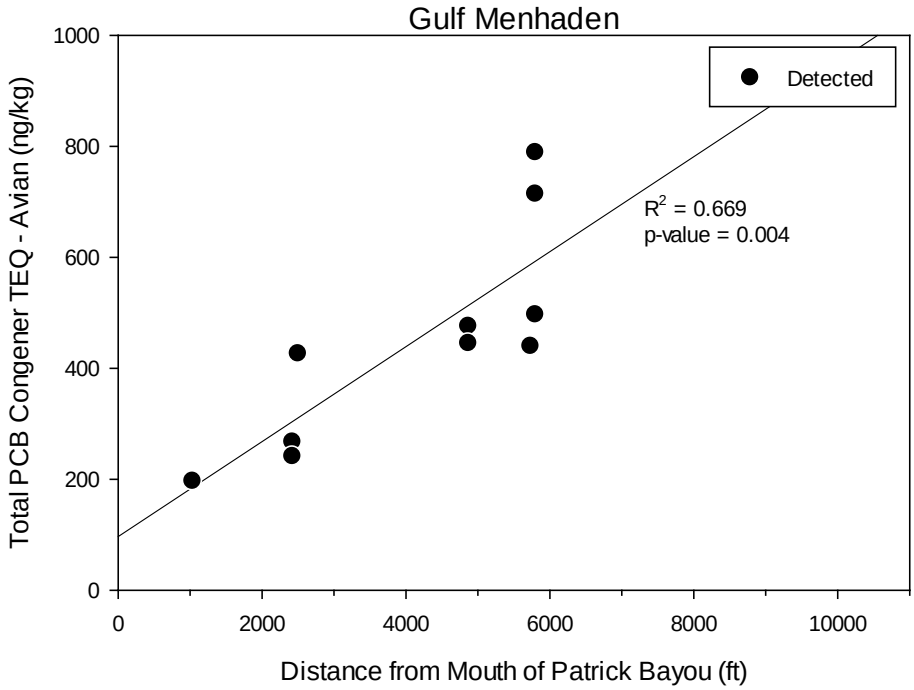

Gulf Menhaden
Detected
Mercury (mg/kg)
0.25
0.20
0.15
0.10
0.05
0.00
R^2 = 0.169
p-value = 0.239
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

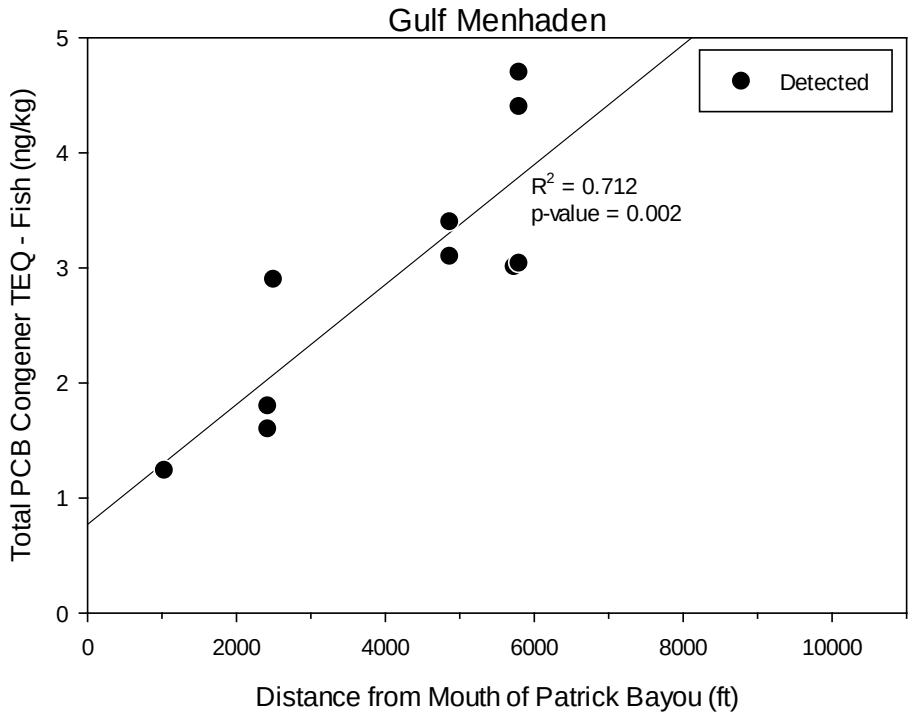

Gulf Menhaden
Detected
Total Dioxin/Furan TEQ - Avian (ng/kg)
40
30
20
10
0
R^2 = 0.0135
p-value = 0.749
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

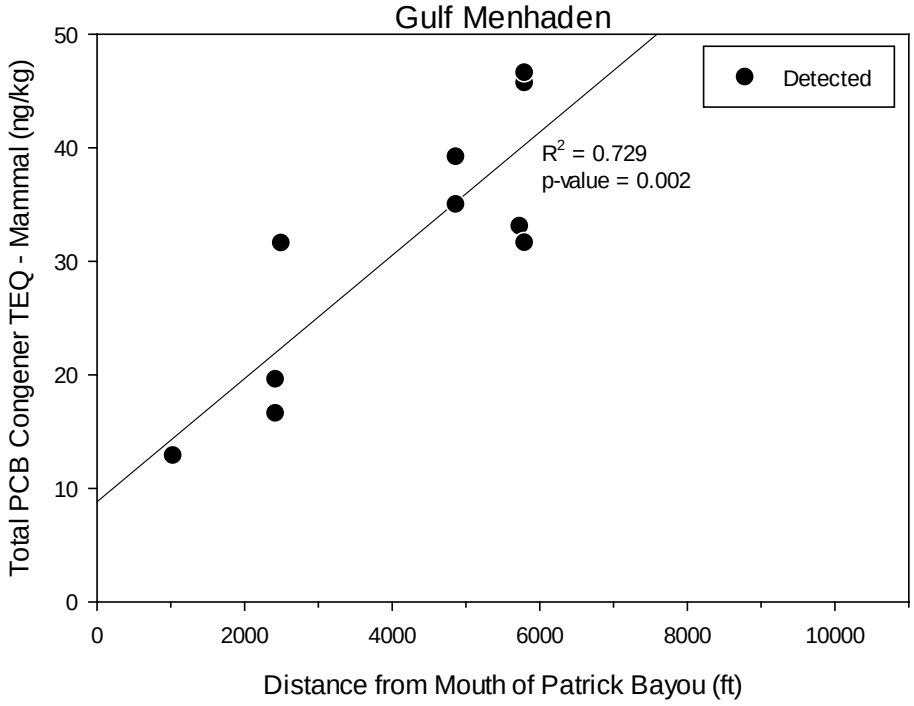

Gulf Menhaden
Detected
R^2 = 0.115
p-value = 0.337
Total Dioxin/Furan TEQ - Fish (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
2
4
6
8
10
12
14
16
18
20
0
2000
4000
6000
8000
10000

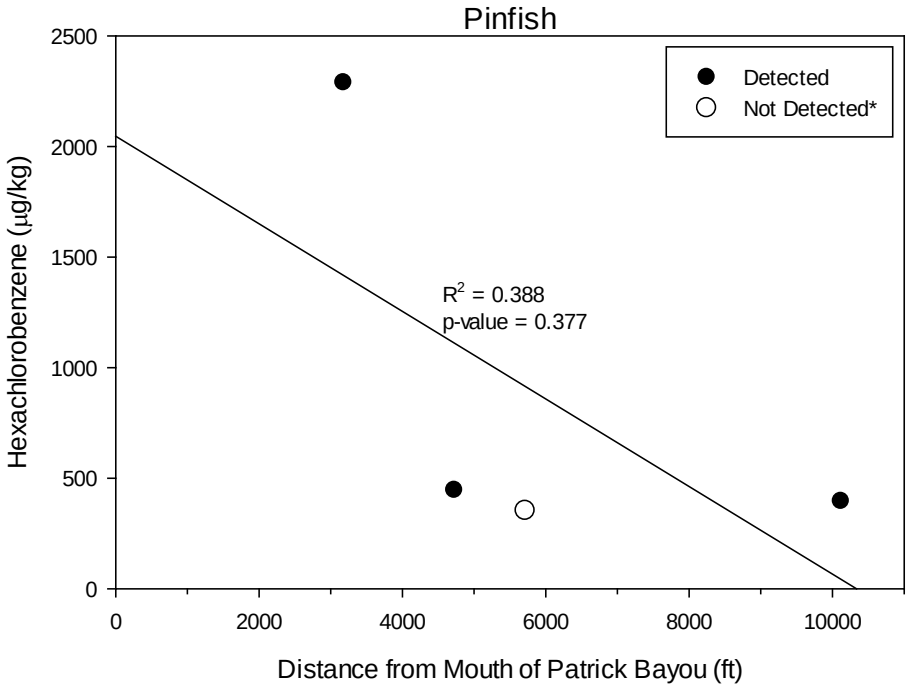

Gulf Menhaden
Detected
R^2 = 0.147
p-value = 0.274
Total Dioxin/Furan TEQ - Mammal (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
2
4
6
8
10
12
14
16
18
20
0
2000
4000
6000
8000
10000


Gulf Menhaden
Detected
R^2 = 0.637
p-value = 0.006
Total PCB Congener (µg/kg)
Distance from Mouth of Patrick Bayou (ft)
0
1000
2000
3000
4000
5000
0
2000
4000
6000
8000
10000

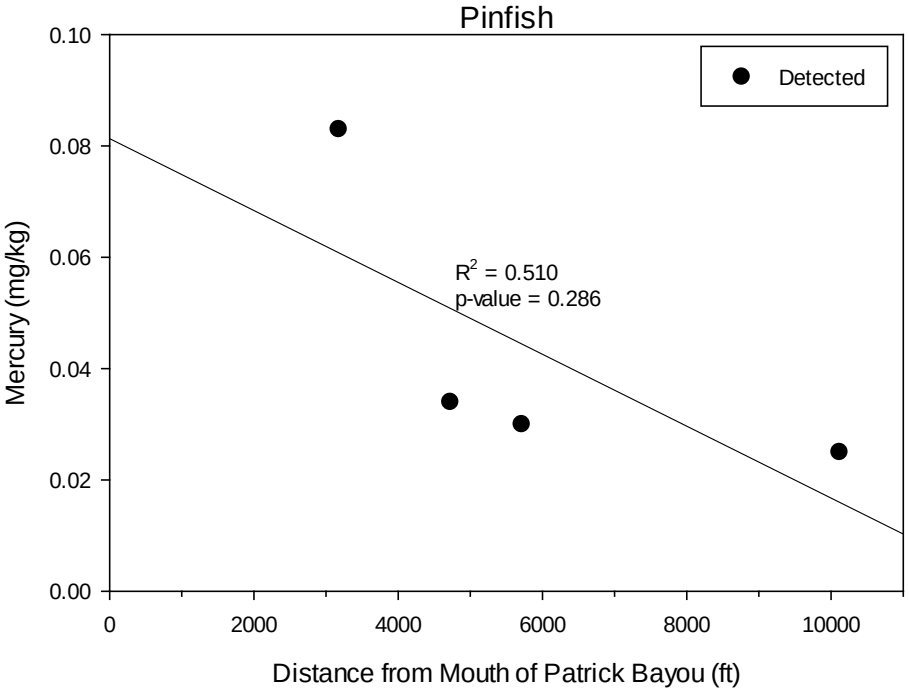

Gulf Menhaden
Detected
R^2 = 0.669
p-value = 0.004
Total PCB Congener TEQ - Avian (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
200
400
600
800
1000
0
2000
4000
6000
8000
10000

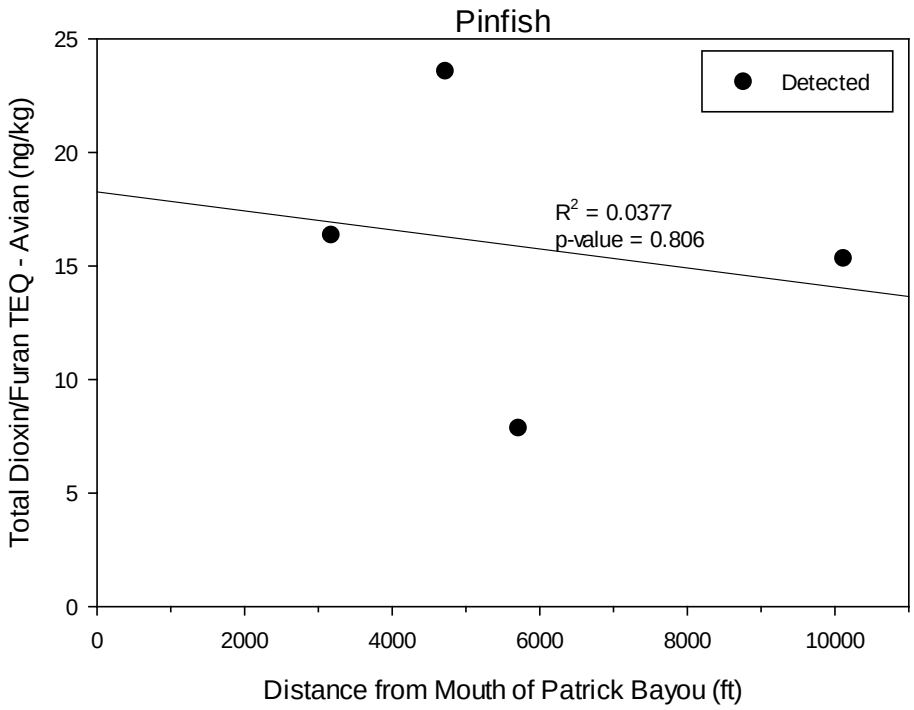

Gulf Menhaden
Detected
R^2 = 0.712
p-value = 0.002
Total PCB Congener TEQ - Fish (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
1
2
3
4
5
0
2000
4000
6000
8000
10000

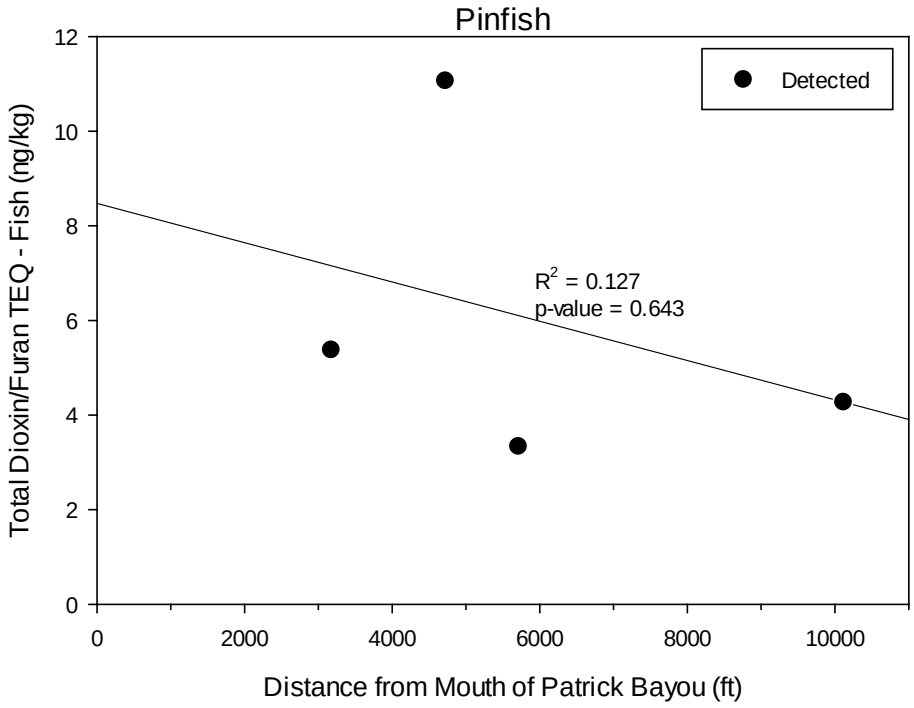

Gulf Menhaden
Detected
R^2 = 0.729
p-value = 0.002
Total PCB Congener TEQ - Mammal (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
10
20
30
40
50
0
2000
4000
6000
8000
10000

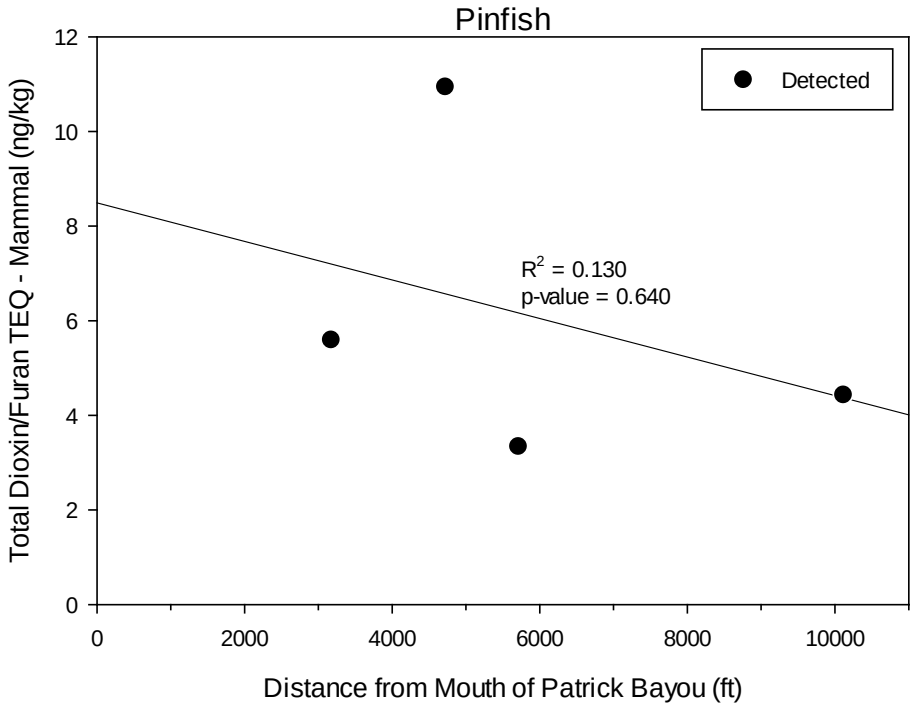


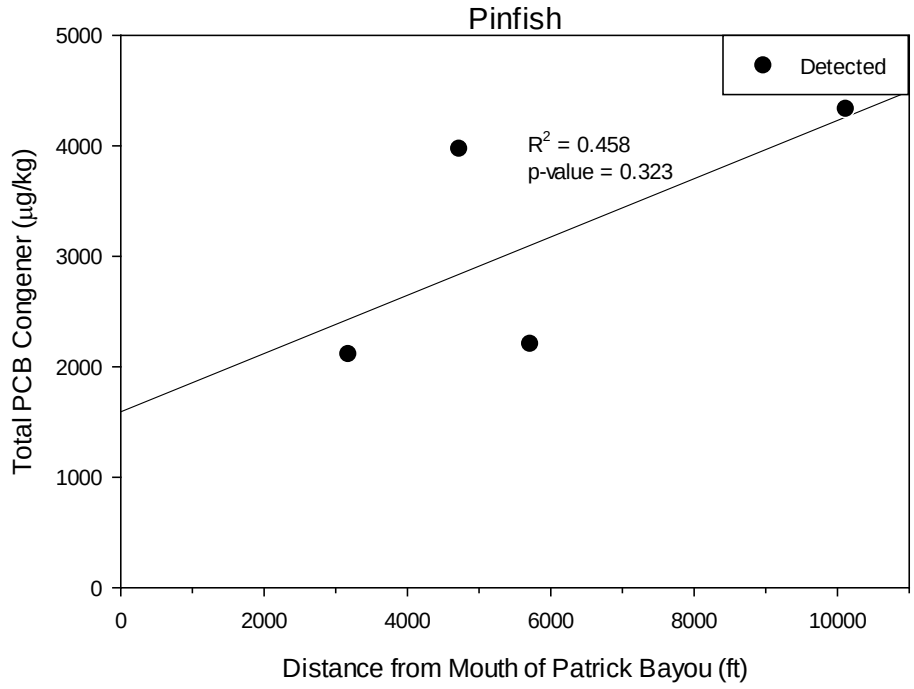
*Non-detects graphed at 1/2 the detection limit

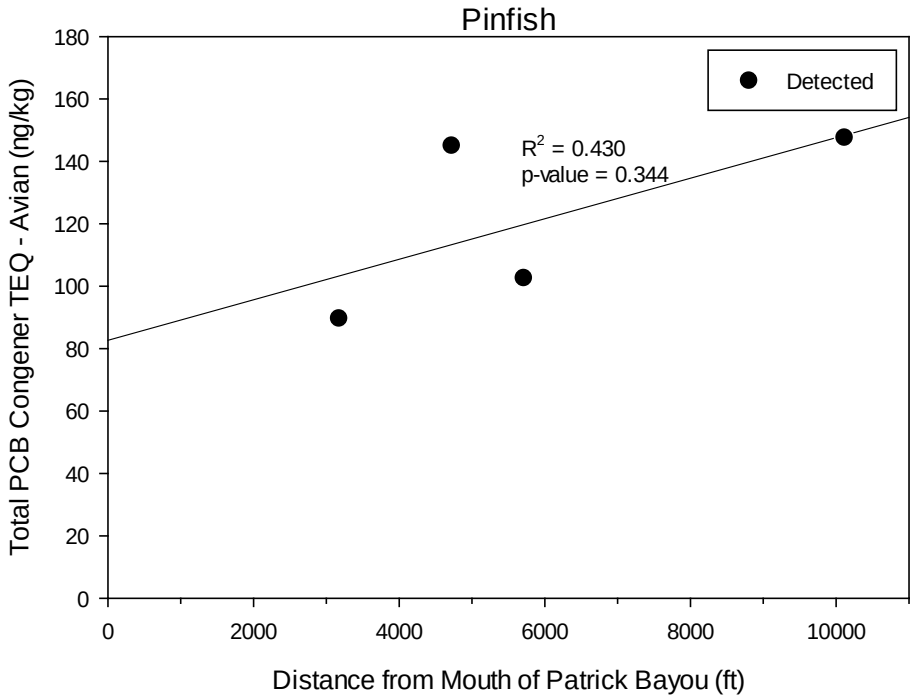


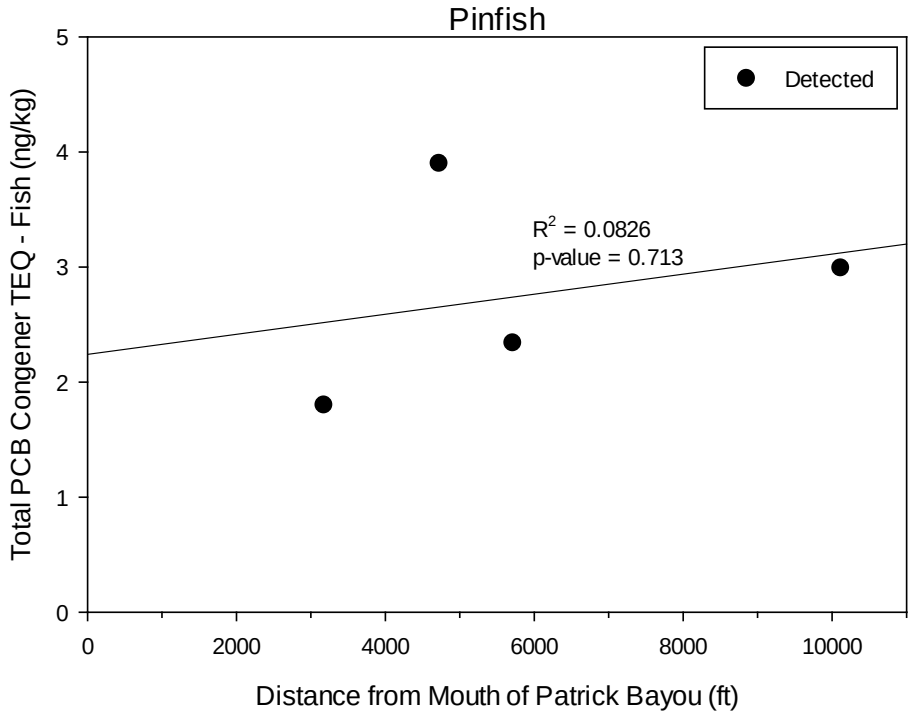

Pinfish
Detected
R^2 = 0.0377
p-value = 0.806
Total Dioxin/Furan TEQ - Avian (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
5
10
15
20
25
0
2000
4000
6000
8000
10000

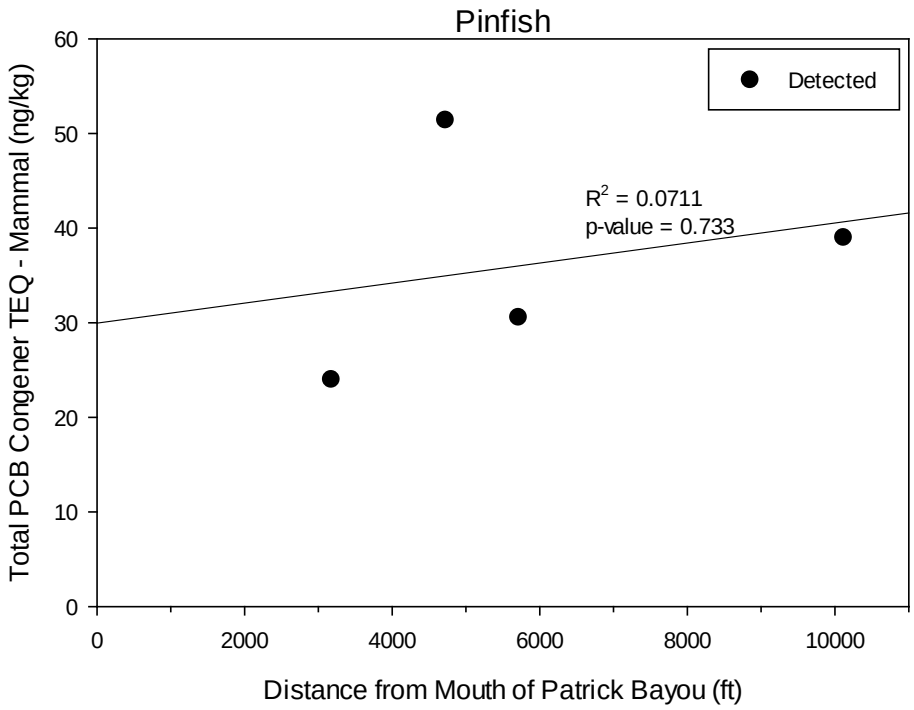

Pinfish
Detected
R^2 = 0.127
p-value = 0.643
Total Dioxin/Furan TEQ - Fish (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
2
4
6
8
10
12
0
2000
4000
6000
8000
10000

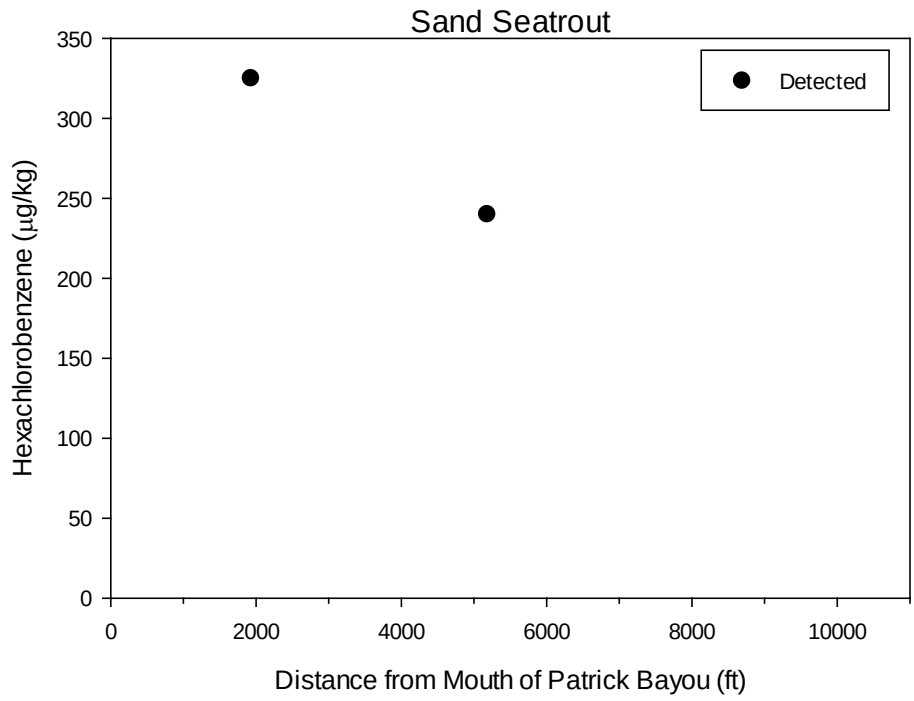

Pinfish
Detected
R^2 = 0.130
p-value = 0.640
Total Dioxin/Furan TEQ - Mammal (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
2
4
6
8
10
12
0
2000
4000
6000
8000
10000

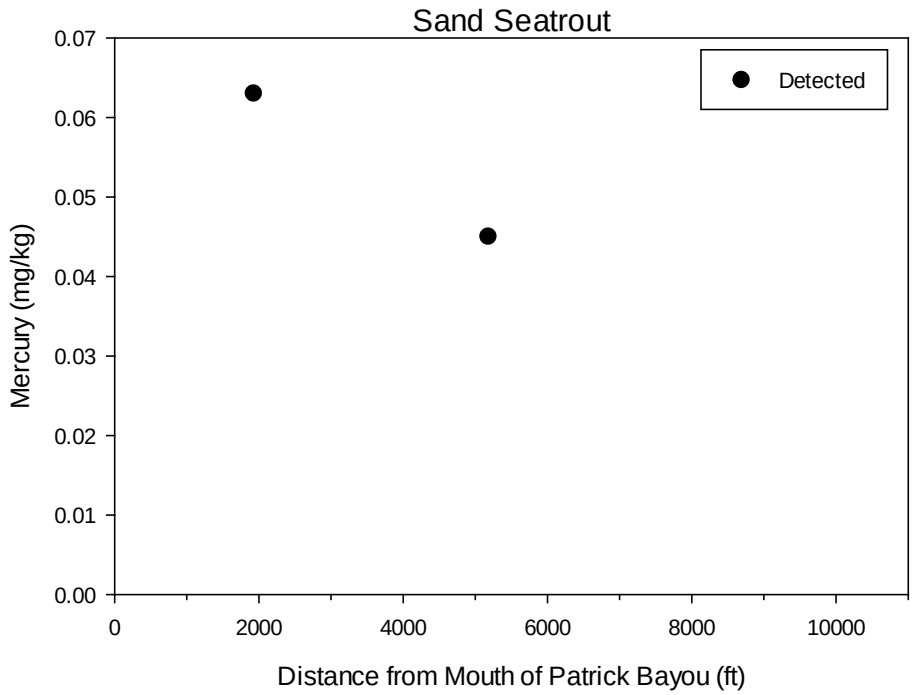

Pinfish
Detected
R^2 = 0.458
p-value = 0.323
Total PCB Congener (µg/kg)
Distance from Mouth of Patrick Bayou (ft)
0
1000
2000
3000
4000
5000
0
2000
4000
6000
8000
10000

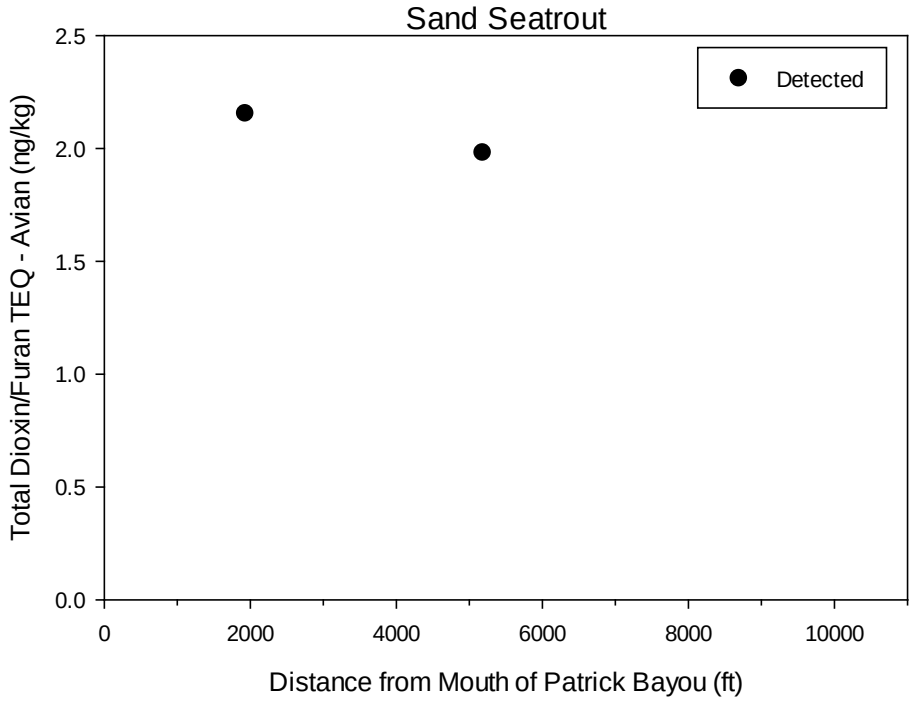

Pinfish
Detected
R^2 = 0.430
p-value = 0.344
Total PCB Congener TEQ - Avian (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
20
40
60
80
100
120
140
160
180
0
2000
4000
6000
8000
10000

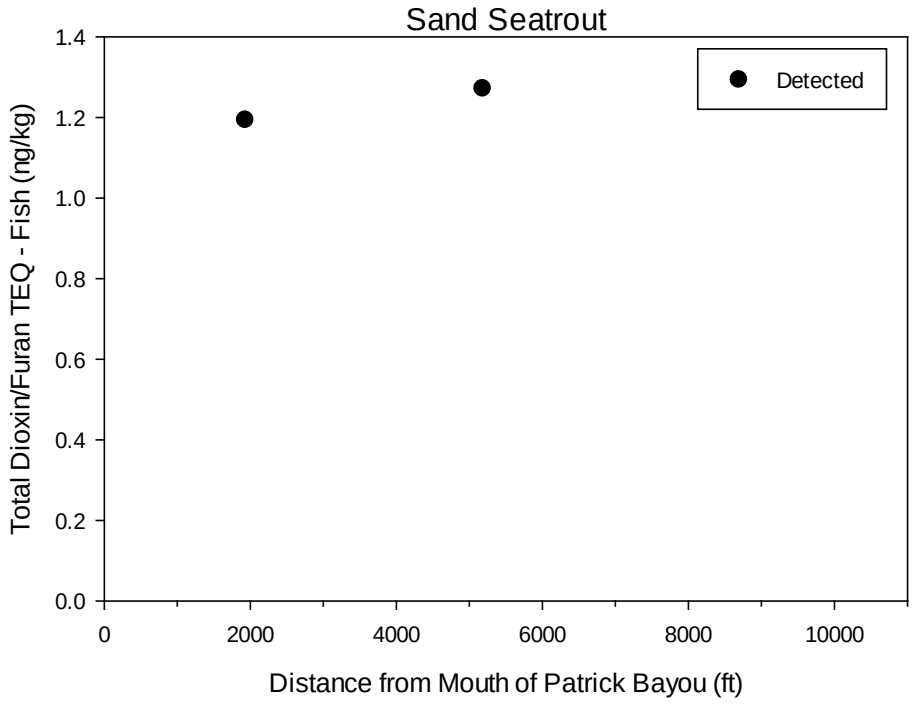

Pinfish
Detected
R^2 = 0.0826
p-value = 0.713
Total PCB Congener TEQ - Fish (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
1
2
3
4
5
0
2000
4000
6000
8000
10000

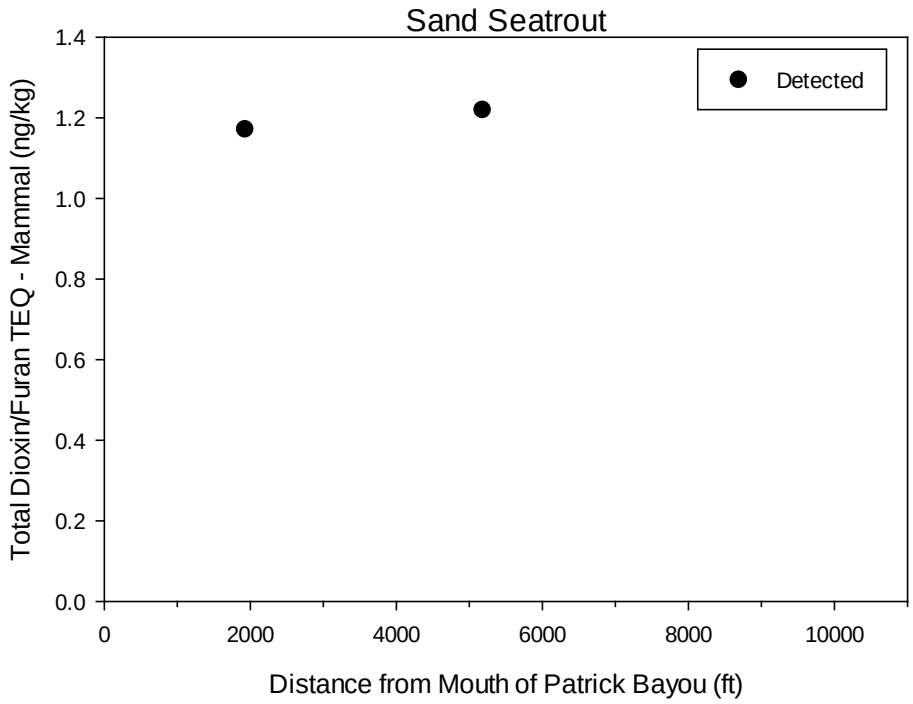

Pinfish
Detected
R^2 = 0.0711
p-value = 0.733
Total PCB Congener TEQ - Mammal (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
10
20
30
40
50
60
0
2000
4000
6000
8000
10000

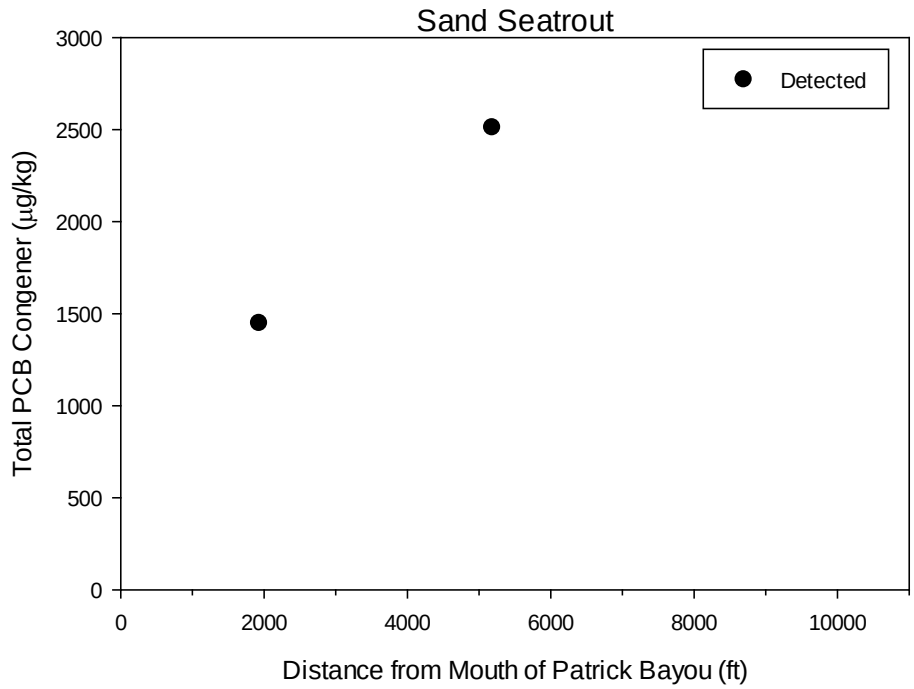

Sand Seatrout
Detected
Hexachlorobenzene (µg/kg)
Distance from Mouth of Patrick Bayou (ft)
0
50
100
150
200
250
300
350
0
2000
4000
6000
8000
10000

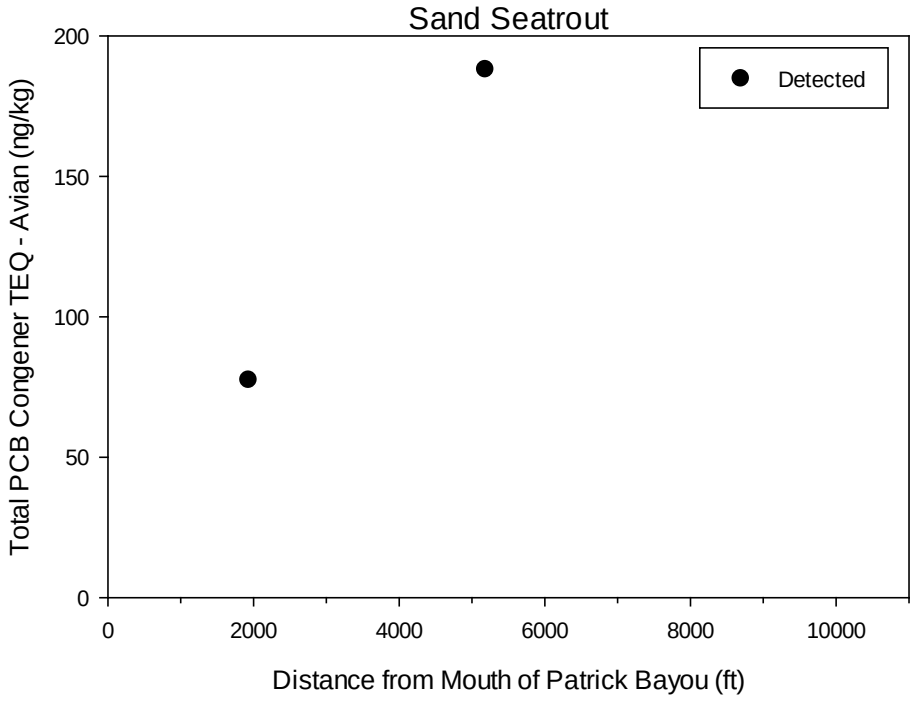

Sand Seatrout
Detected
Mercury (mg/kg)
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

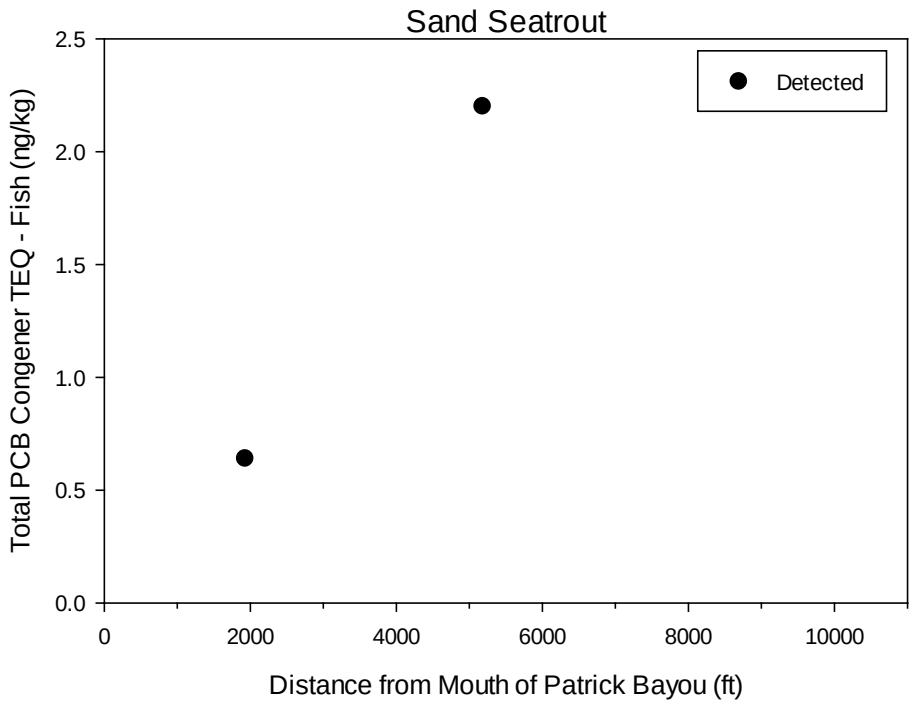

Sand Seatrout
Detected
Total Dioxin/Furan TEQ - Avian (ng/kg)
2.5
2.0
1.5
1.0
0.5
0.0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

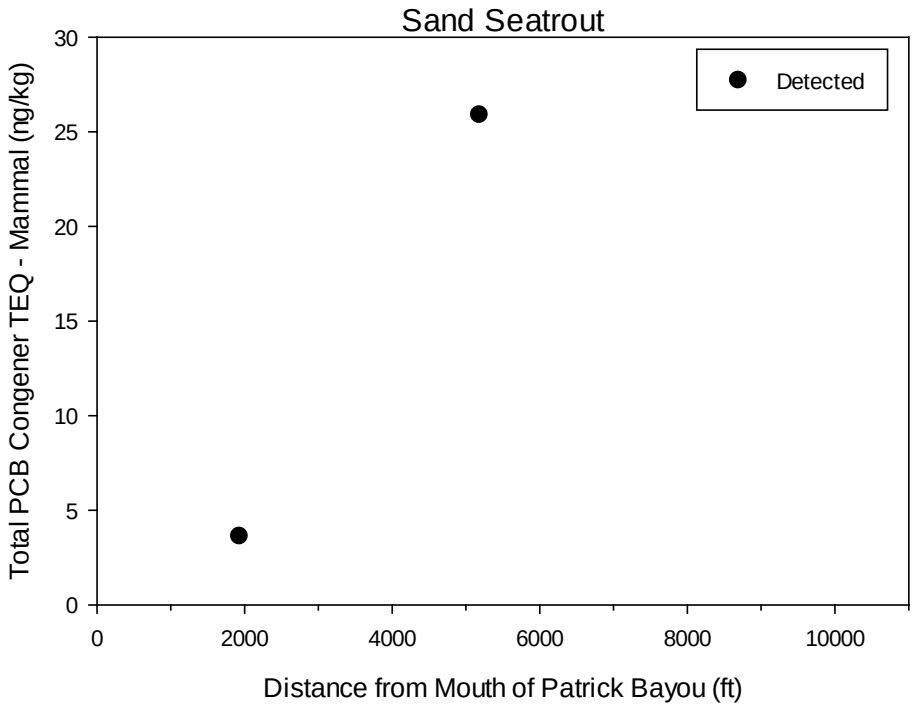

Sand Seatrout
Detected
Total Dioxin/Furan TEQ - Fish (ng/kg)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

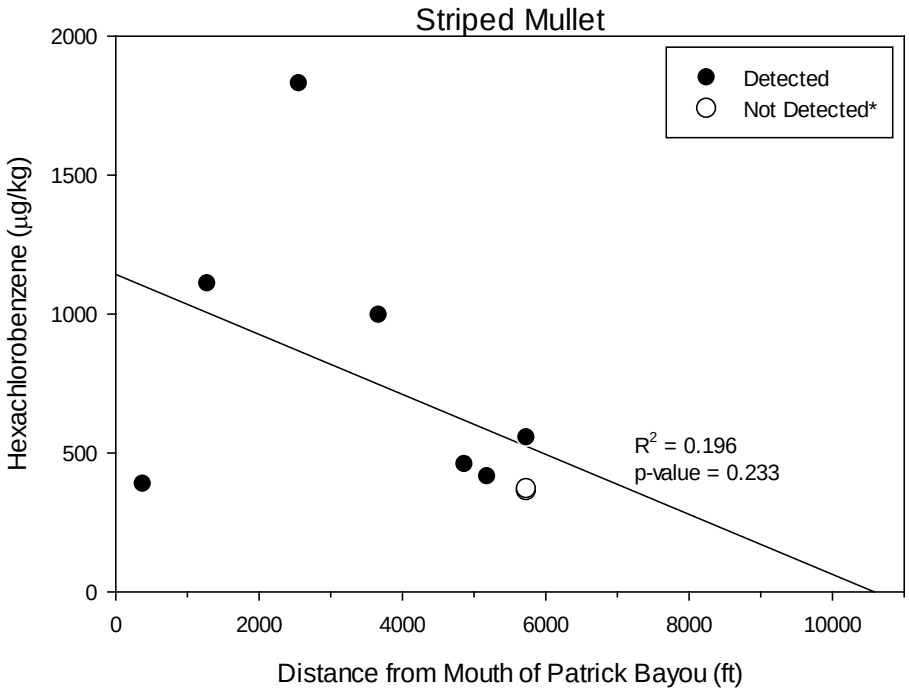

Sand Seatrout
Detected
Total Dioxin/Furan TEQ - Mammal (ng/kg)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)


Sand Seatrout
Detected
Total PCB Congener (µg/kg)
3000
2500
2000
1500
1000
500
0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

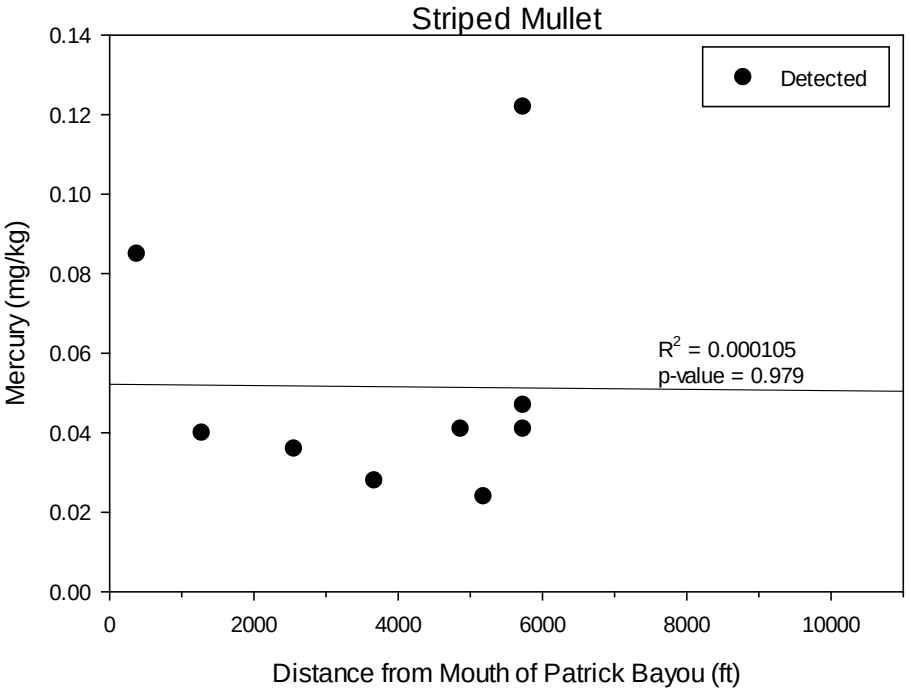

Sand Seatrout
Detected
Total PCB Congener TEQ - Avian (ng/kg)
200
150
100
50
0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

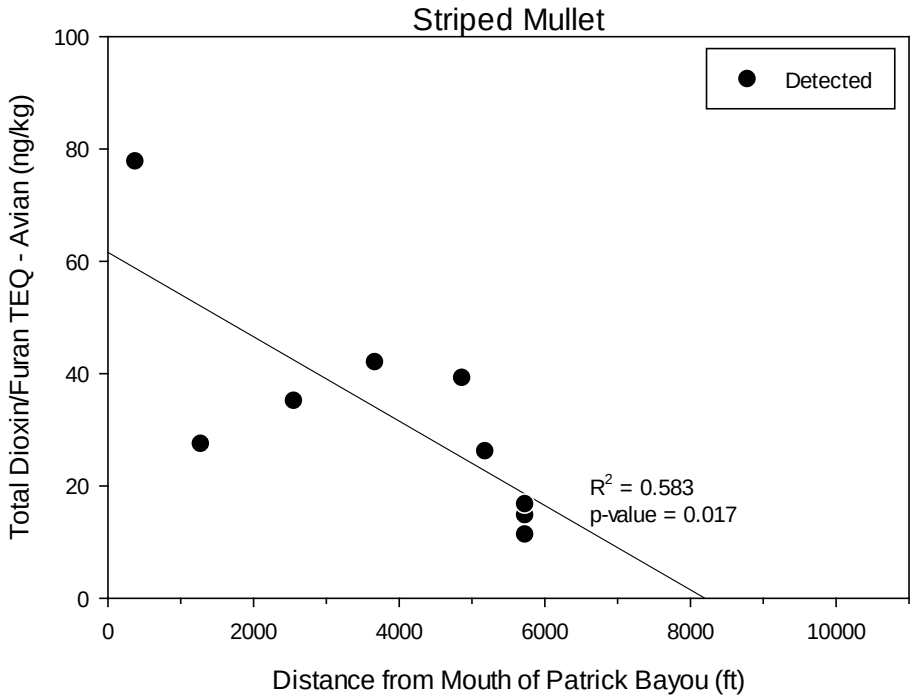

Sand Seatrout
Detected
Total PCB Congener TEQ - Fish (ng/kg)
2.5
2.0
1.5
1.0
0.5
0.0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

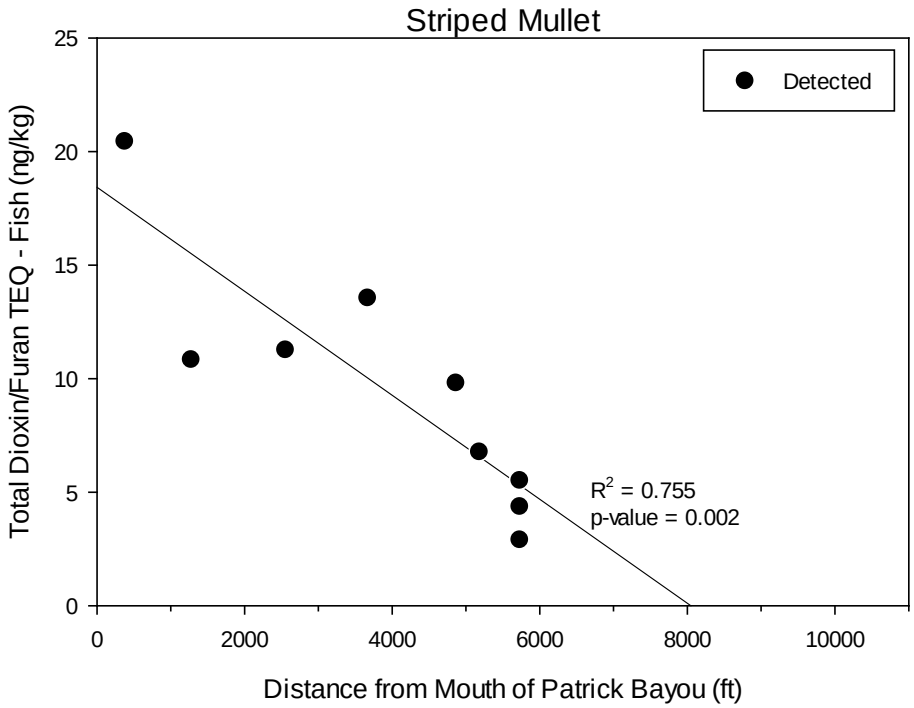

Sand Seatrout
Detected
Total PCB Congener TEQ - Mammal (ng/kg)
30
25
20
15
10
5
0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

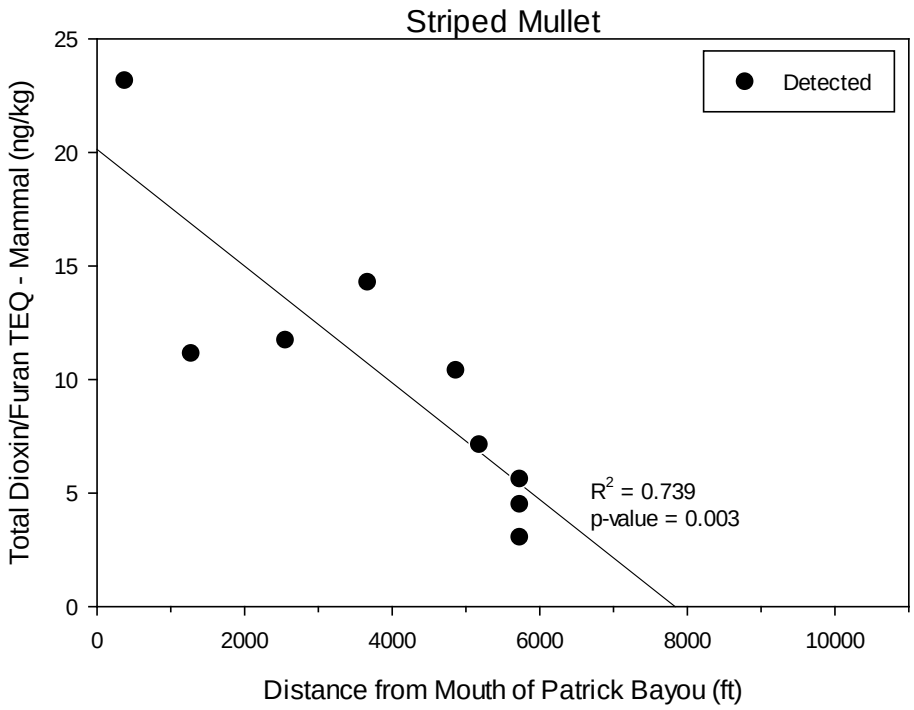


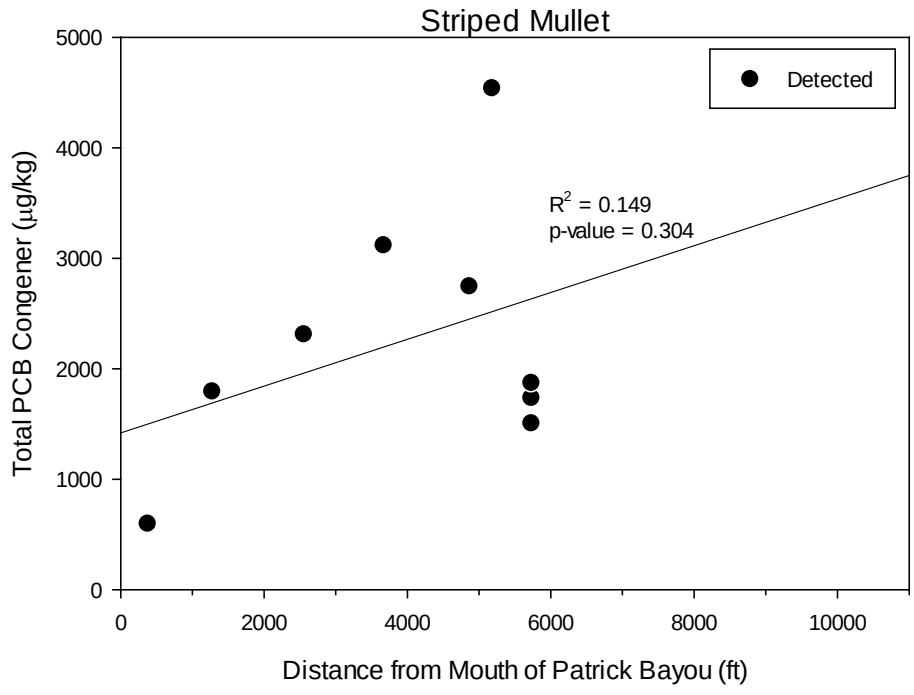
*Non-detects graphed at 1/2 the detection limit

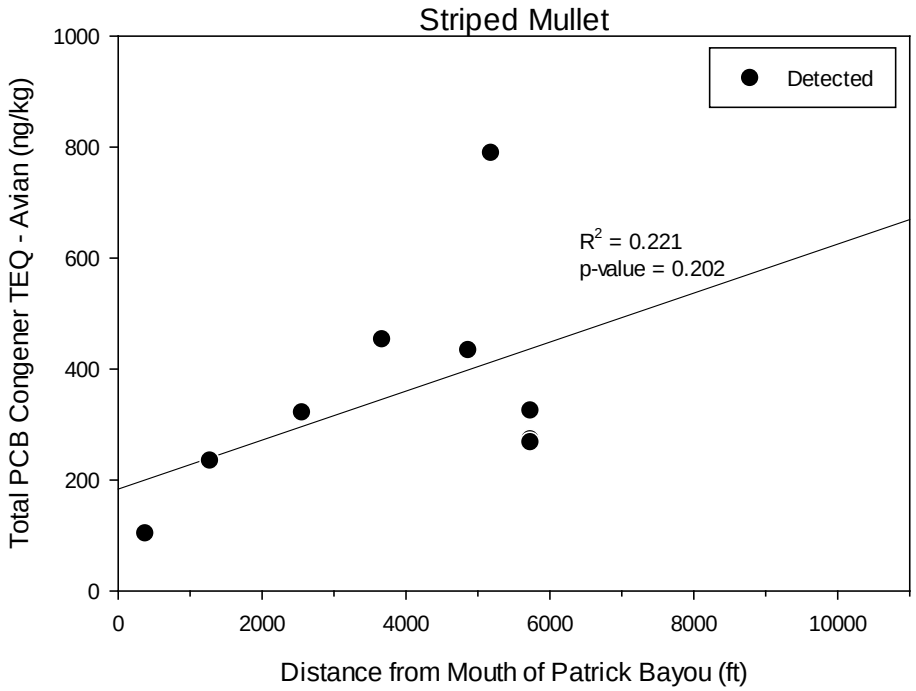


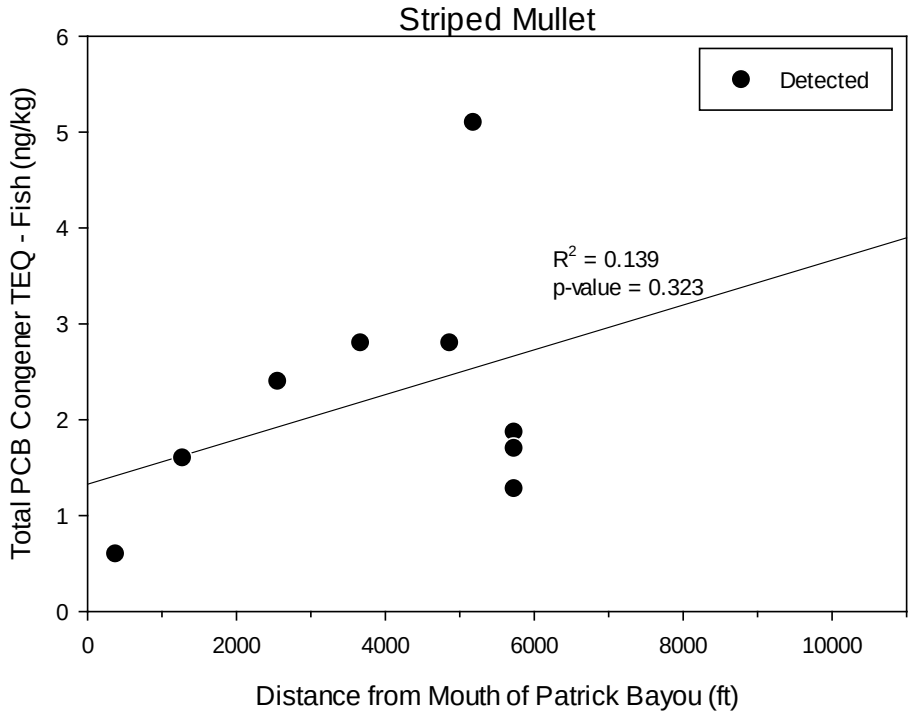

Striped Mullet
Detected
Total Dioxin/Furan TEQ - Avian (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
R2 = 0.583
p-value = 0.017
0
20
40
60
80
100
0
2000
4000
6000
8000
10000

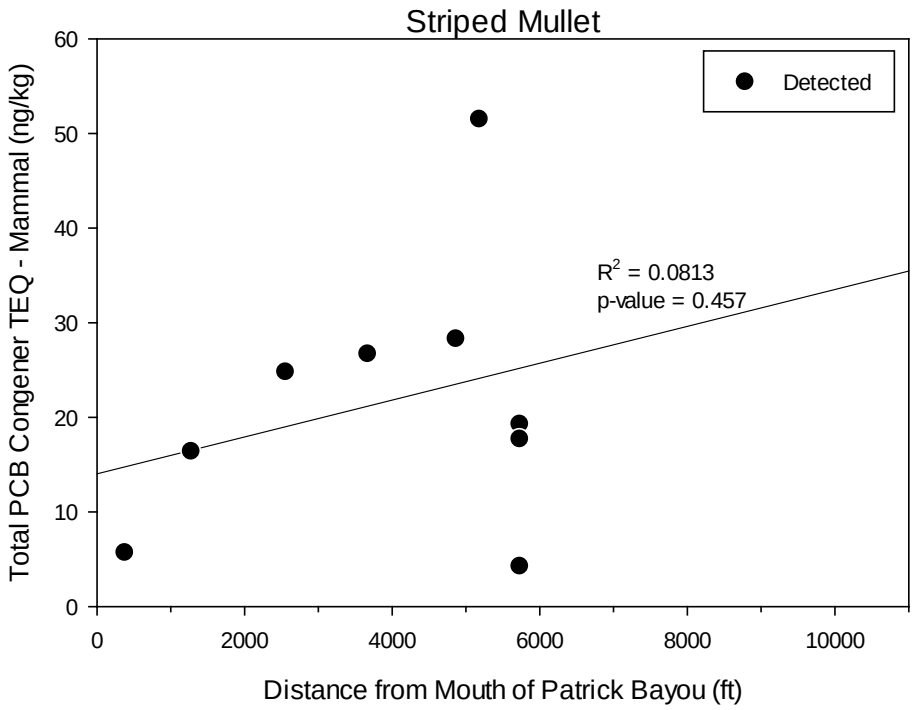

Striped Mullet
Detected
Total Dioxin/Furan TEQ - Fish (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
R2 = 0.755
p-value = 0.002
0
5
10
15
20
25
0
2000
4000
6000
8000
10000

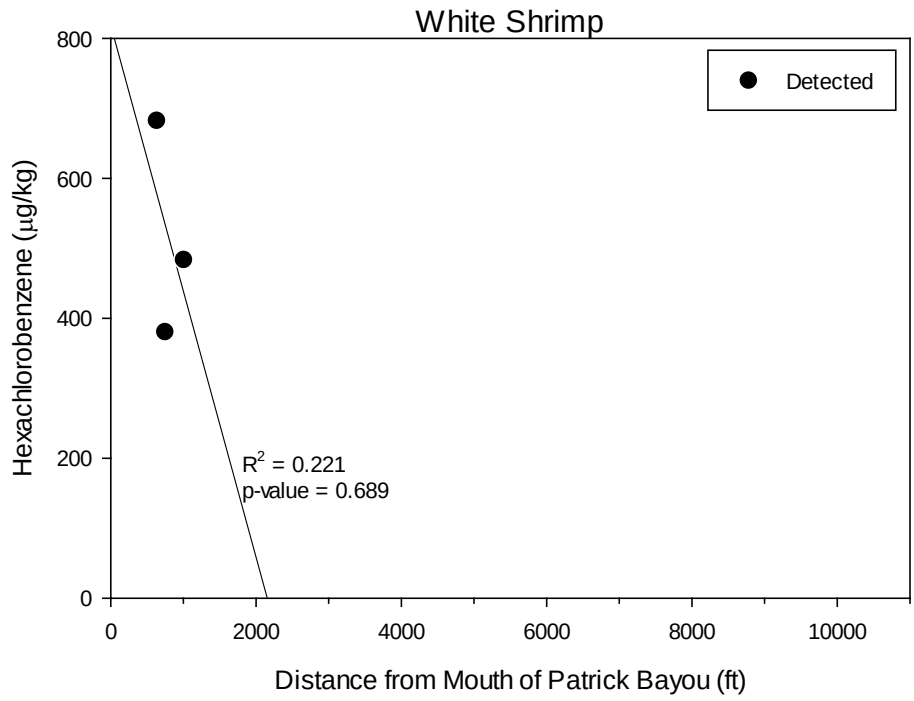

Striped Mullet
Detected
Total Dioxin/Furan TEQ - Mammal (ng/kg)
25
20
15
10
5
0
0
2000
4000
6000
8000
10000
R^2 = 0.739
p-value = 0.003
Distance from Mouth of Patrick Bayou (ft)

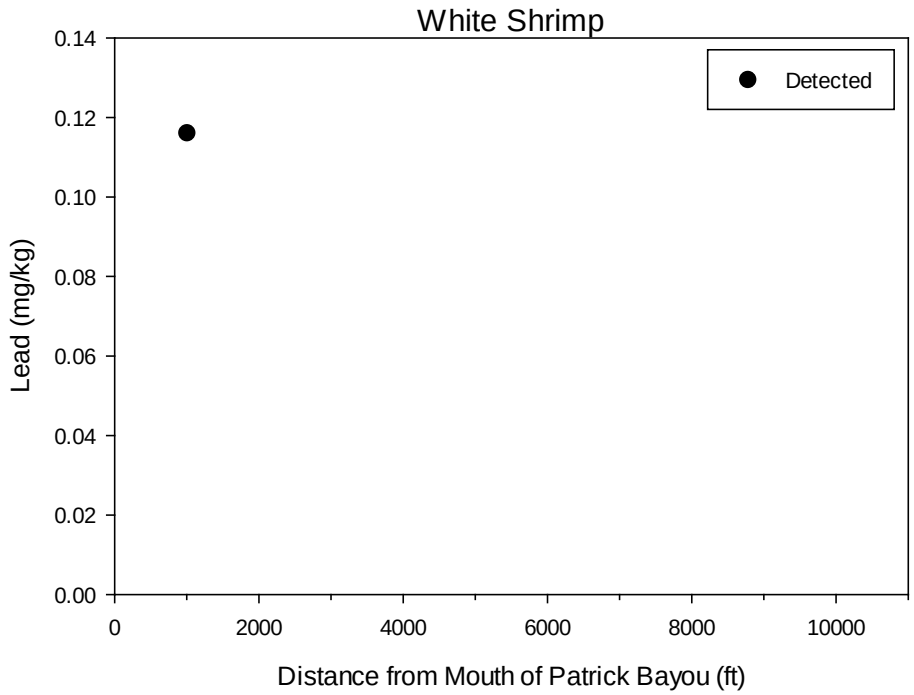

Striped Mullet
Detected
Total PCB Congener (µg/kg)
5000
4000
3000
2000
1000
0
0
2000
4000
6000
8000
10000
R^2 = 0.149
p-value = 0.304
Distance from Mouth of Patrick Bayou (ft)

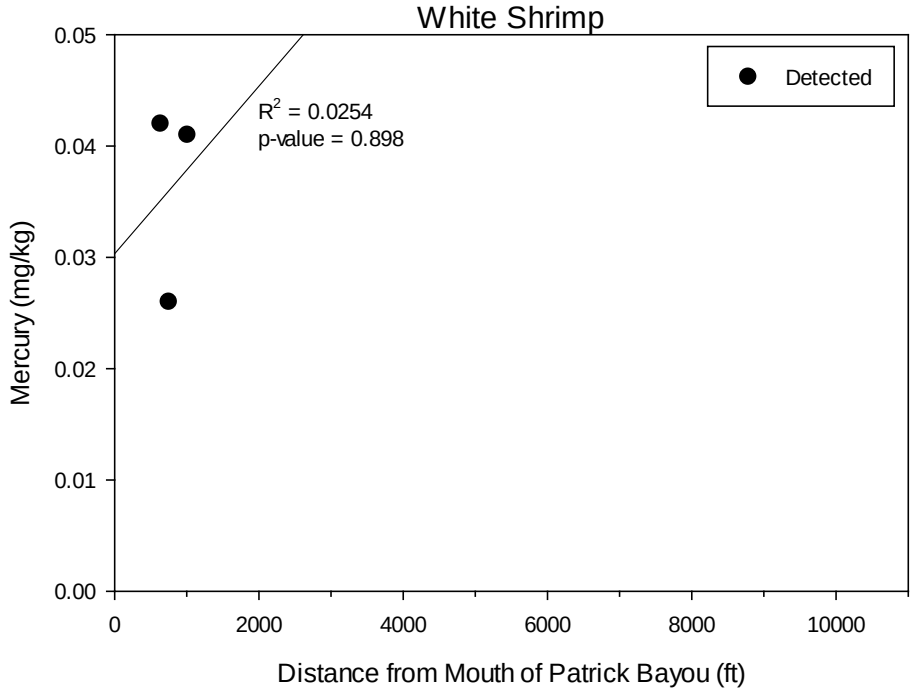

Striped Mullet
Detected
R^2 = 0.221
p-value = 0.202
Total PCB Congener TEQ - Avian (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
200
400
600
800
1000
0
2000
4000
6000
8000
10000

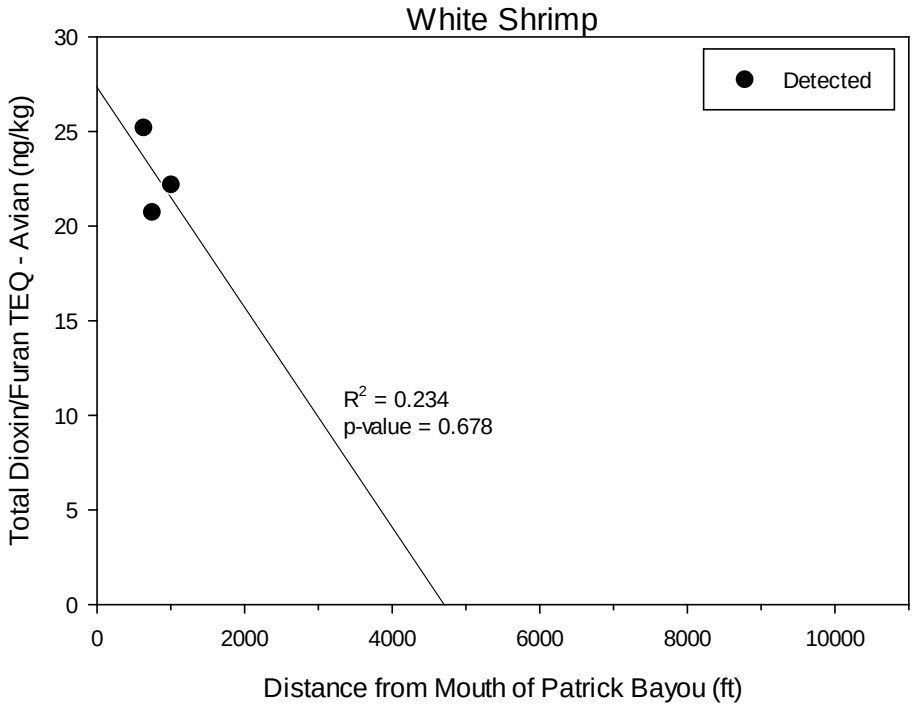

Striped Mullet
Detected
R^2 = 0.139
p-value = 0.323
Total PCB Congener TEQ - Fish (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
1
2
3
4
5
6
0
2000
4000
6000
8000
10000

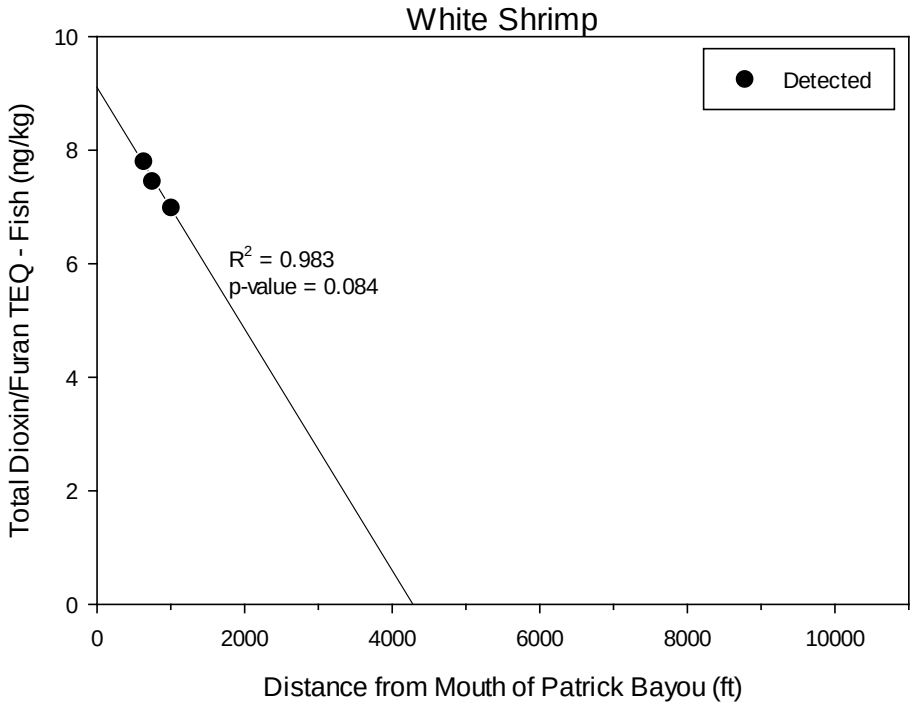

Striped Mullet
Detected
R^2 = 0.0813
p-value = 0.457
Total PCB Congener TEQ - Mammal (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
10
20
30
40
50
60
0
2000
4000
6000
8000
10000

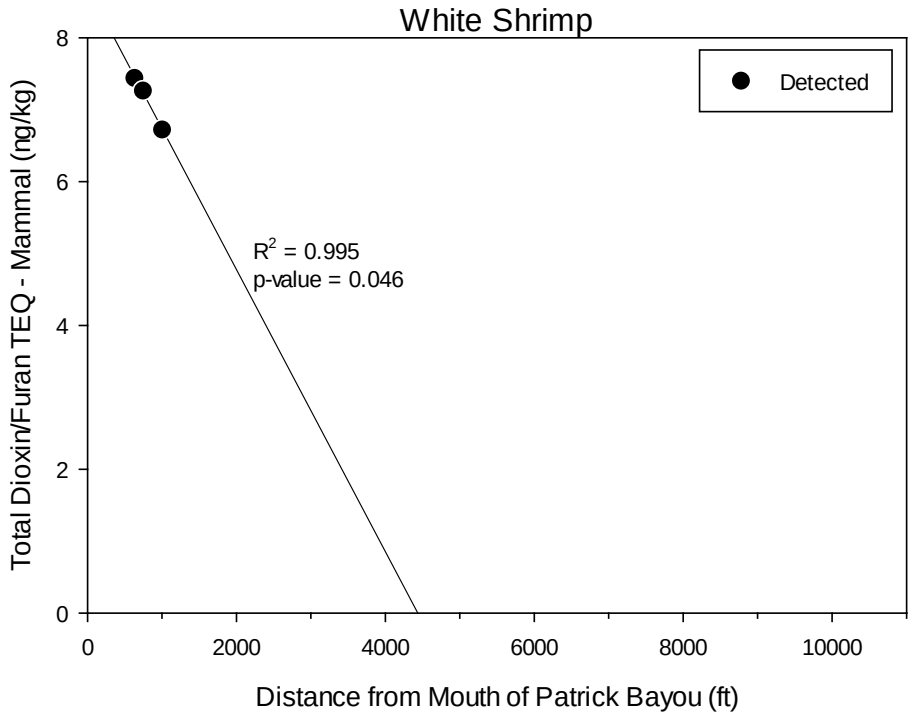

White Shrimp
Detected
R^2 = 0.221
p-value = 0.689
Hexachlorobenzene (µg/kg)
Distance from Mouth of Patrick Bayou (ft)
0
200
400
600
800
0
2000
4000
6000
8000
10000

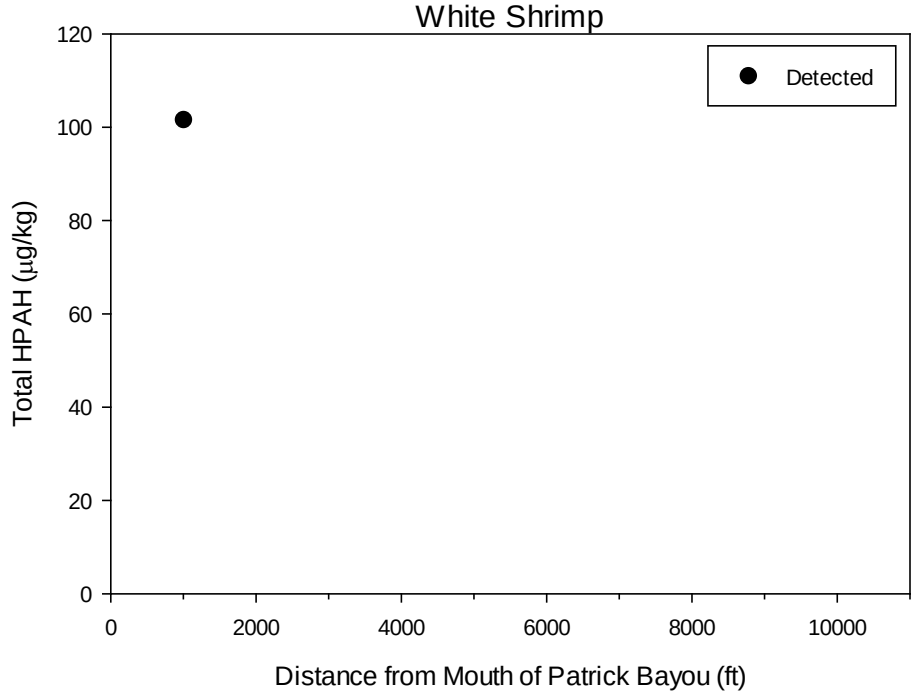

White Shrimp
Detected
Lead (mg/kg)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

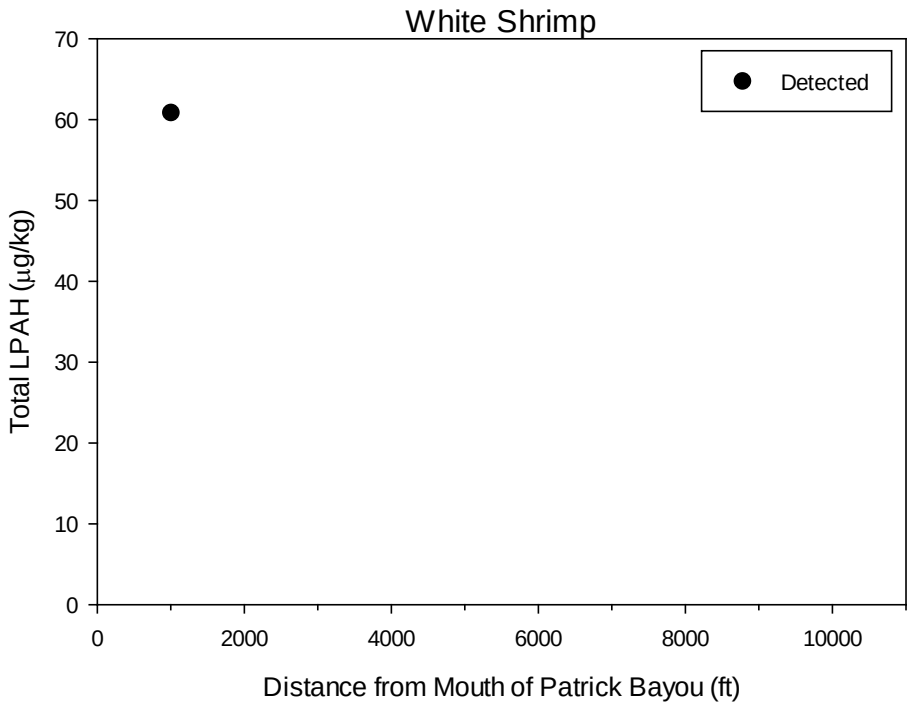

White Shrimp
Detected
R^2 = 0.0254
p-value = 0.898
Mercury (mg/kg)
0.05
0.04
0.03
0.02
0.01
0.00
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

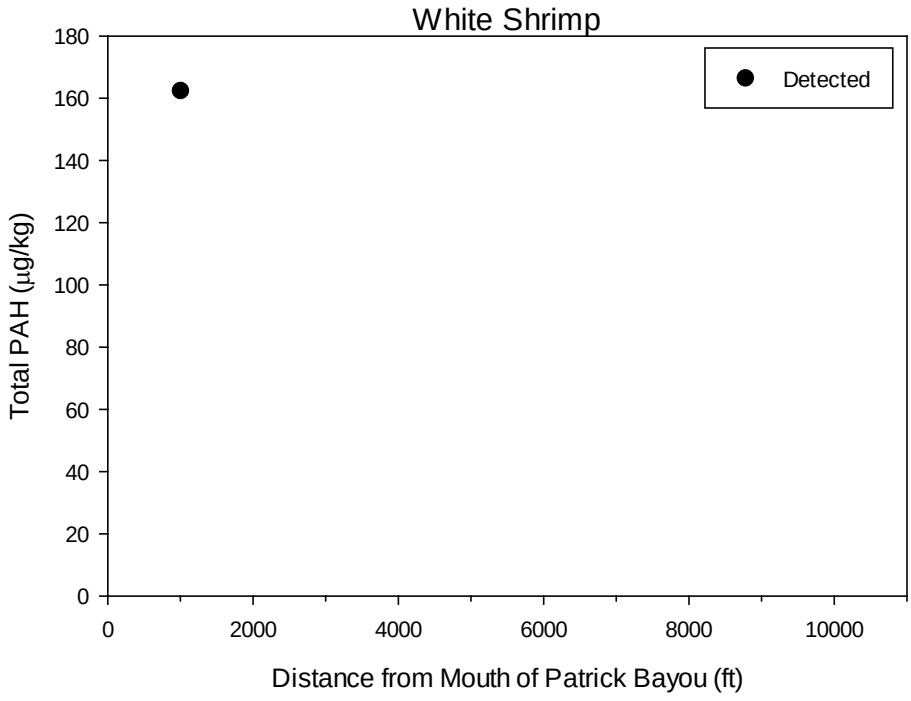

White Shrimp
Detected
Total Dioxin/Furan TEQ - Avian (ng/kg)
30
25
20
15
10
5
0
R^2 = 0.234
p-value = 0.678
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

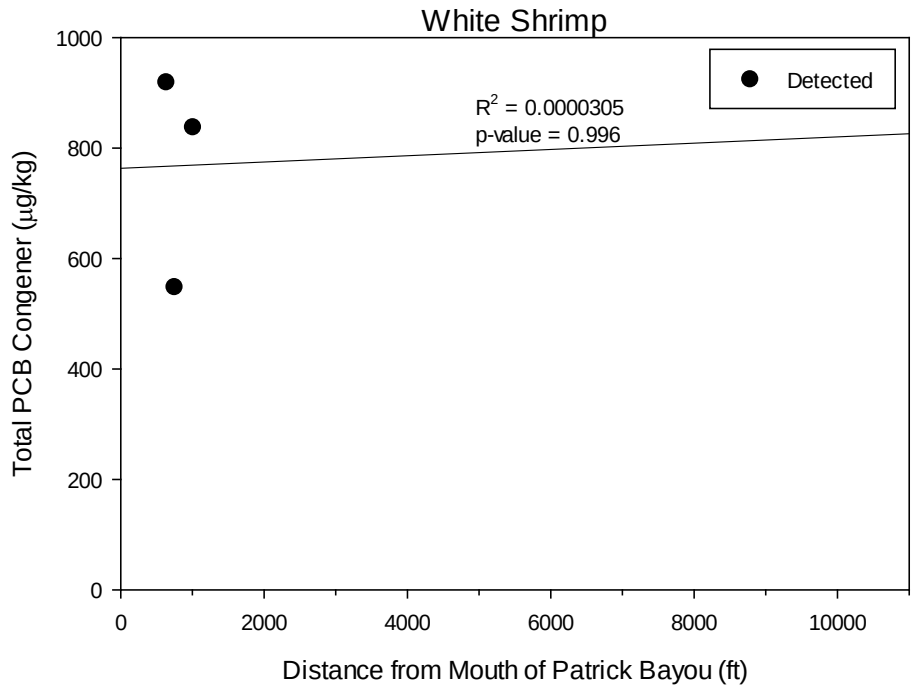

White Shrimp
Detected
Total Dioxin/Furan TEQ - Fish (ng/kg)
10
8
6
4
2
0
R^2 = 0.983
p-value = 0.084
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

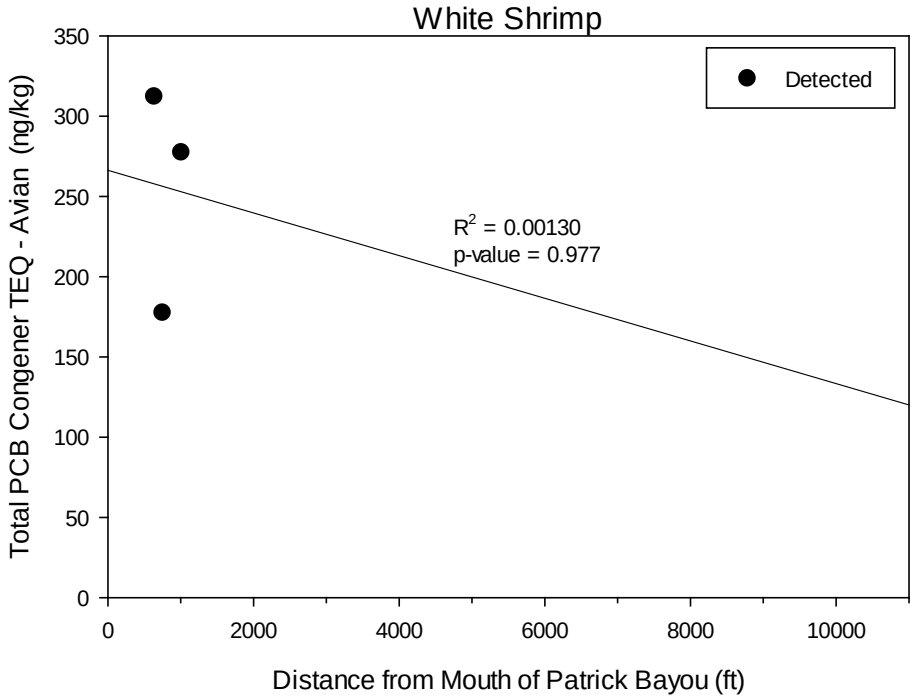

White Shrimp
Detected
R^2 = 0.995
p-value = 0.046
Total Dioxin/Furan TEQ - Mammal (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
2
4
6
8
0
2000
4000
6000
8000
10000

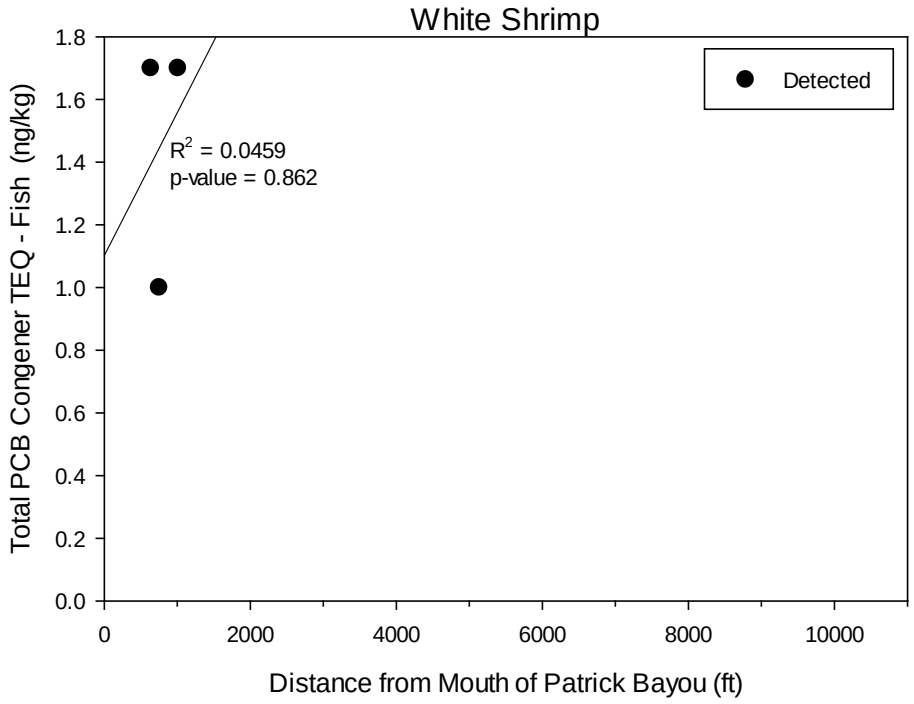

White Shrimp
Detected
Total HPAH (µg/kg)
Distance from Mouth of Patrick Bayou (ft)
0
20
40
60
80
100
120
0
2000
4000
6000
8000
10000

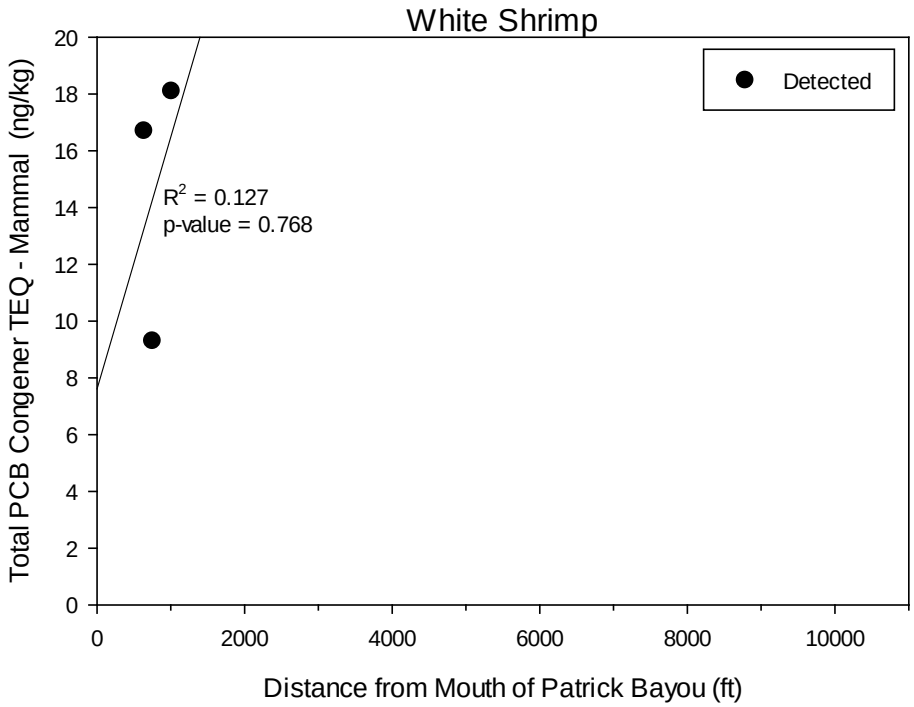

White Shrimp
Detected
Total LPAH (µg/kg)
0
10
20
30
40
50
60
70
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

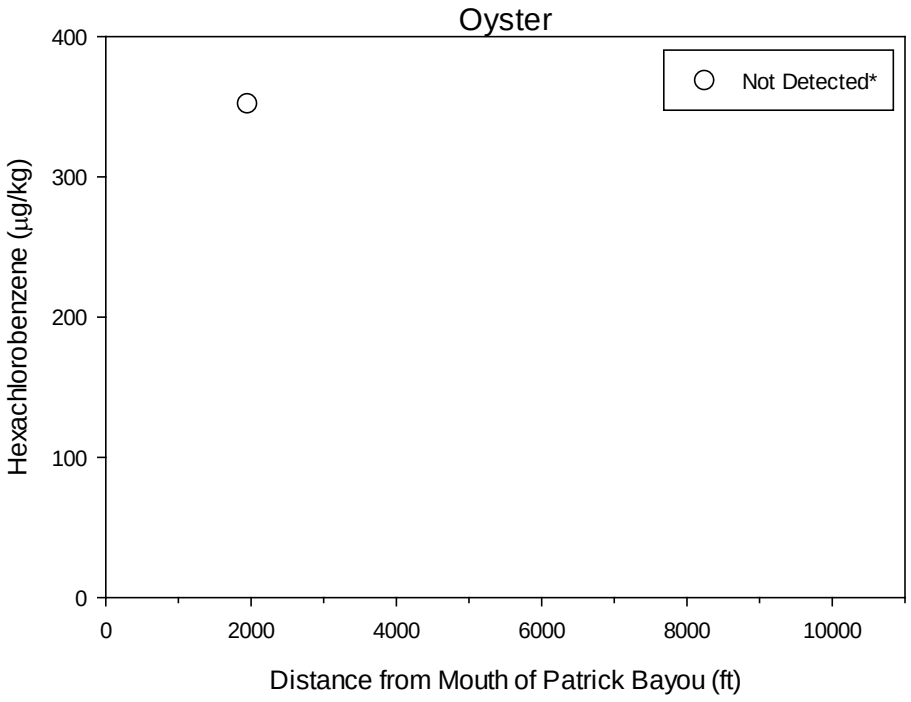

White Shrimp
Detected
Total PAH (µg/kg)
0
20
40
60
80
100
120
140
160
180
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)


White Shrimp
Detected
R^2 = 0.0000305
p-value = 0.996
Total PCB Congener (µg/kg)
Distance from Mouth of Patrick Bayou (ft)
0
200
400
600
800
1000
0
2000
4000
6000
8000
10000

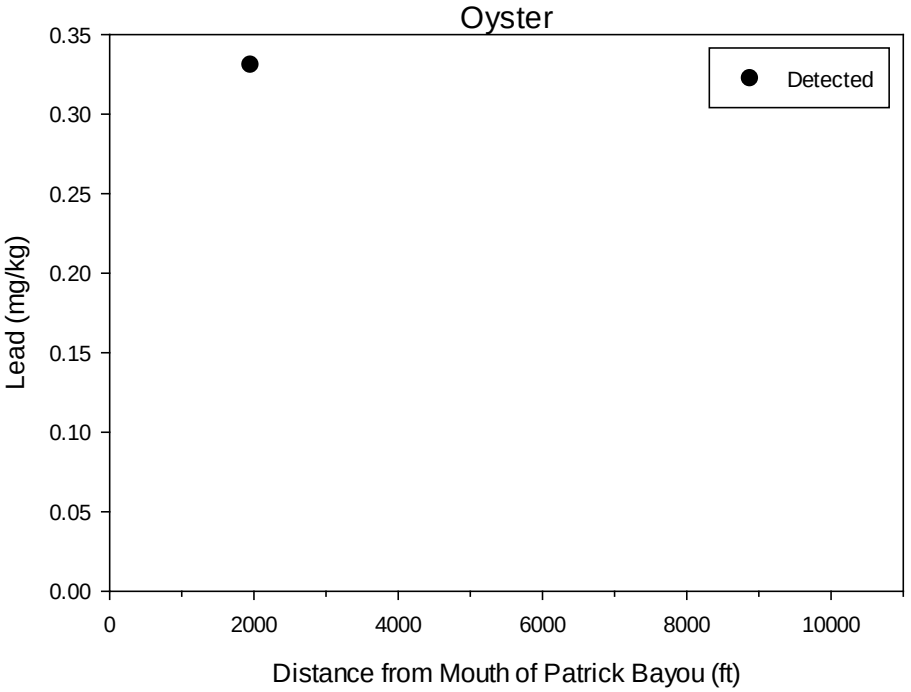

White Shrimp
Detected
R^2 = 0.00130
p-value = 0.977
Total PCB Congener TEQ - Avian (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
50
100
150
200
250
300
350
0
2000
4000
6000
8000
10000

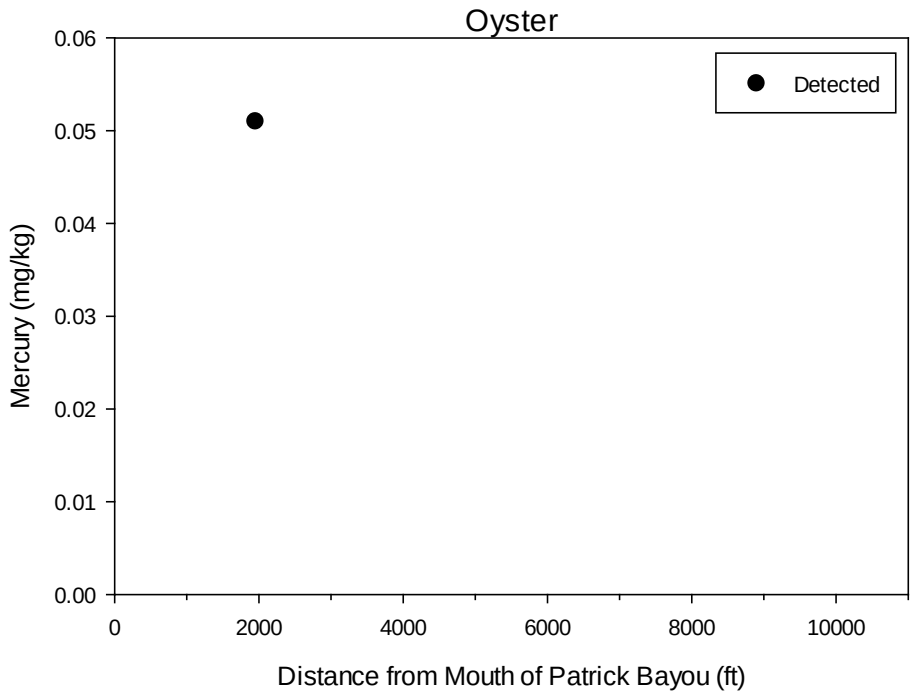

White Shrimp
Detected
R^2 = 0.0459
p-value = 0.862
Total PCB Congener TEQ - Fish (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
0
2000
4000
6000
8000
10000

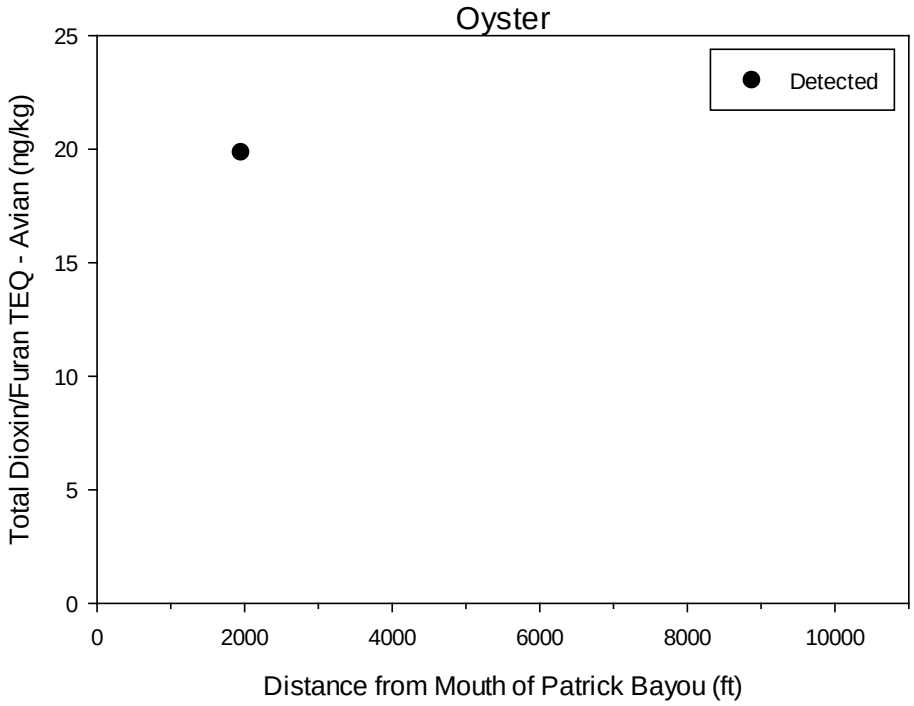

White Shrimp
Detected
R^2 = 0.127
p-value = 0.768
Total PCB Congener TEQ - Mammal (ng/kg)
Distance from Mouth of Patrick Bayou (ft)
0
2
4
6
8
10
12
14
16
18
20
0
2000
4000
6000
8000
10000

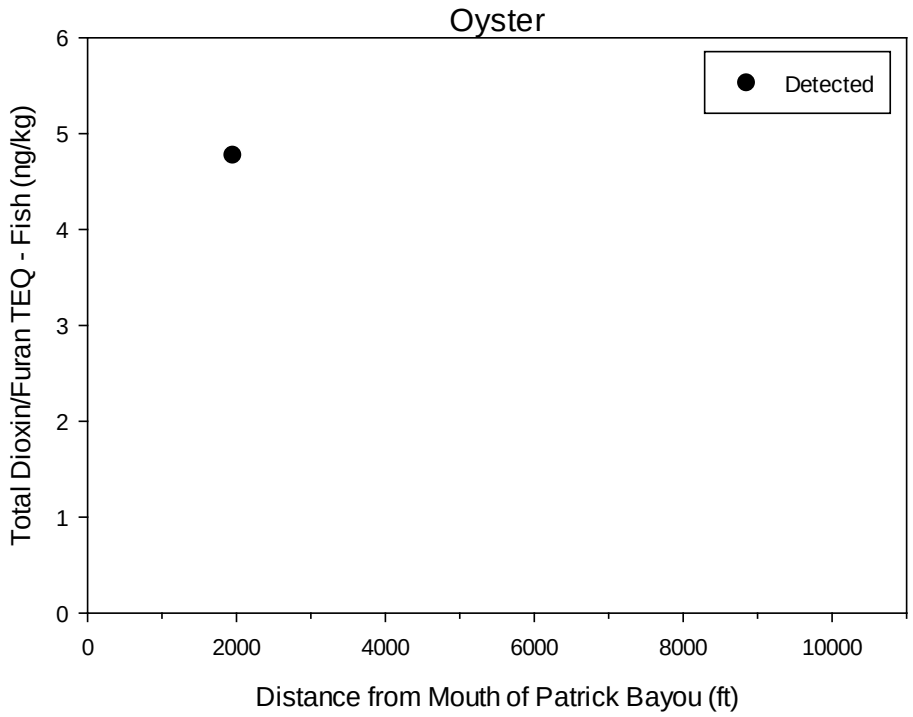


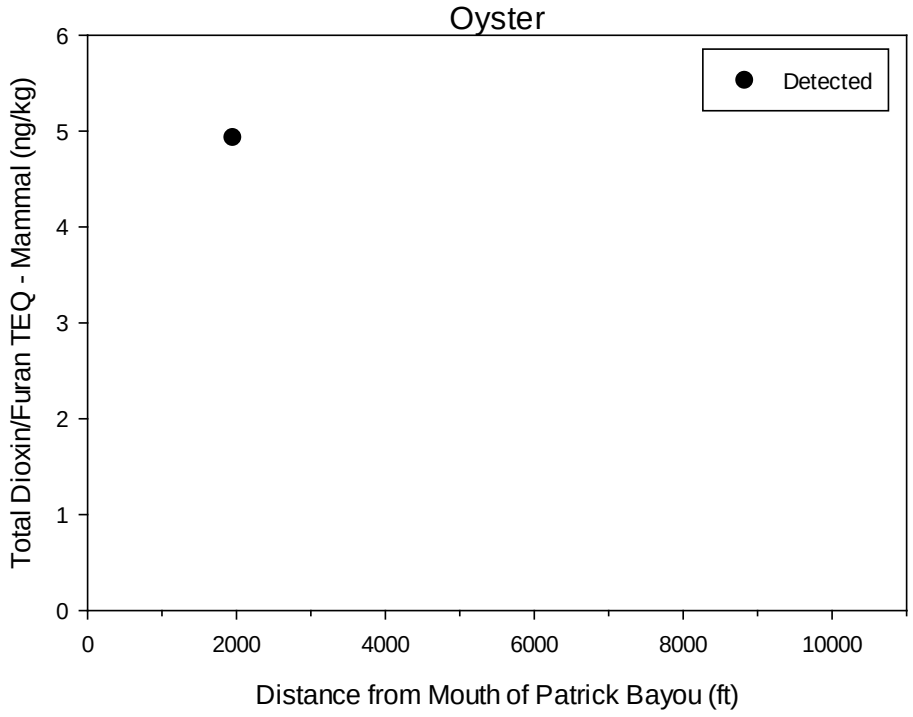
*Non-detects graphed at 1/2 the detection limit

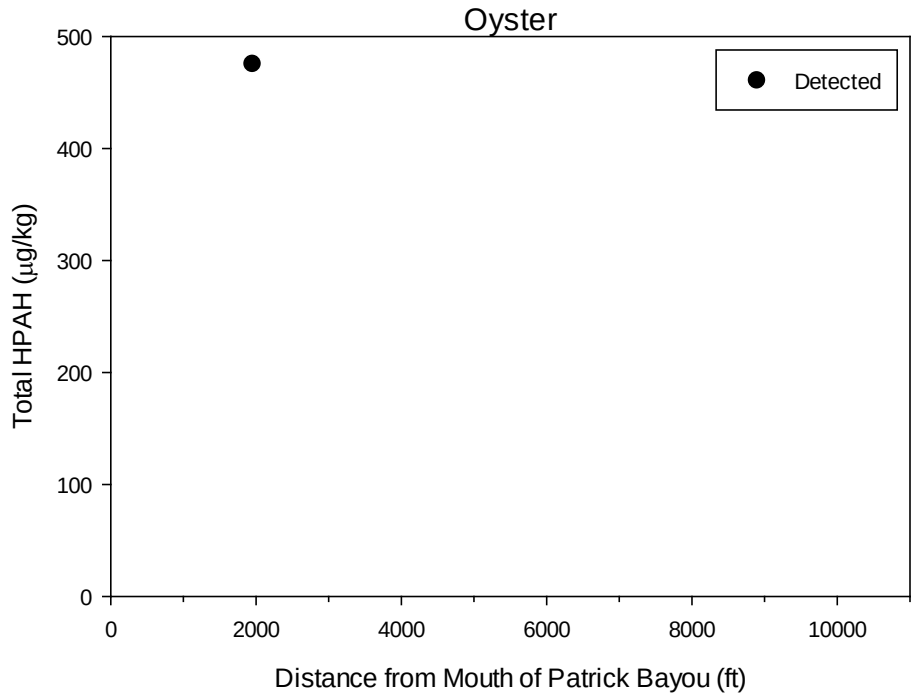


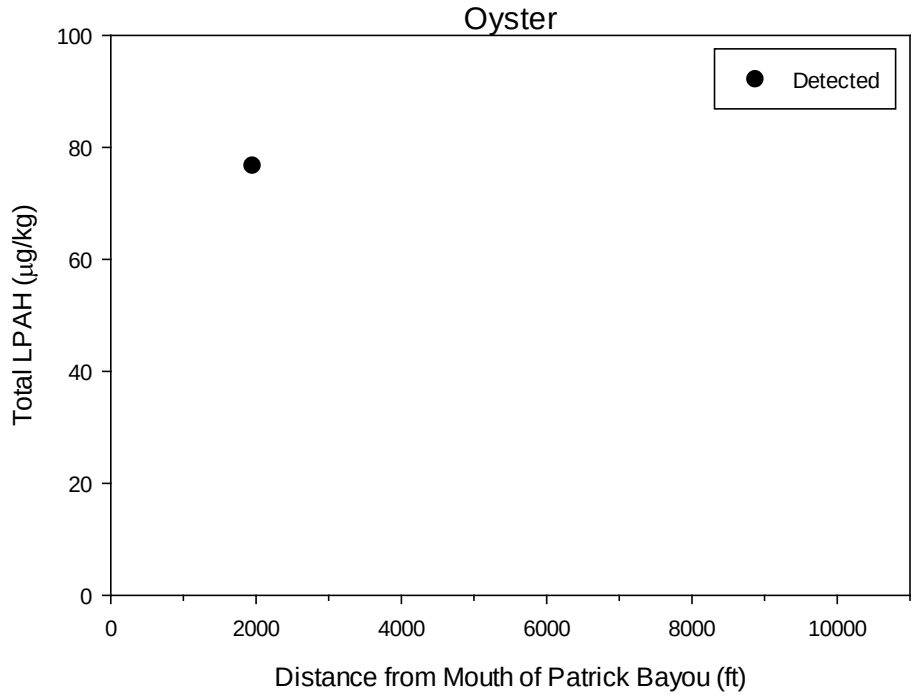

Oyster
Detected
Mercury (mg/kg)
0.06
0.05
0.04
0.03
0.02
0.01
0.00
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

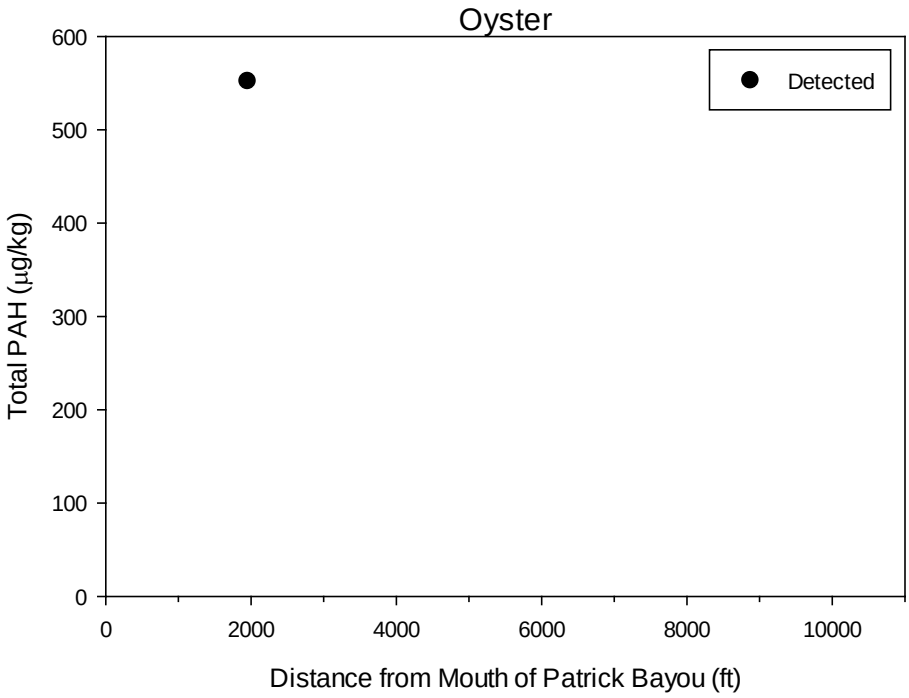

Oyster
Detected
Total Dioxin/Furan TEQ - Avian (ng/kg)
25
20
15
10
5
0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

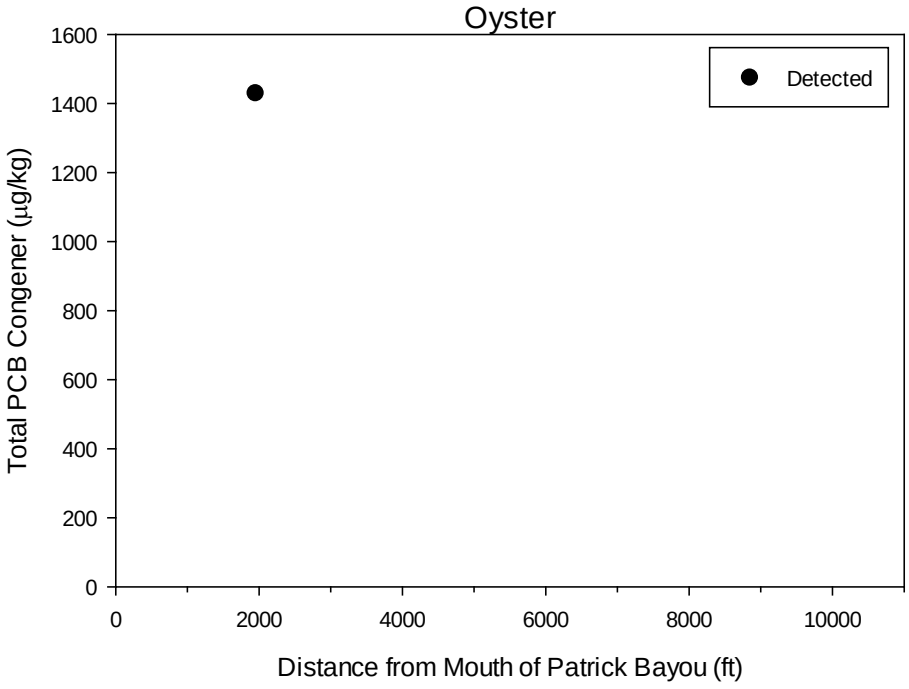

Oyster
Detected
Total Dioxin/Furan TEQ - Fish (ng/kg)
0
1
2
3
4
5
6
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

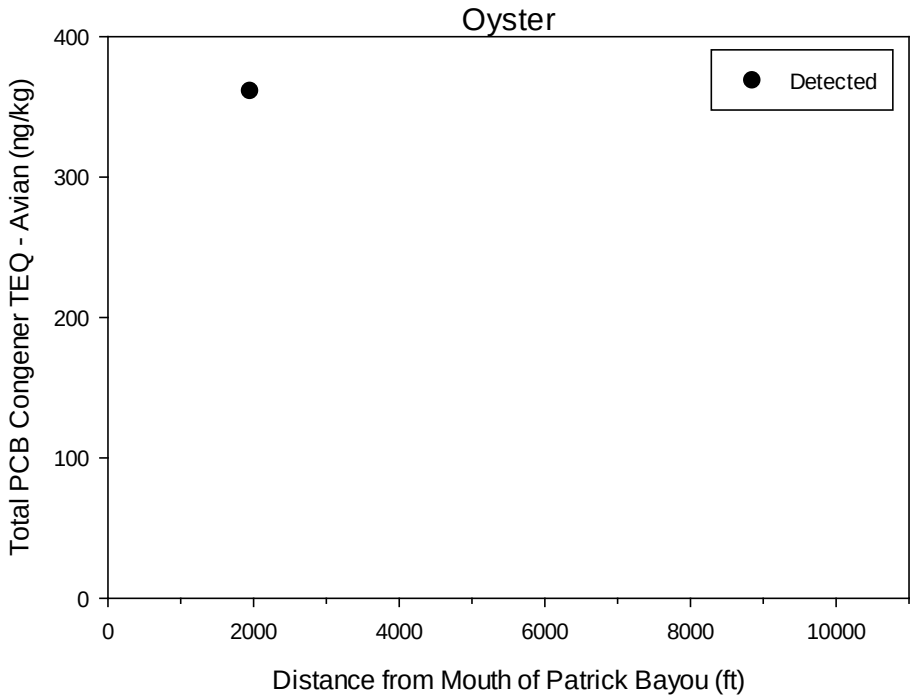

Oyster
Detected
Total Dioxin/Furan TEQ - Mammal (ng/kg)
0
1
2
3
4
5
6
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

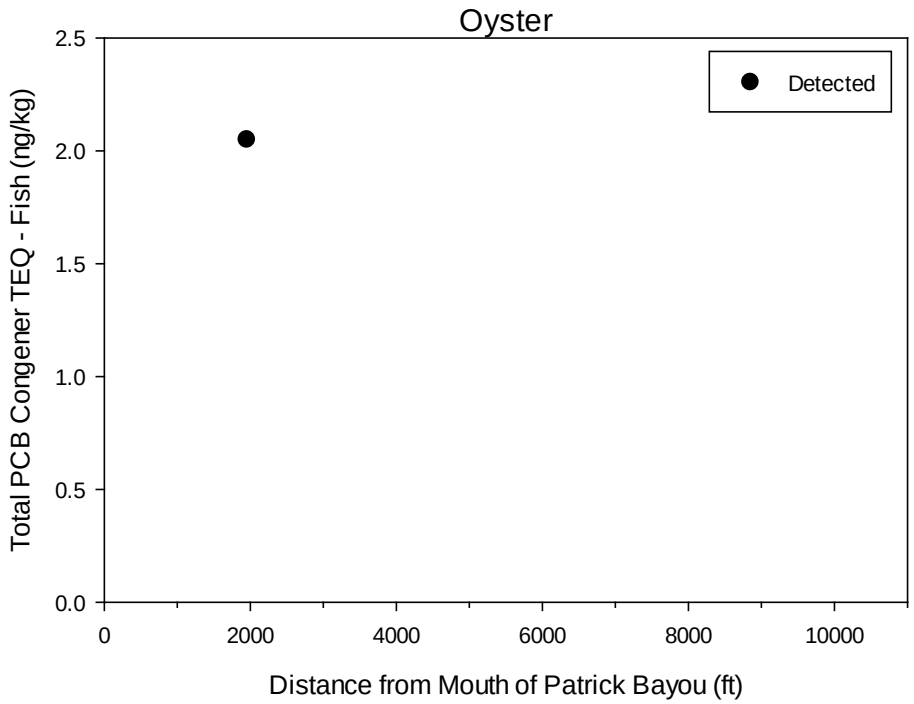

Oyster
Detected
Total HPAH (µg/kg)
500
400
300
200
100
0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

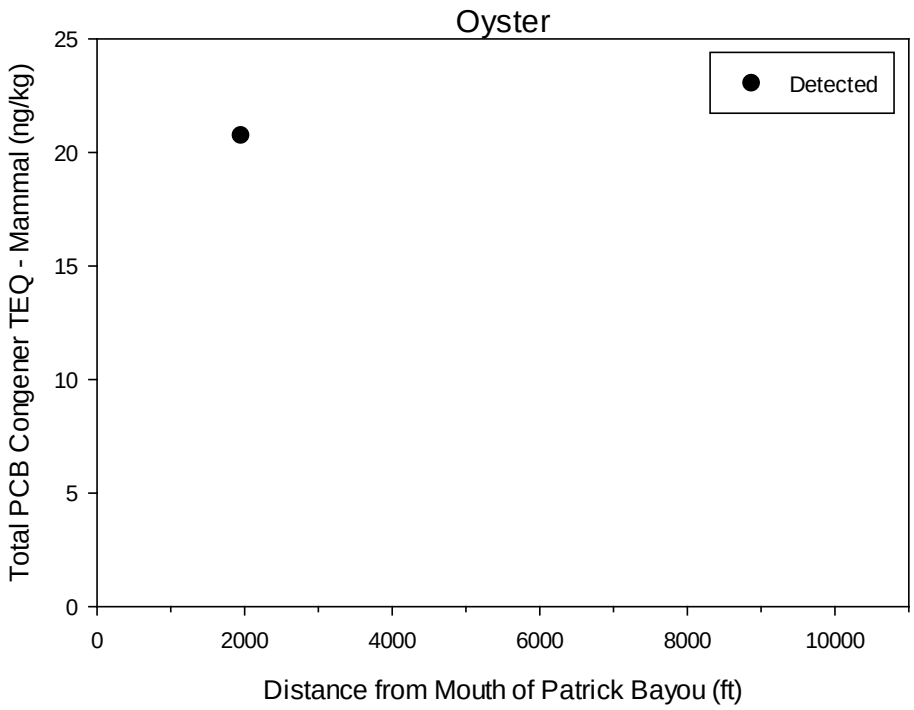

Oyster
Detected
Total LPAH (µg/kg)
100
80
60
40
20
0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)


Oyster
Detected
Total PAH (µg/kg)
600
500
400
300
200
100
0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)


Oyster
Detected
Total PCB Congener (µg/kg)
1600
1400
1200
1000
800
600
400
200
0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)


Oyster
Detected
Total PCB Congener TEQ - Avian (ng/kg)
400
300
200
100
0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)


Oyster
Detected
Total PCB Congener TEQ - Fish (ng/kg)
2.5
2.0
1.5
1.0
0.5
0.0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)


Oyster
Detected
Total PCB Congener TEQ - Mammal (ng/kg)
25
20
15
10
5
0
0
2000
4000
6000
8000
10000
Distance from Mouth of Patrick Bayou (ft)

APPENDIX C-2

OUTPUTS OF 95 UCL CALCULATIONS FOR TISSUE DATA

GROUPING: BLUE CRAB, BROWN SHRIMP, WHITE SHRIMP, OYSTER

General UCL Statistics for Datasets with Non-Detects

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (1,3-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	33	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	33
		Percent Non-Detects	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 dataset for variable Result_Value (1,3-dichlorobenzene_ug/kg) was not processed!

Result_Value (hexachlorobenzene_ug/kg)

General Statistics

Number of Valid Data	33	Number of Detected Data	20
Number of Distinct Detected Data	20	Number of Non-Detect Data	13
		Percent Non-Detects	39.39%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	191	Minimum Detected	5.252
Maximum Detected	5430	Maximum Detected	8.6
Mean of Detected	821	Mean of Detected	6.401
SD of Detected	1104	SD of Detected	0.66
Minimum Non-Detect	347	Minimum Non-Detect	5.849
Maximum Non-Detect	748	Maximum Non-Detect	6.617

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	28
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	84.85%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.407	Shapiro Wilk Test Statistic	0.839
5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	591.1	Mean	6.013
SD	900.2	SD	0.734
95% DL/2 (t) UCL	856.5	95% H-Stat (DL/2) UCL	707.1
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	6.094
		SD in Log Scale	0.652
		Mean in Original Scale	608.6
		SD in Original Scale	892.5
		95% t UCL	871.8
		95% Percentile Bootstrap UCL	904.4
		95% BCA Bootstrap UCL	1088
		95% H-UCL	695.2

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**
k star (bias corrected)	1.533	**Data do not follow a Discernable Distribution (0.05)**

Theta Star	535.4
nu star	61.33
A-D Test Statistic	2.019
5% A-D Critical Value	0.755
K-S Test Statistic	0.755
5% K-S Critical Value	0.197

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	
Minimum	0.000001
Maximum	5430
Mean	546.8
Median	413.5
SD	925.8
k star	0.16
Theta star	3422
Nu star	10.55
AppChi2	4.285
95% Gamma Approximate UCL (Use when n >= 40)	1346
95% Adjusted Gamma UCL (Use when n < 40)	1413

Note: DL/2 is not a recommended method.

Nonparametric Statistics

Kaplan-Meier (KM) Method	
Mean	621
SD	877.2
SE of Mean	157.7
95% KM (t) UCL	888
95% KM (z) UCL	880.3
95% KM (jackknife) UCL	886.5
95% KM (bootstrap t) UCL	1415
95% KM (BCA) UCL	975.7
95% KM (Percentile Bootstrap) UCL	922.2
95% KM (Chebyshev) UCL	1308
97.5% KM (Chebyshev) UCL	1606
99% KM (Chebyshev) UCL	2190

Potential UCLs to Use

95% KM (BCA) UCL	975.7

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	33	Number of Distinct Observations	24

Raw Statistics

Minimum	0.009
Maximum	0.083
Mean	0.0468
Geometric Mean	0.0436
Median	0.046
SD	0.0158
Std. Error of Mean	0.00275
Coefficient of Variation	0.338
Skewness	-0.0016

Log-transformed Statistics

Minimum of Log Data	-4.711
Maximum of Log Data	-2.489
Mean of log Data	-3.132
SD of log Data	0.42

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.989
Shapiro Wilk Critical Value	0.931

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.884
Shapiro Wilk Critical Value	0.931

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	0.0515

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	0.0514
95% Modified-t UCL (Johnson-1978)	0.0515

Assuming Lognormal Distribution

95% H-UCL	0.0548
95% Chebyshev (MVUE) UCL	0.0632
97.5% Chebyshev (MVUE) UCL	0.07
99% Chebyshev (MVUE) UCL	0.0833

Gamma Distribution Test

k star (bias corrected)	6.595
Theta Star	0.0071
MLE of Mean	0.0468
MLE of Standard Deviation	0.0182
nu star	435.3
Approximate Chi Square Value (.05)	387.9
Adjusted Level of Significance	0.0419
Adjusted Chi Square Value	385.6

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	0.0514
95% Jackknife UCL	0.0515

		95% Standard Bootstrap UCL	0.0514
Anderson-Darling Test Statistic	0.478	95% Bootstrap-t UCL	0.0515
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	0.0517
Kolmogorov-Smirnov Test Statistic	0.143	95% Percentile Bootstrap UCL	0.0514
Kolmogorov-Smirnov 5% Critical Value	0.153	95% BCA Bootstrap UCL	0.0514
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0589
		97.5% Chebyshev(Mean, Sd) UCL	0.0641
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0743
95% Approximate Gamma UCL (Use when n >= 40)	0.0526		
95% Adjusted Gamma UCL (Use when n < 40)	0.0529		
Potential UCL to Use		Use 95% Student's-t UCL	0.0515

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Note: For highly negative-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed datasets.

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	33	Number of Distinct Observations	33

Raw Statistics		**Log-transformed Statistics**	
Minimum	97.57	Minimum of Log Data	4.581
Maximum	782.9	Maximum of Log Data	6.663
Mean	404.3	Mean of log Data	5.914
Geometric Mean	370.4	SD of log Data	0.451
Median	369.9		
SD	160.9		
Std. Error of Mean	28		
Coefficient of Variation	0.398		
Skewness	0.406		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.974	Shapiro Wilk Test Statistic	0.95
Shapiro Wilk Critical Value	0.931	Shapiro Wilk Critical Value	0.931
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	451.7	95% H-UCL	476.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	553.4
95% Adjusted-CLT UCL (Chen-1995)	452.5	97.5% Chebyshev (MVUE) UCL	616.1
95% Modified-t UCL (Johnson-1978)	452.1	99% Chebyshev (MVUE) UCL	739.2
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	5.35	**Data appear Normal at 5% Significance Level**	
Theta Star	75.57		
MLE of Mean	404.3		
MLE of Standard Deviation	174.8		
nu star	353.1		
Approximate Chi Square Value (.05)	310.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0419	95% CLT UCL	450.4
Adjusted Chi Square Value	308.5	95% Jackknife UCL	451.7
		95% Standard Bootstrap UCL	449.6
Anderson-Darling Test Statistic	0.251	95% Bootstrap-t UCL	454.5
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	455.1
Kolmogorov-Smirnov Test Statistic	0.0852	95% Percentile Bootstrap UCL	449.9
Kolmogorov-Smirnov 5% Critical Value	0.153	95% BCA Bootstrap UCL	450.6
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	526.4

97.5% Chebyshev(Mean, Sd) UCL	579.2
99% Chebyshev(Mean, Sd) UCL	682.9

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	459.7
95% Adjusted Gamma UCL (Use when n < 40)	462.7

Potential UCL to Use

Use 95% Student's-t UCL 451.7

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 2005 (mammal) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	33	Number of Distinct Observations	33

Raw Statistics		**Log-transformed Statistics**	
Minimum	8.2	Minimum of Log Data	2.104
Maximum	49.2	Maximum of Log Data	3.896
Mean	24.77	Mean of log Data	3.114
Geometric Mean	22.51	SD of log Data	0.462
Median	23.2		
SD	10.51		
Std. Error of Mean	1.83		
Coefficient of Variation	0.424		
Skewness	0.508		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.959	Shapiro Wilk Test Statistic	0.955
Shapiro Wilk Critical Value	0.931	Shapiro Wilk Critical Value	0.931
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	27.87	95% H-UCL	29.28
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	34.06
95% Adjusted-CLT UCL (Chen-1995)	27.95	97.5% Chebyshev (MVUE) UCL	38
95% Modified-t UCL (Johnson-1978)	27.9	99% Chebyshev (MVUE) UCL	45.74

Gamma Distribution Test		**Data Distribution**
k star (bias corrected)	4.919	**Data appear Normal at 5% Significance Level**
Theta Star	5.036	
MLE of Mean	24.77	
MLE of Standard Deviation	11.17	
nu star	324.6	
Approximate Chi Square Value (.05)	283.9	**Nonparametric Statistics**
Adjusted Level of Significance	0.0419	95% CLT UCL 27.78
Adjusted Chi Square Value	281.9	95% Jackknife UCL 27.87
		95% Standard Bootstrap UCL 27.66
Anderson-Darling Test Statistic	0.241	95% Bootstrap-t UCL 28.04
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL 27.99
Kolmogorov-Smirnov Test Statistic	0.0941	95% Percentile Bootstrap UCL 27.86
Kolmogorov-Smirnov 5% Critical Value	0.154	95% BCA Bootstrap UCL 27.82
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL 32.75
		97.5% Chebyshev(Mean, Sd) UCL 36.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL 42.97
95% Approximate Gamma UCL (Use when n >= 40)	28.33	
95% Adjusted Gamma UCL (Use when n < 40)	28.52	

Potential UCL to Use

Use 95% Student's-t UCL 27.87

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

GROUPING: BLUE CRAB, WHITE SHRIMP, OYSTER

Blue Crab, White Shrimp, Oyster

General UCL Statistics for Datasets with Non-Detects

User Selected Options

From File	Sheet1_a.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total pcb congener (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	25

Raw Statistics		**Log-transformed Statistics**	
Minimum	228677	Minimum of Log Data	12.34
Maximum	1429439	Maximum of Log Data	14.17
Mean	717711	Mean of log Data	13.41
Geometric Mean	664560	SD of log Data	0.415
Median	695219		
SD	279856		
Std. Error of Mean	55971		
Coefficient of Variation	0.39		
Skewness	0.731		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.958	Shapiro Wilk Test Statistic	0.969
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	813471	95% H-UCL	849946
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	989827
95% Adjusted-CLT UCL (Chen-1995)	818523	97.5% Chebyshev (MVUE) UCL	1105919
95% Modified-t UCL (Johnson-1978)	814836	99% Chebyshev (MVUE) UCL	1333960

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	5.888	**Data appear Normal at 5% Significance Level**	
Theta Star	121893		
MLE of Mean	717711		
MLE of Standard Deviation	295777		
nu star	294.4		
Approximate Chi Square Value (.05)	255.7	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0395	95% CLT UCL	809775
Adjusted Chi Square Value	253.2	95% Jackknife UCL	813471
		95% Standard Bootstrap UCL	807051
Anderson-Darling Test Statistic	0.22	95% Bootstrap-t UCL	822860
Anderson-Darling 5% Critical Value	0.746	95% Hall's Bootstrap UCL	828971
Kolmogorov-Smirnov Test Statistic	0.0918	95% Percentile Bootstrap UCL	812766
Kolmogorov-Smirnov 5% Critical Value	0.175	95% BCA Bootstrap UCL	811262
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	961684
		97.5% Chebyshev(Mean, Sd) UCL	1067251
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1274617
95% Approximate Gamma UCL (Use when n >= 40)	826477		
95% Adjusted Gamma UCL (Use when n < 40)	834498		

Potential UCL to Use			
		Use 95% Student's-t UCL	813471

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

GROUPING: BLUE CRAB, OYSTER, WHITE SHRIMP (SIZE CLASS A)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	C:\Documents and Settings\sballard\My Documents\Projects\Patrick Bayou\2011\ECO RA\Wildlife Risk\ProUCL\Input Files\OYS_BCRA_WHSA.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (1,3-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	20	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	20
		Percent Non-Detects	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 Result_Value (1,3-dichlorobenzene_ug/kg) was not processed!

Result_Value (1,4-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	20	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	20
		Percent Non-Detects	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 Result_Value (1,4-dichlorobenzene_ug/kg) was not processed!

Result_Value (hexachlorobenzene_ug/kg)

General Statistics

Number of Valid Data	20	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	10
		Percent Non-Detects	50.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	191	Minimum Detected	5.252
Maximum Detected	5430	Maximum Detected	8.6
Mean of Detected	967.5	Mean of Detected	6.315
SD of Detected	1582	SD of Detected	0.917
Minimum Non-Detect	347	Minimum Non-Detect	5.849
Maximum Non-Detect	727	Maximum Non-Detect	6.589

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	18
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	2
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	90.00%

UCL Statistics

Normal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.486
5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level	
Assuming Normal Distribution	
DL/2 Substitution Method	
Mean	592.5
SD	1156
95% DL/2 (t) UCL	1039
Maximum Likelihood Estimate(MLE) Method	N/A
MLE method failed to converge properly	

Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.829
5% Shapiro Wilk Critical Value	0.842
Data not Lognormal at 5% Significance Level	
Assuming Lognormal Distribution	
DL/2 Substitution Method	
Mean	5.828
SD	0.828
95% H-Stat (DL/2) UCL	584.9
Log ROS Method	
Mean in Log Scale	5.888
SD in Log Scale	0.774
Mean in Original Scale	602.5
SD in Original Scale	1151
95% Percentile Bootstrap UCL	1105
95% BCA Bootstrap UCL	1410

Gamma Distribution Test with Detected Values Only	
k star (bias corrected)	0.786
Theta Star	1231
nu star	15.72
A-D Test Statistic	1.365
5% A-D Critical Value	0.748
K-S Test Statistic	0.748
5% K-S Critical Value	0.274
Data not Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	191
Maximum	5430
Mean	970.2
Median	967.1
SD	1088
k star	1.679
Theta star	577.7
Nu star	67.17
AppChi2	49.31
95% Gamma Approximate UCL	1322
95% Adjusted Gamma UCL	1355

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only	
Data do not follow a Discernable Distribution (0.05)	
Nonparametric Statistics	
Kaplan-Meier (KM) Method	
Mean	625.7
SD	1116
SE of Mean	264.1
95% KM (t) UCL	1082
95% KM (z) UCL	1060
95% KM (jackknife) UCL	1072
95% KM (bootstrap t) UCL	2788
95% KM (BCA) UCL	1119
95% KM (Percentile Bootstrap) UCL	1132
95% KM (Chebyshev) UCL	1777
97.5% KM (Chebyshev) UCL	2275
99% KM (Chebyshev) UCL	3253
Potential UCLs to Use	
95% KM (t) UCL	1082
95% KM (% Bootstrap) UCL	1132

Result_Value (hexachlorobutadiene_ug/kg)

General Statistics

Number of Valid Data	20	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	20
		Percent Non-Detects	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 Result_Value (hexachlorobutadiene_ug/kg) was not processed!

Result_Value (lead_mg/kg)

General Statistics

Number of Valid Observations	20	Number of Distinct Observations	20

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.092	Minimum of Log Data	-2.386
Maximum	0.518	Maximum of Log Data	-0.658
Mean	0.183	Mean of log Data	-1.837
Median	0.126	SD of log Data	0.503
SD	0.112		
Coefficient of Variation	0.616		
Skewness	1.761		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.757	Shapiro Wilk Test Statistic	0.858
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.226	95% H-UCL	0.228
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.271
95% Adjusted-CLT UCL	0.235	97.5% Chebyshev (MVUE) UCL	0.31
95% Modified-t UCL	0.228	99% Chebyshev (MVUE) UCL	0.388
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.28	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.0557		
MLE of Mean	0.183		
MLE of Standard Deviation	0.101		
nu star	131.2		
Approximate Chi Square Value (.05)	105.7	**Nonparametric Statistics**	
Adjusted Level of Significance	0.038	95% CLT UCL	0.224
Adjusted Chi Square Value	103.9	95% Jackknife UCL	0.226
		95% Standard Bootstrap UCL	0.223
Anderson-Darling Test Statistic	1.449	95% Bootstrap-t UCL	0.249
Anderson-Darling 5% Critical Value	0.746	95% Hall's Bootstrap UCL	0.237
Kolmogorov-Smirnov Test Statistic	0.236	95% Percentile Bootstrap UCL	0.225
Kolmogorov-Smirnov 5% Critical Value	0.195	95% BCA Bootstrap UCL	0.234
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.292
		97.5% Chebyshev(Mean, Sd) UCL	0.34
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.433
95% Approximate Gamma UCL	0.227		
95% Adjusted Gamma UCL	0.23		

Potential UCL to Use — Use 95% Chebyshev (Mean, Sd) UCL 0.292

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	20	Number of Distinct Observations	15

Raw Statistics

Minimum	0.009
Maximum	0.072
Mean	0.0474
Median	0.048
SD	0.0155
Coefficient of Variation	0.327
Skewness	-0.548

Log-transformed Statistics

Minimum of Log Data	-4.711
Maximum of Log Data	-2.631
Mean of log Data	-3.127
SD of log Data	0.461

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.96
Shapiro Wilk Critical Value	0.905

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.784
Shapiro Wilk Critical Value	0.905

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	0.0533

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	0.0526
95% Modified-t UCL	0.0533

Assuming Lognormal Distribution

95% H-UCL	0.0601
95% Chebyshev (MVUE) UCL	0.071
97.5% Chebyshev (MVUE) UCL	0.0807
99% Chebyshev (MVUE) UCL	0.0998

Gamma Distribution Test

k star (bias corrected)	5.728
Theta Star	0.00827
MLE of Mean	0.0474
MLE of Standard Deviation	0.0198
nu star	229.1
Approximate Chi Square Value (.05)	195.1
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	192.6
Anderson-Darling Test Statistic	0.796
Anderson-Darling 5% Critical Value	0.744
Kolmogorov-Smirnov Test Statistic	0.2
Kolmogorov-Smirnov 5% Critical Value	0.194

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL	0.0556
95% Adjusted Gamma UCL	0.0563

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	0.053
95% Jackknife UCL	0.0533
95% Standard Bootstrap UCL	0.0529
95% Bootstrap-t UCL	0.0532
95% Hall's Bootstrap UCL	0.0528
95% Percentile Bootstrap UCL	0.0528
95% BCA Bootstrap UCL	0.0525
95% Chebyshev(Mean, Sd) UCL	0.0624
97.5% Chebyshev(Mean, Sd) UCL	0.069
99% Chebyshev(Mean, Sd) UCL	0.0818

Potential UCL to Use

Use 95% Student's-t UCL 0.0533

Result_Value (total dioxin/furan teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	20
Number of Distinct Observations	20

Raw Statistics

Minimum	2.513
Maximum	44.76

Log-transformed Statistics

Minimum of Log Data	0.921
Maximum of Log Data	3.801

Blue Crab, Oyster, White Shrimp (Size Class A)

Mean	18.1
Median	17.57
SD	8.604
Coefficient of Variation	0.475
Skewness	1.308
Mean of log Data	2.769
SD of log Data	0.578

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical Value	0.905

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.857
Shapiro Wilk Critical Value	0.905

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	21.42

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	21.86
95% Modified-t UCL	21.52

Assuming Lognormal Distribution

95% H-UCL	24.89
95% Chebyshev (MVUE) UCL	29.69
97.5% Chebyshev (MVUE) UCL	34.45
99% Chebyshev (MVUE) UCL	43.82

Gamma Distribution Test

k star (bias corrected)	3.532
Theta Star	5.124
MLE of Mean	18.1
MLE of Standard Deviation	9.63
nu star	141.3
Approximate Chi Square Value (.05)	114.8
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	112.9
Anderson-Darling Test Statistic	0.634
Anderson-Darling 5% Critical Value	0.745
Kolmogorov-Smirnov Test Statistic	0.157
Kolmogorov-Smirnov 5% Critical Value	0.195

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL	22.27
95% Adjusted Gamma UCL	22.64

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	21.26
95% Jackknife UCL	21.42
95% Standard Bootstrap UCL	21.25
95% Bootstrap-t UCL	22.13
95% Hall's Bootstrap UCL	24.57
95% Percentile Bootstrap UCL	21.22
95% BCA Bootstrap UCL	21.86
95% Chebyshev(Mean, Sd) UCL	26.48
97.5% Chebyshev(Mean, Sd) UCL	30.11
99% Chebyshev(Mean, Sd) UCL	37.24

Potential UCL to Use

Use 95% Approximate Gamma UCL 22.27

Result_Value (total pah (16) (u = 1/2)_ug/kg)

General Statistics

Number of Valid Data	20	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	13
		Percent Non-Detects	65.00%

Raw Statistics

Minimum Detected	60.91
Maximum Detected	552.1
Mean of Detected	157.2
SD of Detected	178.3

Log-transformed Statistics

Minimum Detected	4.109
Maximum Detected	6.314
Mean of Detected	4.706
SD of Detected	0.803

Blue Crab, Oyster, White Shrimp (Size Class A)

Minimum Non-Detect	6.93	Minimum Non-Detect	1.936
Maximum Non-Detect	14.8	Maximum Non-Detect	2.695
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	13
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	65.00%

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.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.622	Shapiro Wilk Test Statistic	0.792
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	59.01	Mean	2.796
SD	124.5	SD	1.531
95% DL/2 (t) UCL	107.2	95% H-Stat (DL/2) UCL	69.93
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	2.988
		SD in Log Scale	1.405
		Mean in Original Scale	60.5
		SD in Original Scale	123.9
		95% Percentile Bootstrap UCL	110.2
		95% BCA Bootstrap UCL	136.1
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.992	**Data Follow Appr. Gamma Distribution at 5% Significance Level**	
Theta Star	158.5		
nu star	13.89		
A-D Test Statistic	0.892	**Nonparametric Statistics**	
5% A-D Critical Value	0.72	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.72	Mean	94.62
5% K-S Critical Value	0.317	SD	107.9
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	26.07
		95% KM (t) UCL	139.7
Assuming Gamma Distribution		95% KM (z) UCL	137.5
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	137.4
Minimum	60.91	95% KM (bootstrap t) UCL	316.1
Maximum	552.1	95% KM (BCA) UCL	148.3
Mean	157.3	95% KM (Percentile Bootstrap) UCL	143.3
Median	157.2	95% KM (Chebyshev) UCL	208.2
SD	104.7	97.5% KM (Chebyshev) UCL	257.4
k star	3.163	99% KM (Chebyshev) UCL	354
Theta star	49.72		
Nu star	126.5	**Potential UCLs to Use**	

AppChi2	101.5	95% KM (t) UCL	139.7
95% Gamma Approximate UCL	196		
95% Adjusted Gamma UCL	199.4		

Note: DL/2 is not a recommended method.

Result_Value (total pcb congener (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	20	Number of Distinct Observations	20

Raw Statistics		Log-transformed Statistics	
Minimum	228677	Minimum of Log Data	12.34
Maximum	1429439	Maximum of Log Data	14.17
Mean	703263	Mean of log Data	13.37
Median	677904	SD of log Data	0.448
SD	304128		
Coefficient of Variation	0.432		
Skewness	0.866		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.938	Shapiro Wilk Test Statistic	0.974
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	820853	95% H-UCL	869904
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1024356
95% Adjusted-CLT UCL	829190	97.5% Chebyshev (MVUE) UCL	1161945
95% Modified-t UCL	823047	99% Chebyshev (MVUE) UCL	1432211

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.858	**Data appear Normal at 5% Significance Level**	
Theta Star	144750		
MLE of Mean	703263		
MLE of Standard Deviation	319057		
nu star	194.3		
Approximate Chi Square Value (.05)	163.1	**Nonparametric Statistics**	
Adjusted Level of Significance	0.038	95% CLT UCL	815122
Adjusted Chi Square Value	160.8	95% Jackknife UCL	820853
		95% Standard Bootstrap UCL	810356
Anderson-Darling Test Statistic	0.236	95% Bootstrap-t UCL	838530
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	845932
Kolmogorov-Smirnov Test Statistic	0.108	95% Percentile Bootstrap UCL	819939
Kolmogorov-Smirnov 5% Critical Value	0.194	95% BCA Bootstrap UCL	829918
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	999691
		97.5% Chebyshev(Mean, Sd) UCL	1127955
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1379906
95% Approximate Gamma UCL	838028		
95% Adjusted Gamma UCL	849804		

Potential UCL to Use		Use 95% Student's-t UCL	820853

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Blue Crab, Oyster, White Shrimp (Size Class A)

Number of Valid Observations 20

Number of Distinct Observations 20

Raw Statistics

Minimum	97.57
Maximum	782.9
Mean	358.2
Median	321.9
SD	163.3
Coefficient of Variation	0.456
Skewness	1.225

Log-transformed Statistics

Minimum of Log Data	4.581
Maximum of Log Data	6.663
Mean of log Data	5.784
SD of log Data	0.467

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.888
Shapiro Wilk Critical Value	0.905

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.935
Shapiro Wilk Critical Value	0.905

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	421.3

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	428.9
95% Modified-t UCL	423

Assuming Lognormal Distribution

95% H-UCL	448.6
95% Chebyshev (MVUE) UCL	529.7
97.5% Chebyshev (MVUE) UCL	603.1
99% Chebyshev (MVUE) UCL	747.1

Gamma Distribution Test

k star (bias corrected)	4.53
Theta Star	79.06
MLE of Mean	358.2
MLE of Standard Deviation	168.3
nu star	181.2
Approximate Chi Square Value (.05)	151.1
Adjusted Level of Significance	0.038
Adjusted Chi Square Value	148.9
Anderson-Darling Test Statistic	0.549
Anderson-Darling 5% Critical Value	0.745
Kolmogorov-Smirnov Test Statistic	0.161
Kolmogorov-Smirnov 5% Critical Value	0.194

Data appear Gamma Distributed at 5% Significance Level

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL	429.6
95% Adjusted Gamma UCL	435.9

Nonparametric Statistics

95% CLT UCL	418.2
95% Jackknife UCL	421.3
95% Standard Bootstrap UCL	415.7
95% Bootstrap-t UCL	438
95% Hall's Bootstrap UCL	456.3
95% Percentile Bootstrap UCL	415.6
95% BCA Bootstrap UCL	427.7
95% Chebyshev(Mean, Sd) UCL	517.4
97.5% Chebyshev(Mean, Sd) UCL	586.3
99% Chebyshev(Mean, Sd) UCL	721.6

Potential UCL to Use

Use 95% Approximate Gamma UCL 429.6

GROUPING: BROWN SHRIMP

Brown Shrimp

General UCL Statistics for Datasets with Non-Detects

User Selected Options

From File	Sheet1_b.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total pcb congener (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	8	Number of Distinct Observations	8

Raw Statistics

Minimum	996653
Maximum	2192372
Mean	1716066
Geometric Mean	1658510
Median	1847710
SD	443301
Std. Error of Mean	156730
Coefficient of Variation	0.258
Skewness	-0.73

Log-transformed Statistics

Minimum of Log Data	13.81
Maximum of Log Data	14.6
Mean of log Data	14.32
SD of log Data	0.29

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this dataset, the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on datasets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.9
Shapiro Wilk Critical Value	0.818

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	2013004

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	1930652
95% Modified-t UCL (Johnson-1978)	2006264

Gamma Distribution Test

k star (bias corrected)	9.347
Theta Star	183603
MLE of Mean	1716066
MLE of Standard Deviation	561315
nu star	149.5
Approximate Chi Square Value (.05)	122.3
Adjusted Level of Significance	0.0195
Adjusted Chi Square Value	116
Anderson-Darling Test Statistic	0.498
Anderson-Darling 5% Critical Value	0.716
Kolmogorov-Smirnov Test Statistic	0.232
Kolmogorov-Smirnov 5% Critical Value	0.294

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	2098698
95% Adjusted Gamma UCL (Use when n < 40)	2211517

Potential UCL to Use

Use 95% Student's-t UCL 2013004

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.867
Shapiro Wilk Critical Value	0.818

Data appear Lognormal at 5% Significance Level

Assuming Lognormal Distribution

95% H-UCL	2165751
95% Chebyshev (MVUE) UCL	2493860
97.5% Chebyshev (MVUE) UCL	2828440
99% Chebyshev (MVUE) UCL	3485657

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	1973865
95% Jackknife UCL	2013004
95% Standard Bootstrap UCL	1952853
95% Bootstrap-t UCL	1970574
95% Hall's Bootstrap UCL	1916436
95% Percentile Bootstrap UCL	1951384
95% BCA Bootstrap UCL	1928821
95% Chebyshev(Mean, Sd) UCL	2399238
97.5% Chebyshev(Mean, Sd) UCL	2694847
99% Chebyshev(Mean, Sd) UCL	3275514

Brown Shrimp

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Note: For highly negative-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed datasets.

GROUPING: GULF KILLIFISH

Gulf Killifish Only

General UCL Statistics for Datasets with Non-Detects

User Selected Options

From File	Sheet1_c.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total pcb congener (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	25

Raw Statistics		**Log-transformed Statistics**	
Minimum	1964622	Minimum of Log Data	14.49
Maximum	8847995	Maximum of Log Data	16
Mean	5215609	Mean of log Data	15.42
Geometric Mean	4972742	SD of log Data	0.327
Median	5144332		
SD	1568411		
Std. Error of Mean	313682		
Coefficient of Variation	0.301		
Skewness	0.266		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.99	Shapiro Wilk Test Statistic	0.962
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	5752282	95% H-UCL	5929489
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	6756490
95% Adjusted-CLT UCL (Chen-1995)	5749406	97.5% Chebyshev (MVUE) UCL	7414908
95% Modified-t UCL (Johnson-1978)	5755064	99% Chebyshev (MVUE) UCL	8708242

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	9.398	**Data appear Normal at 5% Significance Level**	
Theta Star	554953		
MLE of Mean	5215609		
MLE of Standard Deviation	1701299		
nu star	469.9		
Approximate Chi Square Value (.05)	420.7	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0395	95% CLT UCL	5731570
Adjusted Chi Square Value	417.5	95% Jackknife UCL	5752282
		95% Standard Bootstrap UCL	5709166
Anderson-Darling Test Statistic	0.164	95% Bootstrap-t UCL	5782797
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	5788260
Kolmogorov-Smirnov Test Statistic	0.0718	95% Percentile Bootstrap UCL	5715854
Kolmogorov-Smirnov 5% Critical Value	0.174	95% BCA Bootstrap UCL	5731928
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	6582918
		97.5% Chebyshev(Mean, Sd) UCL	7174554
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	8336708
95% Approximate Gamma UCL (Use when n >= 40)	5826419		
95% Adjusted Gamma UCL (Use when n < 40)	5870672		

Potential UCL to Use		
	Use 95% Student's-t UCL	5752282

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Gulf Killifish Only

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	25

Raw Statistics		**Log-transformed Statistics**	
Minimum	270.7	Minimum of Log Data	5.601
Maximum	1173	Maximum of Log Data	7.067
Mean	794.6	Mean of log Data	6.635
Geometric Mean	761.1	SD of log Data	0.32
Median	792.8		
SD	214.9		
Std. Error of Mean	42.99		
Coefficient of Variation	0.27		
Skewness	-0.349		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.982	Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	868.2	95% H-UCL	902.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1027
95% Adjusted-CLT UCL (Chen-1995)	862.1	97.5% Chebyshev (MVUE) UCL	1125
95% Modified-t UCL (Johnson-1978)	867.7	99% Chebyshev (MVUE) UCL	1318

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	10.38	**Data appear Normal at 5% Significance Level**	
Theta Star	76.54		
MLE of Mean	794.6		
MLE of Standard Deviation	246.6		
nu star	519.1		
Approximate Chi Square Value (.05)	467.2	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0395	95% CLT UCL	865.3
Adjusted Chi Square Value	463.9	95% Jackknife UCL	868.2
		95% Standard Bootstrap UCL	864.9
Anderson-Darling Test Statistic	0.406	95% Bootstrap-t UCL	862.8
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	861.6
Kolmogorov-Smirnov Test Statistic	0.142	95% Percentile Bootstrap UCL	865.5
Kolmogorov-Smirnov 5% Critical Value	0.174	95% BCA Bootstrap UCL	862.1
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	982
		97.5% Chebyshev(Mean, Sd) UCL	1063
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1222
95% Approximate Gamma UCL (Use when n >= 40)	882.8		
95% Adjusted Gamma UCL (Use when n < 40)	889.2		

Potential UCL to Use		
	Use 95% Student's-t UCL	868.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Note: For highly negative-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed datasets.

Gulf Killifish Only

Result_Value (total pcb congener teq 2005 (mammal) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	25

Raw Statistics		**Log-transformed Statistics**	
Minimum	15.6	Minimum of Log Data	2.747
Maximum	137.1	Maximum of Log Data	4.921
Mean	77.42	Mean of log Data	4.261
Geometric Mean	70.85	SD of log Data	0.482
Median	80.9		
SD	28.09		
Std. Error of Mean	5.618		
Coefficient of Variation	0.363		
Skewness	-0.237		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.98	Shapiro Wilk Test Statistic	0.852
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	87.03	95% H-UCL	96.33
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	113.7
95% Adjusted-CLT UCL (Chen-1995)	86.38	97.5% Chebyshev (MVUE) UCL	128.6
95% Modified-t UCL (Johnson-1978)	86.99	99% Chebyshev (MVUE) UCL	158

Gamma Distribution Test		**Data Distribution**
k star (bias corrected)	5.129	**Data appear Normal at 5% Significance Level**
Theta Star	15.1	
MLE of Mean	77.42	
MLE of Standard Deviation	34.19	
nu star	256.4	
Approximate Chi Square Value (.05)	220.4	**Nonparametric Statistics**
Adjusted Level of Significance	0.0395	95% CLT UCL 86.66
Adjusted Chi Square Value	218.1	95% Jackknife UCL 87.03
		95% Standard Bootstrap UCL 86.64
Anderson-Darling Test Statistic	0.787	95% Bootstrap-t UCL 86.82
Anderson-Darling 5% Critical Value	0.747	95% Hall's Bootstrap UCL 87.06
Kolmogorov-Smirnov Test Statistic	0.149	95% Percentile Bootstrap UCL 86.53
Kolmogorov-Smirnov 5% Critical Value	0.175	95% BCA Bootstrap UCL 85.91
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL 101.9
		97.5% Chebyshev(Mean, Sd) UCL 112.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL 133.3
95% Approximate Gamma UCL (Use when n >= 40)	90.1	
95% Adjusted Gamma UCL (Use when n < 40)	91.04	

Potential UCL to Use		
		Use 95% Student's-t UCL 87.03

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Note: For highly negative-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed datasets.

Gulf Killifish Only

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	21

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.025	Minimum of Log Data	-3.689
Maximum	0.109	Maximum of Log Data	-2.216
Mean	0.0524	Mean of log Data	-3.042
Geometric Mean	0.0477	SD of log Data	0.43
Median	0.044		
SD	0.0242		
Std. Error of Mean	0.00485		
Coefficient of Variation	0.463		
Skewness	1.097		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.871	Shapiro Wilk Test Statistic	0.944
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0607	95% H-UCL	0.0619
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0723
95% Adjusted-CLT UCL (Chen-1995)	0.0615	97.5% Chebyshev (MVUE) UCL	0.0811
95% Modified-t UCL (Johnson-1978)	0.0608	99% Chebyshev (MVUE) UCL	0.0982

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.929	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	0.0106		
MLE of Mean	0.0524		
MLE of Standard Deviation	0.0236		
nu star	246.5		
Approximate Chi Square Value (.05)	211.1	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0395	95% CLT UCL	0.0603
Adjusted Chi Square Value	208.9	95% Jackknife UCL	0.0607
		95% Standard Bootstrap UCL	0.0602
Anderson-Darling Test Statistic	0.639	95% Bootstrap-t UCL	0.0625
Anderson-Darling 5% Critical Value	0.747	95% Hall's Bootstrap UCL	0.0612
Kolmogorov-Smirnov Test Statistic	0.162	95% Percentile Bootstrap UCL	0.0603
Kolmogorov-Smirnov 5% Critical Value	0.175	95% BCA Bootstrap UCL	0.0618
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0735
		97.5% Chebyshev(Mean, Sd) UCL	0.0826
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.101
95% Approximate Gamma UCL (Use when n >= 40)	0.0611		
95% Adjusted Gamma UCL (Use when n < 40)	0.0618		

Potential UCL to Use		
	Use 95% Approximate Gamma UCL	0.0611

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Gulf Killifish Only

Result_Value (total pcb congener teq 1998 (fish) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	23

Raw Statistics		**Log-transformed Statistics**	
Minimum	2.2	Minimum of Log Data	0.788
Maximum	9.7	Maximum of Log Data	2.272
Mean	6.553	Mean of log Data	1.824
Geometric Mean	6.198	SD of log Data	0.363
Median	6.9		
SD	2.013		
Std. Error of Mean	0.403		
Coefficient of Variation	0.307		
Skewness	-0.319		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.968	Shapiro Wilk Test Statistic	0.907
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	7.242	95% H-UCL	7.598
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.741
95% Adjusted-CLT UCL (Chen-1995)	7.188	97.5% Chebyshev (MVUE) UCL	9.666
95% Modified-t UCL (Johnson-1978)	7.238	99% Chebyshev (MVUE) UCL	11.48

Gamma Distribution Test		**Data Distribution**
k star (bias corrected)	8.061	**Data appear Normal at 5% Significance Level**
Theta Star	0.813	
MLE of Mean	6.553	
MLE of Standard Deviation	2.308	
nu star	403	
Approximate Chi Square Value (.05)	357.5	**Nonparametric Statistics**
Adjusted Level of Significance	0.0395	95% CLT UCL 7.216
Adjusted Chi Square Value	354.6	95% Jackknife UCL 7.242
		95% Standard Bootstrap UCL 7.201
Anderson-Darling Test Statistic	0.5	95% Bootstrap-t UCL 7.228
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL 7.217
Kolmogorov-Smirnov Test Statistic	0.143	95% Percentile Bootstrap UCL 7.187
Kolmogorov-Smirnov 5% Critical Value	0.175	95% BCA Bootstrap UCL 7.161
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL 8.308
		97.5% Chebyshev(Mean, Sd) UCL 9.068
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL 10.56
95% Approximate Gamma UCL (Use when n >= 40)	7.388	
95% Adjusted Gamma UCL (Use when n < 40)	7.449	

Potential UCL to Use	
Use 95% Student's-t UCL	7.242

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Note: For highly negative-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

GROUPING: GULF KILLIFISH, GULF MENHADEN, STRIPED MULLET, PINFISH, SAND SEATROUT

General UCL Statistics for Datasets with Non-Detects

User Selected Options

From File	Sheet1_d.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (1,3-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	50	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	50
		Percent Non-Detects	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 dataset for variable Result_Value (1,3-dichlorobenzene_ug/kg) was not processed!

Result_Value (hexachlorobenzene_ug/kg)

General Statistics

Number of Valid Data	50	Number of Detected Data	28
Number of Distinct Detected Data	27	Number of Non-Detect Data	22
		Percent Non-Detects	44.00%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	200	Minimum Detected	5.298
Maximum Detected	2360	Maximum Detected	7.766
Mean of Detected	680	Mean of Detected	6.28
SD of Detected	576.9	SD of Detected	0.66
Minimum Non-Detect	351	Minimum Non-Detect	5.861
Maximum Non-Detect	765	Maximum Non-Detect	6.64

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	43
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	86.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.709	Shapiro Wilk Test Statistic	0.923
5% Shapiro Wilk Critical Value	0.924	5% Shapiro Wilk Critical Value	0.924
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	519.2	Mean	6.029
SD	468.9	SD	0.603
95% DL/2 (t) UCL	630.3	95% H-Stat (DL/2) UCL	590.3
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	6.056
		SD in Log Scale	0.573
		Mean in Original Scale	525.4
		SD in Original Scale	465.4
		95% t UCL	635.7
		95% Percentile Bootstrap UCL	643.2
		95% BCA Bootstrap UCL	676.8
		95% H-UCL	589.2

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**
k star (bias corrected)	2.004	**Data do not follow a Discernable Distribution (0.05)**
Theta Star	339.3	
nu star	112.2	
A-D Test Statistic	1.384	**Nonparametric Statistics**
5% A-D Critical Value	0.757	Kaplan-Meier (KM) Method

K-S Test Statistic	0.757	Mean	528.3
5% K-S Critical Value	0.167	SD	463.9
Data not Gamma Distributed at 5% Significance Level		SE of Mean	68.18
		95% KM (t) UCL	642.6
Assuming Gamma Distribution		95% KM (z) UCL	640.4
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	641.9
Minimum	98.03	95% KM (bootstrap t) UCL	698.8
Maximum	2360	95% KM (BCA) UCL	645.9
Mean	546.6	95% KM (Percentile Bootstrap) UCL	646.4
Median	474.4	95% KM (Chebyshev) UCL	825.5
SD	470.9	97.5% KM (Chebyshev) UCL	954.1
k star	1.973	99% KM (Chebyshev) UCL	1207
Theta star	277		
Nu star	197.3	**Potential UCLs to Use**	
AppChi2	165.8	95% KM (t) UCL	642.6
95% Gamma Approximate UCL (Use when n >= 40)	650.4	95% KM (% Bootstrap) UCL	646.4
95% Adjusted Gamma UCL (Use when n < 40)	653.8		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	50	Number of Distinct Observations	37

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.024	Minimum of Log Data	-3.73
Maximum	0.199	Maximum of Log Data	-1.614
Mean	0.0643	Mean of log Data	-2.904
Geometric Mean	0.0548	SD of log Data	0.551
Median	0.0465		
SD	0.0406		
Std. Error of Mean	0.00575		
Coefficient of Variation	0.632		
Skewness	1.635		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.82	Shapiro Wilk Test Statistic	0.944
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0739	95% H-UCL	0.0743
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0865
95% Adjusted-CLT UCL (Chen-1995)	0.0752	97.5% Chebyshev (MVUE) UCL	0.0964
95% Modified-t UCL (Johnson-1978)	0.0742	99% Chebyshev (MVUE) UCL	0.116
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.111	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.0207		
MLE of Mean	0.0643		
MLE of Standard Deviation	0.0365		
nu star	311.1		
Approximate Chi Square Value (.05)	271.2	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0452	95% CLT UCL	0.0738
Adjusted Chi Square Value	270.1	95% Jackknife UCL	0.0739
		95% Standard Bootstrap UCL	0.0736
Anderson-Darling Test Statistic	1.152	95% Bootstrap-t UCL	0.0757
Anderson-Darling 5% Critical Value	0.756	95% Hall's Bootstrap UCL	0.0757
Kolmogorov-Smirnov Test Statistic	0.157	95% Percentile Bootstrap UCL	0.0749
Kolmogorov-Smirnov 5% Critical Value	0.126	95% BCA Bootstrap UCL	0.0744
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0893
		97.5% Chebyshev(Mean, Sd) UCL	0.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.121
95% Approximate Gamma UCL (Use when n >= 40)	0.0738		
95% Adjusted Gamma UCL (Use when n < 40)	0.0741		

Potential UCL to Use	Use 95% Chebyshev (Mean, Sd) UCL 0.0893

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 1998 (fish) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	50	Number of Distinct Observations	43

Raw Statistics		Log-transformed Statistics	
Minimum	0.6	Minimum of Log Data	-0.511
Maximum	9.7	Maximum of Log Data	2.272
Mean	4.541	Mean of log Data	1.314
Geometric Mean	3.721	SD of log Data	0.689
Median	3.95		
SD	2.607		
Std. Error of Mean	0.369		
Coefficient of Variation	0.574		
Skewness	0.414		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.928	Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	5.159	95% H-UCL	5.764
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	6.869
95% Adjusted-CLT UCL (Chen-1995)	5.17	97.5% Chebyshev (MVUE) UCL	7.811
95% Modified-t UCL (Johnson-1978)	5.163	99% Chebyshev (MVUE) UCL	9.661

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.52	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	1.802		
MLE of Mean	4.541		
MLE of Standard Deviation	2.86		
nu star	252		
Approximate Chi Square Value (.05)	216.3	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0452	95% CLT UCL	5.147
Adjusted Chi Square Value	215.3	95% Jackknife UCL	5.159
		95% Standard Bootstrap UCL	5.128
Anderson-Darling Test Statistic	0.489	95% Bootstrap-t UCL	5.182
Anderson-Darling 5% Critical Value	0.759	95% Hall's Bootstrap UCL	5.171
Kolmogorov-Smirnov Test Statistic	0.0954	95% Percentile Bootstrap UCL	5.167
Kolmogorov-Smirnov 5% Critical Value	0.126	95% BCA Bootstrap UCL	5.194
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	6.148
		97.5% Chebyshev(Mean, Sd) UCL	6.844
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	8.21
95% Approximate Gamma UCL (Use when n >= 40)	5.292		
95% Adjusted Gamma UCL (Use when n < 40)	5.316		

Potential UCL to Use	Use 95% Approximate Gamma UCL 5.292

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	50	Number of Distinct Observations	50

Raw Statistics		Log-transformed Statistics	
Minimum	596176	Minimum of Log Data	13.3
Maximum	8847995	Maximum of Log Data	16
Mean	3872225	Mean of log Data	15.04
Geometric Mean	3391635	SD of log Data	0.551
Median	3898513		

Gulf Killifish, Gulf Menhaden, Striped Mullet, Pinfish, Sand Seatrout

SD	1887270
Std. Error of Mean	266900
Coefficient of Variation	0.487
Skewness	0.535

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.96
Shapiro Wilk Critical Value	0.947

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	4319697

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	4332797
95% Modified-t UCL (Johnson-1978)	4323060

Gamma Distribution Test

k star (bias corrected)	3.709
Theta Star	1043886
MLE of Mean	3872225
MLE of Standard Deviation	2010513
nu star	370.9
Approximate Chi Square Value (.05)	327.3
Adjusted Level of Significance	0.0452
Adjusted Chi Square Value	326.1
Anderson-Darling Test Statistic	0.302
Anderson-Darling 5% Critical Value	0.754
Kolmogorov-Smirnov Test Statistic	0.0887
Kolmogorov-Smirnov 5% Critical Value	0.126

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	4388468
95% Adjusted Gamma UCL (Use when n < 40)	4404777

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.962
Shapiro Wilk Critical Value	0.947

Data appear Lognormal at 5% Significance Level

Assuming Lognormal Distribution

95% H-UCL	4594363
95% Chebyshev (MVUE) UCL	5351061
97.5% Chebyshev (MVUE) UCL	5964232
99% Chebyshev (MVUE) UCL	7168686

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	4311237
95% Jackknife UCL	4319697
95% Standard Bootstrap UCL	4305645
95% Bootstrap-t UCL	4337908
95% Hall's Bootstrap UCL	4366124
95% Percentile Bootstrap UCL	4298829
95% BCA Bootstrap UCL	4329279
95% Chebyshev(Mean, Sd) UCL	5035616
97.5% Chebyshev(Mean, Sd) UCL	5539017
99% Chebyshev(Mean, Sd) UCL	6527849

Potential UCL to Use

Use 95% Student's-t UCL 4319697

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

GROUPING: GULF KILLIFISH, STRIPED MULLET, PINFISH, SAND SEATROUT

Gulf Killifish, Striped Mullet, Pinfish, Sand Seatrout

General UCL Statistics for Datasets with Non-Detects

User Selected Options

From File	Sheet1_e.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	40	Number of Distinct Observations	30

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.024	Minimum of Log Data	-3.73
Maximum	0.122	Maximum of Log Data	-2.104
Mean	0.0513	Mean of log Data	-3.071
Geometric Mean	0.0464	SD of log Data	0.444
Median	0.044		
SD	0.0252		
Std. Error of Mean	0.00398		
Coefficient of Variation	0.491		
Skewness	1.247		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.853	Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical Value	0.94	Shapiro Wilk Critical Value	0.94
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.058	95% H-UCL	0.0585
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0672
95% Adjusted-CLT UCL (Chen-1995)	0.0587	97.5% Chebyshev (MVUE) UCL	0.0742
95% Modified-t UCL (Johnson-1978)	0.0582	99% Chebyshev (MVUE) UCL	0.088
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.719	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.0109		
MLE of Mean	0.0513		
MLE of Standard Deviation	0.0236		
nu star	377.5		
Approximate Chi Square Value (.05)	333.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.044	95% CLT UCL	0.0579
Adjusted Chi Square Value	332	95% Jackknife UCL	0.058
		95% Standard Bootstrap UCL	0.0578
Anderson-Darling Test Statistic	1.083	95% Bootstrap-t UCL	0.0589
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL	0.0592
Kolmogorov-Smirnov Test Statistic	0.168	95% Percentile Bootstrap UCL	0.0581
Kolmogorov-Smirnov 5% Critical Value	0.14	95% BCA Bootstrap UCL	0.0586
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0687
		97.5% Chebyshev(Mean, Sd) UCL	0.0762
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.091
95% Approximate Gamma UCL (Use when n >= 40)	0.0581		
95% Adjusted Gamma UCL (Use when n < 40)	0.0584		

Potential UCL to Use	
Use 95% Student's-t UCL	0.058
or 95% Modified-t UCL	0.0582

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

GROUPING: GULF MENHADEN

Gulf Menhaden

General UCL Statistics for Datasets with Non-Detects

User Selected Options

From File	Sheet1_f.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	9

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.068	Minimum of Log Data	-2.688
Maximum	0.199	Maximum of Log Data	-1.614
Mean	0.116	Mean of log Data	-2.233
Geometric Mean	0.107	SD of log Data	0.42
Median	0.097		
SD	0.0499		
Std. Error of Mean	0.0158		
Coefficient of Variation	0.43		
Skewness	0.64		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.851	Shapiro Wilk Test Statistic	0.862
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.145	95% H-UCL	0.157
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.184
95% Adjusted-CLT UCL (Chen-1995)	0.146	97.5% Chebyshev (MVUE) UCL	0.213
95% Modified-t UCL (Johnson-1978)	0.146	99% Chebyshev (MVUE) UCL	0.271
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.514	**Data appear Normal at 5% Significance Level**	
Theta Star	0.0257		
MLE of Mean	0.116		
MLE of Standard Deviation	0.0547		
nu star	90.28		
Approximate Chi Square Value (.05)	69.37	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.142
Adjusted Chi Square Value	66.19	95% Jackknife UCL	0.145
		95% Standard Bootstrap UCL	0.14
Anderson-Darling Test Statistic	0.677	95% Bootstrap-t UCL	0.153
Anderson-Darling 5% Critical Value	0.728	95% Hall's Bootstrap UCL	0.142
Kolmogorov-Smirnov Test Statistic	0.29	95% Percentile Bootstrap UCL	0.141
Kolmogorov-Smirnov 5% Critical Value	0.267	95% BCA Bootstrap UCL	0.144
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.185
		97.5% Chebyshev(Mean, Sd) UCL	0.215
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.273
95% Approximate Gamma UCL (Use when n >= 40)	0.151		
95% Adjusted Gamma UCL (Use when n < 40)	0.158		
Potential UCL to Use		Use 95% Student's-t UCL	0.145

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

GROUPING: GULF MENHADEN, STRIPED MULLET, PINFISH, SAND SEATROUT

Gulf Menhaden, Striped Mullet, Pinfish, Sand Seatrout

General UCL Statistics for Datasets with Non-Detects

User Selected Options

From File	Sheet1_g.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total pcb congener (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	25

Raw Statistics		**Log-transformed Statistics**	
Minimum	596176	Minimum of Log Data	13.3
Maximum	4538571	Maximum of Log Data	15.33
Mean	2528842	Mean of log Data	14.65
Geometric Mean	2313249	SD of log Data	0.456
Median	2310205		
SD	1025826		
Std. Error of Mean	205165		
Coefficient of Variation	0.406		
Skewness	0.429		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.954	Shapiro Wilk Test Statistic	0.939
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	2879855	95% H-UCL	3068891
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3604346
95% Adjusted-CLT UCL (Chen-1995)	2885105	97.5% Chebyshev (MVUE) UCL	4058543
95% Modified-t UCL (Johnson-1978)	2882787	99% Chebyshev (MVUE) UCL	4950724

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	5.107	**Data appear Normal at 5% Significance Level**	
Theta Star	495210		
MLE of Mean	2528842		
MLE of Standard Deviation	1119065		
nu star	255.3		
Approximate Chi Square Value (.05)	219.3	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0395	95% CLT UCL	2866309
Adjusted Chi Square Value	217.1	95% Jackknife UCL	2879855
		95% Standard Bootstrap UCL	2857615
Anderson-Darling Test Statistic	0.259	95% Bootstrap-t UCL	2908346
Anderson-Darling 5% Critical Value	0.747	95% Hall's Bootstrap UCL	2889135
Kolmogorov-Smirnov Test Statistic	0.104	95% Percentile Bootstrap UCL	2848567
Kolmogorov-Smirnov 5% Critical Value	0.175	95% BCA Bootstrap UCL	2883986
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3423136
		97.5% Chebyshev(Mean, Sd) UCL	3810098
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4570210
95% Approximate Gamma UCL (Use when n >= 40)	2943900		
95% Adjusted Gamma UCL (Use when n < 40)	2974704		

Potential UCL to Use	
Use 95% Student's-t UCL	2879855

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Gulf Menhaden, Striped Mullet, Pinfish, Sand Seatrout

Number of Valid Observations	25	Number of Distinct Observations	25

Raw Statistics

Minimum	77.5
Maximum	789.3
Mean	337.9
Geometric Mean	277.2
Median	273.1
SD	207.7
Std. Error of Mean	41.55
Coefficient of Variation	0.615
Skewness	0.845

Log-transformed Statistics

Minimum of Log Data	4.35
Maximum of Log Data	6.671
Mean of log Data	5.625
SD of log Data	0.671

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.905
Shapiro Wilk Critical Value	0.918

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.953
Shapiro Wilk Critical Value	0.918

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	409

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	413.7
95% Modified-t UCL (Johnson-1978)	410.1

Assuming Lognormal Distribution

95% H-UCL	464.2
95% Chebyshev (MVUE) UCL	558.8
97.5% Chebyshev (MVUE) UCL	652
99% Chebyshev (MVUE) UCL	834.9

Gamma Distribution Test

k star (bias corrected)	2.386
Theta Star	141.6
MLE of Mean	337.9
MLE of Standard Deviation	218.8
nu star	119.3
Approximate Chi Square Value (.05)	95.07
Adjusted Level of Significance	0.0395
Adjusted Chi Square Value	93.6
Anderson-Darling Test Statistic	0.313
Anderson-Darling 5% Critical Value	0.753
Kolmogorov-Smirnov Test Statistic	0.125
Kolmogorov-Smirnov 5% Critical Value	0.176

Data appear Gamma Distributed at 5% Significance Level

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	424
95% Adjusted Gamma UCL (Use when n < 40)	430.6

Nonparametric Statistics

95% CLT UCL	406.2
95% Jackknife UCL	409
95% Standard Bootstrap UCL	403.9
95% Bootstrap-t UCL	420.5
95% Hall's Bootstrap UCL	413.9
95% Percentile Bootstrap UCL	407.3
95% BCA Bootstrap UCL	413
95% Chebyshev(Mean, Sd) UCL	519
97.5% Chebyshev(Mean, Sd) UCL	597.4
99% Chebyshev(Mean, Sd) UCL	751.3

Potential UCL to Use

Use 95% Approximate Gamma UCL 424

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 2005 (mammal) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	25

Raw Statistics

Minimum	3.63
Maximum	51.5
Mean	27.24
Geometric Mean	22.63
Median	26.7
SD	13.74
Std. Error of Mean	2.748
Coefficient of Variation	0.504

Log-transformed Statistics

Minimum of Log Data	1.289
Maximum of Log Data	3.942
Mean of log Data	3.119
SD of log Data	0.718

Gulf Menhaden, Striped Mullet, Pinfish, Sand Seatrout

Skewness 0.0618

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic 0.968
Shapiro Wilk Critical Value 0.918
Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL 31.94

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995) 31.8
95% Modified-t UCL (Johnson-1978) 31.95

Gamma Distribution Test

k star (bias corrected) 2.535
Theta Star 10.75
MLE of Mean 27.24
MLE of Standard Deviation 17.11
nu star 126.7
Approximate Chi Square Value (.05) 101.7
Adjusted Level of Significance 0.0395
Adjusted Chi Square Value 100.2

Anderson-Darling Test Statistic 0.644
Anderson-Darling 5% Critical Value 0.752
Kolmogorov-Smirnov Test Statistic 0.137
Kolmogorov-Smirnov 5% Critical Value 0.176
Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40) 33.93
95% Adjusted Gamma UCL (Use when n < 40) 34.45

Potential UCL to Use

Lognormal Distribution Test

Shapiro Wilk Test Statistic 0.854
Shapiro Wilk Critical Value 0.918
Data not Lognormal at 5% Significance Level

Assuming Lognormal Distribution

95% H-UCL 40.22
95% Chebyshev (MVUE) UCL 48.45
97.5% Chebyshev (MVUE) UCL 56.91
99% Chebyshev (MVUE) UCL 73.52

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL 31.76
95% Jackknife UCL 31.94
95% Standard Bootstrap UCL 31.66
95% Bootstrap-t UCL 31.77
95% Hall's Bootstrap UCL 31.85
95% Percentile Bootstrap UCL 31.55
95% BCA Bootstrap UCL 31.7
95% Chebyshev(Mean, Sd) UCL 39.22
97.5% Chebyshev(Mean, Sd) UCL 44.4
99% Chebyshev(Mean, Sd) UCL 54.58

Use 95% Student's-t UCL 31.94

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Gulf Menhaden, Striped Mullet, Pinfish, Sand Seatrout

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	23

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.024	Minimum of Log Data	-3.73
Maximum	0.199	Maximum of Log Data	-1.614
Mean	0.0762	Mean of log Data	-2.765
Geometric Mean	0.063	SD of log Data	0.628
Median	0.068		
SD	0.0499		
Std. Error of Mean	0.00997		
Coefficient of Variation	0.654		
Skewness	1.162		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.863	Shapiro Wilk Test Statistic	0.954
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0933	95% H-UCL	0.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.12
95% Adjusted-CLT UCL (Chen-1995)	0.0951	97.5% Chebyshev (MVUE) UCL	0.139
95% Modified-t UCL (Johnson-1978)	0.0937	99% Chebyshev (MVUE) UCL	0.177

Gamma Distribution Test		**Data Distribution**
k star (bias corrected)	2.465	**Data appear Gamma Distributed at 5% Significance Level**
Theta Star	0.0309	
MLE of Mean	0.0762	
MLE of Standard Deviation	0.0486	
nu star	123.2	
Approximate Chi Square Value (.05)	98.6	**Nonparametric Statistics**
Adjusted Level of Significance	0.0395	95% CLT UCL 0.0926
Adjusted Chi Square Value	97.1	95% Jackknife UCL 0.0933
		95% Standard Bootstrap UCL 0.0921
Anderson-Darling Test Statistic	0.506	95% Bootstrap-t UCL 0.0986
Anderson-Darling 5% Critical Value	0.752	95% Hall's Bootstrap UCL 0.0957
Kolmogorov-Smirnov Test Statistic	0.144	95% Percentile Bootstrap UCL 0.0938
Kolmogorov-Smirnov 5% Critical Value	0.176	95% BCA Bootstrap UCL 0.0946
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL 0.12
		97.5% Chebyshev(Mean, Sd) UCL 0.139
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL 0.175
95% Approximate Gamma UCL (Use when n >= 40)	0.0953	
95% Adjusted Gamma UCL (Use when n < 40)	0.0968	

Potential UCL to Use		
		Use 95% Approximate Gamma UCL 0.0953

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

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Result_Value (total pcb congener teq 1998 (fish) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	22

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.6	Minimum of Log Data	-0.511
Maximum	5.1	Maximum of Log Data	1.629
Mean	2.528	Mean of log Data	0.804
Geometric Mean	2.234	SD of log Data	0.544
Median	2.4		
SD	1.179		
Std. Error of Mean	0.236		
Coefficient of Variation	0.466		
Skewness	0.453		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.962	Shapiro Wilk Test Statistic	0.933
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	2.932	95% H-UCL	3.234
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.853
95% Adjusted-CLT UCL (Chen-1995)	2.939	97.5% Chebyshev (MVUE) UCL	4.406
95% Modified-t UCL (Johnson-1978)	2.935	99% Chebyshev (MVUE) UCL	5.494

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.726	**Data appear Normal at 5% Significance Level**	
Theta Star	0.679		
MLE of Mean	2.528		
MLE of Standard Deviation	1.31		
nu star	186.3		
Approximate Chi Square Value (.05)	155.7	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0395	95% CLT UCL	2.916
Adjusted Chi Square Value	153.8	95% Jackknife UCL	2.932
		95% Standard Bootstrap UCL	2.911
Anderson-Darling Test Statistic	0.296	95% Bootstrap-t UCL	2.95
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	2.951
Kolmogorov-Smirnov Test Statistic	0.126	95% Percentile Bootstrap UCL	2.909
Kolmogorov-Smirnov 5% Critical Value	0.175	95% BCA Bootstrap UCL	2.917
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.556
		97.5% Chebyshev(Mean, Sd) UCL	4.001
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.875
95% Approximate Gamma UCL (Use when n >= 40)	3.025		
95% Adjusted Gamma UCL (Use when n < 40)	3.062		

Potential UCL to Use	
Use 95% Student's-t UCL	2.932

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

GROUPING: GULF MENHADEN, STRIPED MULLET

Gulf Menhaden, Striped Mullet

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	19	Number of Distinct Observations	19

Raw Statistics

Minimum	103.7
Maximum	789.3
Mean	405.1
Geometric Mean	361.9
Median	426.7
SD	192.8
Std. Error of Mean	44.24
Coefficient of Variation	0.476
Skewness	0.78

Log-transformed Statistics

Minimum of Log Data	4.642
Maximum of Log Data	6.671
Mean of log Data	5.891
SD of log Data	0.506

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.911
Shapiro Wilk Critical Value	0.901

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.949
Shapiro Wilk Critical Value	0.901

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	481.8

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	486.3
95% Modified-t UCL (Johnson-1978)	483.1

Assuming Lognormal Distribution

95% H-UCL	523.2
95% Chebyshev (MVUE) UCL	622.6
97.5% Chebyshev (MVUE) UCL	715.3
99% Chebyshev (MVUE) UCL	897.5

Gamma Distribution Test

k star (bias corrected)	3.902
Theta Star	103.8
MLE of Mean	405.1
MLE of Standard Deviation	205.1
nu star	148.3
Approximate Chi Square Value (.05)	121.1
Adjusted Level of Significance	0.0369
Adjusted Chi Square Value	119
Anderson-Darling Test Statistic	0.379

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	477.9
95% Jackknife UCL	481.8
95% Standard Bootstrap UCL	474.7
95% Bootstrap-t UCL	497.2

Gulf Menhaden, Striped Mullet

Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	493.7
Kolmogorov-Smirnov Test Statistic	0.132	95% Percentile Bootstrap UCL	474.9
Kolmogorov-Smirnov 5% Critical Value	0.199	95% BCA Bootstrap UCL	480.9
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	597.9
		97.5% Chebyshev(Mean, Sd) UCL	681.3
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	845.2
95% Approximate Gamma UCL (Use when n >= 40)	495.9		
95% Adjusted Gamma UCL (Use when n < 40)	504.8		
Potential UCL to Use		Use 95% Student's-t UCL	481.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

GROUPING: PINFISH, SAND SEATROUT

Pinfish, Sand Seatrout

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	6	Number of Distinct Observations	6

Raw Statistics

Minimum	77.5
Maximum	188.1
Mean	125.1
Geometric Mean	119.2
Median	123.8
SD	42.2
Std. Error of Mean	17.23
Coefficient of Variation	0.337
Skewness	0.424

Log-transformed Statistics

Minimum of Log Data	4.35
Maximum of Log Data	5.237
Mean of log Data	4.781
SD of log Data	0.341

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!

If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data

Note: It should be noted that even though bootstrap methods may be performed on this data set,

the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.932
Shapiro Wilk Critical Value	0.788

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.943
Shapiro Wilk Critical Value	0.788

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	159.8

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	156.6

Assuming Lognormal Distribution

95% H-UCL	179.4
95% Chebyshev (MVUE) UCL	201
97.5% Chebyshev (MVUE) UCL	233.8

Pinfish, Sand Seatrout

95% Modified-t UCL (Johnson-1978)	160.3
99% Chebyshev (MVUE) UCL	298.3

Gamma Distribution Test

k star (bias corrected)	5.394
Theta Star	23.19
MLE of Mean	125.1
MLE of Standard Deviation	53.85
nu star	64.73
Approximate Chi Square Value (.05)	47.22
Adjusted Level of Significance	0.0122
Adjusted Chi Square Value	41.87
Anderson-Darling Test Statistic	0.302
Anderson-Darling 5% Critical Value	0.698
Kolmogorov-Smirnov Test Statistic	0.224
Kolmogorov-Smirnov 5% Critical Value	0.332

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	171.4
95% Adjusted Gamma UCL (Use when n < 40)	193.3

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	153.4
95% Jackknife UCL	159.8
95% Standard Bootstrap UCL	150.1
95% Bootstrap-t UCL	168.1
95% Hall's Bootstrap UCL	149.1
95% Percentile Bootstrap UCL	152.3
95% BCA Bootstrap UCL	153.2
95% Chebyshev(Mean, Sd) UCL	200.2
97.5% Chebyshev(Mean, Sd) UCL	232.7
99% Chebyshev(Mean, Sd) UCL	296.5

Potential UCL to Use Use 95% Student's-t UCL 159.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

APPENDIX C-3
ESTIMATION OF METHYLMERCURY CONCENTRATION IN SEDIMENT

1 ESTIMATION OF METHYLMERCURY CONCENTRATION IN SEDIMENT

The estimation of bulk sediment methylmercury ($MeHg_{sed}$) concentrations is based on the equilibrium constants (K) provided in Appendix B of O'Day et al. (2012) and the reference cited therein (Skyllberg 2008). This information is recreated in Table 1.

Table 1

Chemical Reactions for Methylmercury Partitioning

(after O'Day et al. [2012])

Reaction	Log K[1]
$(DOM)H + CH_3Hg^+ = CH_3Hg((DOM)) + H^+$	6.5
$(SOM)H + CH_3Hg^+ = CH_3Hg((SOM)) + H^+$	6.5

Note:
1. Equilibrium partitioning cited are from Skyllberg (2008).

In this case, dissolved organic matter (DOM) and sediment organic matter (SOM) are assumed to be equivalent to the dissolved organic carbon measured in the porewater (DOC_{pw}) and total organic carbon measured in the bulk sediment (TOC_{sed}). Additionally, as described in Table 1, the partitioning at equilibrium of MeHg in the porewater ($MeHg_{pw}$) to DOC_{pw} and $MeHg_{sed}$ to TOC_{sed} is assumed to be equivalent.

The reactions in Table 1 take the generic form of Equation 1; as a result, their respective K values can be calculated using Equation 2 (Smith 2006). Since these values are the same (Skyllberg 2008), by setting the two equilibrium constant equations for the above reactions equal to each other and cancelling terms, a relationship for estimating $MeHg_{sed}$ can be developed (Equation 3).

$$A + B \Longleftrightarrow C + D \quad (1)$$

$$K = \frac{[C][D]}{[A][B]} \quad (2)$$

$$\mathrm{MeHg_{sed}} = \mathrm{MeHg_{pw}} \times \frac{\mathrm{TOC_{sed}}}{\mathrm{DOC_{pw}}} \quad (3)$$

Using the available data for $MeHg_{pw}$, TOC_{sed}, and DOC_{pw} (Table 2), an estimated $MeHg_{sed}$ value was calculated for each sample location (Table 3). The $MeHg_{pw}$ data[1] are available for depths from 0 cm to 20 cm; however, it is assumed that MeHg below a 10 cm depth is not available to receptors for ingestion. As a result, the $MeHg_{pw}$ data from each sample location are averaged over the 0 cm to 10 cm interval and used in Equation 3. Additionally, the standard deviation for each average was calculated and used in Equation 3 to determine an estimated standard deviation for $MeHg_{sed}$.

Data for DOC_{pw} are representative of the sampling interval from 0 cm to 11 cm and are considered averaged values for each of the sample locations.

TOC_{sed} values for PB-023, PB-024, PB-044, PB-053, PB-059.1, and PB-059.2 are from bulk sediment samples collected over the 0 to 10 cm interval. TOC_{sed} for several sites (PB-006, PB-0046, and PB-0052) were sampled over multiple depth intervals from 0 cm to 10 cm; similar to the $MeHg_{pw}$ data. For these samples, TOC values are averaged and used in Equation 3. Finally, TOC in one sample (PB-0036) is only at the 2 cm depth, but it is assumed that this value is representative, as it does not fall outside the range of the average measured values from other sample locations.

[1] $MeHg_{pw}$ and DOC_{pw} data were collected as part of the Patrick Bayou Mercury Study (August to September 2007).

Table 2

Observed Data Values

Location	$MeHg_{pw}$ (ng/L)		DOC_{pw} (µg/L)	TOC_{sed} (%)
	Average	Standard Deviation		
PB-006A	2.47	1.48	20,000	1.48
PB-006B	4.7	1.68	19,000	1.48
PB-023	1.27	0.73	22,000	0.64
PB-024	3.46	1.62	24,000	0.92
PB-036	9.51	5.31	42,000	4.36
PB-044	0.99	0.42	12,000	1.26
PB-046	3.28	2.35	26,000	1.81
PB-052	0.32	0.27	26,000	5.12
PB-053	3.05	1.58	57,000	2.06
PB-059.1	0.23	0.07	50,000	1.09
PB-059.2	0.23	0.07	50,000	1

Notes:

1. Cells highlighted in blue are duplicated.
2. $MeHg_{pw}$ sample values are averaged over the sampling interval from 0 to 10 cm.
3. TOC_{sed} values are averaged for samples taken over an interval (e.g., 0 to 10 cm).

Table 3 presents the results of applying Equation 3 to the available data for each sampling station. Two estimated $MeHg_{sed}$ values are given: the average and the standard deviation. Average values are calculated as described above, and the estimated standard deviations in $MeHg_{sed}$ are calculated using the standard deviation for the 0 cm to 10 cm interval from the non-averaged $MeHg_{pw}$ data. The estimated $MeHg_{sed}$ values range from 9,872 ng/kg to 46 ng/kg.

Table 3

Estimated $MeHg_{sed}$ Concentrations

Location	$MeHg_{sed}$ (ng/kg) Average	$MeHg_{sed}$ (ng/kg) Standard Deviation
PB-006A	1,828	1,095
PB-006B	3,661	1,309
PB-023	369	212
PB-024	1,326	621
PB-036	9,872	5,512
PB-044	1,040	441
PB-046	2,283	1,636
PB-052	630	532
PB-053	1,102	571
PB-059.1	51	16
PB-059.2	46	14

Notes:
1. Bulk sediment concentrations of MeHg are estimated using the data presented in O'Day et al. (2012) and the references cited therein.
2. Based on the research presented above in Note 1, the partitioning of MeHg to the solid and dissolved OC is assumed to be the same at equilibrium.

Variations in sampling location and thus the conditions for each sample are not accounted for in the above estimates (Table 3). The sample locations for the bulk sediment and porewater measurements are provided in Figure C-1.

To quantitatively assess any variations in sampling location an uncertainty analysis was performed for these $MeHg_{sed}$ estimates. Based on Equation 3, increasing values for TOC_{sed} and $MeHg_{pw}$ and lowering values for DOC_{pw} would provide the highest estimates for $MeHg_{sed}$.

Conversely, lowering values for TOC_{sed} and $MeHg_{pw}$ and increasing values for DOC_{pw} would provide the lowest estimates for $MeHg_{sed}$. This method was used to calculate an upper and lower bound to the average values estimated for $MeHg_{sed}$ (Table 3).

As described above, observed values for DOC_{pw} are considered averaged over the sampled depth interval; therefore, for the uncertainty analysis this parameter is assumed to be constant across the entire Site. The maximum and minimum values are 57,000 µg/l and 12,000 µg/l, respectively. TOC_{sed} is treated similarly for this analysis, and the maximum and minimum values are 5.54 percent and 0.64 percent, respectively. The remaining parameter, $MeHg_{pw}$, was collected at various depths for most locations. Maximum and minimum values over the 0 to 10 cm depth interval for $MeHg_{pw}$ at each sampling location were used to calculate the upper and lower bound estimates, respectively.

$MeHg_{pw}$ was sampled over the 0 to 20 cm depth interval, but the 0 to 10 cm depth interval is the dataset used in this analysis for the $MeHg_{sed}$ estimates; this rationale is described above. It should be noted that none of the maximum $MeHg_{pw}$ concentrations occurs below the 0 to 10 cm depth interval; however, there are several instances where the lowest concentration occurs in the 10 to 20 cm depth interval. Using the lowest concentration in the 0 to 10 cm depth interval provides a more conservative estimate; therefore, only concentration values from the 0 to 10 cm depth interval are used for the uncertainty analysis. Additionally, there are two instances where a depth interval has two reported $MeHg_{pw}$ concentrations (PB-006A and PB-044). In each case the higher (and thus more conservative) value is used for the uncertainty analysis.

The results of the uncertainty analysis are plotted in Figure C-2. As expected, the differences in the upper and lower bounds to the average $MeHg_{sed}$ estimates are greater than the standard deviations presented in Table 3. The values estimated for the upper and lower bound concentrations are provided in Table 4. Upper bound estimates range from 67,173 ng/kg to 1,662 ng/kg, and lower bound estimates range from 376 ng/kg to 22 ng/kg.

Table 4

Upper and Lower Bound $MeHg_{sed}$ Estimates

Location	$MeHg_{sed}$ (ng/kg) Upper Bound	$MeHg_{sed}$ (ng/kg) Lower Bound
PB-006A	22,714	144
PB-006B	34,717	376
PB-023	9,603	55
PB-024	22,483	77
PB-036	67,173	117
PB-044	6,648	35
PB-046	29,177	139
PB-052	3,740	22
PB-053	25,161	174
PB-059.1	1,662	22
PB-059.2	1,662	22

Notes:
1. Bulk sediment concentrations of MeHg are estimated using the data presented in O'Day et al. (2012) and the references cited therein.
2. Based on the research presented above in Note 1, the partitioning of MeHg to the solid and dissolved OC is assumed to be the same at equilibrium.

The $MeHg_{sed}$ results were used, along with the total mercury (Hg_T) observed in the bulk sediment, to estimate the proportion of MeHg to Hg_T (Table 5). For the analysis of the average $MeHg_{sed}$ concentrations, observed Hg_T values are averaged for each sample location; their sample depths and dates are similar to the TOC_{sed} data discussed above. In addition to the averaged values the observed Hg_T value for each sampling location was used to calculate the upper and lower bounds of the proportion of $MeHg_{sed}$ to Hg_T. Based on the calculation, the lowest Hg_T concentrations will maximize the proportion (upper bound), and the highest Hg_T concentrations will minimize the proportion (lower bound). In general, Hg_T concentration was sampled over the 0 to 10 cm depth interval; details regarding the sampling interval for each sample location are similar to those described above for TOC_{sed}. These values along with the respective estimated upper and lower bound proportions are provided in Table 6.

Table 5

Proportion of $MeHg_{sed}$ to Total Observed Mercury

Location	Average Hg_T (mg/kg)	Proportion of $MeHg_{sed}$ to Hg_T
PB-006A	2.07	0.088%
PB-006B	2.07	0.177%
PB-023	2.87	0.013%
PB-024	5.44	0.024%
PB-036	45.60	0.022%
PB-044	13.70	0.008%
PB-046	5.57	0.041%
PB-052	9.64	0.007%
PB-053	843.00	<0.001%
PB-059.1	0.80	0.006%
PB-059.2	1.12	0.004%

Notes:
1. Cells highlighted in blue are duplicated.
2. Hg_T sample values are averaged over the sampling interval from 0 to 10 cm.

Table 6

Proportion of $MeHg_{sed}$ to Total Observed Mercury – Bounding Cases

Location	Upper Bound Estimate		Lower Bound Estimate	
	Minimum Hg_T (mg/kg)	Proportion of $MeHg_{sed}$ to Hg_T	Maximum Hg_T (mg/kg)	Proportion of $MeHg_{sed}$ to Hg_T
PB-006A	1.49	1.524%	2.73	0.005%
PB-006B	1.49	2.330%	2.73	0.014%
PB-023	2.87	0.335%	2.87	0.002%
PB-024	5.44	0.413%	5.44	0.001%
PB-036	45.6	0.147%	45.6	<0.001%
PB-044	13.7	0.049%	13.7	<0.001%
PB-046	4.04	0.722%	7.58	0.002%
PB-052	5.12	0.073%	12.1	<0.001%
PB-053	843	0.003%	843	<0.001%
PB-059.1	0.8	0.208%	0.8	0.003%
PB-059.2	1.12	0.148%	1.12	0.002%

Notes:
1. Cells highlighted in blue are duplicated.
2. Hg_T samples are for the 0 to 10 cm depth interval. Some locations only have one sample.

The results of this analysis indicate that the MeHg present in the sediments represents a very small portion of the Hg_T observed in the bulk sediment samples (0.177 percent to less than 0.001 percent). Based on the uncertainty analysis, upper bound estimates indicate that the proportion of $MeHg_{sed}$ to Hg_T is less than 2.5 percent. It is likely that other site-specific factors (e.g., mercury sulfide speciation) contribute to the low concentrations of MeHg in the sediments.

2 REFERENCES

O'Day, P.A., B.A. Bessinger, D. Vlassopoulos, and S. Serrano, 2012. Reactive Transport Modeling of Subaqueous Sediment Caps and Implications for the Long-Term Fate of Arsenic, Mercury, and Methylmercury. Submitted to: *Aquatic Geochemistry*. In Publication.

Skyllberg, U., 2008. Competition among thiols and inorganic sulfides and polysulfides for Hg and MeHg in wetland soils and sediments under suboxic conditions: Illumination of controversies and implications for MeHg net production. *J Geophys Res -Biogeosci* 113:536-554. doi:G00c0310.1029/2008jg000745

Smith, J.G., 2006. *Organic Chemistry*. Boston: McGraw Hill.

FIGURES

ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010.

Feet
0 170 340 510 680

Figure C-1
Sediment TOC and Porewater Methylmercury Sample Locations
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, TX

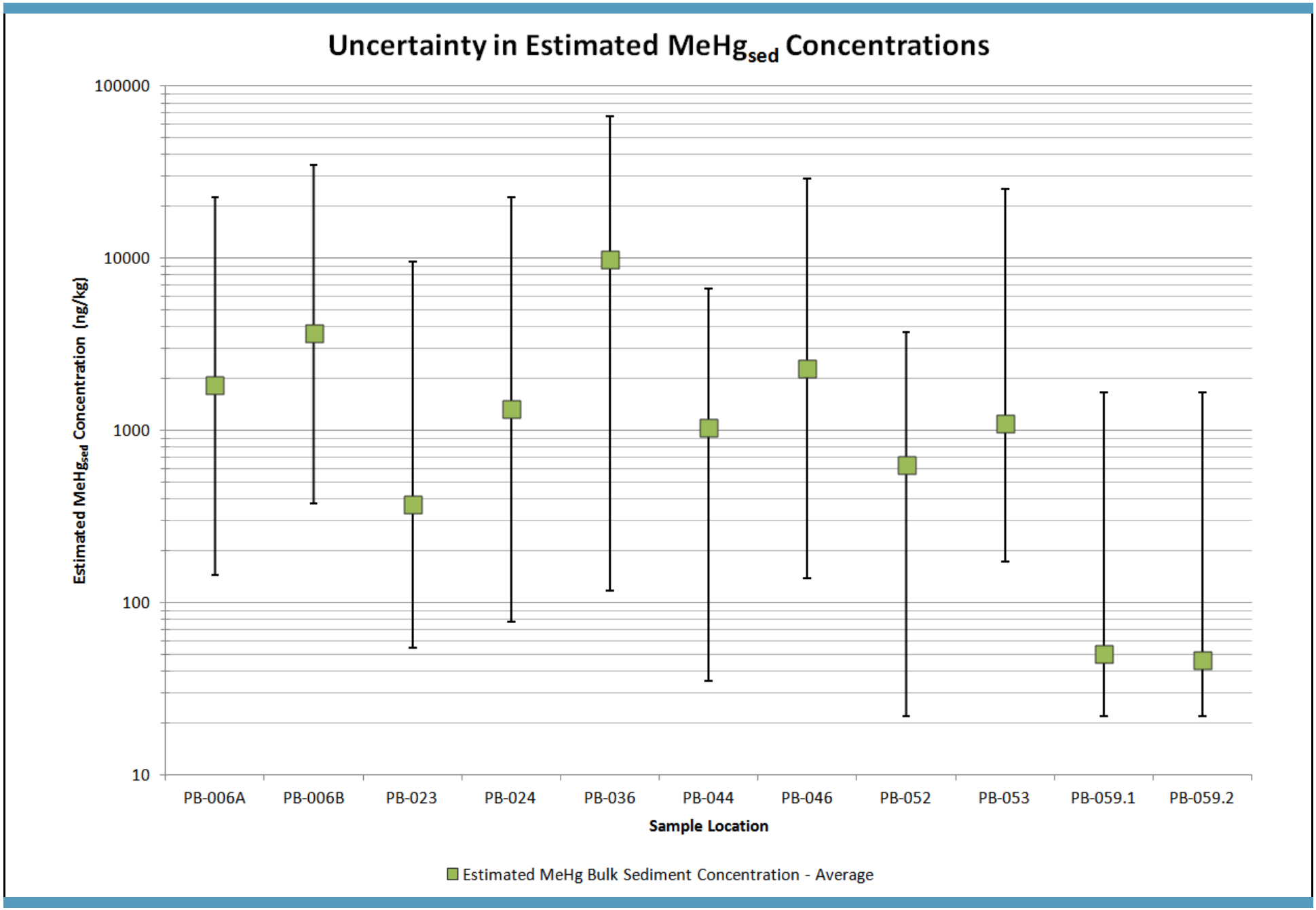


Figure C-2
Uncertainty in Estimated MeHg$_{sed}$ Concentrations
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, TX

ANCHOR QEA

APPENDIX C-4
BASELINE RISK ASSESSMENT

TABLE C-4.1

EXPOSURE VARIABLES FOR WILDLIFE TOTAL DAILY INTAKE MODELS

Table C-4.1
Exposure Variables for Wildlife Total Daily Intake Models

Parameter	Receptor Group: / Receptor: / Units	Piscivorous Birds / Belted Kingfisher		Sediment-probing Birds / Spotted Sandpiper		Carnivorous Birds / Composite		Omnivorous Mammals / Raccoon	
BW	kg	0.136	*a*	0.0425	*a*	0.870	*a*	3.99	*a*
NFMR	kcal/day/kg BW	6722	*b*	4016	*b*	3570	*b*	922.6	*b*
a	unitless	14.25	*g*	8.13	*h*	14.25	*g*	6.03	*i*
b	unitless	0.659	*g*	0.77	*h*	0.659	*g*	0.678	*i*
AE_{fish}	unitless	0.79	*c*	NA	--	0.79	*c*	0.91	*c*
$AE_{invertebrates}$	unitless	0.77	*c*	0.77	*c*	0.77	*c*	0.91	*c*
AE_{Plants}	unitless	NA	--	NA	--	NA	--	0.74	*j*
$AE_{Animals}$	unitless	NA	--	NA	--	0.78	*o*	0.84	*k*
GE_{fish}	kcal/kg	1200	*c*	NA	--	1200	*c*	1200	*c*
$GE_{invertebrates}$	kcal/kg	1070	*c*	1070	*c*	1070	*c*	1070	*c*
GE_{Plants}	kcal/kg	NA	--	NA	--	NA	--	1300	*l*
$GE_{Animals}$	kcal/kg	NA	--	NA	--	1700	*m*	1700	*m*
P_{fish}	unitless	0.89	*n*	0	*n*	0.33	*n*	0.233	*n*
$P_{invertebrates}$	unitless	0.11	*n*	1	*n*	0.33	*n*	0.233	*n*
P_{plants}	unitless	0	*n*	0	*n*	0	*n*	0.3	*n*
$P_{mammals}$	unitless	0	*n*	0	*n*	0.33	*n*	0.233	*n*
FS	unitless	0	*f*	0.18	*d*	0.01	*f*	0.094	*e*
$P_{moisture}$	unitless	0.74	*q*	0.72	*q*	0.69	*q*	0.69	*q*
AUF	unitless	0.69	*p*	0.34	*p*	0.36	*p*	0.021	*p*

Notes:

a Average for adults, both sexes (see text for derivation).
b Derived using Equation 6-7 in text.
c See AE and GE derivation worksheet in Appendix A.
d USEPA 1993. Semi-palmated sandpiper value used as surrogate.
e Based on empirical data (Beyer et al. 1994).
f Best professional judgment.
g Power (b) and slope (a) terms for marine birds (Nagy 1999).
h Power (b) and slope (a) terms for Charadriiformes (Nagy 1999).
i Power (b) and slope (a) terms for omnivores (Nagy 1999).
j Average AE for mammals consuming plants (USEPA 1993).
k Average for mammals consuming small birds & mammals (USEPA 1993).
l Average of terrestrial monocot grasses (USEPA 1993).
m Average of reported values for mice, voles, and rabbits (USEPA 1993).
n See text for derivation.
o Average of birds of prey consuming birds and small mammals (USEPA 1993).
p See text for discussion.

Table C-4.1
Exposure Variables for Wildlife Total Daily Intake Models

q Percent moisture calculated based on values in USEPA (1993). Based on a weighted average relative to the proportion of food in receptors diet. Moisture for each prey class based on the following:
Fish: Average of bony fishes in Table 4-1 of USEPA (1993) = 74%
Invertebrates: Average of aquatic invertebrates in Table 4-1 of USEPA (1993) = 72%
Mammals: Terrestrial mammal average in Table 4-1 of USEPA (1993) = 68%
Plants: Midpoint of aquatic emergent vegetation range in Table 4-2 of USEPA (1993) = 63%

NA - not applicable

TABLE C-4.2

EXPOSURE VARIABLES FOR CALCULATING MARSH RICE RAT COPC CONCENTRATION

Table C-4.2
Exposure Variables for Calculating Marsh Rice Rat COPC Concentration

Variable	Definition	Units	Mercury				PCB Congener TEQ (Mammal)		PCB Congener TEQ (Avian)	
			Methyl Mercury		Inorganic Mercury					
Kow	Log octanol/water partition coefficient	unitless	2.54	*a*	log(0.61)	*i*	6.64	*m*	6.64	*m*
$FCM_{TL3(OM)}$	Food chain multiplier for trophic level 3 (marsh rice rat)	unitless	1.0	*b*	1.0	*g*	14	*n*	14	*n*
C_{SED}	COPC concentration in sediment	mg/kg dw	4.79E-02	*c*	4.74E+00	*c*	1.12E-04	*c*	2.08E-03	*c*
$BCF_{PLANT-OM}$	Plant-to-omnivore BCF	unitless	3.44E-04	*d*	2.30E-03	*k*	2.39E-02	*o*	2.39E-02	*o*
BCF_{SED-OM}	Sediment-to-omnivore BCF	unitless	8.34E-06	*e*	5.57E-05	*l*	1.70E-04	*p*	1.70E-04	*p*
FR_{SED}	Fraction of sediment in diet that is contaminated	unitless	1	*f*	1	*f*	1	*f*	1	*f*
$TL_{BIOTA,a}$	Trophic Level of Food Type 1	unitless	3	*j*	3	*j*	3	*j*	3	*j*
$TL_{BIOTA,b}$	Trophic Level of Food Type 2	unitless	3	*j*	3	*j*	3	*j*	3	*j*
$TL_{BIOTA,c}$	Trophic Level of Food Type 3	unitless	2	*j*	2	*j*	2	*j*	2	*j*
$TL_{BIOTA,e}$	Trophic Level of Food Type 5	unitless	--		--		--		3	*j*
$FCM_{TL(BIOTA,a)}$	Food Chain Multiplier for Food Type 1	unitless	1	*b*	1	*i*	14	*n*	14	*n*
$FCM_{TL(BIOTA,b)}$	Food Chain Multiplier for Food Type 2	unitless	1	*b*	1	*i*	14	*n*	14	*n*
$FCM_{TL(BIOTA,c)}$	Food Chain Multiplier for Food Type 3	unitless	1	*b*	1	*i*	1	*n*	1	*n*
$FCM_{TL(BIOTA,e)}$	Food Chain Multiplier for Food Type 3	unitless	--		--		--		14	*n*
$FR_{BIOTA,k}$ (all Food Types)	Fraction of kth Food Group that is contaminated	unitless	1	*f*	1	*f*	1	*f*	1	*f*
$P_{BIOTA,a}$	Portion of diet consisting of Food Type 1	unitless	0.125	*t*	0.125	*t*	0.125	*t*	0.083	*t*
$P_{BIOTA,b}$	Portion of diet consisting of Food Type 2	unitless	0.125	*t*	0.125	*t*	0.125	*t*	0.083	*t*
$P_{BIOTA,c}$	Portion of diet consisting of Food Type 3	unitless	0.25	*t*	0.25	*t*	0.25	*t*	0.25	*t*
$P_{BIOTA,d}$	Portion of diet consisting of Food Type 4	unitless	0.5	*t*	0.5	*t*	0.5	*t*	0.5	*t*
$P_{BIOTA,e}$	Portion of diet consisting of Food Type 5	unitless	--		--		--		0.083	*t*
$C_{BIOTA,a}$	COPC concentration in Food Type 1	mg/kg ww	1.45E-01	*q*	--		8.70E-05	*q*	8.68E-04	*q*
$C_{BIOTA,b}$	COPC concentration in Food Type 2	mg/kg ww	5.80E-02	*q*	--		3.19E-05	*q*	4.24E-04	*q*
$C_{BIOTA,c}$	COPC concentration in Food Type 3	mg/kg ww	5.15E-02	*q*	--		2.79E-05	*q*	4.52E-04	*q*
$C_{BIOTA,d}$	COPC concentration in Food Type 4	mg/kg ww	2.43E-03	*r*	6.60E-02	*r*	2.32E-07	*s*	4.35E-06	*h*
$C_{BIOTA,e}$	COPC concentration in Food Type 5	mg/kg ww	--		--		--		1.60E-04	*q*

Notes:

a Maximum value in methylmercury Kow range (Environment Canada 2002)
b USEPA (1999) Table 5-2 based on a Kow of 3
c Table 6-4
d USEPA (1999) Table D-1 value for methyl mercury
e USEPA (1999) Table D-3 value for methyl mercury
f USEPA (1999) Table F-1-14 Default
g USEPA (1999) Table 5-2 based on a Kow of 2 (smallest Kow value provided)
h PCB Congener TEQ (Avian) Plant Concentration Calculation, BERA Appendix C
i USEPA (1999) Table A-2-130 value for mercuric chloride
j USEPA (1999) and Professional judgment. All fish were assumed to belong to Trophic level 3 (omnivore) and invertebrates were assumed to be belong to trophic level 2 (herbivore)
k USEPA (1999) Table D-1 value for mercuric chloride
l USEPA (1999) Table D-3 value for mercuric chloride
m USEPA (1999) Table A-2-176
n USEPA (1999) Table 5-2 based on a Kow of 6.6
o USEPA (1999) Table D-1 value for 2,3,7,8-TCDD
p USEPA (1999) Table D-3 value for 2,3,7,8-TCDD
q Table 6-3
r Mercury Plant Concentration Calculation, BERA Appendix C
s PCB Congener TEQ (Mammal) Plant Concentration Calculation, BERA Appendix C
t Marsh Rice Rat diet indicated in BERA Workplan (Anchor QEA 2011). Diet was assumed to be composed of 50% plant matter and 50% animal (25% invertebrates and 25% fish)

EXHIBIT C-4.1
WILDLIFE DAILY INTAKE EQUATIONS

Exhibit C-4.1

EQUATIONS	
GENERAL	
$TDI_{ALL} = TDI_{BIOTA} + TDI_{SEDIMENT}$	Equation 1
TISSUE	
$TDI_{BIOTA} = \sum_{k=1}^{m} (C_{BIOTA_k} \times FR_k \times NIR_k)$	Equation 2
$NIR_{TOTAL} = \frac{NFMR}{ME_{AVG}}$	Equation 3
$ME_{AVG} = \sum_{k=1}^{m} (P_{BIOTA,k} \times ME_k)$	Equation 4
$ME_k = GE_k \times AE_k$	Equation 5
$NIR_k = P_{BIOTA,k} \times NIR_{TOTAL}$	Equation 6
$NFMR = \frac{[(a \times BW_*^b) \times CF_1]}{BW}$	Equation 7
SEDIMENT	
$TDI_{SEDIMENT} = \sum_{j=1}^{i} (C_{SED,_j} \times FS \times IR_{TOTAL} \times P_{SED,j})$	Equation 8
$IR_{TOTAL} = (NIR_{TOTAL} \times BW) \times (1 - P_{MOISTURE})$	Equation 9

VARIABLES		
	DESCRIPTION	UNITS
TDI_{ALL}	Total daily intake of COPC from all sources	$mg_{COPC}/kg_{BW}/day$
TDI_{BIOTA}	Total daily intake of COPC from ingestion of food items	$mg_{COPC}/kg_{BW}/day$
$TDI_{SEDIMENT}$	Total daily intake of COPC from incidental ingestion of sediment	$mg_{COPC}/kg_{BW}/day$
$C_{BIOTA,k}$	COPC concentration in kth food type, wet weight	mg_{COPC}/kg_{food}
FR_k	Fraction of kth type of food that is contaminated	unitless
NIR_k	Normalized food ingestion rate of kth type of food, wet weight	$kg_{food}/kg_{BW}/day$
NIR_{TOTAL}	Total normalized food ingestion rate, wet weight	$kg_{food}/kg_{BW}/day$
NFMR	Body weight normalized free-living metabolic rate	$kcal/kg_{BW}/day$
ME_{AVG}	Average metabolizable energy of the diet, wet weight	$kcal/kg_{food}$
$P_{BIOTA,k}$	Proportion of the diet consisting of the kth food type	unitless
ME_k	Metabolizable energy of the kth food type, wet weight	$kcal/kg_{food}$
GE_k	Gross energy content of the kth food type, wet weight	$kcal/kg_{food}$
AE_k	Assimilation efficiency by receptor of kth food type	unitless
BW	Body weight	kilograms
BW_*	Body weight	grams
a	Free-living metabolic rate slope factor	unitless

Exhibit C-4.1

VARIABLES		
	DESCRIPTION	UNITS
b	Free-living metabolic rate power	unitless
CF_1	Conversion factor	1 kcal/4.186 kjoules
$C_{SED,j}$	Sediment COPC concentration in the jth foraging area, dry weight	mg_{COPC}/kg
FS	Fraction of sediment in diet; as proportion of ingestion rate	unitless
IR_{TOTAL}	Total daily food ingestion rate, dry weight	kg_{food}/day
$P_{SED,j}$	Proportion of food intake from jth foraging area	unitless
$P_{MOISTURE}$	Proportion of moisture in food	unitless

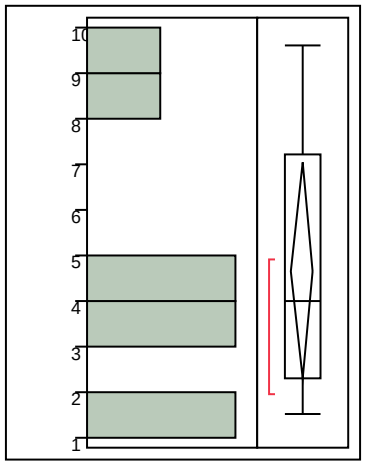
Definitions:

mg – milligrams
kg – kilograms
kcal – kilocalories
kjoules – kilojoules

EXHIBIT C-4.2
HOME RANGE DISTRIBUTION ANALYSIS

Home Range Distribution Analysis (kilometers)[1]

Shorebirds[2]



Quantiles

100.0%	maximum	9.6
99.5%		9.6
97.5%		9.6
90.0%		9.6
75.0%	quartile	7.225
50.0%	median	4
25.0%	quartile	2.2875
10.0%		1.5
2.5%		1.5
0.5%		1.5
0.0%	minimum	1.5

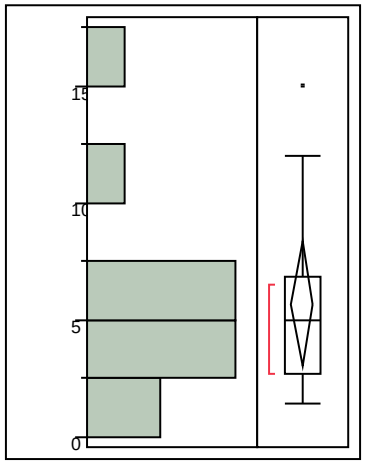
Moments

Mean	4.65625
Std Dev	2.8381882
Std Err Mean	1.0034511
Upper 95% Mean	7.0290348
Lower 95% Mean	2.2834652
N	8

[1] See Section 6 (Table 6-5) for list of home ranges used in calculations.

[2] Distributions, quantiles, and moments calculated using JMP® 9.0.2 (SAS 2010; www.jmp.com)

Herons and Egrets



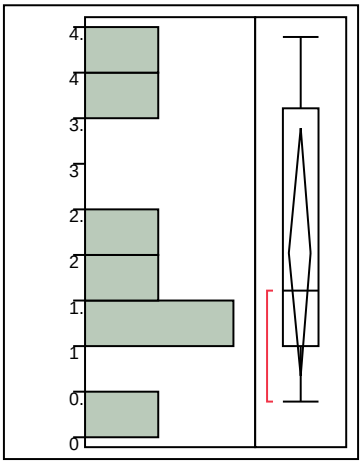
Quantiles

100.0%	maximum	15
99.5%		15
97.5%		15
90.0%		14.1
75.0%	quartile	6.8875
50.0%	median	5
25.0%	quartile	2.7
10.0%		1.52
2.5%		1.4
0.5%		1.4
0.0%	minimum	1.4

Moments

Mean	5.6875
Std Dev	4.1643577
Std Err Mean	1.2021465
Upper 95% Mean	8.3334066
Lower 95% Mean	3.0415934
N	12

Belted Kingfisher



Quantiles

100.0%	maximum	4.4
99.5%		4.4
97.5%		4.4
90.0%		4.4
75.0%	quartile	3.6
50.0%	median	1.6
25.0%	quartile	1
10.0%		0.4
2.5%		0.4
0.5%		0.4
0.0%	minimum	0.4

Moments

Mean	2.0285714
Std Dev	1.4761598
Std Err Mean	0.5579359
Upper 95% Mean	3.3937915
Lower 95% Mean	0.6633514
N	7

CARNIVOROUS BIRD BASELINE RISK SHEETS

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Baseline**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 4

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.165	0.054	948	Fish	1	GM
2	0.165	0.054	948	Fish	1	GKF, STM, PNF, SAS
3	0.33	0.108	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.34	0.111	1326	Mammal	0.5	March Rice Rat
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Baseline**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	4.7391	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	2.64E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.40E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125		Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125		Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25		Table C-4.2
4	Plant				1	0.5	6.60E-02	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Baseline**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.0479	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0.018125	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	0.00725	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0.012875	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.99E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.83E-02	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125	1.45E-01	Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125	5.80E-02	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	5.15E-02	Table C-4.2
4	Plant	Plant			1	0.5	2.43E-03	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Baseline**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515	3.83E-02				6.7E-03	0.0479							1.3E-05	6.7E-03	0.064	0.11
Mercury (Inorganic)				3.40E-04				1.9E-05	4.7391							1.3E-03	1.3E-03	0.9	0.0014

Plant PCB Congener TEQ (Avian)
Calculations

$$C_{PLANT} = C_{SED} \times BAF_{PLANT}$$

where:
C_{PLANT} = Concentration of PCB Congener TEQ (Avian) in plant tissue
C_{SED} = Concentration of PCB Congener TEQ (Avian) in sediment
BAF_{PLANT} = Bioaccumulation factor for PCB (kgSED / kgPREY)

$$C_{PLANT,\ WW} = C_{PLANT,DW} \times \left(\frac{(100 - \%\ moisture)}{100}\right)$$

where:
$C_{PLANT,WW}$ = Concentration in plant tissue as wet weight
$C_{PLANT,DW}$ = Concentration in plant tissue as dry weight
% moisture = Moisture content of plant tissue

	C_{SED} (mg/kg)	BAF_{PLANT*}	$C_{PLANT,DW}$ (mg/kg)	$C_{PLANT,WW}$ (mg/kg)
PCB	2.10E-03	0.0056	1.18E-05	4.35E-06

*USEPA (1999) Table C-2, BCF for 2,3,7,8-TCDD

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Baseline**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.11	0.036	948	Fish	1	GKF
2	0.11	0.036	948	Fish	1	GM, STM
3	0.33	0.108	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.34	0.111	1326	Mammal	0.5	March Rice Rat
5	0.11	0.036	948	Fish	1	PNF, SAS
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Baseline**
COPC: **PCB Congener TEQ (Avian)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0021	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	7.21E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	3.52E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	1.58E-03	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	5.20E-08	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Food Type 5	1.33E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	4.95E-06	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.71E-03	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.083	8.68E-04	Table C-4.2
2	Fish	GM, STM	3	14	1	0.083	4.24E-04	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	4.52E-04	Table C-4.2
4	Plant	Plant			1	0.5	4.35E-06	Table C-4.2
5	Fish	PNF, SAS	3	14	1	0.083	1.60E-04	Table C-4.2
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Baseline**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.0009	0.0005	0.0005	1.71E-03	0.0002			7.1E-05	0.0021							5.5E-07	7.2E-05	1.4E-04	0.51

BELTED KINGFISHER BASELINE RISK SHEETS

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Baseline**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 2

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.89	0.607	948	Fish	1	GKF, GM, STM, PNF, SAS
2	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Baseline**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Hexachlorobenzene	0.6464	0.9757						3.2E-01	2.1373							0.0E+00	3.2E-01	3.35	0.10
1,3-Dichlorobenzene	0.769	0.758						3.6E-01	0.0736							0.0E+00	3.6E-01	160.8	0.0022

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Baseline**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 3

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.445	0.304	948	Fish	1	GM
2	0.445	0.304	948	Fish	1	GKF, STM, PNF, SAS
3	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Baseline**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515					4.5E-02	0.0479							0.0E+00	4.5E-02	0.064	0.71
Mercury (Inorganic)								0.0E+00	4.7391							0.0E+00	0.0E+00	0.9	0

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Baseline**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 3

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.3	0.205	948	Fish	1	GKF
2	0.3	0.205	948	Fish	1	GM, STM
3	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.29	0.205	948	Fish	1	PNF, SAS
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Baseline**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.0009	0.0005	0.0005	0.0002				2.4E-04	0.0021							0.0E+00	2.4E-04	0.00014	1.69

RACCOON BASELINE RISK SHEETS

Plant Mercury Calculations

$$C_{PLANT} = C_{SED} \times BAF_{PLANT}$$

where:

C_{PLANT} = Concentration of mercury in plant tissue

C_{SED} = Concentraiton of mercury in sediment

BAF_{PLANT} = Bioaccumulation factor for mercury (kgSED / kgPREY)

$$C_{PLANT,\ WW} = C_{PLANT,DW} \times \left(\frac{(100 - \%\ moisture)}{100}\right)$$

where:

$C_{PLANT,WW}$ = Concentration in plant tissue as wet weight

$C_{PLANT,DW}$ = Concentration in plant tissue as dry weight

% moisture = Moisture content of plant tissue

	C_{SED} (mg/kg)	BAF_{PLANT}	$C_{PLANT,DW}$ (mg/kg)	$C_{PLANT,WW}$ (mg/kg)
Methylmercury	0.048	0.137	0.007	0.002
Inorganic Mercury	4.74	0.0375	0.178	0.066

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Baseline**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.021	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.116	0.010	1092	Fish	1	GM
2	0.116	0.010	1092	Fish	1	GKF, STM, PNF, SAS
3	0.234	0.021	974	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.3	0.027	962	Plant	1	
5	0.234	0.021	1428	Mammal	0.5	Marsh Rice Rat
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Baseline**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	4.7391	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	2.64E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.40E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125		Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125		Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25		Table C-4.2
4	Plant				1	0.5	6.60E-02	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Baseline**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.0479	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	1.81E-02	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	7.25E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	1.29E-02	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.99E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.83E-02	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125	1.45E-01	Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125	5.80E-02	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	5.15E-02	Table C-4.2
4	Plant				1	0.5	2.43E-03	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Baseline**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515	0.002426492	3.83E-02			7.7E-05	0.0479							8.9E-06	8.6E-05	0.0177	0.0049
Mercury (Inorganic)				0.065754378	3.40E-04			3.8E-05	4.7391							8.8E-04	9.1E-04	3.54	0.00026

Plant PCB Congener TEQ (Mammal)
Calculations

$$C_{PLANT} = C_{SED} \times BAF_{PLANT}$$

where:
C_{PLANT} = Concentration of PCB Congener TEQ (Mammal) in plant tissue
C_{SED} = Concentration of PCB Congener TEQ (Mammal) in sediment
BAF_{PLANT} = Bioaccumulation factor for PCB Congener TEQ (Mammal) (kgSED / kgPREY)

$$C_{PLANT,\ WW} = C_{PLANT,DW} \times \left(\frac{(100 - \%\ moisture)}{100}\right)$$

where:
$C_{PLANT,WW}$ = Concentration in plant tissue as wet weight
$C_{PLANT,DW}$ = Concentration in plant tissue as dry weight
% moisture = Moisture content of plant tissue

	C_{SED} (mg/kg)	BAF_{PLANT*}	$C_{PLANT,DW}$ (mg/kg)	$C_{PLANT,WW}$ (mg/kg)
PCB	1.12E-04	0.0056	6.27E-07	2.32E-07

*USEPA (1999) Table C-2, BCF for 2,3,7,8-TCDD

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Baseline**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.021	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.116	0.010	1092	Fish	1	GKF
2	0.116	0.010	1092	Fish	1	GM, STM, PNF, SAS
3	0.234	0.021	974	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.3	0.027	962	Plant	1	
5	0.234	0.021	1428	Mammal	0.5	Marsh Rice Rat
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Baseline**
COPC: **PCB Congener TEQ (Mammal)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0001	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	1.09E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	3.99E-06	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	9.75E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	2.77E-09	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	1.91E-08	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.12E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.125	8.70E-05	Table C-4.2
2	Fish	GM, STM, PNF, SAS	3	14	1	0.125	3.19E-05	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	2.79E-05	Table C-4.2
4	Plant	Plant			1	0.5	2.32E-07	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Baseline**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Mammal) (U=1/2)	8.7E-05	3.2E-05	2.8E-05	2.32E-07	1.12E-04			6.4E-08	0.0001							2.1E-08	8.4E-08	5.4E-07	0.16

SPOTTED SANDPIPER BASELINE RISK SHEETS

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **Baseline**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	43	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	8.1	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.77	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	818	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	824	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.992	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.012	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.73	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.18	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.34	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 1

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	1	0.992	824	Invert	1	OYS,BCRA,WHSA
2						
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **Baseline**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Lead	0.292							9.9E-02	48.944							3.5E-02	1.3E-01	3.26	0.04
Mercury (Methyl)	0.0533							1.8E-02	0.0479							3.4E-05	1.8E-02	0.064	0.28
Total PAH 16 (U=1/2)	0.1397							4.7E-02	7.3078							5.2E-03	5.2E-02	325	0.00016
Dioxin/Furan Congener TEQ (Avian) (U=1/2)	2.2E-05							7.5E-06	0.0002							1.5E-07	7.7E-06	0.00014	0.05
Hexachlorobenzene	1.132							3.8E-01	2.1373							1.5E-03	3.8E-01	3.35	0.11
Hexachlorobutadiene	0.3725							1.3E-01	3.8327							2.7E-03	1.3E-01	20	0.006
1,3-Dichlorobenzene	0.3725							1.3E-01	0.0736							5.2E-05	1.3E-01	160.8	0.0008
1,4-Dichlorobenzene	0.3725							1.3E-01	0.0744							5.2E-05	1.3E-01	160.8	0.0008
PCB Congener TEQ (Avian) (U=1/2)	0.00043							1.4E-04	0.0021							1.5E-06	1.5E-04	1.4E-04	1.0
Mercury (Inorganic)								0.0E+00	4.7391							3.3E-03	3.3E-03	9.0E-01	0.004

APPENDIX C-5
WILDLIFE RISK ASSESSMENT
UNCERTAINTY ANALYSIS

APPENDIX C-5.1
PREY GROUPING UNCERTAINTY ANALYSIS – DIET PROPORTIONS ADJUSTED BY PREY BIOMASS

Table C-5.1
Diet Proportions Adjusted by Prey Biomass

Receptor	Grouping	Total Biomass	Proportion of Biomass	Proportion of Diet	Biomass Weighted Proportion of Diet
Belted Kingfisher	Mercury				
	GM	3,764	0.13	0.89	0.11
	GKF, STM, PNF, SAS	25,398	0.87	0.89	0.78
	BCR, BRS, WHS, OYS	9,686	1	0.11	0.11
	Hexachlorobenzene				
	GKF, GM, STM, PNF, SAS	29,162	1	0.89	0.89
	BCR, BRS, WHS, OYS	9,686	1	0.11	0.11
	1,3-Dichlorobenzene				
	GKF, GM, STM, PNF, SAS	29,162	1	0.89	0.89
	BCR, BRS, WHS, OYS	9,686	1	0.11	0.11
	PCB TEQ				
	GKF	15,235	0.52	0.89	0.46
	GM, STM	7,700	0.26	0.89	0.24
	PNF, SAS	6,226	0.21	0.89	0.19
	BCR, BRS, WHS, OYS	9,686	1	0.11	0.11
Carnivorous Bird	Mercury				
	GM	3,764	0.13	0.33	0.04
	GKF, STM, PNF, SAS	25,398	0.87	0.33	0.29
	BCR, BRS, WHS, OYS	9,686	1	0.33	0.33
	PCB TEQ				
	GKF	15,235	0.52	0.33	0.17
	GM, STM	7,700	0.26	0.33	0.09
	PNF, SAS	6,226	0.21	0.33	0.07
	BCR, BRS, WHS, OYS	9,686	1	0.33	0.33
Raccoon	Mercury				
	GM	3,764	0.13	0.233	0.03
	GKF, STM, PNF, SAS	25,398	0.87	0.233	0.20
	BCR, BRS, WHS, OYS	9,686	1	0.234	0.23
	PCB TEQ				
	GKF	15,235	0.52	0.233	0.12
	GM, STM, PNF, SAS	13,927	0.48	0.233	0.11
	BCR, BRS, WHS, OYS	9,686	1	0.234	0.23

CARNIVOROUS BIRD RISK SHEETS

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Biomass Based Proportion of Prey Groups**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 4

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.042594	0.014	948	Fish	1	GM
2	0.287406	0.094	948	Fish	1	GKF, STM, PNF, SAS
3	0.33	0.108	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.34	0.111	1326	Mammal	0.5	March Rice Rat
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Biomass Based Proportion of Prey Groups**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.0479	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0.0047125	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	0.012615	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0.012875	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.99E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.02E-02	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.0325	1.45E-01	Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.2175	5.80E-02	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	5.15E-02	Table C-4.2
4	Plant	Plant			1	0.5	2.43E-03	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Biomass Based Proportion of Prey Groups**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	4.7391	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	2.64E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.40E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.0325		Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.2175		Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25		Table C-4.2
4	Plant				1	0.5	6.60E-02	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Biomass Based Proportion of Prey Groups**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515	3.02E-02				5.3E-03	0.0479							1.3E-05	5.3E-03	0.064	0.08
Mercury (Inorganic)				3.40E-04				1.9E-05	4.7391							1.3E-03	1.3E-03	0.9	0.0014

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Biomass Based Proportion of Prey Groups**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.17	0.056	948	Fish	1	GKF
2	0.09	0.029	948	Fish	1	GM, STM
3	0.33	0.108	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.34	0.111	1326	Mammal	0.5	March Rice Rat
5	0.07	0.029	948	Fish	1	PNF, SAS
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Biomass Based Proportion of Prey Groups**
COPC: **PCB Congener TEQ (Avian)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0021	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	1.13E-04	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	2.76E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	1.58E-03	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	5.20E-08	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Food Type 5	8.79E-06	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	4.95E-06	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.74E-03	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.13	8.68E-04	Table C-4.2
2	Fish	GM, STM	3	14	1	0.065	4.24E-04	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	4.52E-04	Table C-4.2
4	Plant	Plant			1	0.5	4.35E-06	Table C-4.2
5	Fish	PNF, SAS	3	14	1	0.055	1.60E-04	Table C-4.2
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Biomass Based Proportion of Prey Groups**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.0009	0.0005	0.0005	1.74E-03	0.0002			7.6E-05	0.0021							5.5E-07	7.7E-05	1.4E-04	0.55

BELTED KINGFISHER RISK SHEETS

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Biomass Based Proportion of Prey Groups**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 2

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.89	0.607	948	Fish	1	GKF, GM, STM, PNF, SAS
2	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Biomass Based Proportion of Prey Groups**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Hexachlorobenzene	0.6464	0.9757						3.2E-01	2.1373							0.0E+00	3.2E-01	3.35	0.10
1,3-Dichlorobenzene	0.769	0.758						3.6E-01	0.0736							0.0E+00	3.6E-01	160.8	0.0022

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Biomass Based Proportion of Prey Groups**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 3

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.114875	0.078	948	Fish	1	GM
2	0.775125	0.529	948	Fish	1	GKF, STM, PNF, SAS
3	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Biomass Based Proportion of Prey Groups**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515					3.2E-02	0.0479							0.0E+00	3.2E-02	0.064	0.49
Mercury (Inorganic)								0.0E+00	4.7391							0.0E+00	0.0E+00	0.9	0

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Biomass Based Proportion of Prey Groups**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 4

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.46	0.314	948	Fish	1	GKF
2	0.24	0.164	948	Fish	1	GM, STM
3	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.19	0.164	948	Fish	1	PNF, SAS
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Biomass Based Proportion of Prey Groups**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.0009	0.0005	0.0005	0.0002				2.8E-04	0.0021							0.0E+00	2.8E-04	0.00014	2.03

RACCOON RISK SHEETS

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Biomass Based Proportion of Prey Groups**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.021	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.030074	0.003	1092	Fish	1	GM
2	0.202926	0.018	1092	Fish	1	GKF, STM, PNF, SAS
3	0.233	0.021	974	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.3	0.027	962	Plant	1	
5	0.234	0.021	1428	Mammal	0.5	Marsh Rice Rat
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Biomass Based Proportion of Prey Groups**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.0479	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	4.71E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	1.26E-02	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	1.29E-02	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.99E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.02E-02	mg/kg ww	

Number of food types (k = 1 to m): 5

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.0325	1.45E-01	Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.2175	5.80E-02	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	5.15E-02	Table C-4.2
4	Plant				1	0.5	2.43E-03	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Biomass Based Proportion of Prey Groups**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	4.7391	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	2.64E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.40E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.0325		Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.2175		Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25		Table C-4.2
4	Plant				1	0.5	6.60E-02	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Biomass Based Proportion of Prey Groups**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515	0.002426492	3.02E-02			6.1E-05	0.0479							8.9E-06	7.0E-05	0.0177	0.0040
Mercury (Inorganic)				0.065754378	3.40E-04			3.8E-05	4.7391							8.8E-04	9.1E-04	3.54	0.00026

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Biomass Based Proportion of Prey Groups**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.021	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.121727	0.011	1092	Fish	1	GKF
2	0.111273	0.010	1092	Fish	1	GM, STM, PNF, SAS
3	0.233	0.021	974	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.3	0.027	962	Plant	1	
5	0.234	0.021	1428	Mammal	0.5	Marsh Rice Rat
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Biomass Based Proportion of Prey Groups**
COPC: **PCB Congener TEQ (Mammal)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0001	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	1.13E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	3.83E-06	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	9.75E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	2.77E-09	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	1.91E-08	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.13E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.13	8.70E-05	Table C-4.2
2	Fish	GM, STM, PNF, SAS	3	14	1	0.12	3.19E-05	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	2.79E-05	Table C-4.2
4	Plant	Plant			1	0.5	2.32E-07	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Biomass Based Proportion of Prey Groups**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Mammal) (U=1/2)	8.7E-05	3.2E-05	2.8E-05	2.32E-07	1.13E-04			6.4E-08	0.0001							2.1E-08	8.5E-08	5.4E-07	0.16

SPOTTED SANDPIPER RISK SHEETS

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **Biomass Based Proportion of Prey Groups**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	43	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	8.1	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.77	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	818	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	824	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.992	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.012	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.73	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.18	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.34	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 1

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	1	0.992	824	Invert	1	OYS,BCRA,WHSA
2						
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **Biomass Based Proportion of Prey Groups**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Lead	0.292							9.9E-02	48.944							3.5E-02	1.3E-01	3.26	0.04
Mercury (Methyl)	0.0533							1.8E-02	0.0479							3.4E-05	1.8E-02	0.064	0.28
Total PAH 16 (U=1/2)	0.1397							4.7E-02	7.3078							5.2E-03	5.2E-02	325	0.00016
Dioxin/Furan Congener TEQ (Avian) (U=1/2)	2.2E-05							7.5E-06	0.0002							1.5E-07	7.7E-06	0.00014	0.05
Hexachlorobenzene	1.132							3.8E-01	2.1373							1.5E-03	3.8E-01	3.35	0.11
Hexachlorobutadiene	0.3725							1.3E-01	3.8327							2.7E-03	1.3E-01	20	0.01
1,3-Dichlorobenzene	0.3725							1.3E-01	0.0736							5.2E-05	1.3E-01	160.8	0.0008
1,4-Dichlorobenzene	0.3725							1.3E-01	0.0744							5.2E-05	1.3E-01	160.8	0.0008
PCB Congener TEQ (Avian) (U=1/2)	0.00043							1.4E-04	0.0021							1.5E-06	1.5E-04	1.4E-04	1.05
Mercury (Inorganic)								0.0E+00	4.7391							3.3E-03	3.3E-03	9.0E-01	0.004

APPENDIX C-5.2
PREY GROUPING UNCERTAINTY ANALYSIS – GROUPED BY FISH AND SHELLFISH

Table C-5.2
EPCs for All Fish Species and All Invertebrate Species Prey Groups

COPC	Exposure Point Concentration (mg/kg)		
	Gulf Killifish, Gulf Menhaden, Pinfish, Sand Seatrout, Striped Mullet	Blue Crab, Brown Shrimp, White Shrimp, Oyster	Blue Crab, Oyster, White Shrimp
1,3-Dichlorobenzene	0.769[a]	0.758[a]	0.373[a]
1,4-Dichlorobenzene	--	--	0.373[a]
Dioxin/Furan TEQ	--	--	0.0000223
Hexachlorobenzene	0.645	0.950	1.13
Hexachlorobutadiene	--	--	0.373[a]
Lead	--	--	0.292
Mercury	0.0893	0.0515	0.0533
PCB Congener TEQ (Avian)	0.00076	0.000452	0.000430
PCB Congener TEQ (Mammal	0.000062	0.0000279	--
Total PAH	--	--	0.140

Notes:
a - Maximum non-detect value used

ALL FISH SPECIES COMBINED 95 UCL OUTPUTS

All Fish Species Combined

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (1,3-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	50	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	50
		Percent Non-Detects	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 Result_Value (1,3-dichlorobenzene_ug/kg) was not processed!

Result_Value (hexachlorobenzene_ug/kg)

General Statistics

Number of Valid Data	50	Number of Detected Data	28
Number of Distinct Detected Data	27	Number of Non-Detect Data	22
		Percent Non-Detects	44.00%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	200	Minimum Detected	5.298
Maximum Detected	2360	Maximum Detected	7.766
Mean of Detected	680	Mean of Detected	6.28
SD of Detected	576.9	SD of Detected	0.66
Minimum Non-Detect	351	Minimum Non-Detect	5.861
Maximum Non-Detect	765	Maximum Non-Detect	6.64

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	43
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	86.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.709	Shapiro Wilk Test Statistic	0.923
5% Shapiro Wilk Critical Value	0.924	5% Shapiro Wilk Critical Value	0.924
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	519.2	Mean	6.029
SD	468.9	SD	0.603
95% DL/2 (t) UCL	630.3	95% H-Stat (DL/2) UCL	590.3
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	6.056
		SD in Log Scale	0.573
		Mean in Original Scale	525.4
		SD in Original Scale	465.4
		95% t UCL	635.7
		95% Percentile Bootstrap UCL	635.7
		95% BCA Bootstrap UCL	665.7
		95% H-UCL	589.2

All Fish Species Combined

Gamma Distribution Test with Detected Values Only	
k star (bias corrected)	2.004
Theta Star	339.3
nu star	112.2
A-D Test Statistic	1.384
5% A-D Critical Value	0.757
K-S Test Statistic	0.757
5% K-S Critical Value	0.167
Data not Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	98.03
Maximum	2360
Mean	546.6
Median	474.4
SD	470.9
k star	1.973
Theta star	277
Nu star	197.3
AppChi2	165.8
95% Gamma Approximate UCL (Use when n >= 40)	650.4
95% Adjusted Gamma UCL (Use when n < 40)	653.8

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only
Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics	
Kaplan-Meier (KM) Method	
Mean	528.3
SD	463.9
SE of Mean	68.18
95% KM (t) UCL	642.6
95% KM (z) UCL	640.4
95% KM (jackknife) UCL	641.9
95% KM (bootstrap t) UCL	682.8
95% KM (BCA) UCL	647.2
95% KM (Percentile Bootstrap) UCL	644.8
95% KM (Chebyshev) UCL	825.5
97.5% KM (Chebyshev) UCL	954.1
99% KM (Chebyshev) UCL	1207
Potential UCLs to Use	
95% KM (t) UCL	642.6
95% KM (% Bootstrap) UCL	644.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	50	Number of Distinct Observations	37

Raw Statistics		Log-transformed Statistics	
Minimum	0.024	Minimum of Log Data	-3.73
Maximum	0.199	Maximum of Log Data	-1.614
Mean	0.0643	Mean of log Data	-2.904
Geometric Mean	0.0548	SD of log Data	0.551
Median	0.0465		
SD	0.0406		
Std. Error of Mean	0.00575		
Coefficient of Variation	0.632		
Skewness	1.635		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.82	Shapiro Wilk Test Statistic	0.944
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0739	95% H-UCL	0.0743
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0865
95% Adjusted-CLT UCL (Chen-1995)	0.0752	97.5% Chebyshev (MVUE) UCL	0.0964
95% Modified-t UCL (Johnson-1978)	0.0742	99% Chebyshev (MVUE) UCL	0.116
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.111	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.0207		

MLE of Mean	0.0643
MLE of Standard Deviation	0.0365
nu star	311.1
Approximate Chi Square Value (.05)	271.2
Adjusted Level of Significance	0.0452
Adjusted Chi Square Value	270.1
Anderson-Darling Test Statistic	1.152
Anderson-Darling 5% Critical Value	0.756
Kolmogorov-Smirnov Test Statistic	0.157
Kolmogorov-Smirnov 5% Critical Value	0.126

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	0.0738
95% Adjusted Gamma UCL (Use when n < 40)	0.0741

Nonparametric Statistics

95% CLT UCL	0.0738
95% Jackknife UCL	0.0739
95% Standard Bootstrap UCL	0.0737
95% Bootstrap-t UCL	0.0761
95% Hall's Bootstrap UCL	0.0755
95% Percentile Bootstrap UCL	0.0741
95% BCA Bootstrap UCL	0.0756
95% Chebyshev(Mean, Sd) UCL	0.0893
97.5% Chebyshev(Mean, Sd) UCL	0.1
99% Chebyshev(Mean, Sd) UCL	0.121

Potential UCL to Use

Use 95% Chebyshev (Mean, Sd) UCL 0.0893

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	50	Number of Distinct Observations	50

Raw Statistics

Minimum	77.5
Maximum	1173
Mean	566.3
Geometric Mean	459.3
Median	551.7
SD	311.4
Std. Error of Mean	44.04
Coefficient of Variation	0.55
Skewness	0.099

Log-transformed Statistics

Minimum of Log Data	4.35
Maximum of Log Data	7.067
Mean of log Data	6.13
SD of log Data	0.729

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.942
Shapiro Wilk Critical Value	0.947

Data not Normal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	640.1

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	639.4
95% Modified-t UCL (Johnson-1978)	640.2

Gamma Distribution Test

k star (bias corrected)	2.404
Theta Star	235.5
MLE of Mean	566.3
MLE of Standard Deviation	365.2
nu star	240.4
Approximate Chi Square Value (.05)	205.5
Adjusted Level of Significance	0.0452
Adjusted Chi Square Value	204.6
Anderson-Darling Test Statistic	1.016
Anderson-Darling 5% Critical Value	0.76

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.897
Shapiro Wilk Critical Value	0.947

Data not Lognormal at 5% Significance Level

Assuming Lognormal Distribution

95% H-UCL	742.7
95% Chebyshev (MVUE) UCL	889.7
97.5% Chebyshev (MVUE) UCL	1017
99% Chebyshev (MVUE) UCL	1268

Data Distribution

Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics

95% CLT UCL	638.7
95% Jackknife UCL	640.1
95% Standard Bootstrap UCL	636.8
95% Bootstrap-t UCL	640
95% Hall's Bootstrap UCL	643.5

Kolmogorov-Smirnov Test Statistic	0.147
Kolmogorov-Smirnov 5% Critical Value	0.127
Data not Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
95% Approximate Gamma UCL (Use when n >= 40)	662.4
95% Adjusted Gamma UCL (Use when n < 40)	665.5
95% Percentile Bootstrap UCL	635
95% BCA Bootstrap UCL	641.1
95% Chebyshev(Mean, Sd) UCL	758.2
97.5% Chebyshev(Mean, Sd) UCL	841.3
99% Chebyshev(Mean, Sd) UCL	1004
Potential UCL to Use	
Use 95% Chebyshev (Mean, Sd) UCL	758.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 2005 (mammal) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	50	Number of Distinct Observations	50

Raw Statistics		**Log-transformed Statistics**	
Minimum	3.63	Minimum of Log Data	1.289
Maximum	137.1	Maximum of Log Data	4.921
Mean	52.33	Mean of log Data	3.69
Geometric Mean	40.04	SD of log Data	0.836
Median	45.55		
SD	33.49		
Std. Error of Mean	4.736		
Coefficient of Variation	0.64		
Skewness	0.55		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.937	Shapiro Wilk Test Statistic	0.92
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	60.27	95% H-UCL	73.62
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	89.01
95% Adjusted-CLT UCL (Chen-1995)	60.51	97.5% Chebyshev (MVUE) UCL	103.2
95% Modified-t UCL (Johnson-1978)	60.33	99% Chebyshev (MVUE) UCL	131
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.91	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	27.39		
MLE of Mean	52.33		
MLE of Standard Deviation	37.86		
nu star	191		
Approximate Chi Square Value (.05)	160.1	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0452	95% CLT UCL	60.12
Adjusted Chi Square Value	159.2	95% Jackknife UCL	60.27
		95% Standard Bootstrap UCL	60.14
Anderson-Darling Test Statistic	0.428	95% Bootstrap-t UCL	60.72
Anderson-Darling 5% Critical Value	0.763	95% Hall's Bootstrap UCL	60.55
Kolmogorov-Smirnov Test Statistic	0.0909	95% Percentile Bootstrap UCL	60.45
Kolmogorov-Smirnov 5% Critical Value	0.127	95% BCA Bootstrap UCL	59.95
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	72.97
		97.5% Chebyshev(Mean, Sd) UCL	81.91
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	99.45
95% Approximate Gamma UCL (Use when n >= 40)	62.46		
95% Adjusted Gamma UCL (Use when n < 40)	62.79		

All Fish Species Combined

Potential UCL to Use	Use 95% Approximate Gamma UCL 62.46

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

ALL INVERTEBRATE SPECIES COMBINED 95 UCL OUTPUTS

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1_a.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (1,3-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	33	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	33
		Percent Non-Detects	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 Result_Value (1,3-dichlorobenzene_ug/kg) was not processed!

Result_Value (hexachlorobenzene_ug/kg)

General Statistics

Number of Valid Data	33	Number of Detected Data	20
Number of Distinct Detected Data	20	Number of Non-Detect Data	13
		Percent Non-Detects	39.39%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	191	Minimum Detected	5.252
Maximum Detected	5430	Maximum Detected	8.6
Mean of Detected	821	Mean of Detected	6.401
SD of Detected	1104	SD of Detected	0.66
Minimum Non-Detect	347	Minimum Non-Detect	5.849
Maximum Non-Detect	748	Maximum Non-Detect	6.617

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	28
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	84.85%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.407	Shapiro Wilk Test Statistic	0.839
5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	591.1	Mean	6.013
SD	900.2	SD	0.734
95% DL/2 (t) UCL	856.5	95% H-Stat (DL/2) UCL	707.1
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	6.094
		SD in Log Scale	0.652
		Mean in Original Scale	608.6
		SD in Original Scale	892.5
		95% t UCL	871.8
		95% Percentile Bootstrap UCL	910.7
		95% BCA Bootstrap UCL	1105
		95% H-UCL	695.2

All Invertebrate Species Combined

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	1.533
Theta Star	535.4
nu star	61.33
A-D Test Statistic	2.019
5% A-D Critical Value	0.755
K-S Test Statistic	0.755
5% K-S Critical Value	0.197

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data

Minimum	0.000001
Maximum	5430
Mean	546.8
Median	413.5
SD	925.8
k star	0.16
Theta star	3422
Nu star	10.55
AppChi2	4.285
95% Gamma Approximate UCL (Use when n >= 40)	1346
95% Adjusted Gamma UCL (Use when n < 40)	1413

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only

Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics

Kaplan-Meier (KM) Method

Mean	621
SD	877.2
SE of Mean	157.7
95% KM (t) UCL	888
95% KM (z) UCL	880.3
95% KM (jackknife) UCL	886.5
95% KM (bootstrap t) UCL	1413
95% KM (BCA) UCL	949.8
95% KM (Percentile Bootstrap) UCL	920.5
95% KM (Chebyshev) UCL	1308
97.5% KM (Chebyshev) UCL	1606
99% KM (Chebyshev) UCL	2190

Potential UCLs to Use

95% KM (BCA) UCL	949.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	33	Number of Distinct Observations	24

Raw Statistics

Minimum	0.009
Maximum	0.083
Mean	0.0468
Geometric Mean	0.0436
Median	0.046
SD	0.0158
Std. Error of Mean	0.00275
Coefficient of Variation	0.338
Skewness	-0.0016

Log-transformed Statistics

Minimum of Log Data	-4.711
Maximum of Log Data	-2.489
Mean of log Data	-3.132
SD of log Data	0.42

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.989
Shapiro Wilk Critical Value	0.931

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	0.0515

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	0.0514
95% Modified-t UCL (Johnson-1978)	0.0515

Gamma Distribution Test

k star (bias corrected)	6.595
Theta Star	0.0071

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.884
Shapiro Wilk Critical Value	0.931

Data not Lognormal at 5% Significance Level

Assuming Lognormal Distribution

95% H-UCL	0.0548
95% Chebyshev (MVUE) UCL	0.0632
97.5% Chebyshev (MVUE) UCL	0.07
99% Chebyshev (MVUE) UCL	0.0833

Data Distribution

Data appear Normal at 5% Significance Level

MLE of Mean	0.0468
MLE of Standard Deviation	0.0182
nu star	435.3
Approximate Chi Square Value (.05)	387.9
Adjusted Level of Significance	0.0419
Adjusted Chi Square Value	385.6
Anderson-Darling Test Statistic	0.478
Anderson-Darling 5% Critical Value	0.748
Kolmogorov-Smirnov Test Statistic	0.143
Kolmogorov-Smirnov 5% Critical Value	0.153

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	0.0526
95% Adjusted Gamma UCL (Use when n < 40)	0.0529

Nonparametric Statistics

95% CLT UCL	0.0514
95% Jackknife UCL	0.0515
95% Standard Bootstrap UCL	0.0514
95% Bootstrap-t UCL	0.0517
95% Hall's Bootstrap UCL	0.0516
95% Percentile Bootstrap UCL	0.0512
95% BCA Bootstrap UCL	0.0512
95% Chebyshev(Mean, Sd) UCL	0.0589
97.5% Chebyshev(Mean, Sd) UCL	0.0641
99% Chebyshev(Mean, Sd) UCL	0.0743

Potential UCL to Use

Use 95% Student's-t UCL 0.0515

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Note: For highly negative-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	33
Number of Distinct Observations	33

Raw Statistics

Minimum	97.57
Maximum	782.9
Mean	404.3
Geometric Mean	370.4
Median	369.9
SD	160.9
Std. Error of Mean	28
Coefficient of Variation	0.398
Skewness	0.406

Log-transformed Statistics

Minimum of Log Data	4.581
Maximum of Log Data	6.663
Mean of log Data	5.914
SD of log Data	0.451

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.974
Shapiro Wilk Critical Value	0.931

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	451.7

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	452.5
95% Modified-t UCL (Johnson-1978)	452.1

Gamma Distribution Test

k star (bias corrected)	5.35
Theta Star	75.57
MLE of Mean	404.3
MLE of Standard Deviation	174.8
nu star	353.1
Approximate Chi Square Value (.05)	310.5

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.95
Shapiro Wilk Critical Value	0.931

Data appear Lognormal at 5% Significance Level

Assuming Lognormal Distribution

95% H-UCL	476.8
95% Chebyshev (MVUE) UCL	553.4
97.5% Chebyshev (MVUE) UCL	616.1
99% Chebyshev (MVUE) UCL	739.2

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

Adjusted Level of Significance	0.0419	95% CLT UCL	450.4
Adjusted Chi Square Value	308.5	95% Jackknife UCL	451.7
		95% Standard Bootstrap UCL	449.5
Anderson-Darling Test Statistic	0.251	95% Bootstrap-t UCL	454.4
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	453.1
Kolmogorov-Smirnov Test Statistic	0.0852	95% Percentile Bootstrap UCL	450.6
Kolmogorov-Smirnov 5% Critical Value	0.153	95% BCA Bootstrap UCL	450.1
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	526.4
		97.5% Chebyshev(Mean, Sd) UCL	579.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	682.9
95% Approximate Gamma UCL (Use when n >= 40)	459.7		
95% Adjusted Gamma UCL (Use when n < 40)	462.7		
Potential UCL to Use		Use 95% Student's-t UCL	451.7

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 2005 (mammal) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	33	Number of Distinct Observations	33

Raw Statistics		**Log-transformed Statistics**	
Minimum	8.2	Minimum of Log Data	2.104
Maximum	49.2	Maximum of Log Data	3.896
Mean	24.77	Mean of log Data	3.114
Geometric Mean	22.51	SD of log Data	0.462
Median	23.2		
SD	10.51		
Std. Error of Mean	1.83		
Coefficient of Variation	0.424		
Skewness	0.508		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.959	Shapiro Wilk Test Statistic	0.955
Shapiro Wilk Critical Value	0.931	Shapiro Wilk Critical Value	0.931
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	27.87	95% H-UCL	29.28
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	34.06
95% Adjusted-CLT UCL (Chen-1995)	27.95	97.5% Chebyshev (MVUE) UCL	38
95% Modified-t UCL (Johnson-1978)	27.9	99% Chebyshev (MVUE) UCL	45.74

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.919	**Data appear Normal at 5% Significance Level**	
Theta Star	5.036		
MLE of Mean	24.77		
MLE of Standard Deviation	11.17		
nu star	324.6		
Approximate Chi Square Value (.05)	283.9	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0419	95% CLT UCL	27.78
Adjusted Chi Square Value	281.9	95% Jackknife UCL	27.87
		95% Standard Bootstrap UCL	27.82
Anderson-Darling Test Statistic	0.241	95% Bootstrap-t UCL	28.22
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	27.99
Kolmogorov-Smirnov Test Statistic	0.0941	95% Percentile Bootstrap UCL	27.86
Kolmogorov-Smirnov 5% Critical Value	0.154	95% BCA Bootstrap UCL	27.79
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	32.75

All Invertebrate Species Combined

	97.5% Chebyshev(Mean, Sd) UCL 36.2
Assuming Gamma Distribution	99% Chebyshev(Mean, Sd) UCL 42.97
95% Approximate Gamma UCL (Use when n >= 40) 28.33	
95% Adjusted Gamma UCL (Use when n < 40) 28.52	
Potential UCL to Use	Use 95% Student's-t UCL 27.87

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

CARNIVOROUS BIRD RISK SHEETS

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Fish and Invertebrate Species Grouped**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 3

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.33	0.108	948	Fish	1	All fish
2	0.33	0.108	824	Invertebrate	1	All invertebrates
3	0.34	0.111	1326	Mammal	0.5	Marsh Rice Rat
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Fish and Invertebrate Species Grouped**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.0479	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0.022325	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0.12875	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3		mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.99E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.51E-01	mg/kg ww	

Number of food types (k = 1 to m): 3

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	All fish	3	1	1	0.25	0.0893	Table C-4.2
2	Invertebrate	All invertebrates	2	1	1	0.25	0.515	Table C-4.2
3	Plant	Plant			1	0.5	2.43E-03	Table C-4.2
4								
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Fish and Invertebrate Species Grouped**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	4.7391	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3		mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	2.64E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.40E-04	mg/kg ww	

Number of food types (k = 1 to m): 3

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	All fish	3	1	1	0.25		Table C-4.2
2	Invertebrate	All invertebrates	2	1	1	0.25		Table C-4.2
3	Plant				1	0.5	6.60E-02	Table C-4.2
4								
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Fish and Invertebrate Species Grouped**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.0893	0.515	1.51E-01					2.6E-02	0.0479							1.3E-05	2.7E-02	0.064	0.41
Mercury (Inorganic)			3.40E-04					1.9E-05	4.7391							1.3E-03	1.3E-03	0.9	0.0014

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Fish and Invertebrate Species Grouped**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 3

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.33	0.108	948	Fish	1	All fish
2	0.33	0.108	824	Invertebrate	1	All invertebrates
3	0.34	0.111	1326	Mammal	0.5	Marsh Rice Rat
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Fish and Invertebrate Species Grouped**
COPC: **PCB Congener TEQ (Avian)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0021	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	1.90E-04	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	1.58E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3		mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	5.20E-08	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Food Type 5		mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	4.95E-06	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.78E-03	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	All Fish	3	14	1	0.25	7.58E-04	Table C-4.2
2	Invertebrate	All Invertebrates	2	1	1	0.25	4.52E-04	Table C-4.2
3	Plant	Plant			1	0.5	4.35E-06	Table C-4.2
4								
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Fish and Invertebrate Species Grouped**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.00076	0.00045	1.78E-03					8.3E-05	0.0021							5.5E-07	8.3E-05	1.4E-04	0.59

BELTED KINGFISHER RISK SHEETS

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Fish and Invertebrate Species Grouped**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	948	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.672	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 2

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.89	0.598	948	Fish	1	All fish
2	0.11	0.074	948	Invert	1	All invert
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Fish and Invertebrate Species Grouped**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.0893	0.0515						4.0E-02	0.0479							0.0E+00	4.0E-02	0.064	0.62
Hexachlorobenzene	0.6448	0.9498						3.1E-01	2.1373							0.0E+00	3.1E-01	3.35	0.09
1,3-Dichlorobenzene	0.769	0.758						3.6E-01	0.0736							0.0E+00	3.6E-01	160.8	0.0022
PCB Congener TEQ (Avian) (U=1/2)	0.0008	0.0005						3.4E-04	0.0021							0.0E+00	3.4E-04	0.00014	2.40
Mercury (Inorganic)								0.0E+00	4.7391							0.0E+00	0.0E+00	9.0E-01	0

RACCOON RISK SHEETS

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Fish and Invertebrate Species Grouped**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.021	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 4

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.233	0.021	1092	Fish	1	All Fish
2	0.234	0.021	974	Invertebrate	1	All invertebrate
3	0.3	0.027	962	Plant	1	
4	0.233	0.021	1428	Mammal	0.5	Marsh Rice Rat
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Fish and Invertebrate Species Grouped**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.0479	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	2.23E-02	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	1.29E-02	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3		mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.99E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.52E-02	mg/kg ww	

Number of food types (*k* = 1 to *m*): 3

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	All Fish	3	1	1	0.25	8.93E-02	Table C-4.2
2	Invertebrate	All Invertebrate	2	1	1	0.25	5.15E-02	Table C-4.2
3	Plant				1	0.5	2.43E-03	Table C-4.2
4								
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Fish and Invertebrate Species Grouped**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	4.7391	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3		mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	2.64E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.40E-04	mg/kg ww	

Number of food types (k = 1 to m): 3

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	All Fish	3	1	1	0.25		Table C-4.2
2	Invertebrate	All Invertebrate	2	1	1	0.25		Table C-4.2
3	Plant				1	0.5	6.60E-02	Table C-4.2
4								
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Fish and Invertebrate Species Grouped**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.0893	0.0515	0.002426492	3.52E-02				7.2E-05	0.0479							8.9E-06	8.0E-05	0.0177	0.0045
Mercury (Inorganic)			0.065754378	3.40E-04				3.8E-05	4.7391							8.8E-04	9.1E-04	3.54	0.00026

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Fish and Invertebrate Species Grouped**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.021	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 4

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.233	0.021	1092	Fish	1	All Fish
2	0.234	0.021	974	Invertebrate	1	All invertebrate
3	0.3	0.027	962	Plant	1	
4	0.233	0.021	1428	Mammal	0.5	Marsh Rice Rat
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Fish and Invertebrate Species Grouped**
COPC: **PCB Congener TEQ (Mammal)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0001	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	2.18E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	1.12E-04	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3		mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	2.77E-09	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	1.91E-08	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.34E-04	mg/kg ww	

Number of food types (k = 1 to m): 3

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	All Fish	3	14	1	0.25	8.70E-05	Table C-4.2
2	Invertebrate	All Invertebrate	2	1	1	0.25	3.19E-05	Table C-4.2
3	Plant	Plant			1	0.5	2.32E-07	Table C-4.2
4								
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Fish and Invertebrate Species Grouped**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Mammal) (U=1/2)	6.2E-05	2.8E-05	2.32E-07	1.34E-04				7.0E-08	0.0001							2.1E-08	9.0E-08	5.4E-07	0.17

SPOTTED SANDPIPER RISK SHEETS

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **Fish and Invertebrate Species Grouped**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	43	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	8.1	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.77	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	818	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	824	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.992	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.012	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.73	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.3	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.34	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 1

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	1	0.992	824	Invert	1	All invertebrates
2						
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **Fish and Invertebrate Species Grouped**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Lead	0.292							9.9E-02	48.944							5.8E-02	1.6E-01	3.26	0.05
Mercury (Methyl)	0.0533							1.8E-02	0.0479							5.6E-05	1.8E-02	0.064	0.28
Total PAH 16 (U=1/2)	0.1397							4.7E-02	7.3078							8.6E-03	5.6E-02	325	0.00017
Dioxin/Furan Congener TEQ (Avian) (U=1/2)	2.2E-05							7.5E-06	0.0002							2.5E-07	7.8E-06	0.00014	0.06
Hexachlorobenzene	1.13							3.8E-01	2.1373							2.5E-03	3.8E-01	3.35	0.11
Hexachlorobutadiene	0.373							1.3E-01	3.8327							4.5E-03	1.3E-01	20	0.01
1,3-Dichlorobenzene	0.373							1.3E-01	0.0736							8.7E-05	1.3E-01	160.8	0.0008
1,4-Dichlorobenzene	0.373							1.3E-01	0.0744							8.7E-05	1.3E-01	160.8	0.0008
PCB Congener TEQ (Avian) (U=1/2)	0.00043							1.5E-04	0.0021							2.4E-06	1.5E-04	1.4E-04	1.05
Mercury (Inorganic)								0.0E+00	4.7391							5.6E-03	5.6E-03	9.0E-01	0.006

APPENDIX C-5.3
PREY GROUPING UNCERTAINTY ANALYSIS – ALL SPECIES INDEPENDENT

Table C-5.3
EPCs For All Individual Prey Species

COPC	Exposure Point Concentration (mg/kg)								
	BCR	BRS	GKF	GM	OYS	PNF	SAS	STM	WHS
1,3-Dichlorobenzene	0.748[a]	0.709[a]	0.763[a]	0.765[a]	0.704[a]	0.765[a]	0.37[a]	0.769[a]	0.758[a]
1,4-Dichlorobenzene	0.745[a]	--	--	--	0.704[a]	--	--	--	0.714[a]
Hexachlorobenzene	1.088	0.7977	0.5825	0.568	0.704[a]	2.29[b]	0.325[b]	1.05	0.682[b]
Hexachlorobutadiene	0.745[a]	--	--	--	0.704[a]	--	--	--	0.714[a]
Lead	0.226	--	--	--	0.331[b]	--	--	--	0.116[b]
Mercury	0.0567	0.0501	0.0611	0.145	0.051[b]	0.083[b]	0.063[b]	0.0744	0.042[b]
Dioxin/Furan TEQ (Avian; U=1/2)	--	--	--	--	0.000020[b]	--	--	--	0.000025[b]
Total PAH (U=1/2)	0.07592	--	--	--	0.55212[b]	--	--	--	0.1623[b]
PCB Congener TEQ (Avian; U=1/2)	0.00044	0.00060	0.00087	0.00056	0.00036[b]	0.00015[b]	0.00019[b]	0.00048	0.00031[b]
PCB Congener TEQ (Mammal; U=1/2)	0.000031	0.000031	0.000087	0.000038	0.000021[b]	0.000051[b]	0.000026[b]	0.000030	0.000018[b]

Notes:
a - EPC based on maximum non-detected value
b - EPC based on maximum detected value
BCR - blue crab
BRS - brown shrimp
GKF - gulf killifish
GM - gulf menhaden
OYS - oyster
PNF - pinfish
SAS - sand seatrout
STM - striped mullet
WHS - white shrimp

BLUE CRAB 95 UCL OUTPUTS

Blue Crab

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (1,3-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	21	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	21
		Percent Non-Detects	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 Result_Value (1,3-dichlorobenzene_ug/kg) was not processed!

Result_Value (1,4-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	18	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	18
		Percent Non-Detects	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 Result_Value (1,4-dichlorobenzene_ug/kg) was not processed!

Result_Value (hexachlorobenzene_ug/kg)

General Statistics

Number of Valid Data	21	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	12
		Percent Non-Detects	57.14%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	191	Minimum Detected	5.252
Maximum Detected	5430	Maximum Detected	8.6
Mean of Detected	1021	Mean of Detected	6.33
SD of Detected	1668	SD of Detected	0.971
Minimum Non-Detect	347	Minimum Non-Detect	5.849
Maximum Non-Detect	748	Maximum Non-Detect	6.617

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	19
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	2
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	90.48%

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.

Blue Crab

UCL Statistics

Normal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.511
5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level	
Assuming Normal Distribution	
DL/2 Substitution Method	
Mean	568
SD	1131
95% DL/2 (t) UCL	993.5
Maximum Likelihood Estimate(MLE) Method	N/A
MLE method failed to converge properly	

Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.847
5% Shapiro Wilk Critical Value	0.829
Data appear Lognormal at 5% Significance Level	
Assuming Lognormal Distribution	
DL/2 Substitution Method	
Mean	5.786
SD	0.816
95% H-Stat (DL/2) UCL	694.3
Log ROS Method	
Mean in Log Scale	5.842
SD in Log Scale	0.757
Mean in Original Scale	575.3
SD in Original Scale	1127
95% t UCL	999.4
95% Percentile Bootstrap UCL	1028
95% BCA Bootstrap UCL	1355
95% H-UCL	672

Gamma Distribution Test with Detected Values Only	
k star (bias corrected)	0.719
Theta Star	1420
nu star	12.94
A-D Test Statistic	1.166
5% A-D Critical Value	0.745
K-S Test Statistic	0.745
5% K-S Critical Value	0.287
Data not Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	0.000001
Maximum	5430
Mean	471.7
Median	237.7
SD	1165
k star	0.119
Theta star	3955
Nu star	5.009
AppChi2	1.157
95% Gamma Approximate UCL (Use when n >= 40)	2043
95% Adjusted Gamma UCL (Use when n < 40)	2310

Data Distribution Test with Detected Values Only
Data appear Lognormal at 5% Significance Level

Nonparametric Statistics	
Kaplan-Meier (KM) Method	
Mean	600
SD	1094
SE of Mean	254.5
95% KM (t) UCL	1039
95% KM (z) UCL	1019
95% KM (jackknife) UCL	1026
95% KM (bootstrap t) UCL	2652
95% KM (BCA) UCL	1097
95% KM (Percentile Bootstrap) UCL	1088
95% KM (Chebyshev) UCL	1709
97.5% KM (Chebyshev) UCL	2189
99% KM (Chebyshev) UCL	3132
Potential UCLs to Use	
95% KM (t) UCL	1039
95% KM (% Bootstrap) UCL	1088

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Result_Value (hexachlorobutadiene_ug/kg)

General Statistics

Number of Valid Data	18	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	18
		Percent Non-Detects	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 Result_Value (hexachlorobutadiene_ug/kg) was not processed!

Result_Value (lead_mg/kg)

General Statistics

Number of Valid Observations	18	Number of Distinct Observations	18

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.092	Minimum of Log Data	-2.386
Maximum	0.518	Maximum of Log Data	-0.658
Mean	0.178	Mean of log Data	-1.86
Geometric Mean	0.156	SD of log Data	0.494
Median	0.126		
SD	0.112		
Std. Error of Mean	0.0264		
Coefficient of Variation	0.629		
Skewness	2.011		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.735	Shapiro Wilk Test Statistic	0.859
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.224	95% H-UCL	0.224
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.266
95% Adjusted-CLT UCL (Chen-1995)	0.235	97.5% Chebyshev (MVUE) UCL	0.306
95% Modified-t UCL (Johnson-1978)	0.226	99% Chebyshev (MVUE) UCL	0.384

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.27	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.0545		
MLE of Mean	0.178		
MLE of Standard Deviation	0.0985		
nu star	117.7		
Approximate Chi Square Value (.05)	93.67	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0357	95% CLT UCL	0.221
Adjusted Chi Square Value	91.61	95% Jackknife UCL	0.224
		95% Standard Bootstrap UCL	0.219
Anderson-Darling Test Statistic	1.296	95% Bootstrap-t UCL	0.263
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	0.251
Kolmogorov-Smirnov Test Statistic	0.232	95% Percentile Bootstrap UCL	0.221
Kolmogorov-Smirnov 5% Critical Value	0.205	95% BCA Bootstrap UCL	0.235
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.293
		97.5% Chebyshev(Mean, Sd) UCL	0.343
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.441
95% Approximate Gamma UCL (Use when n >= 40)	0.224		
95% Adjusted Gamma UCL (Use when n < 40)	0.229		

Potential UCL to Use	
Use 95% Student's-t UCL	0.224
or 95% Modified-t UCL	0.226

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (mercury_mg/kg)

Blue Crab

General Statistics

Number of Valid Observations	21	Number of Distinct Observations	16

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.009	Minimum of Log Data	-4.711
Maximum	0.083	Maximum of Log Data	-2.489
Mean	0.0502	Mean of log Data	-3.073
Geometric Mean	0.0463	SD of log Data	0.475
Median	0.051		
SD	0.0171		
Std. Error of Mean	0.00373		
Coefficient of Variation	0.34		
Skewness	-0.416		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.979	Shapiro Wilk Test Statistic	0.804
Shapiro Wilk Critical Value	0.908	Shapiro Wilk Critical Value	0.908
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0567	95% H-UCL	0.0639
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0756
95% Adjusted-CLT UCL (Chen-1995)	0.056	97.5% Chebyshev (MVUE) UCL	0.086
95% Modified-t UCL (Johnson-1978)	0.0566	99% Chebyshev (MVUE) UCL	0.106
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	5.406	**Data appear Normal at 5% Significance Level**	
Theta Star	0.00929		
MLE of Mean	0.0502		
MLE of Standard Deviation	0.0216		
nu star	227.1		
Approximate Chi Square Value (.05)	193.2	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0383	95% CLT UCL	0.0564
Adjusted Chi Square Value	190.8	95% Jackknife UCL	0.0567
		95% Standard Bootstrap UCL	0.056
Anderson-Darling Test Statistic	0.712	95% Bootstrap-t UCL	0.0567
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	0.0562
Kolmogorov-Smirnov Test Statistic	0.208	95% Percentile Bootstrap UCL	0.056
Kolmogorov-Smirnov 5% Critical Value	0.19	95% BCA Bootstrap UCL	0.0559
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0665
		97.5% Chebyshev(Mean, Sd) UCL	0.0735
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0874
95% Approximate Gamma UCL (Use when n >= 40)	0.059		
95% Adjusted Gamma UCL (Use when n < 40)	0.0598		

Potential UCL to Use		
	Use 95% Student's-t UCL	0.0567

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Note: For highly negative-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Result_Value (total pah (16) (u = 1/2)_ug/kg)

General Statistics

Number of Valid Data	18	Number of Detected Data	5

Blue Crab

Number of Distinct Detected Data	5	Number of Non-Detect Data	13
		Percent Non-Detects	72.22%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	60.91	Minimum Detected	4.109
Maximum Detected	123.8	Maximum Detected	4.819
Mean of Detected	77.22	Mean of Detected	4.308
SD of Detected	26.45	SD of Detected	0.294
Minimum Non-Detect	6.93	Minimum Non-Detect	1.936
Maximum Non-Detect	14.8	Maximum Non-Detect	2.695

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	13
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	72.22%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

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

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.694	Shapiro Wilk Test Statistic	0.741
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	25.88	Mean	2.473
SD	35.22	SD	1.213
95% DL/2 (t) UCL	40.32	95% H-Stat (DL/2) UCL	59.09
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	3.525
		SD in Log Scale	0.538
		Mean in Original Scale	39.83
		SD in Original Scale	27.32
		95% t UCL	51.03
		95% Percentile Bootstrap UCL	51.13
		95% BCA Bootstrap UCL	54.45
		95% H-UCL	51.36

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	5.409	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	14.28		
nu star	54.09		
A-D Test Statistic	0.794	**Nonparametric Statistics**	
5% A-D Critical Value	0.679	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.679	Mean	65.44
5% K-S Critical Value	0.357	SD	14.45
Data not Gamma Distributed at 5% Significance Level		SE of Mean	3.808
		95% KM (t) UCL	72.07
Assuming Gamma Distribution		95% KM (z) UCL	71.7
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	71.53
Minimum	0.000001	95% KM (bootstrap t) UCL	83.69
Maximum	123.8	95% KM (BCA) UCL	76.32
Mean	21.45	95% KM (Percentile Bootstrap) UCL	75.92
Median	0.000001	95% KM (Chebyshev) UCL	82.04
SD	37.83	97.5% KM (Chebyshev) UCL	89.22
k star	0.0965	99% KM (Chebyshev) UCL	103.3

Theta star	222.4
Nu star	3.473
AppChi2	0.525
95% Gamma Approximate UCL (Use when n >= 40)	141.8
95% Adjusted Gamma UCL (Use when n < 40)	172.3

Potential UCLs to Use

95% KM (t) UCL	72.07
95% KM (% Bootstrap) UCL	75.92

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	21	Number of Distinct Observations	21

Raw Statistics		**Log-transformed Statistics**	
Minimum	97.57	Minimum of Log Data	4.581
Maximum	782.9	Maximum of Log Data	6.663
Mean	378.7	Mean of log Data	5.84
Geometric Mean	343.9	SD of log Data	0.474
Median	340.8		
SD	163.7		
Std. Error of Mean	35.73		
Coefficient of Variation	0.432		
Skewness	0.813		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.942	Shapiro Wilk Test Statistic	0.941
Shapiro Wilk Critical Value	0.908	Shapiro Wilk Critical Value	0.908
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	440.3	95% H-UCL	473.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	560.9
95% Adjusted-CLT UCL (Chen-1995)	444.2	97.5% Chebyshev (MVUE) UCL	638.1
95% Modified-t UCL (Johnson-1978)	441.4	99% Chebyshev (MVUE) UCL	789.7

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.611	**Data appear Normal at 5% Significance Level**	
Theta Star	82.14		
MLE of Mean	378.7		
MLE of Standard Deviation	176.4		
nu star	193.7		
Approximate Chi Square Value (.05)	162.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0383	95% CLT UCL	437.5
Adjusted Chi Square Value	160.3	95% Jackknife UCL	440.3
		95% Standard Bootstrap UCL	436.1
Anderson-Darling Test Statistic	0.313	95% Bootstrap-t UCL	452.3
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	454.1
Kolmogorov-Smirnov Test Statistic	0.115	95% Percentile Bootstrap UCL	438
Kolmogorov-Smirnov 5% Critical Value	0.19	95% BCA Bootstrap UCL	441.6
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	534.4
		97.5% Chebyshev(Mean, Sd) UCL	601.8
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	734.2
95% Approximate Gamma UCL (Use when n >= 40)	451.4		
95% Adjusted Gamma UCL (Use when n < 40)	457.6		

Potential UCL to Use	
Use 95% Student's-t UCL	440.3

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Blue Crab

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 2005 (mammal) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	21	Number of Distinct Observations	21

Raw Statistics		**Log-transformed Statistics**	
Minimum	8.35	Minimum of Log Data	2.122
Maximum	49.2	Maximum of Log Data	3.896
Mean	26.38	Mean of log Data	3.179
Geometric Mean	24.03	SD of log Data	0.46
Median	24.8		
SD	11.1		
Std. Error of Mean	2.422		
Coefficient of Variation	0.421		
Skewness	0.412		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.97	Shapiro Wilk Test Statistic	0.971
Shapiro Wilk Critical Value	0.908	Shapiro Wilk Critical Value	0.908
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	30.55	95% H-UCL	32.67
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	38.58
95% Adjusted-CLT UCL (Chen-1995)	30.59	97.5% Chebyshev (MVUE) UCL	43.77
95% Modified-t UCL (Johnson-1978)	30.59	99% Chebyshev (MVUE) UCL	53.98
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.767	**Data appear Normal at 5% Significance Level**	
Theta Star	5.533		
MLE of Mean	26.38		
MLE of Standard Deviation	12.08		
nu star	200.2		
Approximate Chi Square Value (.05)	168.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0383	95% CLT UCL	30.36
Adjusted Chi Square Value	166.3	95% Jackknife UCL	30.55
		95% Standard Bootstrap UCL	30.27
Anderson-Darling Test Statistic	0.155	95% Bootstrap-t UCL	30.87
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	30.62
Kolmogorov-Smirnov Test Statistic	0.107	95% Percentile Bootstrap UCL	30.48
Kolmogorov-Smirnov 5% Critical Value	0.19	95% BCA Bootstrap UCL	30.39
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	36.93
		97.5% Chebyshev(Mean, Sd) UCL	41.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	50.48
95% Approximate Gamma UCL (Use when n >= 40)	31.35		
95% Adjusted Gamma UCL (Use when n < 40)	31.77		
Potential UCL to Use		Use 95% Student's-t UCL	30.55

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BROWN SHRIMP 95 UCL OUTPUTS

Brown Shrimp

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1_a.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (1,3-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	8	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	8
		Percent Non-Detects	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 Result_Value (1,3-dichlorobenzene_ug/kg) was not processed!

Result_Value (hexachlorobenzene_ug/kg)

General Statistics

Number of Valid Observations	8	Number of Distinct Observations	8

Raw Statistics

Minimum	537
Maximum	913
Mean	710.4
Geometric Mean	700
Median	694.5
SD	130.4
Std. Error of Mean	46.09
Coefficient of Variation	0.183
Skewness	0.292

Log-transformed Statistics

Minimum of Log Data	6.286
Maximum of Log Data	6.817
Mean of log Data	6.551
SD of log Data	0.183

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.967
Shapiro Wilk Critical Value	0.818

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.973
Shapiro Wilk Critical Value	0.818

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	797.7

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	791.3
95% Modified-t UCL (Johnson-1978)	798.5

Assuming Lognormal Distribution

95% H-UCL	813.6
95% Chebyshev (MVUE) UCL	911.6
97.5% Chebyshev (MVUE) UCL	998.6
99% Chebyshev (MVUE) UCL	1170

Gamma Distribution Test

k star (bias corrected)	21.42
Theta Star	33.16
MLE of Mean	710.4
MLE of Standard Deviation	153.5

Data Distribution

Data appear Normal at 5% Significance Level

Brown Shrimp

nu star	342.7
Approximate Chi Square Value (.05)	300.8
Adjusted Level of Significance	0.0195
Adjusted Chi Square Value	290.8
Anderson-Darling Test Statistic	0.186
Anderson-Darling 5% Critical Value	0.716
Kolmogorov-Smirnov Test Statistic	0.145
Kolmogorov-Smirnov 5% Critical Value	0.294

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	809.3
95% Adjusted Gamma UCL (Use when n < 40)	837.1

Nonparametric Statistics

95% CLT UCL	786.2
95% Jackknife UCL	797.7
95% Standard Bootstrap UCL	781.9
95% Bootstrap-t UCL	806.8
95% Hall's Bootstrap UCL	787.9
95% Percentile Bootstrap UCL	784.8
95% BCA Bootstrap UCL	780.1
95% Chebyshev(Mean, Sd) UCL	911.3
97.5% Chebyshev(Mean, Sd) UCL	998.2
99% Chebyshev(Mean, Sd) UCL	1169

Potential UCL to Use

Use 95% Student's-t UCL 797.7

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	8
Number of Distinct Observations	8

Raw Statistics

Minimum	0.025
Maximum	0.065
Mean	0.0414
Geometric Mean	0.0396
Median	0.0405
SD	0.013
Std. Error of Mean	0.00459
Coefficient of Variation	0.314
Skewness	0.622

Log-transformed Statistics

Minimum of Log Data	-3.689
Maximum of Log Data	-2.733
Mean of log Data	-3.228
SD of log Data	0.313

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set, the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.952
Shapiro Wilk Critical Value	0.818

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	0.0501

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	0.05
95% Modified-t UCL (Johnson-1978)	0.0502

Gamma Distribution Test

k star (bias corrected)	7.511
Theta Star	0.00551
MLE of Mean	0.0414
MLE of Standard Deviation	0.0151
nu star	120.2

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.974
Shapiro Wilk Critical Value	0.818

Data appear Lognormal at 5% Significance Level

Assuming Lognormal Distribution

95% H-UCL	0.0532
95% Chebyshev (MVUE) UCL	0.0614
97.5% Chebyshev (MVUE) UCL	0.0701
99% Chebyshev (MVUE) UCL	0.0871

Data Distribution

Data appear Normal at 5% Significance Level

Approximate Chi Square Value (.05)	95.86
Adjusted Level of Significance	0.0195
Adjusted Chi Square Value	90.38
Anderson-Darling Test Statistic	0.212
Anderson-Darling 5% Critical Value	0.715
Kolmogorov-Smirnov Test Statistic	0.152
Kolmogorov-Smirnov 5% Critical Value	0.294

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	0.0519
95% Adjusted Gamma UCL (Use when n < 40)	0.055

Potential UCL to Use

Nonparametric Statistics

95% CLT UCL	0.0489
95% Jackknife UCL	0.0501
95% Standard Bootstrap UCL	0.0484
95% Bootstrap-t UCL	0.0513
95% Hall's Bootstrap UCL	0.0506
95% Percentile Bootstrap UCL	0.0489
95% BCA Bootstrap UCL	0.0493
95% Chebyshev(Mean, Sd) UCL	0.0614
97.5% Chebyshev(Mean, Sd) UCL	0.07
99% Chebyshev(Mean, Sd) UCL	0.087
Use 95% Student's-t UCL	0.0501

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	8
Number of Distinct Observations	8

Raw Statistics

Minimum	369.9
Maximum	694.7
Mean	532.6
Geometric Mean	524.2
Median	552.1
SD	98.89
Std. Error of Mean	34.96
Coefficient of Variation	0.186
Skewness	-0.164

Log-transformed Statistics

Minimum of Log Data	5.913
Maximum of Log Data	6.544
Mean of log Data	6.262
SD of log Data	0.194

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set, the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.965
Shapiro Wilk Critical Value	0.818

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	598.9

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	588
95% Modified-t UCL (Johnson-1978)	598.5

Gamma Distribution Test

k star (bias corrected)	19.79
Theta Star	26.91
MLE of Mean	532.6
MLE of Standard Deviation	119.7
nu star	316.7
Approximate Chi Square Value (.05)	276.4

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.947
Shapiro Wilk Critical Value	0.818

Data appear Lognormal at 5% Significance Level

Assuming Lognormal Distribution

95% H-UCL	615.7
95% Chebyshev (MVUE) UCL	692.5
97.5% Chebyshev (MVUE) UCL	761.6
99% Chebyshev (MVUE) UCL	897.2

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

Brown Shrimp

Adjusted Level of Significance	0.0195	95% CLT UCL	590.1
Adjusted Chi Square Value	266.9	95% Jackknife UCL	598.9
		95% Standard Bootstrap UCL	586.4
Anderson-Darling Test Statistic	0.305	95% Bootstrap-t UCL	595.4
Anderson-Darling 5% Critical Value	0.716	95% Hall's Bootstrap UCL	594.3
Kolmogorov-Smirnov Test Statistic	0.199	95% Percentile Bootstrap UCL	582.1
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	581.6
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	685
		97.5% Chebyshev(Mean, Sd) UCL	751
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	880.5
95% Approximate Gamma UCL (Use when n >= 40)	610.1		
95% Adjusted Gamma UCL (Use when n < 40)	631.9		
Potential UCL to Use		Use 95% Student's-t UCL	598.9

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Note: For highly negative-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Result_Value (total pcb congener teq 2005 (mammal) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	8	Number of Distinct Observations	8
Raw Statistics		**Log-transformed Statistics**	
Minimum	8.2	Minimum of Log Data	2.104
Maximum	41.18	Maximum of Log Data	3.718
Mean	24.83	Mean of log Data	3.128
Geometric Mean	22.83	SD of log Data	0.477
Median	22.85		
SD	9.646		
Std. Error of Mean	3.41		
Coefficient of Variation	0.388		
Skewness	0.00717		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set, the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.952	Shapiro Wilk Test Statistic	0.863
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	31.3	95% H-UCL	38.81
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	43.86
95% Adjusted-CLT UCL (Chen-1995)	30.45	97.5% Chebyshev (MVUE) UCL	51.94
95% Modified-t UCL (Johnson-1978)	31.3	99% Chebyshev (MVUE) UCL	67.8
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.895	**Data appear Normal at 5% Significance Level**	
Theta Star	6.376		

Brown Shrimp

MLE of Mean	24.83
MLE of Standard Deviation	12.58
nu star	62.32
Approximate Chi Square Value (.05)	45.16
Adjusted Level of Significance	0.0195
Adjusted Chi Square Value	41.49
Anderson-Darling Test Statistic	0.441
Anderson-Darling 5% Critical Value	0.718
Kolmogorov-Smirnov Test Statistic	0.234
Kolmogorov-Smirnov 5% Critical Value	0.295

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	34.27
95% Adjusted Gamma UCL (Use when n < 40)	37.3

Potential UCL to Use

Nonparametric Statistics

95% CLT UCL	30.44
95% Jackknife UCL	31.3
95% Standard Bootstrap UCL	30.06
95% Bootstrap-t UCL	31.91
95% Hall's Bootstrap UCL	32.47
95% Percentile Bootstrap UCL	30.17
95% BCA Bootstrap UCL	30.01
95% Chebyshev(Mean, Sd) UCL	39.7
97.5% Chebyshev(Mean, Sd) UCL	46.13
99% Chebyshev(Mean, Sd) UCL	58.77
Use 95% Student's-t UCL	31.3

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

GULF KILLIFISH 95 UCL OUTPUTS

Gulf Killifish

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1_b.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (1,3-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	25	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	25
		Percent Non-Detects	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 Result_Value (1,3-dichlorobenzene_ug/kg) was not processed!

Result_Value (hexachlorobenzene_ug/kg)

General Statistics

Number of Valid Data	25	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	15
		Percent Non-Detects	60.00%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	200	Minimum Detected	5.298
Maximum Detected	2360	Maximum Detected	7.766
Mean of Detected	663.8	Mean of Detected	6.18
SD of Detected	653.3	SD of Detected	0.793
Minimum Non-Detect	351	Minimum Non-Detect	5.861
Maximum Non-Detect	763	Maximum Non-Detect	6.637

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	22
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	88.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.714	Shapiro Wilk Test Statistic	0.916
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	440.5	Mean	5.846
SD	446.7	SD	0.62
95% DL/2 (t) UCL	593.4	95% H-Stat (DL/2) UCL	544.3
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	5.809
		SD in Log Scale	0.578
		Mean in Original Scale	422.1
		SD in Original Scale	448.1
		95% t UCL	575.4
		95% Percentile Bootstrap UCL	588.3
		95% BCA Bootstrap UCL	662.6
		95% H-UCL	500.8

Gulf Killifish

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	1.272
Theta Star	521.9
nu star	25.44
A-D Test Statistic	0.538
5% A-D Critical Value	0.738
K-S Test Statistic	0.738
5% K-S Critical Value	0.271

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data

Minimum	200
Maximum	2360
Mean	450.2
Median	343.8
SD	439.8
k star	2.262
Theta star	199.1
Nu star	113.1
AppChi2	89.53
95% Gamma Approximate UCL (Use when n >= 40)	568.6
95% Adjusted Gamma UCL (Use when n < 40)	577.8

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	420.3
SD	442.9
SE of Mean	94.76
95% KM (t) UCL	582.5
95% KM (z) UCL	576.2
95% KM (jackknife) UCL	578.1
95% KM (bootstrap t) UCL	746.5
95% KM (BCA) UCL	613.6
95% KM (Percentile Bootstrap) UCL	578.5
95% KM (Chebyshev) UCL	833.4
97.5% KM (Chebyshev) UCL	1012
99% KM (Chebyshev) UCL	1363

Potential UCLs to Use

95% KM (t) UCL	582.5

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	21

Raw Statistics

Minimum	0.025
Maximum	0.109
Mean	0.0524
Geometric Mean	0.0477
Median	0.044
SD	0.0242
Std. Error of Mean	0.00485
Coefficient of Variation	0.463
Skewness	1.097

Log-transformed Statistics

Minimum of Log Data	-3.689
Maximum of Log Data	-2.216
Mean of log Data	-3.042
SD of log Data	0.43

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.871
Shapiro Wilk Critical Value	0.918

Data not Normal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	0.0607

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	0.0615
95% Modified-t UCL (Johnson-1978)	0.0608

Gamma Distribution Test

k star (bias corrected)	4.929
Theta Star	0.0106

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.944
Shapiro Wilk Critical Value	0.918

Data appear Lognormal at 5% Significance Level

Assuming Lognormal Distribution

95% H-UCL	0.0619
95% Chebyshev (MVUE) UCL	0.0723
97.5% Chebyshev (MVUE) UCL	0.0811
99% Chebyshev (MVUE) UCL	0.0982

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

MLE of Mean	0.0524
MLE of Standard Deviation	0.0236
nu star	246.5
Approximate Chi Square Value (.05)	211.1
Adjusted Level of Significance	0.0395
Adjusted Chi Square Value	208.9
Anderson-Darling Test Statistic	0.639
Anderson-Darling 5% Critical Value	0.747
Kolmogorov-Smirnov Test Statistic	0.162
Kolmogorov-Smirnov 5% Critical Value	0.175

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	0.0611
95% Adjusted Gamma UCL (Use when n < 40)	0.0618

Nonparametric Statistics

95% CLT UCL	0.0603
95% Jackknife UCL	0.0607
95% Standard Bootstrap UCL	0.0602
95% Bootstrap-t UCL	0.063
95% Hall's Bootstrap UCL	0.0611
95% Percentile Bootstrap UCL	0.0606
95% BCA Bootstrap UCL	0.0613
95% Chebyshev(Mean, Sd) UCL	0.0735
97.5% Chebyshev(Mean, Sd) UCL	0.0826
99% Chebyshev(Mean, Sd) UCL	0.101

Potential UCL to Use

Use 95% Approximate Gamma UCL 0.0611

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	25

Raw Statistics

Minimum	270.7
Maximum	1173
Mean	794.6
Geometric Mean	761.1
Median	792.8
SD	214.9
Std. Error of Mean	42.99
Coefficient of Variation	0.27
Skewness	-0.349

Log-transformed Statistics

Minimum of Log Data	5.601
Maximum of Log Data	7.067
Mean of log Data	6.635
SD of log Data	0.32

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.982
Shapiro Wilk Critical Value	0.918

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical Value	0.918

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	868.2

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	862.1
95% Modified-t UCL (Johnson-1978)	867.7

Assuming Lognormal Distribution

95% H-UCL	902.8
95% Chebyshev (MVUE) UCL	1027
97.5% Chebyshev (MVUE) UCL	1125
99% Chebyshev (MVUE) UCL	1318

Gamma Distribution Test

k star (bias corrected)	10.38
Theta Star	76.54
MLE of Mean	794.6
MLE of Standard Deviation	246.6
nu star	519.1
Approximate Chi Square Value (.05)	467.2
Adjusted Level of Significance	0.0395
Adjusted Chi Square Value	463.9
Anderson-Darling Test Statistic	0.406

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	865.3
95% Jackknife UCL	868.2
95% Standard Bootstrap UCL	864
95% Bootstrap-t UCL	869.1

Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	865.8
Kolmogorov-Smirnov Test Statistic	0.142	95% Percentile Bootstrap UCL	868.2
Kolmogorov-Smirnov 5% Critical Value	0.174	95% BCA Bootstrap UCL	860.4
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	982
		97.5% Chebyshev(Mean, Sd) UCL	1063
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1222
95% Approximate Gamma UCL (Use when n >= 40)	882.8		
95% Adjusted Gamma UCL (Use when n < 40)	889.2		
Potential UCL to Use		Use 95% Student's-t UCL	868.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Note: For highly negative-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Result_Value (total pcb congener teq 2005 (mammal) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	25
Raw Statistics		**Log-transformed Statistics**	
Minimum	15.6	Minimum of Log Data	2.747
Maximum	137.1	Maximum of Log Data	4.921
Mean	77.42	Mean of log Data	4.261
Geometric Mean	70.85	SD of log Data	0.482
Median	80.9		
SD	28.09		
Std. Error of Mean	5.618		
Coefficient of Variation	0.363		
Skewness	-0.237		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.98	Shapiro Wilk Test Statistic	0.852
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	87.03	95% H-UCL	96.33
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	113.7
95% Adjusted-CLT UCL (Chen-1995)	86.38	97.5% Chebyshev (MVUE) UCL	128.6
95% Modified-t UCL (Johnson-1978)	86.99	99% Chebyshev (MVUE) UCL	158
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	5.129	**Data appear Normal at 5% Significance Level**	
Theta Star	15.1		
MLE of Mean	77.42		
MLE of Standard Deviation	34.19		
nu star	256.4		
Approximate Chi Square Value (.05)	220.4	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0395	95% CLT UCL	86.66
Adjusted Chi Square Value	218.1	95% Jackknife UCL	87.03
		95% Standard Bootstrap UCL	86.65
Anderson-Darling Test Statistic	0.787	95% Bootstrap-t UCL	87
Anderson-Darling 5% Critical Value	0.747	95% Hall's Bootstrap UCL	86.72
Kolmogorov-Smirnov Test Statistic	0.149	95% Percentile Bootstrap UCL	85.88
Kolmogorov-Smirnov 5% Critical Value	0.175	95% BCA Bootstrap UCL	86.29

Gulf Killifish

Data follow Appr. Gamma Distribution at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40) 90.1

95% Adjusted Gamma UCL (Use when n < 40) 91.04

95% Chebyshev(Mean, Sd) UCL 101.9

97.5% Chebyshev(Mean, Sd) UCL 112.5

99% Chebyshev(Mean, Sd) UCL 133.3

Potential UCL to Use

Use 95% Student's-t UCL 87.03

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Note: For highly negative-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

GULF MENHADEN 95 UCL OUTPUTS

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General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (1,3-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	10	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	10
		Percent Non-Detects	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 Result_Value (1,3-dichlorobenzene_ug/kg) was not processed!

Result_Value (hexachlorobenzene_ug/kg)

General Statistics

Number of Valid Data	10	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	4
		Percent Non-Detects	40.00%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	398	Minimum Detected	5.986
Maximum Detected	671	Maximum Detected	6.509
Mean of Detected	490.7	Mean of Detected	6.179
SD of Detected	103.4	SD of Detected	0.197
Minimum Non-Detect	699	Minimum Non-Detect	6.55
Maximum Non-Detect	765	Maximum Non-Detect	6.64

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	10
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

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

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.87	Shapiro Wilk Test Statistic	0.903
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	439.9	Mean	6.066
SD	101.5	SD	0.209
95% DL/2 (t) UCL	498.7	95% H-Stat (DL/2) UCL	502
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	6.179

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SD in Log Scale	0.147
Mean in Original Scale	487.4
SD in Original Scale	77.17
95% t UCL	532.1
95% Percentile Bootstrap UCL	530.9
95% BCA Bootstrap UCL	539
95% H-UCL	533.6

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	14.95
Theta Star	32.83
nu star	179.4
A-D Test Statistic	0.401
5% A-D Critical Value	0.697
K-S Test Statistic	0.697
5% K-S Critical Value	0.332

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	
Minimum	398
Maximum	671
Mean	496.7
Median	505.8
SD	77.44
k star	34.23
Theta star	14.51
Nu star	684.7
AppChi2	624.9
95% Gamma Approximate UCL (Use when n >= 40)	544.2
95% Adjusted Gamma UCL (Use when n < 40)	553

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only

Data appear Normal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method	
Mean	490.7
SD	94.36
SE of Mean	42.2
95% KM (t) UCL	568
95% KM (z) UCL	560.1
95% KM (jackknife) UCL	571.1
95% KM (bootstrap t) UCL	742.1
95% KM (BCA) UCL	557.9
95% KM (Percentile Bootstrap) UCL	560.2
95% KM (Chebyshev) UCL	674.6
97.5% KM (Chebyshev) UCL	754.2
99% KM (Chebyshev) UCL	910.6

Potential UCLs to Use

95% KM (t) UCL	568
95% KM (Percentile Bootstrap) UCL	560.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	9

Raw Statistics

Minimum	0.068
Maximum	0.199
Mean	0.116
Geometric Mean	0.107
Median	0.097
SD	0.0499
Std. Error of Mean	0.0158
Coefficient of Variation	0.43
Skewness	0.64

Log-transformed Statistics

Minimum of Log Data	-2.688
Maximum of Log Data	-1.614
Mean of log Data	-2.233
SD of log Data	0.42

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.851
Shapiro Wilk Critical Value	0.842

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.862
Shapiro Wilk Critical Value	0.842

Data appear Lognormal at 5% Significance Level

Assuming Lognormal Distribution

95% Student's-t UCL	0.145	95% H-UCL	0.157
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.184
95% Adjusted-CLT UCL (Chen-1995)	0.146	97.5% Chebyshev (MVUE) UCL	0.213
95% Modified-t UCL (Johnson-1978)	0.146	99% Chebyshev (MVUE) UCL	0.271

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.514	**Data appear Normal at 5% Significance Level**	
Theta Star	0.0257		
MLE of Mean	0.116		
MLE of Standard Deviation	0.0547		
nu star	90.28		
Approximate Chi Square Value (.05)	69.37	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	0.142
Adjusted Chi Square Value	66.19	95% Jackknife UCL	0.145
		95% Standard Bootstrap UCL	0.141
Anderson-Darling Test Statistic	0.677	95% Bootstrap-t UCL	0.15
Anderson-Darling 5% Critical Value	0.728	95% Hall's Bootstrap UCL	0.143
Kolmogorov-Smirnov Test Statistic	0.29	95% Percentile Bootstrap UCL	0.142
Kolmogorov-Smirnov 5% Critical Value	0.267	95% BCA Bootstrap UCL	0.145
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.185
		97.5% Chebyshev(Mean, Sd) UCL	0.215
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.273
95% Approximate Gamma UCL (Use when n >= 40)	0.151		
95% Adjusted Gamma UCL (Use when n < 40)	0.158		

Potential UCL to Use		Use 95% Student's-t UCL	0.145

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		**Log-transformed Statistics**	
Minimum	197.1	Minimum of Log Data	5.284
Maximum	789.2	Maximum of Log Data	6.671
Mean	449.5	Mean of log Data	6.022
Geometric Mean	412.3	SD of log Data	0.448
Median	442.6		
SD	191.3		
Std. Error of Mean	60.48		
Coefficient of Variation	0.426		
Skewness	0.532		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.922	Shapiro Wilk Test Statistic	0.934
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	560.3	95% H-UCL	628.6
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	733.8
95% Adjusted-CLT UCL (Chen-1995)	559.8	97.5% Chebyshev (MVUE) UCL	856.2
95% Modified-t UCL (Johnson-1978)	562	99% Chebyshev (MVUE) UCL	1097

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.236	**Data appear Normal at 5% Significance Level**	
Theta Star	106.1		

MLE of Mean	449.5
MLE of Standard Deviation	218.4
nu star	84.72
Approximate Chi Square Value (.05)	64.51
Adjusted Level of Significance	0.0267
Adjusted Chi Square Value	61.45
Anderson-Darling Test Statistic	0.375
Anderson-Darling 5% Critical Value	0.729
Kolmogorov-Smirnov Test Statistic	0.205
Kolmogorov-Smirnov 5% Critical Value	0.267

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	590.3
95% Adjusted Gamma UCL (Use when n < 40)	619.7

Nonparametric Statistics

95% CLT UCL	548.9
95% Jackknife UCL	560.3
95% Standard Bootstrap UCL	543.1
95% Bootstrap-t UCL	579.7
95% Hall's Bootstrap UCL	627.6
95% Percentile Bootstrap UCL	545.4
95% BCA Bootstrap UCL	547.1
95% Chebyshev(Mean, Sd) UCL	713.1
97.5% Chebyshev(Mean, Sd) UCL	827.2
99% Chebyshev(Mean, Sd) UCL	1051

Potential UCL to Use

Use 95% Student's-t UCL 560.3

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 2005 (mammal) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics

Minimum	12.88
Maximum	46.6
Mean	31.19
Geometric Mean	28.89
Median	32.35
SD	11.61
Std. Error of Mean	3.671
Coefficient of Variation	0.372
Skewness	-0.311

Log-transformed Statistics

Minimum of Log Data	2.556
Maximum of Log Data	3.842
Mean of log Data	3.363
SD of log Data	0.436

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.931
Shapiro Wilk Critical Value	0.842

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.889
Shapiro Wilk Critical Value	0.842

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	37.92

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	36.84
95% Modified-t UCL (Johnson-1978)	37.86

Assuming Lognormal Distribution

95% H-UCL	43.34
95% Chebyshev (MVUE) UCL	50.63
97.5% Chebyshev (MVUE) UCL	58.93
99% Chebyshev (MVUE) UCL	75.24

Gamma Distribution Test

k star (bias corrected)	4.749
Theta Star	6.568
MLE of Mean	31.19
MLE of Standard Deviation	14.31
nu star	94.97
Approximate Chi Square Value (.05)	73.5
Adjusted Level of Significance	0.0267
Adjusted Chi Square Value	70.22
Anderson-Darling Test Statistic	0.483

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	37.23
95% Jackknife UCL	37.92
95% Standard Bootstrap UCL	37.04
95% Bootstrap-t UCL	37.62

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Anderson-Darling 5% Critical Value	0.728	95% Hall's Bootstrap UCL	36.67
Kolmogorov-Smirnov Test Statistic	0.265	95% Percentile Bootstrap UCL	36.8
Kolmogorov-Smirnov 5% Critical Value	0.267	95% BCA Bootstrap UCL	36.83
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	47.19
		97.5% Chebyshev(Mean, Sd) UCL	54.12
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	67.72
95% Approximate Gamma UCL (Use when n >= 40)	40.3		
95% Adjusted Gamma UCL (Use when n < 40)	42.18		
Potential UCL to Use		Use 95% Student's-t UCL	37.92

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Note: For highly negative-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

PINFISH 95 UCL OUTPUTS

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1_d.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (1,3-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	4	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	4
		Percent Non-Detects	100.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Result_Value (1,3-dichlorobenzene_ug/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Result_Value (hexachlorobenzene_ug/kg)

General Statistics

Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Result_Value (hexachlorobenzene_ug/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Result_Value (mercury_mg/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Result_Value (total pcb congener teq 2005 (mammal) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Result_Value (total pcb congener teq 2005 (mammal) (u = 1/2)_ng/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

STRIPED MULLET 95 UCL OUTPUTS

Striped Mullet

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (1,3-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	9	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	9
		Percent Non-Detects	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 Result_Value (1,3-dichlorobenzene_ug/kg) was not processed!

Result_Value (hexachlorobenzene_ug/kg)

General Statistics

Number of Valid Data	9	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	2
		Percent Non-Detects	22.22%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	389	Minimum Detected	5.964
Maximum Detected	1830	Maximum Detected	7.512
Mean of Detected	822.6	Mean of Detected	6.554
SD of Detected	529.7	SD of Detected	0.593
Minimum Non-Detect	727	Minimum Non-Detect	6.589
Maximum Non-Detect	742	Maximum Non-Detect	6.609

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	66.67%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

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

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.832	Shapiro Wilk Test Statistic	0.892
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	721.4	Mean	6.41
SD	500.8	SD	0.587
95% DL/2 (t) UCL	1032	95% H-Stat (DL/2) UCL	1190
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1360	Mean in Log Scale	6.47

Striped Mullet

SD	368.9
95% MLE (t) UCL	1588
95% MLE (Tiku) UCL	1748

SD in Log Scale	0.539
Mean in Original Scale	746.7
SD in Original Scale	482.8
95% t UCL	1046
95% Percentile Bootstrap UCL	1016
95% BCA Bootstrap UCL	1103
95% H UCL	1157

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	1.984
Theta Star	414.6
nu star	27.78
A-D Test Statistic	0.472
5% A-D Critical Value	0.711
K-S Test Statistic	0.711
5% K-S Critical Value	0.313

Data appear Gamma Distributed at 5% Significance Level

Data Distribution Test with Detected Values Only

Data appear Normal at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	
Minimum	389
Maximum	1830
Mean	758.1
Median	532.6
SD	476.3
k star	2.586
Theta star	293.2
Nu star	46.54
AppChi2	31.89
95% Gamma Approximate UCL (Use when n >= 40)	1107
95% Adjusted Gamma UCL (Use when n < 40)	1202

Note: DL/2 is not a recommended method.

Nonparametric Statistics

Kaplan-Meier (KM) Method	
Mean	740.9
SD	459.7
SE of Mean	166
95% KM (t) UCL	1050
95% KM (z) UCL	1014
95% KM (jackknife) UCL	1045
95% KM (bootstrap t) UCL	1310
95% KM (BCA) UCL	1057
95% KM (Percentile Bootstrap) UCL	1033
95% KM (Chebyshev) UCL	1465
97.5% KM (Chebyshev) UCL	1778
99% KM (Chebyshev) UCL	2393

Potential UCLs to Use

95% KM (t) UCL	1050
95% KM (Percentile Bootstrap) UCL	1033

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	8

Raw Statistics

Minimum	0.024
Maximum	0.122
Mean	0.0516
Geometric Mean	0.0452
Median	0.041
SD	0.0317
Std. Error of Mean	0.0106
Coefficient of Variation	0.614
Skewness	1.75

Log-transformed Statistics

Minimum of Log Data	-3.73
Maximum of Log Data	-2.104
Mean of log Data	-3.096
SD of log Data	0.513

Warning: There are only 9 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Striped Mullet

Normal Distribution Test

Shapiro Wilk Test Statistic	0.768
Shapiro Wilk Critical Value	0.829

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.896
Shapiro Wilk Critical Value	0.829

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	0.0712

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	0.0755
95% Modified-t UCL (Johnson-1978)	0.0722

Assuming Lognormal Distribution

95% H-UCL	0.0775
95% Chebyshev (MVUE) UCL	0.0891
97.5% Chebyshev (MVUE) UCL	0.106
99% Chebyshev (MVUE) UCL	0.138

Gamma Distribution Test

k star (bias corrected)	2.728
Theta Star	0.0189
MLE of Mean	0.0516
MLE of Standard Deviation	0.0312
nu star	49.11
Approximate Chi Square Value (.05)	34.02
Adjusted Level of Significance	0.0231
Adjusted Chi Square Value	31.39
Anderson-Darling Test Statistic	0.685
Anderson-Darling 5% Critical Value	0.725
Kolmogorov-Smirnov Test Statistic	0.283
Kolmogorov-Smirnov 5% Critical Value	0.28

Data follow Appr. Gamma Distribution at 5% Significance Level

Data Distribution

Data Follow Appr. Gamma Distribution at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	0.0689
95% Jackknife UCL	0.0712
95% Standard Bootstrap UCL	0.0678
95% Bootstrap-t UCL	0.115
95% Hall's Bootstrap UCL	0.19
95% Percentile Bootstrap UCL	0.0699
95% BCA Bootstrap UCL	0.0746
95% Chebyshev(Mean, Sd) UCL	0.0975
97.5% Chebyshev(Mean, Sd) UCL	0.117
99% Chebyshev(Mean, Sd) UCL	0.157

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	0.0744
95% Adjusted Gamma UCL (Use when n < 40)	0.0806

Potential UCL to Use

Use 95% Approximate Gamma UCL 0.0744

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	9
Number of Distinct Observations	9

Raw Statistics

Minimum	103.7
Maximum	789.3
Mean	355.8
Geometric Mean	313
Median	321.5
SD	193.1
Std. Error of Mean	64.38
Coefficient of Variation	0.543
Skewness	1.422

Log-transformed Statistics

Minimum of Log Data	4.642
Maximum of Log Data	6.671
Mean of log Data	5.746
SD of log Data	0.553

Warning: There are only 9 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set, the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test

Lognormal Distribution Test

Striped Mullet

Shapiro Wilk Test Statistic	0.879
Shapiro Wilk Critical Value	0.829

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	475.5

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	494.3
95% Modified-t UCL (Johnson-1978)	480.6

Gamma Distribution Test

k star (bias corrected)	2.784
Theta Star	127.8
MLE of Mean	355.8
MLE of Standard Deviation	213.3
nu star	50.11
Approximate Chi Square Value (.05)	34.85
Adjusted Level of Significance	0.0231
Adjusted Chi Square Value	32.19
Anderson-Darling Test Statistic	0.322
Anderson-Darling 5% Critical Value	0.725
Kolmogorov-Smirnov Test Statistic	0.172
Kolmogorov-Smirnov 5% Critical Value	0.28

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL (Use when n >= 40)	511.5
95% Adjusted Gamma UCL (Use when n < 40)	553.8

Potential UCL to Use

Use 95% Student's-t UCL	475.5

Shapiro Wilk Test Statistic	0.944
Shapiro Wilk Critical Value	0.829

Data appear Lognormal at 5% Significance Level

Assuming Lognormal Distribution

95% H-UCL	574.8
95% Chebyshev (MVUE) UCL	650.6
97.5% Chebyshev (MVUE) UCL	777.2
99% Chebyshev (MVUE) UCL	1026

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	461.7
95% Jackknife UCL	475.5
95% Standard Bootstrap UCL	456.5
95% Bootstrap-t UCL	531.9
95% Hall's Bootstrap UCL	1055
95% Percentile Bootstrap UCL	458.7
95% BCA Bootstrap UCL	485.7
95% Chebyshev(Mean, Sd) UCL	636.4
97.5% Chebyshev(Mean, Sd) UCL	757.9
99% Chebyshev(Mean, Sd) UCL	996.4

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Result_Value (total pcb congener teq 2005 (mammal) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	9
Number of Distinct Observations	9

Raw Statistics

Minimum	4.26
Maximum	51.5
Mean	21.63
Geometric Mean	17.19
Median	19.27
SD	14.04
Std. Error of Mean	4.679
Coefficient of Variation	0.649
Skewness	1.024

Log-transformed Statistics

Minimum of Log Data	1.449
Maximum of Log Data	3.942
Mean of log Data	2.844
SD of log Data	0.788

Warning: There are only 9 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set, the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.909

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.902

Striped Mullet

Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level	
Assuming Normal Distribution	
95% Student's-t UCL	30.33
95% UCLs (Adjusted for Skewness)	
95% Adjusted-CLT UCL (Chen-1995)	31.03
95% Modified-t UCL (Johnson-1978)	30.59
Gamma Distribution Test	
k star (bias corrected)	1.628
Theta Star	13.28
MLE of Mean	21.63
MLE of Standard Deviation	16.95
nu star	29.31
Approximate Chi Square Value (.05)	17.95
Adjusted Level of Significance	0.0231
Adjusted Chi Square Value	16.1
Anderson-Darling Test Statistic	0.372
Anderson-Darling 5% Critical Value	0.729
Kolmogorov-Smirnov Test Statistic	0.207
Kolmogorov-Smirnov 5% Critical Value	0.282
Data appear Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
95% Approximate Gamma UCL (Use when n >= 40)	35.31
95% Adjusted Gamma UCL (Use when n < 40)	39.36
Potential UCL to Use	

Shapiro Wilk Critical Value	0.829
Data appear Lognormal at 5% Significance Level	
Assuming Lognormal Distribution	
95% H-UCL	50.94
95% Chebyshev (MVUE) UCL	48.94
97.5% Chebyshev (MVUE) UCL	60.38
99% Chebyshev (MVUE) UCL	82.87
Data Distribution	
Data appear Normal at 5% Significance Level	
Nonparametric Statistics	
95% CLT UCL	29.32
95% Jackknife UCL	30.33
95% Standard Bootstrap UCL	28.99
95% Bootstrap-t UCL	31.99
95% Hall's Bootstrap UCL	38.45
95% Percentile Bootstrap UCL	29.28
95% BCA Bootstrap UCL	30.6
95% Chebyshev(Mean, Sd) UCL	42.02
97.5% Chebyshev(Mean, Sd) UCL	50.85
99% Chebyshev(Mean, Sd) UCL	68.18
Use 95% Student's-t UCL	30.33

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

WHITE SHRIMP 95 UCL OUTPUTS

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1_e.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (1,3-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	3	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	3
		Percent Non-Detects	100.00%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Result_Value (1,3-dichlorobenzene_ug/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Result_Value (1,4-dichlorobenzene_ug/kg)

General Statistics

Number of Valid Data	1	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	1
		Percent Non-Detects	100.00%

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Result_Value (1,4-dichlorobenzene_ug/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Result_Value (hexachlorobenzene_ug/kg)

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Result_Value (hexachlorobenzene_ug/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Result_Value (hexachlorobutadiene_ug/kg)

General Statistics

Number of Valid Data	1	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	1
		Percent Non-Detects	100.00%

Warning: This data set only has 1 observations!

White Shrimp

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Result_Value (hexachlorobutadiene_ug/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Result_Value (lead_mg/kg)

General Statistics

Number of Valid Observations 1	Number of Distinct Observations 1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Result_Value (lead_mg/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations 3	Number of Distinct Observations 3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Result_Value (mercury_mg/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Result_Value (total dioxin/furan teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations 3	Number of Distinct Observations 3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Result_Value (total dioxin/furan teq 1998 (avian) (u = 1/2)_ng/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Result_Value (total pah (16) (u = 1/2)_ug/kg)

General Statistics

Number of Valid Observations 1	Number of Distinct Observations 1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Result_Value (total pah (16) (u = 1/2)_ug/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations 3	Number of Distinct Observations 3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Result_Value (total pcb congener teq 1998 (avian) (u = 1/2)_ng/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Result_Value (total pcb congener teq 2005 (mammal) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations 3	Number of Distinct Observations 3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Result_Value (total pcb congener teq 2005 (mammal) (u = 1/2)_ng/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CARNIVOROUS BIRD RISK SHEETS

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **All Prey Species Separate**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 10

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.066	0.022	948	Fish	1	GKF
2	0.066	0.022	948	Fish	1	STM
3	0.066	0.022	948	Fish	1	GM
4	0.066	0.022	948	Fish	1	PNF
5	0.066	0.022	948	Fish	1	SAS
6	0.0825	0.022	824	Invertebrate	1	BCR
7	0.0825	0.022	824	Invertebrate	1	OYS
8	0.0825	0.022	824	Invertebrate	1	BRS
9	0.0825	0.022	824	Invertebrate	1	WHS
10	0.34	0.022	1326	Mammal	0.5	Marsh Rice Rat

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **All Prey Species Separate**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.0479	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0.003055	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0.00372	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0.00725	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 4	0.00415	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 5	0.00315	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 6	0.00354375	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 7	0.0031875	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 8	0.00313125	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 9	0.002625	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.99E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.38E-02	mg/kg ww	

Number of food types (k = 1 to m): 10

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	1	1	0.05	0.0611	Table C-4.2
2	Fish	STM	3	1	1	0.05	0.0744	Table C-4.2
3	Fish	GM	3	1	1	0.05	0.145	Table C-4.2
4	Fish	PNF	3	1	1	0.05	0.083	Table C-4.2
5	Fish	SAS	3	1	1	0.05	0.063	Table C-4.2
6	Invertebrate	BCR	2	1	1	0.0625	0.0567	Table C-4.2
7	Invertebrate	OYS	2	1	1	0.0625	0.051	Table C-4.2
8	Invertebrate	BRS	2	1	1	0.0625	0.0501	Table C-4.2
9	Invertebrate	WHS	2	1	1	0.0625	0.042	Table C-4.2
10	Plant	Plant			1	0.5	2.43E-03	Table C-4.2

Definitions:
kg - kilogram
mg - milligrams

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **All Prey Species Separate**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	4.7391	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 4	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 5	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 6	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 7	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 8	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 9	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	2.64E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.40E-04	mg/kg ww	

Number of food types (k = 1 to m): 10

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	1	1	0.05		Table C-4.2
2	Fish	STM	3	1	1	0.05		Table C-4.2
3	Fish	GM	3	1	1	0.05		Table C-4.2
4	Fish	PNF	3	1	1	0.05		Table C-4.2
5	Fish	SAS	3	1	1	0.05		Table C-4.2
6	Invertebrate	BCR	2	1	1	0.0625		Table C-4.2
7	Invertebrate	OYS	2	1	1	0.0625		Table C-4.2
8	Invertebrate	BRS	2	1	1	0.0625		Table C-4.2
9	Invertebrate	WHS	2	1	1	0.0625		Table C-4.2
10	Plant	Plant			1	0.5	6.60E-02	Table C-4.2

Definitions:
kg - kilogram
mg - milligrams

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **All Prey Species Separate**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	$C_{BIOTA,8}$	$C_{BIOTA,9}$	$C_{BIOTA,10}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)										*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.0611	0.0744	0.145	0.083	0.063	0.0567	0.051	0.0501	0.042	3.38E-02	5.0E-03	0.0479							1.3E-05	5.0E-03	0.064	0.08
Mercury (Inorganic)										3.40E-04	3.7E-06	4.7391							1.3E-03	1.3E-03	0.9	0.0014

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **All Prey Species Separate**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.066	0.022	948	Fish	1	GKF
2	0.066	0.022	948	Fish	1	STM
3	0.066	0.022	948	Fish	1	GM
4	0.066	0.022	948	Fish	1	PNF
5	0.066	0.022	948	Fish	1	SAS
6	0.0825	0.027	824	Invertebrate	1	BCR
7	0.0825	0.027	824	Invertebrate	1	OYS
8	0.0825	0.027	824	Invertebrate	1	BRS
9	0.0825	0.027	824	Invertebrate	1	WHS
10	0.34	0.111	1326	Mammal	0.5	Marsh Rice Rat

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **All Prey Species Separate**
COPC: **PCB Congener TEQ (Avian)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0021	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	4.34E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	2.38E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	2.80E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 4	7.38E-06	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 5	9.41E-06	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 6	3.85E-04	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 7	3.16E-04	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 8	5.24E-04	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 9	2.73E-04	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	5.20E-08	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	4.95E-06	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.62E-03	mg/kg ww	

Number of food types (k = 1 to m): 10

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.05	8.68E-04	Table C-4.2
2	Fish	STM	3	14	1	0.05	4.76E-04	Table C-4.2
3	Fish	GM	3	14	1	0.05	5.60E-04	Table C-4.2
4	Fish	PNF	3	14	1	0.05	1.48E-04	Table C-4.2
5	Fish	SAS	3	14	1	0.05	1.88E-04	Table C-4.2
6	Invertebrate	BCR	2	1	1	0.0625	4.40E-04	Table C-4.2
7	Invertebrate	OYS	2	1	1	0.0625	3.61E-04	Table C-4.2
8	Invertebrate	BRS	2	1	1	0.0625	5.99E-04	Table C-4.2
9	Invertebrate	WHS	2	1	1	0.0625	3.12E-04	Table C-4.2
10	Plant	Plant			1	0.5	4.35E-06	Table C-4.2

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **All Prey Species Separate**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	$C_{BIOTA,8}$	$C_{BIOTA,9}$	$C_{BIOTA,10}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)										*mg/kg$_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg$_{BW}$/day*	*mg/kg$_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.00087	0.00048	0.00056	0.000148	0.00019	0.00044	0.00036	0.0006	0.00031	1.62E-03	6.6E-05	0.0021							5.5E-07	6.7E-05	1.4E-04	0.48

BELTED KINGFISHER RISK SHEETS

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **All Prey Species Separate**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 9

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.178	0.121	948	Fish	1	GKF
2	0.178	0.121	948	Fish	1	STM
3	0.178	0.121	948	Fish	1	GM
4	0.178	0.121	948	Fish	1	PNF
5	0.178	0.121	948	Fish	1	SAS
6	0.028	0.019	824	Invertebrate	1	BCR
7	0.028	0.019	824	Invertebrate	1	BRS
8	0.027	0.018	824	Invertebrate	1	WHS
9	0.027	0.018	824	Invertebrate	1	OYS

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **All Prey Species Separate**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	$C_{BIOTA,8}$	$C_{BIOTA,9}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)									*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.0611	0.0744	0.145	0.083	0.063	0.0567	0.0501	0.042	0.051	3.8E-02	0.0479							0.0E+00	3.8E-02	0.064	0.60
Hexachlorobenzene	0.5825	1.05	0.568	2.29	0.325	1.088	0.7977	0.682	0.704	4.5E-01	2.1373							0.0E+00	4.5E-01	3.35	0.13
1,3-Dichlorobenzene	0.763	0.769	0.765	0.765	0.37	0.748	0.709	0.758	0.704	3.3E-01	0.0736							0.0E+00	3.3E-01	160.8	0.0020
PCB Congener TEQ (Avian) (U=1/2)	0.00087	0.00048	0.00056	0.00015	0.00019	0.00044	0.0006	0.00031	0.00036	2.1E-04	0.0021							0.0E+00	2.1E-04	0.00014	1.50
Mercury (Inorganic)										0.0E+00	4.7391							0.0E+00	0.0E+00	9.0E-01	0

RACCOON RISK SHEETS

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **All Prey Species Separate**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.021	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 11

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.0466	0.004	1092	Fish	1	GKF
2	0.0466	0.004	1092	Fish	1	STM
3	0.0466	0.004	1092	Fish	1	GM
4	0.0466	0.004	1092	Fish	1	PNF
5	0.0466	0.004	1092	Fish	1	SAS
6	0.0585	0.005	974	Invertebrate	1	BCR
7	0.0585	0.005	974	Invertebrate	1	OYS
8	0.0585	0.005	974	Invertebrate	1	BRS
9	0.0585	0.005	974	Invertebrate	1	WHS
10	0.3	0.027	962	Plant	1	
11	0.233	0.021	1428	Mammal	0.5	Marsh Rice Rat

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **All Prey Species Separate**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.0479	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	3.06E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	3.72E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	7.25E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 4	4.15E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 5	3.15E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 6	3.54E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 7	3.19E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 8	3.13E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 9	2.63E-03	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	2.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.99E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.38E-02	mg/kg ww	

Number of food types (k = 1 to m): 10

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	1	1	0.05	6.11E-02	Table C-4.2
2	Fish	STM	3	1	1	0.05	7.44E-02	Table C-4.2
3	Fish	GM	3	1	1	0.05	1.45E-01	Table C-4.2
4	Fish	PNF	3	1	1	0.05	8.30E-02	Table C-4.2
5	Fish	SAS	3	1	1	0.05	6.30E-02	Table C-4.2
6	Invertebrate	BCR	2	1	1	0.0625	5.67E-02	Table C-4.2
7	Invertebrate	OYS	2	1	1	0.0625	5.10E-02	Table C-4.2
8	Invertebrate	BRS	2	1	1	0.0625	5.01E-02	Table C-4.2
9	Invertebrate	WHS	2	1	1	0.0625	4.20E-02	Table C-4.2
10	Plant				1	0.5	2.43E-03	Table C-4.2

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **All Prey Species Separate**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	4.7391	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
P_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 4	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 5	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 6	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 7	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 8	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 9	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	2.64E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.40E-04	mg/kg ww	

Number of food types (k = 1 to m): 10

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$P_{BIOTA,k}$	$FR_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	1	1	0.05		Table C-4.2
2	Fish	STM	3	1	1	0.05		Table C-4.2
3	Fish	GM	3	1	1	0.05		Table C-4.2
4	Fish	PNF	3	1	1	0.05		Table C-4.2
5	Fish	SAS	3	1	1	0.05		Table C-4.2
6	Invertebrate	BCR	2	1	1	0.0625		Table C-4.2
7	Invertebrate	OYS	2	1	1	0.0625		Table C-4.2
8	Invertebrate	BRS	2	1	1	0.0625		Table C-4.2
9	Invertebrate	WHS	2	1	1	0.0625		Table C-4.2
10	Plant				1	0.5	6.60E-02	Table C-4.2

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **All Prey Species Separate**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	$C_{BIOTA,8}$	$C_{BIOTA,9}$	$C_{BIOTA,10}$	$C_{BIOTA,11}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)											*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.0611	0.0744	0.145	0.083	0.063	0.0567	0.051	0.0501	0.042	0.00243	3.38E-02	6.9E-05	0.0479							8.9E-06	7.8E-05	0.0177	0.0044
Mercury (Inorganic)										0.06575	3.40E-04	3.8E-05	4.7391							8.8E-04	9.1E-04	3.54	0.00026

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **All Prey Species Separate**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.021	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 11

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.0466	0.004	1092	Fish	1	GKF
2	0.0466	0.004	1092	Fish	1	STM
3	0.0466	0.004	1092	Fish	1	GM
4	0.0466	0.004	1092	Fish	1	PNF
5	0.0466	0.004	1092	Fish	1	SAS
6	0.0585	0.005	974	Invertebrate	1	BCR
7	0.0585	0.005	974	Invertebrate	1	OYS
8	0.0585	0.005	974	Invertebrate	1	BRS
9	0.0585	0.005	974	Invertebrate	1	WHS
10	0.3	0.027	962	Plant	1	
11	0.233	0.021	1428	Mammal	0.5	Marsh Rice Rat

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **All Prey Species Separate**
COPC: **PCB Congener TEQ (Mammal)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0001	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	4.35E-06	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	1.52E-06	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	1.90E-06	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 4	2.57E-06	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 5	1.30E-06	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 6	2.67E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 7	1.81E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 8	2.74E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 9	1.58E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	2.77E-09	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	1.91E-08	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	9.98E-05	mg/kg ww	

Number of food types (k = 1 to m): 10

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.05	8.70E-05	Table C-4.2
2	Fish	STM	3	14	1	0.05	3.03E-05	Table C-4.2
3	Fish	GM	3	14	1	0.05	3.79E-05	Table C-4.2
4	Fish	PNF	3	14	1	0.05	5.14E-05	Table C-4.2
5	Fish	SAS	3	14	1	0.05	2.59E-05	Table C-4.2
6	Invertebrate	BCR	2	1	1	0.0625	3.06E-05	Table C-4.2
7	Invertebrate	OYS	2	1	1	0.0625	2.07E-05	Table C-4.2
8	Invertebrate	BRS	2	1	1	0.0625	3.13E-05	Table C-4.2
9	Invertebrate	WHS	2	1	1	0.0625	1.81E-05	Table C-4.2
10	Plant	Plant			1	0.5	2.32E-07	Table C-4.2

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **All Prey Species Separate**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	$C_{BIOTA,8}$	$C_{BIOTA,9}$	$C_{BIOTA,10}$	$C_{BIOTA,11}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)											*mg/kg_{BW}/day*	*mg/kg (dry weight)*							*mg/kg_{BW}/day*	*mg/kg_{BW}/day*		*NA*
PCB Congener TEQ (Mammal) (U=1/2)	8.7E-05	3E-05	3.8E-05	5.1E-05	0.0000259	3.1E-05	2.1E-05	3.1E-05	1.8E-05	2.32E-07	9.98E-05	5.4E-08	0.0001							2.1E-08	7.5E-08	5.4E-07	0.14

SPOTTED SANDPIPER RISK SHEETS

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **All Prey Species Separate**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	43	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	8.1	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.77	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	818	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	824	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.992	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.012	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.73	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.3	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.34	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 3

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.33	0.328	824	Invert	1	OYS
2	0.33	0.328	824	Invert	1	BCR
3	0.34	0.337	824	Invert	1	WHS
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **All Prey Species Separate**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Lead	0.331	0.226	0.116					7.5E-02	48.944							5.8E-02	1.3E-01	3.26	0.04
Mercury (Methyl)	0.051	0.0567	0.042					1.7E-02	0.0479							5.6E-05	1.7E-02	0.064	0.26
Total PAH 16 (U=1/2)	0.55212	0.07592	0.1623					8.9E-02	7.3078							8.6E-03	9.7E-02	325	0.00030
Dioxin/Furan Congener TEQ (Avian) (U=1/2)	2E-05	2.2E-05	2.5E-05					7.6E-06	0.0002							2.5E-07	7.8E-06	0.00014	0.06
Hexachlorobenzene	0.704	1.088	0.682					2.8E-01	2.1373							2.5E-03	2.8E-01	3.35	0.08
Hexachlorobutadiene	0.704	0.745	0.714					2.4E-01	3.8327							4.5E-03	2.5E-01	20	0.01
1,3-Dichlorobenzene	0.704	0.748	0.758					2.5E-01	0.0736							8.7E-05	2.5E-01	160.8	0.0015
1,4-Dichlorobenzene	0.704	0.745	0.714					2.4E-01	0.0744							8.7E-05	2.4E-01	160.8	0.0015
PCB Congener TEQ (Avian) (U=1/2)	0.00036	0.00044	0.00031					1.3E-04	0.0021							2.4E-06	1.3E-04	1.4E-04	0.91
Mercury (Inorganic)								0.0E+00	4.7391							5.6E-03	5.6E-03	9.0E-01	0.006

APPENDIX C-5.4
SEDIMENT EPC UNCERTAINTYANALYSIS
SITE-WIDE SWAC AS EPC

Table C-5.4
Comparison of Baseline SWAC and SWAC Calculated With All Tidal Zones

COPC	Units	Intertidal, and Supratidal SWAC (Baseline)	Subtidal, Intertidal, and Supratidal SWAC
1,3-Dichlorobenzene	mg/kg	0.074	0.11
1,4-Dichlorobenzene	mg/kg	0.074	0.08
Hexachlorobenzene	mg/kg	2.14	3.37
Hexachlorobutadiene	mg/kg	3.83	6.07
Lead	mg/kg	48.94	46.24
Mercury	mg/kg	4.79	10.18
Total Dioxin/Furan TEQ 1998 (Avian; U=1/2)	mg/kg	0.00022	0.00028
Total PAH (U=1/2)	mg/kg	7.31	9.36
Total PCB Congener TEQ 1998 (Avian; U=1/2)	mg/kg	0.0021	0.0023
Total PCB Congener TEQ 2005 (Mammal; U=1/2)	mg/kg	0.00011	0.00012

Notes:
SWAC - surface weighted average concentration
mg/kg - milligrams per kilogram
COPC - chemical of potential concern
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl

CARNIVOROUS BIRD RISK SHEETS

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Sediment Site-Wide SWAC**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 4

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.165	0.054	948	Fish	1	GM
2	0.165	0.054	948	Fish	1	GKF, STM, PNF, SAS
3	0.33	0.108	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.34	0.111	1326	Mammal	0.5	March Rice Rat
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Sediment Site-Wide SWAC**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.1018	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0.018125	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	0.00725	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0.012875	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	8.49E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.83E-02	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125	1.45E-01	Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125	5.80E-02	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	5.15E-02	Table C-4.2
4	Plant	Plant			1	0.5	2.43E-03	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Sediment Site-Wide SWAC**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	10.0815	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	5.62E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	6.37E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125		Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125		Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25		Table C-4.2
4	Plant				1	0.5	6.60E-02	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Sediment Site-Wide SWAC**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515	3.83E-02				6.7E-03	0.1018							2.7E-05	6.7E-03	0.064	0.11
Mercury (Inorganic)				6.37E-04				3.5E-05	10.081							2.7E-03	2.7E-03	0.9	0.0030

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Sediment Site-Wide SWAC**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.11	0.036	948	Fish	1	GKF
2	0.11	0.036	948	Fish	1	GM, STM
3	0.33	0.108	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.34	0.111	1326	Mammal	0.5	March Rice Rat
5	0.11	0.036	948	Fish	1	PNF, SAS
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Sediment Site-Wide SWAC**
COPC: **PCB Congener TEQ (Avian)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0023	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	7.21E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	3.52E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	1.58E-03	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	5.20E-08	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Food Type 5	1.33E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	5.39E-06	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.71E-03	mg/kg ww	

Number of food types (k = 1 to m): 5

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.083	8.68E-04	Table C-4.2
2	Fish	GM, STM	3	14	1	0.083	4.24E-04	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	4.52E-04	Table C-4.2
4	Plant	Plant			1	0.5	4.35E-06	Table C-4.2
5	Fish	PNF, SAS	3	14	1	0.083	1.60E-04	Table C-4.2
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Sediment Site-Wide SWAC**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.0009	0.0005	0.0005	1.71E-03	0.0002			7.1E-05	0.0023							6.0E-07	7.2E-05	1.4E-04	0.51

BELTED KINGFISHER RISK SHEETS

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Sediment Site-Wide SWAC**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 2

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.89	0.607	948	Fish	1	GKF, GM, STM, PNF, SAS
2	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Sediment Site-Wide SWAC**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Hexachlorobenzene	0.6464	0.9757						3.2E-01	3.3726							0.0E+00	3.2E-01	3.35	0.10
1,3-Dichlorobenzene	0.769	0.758						3.6E-01	0.106							0.0E+00	3.6E-01	160.8	0.0022

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Sediment Site-Wide SWAC**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 3

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.445	0.304	948	Fish	1	GM
2	0.445	0.304	948	Fish	1	GKF, STM, PNF, SAS
3	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Sediment Site-Wide SWAC**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515					4.5E-02	0.1018							0.0E+00	4.5E-02	0.064	0.71
Mercury (Inorganic)								0.0E+00	10.081							0.0E+00	0.0E+00	0.9	0

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Sediment Site-Wide SWAC**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 3

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.3	0.205	948	Fish	1	GKF
2	0.3	0.205	948	Fish	1	GM, STM
3	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.29	0.205	948	Fish	1	PNF, SAS
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Sediment Site-Wide SWAC**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.0009	0.0005	0.0005	0.0002				2.4E-04	0.0023							0.0E+00	2.4E-04	0.00014	1.69

RACCOON RISK SHEETS

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Sediment Site-Wide SWAC**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.021	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.116	0.010	1092	Fish	1	GM
2	0.116	0.010	1092	Fish	1	GKF, STM, PNF, SAS
3	0.234	0.021	974	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.3	0.027	962	Plant	1	
5	0.234	0.021	1428	Mammal	0.5	Marsh Rice Rat
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Sediment Site-Wide SWAC**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	1.02E-01	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	1.81E-02	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	7.25E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	1.29E-02	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	8.49E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.83E-02	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125	1.45E-01	Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125	5.80E-02	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	5.15E-02	Table C-4.2
4	Plant				1	0.5	2.43E-03	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Sediment Site-Wide SWAC**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	10.0815	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	5.62E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	6.37E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125		Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125		Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25		Table C-4.2
4	Plant				1	0.5	6.60E-02	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Sediment Site-Wide SWAC**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515	0.002426492	3.83E-02			7.7E-05	0.1018							1.9E-05	9.6E-05	0.0177	0.0054
Mercury (Inorganic)				0.065754378	6.37E-04			3.8E-05	10.081							1.9E-03	1.9E-03	3.54	0.00054

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Sediment Site-Wide SWAC**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.021	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.116	0.010	1092	Fish	1	GKF
2	0.116	0.010	1092	Fish	1	GM, STM, PNF, SAS
3	0.234	0.021	974	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.3	0.027	962	Plant	1	
5	0.234	0.021	1428	Mammal	0.5	Marsh Rice Rat
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Sediment Site-Wide SWAC**
COPC: **PCB Congener TEQ (Mammal)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0001	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	1.09E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	3.99E-06	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	9.75E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	2.77E-09	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	2.06E-08	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.12E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.125	8.70E-05	Table C-4.2
2	Fish	GM, STM, PNF, SAS	3	14	1	0.125	3.19E-05	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	2.79E-05	Table C-4.2
4	Plant	Plant			1	0.5	2.32E-07	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Sediment Site-Wide SWAC**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Mammal) (U=1/2)	8.7E-05	3.2E-05	2.8E-05	2.32E-07	1.12E-04			6.4E-08	0.0001							2.2E-08	8.6E-08	5.4E-07	0.16

SPOTTED SANDPIPER RISK SHEETS

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **Sediment Site-Wide SWAC**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	43	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	8.1	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.77	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	818	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	824	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.992	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.012	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.73	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.18	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.34	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 1

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	1	0.992	824	Invert	1	OYS,BCRA,WHSA
2						
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **Sediment Site-Wide SWAC**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Lead	0.292							9.9E-02	46.238							3.3E-02	1.3E-01	3.26	0.04
Mercury (Methyl)	0.0533							1.8E-02	0.1018							7.2E-05	1.8E-02	0.064	0.28
Total PAH 16 (U=1/2)	0.1397							4.7E-02	9.3648							6.6E-03	5.4E-02	325	0.00017
Dioxin/Furan Congener TEQ (Avian) (U=1/2)	2.2E-05							7.5E-06	0.0003							2.0E-07	7.7E-06	0.00014	0.06
Hexachlorobenzene	1.132							3.8E-01	3.3726							2.4E-03	3.8E-01	3.35	0.11
Hexachlorobutadiene	0.3725							1.3E-01	6.07							4.3E-03	1.3E-01	20	0.006
1,3-Dichlorobenzene	0.3725							1.3E-01	0.106							7.5E-05	1.3E-01	160.8	0.0008
1,4-Dichlorobenzene	0.3725							1.3E-01	0.084							5.9E-05	1.3E-01	160.8	0.0008
PCB Congener TEQ (Avian) (U=1/2)	0.00043							1.4E-04	0.0023							1.6E-06	1.5E-04	1.4E-04	1.05
Mercury (Inorganic)								0.0E+00	10.081							7.1E-03	7.1E-03	9.0E-01	0.008

APPENDIX C-5.5
AUF UNCERTAINTY ANALYSIS – LOWER-BOUND ESTIMATE OF HOME RANGE

CARNIVOROUS BIRD RISK SHEETS

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **AUF_{Lower}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.17	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 4

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.165	0.054	948	Fish	1	GM
2	0.165	0.054	948	Fish	1	GKF, STM, PNF, SAS
3	0.33	0.108	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.34	0.111	1326	Mammal	0.5	March Rice Rat
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **AUF_{Lower}**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.0479	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0.018125	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0.00725	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0.012875	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.99E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.83E-02	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125	1.45E-01	Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125	5.80E-02	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	5.15E-02	Table C-4.2
4	Plant	Plant			1	0.5	2.43E-03	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **AUF_{Lower}**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	4.7391	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	2.64E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.40E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125		Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125		Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25		Table C-4.2
4	Plant				1	0.5	6.60E-02	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **AUFLower**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515	3.83E-02				3.2E-03	0.0479							6.0E-06	3.2E-03	0.064	0.05
Mercury (Inorganic)				3.40E-04				1.9E-05	4.7391							6.0E-04	6.1E-04	0.9	0.0007

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **AUF_{Lower}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.17	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.11	0.036	948	Fish	1	GKF
2	0.11	0.036	948	Fish	1	GM, STM
3	0.33	0.108	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.34	0.111	1326	Mammal	0.5	March Rice Rat
5	0.11	0.036	948	Fish	1	PNF, SAS
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **AUF_{Lower}**
COPC: **PCB Congener TEQ (Avian)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0021	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	7.21E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	3.52E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	1.58E-03	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	5.20E-08	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Food Type 5	1.33E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	4.95E-06	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.71E-03	mg/kg ww	

Number of food types (k = 1 to m): 5

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.083	8.68E-04	Table C-4.2
2	Fish	GM, STM	3	14	1	0.083	4.24E-04	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	4.52E-04	Table C-4.2
4	Plant	Plant			1	0.5	4.35E-06	Table C-4.2
5	Fish	PNF, SAS	3	14	1	0.083	1.60E-04	Table C-4.2
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **AUFLower**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.0009	0.0005	0.0005	1.71E-03	0.0002			3.4E-05	0.0021							2.6E-07	3.4E-05	1.4E-04	0.24

BELTED KINGFISHER RISK SHEETS

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **AUF_{Lower}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.57	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 2

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.89	0.607	948	Fish	1	GKF, GM, STM, PNF, SAS
2	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **AUFLower**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Hexachlorobenzene	0.6464	0.9757						2.7E-01	2.1373							0.0E+00	2.7E-01	3.35	0.08
1,3-Dichlorobenzene	0.769	0.758						3.0E-01	0.0736							0.0E+00	3.0E-01	160.8	0.0019

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **AUF_{Lower}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.57	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 3

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.445	0.304	948	Fish	1	GM
2	0.445	0.304	948	Fish	1	GKF, STM, PNF, SAS
3	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **AUFLower**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515					3.7E-02	0.0479							0.0E+00	3.7E-02	0.064	0.58
Mercury (Inorganic)								0.0E+00	4.7391							0.0E+00	0.0E+00	0.9	0

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **AUF_{Lower}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.57	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 3

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.3	0.205	948	Fish	1	GKF
2	0.3	0.205	948	Fish	1	GM, STM
3	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.29	0.205	948	Fish	1	PNF, SAS
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **AUFLower**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.0009	0.0005	0.0005	0.0002				2.0E-04	0.0021							0.0E+00	2.0E-04	0.00014	1.40

RACCOON RISK SHEETS

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **AUF_{Lower}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.019	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.116	0.010	1092	Fish	1	GM
2	0.116	0.010	1092	Fish	1	GKF, STM, PNF, SAS
3	0.234	0.021	974	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.3	0.027	962	Plant	1	
5	0.234	0.021	1428	Mammal	0.5	Marsh Rice Rat
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **AUF_{Lower}**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.0479	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	1.81E-02	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	7.25E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	1.29E-02	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.99E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.83E-02	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125	1.45E-01	Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125	5.80E-02	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	5.15E-02	Table C-4.2
4	Plant				1	0.5	2.43E-03	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **AUF_{Lower}**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	4.7391	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	2.64E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.40E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125		Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125		Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25		Table C-4.2
4	Plant				1	0.5	6.60E-02	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **AUFLower**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515	0.002426492	3.83E-02			7.0E-05	0.0479							8.0E-06	7.8E-05	0.0177	0.0044
Mercury (Inorganic)				0.065754378	3.40E-04			3.4E-05	4.7391							7.9E-04	8.3E-04	3.54	0.00023

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **AUF_{Lower}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.019	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.116	0.010	1092	Fish	1	GKF
2	0.116	0.010	1092	Fish	1	GM, STM, PNF, SAS
3	0.234	0.021	974	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.3	0.027	962	Plant	1	
5	0.234	0.021	1428	Mammal	0.5	Marsh Rice Rat
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **AUF_{Lower}**
COPC: **PCB Congener TEQ (Mammal)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0001	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	1.09E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	3.99E-06	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	9.75E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	2.77E-09	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	1.91E-08	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.12E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.125	8.70E-05	Table C-4.2
2	Fish	GM, STM, PNF, SAS	3	14	1	0.125	3.19E-05	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	2.79E-05	Table C-4.2
4	Plant	Plant			1	0.5	2.32E-07	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **AUFLower**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Mammal) (U=1/2)	8.7E-05	3.2E-05	2.8E-05	2.32E-07	1.12E-04			5.8E-08	0.0001							1.9E-08	7.6E-08	5.4E-07	0.14

SPOTTED SANDPIPER RISK SHEETS

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **AUF_{Lower}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	43	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	8.1	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.77	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	818	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	824	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.992	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.012	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.73	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.18	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.26	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 1

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	1	0.992	824	Invert	1	OYS,BCRA,WHSA
2						
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **AUFLower**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Lead	0.292							7.5E-02	48.944							2.6E-02	1.0E-01	3.26	0.031
Mercury (Methyl)	0.0533							1.4E-02	0.0479							2.6E-05	1.4E-02	0.064	0.22
Total PAH 16 (U=1/2)	0.1397							3.6E-02	7.3078							3.9E-03	4.0E-02	325	0.00012
Dioxin/Furan Congener TEQ (Avian) (U=1/2)	2.2E-05							5.7E-06	0.0002							1.2E-07	5.9E-06	0.00014	0.042
Hexachlorobenzene	1.132							2.9E-01	2.1373							1.2E-03	2.9E-01	3.35	0.09
Hexachlorobutadiene	0.3725							9.6E-02	3.8327							2.1E-03	9.8E-02	20	0.0049
1,3-Dichlorobenzene	0.3725							9.6E-02	0.0736							4.0E-05	9.6E-02	160.8	0.00060
1,4-Dichlorobenzene	0.3725							9.6E-02	0.0744							4.0E-05	9.6E-02	160.8	0.00060
PCB Congener TEQ (Avian) (U=1/2)	0.00043							1.1E-04	0.0021							1.1E-06	1.1E-04	1.4E-04	0.80
Mercury (Inorganic)								0.0E+00	4.7391							2.6E-03	2.6E-03	9.0E-01	0.0028

APPENDIX C-5.6
AUF UNCERTAINTY ANALYSIS – UPPER-BOUND ESTIMATE OF HOME RANGE

CARNIVOROUS BIRD RISK SHEETS

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **AUF_{Upper}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	1	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 4

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.165	0.054	948	Fish	1	GM
2	0.165	0.054	948	Fish	1	GKF, STM, PNF, SAS
3	0.33	0.108	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.34	0.111	1326	Mammal	0.5	March Rice Rat
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **AUF_{Upper}**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.0479	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0.018125	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0.00725	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0.012875	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.99E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.83E-02	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125	1.45E-01	Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125	5.80E-02	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	5.15E-02	Table C-4.2
4	Plant	Plant			1	0.5	2.43E-03	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **AUF_{Upper}**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	4.7391	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	2.64E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.40E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125		Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125		Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25		Table C-4.2
4	Plant				1	0.5	6.60E-02	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **AUFUpper**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$ /day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$ /day*	*mg/kg $_{BW}$ /day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515	3.83E-02				1.9E-02	0.0479							3.5E-05	1.9E-02	0.064	0.29
Mercury (Inorganic)				3.40E-04				1.9E-05	4.7391							3.5E-03	3.5E-03	0.9	0.0039

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **AUF_{Upper}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	1	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.11	0.036	948	Fish	1	GKF
2	0.11	0.036	948	Fish	1	GM, STM
3	0.33	0.108	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.34	0.111	1326	Mammal	0.5	March Rice Rat
5	0.11	0.036	948	Fish	1	PNF, SAS
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **AUF_{Upper}**
COPC: **PCB Congener TEQ (Avian)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0021	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	7.21E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	3.52E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	1.58E-03	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	5.20E-08	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Food Type 5	1.33E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	4.95E-06	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.71E-03	mg/kg ww	

Number of food types (k = 1 to m): 5

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.083	8.68E-04	Table C-4.2
2	Fish	GM, STM	3	14	1	0.083	4.24E-04	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	4.52E-04	Table C-4.2
4	Plant	Plant			1	0.5	4.35E-06	Table C-4.2
5	Fish	PNF, SAS	3	14	1	0.083	1.60E-04	Table C-4.2
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **AUFUpper**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.0009	0.0005	0.0005	1.71E-03	0.0002			2.0E-04	0.0021							1.5E-06	2.0E-04	1.4E-04	1.42

BELTED KINGFISHER RISK SHEETS

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **AUF_{Upper}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	1	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 2

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.89	0.607	948	Fish	1	GKF, GM, STM, PNF, SAS
2	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **AUFUpper**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Hexachlorobenzene	0.6464	0.9757						4.7E-01	2.1373							0.0E+00	4.7E-01	3.35	0.14
1,3-Dichlorobenzene	0.769	0.758						5.2E-01	0.0736							0.0E+00	5.2E-01	160.8	0.0033

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **AUF_{Upper}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	1	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 3

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.445	0.304	948	Fish	1	GM
2	0.445	0.304	948	Fish	1	GKF, STM, PNF, SAS
3	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **AUFUpper**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515					6.5E-02	0.0479							0.0E+00	6.5E-02	0.064	1.02
Mercury (Inorganic)								0.0E+00	4.7391							0.0E+00	0.0E+00	0.9	0

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **AUF_{Upper}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	1	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 3

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.3	0.205	948	Fish	1	GKF
2	0.3	0.205	948	Fish	1	GM, STM
3	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.29	0.205	948	Fish	1	PNF, SAS
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **AUFUpper**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.0009	0.0005	0.0005	0.0002				3.4E-04	0.0021							0.0E+00	3.4E-04	0.00014	2.45

RACCOON RISK SHEETS

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **AUF_{Upper}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.023	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.116	0.010	1092	Fish	1	GM
2	0.116	0.010	1092	Fish	1	GKF, STM, PNF, SAS
3	0.234	0.021	974	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.3	0.027	962	Plant	1	
5	0.234	0.021	1428	Mammal	0.5	Marsh Rice Rat
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **AUF_{Upper}**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.0479	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	1.81E-02	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	7.25E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	1.29E-02	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.99E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.83E-02	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125	1.45E-01	Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125	5.80E-02	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	5.15E-02	Table C-4.2
4	Plant				1	0.5	2.43E-03	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **AUF_{Upper}**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	4.7391	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	2.64E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.40E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125		Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125		Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25		Table C-4.2
4	Plant				1	0.5	6.60E-02	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **AUFUpper**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515	0.002426492	3.83E-02			8.5E-05	0.0479							9.7E-06	9.5E-05	0.0177	0.0053
Mercury (Inorganic)				0.065754378	3.40E-04			4.1E-05	4.7391							9.6E-04	1.0E-03	3.54	0.00028

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **AUF_{Upper}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.023	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.116	0.010	1092	Fish	1	GKF
2	0.116	0.010	1092	Fish	1	GM, STM, PNF, SAS
3	0.234	0.021	974	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.3	0.027	962	Plant	1	
5	0.234	0.021	1428	Mammal	0.5	Marsh Rice Rat
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **AUF_{Upper}**
COPC: **PCB Congener TEQ (Mammal)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0001	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	1.09E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	3.99E-06	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	9.75E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	2.77E-09	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	1.91E-08	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.12E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.125	8.70E-05	Table C-4.2
2	Fish	GM, STM, PNF, SAS	3	14	1	0.125	3.19E-05	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	2.79E-05	Table C-4.2
4	Plant	Plant			1	0.5	2.32E-07	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **AUFUpper**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Mammal) (U=1/2)	8.7E-05	3.2E-05	2.8E-05	2.32E-07	1.12E-04			7.0E-08	0.0001							2.3E-08	9.2E-08	5.4E-07	0.17

SPOTTED SANDPIPER RISK SHEETS

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **AUF_{Upper}**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	43	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	8.1	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.77	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	818	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	824	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.992	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.012	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.73	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.18	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	1	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 1

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	1	0.992	824	Invert	1	OYS,BCRA,WHSA
2						
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor Group: **Sediment-probing Birds**
Scenario: **AUFUpper**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*$mg/kg_{BW}/day$*	*mg/kg (dry weight)*							*$mg/kg_{BW}/day$*	*$mg/kg_{BW}/day$*		*NA*
Lead	0.292							2.9E-01	48.944							1.0E-01	3.9E-01	3.26	0.12
Mercury (Methyl)	0.0533							5.3E-02	0.0479							9.9E-05	5.3E-02	0.064	0.83
Total PAH 16 (U=1/2)	0.1397							1.4E-01	7.3078							1.5E-02	1.5E-01	325	0.00047
Dioxin/Furan Congener TEQ (Avian) (U=1/2)	2.2E-05							2.2E-05	0.0002							4.5E-07	2.3E-05	0.00014	0.16
Hexachlorobenzene	1.132							1.1E+00	2.1373							4.4E-03	1.1E+00	3.35	0.34
Hexachlorobutadiene	0.3725							3.7E-01	3.8327							7.9E-03	3.8E-01	20	0.019
1,3-Dichlorobenzene	0.3725							3.7E-01	0.0736							1.5E-04	3.7E-01	160.8	0.0023
1,4-Dichlorobenzene	0.3725							3.7E-01	0.0744							1.5E-04	3.7E-01	160.8	0.0023
PCB Congener TEQ (Avian) (U=1/2)	0.00043							4.3E-04	0.0021							4.3E-06	4.3E-04	1.4E-04	3.08
Mercury (Inorganic)								0.0E+00	4.7391							9.8E-03	9.8E-03	9.0E-01	0.011

APPENDIX C-5.7
PCB RISK UNCERTAINTY ANALYSIS – EXPOSURE AND EFFECTS BASED ON TOTAL PCB CONGENERS

Plant Total PCB Congeners Calculations

$$C_{PLANT} = C_{SED} \times BAF_{PLANT}$$

Where:

C_{PLANT} = Concentration of PCB Congener TEQ (Mammal) in plant tissue

C_{SED} = Concentration of PCB Congener TEQ (Mammal) in sediment

BAF_{PLANT} = Bioaccumulation factor for PCB Congener TEQ (Mammal) (kgSED / kgPREY)

$$C_{PLANT,\ WW} = C_{PLANT,DW} \times \left(\frac{(100 - \%\ moisture)}{100}\right)$$

Where:

$C_{PLANT,WW}$ = Concentration in plant tissue as wet weight

$C_{PLANT,DW}$ = Concentration in plant tissue as dry weight

% moisture = Moisture content of plant tissue

	C_{SED} (mg/kg)	BAF_{PLANT*}	$C_{PLANT,DW}$ (mg/kg)	$C_{PLANT,WW}$ (mg/kg)
Total PCB Congeners	7.87E+00	0.01	7.87E-02	2.91E-02

*USEPA (1999) Table C-2, BCF for Arcolor 1254

CARNIVOROUS BIRD RISK SHEETS

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **PCB Uncertainty**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.165	0.054	948	Fish	1	GKF
2	0.165	0.054	948	Fish	1	GM, STM, PNF, SAS
3	0.165	0.054	824	Invertebrate	1	BRS
4	0.165	0.054	824	Invertebrate	1	BCR, WHS, OYS
5	0.34	0.111	1326	Mammal	0.5	
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **PCB Uncertainty**
COPC: **Total PCB Congeners**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	12	--	USEPA (1999) Table 5-2 for log Kow of 6.2 (Aroclor 1254)
$BCF_{PLANT-OM}$	1.78E-02	--	USEPA (1999) Table D-1 for Aroclor 1254
C_{SED}	7.8689	mg/kg dw	Risk Characterization
BCF_{SED-OM}	7.42E-05	--	USEPA (1999) Table D-3 for Aroclor 1254
FR_{SED}	1.0	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	7.19E-01	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 1	3.60E-01	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	3.02E+00	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 4	1.22E+00	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	1.81E-03	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	5.84E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	5.32E+00	mg/kg ww	

Number of food types (k = 1 to m): 5

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	12	1	0.125	5.75E+00	Risk Characterization
2	Fish	GM, STM, PNF, SAS	3	12	1	0.125	2.88E+00	Risk Characterization
3	Invertebrate	BRS	2	1	1	0.125	2.01E+00	Risk Characterization
4	Invertebrate	BCR, WHS, OYS	2	1	1	0.125	8.13E-01	Risk Characterization
5	Plant	Plant			1	0.5	2.91E-02	Plant Total PCB Congeners Calculations
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **PCB Uncertainty**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Total PCB Congener (U=1/2)	5.7523	2.8799	2.013	0.8135	5.32E+00			3.3E-01	7.8689							2.1E-03	3.3E-01	2.05	0.16

BELTED KINGFISHER RISK SHEETS

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **PCB Uncertainty**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 4

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.445	0.304	948	Fish	1	GKF
2	0.445	0.304	948	Fish	1	GM, STM, PNF, SAS
3	0.055	0.038	824	Invertebrate	1	BRS
4	0.055	0.038	824	Invertebrate	1	BCR, WHS, OYS
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **PCB Uncertainty**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Total PCB Congener (U=1/2)	5.7523	2.8799	2.013	0.8135				1.9E+00	7.8689							0.0E+00	1.9E+00	2.05	0.92

RACCOON RISK SHEETS

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **PCB Uncertainty**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.021	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 6

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.116	0.010	1092	Fish	1	GKF
2	0.116	0.010	1092	Fish	1	GM, STM, PNF, SAS
3	0.117	0.011	974	Invertebrate	1	BRS
4	0.117	0.011	974	Invertebrate	1	BCR, WHS, OYS
5	0.3	0.027	962	Plant	1	
6	0.234	0.021	1428	Mammal	0.5	
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **PCB Uncertainty**
COPC: **Total PCB Congeners**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	12	--	USEPA (1999) Table 5-2 for log Kow of 6.2 (Aroclor 1254)
$BCF_{PLANT-OM}$	1.78E-02	--	USEPA (1999) Table D-1 for Aroclor 1254
C_{SED}	7.8689	mg/kg dw	Risk Characterization
BCF_{SED-OM}	7.42E-05	--	USEPA (1999) Table D-3 for Aroclor 1254
FR_{SED}	1.0	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	7.19E-01	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	3.60E-01	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	3.02E+00	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 4	1.22E+00	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	1.81E-03	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	5.84E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	5.32E+00	mg/kg ww	

Number of food types (k = 1 to m): 5

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	12	1	0.125	5.75E+00	Risk Characterization
2	Fish	GM, STM, PNF, SAS	3	12	1	0.125	2.88E+00	Risk Characterization
3	Invertebrate	BRS	2	1	1	0.125	2.01E+00	Risk Characterization
4	Invertebrate	BCR, WHS, OYS	2	1	1	0.125	8.13E-01	Risk Characterization
5	Plant	Plant			1	0.5	2.91E-02	Plant Total PCB Congeners Calculations
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **PCB Uncertainty**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Total PCB Congener (U=1/2)	5.75228	2.87986	2.013	0.81347	2.91E-02	5.32E+00		3.7E-03	7.8689							1.5E-03	5.2E-03	0.106	0.049

SPOTTED SANDPIPER RISK SHEETS

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **PCB Uncertainty**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	43	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	8.1	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.77	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	818	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	824	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.992	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.012	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.73	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.18	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.34	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 1

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	1	0.992	824	Invert	1	OYS,BCRA,WHSA
2						
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **PCB Uncertainty**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Total PCB Congener (U=1/2)	0.82085							2.8E-01	7.8689							5.5E-03	2.8E-01	2.05	0.14

APPENDIX C-5.8

SWACS CALCULATED BY EXCLUDING GUNITE PORTION OF PATRICK BAYOU

Table C-5.8
Comparison of Baseline SWAC and Excluding Gunite Channel SWAC

COPC	Units	Intertidal and Supratidal SWAC	
		Whole Bayou (Baseline)	Excluding Gunite Channel
1,3-Dichlorobenzene	mg/kg	0.074	0.088
1,4-Dichlorobenzene	mg/kg	0.074	0.090
Hexachlorobenzene	mg/kg	2.14	2.58
Hexachlorobutadiene	mg/kg	3.83	4.69
Lead	mg/kg	48.94	45.16
Mercury	mg/kg	4.79	5.85
Total Dioxin/Furan TEQ 1998 (Avian; U=1/2)	mg/kg	0.00022	0.00026
Total PAH (U=1/2)	mg/kg	7.31	6.20
Total PCB Congener TEQ 1998 (Avian; U=1/2)	mg/kg	0.0021	0.0023
Total PCB Congener TEQ 2005 (Mammal; U=1/2)	mg/kg	0.00011	0.00013

Notes:
SWAC - surface weighted average concentration
mg/kg - milligrams per kilogram
COPC - chemical of potential concern
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl

CARNIVOROUS BIRD RISK SHEETS

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Baseline**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 4

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.165	0.054	948	Fish	1	GM
2	0.165	0.054	948	Fish	1	GKF, STM, PNF, SAS
3	0.33	0.108	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.34	0.111	1326	Mammal	0.5	March Rice Rat
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Excluding Gunite Channel**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.0585	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0.018125	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0.00725	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0.012875	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	4.88E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.83E-02	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125	1.45E-01	Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125	5.80E-02	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	5.15E-02	Table C-4.2
4	Plant	Plant			1	0.5	2.43E-03	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Excluding Gunite Channel**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	5.7915	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.23E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.98E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125		Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125		Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25		Table C-4.2
4	Plant				1	0.5	6.60E-02	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Baseline**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515	3.83E-02				6.7E-03	0.0585							1.6E-05	6.7E-03	0.064	0.11
Mercury (Inorganic)				3.98E-04				2.2E-05	5.7915							1.5E-03	1.6E-03	0.9	0.0017

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Excluding Gunite Channel**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.11	0.036	948	Fish	1	GKF
2	0.11	0.036	948	Fish	1	GM, STM
3	0.33	0.108	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.34	0.111	1326	Mammal	0.5	March Rice Rat
5	0.11	0.036	948	Fish	1	PNF, SAS
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Excluding Gunite Channel**
COPC: **PCB Congener TEQ (Avian)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0023	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	7.21E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	3.52E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	1.58E-03	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	5.20E-08	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Food Type 5	1.33E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	5.52E-06	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.71E-03	mg/kg ww	

Number of food types (k = 1 to m): 5

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.083	8.68E-04	Table C-4.2
2	Fish	GM, STM	3	14	1	0.083	4.24E-04	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	4.52E-04	Table C-4.2
4	Plant	Plant			1	0.5	4.35E-06	Table C-4.2
5	Fish	PNF, SAS	3	14	1	0.083	1.60E-04	Table C-4.2
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Excluding Gunite Channel**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.00087	0.00048	0.00045	1.71E-03	0.00016			7.1E-05	0.0023							6.2E-07	7.2E-05	1.4E-04	0.51

BELTED KINGFISHER RISK SHEETS

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Excluding Gunite Channel**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}$/day	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	kg/kg_{BW}/day	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 2

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.89	0.607	948	Fish	1	GKF, GM, STM, PNF, SAS
2	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Excluding Gunite Channel**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Hexachlorobenzene	0.6464	0.9757						3.2E-01	2.5829							0.0E+00	3.2E-01	3.35	0.10
1,3-Dichlorobenzene	0.769	0.758						3.6E-01	0.0885							0.0E+00	3.6E-01	160.8	0.0022

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Excluding Gunite Channel**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 3

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.445	0.304	948	Fish	1	GM
2	0.445	0.304	948	Fish	1	GKF, STM, PNF, SAS
3	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Excluding Gunite Channel**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515					4.5E-02	0.0585							0.0E+00	4.5E-02	0.064	0.71
Mercury (Inorganic)								0.0E+00	5.7915							0.0E+00	0.0E+00	0.9	0

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Excluding Gunite Channel**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	136	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	637	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	934	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.682	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.024	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.69	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 4

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.3	0.205	948	Fish	1	GKF
2	0.3	0.205	948	Fish	1	GM, STM
3	0.11	0.075	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.29	0.205	948	Fish	1	PNF, SAS
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Belted Kingfisher**
Receptor Group: **Piscivorous Birds**
Scenario: **Excluding Gunite Channel**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.00087	0.00048	0.00045	0.00016				2.4E-04	0.0023							0.0E+00	2.4E-04	0.00014	1.69

RACCOON RISK SHEETS

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Excluding Gunite Channel**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.021	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.116	0.010	1092	Fish	1	GM
2	0.116	0.010	1092	Fish	1	GKF, STM, PNF, SAS
3	0.234	0.021	974	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.3	0.027	962	Plant	1	
5	0.234	0.021	1428	Mammal	0.5	Marsh Rice Rat
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Excluding Gunite Channel**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-4.2
C_{SED}	0.0585	mg/kg dw	Table C-4.2
BCF_{SED-OM}	8.34E-06	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	1.81E-02	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	7.25E-03	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	1.29E-02	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	4.17E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	4.88E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.83E-02	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125	1.45E-01	Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125	5.80E-02	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	5.15E-02	Table C-4.2
4	Plant				1	0.5	2.43E-03	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Excluding Gunite Channel**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-4.2
C_{SED}	5.7915	mg/kg dw	Table C-4.2
BCF_{SED-OM}	5.57E-05	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	7.59E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.23E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.98E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125		Table C-4.2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125		Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25		Table C-4.2
4	Plant				1	0.5	6.60E-02	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Excluding Gunite Channel**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515	0.002426492	3.83E-02			7.7E-05	0.0585							1.1E-05	8.8E-05	0.0177	0.0050
Mercury (Inorganic)				0.065754378	3.98E-04			3.8E-05	5.7915							1.1E-03	1.1E-03	3.54	0.00031

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Excluding Gunite Channel**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	3990	g	Table C-4.1	AE_{FISH}	0.91	--	Table C-4.1
a	6.0	--	Table C-4.1	$AE_{INVERTs}$	0.91	--	Table C-4.1
b	0.678	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	100	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.84	--	Table C-4.1
ME_{AVG}	1104	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.090	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.094	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.094	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.021	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 5

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.116	0.010	1092	Fish	1	GKF
2	0.116	0.010	1092	Fish	1	GM, STM, PNF, SAS
3	0.234	0.021	974	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.3	0.027	962	Plant	1	
5	0.234	0.021	1428	Mammal	0.5	Marsh Rice Rat
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Excluding Gunite Channel**
COPC: **PCB Congener TEQ (Mammal)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14.0	--	Table C-4.2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-4.2
C_{SED}	0.0001	mg/kg dw	Table C-4.2
BCF_{SED-OM}	1.70E-04	--	Table C-4.2
FR_{SED}	1.000	--	Table C-4.2
COPC concentration in Marsh Rice Rat from Food Type 1	1.09E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	3.99E-06	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	9.75E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	2.77E-09	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	2.21E-08	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.12E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.125	8.70E-05	Table C-4.2
2	Fish	GM, STM, PNF, SAS	3	14	1	0.125	3.19E-05	Table C-4.2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	2.79E-05	Table C-4.2
4	Plant	Plant			1	0.5	2.32E-07	Table C-4.2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight

Receptor: **Raccoon**
Receptor Group: **Omnivorous Mammal**
Scenario: **Excluding Gunite Channel**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Mammal) (U=1/2)	8.7E-05	3.2E-05	2.8E-05	2.32E-07	1.12E-04			6.4E-08	0.0001							2.4E-08	8.8E-08	5.4E-07	0.16

SPOTTED SANDPIPER RISK SHEETS

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **Excluding Gunite Channel**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	43	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	8.1	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.77	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	818	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	824	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.992	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.012	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.73	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.18	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.34	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 1

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	1	0.992	824	Invert	1	OYS,BCRA,WHSA
2						
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

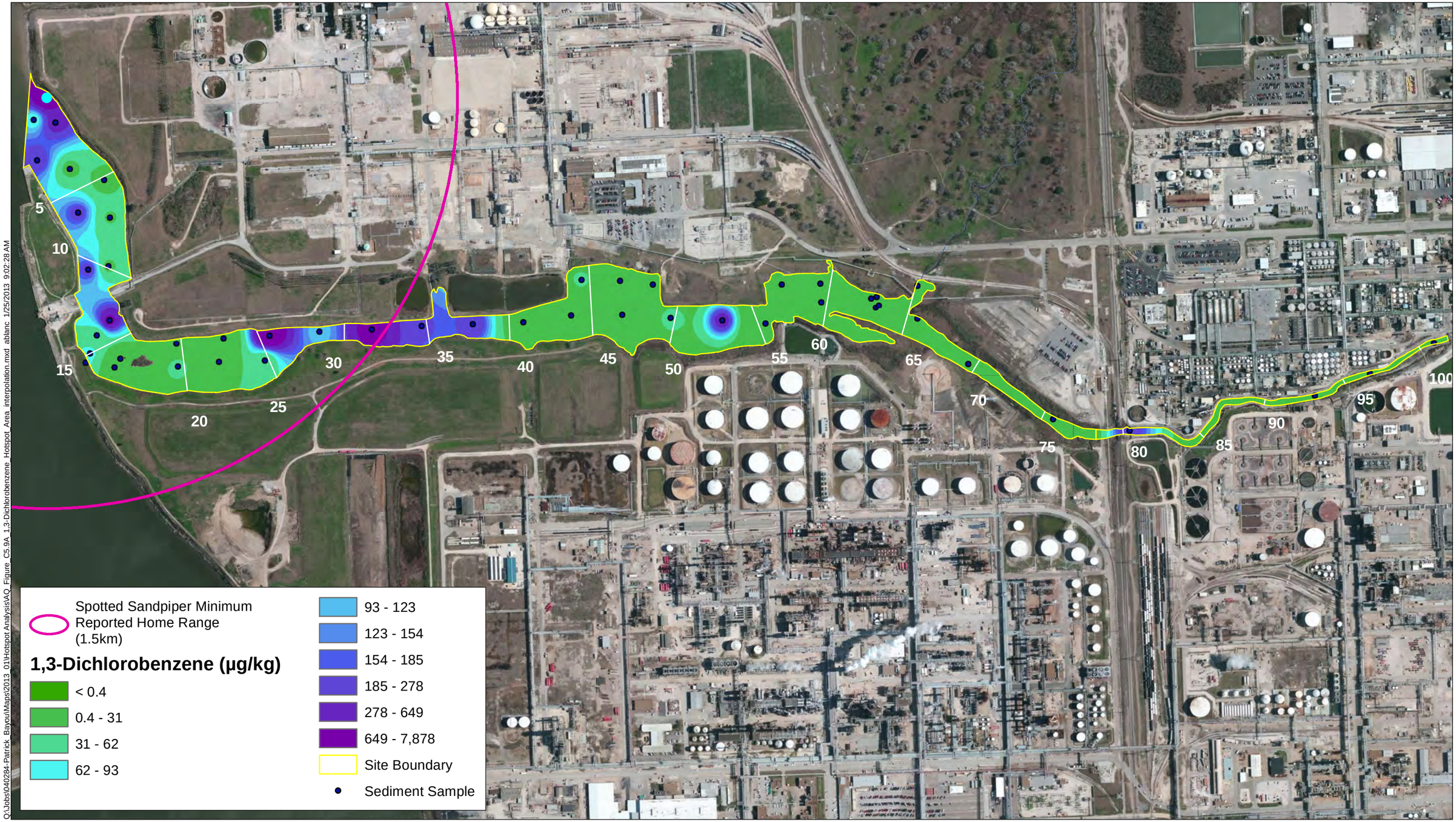
Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **Excluding Gunite Channel**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Lead	0.292							9.9E-02	45.16							3.2E-02	1.3E-01	3.26	0.04
Mercury (Methyl)	0.0533							1.8E-02	0.0585							4.1E-05	1.8E-02	0.064	0.28
Total PAH 16 (U=1/2)	0.1397							4.7E-02	6.198							4.4E-03	5.2E-02	325	0.00016
Dioxin/Furan Congener TEQ (Avian) (U=1/2)	2.2E-05							7.5E-06	0.0003							1.8E-07	7.7E-06	0.00014	0.05
Hexachlorobenzene	1.132							3.8E-01	2.5829							1.8E-03	3.8E-01	3.35	0.11
Hexachlorobutadiene	0.3725							1.3E-01	4.687							3.3E-03	1.3E-01	20	0.006
1,3-Dichlorobenzene	0.3725							1.3E-01	0.0885							6.2E-05	1.3E-01	160.8	0.0008
1,4-Dichlorobenzene	0.3725							1.3E-01	0.0897							6.3E-05	1.3E-01	160.8	0.0008
PCB Congener TEQ (Avian) (U=1/2)	0.00043							1.4E-04	0.0023							1.6E-06	1.5E-04	1.4E-04	1.0
Mercury (Inorganic)								0.0E+00	5.7915							4.1E-03	4.1E-03	9.0E-01	0.005

APPENDIX C-5.9

SEDIMENT HOT SPOT UNCERTAINTY ANALYSIS

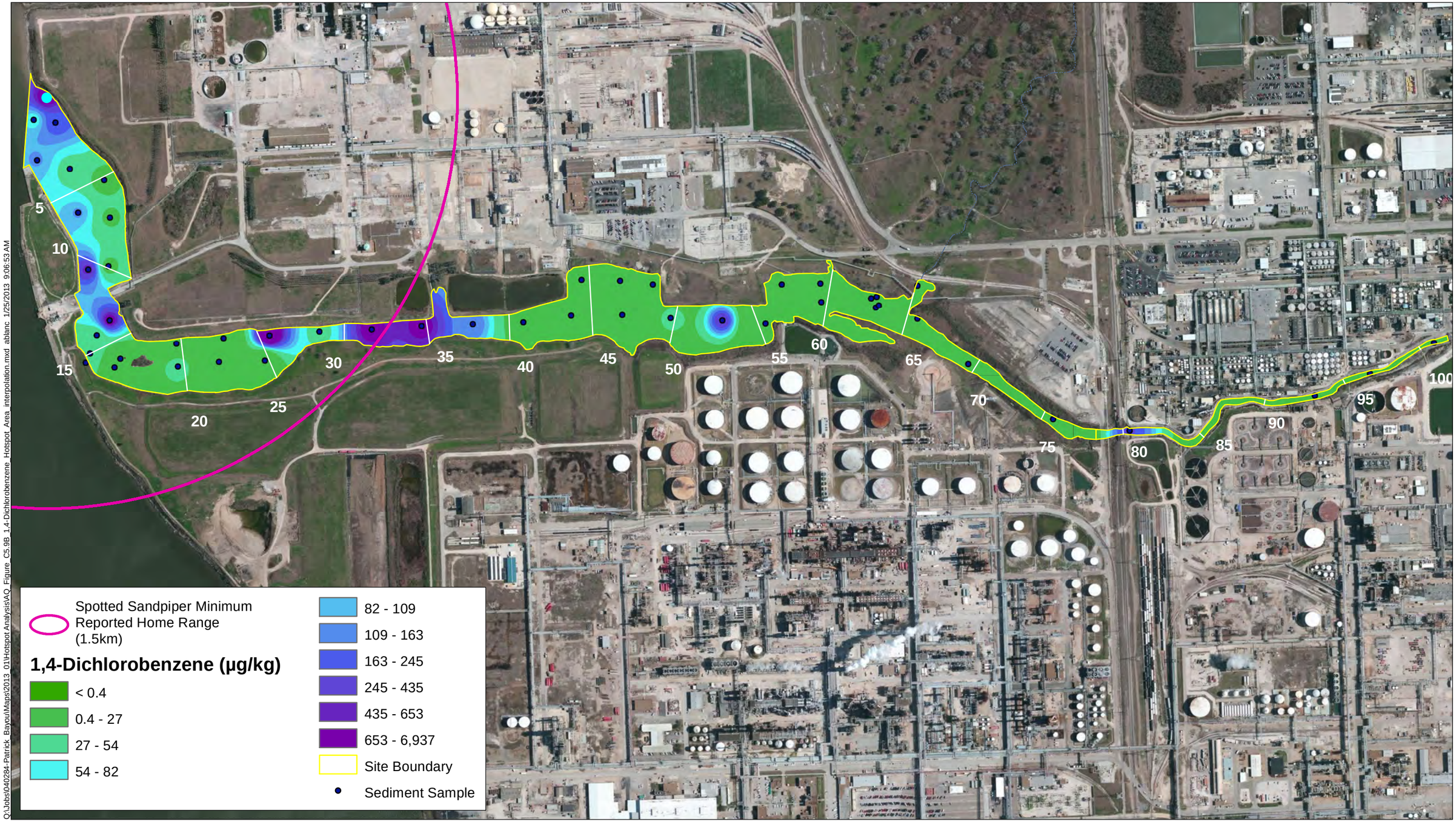
FIGURES



Station numbers from Patrick Bayou PSCR
indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure C-5.9A
1,3-Dichlorobenzene Hot Spot Area Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

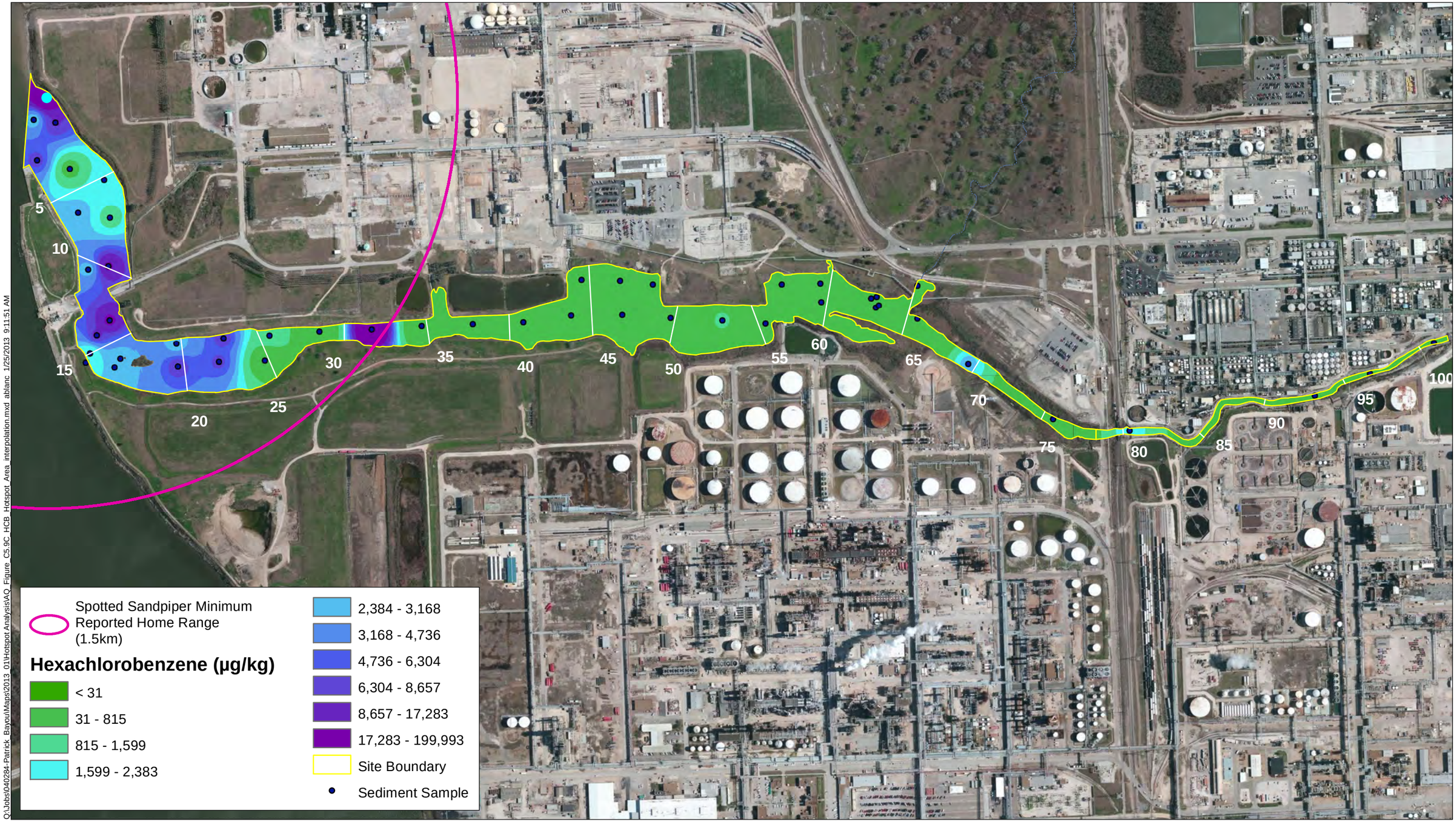


ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure C-5.9B
1,4-Dichlorobenzene Hot Spot Area Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
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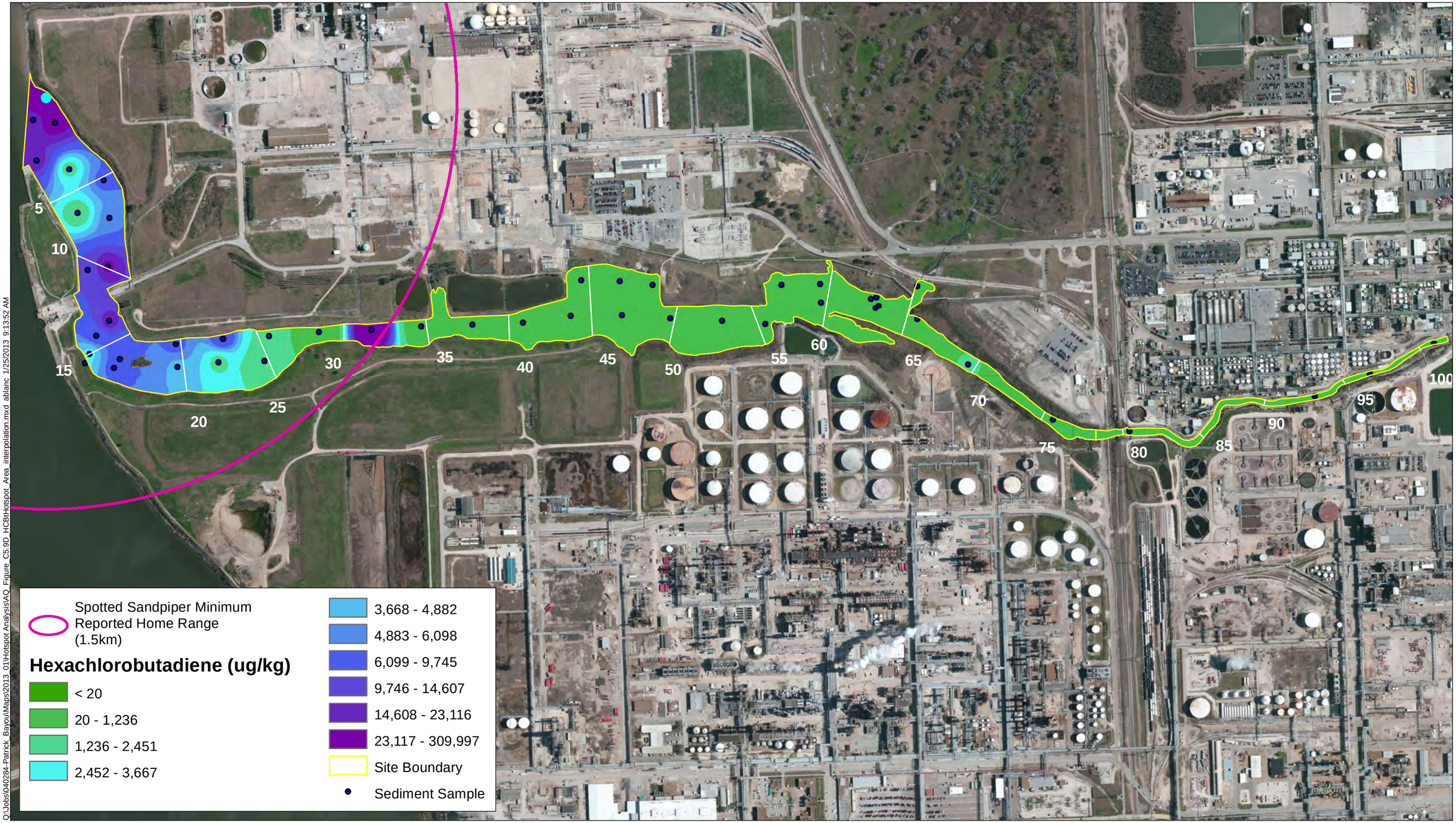
Figure C-5.9C
Hexachlorobenzene Hot Spot Area Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
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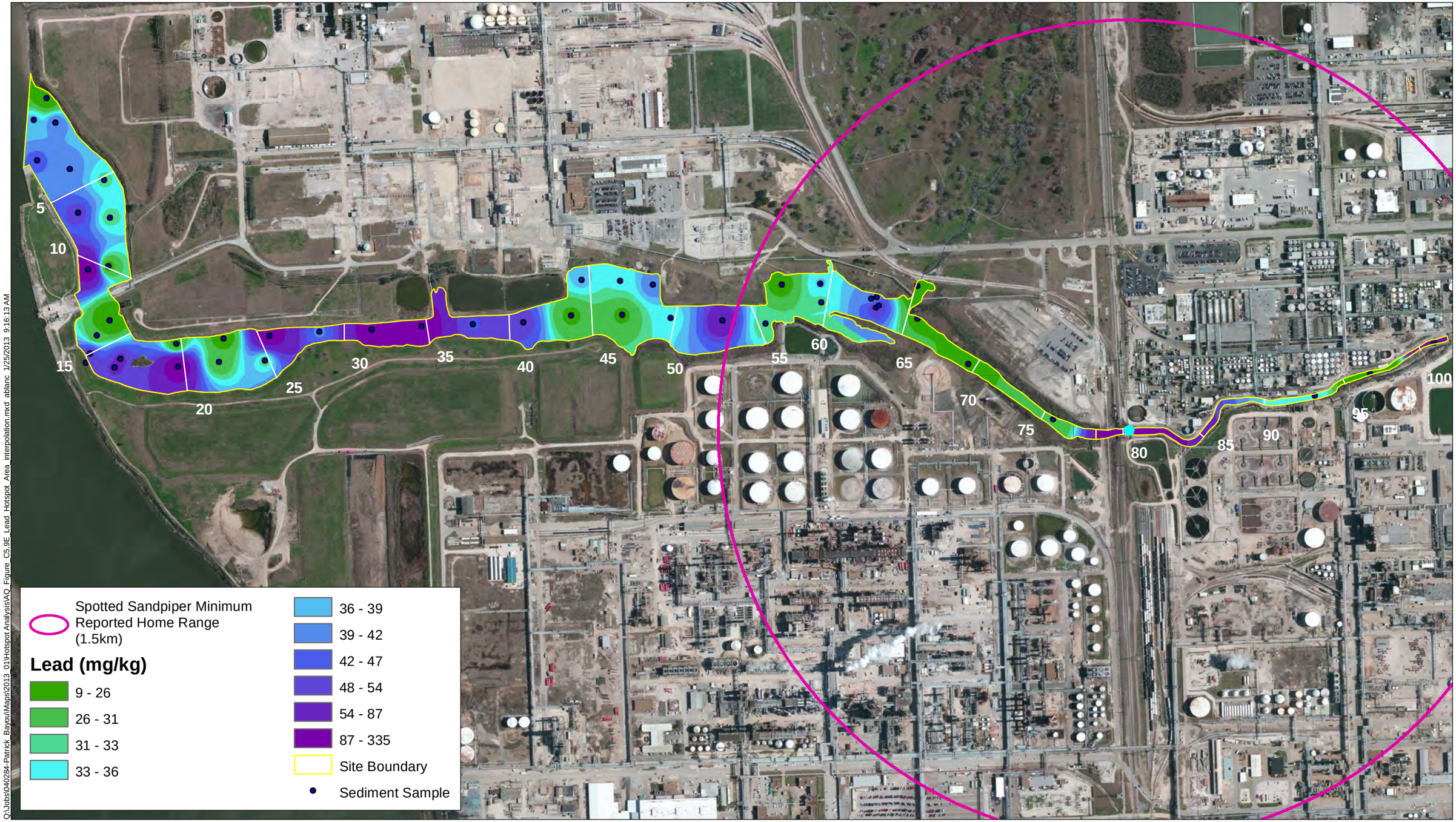
Figure C-5.9D
Hexachlorobutadiene Hot Spot Area Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



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ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
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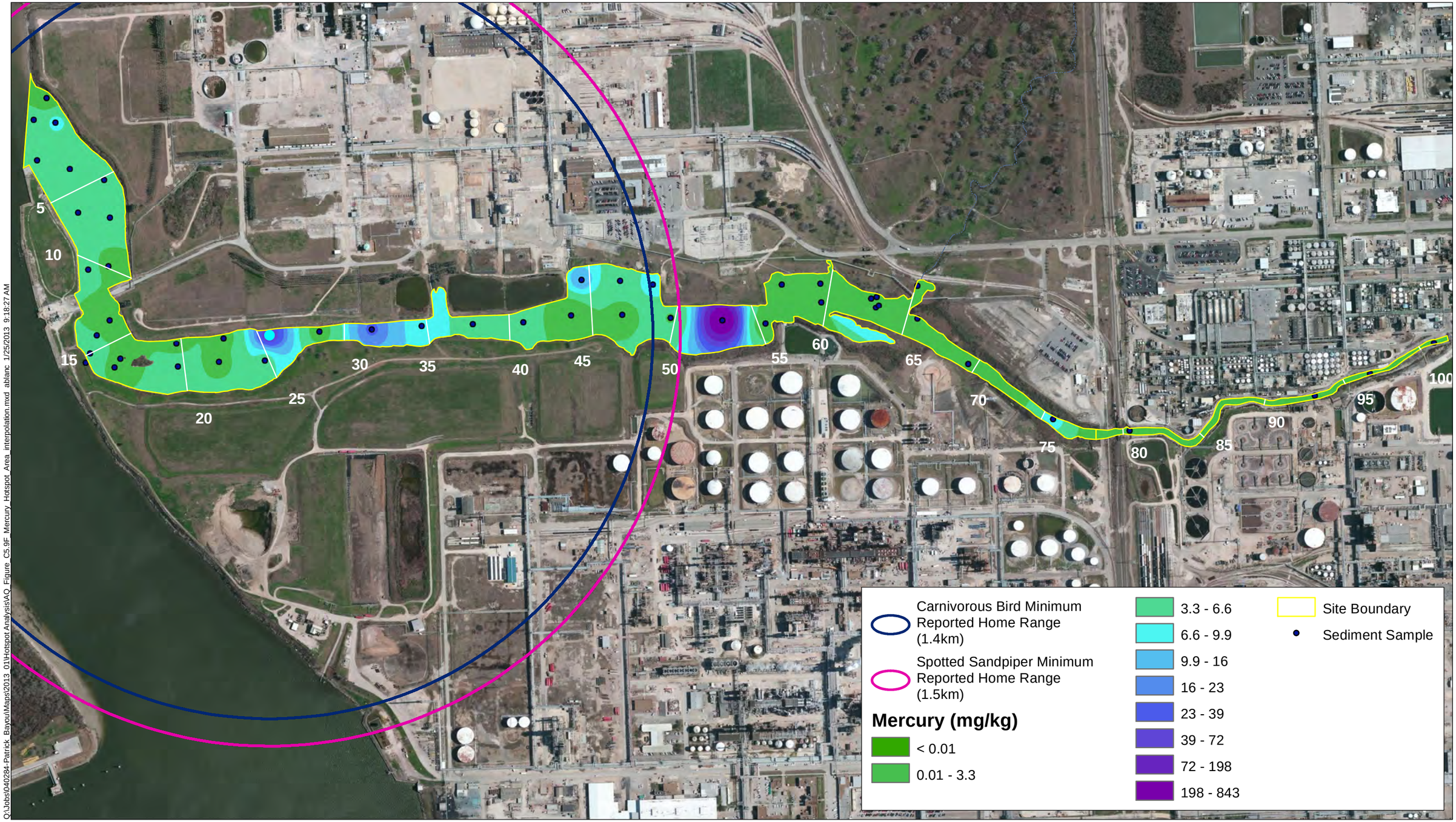
Figure C-5.9E
Lead Hot Spot Area Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



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ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
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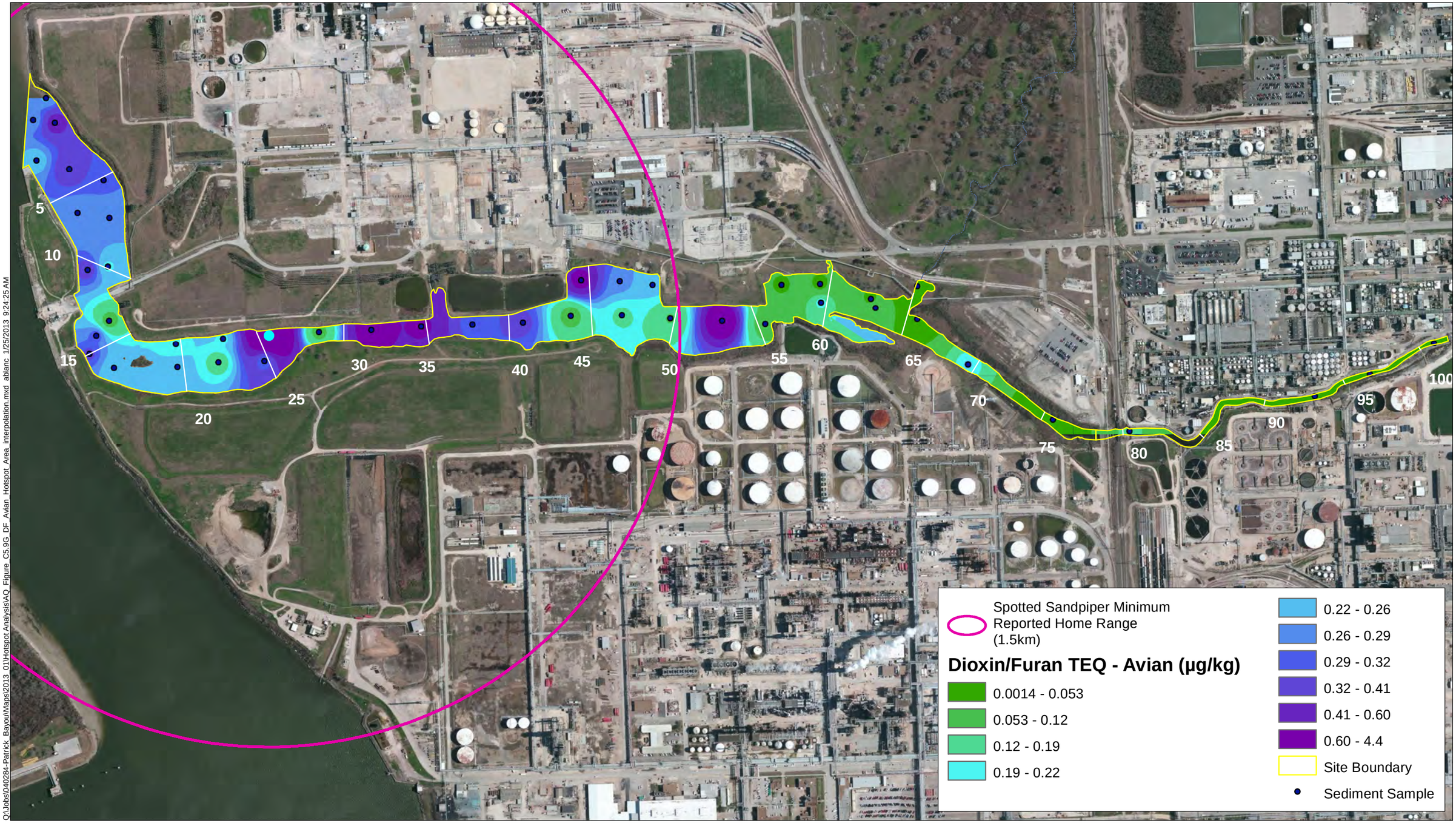
Figure C-5.9F
Mercury Hot Spot Area Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



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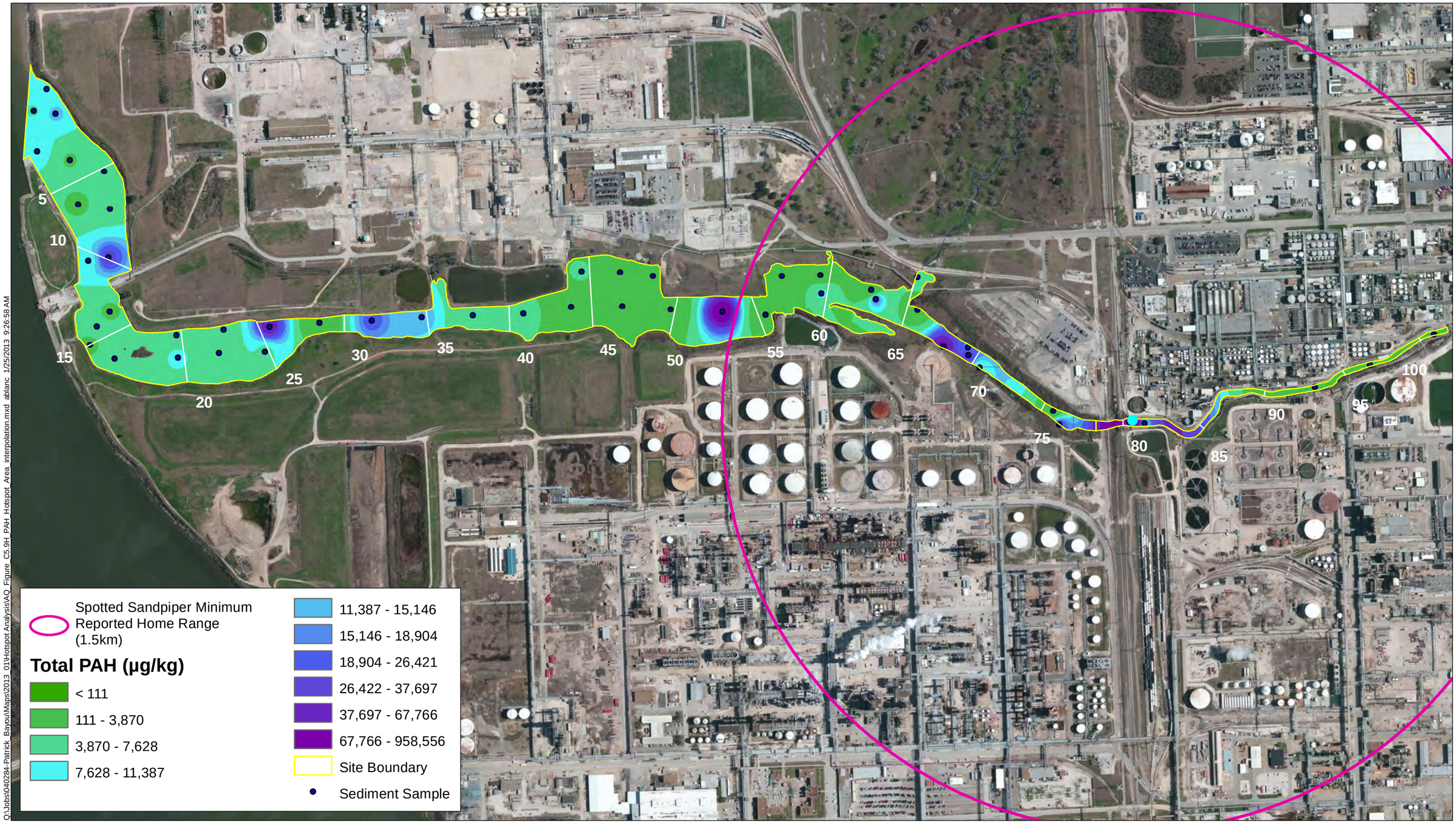
ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure C-5.9G
Total Dioxin/Furan TEQ - Avian Hot Spot Area Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
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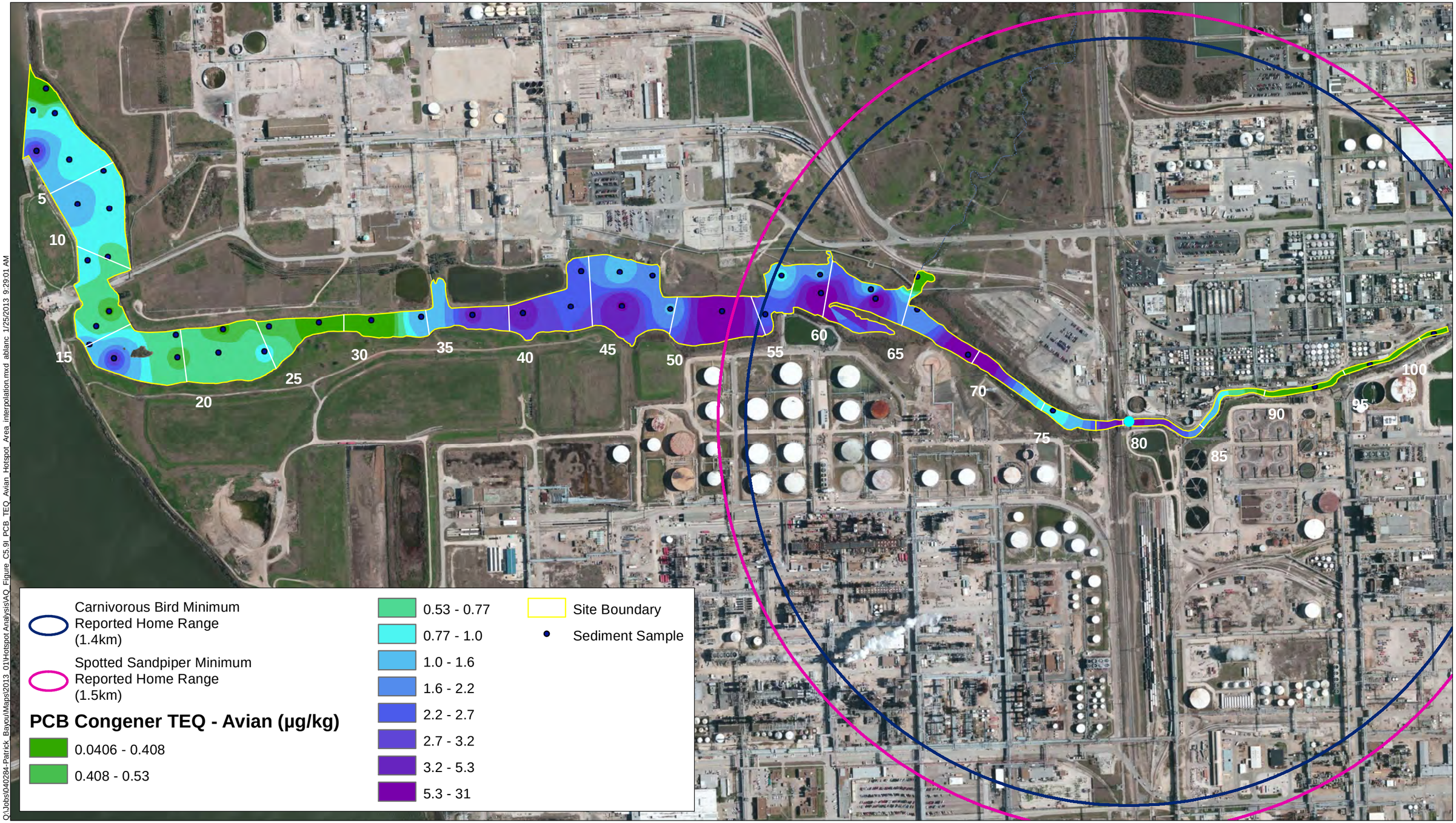
Figure C-5.9H
Total PAH Hot Spot Area Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



ANCHOR QEA

Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: Bing Maps 2010

Feet
0 275 550 825 1,100

Figure C-5.9I
Total PCB Congener TEQ - Avian Hot Spot Area Interpolation
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

TABLES

Table C-5.9 1
Comparison of Site-wide and Hot Spot Intertidal and Supratidal Weighted Averages and HQs

COPC	Intertidal and Supratidal Weighted Averages[a]				HQs			
	Units	Site-wide[b]	Hot Spot Area Based on the Spotted Sandpiper Minimum Home-range (1.5 km)	Hot Spot Area Based on the Carnivorous Bird Minimum Home-range (1.4 km)	Site-wide Spotted Sandpiper	Hot Spot Spotted Sandpiper	Site-wide Carnivorous Bird	Hot Spot Carnivorous Bird
Lead	mg/kg	48.9	51.1	--	0.04	0.04	--	--
Mercury (Methyl)[c]	mg/kg	0.05	0.06	0.06	0.28	0.28	0.11	0.11
Mercury (Inorganic)[d]	mg/kg	4.74	5.77	5.80	0.004	0.005	0.0014	0.0017
Total Mercury	mg/kg	4.79	5.83	5.86	0.28	0.29	0.11	0.11
Total PAH	µg/kg	7310	7420	--	0.00016	0.00016	--	--
1,3-Dichlorobenzene	µg/kg	73.6	109	--	0.0008	0.0008	--	--
1,4-Dichlorobenzene	µg/kg	74.4	112	--	0.0008	0.0008	--	--
Hexachlorobenzene	µg/kg	2140	3180	--	0.11	0.11	--	--
Hexachlorobutadiene	µg/kg	3830	5820	--	0.006	0.006	--	--
PCB Congener TEQ (Avian)	ng/kg	2080	2424	2451	1.0	1.0	0.76	0.76
Dioxin/Furan TEQ (Avian)	ng/kg	108	260	--	0.05	0.05	--	--

[a] - Intertidal and Supratidal Weighted Average is the sediment exposure point concentration.

[b] - From Table 6-4

[c] - Based on the Total Mercury sediment concentration multiplied by 0.01

[d] - Based on the Total Mercury sediment concentration multiplied 0.99

Notes:
COPC - Chemical of potential concern
SWAC - surface weighted average concentration
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
TEQ - Toxic equivalent
mg/kg - milligram per kilogram
ng/kg - nanogram per kilogram
µg/kg - microgram per kilogram

Table C-5.9 2
Hot Spot Analysis Exposure Variables for Calculating Marsh Rice Rat COPC Concentration

Variable	Definition	Units	Mercury				PCB Congener TEQ (Avian)	
			Methyl Mercury		Inorganic Mercury			
Kow	Log octanol/water partition coefficient	unitless	2.54	*a*	log(0.61)	*i*	6.64	*m*
$FCM_{TL3(OM)}$	Food chain multiplier for trophic level 3 (marsh rice rat)	unitless	1.0	*b*	1.0	*g*	14	*n*
Hot_Spot_C_{SED}	Hot spot COPC concentration in sediment	mg/kg dw	5.86E-02	*c*	5.80E+00	*c*	2.45E-03	*c*
$BCF_{PLANT-OM}$	Plant-to-omnivore BCF	unitless	3.44E-04	*d*	2.30E-03	*k*	2.39E-02	*o*
BCF_{SED-OM}	Sediment-to-omnivore BCF	unitless	8.34E-06	*e*	5.57E-05	*l*	1.70E-04	*p*
FR_{SED}	Fraction of sediment in diet that is contaminated	unitless	1	*f*	1	*f*	1	*f*
$TL_{BIOTA,a}$	Trophic Level of Food Type 1	unitless	3	*j*	3	*j*	3	*j*
$TL_{BIOTA,b}$	Trophic Level of Food Type 2	unitless	3	*j*	3	*j*	3	*j*
$TL_{BIOTA,c}$	Trophic Level of Food Type 3	unitless	2	*j*	2	*j*	2	*j*
$TL_{BIOTA,e}$	Trophic Level of Food Type 5	unitless	--		--		3	*j*
$FCM_{TL(BIOTA,a)}$	Food Chain Multiplier for Food Type 1	unitless	1	*b*	1	*g*	14	*n*
$FCM_{TL(BIOTA,b)}$	Food Chain Multiplier for Food Type 2	unitless	1	*b*	1	*g*	14	*n*
$FCM_{TL(BIOTA,c)}$	Food Chain Multiplier for Food Type 3	unitless	1	*b*	1	*g*	1	*n*
$FCM_{TL(BIOTA,e)}$	Food Chain Multiplier for Food Type 3	unitless	--		--		14	*n*
$FR_{BIOT,k}$ (all Food Types)	Portion of kth Food Group that is contaminated	unitless	1	*f*	1	*f*	1	*f*
$P_{BIOTA,a}$	Portion of diet composed of Food Type 1	unitless	0.125	*s*	0.125	*s*	0.083	*s*
$P_{BIOTA,b}$	Portion of diet composed of Food Type 2	unitless	0.125	*s*	0.125	*s*	0.083	*s*
$P_{BIOTA,c}$	Portion of diet composed of Food Type 3	unitless	0.25	*s*	0.25	*s*	0.25	*s*
$P_{BIOTA,d}$	Portion of diet composed of Food Type 4	unitless	0.5	*s*	0.5	*s*	0.5	*s*
$P_{BIOTA,e}$	Portion of diet composed of Food Type 5	unitless	--		--		0.083	*s*
$C_{BIOTA,a}$	COPC concentration in Food Type 1	mg/kg ww	1.45E-01	*q*	--		8.68E-04	*q*
$C_{BIOTA,b}$	COPC concentration in Food Type 2	mg/kg ww	5.80E-02	*q*	--		4.24E-04	*q*
$C_{BIOTA,c}$	COPC concentration in Food Type 3	mg/kg ww	5.15E-02	*q*	--		4.52E-04	*q*
$C_{BIOTA,d}$	COPC concentration in Food Type 4	mg/kg ww	3.00E-03	*r*	8.10E-02	*r*	5.18E-06	*h*
$C_{BIOTA,e}$	COPC concentration in Food Type 5	mg/kg ww	--		--		1.60E-04	*q*

Notes:

a Maximum value in methyl mercury Kow range (Environment Canada 2002)
b USEPA (1999) Table 5-2 based on a Kow of 3
c Table C-5.9 1
d USEPA (1999) Table D-1 value for methyl mercury
e USEPA (1999) Table D-3 value for methyl mercury
f USEPA (1999) Table F-1-14 Default
g USEPA (1999) Table 5-2 based on a Kow of 2 (smallest Kow value provided)
h Hot Spot PCB Congener TEQ (Avian) Plant Concentration Calculation, BERA Appendi
i USEPA (1999) Table A-2-130 value for mercuric chloride
j USEPA (1999) and Professional judgment. All fish were assumed to belong to Trophic level of 3 (omnivore) and invertebrates were assumed to be belong to trophic level 2 (herbivore)
k USEPA (1999) Table D-1 value for mercuric chloride
l USEPA (1999) Table D-3 value for mercuric chloride
m USEPA (1999) Table A-2-176
n USEPA (1999) Table 5-2 based on a Kow of 6.6
o USEPA (1999) Table D-1 value for 2,3,7,8-TCDD
p USEPA (1999) Table D-3 value for 2,3,7,8-TCDD
q Table 6-3
r Hot Spot Mercury Plant Concentration Calculation
s Marsh Rice Rat diet indicated in BERA Workplan (Anchor QEA 2011). Diet was assumed to be composed of 50% plant matter and 50% animal (25% invertebrates and 25% fish)

CARNIVOROUS BIRD RISK SHEETS

Hot Spot Plant Mercury Calculations

$$C_{PLANT} = C_{SED} \times BAF_{PLANT}$$

Where:

C_{PLANT} = Concentration of mercury in plant tissue

C_{SED} = Concentration of mercury in sediment

BAF_{PLANT} = Bioaccumulation factor for mercury (kgSED / kgPREY)

$$C_{PLANT,\ WW} = C_{PLANT,DW} \times \left(\frac{(100 - \%\ moisture)}{100}\right)$$

Where:

$C_{PLANT,WW}$ = Concentration in plant tissue as wet weight

$C_{PLANT,DW}$ = Concentration in plant tissue as dry weight

% moisture = Moisture content of plant tissue

	Hot_Spot_C_{SED} (mg/kg)	**BAF_{PLANT}**	**Hot_Spot_$C_{PLANT,DW}$ (mg/kg)**	**Hot_Spot_$C_{PLANT,WW}$ (mg/kg)**
Methylmercury	0.059	0.137	0.008	0.003
Inorganic Mercury	5.80	0.0375	0.218	0.081

Hot Spot Plant PCB Congener TEQ (Avian)
Calculations

$$C_{PLANT} = C_{SED} \times BAF_{PLANT}$$

Where:
C_{PLANT} = Concentration of PCB Congener TEQ (Avian) in plant tissue
C_{SED} = Concentration of PCB Congener TEQ (Avian) in sediment
BAF_{PLANT} = Bioaccumulation factor for PCB (kgSED / kgPREY)

$$C_{PLANT,\ WW} = C_{PLANT,DW} \times \left(\frac{(100 - \%\ moisture)}{100}\right)$$

Where:
$C_{PLANT,WW}$ = Concentration in plant tissue as wet weight
$C_{PLANT,DW}$ = Concentration in plant tissue as dry weight
% moisture = Moisture content of plant tissue

	Hot_Spot_C_{SED} (mg/kg)	**BAF_{PLANT}***	**Hot_Spot_$C_{PLANT,DW}$ (mg/kg)**	**Hot_Spot_$C_{PLANT,WW}$ (mg/kg)**
PCB Congener TEQ (Avian)	2.50E-03	0.0056	1.40E-05	5.18E-06

*USEPA (1999) Table C-2, BCF for 2,3,7,8-TCDD

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Hot Spot Analysis**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 4

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.165	0.054	948	Fish	1	GM
2	0.165	0.054	948	Fish	1	GKF, STM, PNF, SAS
3	0.33	0.108	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.34	0.111	1326	Mammal	0.5	
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Hot Spot Analysis**
COPC: **Methyl Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1	--	Table C-5.9 2
$BCF_{PLANT-OM}$	3.44E-04	--	Table C-5.9 2
Hot_Spot_C_{SED}	0.0586	mg/kg dw	Table C-5.9 2
BCF_{SED-OM}	8.34E-06	--	Table C-5.9 2
FR_{SED}	1	--	Table C-5.9 2
COPC concentration in Marsh Rice Rat from Food Type 1	0.018125	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0.00725	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0.012875	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	5.16E-07	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	4.89E-07	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	3.83E-02	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125	1.45E-01	Table C-5.9 2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125	5.80E-02	Table C-5.9 2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	5.15E-02	Table C-5.9 2
4	Plant	Plant			1	0.5	3.00E-03	Table C-5.9 2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Hot Spot Analysis**
COPC: **Inorganic Mercury**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	1	--	Table C-5.9 2
$BCF_{PLANT-OM}$	2.30E-03	--	Table C-5.9 2
Hot_Spot_C_{SED}	5.8042	mg/kg dw	Table C-5.9 2
BCF_{SED-OM}	5.57E-05	--	Table C-5.9 2
FR_{SED}	1	--	Table C-5.9 2
COPC concentration in Marsh Rice Rat from Food Type 1	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	0	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	0	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	9.32E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	3.23E-04	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	4.16E-04	mg/kg ww	

Number of food types (k = 1 to m): 4

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GM	3	1	1	0.125		Table C-5.9 2
2	Fish	GKF, STM, PNF, SAS	3	1	1	0.125		Table C-5.9 2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25		Table C-5.9 2
4	Plant				1	0.5	8.10E-02	Table C-5.9 2
5								
6								
7								

Definitions:
kg - kilogram
mg - milligrams

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Hot Spot Analysis**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	Hot_Spot_$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	Hot_Spot_HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Mercury (Methyl)	0.145	0.058	0.0515	3.83E-02				6.7E-03	0.058629							1.6E-05	6.7E-03	0.064	0.11
Mercury (Inorganic)				4.16E-04				2.3E-05	5.804239							1.5E-03	1.6E-03	0.9	0.0017

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Hot Spot Analysis**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	870	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	14.3	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.659	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	339	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	1036	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.327	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.074	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.74	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.01	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.36	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 4

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	0.11	0.036	948	Fish	1	GKF
2	0.11	0.036	948	Fish	1	GM, STM
3	0.33	0.108	824	Invertebrate	1	BCR, BRS, WHS, OYS
4	0.34	0.111	1326	Mammal	1	
5	0.11	0.036	948	Fish	1	PNF, SAS
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Prey Group: **Terrestrial Mammal - Marsh Rice Rat**
Scenario: **Hot Spot Analysis**
COPC: **PCB Congener TEQ (Avian)**

Model: USEPA (1999) Equation 5-12

Parameter	Value	Units	Source
$FCM_{TL3(OM)}$	14	--	Table C-5.9 2
$BCF_{PLANT-OM}$	2.39E-02	--	Table C-5.9 2
Hot_Spot_C_{SED}	0.0025	mg/kg dw	Table C-5.9 2
BCF_{SED-OM}	1.70E-04	--	Table C-5.9 2
FR_{SED}	1	--	Table C-5.9 2
COPC concentration in Marsh Rice Rat from Food Type 1	7.21E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 2	3.52E-05	mg/kg ww	
COPC concentration in Marsh Rice Rat from Food Type 3	1.58E-03	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Plant	6.19E-08	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Food Type 5	1.33E-05	mg/kg ww	
COPC Concentration in Marsh Rice Rat from Sediment	5.83E-06	mg/kg ww	
Total COPC concentration in Marsh Rice Rat	1.71E-03	mg/kg ww	

Number of food types (k = 1 to m): 5

Food Type	Prey Group	Description	$TL_{BIOTA,k}$	$FCM_{TL(BIOTA,k)}$	$FR_{BIOTA,k}$	$P_{BIOTA,k}$	$C_{BIOTA,k}$ mg/kg ww	Source
1	Fish	GKF	3	14	1	0.083	8.68E-04	Table C-5.9 2
2	Fish	GM, STM, PNF, SAS	3	14	1	0.083	4.24E-04	Table C-5.9 2
3	Invertebrate	BCR, BRS, WHS, OYS	2	1	1	0.25	4.52E-04	Table C-5.9 2
4	Plant	Plant			1	0.5	5.18E-06	Table C-5.9 2
5	Fish	PNF, SAS	3	14	1	0.083	1.60E-04	Table C-5.9 2
6								
7								

Definitions:
kg - kilogram
mg - milligrams
dw - dry weight
ww - wet weight

Receptor: **Composite**
Receptor Group: **Carnivorous Birds**
Scenario: **Hot Spot Analysis**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	Hot_Spot_$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	Hot_Spot_HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
PCB Congener TEQ (Avian) (U=1/2)	0.00087	0.00048	0.00045	1.71E-03	0.00016			1.1E-04	0.002451							6.5E-07	1.1E-04	1.4E-04	0.76

SPOTTED SANDPIPER RISK SHEETS

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **Hot Spot Analysis**

Model Parameters

Parameter	Value	Units	Source	Parameter	Value	Units	Source
BW	43	g	Table C-4.1	AE_{FISH}	0.79	--	Table C-4.1
a	8.1	--	Table C-4.1	$AE_{INVERTs}$	0.77	--	Table C-4.1
b	0.77	--	Table C-4.1	AE_{PLANTS}	0.74	--	Table C-4.1
NFMR	818	$kcal/kg_{BW}/day$	Equation 7 (Exhibit C-4.1)	$AE_{MAMMALS}$	0.78	--	Table C-4.1
ME_{AVG}	824	kcal/kg	Equation 4 (Exhibit C-4.1)	GE_{FISH}	1200	$kcal/kg_{FISH}$	Table C-4.1
NIR_{TOTAL}	0.992	$kg/kg_{BW}/day$	Equation 3 (Exhibit C-4.1)	$GE_{INVERTs}$	1070	$kcal/kg_{INVERTS}$	Table C-4.1
IR_{TOTAL}	0.012	kg_{food}/day	Equation 9 (Exhibit C-4.1)	GE_{PLANTS}	1300	$kcal/kg_{PLANTS}$	Table C-4.1
$P_{MOISTURE}$	0.73	--	Table C-4.1	$GE_{MAMMALS}$	1700	$kcal/kg_{MAMMALS}$	Table C-4.1
FS	0.18	--	Table C-4.1	CF_1	0.239	kcal/kjoule	Equation 7 (Exhibit C-4.1)
AUF	0.34	--	Table C-4.1	CF_2	0.001	kg/g	Equation 7 (Exhibit C-4.1)

Number of food types (k = 1 to m): 1

Food Type	$P_{BIOTA,k}$	NIR_k	ME_k	Prey Group	$FR_{BIOTA,k}$	Description
1	1	0.992	824	Invert	1	OYS,BCRA,WHSA
2						
3						
4						
5						
6						
7						

Number of foraging subareas (j = 1 to i): 1

Subarea	$P_{SED,j}$	Description
1	1.00	
2		
3		
4		
5		
6		
7		

Definitions:
kg - kilogram
mg - milligrams
kcal - kilocalories
kjoule - kilojoules

Receptor: **Spotted Sandpiper**
Receptor Group: **Sediment-probing Birds**
Scenario: **Hot Spot Analysis**

COPC	$C_{BIOTA,1}$	$C_{BIOTA,2}$	$C_{BIOTA,3}$	$C_{BIOTA,4}$	$C_{BIOTA,5}$	$C_{BIOTA,6}$	$C_{BIOTA,7}$	TDI_{BIOTA}	Hot_Spot_$C_{SED,1}$	$C_{SED,2}$	$C_{SED,3}$	$C_{SED,4}$	$C_{SED,5}$	$C_{SED,6}$	$C_{SED,7}$	$TDI_{SEDIMENT}$	TDI_{ALL}	TRV	Hot_Spot_HQ
	mg/kg (wet weight)							*mg/kg $_{BW}$/day*	*mg/kg (dry weight)*							*mg/kg $_{BW}$/day*	*mg/kg $_{BW}$/day*		*NA*
Lead	0.292							9.9E-02	51.082824							3.6E-02	1.3E-01	3.26	0.04
Mercury (Methyl)	0.0533							1.8E-02	0.058257							4.1E-05	1.8E-02	0.064	0.28
Total PAH 16 (U=1/2)	0.1397							4.7E-02	7.420385							5.2E-03	5.2E-02	325	0.00016
Dioxin/Furan Congener TEQ (Avian) (U=1/2)	2.2E-05							7.5E-06	0.000259718							1.8E-07	7.7E-06	0.00014	0.05
Hexachlorobenzene	1.132							3.8E-01	3.179603							2.2E-03	3.8E-01	3.35	0.11
Hexachlorobutadiene	0.3725							1.3E-01	5.820095							4.1E-03	1.3E-01	20	0.006
1,3-Dichlorobenzene	0.3725							1.3E-01	0.109273							7.7E-05	1.3E-01	160.8	0.0008
1,4-Dichlorobenzene	0.3725							1.3E-01	0.111573							7.9E-05	1.3E-01	160.8	0.0008
PCB Congener TEQ (Avian) (U=1/2)	0.00043							1.4E-04	0.002424							1.7E-06	1.5E-04	1.4E-04	1.0
Mercury (Inorganic)								0.0E+00	5.767408							4.1E-03	4.1E-03	9.0E-01	0.005

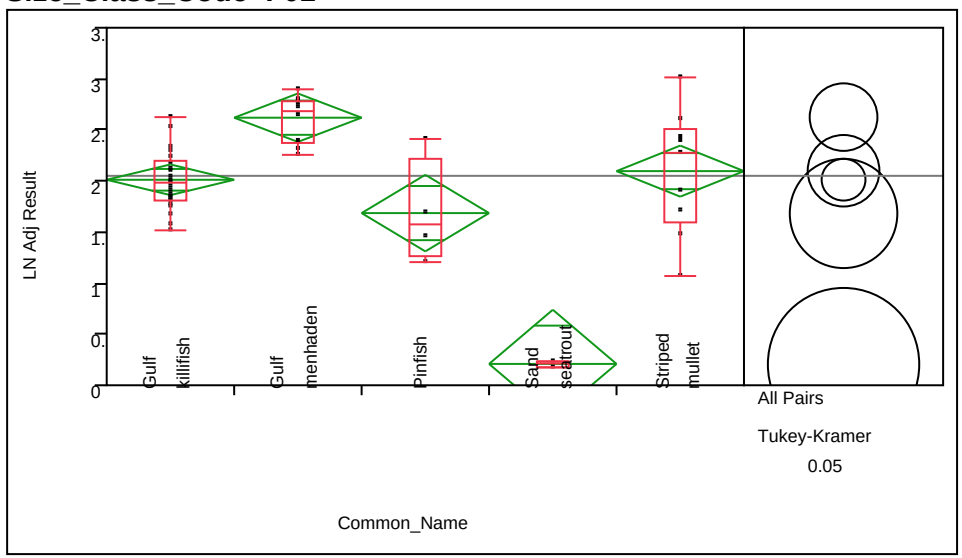
APPENDIX D

FISH RISK ASSESSMENT SUPPORTING INFORMATION

APPENDIX D-1.1
PREY GROUP ANALYSIS

Dioxin/Furan TEQ

Oneway Analysis of LN Adj Result By Common_Name chemical_name=Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2), Size_Class_Code=F01



Oneway Anova
Summary of Fit

Rsquare	0.629744
Adj Rsquare	0.596833
Root Mean Square Error	0.372283
Mean of Response	2.050219
Observations (or Sum Wgts)	50

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Common_Name	4	10.607699	2.65192	19.1344	<.0001*
Error	45	6.236757	0.13859		
C. Total	49	16.844456			

APPENDIX D-1.2
FISH TISSUE EPC CALCULATION

SELENIUM

Gulf Killifish, Gulf Menhaden, Striped Mullet, Pinfish, Sand Seatrout

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

result_value (selenium_d_ug/l)

General Statistics

Number of Valid Data	14	Number of Detected Data	8
Number of Distinct Detected Data	6	Number of Non-Detect Data	6
		Percent Non-Detects	42.86%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.8	Minimum Detected	1.335
Maximum Detected	15	Maximum Detected	2.708
Mean of Detected	11.1	Mean of Detected	2.335
SD of Detected	3.699	SD of Detected	0.45
Minimum Non-Detect	5	Minimum Non-Detect	1.609
Maximum Non-Detect	5	Maximum Non-Detect	1.609

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.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.895	Shapiro Wilk Test Statistic	0.784
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	7.414	Mean	1.727
SD	5.184	SD	0.8
95% DL/2 (t) UCL	9.868	95% H-Stat (DL/2) UCL	13.43
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	12.15	Mean in Log Scale	1.986
SD	2.231	SD in Log Scale	0.564
95% MLE (t) UCL	13.2	Mean in Original Scale	8.371
95% MLE (Tiku) UCL	13.64	SD in Original Scale	4.328
		95% t UCL	10.42
		95% Percentile Bootstrap UCL	10.21
		95% BCA Bootstrap UCL	10.13
		95% H UCL	11.89

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	4.538	**Data appear Normal at 5% Significance Level**	
Theta Star	2.446		
nu star	72.61		
A-D Test Statistic	0.649	**Nonparametric Statistics**	
5% A-D Critical Value	0.717	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.717	Mean	7.971
5% K-S Critical Value	0.295	SD	4.46
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.274
		95% KM (t) UCL	10.23
Assuming Gamma Distribution		95% KM (z) UCL	10.07
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	10.48
Minimum	1E-06	95% KM (bootstrap t) UCL	10.09
Maximum	15	95% KM (BCA) UCL	12.43
Mean	7.722	95% KM (Percentile Bootstrap) UCL	12
Median	7.598	95% KM (Chebyshev) UCL	13.53
SD	5.215	97.5% KM (Chebyshev) UCL	15.93
k star	0.287	99% KM (Chebyshev) UCL	20.65

Theta star	26.92
Nu star	8.033
AppChi2	2.754
95% Gamma Approximate UCL (Use when n >= 40)	22.52
95% Adjusted Gamma UCL (Use when n < 40)	26.28

Note: DL/2 is not a recommended method.

Potential UCLs to Use

95% KM (t) UCL	10.23
95% KM (Percentile Bootstrap) UCL	12

**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.**

result_value (selenium_t_ug/l)

General Statistics

Number of Valid Data	14	Number of Detected Data	8
Number of Distinct Detected Data	7	Number of Non-Detect Data	6
		Percent Non-Detects	42.86%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	4.5	Minimum Detected	1.504
Maximum Detected	16	Maximum Detected	2.773
Mean of Detected	10.94	Mean of Detected	2.331
SD of Detected	3.669	SD of Detected	0.4
Minimum Non-Detect	5	Minimum Non-Detect	1.609
Maximum Non-Detect	5	Maximum Non-Detect	1.609

**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.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.963	Shapiro Wilk Test Statistic	0.892
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	7.321	Mean	1.725
SD	5.101	SD	0.783
95% DL/2 (t) UCL	9.736	95% H-Stat (DL/2) UCL	13
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	11.88	Mean in Log Scale	2.006
SD	2.587	SD in Log Scale	0.516
95% MLE (t) UCL	13.11	Mean in Original Scale	8.381
95% MLE (Tiku) UCL	13.61	SD in Original Scale	4.156
		95% t UCL	10.35
		95% Percentile Bootstrap UCL	10.33
		95% BCA Bootstrap UCL	10.35
		95% H UCL	11.35

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	5.286	**Data appear Normal at 5% Significance Level**	
Theta Star	2.069		
nu star	84.57		
A-D Test Statistic	0.34	**Nonparametric Statistics**	
5% A-D Critical Value	0.716	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.716	Mean	8.179
5% K-S Critical Value	0.295	SD	4.108
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.174
		95% KM (t) UCL	10.26
Assuming Gamma Distribution		95% KM (z) UCL	10.11
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	10.39
Minimum	1E-06	95% KM (bootstrap t) UCL	10.4
Maximum	16	95% KM (BCA) UCL	12.07

Gulf Killifish, Gulf Menhaden, Striped Mullet, Pinfish, Sand Seatrout

Mean	7.661	95% KM (Percentile Bootstrap) UCL	11.64
Median	7.609	95% KM (Chebyshev) UCL	13.3
SD	5.111	97.5% KM (Chebyshev) UCL	15.51
k star	0.393	99% KM (Chebyshev) UCL	19.86
Theta star	19.5		
Nu star	11	**Potential UCLs to Use**	
AppChi2	4.578	95% KM (t) UCL	10.26
95% Gamma Approximate UCL (Use when n >= 40)	18.41	95% KM (Percentile Bootstrap) UCL	11.64
95% Adjusted Gamma UCL (Use when n < 40)	20.85		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

MERCURY

Gulf Killifish

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	21

Raw Statistics		Log-transformed Statistics	
Minimum	0.025	Minimum of Log Data	-3.689
Maximum	0.109	Maximum of Log Data	-2.216
Mean	0.0524	Mean of log Data	-3.042
Geometric Mean	0.0477	SD of log Data	0.43
Median	0.044		
SD	0.0242		
Std. Error of Mean	0.0049		
Coefficient of Variation	0.463		
Skewness	1.097		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.871	Shapiro Wilk Test Statistic	0.944
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0607	95% H-UCL	0.0619
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0723
95% Adjusted-CLT UCL (Chen-1995)	0.0615	97.5% Chebyshev (MVUE) UCL	0.0811
95% Modified-t UCL (Johnson-1978)	0.0608	99% Chebyshev (MVUE) UCL	0.0982

Gamma Distribution Test		Data Distribution
k star (bias corrected)	4.929	**Data appear Gamma Distributed at 5% Significance Level**
Theta Star	0.0106	
MLE of Mean	0.0524	
MLE of Standard Deviation	0.0236	
nu star	246.5	
Approximate Chi Square Value (.05)	211.1	**Nonparametric Statistics**
Adjusted Level of Significance	0.0395	95% CLT UCL 0.0603
Adjusted Chi Square Value	208.9	95% Jackknife UCL 0.0607
		95% Standard Bootstrap UCL 0.0602
Anderson-Darling Test Statistic	0.639	95% Bootstrap-t UCL 0.0625
Anderson-Darling 5% Critical Value	0.747	95% Hall's Bootstrap UCL 0.0612

Gulf Killifish

Kolmogorov-Smirnov Test Statistic	0.162	95% Percentile Bootstrap UCL	0.0603
Kolmogorov-Smirnov 5% Critical Value	0.175	95% BCA Bootstrap UCL	0.0618
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0735
		97.5% Chebyshev(Mean, Sd) UCL	0.0826
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.101
95% Approximate Gamma UCL (Use when n >= 40)	0.0611		
95% Adjusted Gamma UCL (Use when n < 40)	0.0618		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0611

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Gulf Killifish, Striped Mullet, Gulf Menhaden, Pinfish, Sand Seatrout

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1_a.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	50	Number of Distinct Observations	37

Raw Statistics		Log-transformed Statistics	
Minimum	0.024	Minimum of Log Data	-3.73
Maximum	0.199	Maximum of Log Data	-1.614
Mean	0.0643	Mean of log Data	-2.904
Geometric Mean	0.0548	SD of log Data	0.551
Median	0.0465		
SD	0.0406		
Std. Error of Mean	0.0058		
Coefficient of Variation	0.632		
Skewness	1.635		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.82	Shapiro Wilk Test Statistic	0.944
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0739	95% H-UCL	0.0743
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0865
95% Adjusted-CLT UCL (Chen-1995)	0.0752	97.5% Chebyshev (MVUE) UCL	0.0964
95% Modified-t UCL (Johnson-1978)	0.0742	99% Chebyshev (MVUE) UCL	0.116

Gamma Distribution Test		Data Distribution
k star (bias corrected)	3.111	**Data do not follow a Discernable Distribution (0.05)**
Theta Star	0.0207	
MLE of Mean	0.0643	
MLE of Standard Deviation	0.0365	
nu star	311.1	
Approximate Chi Square Value (.05)	271.2	**Nonparametric Statistics**
Adjusted Level of Significance	0.0452	95% CLT UCL 0.0738
Adjusted Chi Square Value	270.1	95% Jackknife UCL 0.0739
		95% Standard Bootstrap UCL 0.0736
Anderson-Darling Test Statistic	1.152	95% Bootstrap-t UCL 0.0757
Anderson-Darling 5% Critical Value	0.756	95% Hall's Bootstrap UCL 0.0757

Gulf Killifish, Striped Mullet, Gulf Menhaden, Pinfish, Sand Seatrout

Kolmogorov-Smirnov Test Statistic	0.157	95% Percentile Bootstrap UCL	0.0749
Kolmogorov-Smirnov 5% Critical Value	0.126	95% BCA Bootstrap UCL	0.0744
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0893
		97.5% Chebyshev(Mean, Sd) UCL	0.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.121
95% Approximate Gamma UCL (Use when n >= 40)	0.0738		
95% Adjusted Gamma UCL (Use when n < 40)	0.0741		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	0.0893

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Striped Mullet, Gulf Menhaden, Pinfish, Sand Seatrout

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1_b.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (mercury_mg/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	23

Raw Statistics

Minimum	0.024
Maximum	0.199
Mean	0.0762
Geometric Mean	0.063
Median	0.068
SD	0.0499
Std. Error of Mean	0.01
Coefficient of Variation	0.654
Skewness	1.162

Log-transformed Statistics

Minimum of Log Data	-3.73
Maximum of Log Data	-1.614
Mean of log Data	-2.765
SD of log Data	0.628

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.863
Shapiro Wilk Critical Value	0.918

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.954
Shapiro Wilk Critical Value	0.918

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	0.0933

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	0.0951
95% Modified-t UCL (Johnson-1978)	0.0937

Assuming Lognormal Distribution

95% H-UCL	0.1
95% Chebyshev (MVUE) UCL	0.12
97.5% Chebyshev (MVUE) UCL	0.139
99% Chebyshev (MVUE) UCL	0.177

Gamma Distribution Test

k star (bias corrected)	2.465
Theta Star	0.0309
MLE of Mean	0.0762
MLE of Standard Deviation	0.0486
nu star	123.2
Approximate Chi Square Value (.05)	98.6
Adjusted Level of Significance	0.0395
Adjusted Chi Square Value	97.1
Anderson-Darling Test Statistic	0.506
Anderson-Darling 5% Critical Value	0.752

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	0.0926
95% Jackknife UCL	0.0933
95% Standard Bootstrap UCL	0.0921
95% Bootstrap-t UCL	0.0986
95% Hall's Bootstrap UCL	0.0957

Striped Mullet, Gulf Menhaden, Pinfish, Sand Seatrout

Kolmogorov-Smirnov Test Statistic	0.144	95% Percentile Bootstrap UCL	0.0938
Kolmogorov-Smirnov 5% Critical Value	0.176	95% BCA Bootstrap UCL	0.0946
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.12
		97.5% Chebyshev(Mean, Sd) UCL	0.139
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.175
95% Approximate Gamma UCL (Use when n >= 40)	0.0953		
95% Adjusted Gamma UCL (Use when n < 40)	0.0968		
Potential UCL to Use		Use 95% Approximate Gamma UCL	0.0953

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

TOTAL PCB CONGENER

Gulf Killifish

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1_c.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total pcb congener (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	25

Raw Statistics

Minimum	2E+06
Maximum	9E+06
Mean	5E+06
Geometric Mean	5E+06
Median	5E+06
SD	2E+06
Std. Error of Mean	313682
Coefficient of Variation	0.301
Skewness	0.266

Log-transformed Statistics

Minimum of Log Data	14.49
Maximum of Log Data	16
Mean of log Data	15.42
SD of log Data	0.327

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.99
Shapiro Wilk Critical Value	0.918

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.962
Shapiro Wilk Critical Value	0.918

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	6E+06

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	6E+06
95% Modified-t UCL (Johnson-1978)	6E+06

Assuming Lognormal Distribution

95% H-UCL	5929489
95% Chebyshev (MVUE) UCL	6756490
97.5% Chebyshev (MVUE) UCL	7414908
99% Chebyshev (MVUE) UCL	8708242

Gamma Distribution Test

k star (bias corrected)	9.398
Theta Star	554953
MLE of Mean	5E+06
MLE of Standard Deviation	2E+06
nu star	469.9
Approximate Chi Square Value (.05)	420.7
Adjusted Level of Significance	0.0395
Adjusted Chi Square Value	417.5
Anderson-Darling Test Statistic	0.164
Anderson-Darling 5% Critical Value	0.745

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	5731570
95% Jackknife UCL	5752282
95% Standard Bootstrap UCL	5709166
95% Bootstrap-t UCL	5782797
95% Hall's Bootstrap UCL	5788260

Gulf Killifish

Kolmogorov-Smirnov Test Statistic	0.0718
Kolmogorov-Smirnov 5% Critical Value	0.174
Data appear Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
95% Approximate Gamma UCL (Use when n >= 40)	6E+06
95% Adjusted Gamma UCL (Use when n < 40)	6E+06
Potential UCL to Use	

95% Percentile Bootstrap UCL	5715854
95% BCA Bootstrap UCL	5731928
95% Chebyshev(Mean, Sd) UCL	6582918
97.5% Chebyshev(Mean, Sd) UCL	7174554
99% Chebyshev(Mean, Sd) UCL	8336708
Use 95% Student's-t UCL	5752282

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Gulf Menhaden, Striped Mullet, Pinfish, Sand Seatrout

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1_g.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total pcb congener (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	25

Raw Statistics		Log-transformed Statistics	
Minimum	596176	Minimum of Log Data	13.3
Maximum	5E+06	Maximum of Log Data	15.33
Mean	3E+06	Mean of log Data	14.65
Geometric Mean	2E+06	SD of log Data	0.456
Median	2E+06		
SD	1E+06		
Std. Error of Mean	205165		
Coefficient of Variation	0.406		
Skewness	0.429		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.954	Shapiro Wilk Test Statistic	0.939
Shapiro Wilk Critical Value	0.918	Shapiro Wilk Critical Value	0.918
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3E+06	95% H-UCL	3068891
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3604346
95% Adjusted-CLT UCL (Chen-1995)	3E+06	97.5% Chebyshev (MVUE) UCL	4058543
95% Modified-t UCL (Johnson-1978)	3E+06	99% Chebyshev (MVUE) UCL	4950724

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	5.107	**Data appear Normal at 5% Significance Level**	
Theta Star	495210		
MLE of Mean	3E+06		
MLE of Standard Deviation	1E+06		
nu star	255.3		
Approximate Chi Square Value (.05)	219.3	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0395	95% CLT UCL	2866309
Adjusted Chi Square Value	217.1	95% Jackknife UCL	2879855
		95% Standard Bootstrap UCL	2857615
Anderson-Darling Test Statistic	0.259	95% Bootstrap-t UCL	2908346
Anderson-Darling 5% Critical Value	0.747	95% Hall's Bootstrap UCL	2889135

Gulf Menhaden, Striped Mullet, Pinfish, Sand Seatrout

Kolmogorov-Smirnov Test Statistic	0.104
Kolmogorov-Smirnov 5% Critical Value	0.175
Data appear Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
95% Approximate Gamma UCL (Use when n >= 40)	3E+06
95% Adjusted Gamma UCL (Use when n < 40)	3E+06
Potential UCL to Use	

95% Percentile Bootstrap UCL	2848567
95% BCA Bootstrap UCL	2883986
95% Chebyshev(Mean, Sd) UCL	3423136
97.5% Chebyshev(Mean, Sd) UCL	3810098
99% Chebyshev(Mean, Sd) UCL	4570210
Use 95% Student's-t UCL	2879855

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Gulf Killifish, Striped Mullet, Gulf Menhaden, Pinfish, Sand Seatrout

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total pcb congener (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	50	Number of Distinct Observations	50

Raw Statistics

Minimum	596176
Maximum	9E+06
Mean	4E+06
Geometric Mean	3E+06
Median	4E+06
SD	2E+06
Std. Error of Mean	266900
Coefficient of Variation	0.487
Skewness	0.535

Log-transformed Statistics

Minimum of Log Data	13.3
Maximum of Log Data	16
Mean of log Data	15.04
SD of log Data	0.551

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.96
Shapiro Wilk Critical Value	0.947

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.962
Shapiro Wilk Critical Value	0.947

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	4E+06

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	4E+06
95% Modified-t UCL (Johnson-1978)	4E+06

Assuming Lognormal Distribution

95% H-UCL	4594363
95% Chebyshev (MVUE) UCL	5351061
97.5% Chebyshev (MVUE) UCL	5964232
99% Chebyshev (MVUE) UCL	7168686

Gamma Distribution Test

k star (bias corrected)	3.709
Theta Star	1E+06
MLE of Mean	4E+06
MLE of Standard Deviation	2E+06
nu star	370.9
Approximate Chi Square Value (.05)	327.3
Adjusted Level of Significance	0.0452
Adjusted Chi Square Value	326.1
Anderson-Darling Test Statistic	0.302

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	4311237
95% Jackknife UCL	4319697
95% Standard Bootstrap UCL	4305645
95% Bootstrap-t UCL	4337908

Gulf Killifish, Striped Mullet, Gulf Menhaden, Pinfish, Sand Seatrout

Anderson-Darling 5% Critical Value	0.754	95% Hall's Bootstrap UCL	4366124
Kolmogorov-Smirnov Test Statistic	0.0887	95% Percentile Bootstrap UCL	4298829
Kolmogorov-Smirnov 5% Critical Value	0.126	95% BCA Bootstrap UCL	4329279
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5035616
		97.5% Chebyshev(Mean, Sd) UCL	5539017
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6527849
95% Approximate Gamma UCL (Use when n >= 40)	4E+06		
95% Adjusted Gamma UCL (Use when n < 40)	4E+06		
Potential UCL to Use		Use 95% Student's-t UCL	4319697

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

PCB CONGENER TEQ (FISH)

Gulf Killifish

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total pcb congener teq 1998 (fish) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	23

Raw Statistics

Minimum	2.2
Maximum	9.7
Mean	6.553
Geometric Mean	6.198
Median	6.9
SD	2.013
Std. Error of Mean	0.403
Coefficient of Variation	0.307
Skewness	-0.319

Log-transformed Statistics

Minimum of Log Data	0.788
Maximum of Log Data	2.272
Mean of log Data	1.824
SD of log Data	0.363

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.968
Shapiro Wilk Critical Value	0.918

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.907
Shapiro Wilk Critical Value	0.918

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	7.242

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	7.188
95% Modified-t UCL (Johnson-1978)	7.238

Assuming Lognormal Distribution

95% H-UCL	7.598
95% Chebyshev (MVUE) UCL	8.741
97.5% Chebyshev (MVUE) UCL	9.666
99% Chebyshev (MVUE) UCL	11.48

Gamma Distribution Test

k star (bias corrected)	8.061
Theta Star	0.813
MLE of Mean	6.553
MLE of Standard Deviation	2.308
nu star	403
Approximate Chi Square Value (.05)	357.5
Adjusted Level of Significance	0.0395
Adjusted Chi Square Value	354.6
Anderson-Darling Test Statistic	0.5
Anderson-Darling 5% Critical Value	0.745

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	7.216
95% Jackknife UCL	7.242
95% Standard Bootstrap UCL	7.201
95% Bootstrap-t UCL	7.228
95% Hall's Bootstrap UCL	7.217

Gulf Killifish

Kolmogorov-Smirnov Test Statistic	0.143
Kolmogorov-Smirnov 5% Critical Value	0.175
Data appear Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
95% Approximate Gamma UCL (Use when n >= 40)	7.388
95% Adjusted Gamma UCL (Use when n < 40)	7.449
Potential UCL to Use	

95% Percentile Bootstrap UCL	7.187
95% BCA Bootstrap UCL	7.161
95% Chebyshev(Mean, Sd) UCL	8.308
97.5% Chebyshev(Mean, Sd) UCL	9.068
99% Chebyshev(Mean, Sd) UCL	10.56
Use 95% Student's-t UCL	7.242

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Note: For highly negative-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Gulf Killifish, Striped Mullet, Gulf Menhaden, Pinfish, Sand Seatrout

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1_a.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total pcb congener teq 1998 (fish) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	50	Number of Distinct Observations	43

Raw Statistics

Minimum	0.6
Maximum	9.7
Mean	4.541
Geometric Mean	3.721
Median	3.95
SD	2.607
Std. Error of Mean	0.369
Coefficient of Variation	0.574
Skewness	0.414

Log-transformed Statistics

Minimum of Log Data	-0.511
Maximum of Log Data	2.272
Mean of log Data	1.314
SD of log Data	0.689

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.928
Shapiro Wilk Critical Value	0.947

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical Value	0.947

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	5.159

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	5.17
95% Modified-t UCL (Johnson-1978)	5.163

Assuming Lognormal Distribution

95% H-UCL	5.764
95% Chebyshev (MVUE) UCL	6.869
97.5% Chebyshev (MVUE) UCL	7.811
99% Chebyshev (MVUE) UCL	9.661

Gamma Distribution Test

k star (bias corrected)	2.52
Theta Star	1.802
MLE of Mean	4.541
MLE of Standard Deviation	2.86
nu star	252
Approximate Chi Square Value (.05)	216.3
Adjusted Level of Significance	0.0452
Adjusted Chi Square Value	215.3
Anderson-Darling Test Statistic	0.489
Anderson-Darling 5% Critical Value	0.759

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	5.147
95% Jackknife UCL	5.159
95% Standard Bootstrap UCL	5.128
95% Bootstrap-t UCL	5.182
95% Hall's Bootstrap UCL	5.171

Gulf Killifish, Striped Mullet, Gulf Menhaden, Pinfish, Sand Seatrout

Kolmogorov-Smirnov Test Statistic	0.0954	95% Percentile Bootstrap UCL	5.167
Kolmogorov-Smirnov 5% Critical Value	0.126	95% BCA Bootstrap UCL	5.194
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	6.148
		97.5% Chebyshev(Mean, Sd) UCL	6.844
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	8.21
95% Approximate Gamma UCL (Use when n >= 40)	5.292		
95% Adjusted Gamma UCL (Use when n < 40)	5.316		
Potential UCL to Use		Use 95% Approximate Gamma UCL	5.292

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Striped Mullet, Gulf Menhaden, Pinfish, Sand Seatrout

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1_b.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total pcb congener teq 1998 (fish) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	25	Number of Distinct Observations	22

Raw Statistics

Minimum	0.6
Maximum	5.1
Mean	2.528
Geometric Mean	2.234
Median	2.4
SD	1.179
Std. Error of Mean	0.236
Coefficient of Variation	0.466
Skewness	0.453

Log-transformed Statistics

Minimum of Log Data	-0.511
Maximum of Log Data	1.629
Mean of log Data	0.804
SD of log Data	0.544

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.962
Shapiro Wilk Critical Value	0.918

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.933
Shapiro Wilk Critical Value	0.918

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	2.932

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	2.939
95% Modified-t UCL (Johnson-1978)	2.935

Assuming Lognormal Distribution

95% H-UCL	3.234
95% Chebyshev (MVUE) UCL	3.853
97.5% Chebyshev (MVUE) UCL	4.406
99% Chebyshev (MVUE) UCL	5.494

Gamma Distribution Test

k star (bias corrected)	3.726
Theta Star	0.679
MLE of Mean	2.528
MLE of Standard Deviation	1.31
nu star	186.3
Approximate Chi Square Value (.05)	155.7
Adjusted Level of Significance	0.0395
Adjusted Chi Square Value	153.8
Anderson-Darling Test Statistic	0.296

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	2.916
95% Jackknife UCL	2.932
95% Standard Bootstrap UCL	2.911
95% Bootstrap-t UCL	2.95

Striped Mullet, Gulf Menhaden, Pinfish, Sand Seatrout

Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	2.951
Kolmogorov-Smirnov Test Statistic	0.126	95% Percentile Bootstrap UCL	2.909
Kolmogorov-Smirnov 5% Critical Value	0.175	95% BCA Bootstrap UCL	2.917
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.556
		97.5% Chebyshev(Mean, Sd) UCL	4.001
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.875
95% Approximate Gamma UCL (Use when n >= 40)	3.025		
95% Adjusted Gamma UCL (Use when n < 40)	3.062		
Potential UCL to Use		Use 95% Student's-t UCL	2.932

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

DIOXIN/FURAN TEQ (FISH)

Gulf Menhaden

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1_a.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total dioxin/furan teq 1998 (fish) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics

Minimum	9.495
Maximum	18.13
Mean	14.03
Geometric Mean	13.73
Median	14.65
SD	2.942
Std. Error of Mean	0.93
Coefficient of Variation	0.21
Skewness	-0.456

Log-transformed Statistics

Minimum of Log Data	2.251
Maximum of Log Data	2.898
Mean of log Data	2.619
SD of log Data	0.224

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.92
Shapiro Wilk Critical Value	0.842

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.893
Shapiro Wilk Critical Value	0.842

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	15.73

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	15.41
95% Modified-t UCL (Johnson-1978)	15.71

Assuming Lognormal Distribution

95% H-UCL	16.23
95% Chebyshev (MVUE) UCL	18.4
97.5% Chebyshev (MVUE) UCL	20.29
99% Chebyshev (MVUE) UCL	23.99

Gamma Distribution Test

k star (bias corrected)	16.35
Theta Star	0.858
MLE of Mean	14.03
MLE of Standard Deviation	3.469
nu star	327.1
Approximate Chi Square Value (.05)	286.2
Adjusted Level of Significance	0.0267
Adjusted Chi Square Value	279.5
Anderson-Darling Test Statistic	0.518
Anderson-Darling 5% Critical Value	0.725

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	15.56
95% Jackknife UCL	15.73
95% Standard Bootstrap UCL	15.48
95% Bootstrap-t UCL	15.61
95% Hall's Bootstrap UCL	15.39

Gulf Menhaden

Kolmogorov-Smirnov Test Statistic	0.206
Kolmogorov-Smirnov 5% Critical Value	0.266
Data appear Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
95% Approximate Gamma UCL (Use when n >= 40)	16.03
95% Adjusted Gamma UCL (Use when n < 40)	16.41
Potential UCL to Use	

95% Percentile Bootstrap UCL	15.52
95% BCA Bootstrap UCL	15.33
95% Chebyshev(Mean, Sd) UCL	18.08
97.5% Chebyshev(Mean, Sd) UCL	19.84
99% Chebyshev(Mean, Sd) UCL	23.28
Use 95% Student's-t UCL	15.73

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Note: For highly negative-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1_b.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total dioxin/furan teq 1998 (fish) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations 2 Number of Distinct Observations 2

Warning: This data set only has 2 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable Result_Value (total dioxin/furan teq 1998 (fish) (u = 1/2)_ng/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Gulf Killifish, Striped Mullet, Pinfish

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result_Value (total dioxin/furan teq 1998 (fish) (u = 1/2)_ng/kg)

General Statistics

Number of Valid Observations	38	Number of Distinct Observations	38

Raw Statistics

Minimum	2.897
Maximum	20.44
Mean	8.009
Geometric Mean	7.37
Median	7.121
SD	3.481
Std. Error of Mean	0.565
Coefficient of Variation	0.435
Skewness	1.395

Log-transformed Statistics

Minimum of Log Data	1.064
Maximum of Log Data	3.017
Mean of log Data	1.997
SD of log Data	0.411

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.908
Shapiro Wilk Critical Value	0.938

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.991
Shapiro Wilk Critical Value	0.938

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	8.962

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995)	9.075
95% Modified-t UCL (Johnson-1978)	8.983

Assuming Lognormal Distribution

95% H-UCL	9.092
95% Chebyshev (MVUE) UCL	10.41
97.5% Chebyshev (MVUE) UCL	11.45
99% Chebyshev (MVUE) UCL	13.49

Gamma Distribution Test

k star (bias corrected)	5.699
Theta Star	1.405
MLE of Mean	8.009
MLE of Standard Deviation	3.355
nu star	433.1
Approximate Chi Square Value (.05)	385.9
Adjusted Level of Significance	0.0434
Adjusted Chi Square Value	384
Anderson-Darling Test Statistic	0.286
Anderson-Darling 5% Critical Value	0.75

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	8.938
95% Jackknife UCL	8.962
95% Standard Bootstrap UCL	8.911
95% Bootstrap-t UCL	9.121
95% Hall's Bootstrap UCL	9.201

Gulf Killifish, Striped Mullet, Pinfish

Kolmogorov-Smirnov Test Statistic	0.103	95% Percentile Bootstrap UCL	8.916
Kolmogorov-Smirnov 5% Critical Value	0.143	95% BCA Bootstrap UCL	9.065
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	10.47
		97.5% Chebyshev(Mean, Sd) UCL	11.54
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	13.63
95% Approximate Gamma UCL (Use when n >= 40)	8.99		
95% Adjusted Gamma UCL (Use when n < 40)	9.033		
Potential UCL to Use		Use 95% Approximate Gamma UCL	8.99

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

APPENDIX D-2
FISH TISSUE LOEDS FOR MERCURY

Appendix D-2
Fish Tissue LOEDs for Mercury

Ref ID	Year	Author	Publication Source	Species Scientific Name	Species Common Name	Species TSN Code	Analyte Name	CAS No.	Conc_Wet	Conc_Units	No. Reps	QA Stats Method	QA Chem Method	QA Chem DL
SEQ97-31	1982	Snarski, V.M., Olson, G.F.	Aquat Toxicol	Pimephales promelas	Fathead minnow	163517	Mercury	7439-97-6	1.31	MG/KG	6	Y	Y	N
SEQ97-31	1982	Snarski, V.M., Olson, G.F.	Aquat Toxicol	Pimephales promelas	Fathead minnow	163517	Mercury	7439-97-6	1.36	MG/KG	30	Y	Y	N
SEQ97-31	1982	Snarski, V.M., Olson, G.F.	Aquat Toxicol	Pimephales promelas	Fathead minnow	163517	Mercury	7439-97-6	1.36	MG/KG	7	Y	Y	N
URS21	1996	Friedmann, A.S., M.C. Watzin, T. Brinck-Johnsen and J.C. Leiter	Aquat Toxicol 35:265-278	Stizostedion vitreum	Walleye	168506	Mercury	7439-97-6	2.37	MG/KG	22	Y	Y	Y
SEQ97-31	1982	Snarski, V.M., Olson, G.F.	Aquat Toxicol	Pimephales promelas	Fathead minnow	163517	Mercury	7439-97-6	4.76	MG/KG	6	Y	Y	N
JA376	1982	Rodgers DW, FWH Beamish	Aquat Toxicol 02:271-290	Oncorhynchus mykiss	Trout - Rainbow	161989	Methyl Mercury	22967-92-6	8	MG/KG	1	Y	Y	Y
JA376	1982	Rodgers DW, FWH Beamish	Aquat Toxicol 02:271-290	Oncorhynchus mykiss	Trout - Rainbow	161989	Methyl Mercury	22967-92-6	10	MG/KG	1	Y	Y	Y
SEQ97-31	1982	Snarski, V.M., Olson, G.F.	Aquat Toxicol	Pimephales promelas	Fathead minnow	163517	Mercury	7439-97-6	18.8	MG/KG	4	Y	Y	N
SEQ97-31	1982	Snarski, V.M., Olson, G.F.	Aquat Toxicol	Pimephales promelas	Fathead minnow	163517	Mercury	7439-97-6	4.18	MG/KG	6	Y	Y	N
JA488	1975	Wobeser, G.	J Fish Res Bd Can 32(11):2005-2013	Oncorhynchus mykiss	Trout - Rainbow	161989	Mercury	7439-97-6	6.9	MG/KG	3	Y	Y	N
JA489	1975	Wobeser, G.	J Fish Res Bd Can 32(11), 2015-2023	Oncorhynchus mykiss	Trout - Rainbow	161989	Mercury	7439-97-6	10	MG/KG	5	N	Y	Y
MEC03-134	2002	Hammerschmidt, Chad, Mark Sandheinrich, James Wiener, and Ronald Rada	Environ Sci Tech 36: 877-883	Pimephales promelas	Fathead minnow	163517	Methyl Mercury	22967-92-6	0.7	MG/KG	8	Y	Y	Y
MEC04-120	1998	Vollestad LA, E Fjeld, T Haugen, SA Oxnevad	Environ Pollut 101:349-354	Thymallus thymallus	Grayling	162022	Mercury	7439-97-6	3.8	MG/KG	1	Y	Y	N

Appendix D-2
Fish Tissue LOEDs for Mercury

Ref ID	QA Exp Method	QA Effects Method	QA Reps	Effect Class	Toxicity Measure	Exposure Route	Species Body Part	Species Start Lifestage	Species Habitat	Species Feeding Behavior	Comments
SEQ97-31	Y	Y	Y	Growth	LOED	Combined	Whole Body	Adult	Lakes, ponds, streams	Not Specified	
SEQ97-31	Y	Y	Y	Growth	LOED	Combined	Whole Body	Adult	Lakes, ponds, streams	Not Specified	30-day exposure: Progeny of exposed fish.
SEQ97-31	Y	Y	Y	Growth	LOED	Combined	Whole Body	Adult	Lakes, ponds, streams	Not Specified	Weight of females.
URS21	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Immature	Great Lakes region, upper Mississippi north to Assiniboia, east to VT, PA, GA, AB; in clear water with rocks, gravel, sand bottom	Carnivorous; largely on various minnows, occasionally young whitefish	Significant reduction in length and weight of males, but not females.
SEQ97-31	Y	Y	Y	Growth	LOED	Combined	Whole Body	Adult	Lakes, ponds, streams	Not Specified	
JA376	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Juvenile	Cool streams	Carnivore-juv fish, inverts	Growth significantly reduced. Fish fed the 25/2% diet and 75/2% diet were not significantly different in their wet weights.
JA376	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Juvenile	Cool streams	Carnivore-juv fish, inverts	Growth significantly reduced. Fish fed the 25/ad lib diet and 45/ad lib diet were not significantly different in their wet weights.
SEQ97-31	Y	Y	Y	Growth	LOED	Combined	Whole Body	Adult	Lakes, ponds, streams	Not Specified	Weight of males.
SEQ97-31	Y	Y	Y	Mortality	LOED	Combined	Whole Body	Adult	Lakes, ponds, streams	Not Specified	
JA488	Y	Y	Y	Mortality	LOED	Absorption	Carcass	Immature	Cool streams	Carnivore-juv fish, inverts	Increase in mortality.
JA489	Y	Y	Y	Mortality	LOED	Ingestion	Whole Body	Juvenile	Cool streams	Carnivore-juv fish, inverts	Increase in mortality. Residue is injected dose (i.p.).
MEC03-134	Y	Y	Y	Reproduction	LOED	Ingestion	Whole Body	Egg	Lakes, ponds, streams	Not Specified	Daily number of eggs produced relative to carcass concentration of methylmercury in female fish fed the same diet throughout exposure periods.
MEC04-120	Y	Y	N	Reproduction	LOED	Water	Whole Body	Egg	NS	Not Specified	Hatching success.

APPENDIX D-3
FISH TISSUE LOEDS FOR 2,3,7,8-TCDD

Appendix D-3
Fish Tissue LOEDs for 2,3,7,8-TCDD

Ref ID	Year	Author	Publication Source	Species Scientific Name	Species Common Name	Species TSN Code	Analyte Name	CAS No.	Conc_Wet	Conc_Units	No. Reps	QA Stats Method	QA Chem Method	QA Chem DL
JA470	1994	Walker MK, PM Cook, AR Batterman, BC Butterworth, C Berini, JJ Libal, LC Hufnagle, RE Peterson	Can J Fish Aquat Sci 51:1410-1419	Salvelinus namaycush	Trout -Lake	162002	2,3,7,8-TCDD	1746-01-6	4.00E-05	MG/KG	3	Y	Y	Y
JA470	1994	Walker MK, PM Cook, AR Batterman, BC Butterworth, C Berini, JJ Libal, LC Hufnagle, RE Peterson	Can J Fish Aquat Sci 51:1410-1419	Salvelinus namaycush	Trout -Lake	162002	2,3,7,8-TCDD	1746-01-6	5.00E-05	MG/KG	3	Y	Y	Y
JA474	1991	Walker MK, JM Spitsbergen, JR Olson, RE Peterson	Can J Fish Aquat Sci 48:875-883	Salvelinus namaycush	Trout -Lake	162002	2,3,7,8-TCDD	1746-01-6	5.50E-05	MG/KG	4	Y	Y	Y
JA474	1991	Walker MK, JM Spitsbergen, JR Olson, RE Peterson	Can J Fish Aquat Sci 48:875-883	Salvelinus namaycush	Trout -Lake	162002	2,3,7,8-TCDD	1746-01-6	5.50E-05	MG/KG	4	Y	Y	Y
JA470	1994	Walker MK, PM Cook, AR Batterman, BC Butterworth, C Berini, JJ Libal, LC Hufnagle, RE Peterson	Can J Fish Aquat Sci 51:1410-1419	Salvelinus namaycush	Trout -Lake	162002	2,3,7,8-TCDD	1746-01-6	5.50E-05	MG/KG	3	Y	Y	Y
JA474	1991	Walker MK, JM Spitsbergen, JR Olson, RE Peterson	Can J Fish Aquat Sci 48:875-883	Salvelinus namaycush	Trout -Lake	162002	2,3,7,8-TCDD	1746-01-6	0.000226	MG/KG	4	Y	Y	Y
JA368	1995	Prince, R. and K.R. Cooper	Environ Tox & Chem 14(4):579-587	Fundulus heteroclitus	Killfish	165647	2,3,7,8-TCDD	1746-01-6	0.000635	MG/KG	5	Y	Y	Y
URS34	1985	Branson, D.R., L.T. Takahashi, W.M. Parker and G.E. Blau	Environ Tox & Chem 04:779-788	Oncorhynchus mykiss	Trout - Rainbow	161989	2,3,7,8-TCDD	1746-01-6	0.00065	MG/KG	3	Y	Y	Y
URS34	1985	Branson, D.R., L.T. Takahashi, W.M. Parker and G.E. Blau	Environ Tox & Chem 04:779-788	Oncorhynchus mykiss	Trout - Rainbow	161989	2,3,7,8-TCDD	1746-01-6	0.00065	MG/KG	3	Y	Y	Y
URS212	1994	Tietge, J.E.	Society of Environmental Toxicology and Chemistry 15th Annual Meeting Abstract	Salvelinus fontinalis	Trout - Brook	162003	2,3,7,8-TCDD	1746-01-6	0.0012	MG/KG	1	N	N	N
URS199	1979	Miller, R.A., L.A. Norris and B.R. Loper	Trans Am Fish Soc 108:401-407	Oncorhynchus kisutch	Salmon-coho	161977	2,3,7,8-TCDD	1746-01-6	0.00217	MG/KG	1	Y	Y	Y
URS199	1979	Miller, R.A., L.A. Norris and B.R. Loper	Trans Am Fish Soc 108:401-407	Oncorhynchus kisutch	Salmon-coho	161977	2,3,7,8-TCDD	1746-01-6	0.00217	MG/KG	1	Y	Y	Y
JA185	1977	Hawkes, C.L. and L.A. Norris	Trans Am Fish Soc 106:641-645	Oncorhynchus mykiss	Trout - Rainbow	161989	2,3,7,8-TCDD	1746-01-6	1.38	MG/KG	1	Y	Y	Y
JA185	1977	Hawkes, C.L. and L.A. Norris	Trans Am Fish Soc 106:641-645	Oncorhynchus mykiss	Trout - Rainbow	161989	2,3,7,8-TCDD	1746-01-6	1.38	MG/KG	1	Y	Y	Y

Appendix D-3
Fish Tissue LOEDs for 2,3,7,8-TCDD

Ref ID	QA Exp Method	QA Effects Method	QA Reps	Effect Class	Toxicity Measure	Exposure Route	Species Body Part	Species Start Lifestage	Species Habitat	Species Feeding Behavior	Comments
JA470	Y	Y	Y	Mortality	LOED	Ingestion	Whole Body	Egg	Deep waters of cold northern lakes	Carnivore-adults piscivorous	Eggs groups recieved one injection out of 7 graded doses of TCDD.
JA470	Y	Y	Y	Mortality	LOED	Ingestion	Whole Body	Egg	Deep waters of cold northern lakes	Carnivore-adults piscivorous	TCDD exposure resulted from feeding adult female trout for up to 149d prior to spawning. No significant differences were found between exp. dose and egg bioaccumulation.
JA474	Y	Y	Y	Growth	LOED	Water	Whole Body	Egg	Deep waters of cold northern lakes	Carnivore-adults piscivorous	Significant increase in sac fry weight at this TCDD concentration.
JA474	Y	Y	Y	Mortality	LOED	Water	Whole Body	Egg	Deep waters of cold northern lakes	Carnivore-adults piscivorous	Significant increase in mortality at this concentration - the lowest concentration to do so. (Called LOAEL in the paper.)
JA470	Y	Y	Y	Mortality	LOED	Ingestion	Whole Body	Egg	Deep waters of cold northern lakes	Carnivore-adults piscivorous	Eggs were treated with waterborne TCDD.
JA474	Y	Y	Y	Growth	LOED	Water	Whole Body	Egg	Deep waters of cold northern lakes	Carnivore-adults piscivorous	Significant sac fry wet weight increase at this TCDD concentration. Significant decrease in sac fry length at this TCDD concentration.
JA368	Y	Y	Y	Mortality	LOED	Absorption	Whole Body	Embryo	Not Specified	Not Specified	28% decrease in hatchability.
URS34	Y	Y	Y	Growth	LOED	Absorption	Whole Body	Immature	Cool streams	Carnivore-juv fish, inverts	Reduced growth, exposed fish weighed 50 G vs. 130 G for controls. And, liver/body weight ratio nearly twice that of controls.
URS34	Y	Y	Y	Mortality	LOED	Absorption	Whole Body	Immature	Cool streams	Carnivore-juv fish, inverts	Lethal to 7 of 90 fish over 139 days.
URS212	Y	N	N	Reproduction	LOED	Ingestion	Whole Body	Immature	Cool streams, gravel bottoms	Carnivore-aquatic insects, fish	Significant delay in spawning; TCDD-spiked diet to produce desired body burden; abstract with minimal information.
URS199	Y	Y	Y	Growth	LOED	Absorption	Whole Body	Immature	NW America and Asian Coast. Streams in Spring, Fall	Carnivore-aquatic insects, fish, inverts	Reduced weight gain. Residue measured after 114 days in clean water.
URS199	Y	Y	Y	Mortality	LOED	Absorption	Whole Body	Immature	NW America and Asian Coast. Streams in Spring, Fall	Carnivore-aquatic insects, fish, inverts	Reduced survival. Residue measured after 114 days in clean water.
JA185	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Juvenile	Cool streams	Carnivore-juv fish, inverts	Weight loss.
JA185	Y	Y	Y	Mortality	LOED	Ingestion	Whole Body	Juvenile	Cool streams	Carnivore-juv fish, inverts	Over 90% mortality.

APPENDIX D-4
FISH TISSUE LOEDS FOR TOTAL PCBS

Appendix D-4
Fish Tissue LOEDs for Total PCBs

Ref ID	Year	Author	Publication Source	Species Scientific Name	Species Common Name	Species TSN Code	Analyte Name	CAS No	Conc_Wet	Conc_Units	No. Reps	QA Stats Method	QA Chem Method	QA Chem DL
MEC04-046	1998	Orn, S., P.L. Anderson, L. Forlin, M. Tysklind, L. Norrgren	Arch Environ Contam Toxicol 35:53-57	Danio rerio	Zebra Danio	163699	PCBs	1336-36-3	1.40E-01	MG/KG	1	Y	Y	N
MEC04-046	1998	Orn, S., P.L. Anderson, L. Forlin, M. Tysklind, L. Norrgren	Arch Environ Contam Toxicol 35:53-57	Danio rerio	Zebra Danio	163699	PCBs	1336-36-3	1.10E+00	MG/KG	1	Y	Y	N
SEQ99J_11	1973	Hansen, D.J., S.C. Schimmel and J. Forester	Proceedings of the Twenty-Seventh Annual Conference Southeastern Association of Game and Fish Commissioners, Hot Springs, Arkansas	Cyprinodon variegatus	Sheepshead minnow	165631	PCBs	1336-36-3	8.80E-01	MG/KG	24	N	Y	N
MEC04-046	1998	Orn, S., P.L. Anderson, L. Forlin, M. Tysklind, L. Norrgren	Arch Environ Contam Toxicol 35:53-57	Danio rerio	Zebra Danio	163699	PCBs	1336-36-3	1.10E+00	MG/KG	1	Y	Y	N
URS14	1980	Bengtsson, B.E.	Water Res. 14:681-687	Phoxinus phoxinus	Minnow	163596	PCBs	1336-36-3	7.00E+01	MG/KG	4	Y	Y	N
URS14	1980	Bengtsson, B.E.	Water Res. 14:681-687	Phoxinus phoxinus	Minnow	163596	PCBs	1336-36-3	15	MG/KG	4	Y	Y	N
URS14	1980	Bengtsson, B.E.	Water Res. 14:681-687	Phoxinus phoxinus	Minnow	163596	PCBs	1336-36-3	180	MG/KG	4	Y	Y	N
URS103	1975	Hansen, D.J., S.C. Schimmel and J. Forester	Trans Am Fish Soc 104:584-588	Cyprinodon variegatus	Sheepshead minnow	165631	PCBs	1336-36-3	200	MG/KG	1	Y	Y	Y
JA278	1978	Mauck, W.L., P.M. Mehrle, and F.L. Mayer.	J Fish Res Bd Can 35:1084-1088	Salvelinus fontinalis	Trout - Brook	162003	Aroclor 1254	11097-69-1	125	MG/KG	1	Y	Y	Y
JA28	1981	Berlin, W.H., R.J. Hesselberg, and M.J. Mac	In Chlorinated Hydrocarbons as a Factor in the Reproduction and Survival of Lake Trout (Salvelinus namaycush) in Lake Michigan. Technical Paper 105. U.S. Fish and Wildlife Service	Salvelinus namaycush	Trout -Lake	162002	Aroclor 1254	11097-69-1	1.53	MG/KG	2	Y	Y	N
URS157	1979	Leatherland, J.F., B.A. Sonstegard and N.V. Holdrient	Comp Biochem Physiol 063c:243-246	Oncorhynchus kisutch	Salmon-coho	161977	PCBs	1336-36-3	9.8	MG/KG	6	N	Y	N
URS104	1976	Hansen, L.G., W.B. Wiekhorst and J. Simon	J Fish Res Bd Can 33:1343-1352	Ictalurus punctatus	Catfish-Channel	163998	PCBs	1336-36-3	14.3	MG/KG	3	N	Y	N
URS157	1979	Leatherland, J.F., B.A. Sonstegard and N.V. Holdrient	Comp Biochem Physiol 063c:243-246	Oncorhynchus kisutch	Salmon-coho	161977	PCBs	1336-36-3	43	MG/KG	6	N	Y	N
URS102	1974	Hansen, D.J., P.R. Parrish and J. Forester	Environ Res 7:363-373	Lagodon rhomboides	Pinfish	169187	PCBs	1336-36-3	65	MG/KG	1	N	Y	Y
URS94	1976	Gruger, E.H., T. Hurley and N.L. Karrick	Environ Sci Tech 10:1033-1037	Oncorhynchus kisutch	Salmon-coho	161977	PCBs	1336-36-3	2.30E+00	MG/KG	3	Y	Y	N
URS103	1975	Hansen, D.J., S.C. Schimmel and J. Forester	Trans Am Fish Soc 104:584-588	Cyprinodon variegatus	Sheepshead minnow	165631	PCBs	1336-36-3	1.100E+03	MG/KG	1	Y	Y	Y

Appendix D-4
Fish Tissue LOEDs for Total PCBs

Ref ID	QA Exp Method	QA Effects Method	QA Reps	Effect Class	Toxicity Measure	Exposure Route	Species Body Part	Species Start Lifestage	Species Habitat	Species Feeding Behavior	Comments
MEC04-046	Y	Y	N	Growth	LOED	Ingestion	Whole Body	Adult	Not Specified	Not Specified	PCBs 41, 51, 60, 68, 91, 99, 104, 112, 115, 126, 143, 153, 169, 184, 193 - weight.
MEC04-046	Y	Y	N	Mortality	LOED	Ingestion	Whole Body	Adult	Not Specified	Not Specified	PCBs 41, 51, 60, 68, 91, 99, 104, 112, 115, 126, 143, 153, 169, 184, 193 - no significance calculated.
SEQ99J_11	Y	Y	Y	Reproduction	LOED	Absorption	Whole Body	Adult	Shallow brackish waters, Cape Cod to Mexico	Wide variety of small aquatic animals and plants	Increase in fecundity.
MEC04-046	Y	Y	N	Reproduction	LOED	Ingestion	Whole Body	Adult	Not Specified	Not Specified	PCBs 41, 51, 60, 68, 91, 99, 104, 112, 115, 126, 143, 153, 169, 184, 193 - ovary weight.
URS14	Y	Y	Y	Mortality	LOED	Ingestion	Whole Body	Adult	Not Specified	Not Specified	Doubling of mortality rate compared to controls after 300 days
URS14	Y	Y	Y	Reproduction	LOED	Ingestion	Whole Body	Adult	Not Specified	Not Specified	Reduction in time to hatch. Fry death within 1 week of hatching. Spawning induced at higher water temperatures. Residues measured 2 months before spawning.
URS14	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Adult	Not Specified	Not Specified	Significantly increased growth at 79 days. Residue measured at 82 days.
URS103	Y	Y	Y	Mortality	LOED	Absorption	Whole Body	Egg-embryo	Shallow brackish waters, Cape Cod to Mexico	Wide variety of small aquatic animals and plants	Lethal to 86% of fry in 28 days.
JA278	Y	Y	Y	Mortality	LOED	Absorption	Whole Body	Embryo	Cool streams, gravel bottoms	Carnivore-aquatic insects, fish	18% increase in mortality.
JA28	Y	Y	Y	Mortality	LOED	Combined	Whole Body	Fry	Deep waters of cold northern lakes	Carnivore-adults piscivorous	Significant increase in mortality. Exposure to 20.8 ng/L in water and 1.05 ug/g in diet.
URS157	Y	Y	Y	Growth	LOED	Ingestion	Carcass	Immature	NW America and Asian Coast. Streams in Spring, Fall	Carnivore-aquatic insects, fish, inverts	Significant increase in hepatosomatic index. Concurrent exposure to 5 mg/kg Mirex in food.
URS104	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Immature	Rapid water streams	Omnivore	40% Reduction in body weight. Increased liver/body weight ratio.
URS157	Y	Y	Y	Growth	LOED	Ingestion	Carcass	Immature	NW America and Asian Coast. Streams in Spring, Fall	Carnivore-aquatic insects, fish, inverts	Significant increase in hepatosomatic index.
URS102	Y	Y	Y	Mortality	LOED	Absorption	Whole Body	Immature	Lower portions of estuaries, Massachusetts to Texas, most common Virginia south	Fish, shellfish, worms, crustaceans, seaweed	18% mortality in 96 hours.
URS94	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Juvenile	NW America and Asian Coast. Streams in Spring, Fall	Carnivore-aquatic insects, fish, inverts	Significant increased rate of growth (weight gain).
URS103	Y	Y	Y	Mortality	LOED	Absorption	Whole Body	Juvenile	Shallow brackish waters, Cape Cod to Mexico	Wide variety of small aquatic animals and plants	88% juvenile mortality in 28 days.

APPENDIX D-5
FISH TISSUE LOEDS FOR SELENIUM

Appendix D-5
Fish Tissue LOEDs for Selenium

Ref ID	Year	Author	Publication Source	Species Scientific Name	Species Common Name	Species TSN Code	Analyte Name	CAS No	Conc_Wet	Conc Units	No. Reps	QA Stats Method	QA Chem Method	QA Chem DL
JA29	1986	Bertram, P.E. and A.S. Brooks.	Wat. Res. 20(7):877-884.	Pimephales promelas	Fathead minnow	163517	Selenium	7782-49-2	0.18	mg/kg	1	Y	Y	N
URS98	1990	Hamilton, S.J., K.J. Buhl, N.L. Faerber, R.H. Wiedmeyer and F.A. Bullard	Environ Tox & Chem 09:347-358	Oncorhynchus tshawytscha	Salmon - Chinook	161980	Selenium	7782-49-2	0.66	mg/kg	10	Y	Y	Y
URS98	1990	Hamilton, S.J., K.J. Buhl, N.L. Faerber, R.H. Wiedmeyer and F.A. Bullard	Environ Tox & Chem 09:347-358	Oncorhynchus tshawytscha	Salmon - Chinook	161980	Selenium	7782-49-2	0.68	mg/kg	20	Y	Y	Y
URS98	1990	Hamilton, S.J., K.J. Buhl, N.L. Faerber, R.H. Wiedmeyer and F.A. Bullard	Environ Tox & Chem 09:347-358	Oncorhynchus tshawytscha	Salmon - Chinook	161980	Selenium	7782-49-2	0.8	mg/kg	4	Y	Y	Y
MEC04-272	2003	Hamilton SJ	Ecotoxicol Environ Saf 56:201-210	Lepomis macrochirus	Bluegill	168141	Selenium	7782-49-2	0.92	mg/kg				
JA200	1982	Hilton, J.W., P.V. Hodson, and S.J. Slinger.	Comp Biochem Physiol 071C:49-55.	Oncorhynchus mykiss	Trout - Rainbow	161989	Selenium	7782-49-2	0.92	mg/kg	1	N	Y	N
URS98	1990	Hamilton, S.J., K.J. Buhl, N.L. Faerber, R.H. Wiedmeyer and F.A. Bullard	Environ Tox & Chem 09:347-358	Oncorhynchus tshawytscha	Salmon - Chinook	161980	Selenium	7782-49-2	1.08	mg/kg	4	Y	Y	Y
URS159	1993	Lemly, A.D.	Aquat Toxicol 27:133-158	Lepomis macrochirus	Bluegill	168141	Selenium	7782-49-2	1.2	mg/kg	3	Y	Y	Y
URS98	1990	Hamilton, S.J., K.J. Buhl, N.L. Faerber, R.H. Wiedmeyer and F.A. Bullard	Environ Tox & Chem 09:347-358	Oncorhynchus tshawytscha	Salmon - Chinook	161980	Selenium	7782-49-2	1.3	mg/kg	4	Y	Y	Y
JA336	1989	Ogle, R.S. and A.W. Knight	Arch Environ Contam Toxicol 18:795-803	Pimephales promelas	Fathead minnow	163517	Selenium	7782-49-2	1.4	mg/kg	4	Y	Y	N
URS98	1990	Hamilton, S.J., K.J. Buhl, N.L. Faerber, R.H. Wiedmeyer and F.A. Bullard	Environ Tox & Chem 09:347-358	Oncorhynchus tshawytscha	Salmon - Chinook	161980	Selenium	7782-49-2	1.6	mg/kg	6	Y	Y	Y
URS159	1993	Lemly, A.D.	Aquat Toxicol 27:133-158	Lepomis macrochirus	Bluegill	168141	Selenium	7782-49-2	1.6	mg/kg	3	Y	Y	Y
URS98	1990	Hamilton, S.J., K.J. Buhl, N.L. Faerber, R.H. Wiedmeyer and F.A. Bullard	Environ Tox & Chem 09:347-358	Oncorhynchus tshawytscha	Salmon - Chinook	161980	Selenium	7782-49-2	1.7	mg/kg	20	Y	Y	Y
URS98	1990	Hamilton, S.J., K.J. Buhl, N.L. Faerber, R.H. Wiedmeyer and F.A. Bullard	Environ Tox & Chem 09:347-358	Oncorhynchus tshawytscha	Salmon - Chinook	161980	Selenium	7782-49-2	2.01	mg/kg	10	Y	Y	Y
URS98	1990	Hamilton, S.J., K.J. Buhl, N.L. Faerber, R.H. Wiedmeyer and F.A. Bullard	Environ Tox & Chem 09:347-358	Oncorhynchus tshawytscha	Salmon - Chinook	161980	Selenium	7782-49-2	2.16	mg/kg	4	Y	Y	Y
URS98	1990	Hamilton, S.J., K.J. Buhl, N.L. Faerber, R.H. Wiedmeyer and F.A. Bullard	Environ Tox & Chem 09:347-358	Oncorhynchus tshawytscha	Salmon - Chinook	161980	Selenium	7782-49-2	2.88	mg/kg	6	Y	Y	Y
JB6	1992	Hermanutz, R.O., Allen, K.N., Roush, T.H., and S.F. Hedtke	Environ Tox & Chem 11: 217-224	Lepomis macrochirus	Bluegill	168141	Selenium	7782-49-2	4.6	mg/kg	6	Y	Y	N

Appendix D-5
Fish Tissue LOEDs for Selenium

Ref ID	QA Exp Method	QA Effects Method	QA Reps	Effect Class	Toxicity Measure	Exposure Route	Species Body Part	Species Start Lifestage	Species Habitat	Species Feeding Behavior	Comments
JA29	Y	Y	N	Growth	LOED	Absorption	Whole Body	Adult	Lakes, ponds, streams	Not Specified	Decrease weight gain.
URS98	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Larval	Both coasts of Pacific; Monterey Bay and China north to Bering Straits, ascending all large streams, e.g., Columbia River	Feeds on variety of forms, e.g., larval, adult insects; small fish, invertebrates	Reduced Weight And Length Gain In 60 Days
URS98	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Larval	Both coasts of Pacific; Monterey Bay and China north to Bering Straits, ascending all large streams, e.g., Columbia River	Feeds on variety of forms, e.g., larval, adult insects; small fish, invertebrates	Reduced Weight And Length Gain In 30 Days
URS98	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Larval	Both coasts of Pacific; Monterey Bay and China north to Bering Straits, ascending all large streams, e.g., Columbia River	Feeds on variety of forms, e.g., larval, adult insects; small fish, invertebrates	Reduced Weight And Length Gain In 60 Days
MEC04-272				Growth	LOED	NS	Whole Body	NS	Vegetation in lakes, ponds, streams	Carnivore-aquatic insects, fish, inverts	Review paper Cleveland et al 1993
JA200	Y	Y	Y	Mortality	LOED	Ingestion	Carcass	Early Juvenile	Cool streams	Carnivore-juv fish, inverts	Significant increase in mortality. Residue measured at 12 weeks.
URS98	Y	Y	Y	Mortality	LOED	Ingestion	Whole Body	Larval	Both coasts of Pacific; Monterey Bay and China north to Bering Straits, ascending all large streams, e.g., Columbia River	Feeds on variety of forms, e.g., larval, adult insects; small fish, invertebrates	Reduced Survival In 90 Days
URS159	Y	Y	Y	Growth	LOED	Combined	Whole Body	Immature	Vegetation in lakes, ponds, streams	Carnivore-aquatic insects, fish, inverts	Reduced weight to length ratio. Exposure at 4 degrees C. Concurrent epxosure to 5 ug inorganic Se/L in water and 5.1 ug Seleno-L-Methionine/g in food.
URS98	Y	Y	Y	Mortality	LOED	Ingestion	Whole Body	Larval	Both coasts of Pacific; Monterey Bay and China north to Bering Straits, ascending all large streams, e.g., Columbia River	Feeds on variety of forms, e.g., larval, adult insects; small fish, invertebrates	Reduced Survival In 90 Days
JA336	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Adult	Lakes, ponds, streams	Not Specified	Significant decrease in body weight gain.
URS98	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Immature	Both coasts of Pacific; Monterey Bay and China north to Bering Straits, ascending all large streams, e.g., Columbia River	Feeds on variety of forms, e.g., larval, adult insects; small fish, invertebrates	Reduced Weight Gain After 120 Days
URS159	Y	Y	Y	Mortality	LOED	Combined	Whole Body	Immature	Vegetation in lakes, ponds, streams	Carnivore-aquatic insects, fish, inverts	35% Increase in mortality. Exposure at 4 degrees C. Concurrent epxosure to 5 ug inorganic Se/L in water and 5.1 ug Seleno-L-Methionine/g in food.
URS98	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Larval	Both coasts of Pacific; Monterey Bay and China north to Bering Straits, ascending all large streams, e.g., Columbia River	Feeds on variety of forms, e.g., larval, adult insects; small fish, invertebrates	Reduced Weight And Length Gain In 30 Days
URS98	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Larval	Both coasts of Pacific; Monterey Bay and China north to Bering Straits, ascending all large streams, e.g., Columbia River	Feeds on variety of forms, e.g., larval, adult insects; small fish, invertebrates	Reduced Weight And Length Gain In 60 Days
URS98	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Larval	Both coasts of Pacific; Monterey Bay and China north to Bering Straits, ascending all large streams, e.g., Columbia River	Feeds on variety of forms, e.g., larval, adult insects; small fish, invertebrates	Reduced Weight And Length Gain
URS98	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Immature	Both coasts of Pacific; Monterey Bay and China north to Bering Straits, ascending all large streams, e.g., Columbia River	Feeds on variety of forms, e.g., larval, adult insects; small fish, invertebrates	Reduced Length After 120 Days
JB6	Y	Y	Y	Mortality	LOED	Combined	Whole Body	Adult	Vegetation in lakes, ponds, streams	Carnivore-aquatic insects, fish, inverts	

Appendix D-5
Fish Tissue LOEDs for Selenium

Ref ID	Year	Author	Publication Source	Species Scientific Name	Species Common Name	Species TSN Code	Analyte Name	CAS No	Conc_Wet	Conc Units	No. Reps	QA Stats Method	QA Chem Method	QA Chem DL
URS98	1990	Hamilton, S.J., K.J. Buhl, N.L. Faerber, R.H. Wiedmeyer and F.A. Bullard	Environ Tox & Chem 09:347-358	Oncorhynchus tshawytscha	Salmon - Chinook	161980	Selenium	7782-49-2	4.64	mg/kg	6	Y	Y	Y
URS98	1990	Hamilton, S.J., K.J. Buhl, N.L. Faerber, R.H. Wiedmeyer and F.A. Bullard	Environ Tox & Chem 09:347-358	Oncorhynchus tshawytscha	Salmon - Chinook	161980	Selenium	7782-49-2	4.68	mg/kg	10	Y	Y	Y
URS15	1986	Bennett, W.N., A.S. Brooks and M.E. Boraas	Arch Environ Contam Toxicol 15:513-517	Pimephales promelas	Fathead minnow	163517	Selenium	7782-49-2	8.6	mg/kg	3	Y	Y	N
URS71	1996	Dobbs, M.G., D.S. Cherry and J. Cairns, Jr.	Environ Tox & Chem 15:340-347	Pimephales promelas	Fathead minnow	163517	Selenium	7782-49-2	12	mg/kg	2	Y	Y	N
URS71	1996	Dobbs, M.G., D.S. Cherry and J. Cairns, Jr.	Environ Tox & Chem 15:340-347	Pimephales promelas	Fathead minnow	163517	Selenium	7782-49-2	17.8	mg/kg	2	Y	Y	N

Appendix D-5
Fish Tissue LOEDs for Selenium

Ref ID	QA Exp Method	QA Effects Method	QA Reps	Effect Class	Toxicity Measure	Exposure Route	Species Body Part	Species Start Lifestage	Species Habitat	Species Feeding Behavior	Comments
URS98	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Immature	Both coasts of Pacific; Monterey Bay and China north to Bering Straits, ascending all large streams, e.g., Columbia River	Feeds on variety of forms, e.g., larval, adult insects; small fish, invertebrates	Reduced Weight And Length Gain In 120 Days
URS98	Y	Y	Y	Mortality	LOED	Ingestion	Whole Body	Larval	Both coasts of Pacific; Monterey Bay and China north to Bering Straits, ascending all large streams, e.g., Columbia River	Feeds on variety of forms, e.g., larval, adult insects; small fish, invertebrates	37% Reduced Survival In 60 Days
URS15	Y	Y	Y	Growth	LOED	Ingestion	Whole Body	Larval	Lakes, ponds, streams	Not Specified	46% Reduction in weight gain. Larval uptake was 1.46 ng selenium per day.
URS71	Y	Y	Y	Growth	LOED	Combined	Whole Body	Larval	Lakes, ponds, streams	Not Specified	Significant reduction in weight.
URS71	Y	Y	Y	Mortality	LOED	Combined	Whole Body	Larval	Lakes, ponds, streams	Not Specified	Mortality

APPENDIX E
BENTHIC INVERTEBRATE RISK ASSESSMENT SUPPORTING INFORMATION

APPENDIX E-1
BENTHIC MODEL SUPPORTING INFORMATION

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Exhibit E-1.1 Graphic Analysis of Benthic Risk Models
Exhibit E-1.2 Hypothesis Testing COPC Without SQGs

1 BENTHIC PREDICTIVE MODEL

In the BERA Work Plan, several predictive toxicity models were evaluated in order to define the relationship between surface sediment chemistry and toxic responses in the benthic community observed at the Site. The models identify the predictive relationship from different perspectives; although the goals of the models are similar: to develop a predictive relationship based on empirical data (i.e., sediment chemistry and toxicity test data) and to identify the principal chemical(s) that appear to best predict the relationship between sediment quality and toxicity. The models generally fall into two groups: 1) generic sediment quality guideline quotient (SQG-Q) models (Long et al. 1998; Ingersoll et al. 2001; MacDonald et al. 1996); and 2) mechanistic models (USEPA 2003d, 2008b).

The generic SQG-Q models rely on the use of threshold effect concentration (e.g., effects range median [ERM], probable effects concentration [PEC], and probable effect level [PEL]) quotients of mixtures of COPCs. Briefly, the quotient is the ratio of each chemical concentration to its threshold effect concentration (i.e., ERM, PEC, and PEL). Individual quotients can then be summed or averaged to evaluate the likelihood that a sediment sample would be expected to be toxic or non-toxic based on the narrative intent of the sediment quality guideline (SQG). Equilibrium partitioning (EqP; i.e., mechanistic) models are used to estimate equilibrium partitioning sediment benchmarks (ESB) to determine if a sample would be toxic based on partitioning between sediment and porewater, which represents the bioavailable fraction. These models rely on a toxic units (TU) approach whereby the toxicity of a class of related chemicals is considered additive. Sediment EqP models have been developed to estimate ESBs for PAH Equilibrium Partitioning Sediment Benchmark Toxic Unit (PAH ESBTU), non-ionic organics (NOC ESBTU), and divalent metals (metals ESBTU). Further details regarding the basis and application of the generic SQG-Q and EqP models used in the development of a predictive model can be found in Section 4.3 of the BERA Work Plan.

Each of these approaches are considered 'generalized' models in the sense that they rely on data from a compilation of sites and/or studies performed under a wide range of locations and conditions. Thus, they are intended to be representative of a broad range of conditions but may not account for potentially unique or confounding conditions that may be present at a

site to which the model is extrapolated. Thus, it is important to evaluate a potential model's performance using Site-specific data (i.e., bioassay data) in order to determine if a model provides an adequate degree of confidence in its interpretation of sediment toxicity at the Site.

The generalized models were evaluated using 51 samples with co-located sediment chemistry and toxicity test data. Samples were collected between September 2000 and August 2006. Treatment and development of the chemistry and toxicity database for model development are detailed in Section 4.3 of the BERA Work Plan. Datasets used in the benthic risk assessment are also summarized in Section 4 above.

In the BERA Work Plan, predictive model development focused on survival of *Leptocheirus plumulosus* in 10-day whole sediment bioassay tests as the effect endpoint for the model. This decision was based on several factors evaluated in detail in the BERA Work Plan. Briefly, they are:

1. This species was the most frequently tested with Site sediments (n = 43),
2. This species showed equal or greater sensitivity and good concordance with other species tested (see exception noted below), and
3. This species has been shown to be equally sensitive under acute, chronic, and subchronic test conditions and endpoints.

1.1 Model Development Summary

This section summarizes the steps taken in the BERA Work Plan to develop a predictive model for the benthic invertebrate risk characterization. Further details on the model development and optimization can be found there.

1.1.1 Assessing Model Performance

The predictive ability of SQG-Q and ESBTU models were initially evaluated by comparing the observed toxicity[1] in the *L. plumulosus* bioassay test and the predicted toxicity based on chemistry data for each sample. Initially, the mean effects range median-quotient (ERM-Q), mean probable effect concentration-quotient (PEC-Q), mean probable effect level-quotient (PEL-Q), PAH ESBTU, NOC ESBTU, and metals ESBTU were included in the predictive ability analysis. Initially, all COPCs with SQGs available were included in the respective models. To evaluate the predictive ability of each, the following statistics were calculated initially assuming the effects threshold was equal to 1.0:

- **False negative rate**: number of samples incorrectly predicted as non-toxic/number of toxic samples.
- **False positive rate**: number of samples incorrectly predicted as toxic/number of non-toxic samples.
- **Reliability**: number of samples correctly predicted/total number of samples.

An SQG-Q or ESBTU model was deemed acceptable for use in the benthic invertebrate risk characterization based on the following acceptability criteria applied in similar evaluations of model performance (Long et al. 1998; MacDonald et al. 2000):

- False negative and false positive rates were less than 25 percent
- Overall reliability greater than or equal to 75 percent

Minimizing the false negative frequency in the model is important to ensure that the model is conservative and protective of the endpoint being evaluated. That is, the consequence of identifying a sample as non-toxic when in fact it is toxic results in a situation where adverse ecological effects may occur but are not identified in the risk characterization. Minimization of the false positive rate is important to avoid unnecessary potential remediation of locations that are not toxic; resulting in an unnecessary use of resources and possibly causing a greater impact (e.g., 'risk of remediation') to the Site than is warranted. Finally, maximizing the overall reliability ensures that a reasonable level of confidence can be placed in the predictive power of the model.

[1] Toxicity was defined as control adjusted survival less than 80 percent.

Table E-1.1 presents the acceptability criteria results for ERM-Q, PEC-Q, PEL-Q, PAH ESBTU, non-ionic COPCs ESBTU, and metals ESBTU models (graphical analysis results are provided in Exhibit E-1.1). All SQG-Q and ESBTU models had false negative rates below or near the acceptability criteria of 25 percent (0 to 28 percent) but only one, the PEC-Q model, had a false positive rate (16 percent) within the acceptability criteria limit. In addition, the PEC-Q model was the only quotient or ESBTU model with a reliability exceeding 75 percent.

Because three of the four SQG-Q or ESBTU models using the default threshold of 1.0 did not meet the acceptability criterion of less than 25 percent false positives, the effect of adjusting the threshold from 1.0 was evaluated. Similar to the approach used in other studies (Long et al. 2006), the thresholds were adjusted in an attempt to achieve acceptable error rates in comparison to toxicity test results for the Site. Effect thresholds were incrementally raised until acceptable error rates were achieved, if possible.

In summary, the mean PEL-Q model could meet the initial performance criteria and the model's overall performance was maximized by adjusting the effects threshold to 2.44. For the mean PEC-Q model, the performance criteria were nearly met at a threshold of 1.0 and further adjustment to the initial 1.0 threshold did not result in any increase in overall model performance. For all other models, the performance criteria were not met at a threshold of 1.0 or at any other threshold value; indicating they are not reliable predictors of toxicity at this Site. As a result, the mean PEL-Q and PEC-Q models were carried forward through a series of model optimization and calibration steps in an attempt to further simplify and improve the model performance and to identify the most appropriate model for characterizing risk to the benthic community.

1.1.2 Model Optimization

To optimize the mean quotient models that met the acceptability criteria (i.e., the PEC-Q and PEL-Q models), steps were taken to identify the COPCs that contributed significantly to the predictive ability of the model and to remove COPCs that did not, with the ultimate goal of improving the model's performance compared to the initial mean quotient model.

Several steps were taken to identify COPCs that contribute significantly to the model's performance. First, COPCs that did not show a significant difference in chemical concentrations between toxic and non-toxic sample groups were removed from the model. The reasoning for this step is that only COPCs that show some positive relationship with observed toxicity are likely to be significant contributors to toxicity at the Site. Next, mean quotients for PEC-Q and PEL-Q were recalculated using only those COPCs identified as having a significant difference between toxic and non-toxic datasets. More specifically, the PEC-Q was recalculated as the mean of the individual PEC-Q for total PAH, total PCB, and lead. The PEL-Q was recalculated using the mean of the individual PEL-Q for total PAH, total PCB, lead, and bis(2-ethylhexyl)phthalate (BEHP).

Finally, graphical analysis of the optimized models was performed similar to the original models. The false negative, false positive, and overall reliability of the optimized models were calculated for a range of quotient values and graphed. Graphs showing false negative, false positive and reliability of the optimized mean PEC-Q and PEL-Q are provided in Exhibit E-1.1. Both optimized models have lower error rates and higher reliability than their respective full mean quotient models (Table E-1.2). Again, the models were initially evaluated at a threshold of 1.0. At a threshold of 1.0 the optimized mean PEL-Q model still had an unacceptably high false positive and low reliability rate. Thus, an incremental evaluation of different thresholds was performed to identify the optimum threshold (e.g., highest reliability and lowest false positives and negatives). At a threshold of 1.6 the optimized mean PEL-Q had a higher overall reliability (81 percent vs. 79 percent), lower false negative (17 percent vs. 22 percent), and same false positive (20 percent) rate as the full mean PEL-Q model at threshold of 2.44. The optimized mean PEC-Q at a threshold of 1.21 had a higher overall reliability (88 percent vs. 79 percent) rate as the full model, a lower false negative rate (22 percent vs. 28 percent), and a lower false positive rate (4 percent vs. 16 percent).

Thus, the optimization step of removing COPCs from the quotient that did not contribute significantly to the predictive ability of the model did improve the performance of both models. In both cases, use of a toxicity threshold greater than 1.0 also significantly improved the predictive ability of both models.

1.2 Alternative Model Evaluation and Interspecies Comparisons

In the BERA Work Plan, an analysis of potential uncertainty associated with the model development was performed. Several sources of uncertainty were addressed, including:

1. Potential contribution of non-ionic organic COPCs to toxicity,
2. Metals bioavailability,
3. COPCs exceeding SQG that are not model variables,
4. COPCs without SQGs, and
5. Reliance on a single species and endpoint to assess community effects.

Nonetheless, USEPA and the Trustees requested that additional analysis of the bioassay and chemistry data be conducted during the BERA to further evaluate potential models that may incorporate additional Site COPCs and species into this LOE. To further assess the representativeness of a benthic toxicity model based on *L. plumulosus* to characterize risks to the benthic community, two types of additional analysis were performed. For the first analysis, the performance of the optimized mean PEL-Q model was assessed when applied to other test species (both individually and pooled) included in the Site toxicity database. For the second analysis, other SQG-Q and mechanistic models were evaluated using *A. bahia, N. arenaceodentata,* and *A. abdita*[2] individually and combined to determine if another model may more accurately predict the presence or absence of toxicity across all species tested in Site sediments. Results of this analysis are evaluated below.

1.2.1 Interspecies Comparisons

The purpose of this analysis was to evaluate whether the model could predict the presence or absence of toxicity for other species as determined by the empirical toxicity and sediment chemistry data for the Site. To address this issue, the rate of false negatives, false positives, and overall reliability of the optimized mean PEL-Q model was calculated using a threshold of 1.6 for *A. bahia, N. arenaceodentata, A. abdita*, and all species combined. Results are provided in Table E-1.3 (graphical analysis provided in Exhibit E-1.1).

At a threshold of 1.6 the rates of false negatives for *M. Americamysis* and *A. abdita* were less than or equal to the acceptability threshold of 25 percent while *N. arenaceodentata* had a

[2] See the BERA Work Plan for a discussion on the performance of other models in relation to *L. plumulosus*.

false negative rate of 67 percent. All species combined had a false negative rate of 27 percent which slightly exceeded the acceptability threshold of 25 percent. Thus, with the exception of *N. arenaceodentata*, a threshold of 1.6 would not result in an unacceptable number of locations (i.e., > 25 percent) being incorrectly identified as non-toxic to other test species based on the optimized mean PEL-Q. However, as can be seen from the rate of false positives (48 – 75 percent) for other test species, a threshold of 1.6 is likely to result in samples frequently being incorrectly identified as toxic based on the optimized mean PEL-Q.

Thus, the optimized mean PEL-Q threshold, or 1.6, is highly conservative with regard to predicting toxicity to other test species, with the possible exception of *N. arenaceodentata* (for the reasons described above) and likely result in frequent false positives. Based on the conservative nature of the threshold, the narrative intent of this threshold should be considered a threshold below which adverse effects to the benthic community would rarely be expected to occur.

If the observed responses from other test species are considered, there exists a range of optimized mean PEL-Q values above 1.6 where the response varies among the different species tested (i.e., adverse effects will be observed more frequently for all species but at different rates). At some threshold, adverse effects would consistently be expected for all species. This threshold would narratively be defined as a threshold above which adverse effects to the benthic community would be frequently expected to occur. Table E-1.3 provides the threshold(s) with the best predictive power for each species and all species combined (excepting *N. arenaceodentata*). If the acceptability criteria for false negatives, false positives, and reliability could not be met at any threshold, then the highest threshold that met the false negative acceptability criteria was chosen.

One species, *A. bahia,* met the acceptability criteria at a threshold range of 3.0 to 14.9. *A. abdita* did not meet all three criteria at any threshold but had an acceptable false negative rate up to a threshold of 2.3[3]. Similarly, for all species combined (excepting *N. arenaceodentata*), all three criteria were not met at any threshold but an acceptable false

[3] Interestingly, at the next highest threshold of 2.4 had a false negative rate of 31 percent but the false positive rate decreased from 75 percent to 25 percent.

negative rate was observed up to a threshold of 2.3[4]. Finally, *N. arenaceodentata* had an acceptable false negative rate up to a threshold of 0.57. Based on this analysis, the threshold of 2.3 was selected as the upper bound threshold above which adverse effects to the benthic community would frequently be expected to occur.

1.2.2 Alternative Model Evaluations

For the second analysis, other SQG-Q and mechanistic models were evaluated using *A. bahia, N. arenaceodentata,* and *A. abdita*[5] individually and combined to determine if another model may more accurately predict the presence or absence of toxicity across all species tested in Site sediments. The same methodology was applied that was used for development of the *L. plumulosus* model. The reliability, false positives, and false negatives were calculated at a range of thresholds for each test species. The threshold (or range of thresholds) that met the acceptability criteria for all three metrics was then determined and recorded in Table E-1.4. If all three acceptability criteria could not be met, the highest threshold meeting the false negative criteria was recorded. Exhibit E-1.1 provides the results of the graphical analysis used to evaluate these alternative models.

None of the other SQG-Q or mechanistic models met the acceptability criteria for *N. arenaceodentata* or *A. abdita*. The PEL-Q, PEC-Q, and ERM-Q models (full models with all available COPCs) met the acceptability criteria for *A. bahia* at a range of thresholds.

1.3 Re-evaluation of COPC without SQGs

Section 4.4.3.4 of the BERA Work Plan evaluated the potential risk associated with benthic invertebrate COPCs that were not included in the model development due to their lack of SQGs or inclusion in mechanistic models. USEPA and the Trustees requested additional analyses be considered during the BERA to provide a more robust assessment of these COPCs. They include:

- Ammonia
- Barium

[4] As with *A. abdita*, the next highest threshold of 2.35 for the combined species model had a false negative rate of 26 percent but the false negative rate decreased from 37 percent to 22 percent.
[5] See the BERA Work Plan for a discussion on the performance of other models in relation to *L. plumulosus*.

- Hexachlorobutadiene
- Benzidine
- Bis(2-chloroisopropyl)ether
- Hexachlorobenzene
- Total xylene
- Isopropylbenzene
- n-Butylbenzene
- n-Propylbenzene
- sec-Butylbenzene
- tert-Butylbenzene

In the BERA Work Plan, concentrations of these COPCs in sediment were compared to an arbitrary threshold of ten times their Site average (based on the exposure assessment dataset).

To support this initial analysis, two evaluations were performed in the BERA. The first used the sediment chemistry data from the toxicity model dataset to statistically evaluate differences in the concentration of these COPCs in the toxic versus non-toxic dataset based on empirical observations of toxicity to *L. plumulosus*. This analysis followed the same approach as the model optimization step for COPCs included in the optimized mean PEL-Q development (Section 4.4.2 of the BERA Work Plan). In this analysis, COPCs with greater than 40 percent frequency of detection were tested using the non-parametric Wilcoxon-Mann-Whitney (WMW) while Gehan's test was used for COPCs with less than 40 percent frequency of detection as recommended by USEPA's ProUCL Version 4.0 Technical Guide (2007). Both tests used ranks of the data to test whether the measurements from one sample group tend to be consistently larger than those in the second group. Samples with less than 8 detected observations in either the toxic or non-toxic dataset could not be evaluated. For each test, α was set at 0.05 and the null and alternative hypotheses are:

$$H_O : \tilde{\mu}_{TOXIC} \leq \tilde{\mu}_{NONTOXIC}$$
$$H_A : \tilde{\mu}_{TOXIC} > \tilde{\mu}_{NONTOXIC}$$

where:

H_o = null hypothesis

H_A = alternative hypothesis

$\tilde{\mu}_{TOXIC}$ = Toxic sample group median

$\tilde{\mu}_{NONTOXIC}$ = Non-toxic sample group median

Results are provided in Exhibit E-1.2. Based on the low frequency of detection or low number of results, ammonia, total xylene, n-butylbenzene, n-propylbenzene, sec-butylbenzene, and tert-butylbenzene were not evaluated.

With one exception, none of the remaining COPCs (hexachlorobutadiene, hexachlorobenzene, benzidine, and bis(2-chloroisopropyl)ether) demonstrated a significant difference between toxic and non-toxic samples. This analysis confirms the previous assessment of these COPCs which concludes that they show no significant association with the observed toxicity in Site sediments and that exclusion from the benthic model does not significantly compromise its predictive power.

Barium was the only COPC to demonstrate a significant difference between toxic and non-toxic sample groups. This may be due to simple covariance of barium with other COPCs that may be causing toxicity. A review of the available literature indicate that relevant bulk sediment toxicity SQG have not been established for barium. However, concentrations in porewater were below the corresponding water quality screening benchmark (Anchor 2008b).

1.4 Predictive Model Uncertainty

The following subsections describe three important potential sources of uncertainty: 1) the potential contribution of non-chemical stressors that may erroneously imply causality of toxicity by the COPC used in the current model; 2) the uncertainty related to confounding factors in the historical sediment bioassay investigations; and 3) analytical uncertainty related to PCBs in bulk sediment. These three sources of uncertainty may compromise the applicability of the current benthic toxicity model for risk characterization and risk management applications. If non-chemical stressors and confounding factors are significant

but unaccounted for, the result is likely to be an overly conservative characterization of risk due to Site COPCs that could potentially result in significant remedial actions that may ultimately not be warranted and that would not otherwise be considered. Analytical uncertainty in the toxicity dataset affects any extrapolation related to the concentration of COPC in sediments without empirical toxicity data.

1.4.1 Non-Chemical Stressors

Within a mesohaline benthic community there are a variety of non-chemical stressors present. These non-chemical stressors may influence the apparent response of organisms or communities observed in typical measurement endpoints selected for ecological risk assessment. These non-chemical stressors can increase the apparent response by test organisms to COPC and may often be the primary cause of adverse effects in toxicity tests. They may also play a significant role in shaping the benthic community and influence many of the benthic community properties (i.e., abundance, diversity, etc.) that are evaluated in ecological risk assessments. These non-chemical stressors may include, but are not limited to, grain size, organic carbon, salinity, and temperature. These stressors may be natural or anthropogenic (e.g., nutrient enrichment) but unrelated to historical or ongoing releases of COPC to a system. However, if non-chemical stressors are not accounted for when evaluating benthic invertebrate measurement endpoints, their effects may be erroneously attributed to chemical stressors (e.g., COPCs) that are measured.

Controlling or quantifying effects of non-chemical stressors when evaluating benthic invertebrate measurement endpoints can be challenging. Nonetheless, there are effective methods to address these issues. Arguably the most important is to incorporate an appropriate reference area into any testing program. An effective reference site would duplicate all the conditions, including non-chemical stressors, of a study site and would provide a point of reference to account for the potential effect of these stressors in the absence of Site COPCs. The incremental effect of these non-chemical stressors can be quantitatively evaluated and incorporated into the observed responses of Site data (e.g., reference envelope approach for bioassay endpoints [Hunt et al. 1998; Smith 2002]).

Unfortunately, the historical Site bioassay and community dataset does not include reference area data[6]. This is a significant data gap. Without appropriate reference area observations for comparison, overly conservative conclusions may be reached based on the responses observed in sediment toxicity tests when compared to levels of chemical stressors in sediment at the Site. Moreover, assessing the incremental contribution of non-chemical stressors to effects observed in Site sediments cannot be performed retroactively. Only additional, concurrent testing and observations of Site and reference area sediments are appropriate to adequately assess the significance of non-chemical stressors on benthic invertebrate bioassay measurement endpoints.

1.4.2 Confounding Factors

Confounding factors (CFs) are characteristics or features that may be present in laboratory sediment bioassays that are not related to the chemical stressors of interest but contribute to observed biological effects (e.g., mortality). These confounding factors can be divided into matrix features and non-matrix features:

- Matrix features vary due to laboratory conditions; including such characteristics as ammonia or sulfide concentrations, the quality of organic carbon in sediment, and acclimation of sediments to test conditions.
- Non-matrix features include selection of appropriate test organisms, test organism health, and test organism acclimation and handling techniques.

Toxicity testing may not provide effective data for assessing and selecting risk management strategies unless it recognizes the potential for CFs and incorporates methods to explain or remove the effects of CF's during testing. Failure to account for CFs may lead to misinterpretation of the causal factors of toxicity; leading to risk characterization focusing on irrelevant or marginally relevant chemical stressors (i.e., COPC) or overestimating the magnitude of risk associated with Site COPC. Awareness of the potential for CFs to impact

[6] Benthic community analysis performed by Parsons Engineering (2002, 2004) of the historical data did compare Site results to 'non-degraded sites in Galveston Bay'. However, these sites were sampled under a completely different program separated in time from the Patrick Bayou sampling efforts and should not be considered a true reference area dataset.

toxicity data interpretation allows the inclusion of those factors in the assessment which, if properly managed, could provide a more robust characterization of risk[7].

Typical CFs that may be present during sediment toxicity tests include:

1. Test organism acclimation to test conditions
2. Test organism health prior to test initiation
3. Sediment acclimation to test conditions
4. Water quality in test chambers

1.4.3 Analytical Uncertainty

Total PCBs are included in the model developed using the paired toxicity and chemistry database. These data were generated outside of the Patrick Bayou Superfund RI and were reviewed for use in the RI during the historical data review process (Anchor 2007b). Analysis of PCBs for samples in the toxicity dataset was performed on an Aroclor basis (i.e., USEPA Method 1656). In each case, only PCBs consistent with Aroclor 1248 standards were identified and reported. More specifically, one tri-chlorinated congener peak and four tetra-chlorinated congener peaks were chosen to quantify the Aroclor 1248 results for samples collected in September 2000 and April 2001 (Parsons Engineering 2002)[8]. Thus, PCB congeners outside of the profile of an Aroclor 1248 standard are not reported.

For the RI surface sediment dataset being used to characterize risk in the BERA (Section 4), PCBs were analyzed on a congener specific basis (i.e., USEPA Method 1668). As a result, the full range of congeners (n = 209) were quantified and reported. Thus total PCB congener values based on all congeners were not consistent with the toxicity dataset and would result in an overestimation of PCBs relative to the methods used in the toxicity dataset.

The uncertainty related to the differences in the two methods is biased conservative. That is, estimates of PCBs based on the Aroclor analytical methods used are likely to underestimate

[7] It should be noted that the real level of risk in the environment may not be accurately predicted from laboratory tests. These standardized tests expose organisms in a controlled environment, where temperature, oxygen, and salinity stay constant.

[8] Commercial Aroclor 1248 mixtures typically consist of 70 percent tri- and tetra-chlorinated homologs (USEPA 1996) (USEPA n.d.)

the concentration of congeners in an environmental sample. Aroclor analysis is based on a pattern-recognition technique and requires significant professional judgment on the part of the analyst to identify these patterns and match them to an expected standard Aroclor mixture profile. These judgments are made using only a subset of the information (e.g., less than 28 congeners). In contrast, congener-specific analysis is much less subjective and can reliably identify all 209 congeners. As a result, comparison between data based on Aroclor versus congener specific analysis is problematic. It is expected that this uncertainty may overestimate benthic risks associated with PCBs.

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TABLES

Table E-1.1
Initial Reliability Analysis Results for Mean ERM-Q, Mean PEC-Q, Mean PEL-Q, PAH ESBTU, NOC ESBTU, and Metals ESBTU

Effect Threshold = 1.0	
ERM-Q	
False Negatives	6%
False Positives	64%
Reliability	60%
PEC-Q	
False Negatives	28%
False Positives	16%
Reliability	79%
PEL-Q	
False Negatives	0%
False Positives	80%
Reliability	53%
PAH ESBTU	
False Negatives	17%
False Positives	68%
Reliability	53%
NOC ESBTU	
False Negatives	100%
False Positives	0%
Reliability	52%
Metals ESBTU	
False Negatives	16%
False Positives	100%
Reliability	49%

Notes:
Shaded cells meet initial acceptability criteria
ERM-Q - Effect Range Median quotient
PEC-Q - probable effects concentration quotient
PEL-Q = probable effect limit quotient
PAH ESBTU - polynuclear aromatic hydrocarbon equilibrium screening benchmark toxic unit
NOC ESBTU - non-ionic COPC equilibrium screening benchmark toxic unit

Table E-1.2

Reliability Analysis Results for Initial and Optimized Mean PEL-Q and PEC-Q

SQG	Mean PEC-Q		Mean PEL-Q	
Model	Initial	Optimized	Initial	Optimized
COPC	All	PAH, PCB, Lead	All	PAH, PCB, BEHP, Lead
Threshold	1.00	1.21	2.44	1.56
False Negatives	28%	22%	22%	17%
False Positives	16%	4%	20%	20%
Reliability	79%	88%	79%	81%

Notes:

PEC-Q - probable effects concentation quotient

PEL-Q - probable effect level quotient

Table E-1.3

Performance Assessment of Optimzed Mean PEL-Q Model Applied to Test Species Other Than *L. plumulosus*

Toxicity Metric	Test Group	Predictive Performance[a]	Optimized Mean PEL-Q @ 1.6	Optimized Mean PEL-Q[b]		
Control Adjusted Survival < 80%	*M. americamysis* n=20	Reliability	55%	85%	--	90%
		False Negative	13%	13%	--	13%
		False Positive	67%	17%	--	8%
		Threshold Number	--	3.0	--	15
	A. abdita n=20	Reliability	65%	65%	--	*70%* [c]
		False Negative	25%	25%	--	*31%c*
		False Positive	75%	75%	--	*25%c*
		Threshold Number	--	2.3	--	*2.4*
	N. arenaceodentata n=36	Reliability	47%	39%		
		False Negative	67%	22%		
		False Positive	48%	74%		
		Threshold Number	--	0.57		
	All species ≠ N. arenaceodentata n=83	Reliability	64%	70%	--	*76%c*
		False Negative	27%	24%	--	*26%c*
		False Positive	43%	37%	--	*22%c*
		Threshold Number	--	2.3	--	*2.4*

Notes:

a Acceptability criteria for predictive performance:

Reliability ≥ 75%

False negatives ≤ 25%

False positives ≤ 25%

b If the acceptability criteria could not be met at any threshold, the highest threshold that met the false negative acceptability criteria is provided

c Although these thresholds did not meet the performance crteria they are provided for context. See text for discussion.

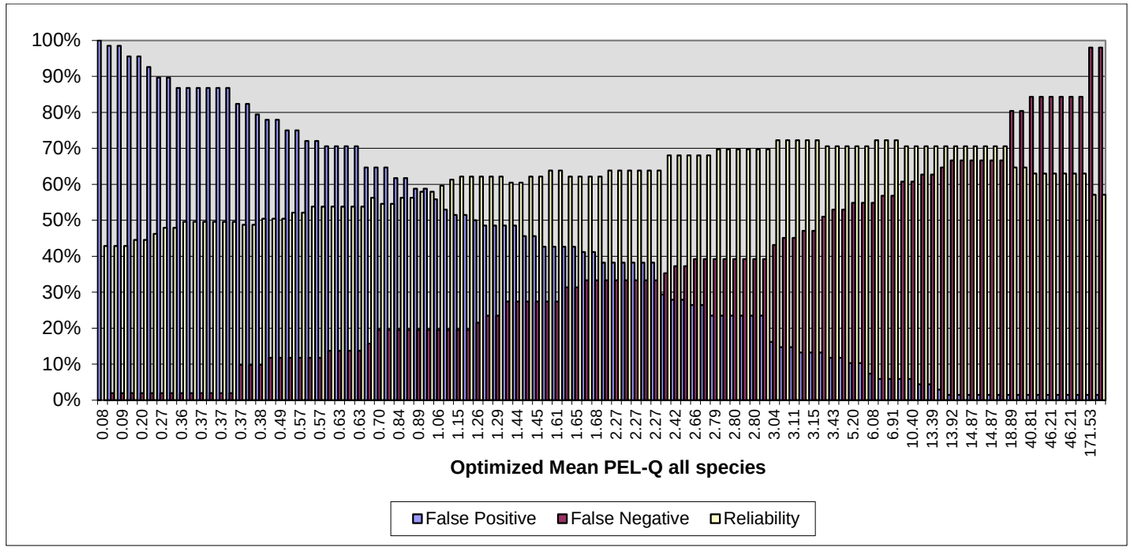
Table E-1.4
Performance Assessment of Initial SQG and Mechanistic Models for Test Species Other Than *L. plumulosus*

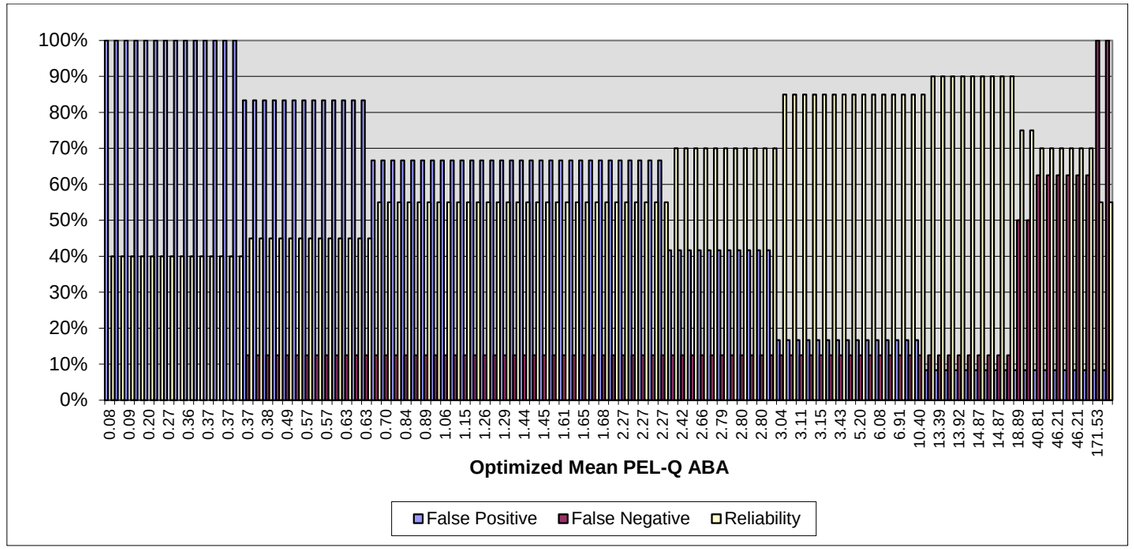
Toxicity Metric	Test Group	Predictive Performance[a]	Mean PEL-Q[b]	Mean PEC-Q[b]	Mean ERM-Q[b]	PAH-ESBTU	NOC-ESBTU	PAH ESBTU + NOC ESBTU
Control Adjusted Survival < 80%	*M. americamysis*	Reliability	90% -- 85%	85% -- 90%	85% -- 85%	55%	40%	55%
	n=20	False Negative	13% -- 25%	13% -- 13%	13% -- 25%	0%	0%	0%
		False Positive	8% -- 8%	17% -- 8%	17% -- 8%	75%	100%	75%
		Threshold Number	5.15 -- 30.48	1.54 -- 6.07	5.56 -- 41.41	0.45	0	0.45
	A. abdita	Reliability	65%	65%	65%	75%	80%	75%
	n=20	False Negative	25%	25%	25%	13%	0%	13%
		False Positive	75%	75%	75%	75%	100%	75%
		Threshold Number	3.7	1.2	4.67	0.45	0	0.45
	N. arenaceodentata	Reliability	28%	31%	28%	50%	50%	44%
	n=36	False Negative	22%	22%	22%	22%	22%	22%
		False Positive	89%	85%	89%	59%	59%	67%
		Threshold Number	1.09	0.47	0.63	1.24	0.007	1.26
	All species ≠ N. arenaceodentata	Reliability	69%	70%	66%	51%	51%	51%
	n=83	False Negative	24%	24%	19%	21%	0%	21%
		False Positive	39%	37%	49%	78%	100%	78%
		Threshold Number	2.94	1.12	2.05	0.69	0	0.71

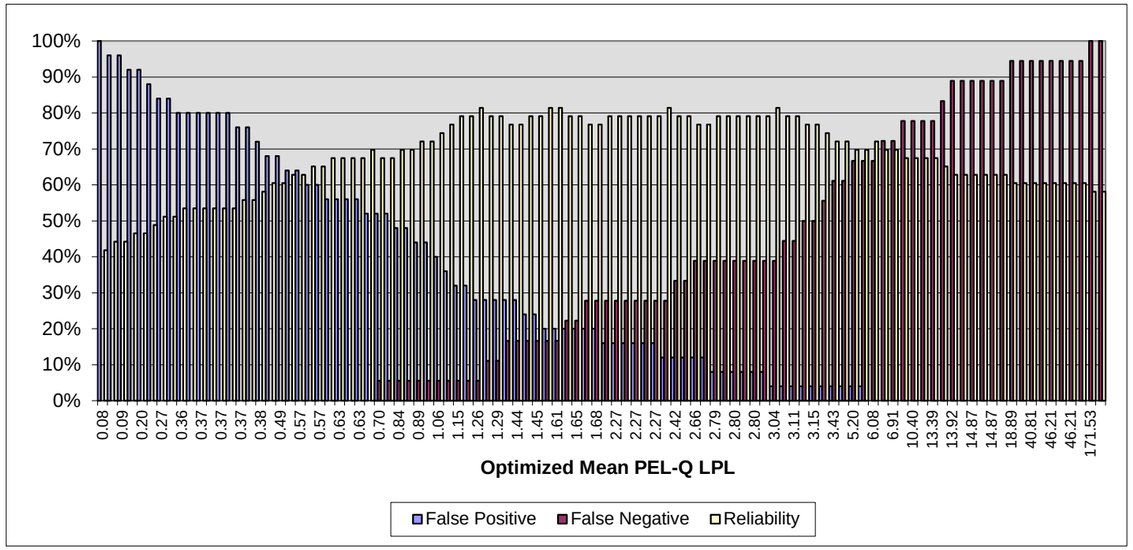
Notes:
a Acceptability criteria for predictive performance:
Reliability ≥ 75%
False negatives ≤ 25%
False positives ≤ 25%
b If the acceptability criteria could not be met at any threshold, the highest threshold that met the false negative acceptability criteria is provided.

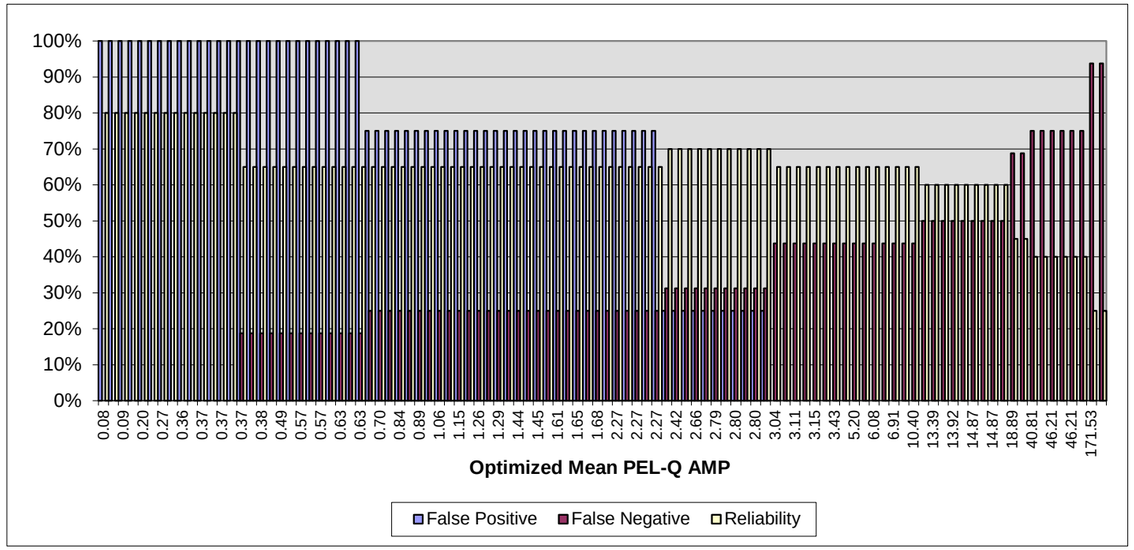
EXHIBIT E-1.1
GRAPHIC ANALYSIS OF BENTHIC RISK MODELS

Exhibit E-1.1
Graphical Analysis of Benthic Risk Models









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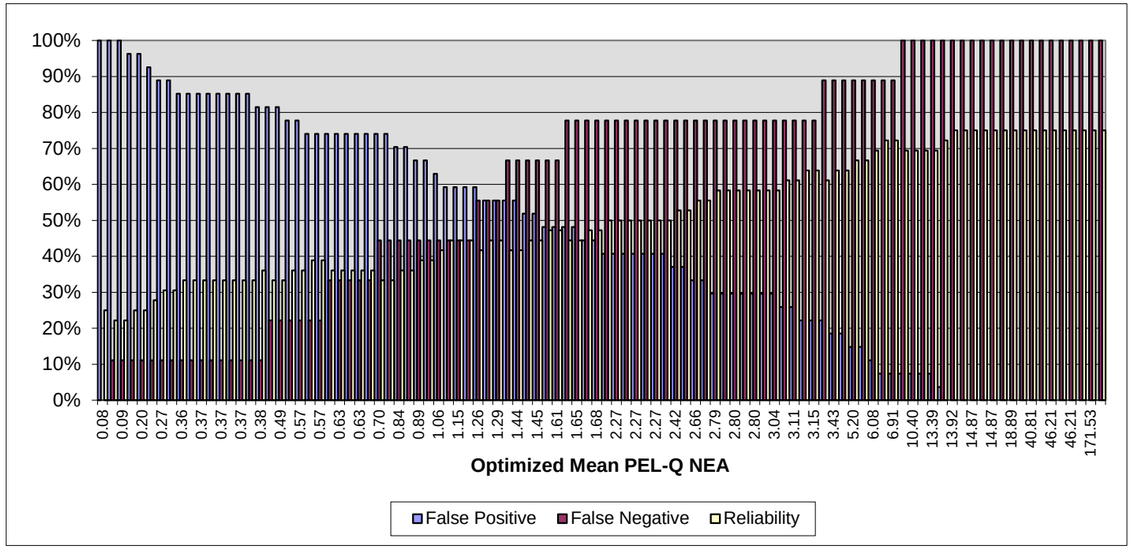

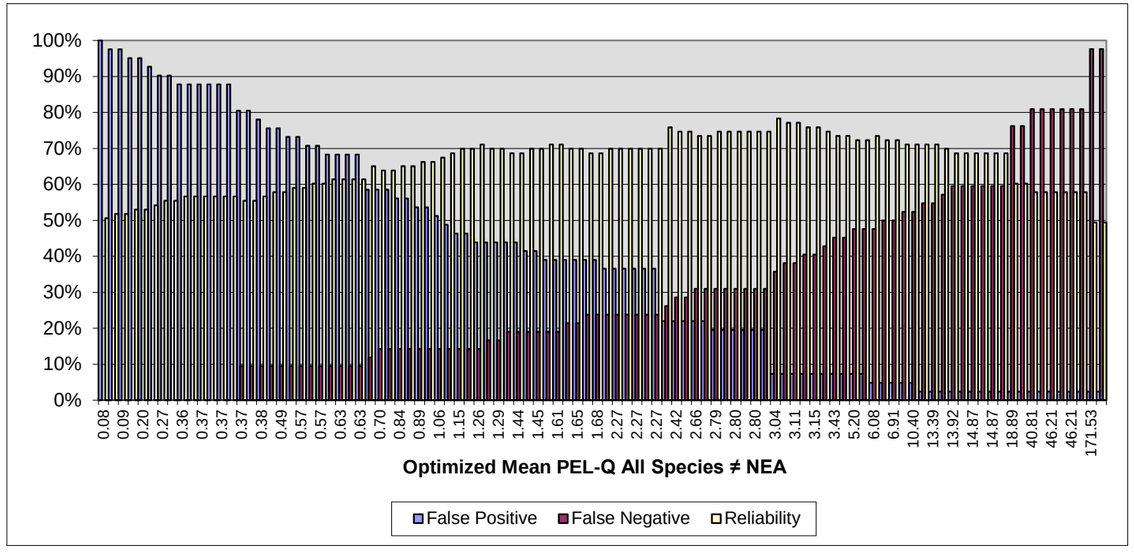

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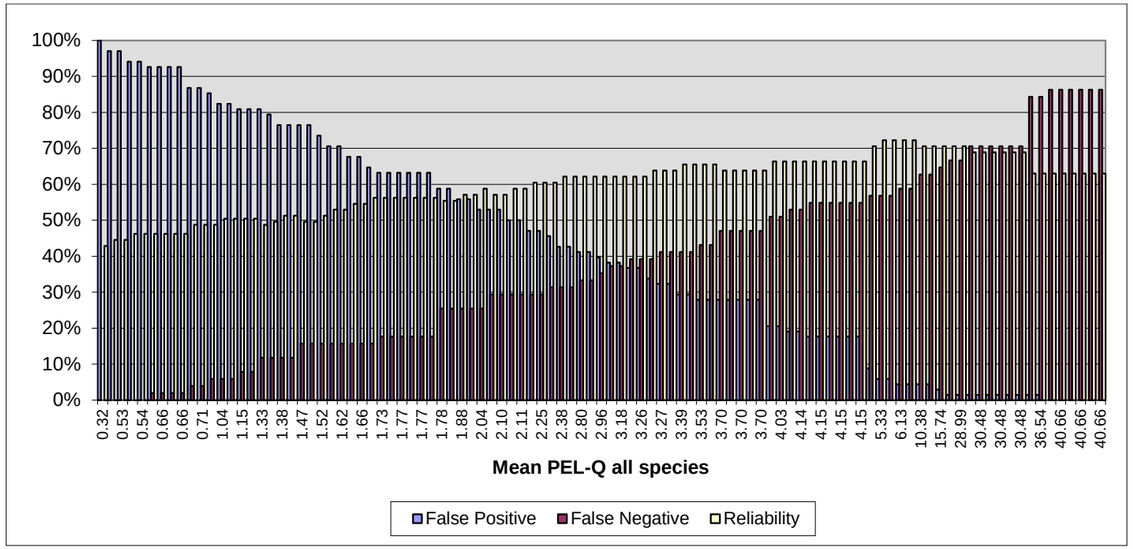

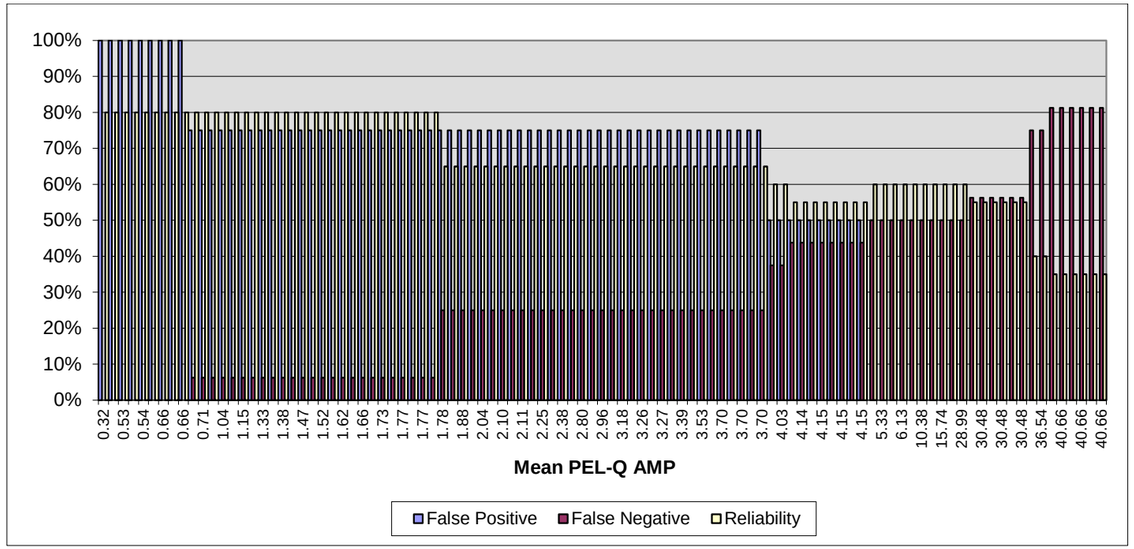

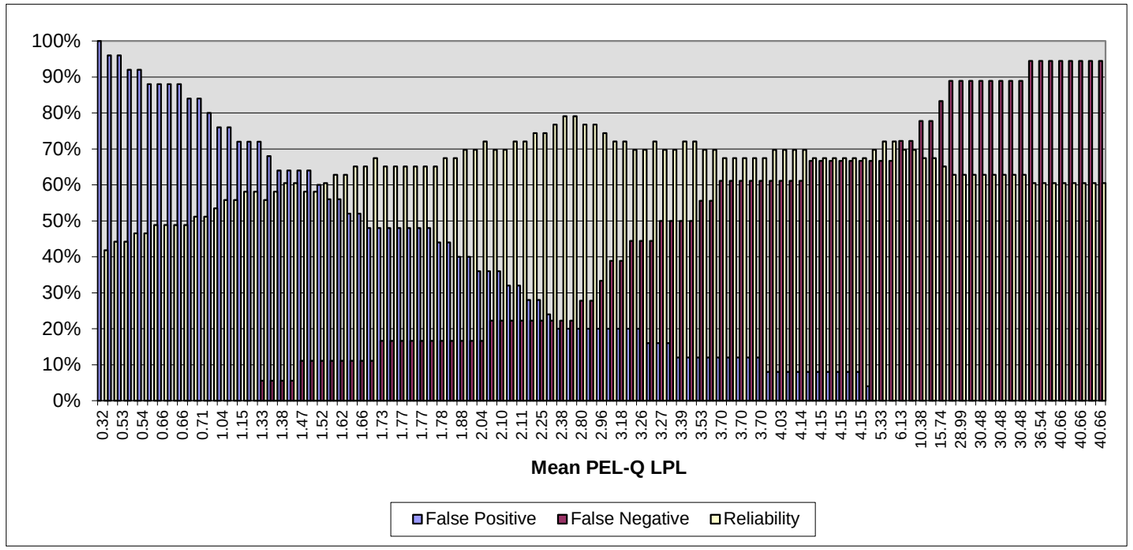

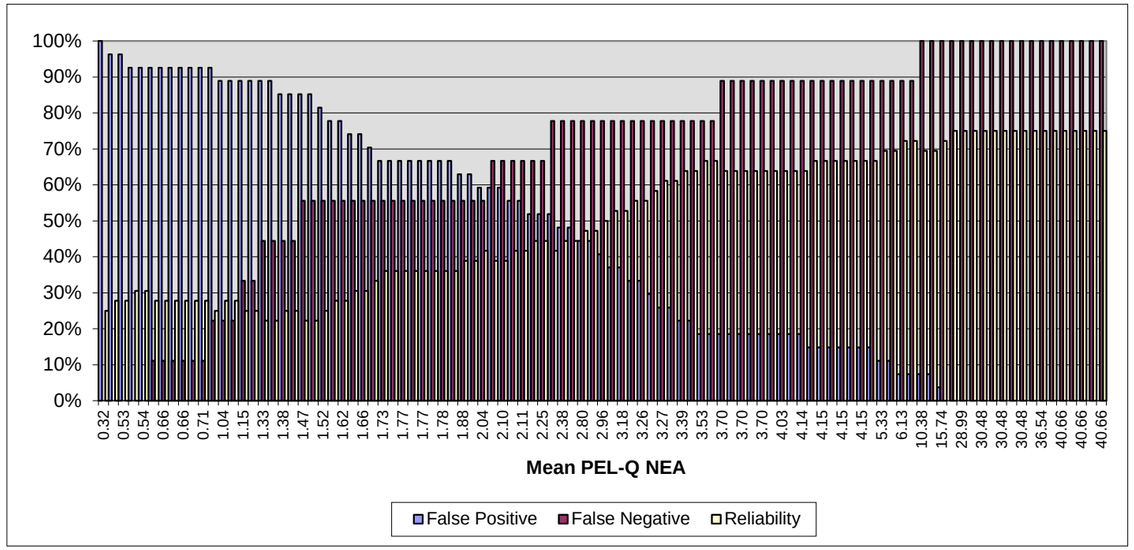

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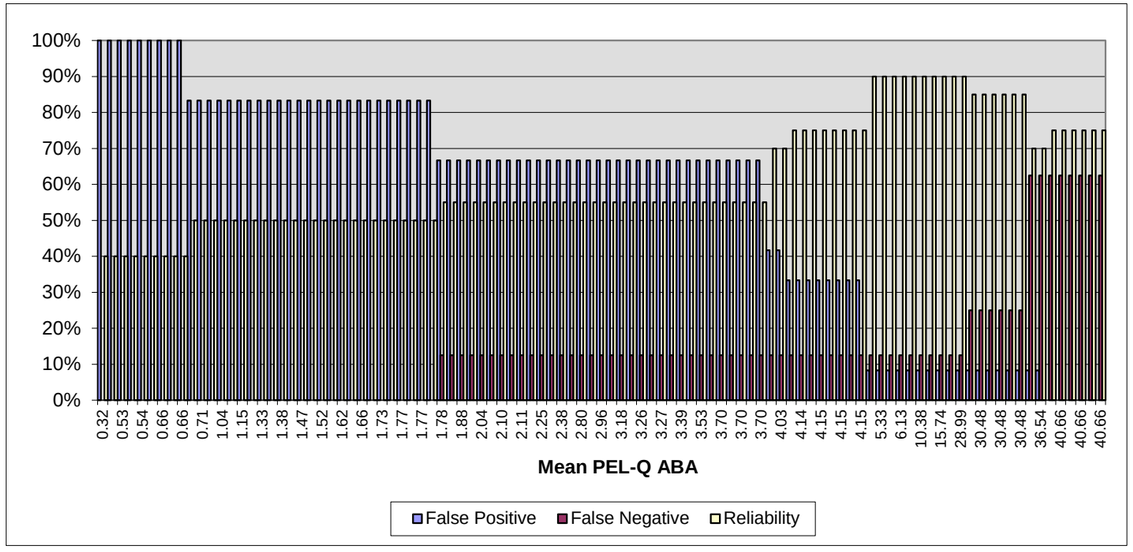

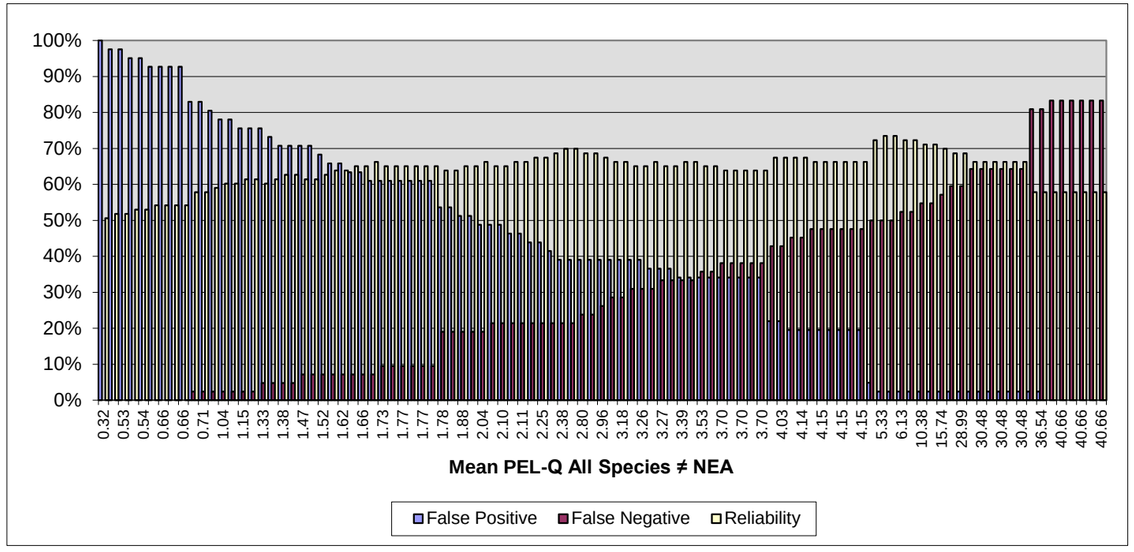

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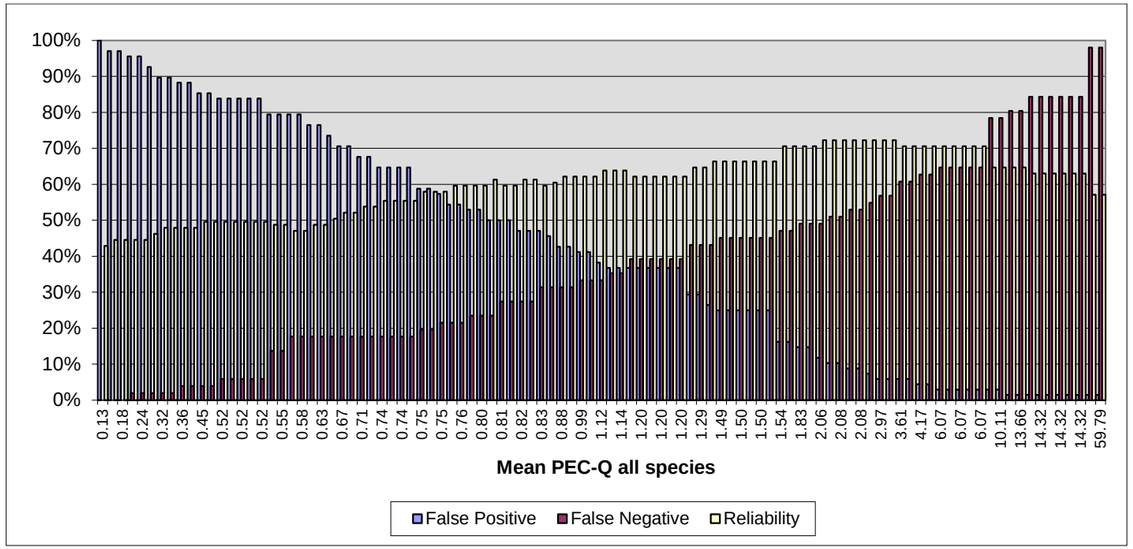

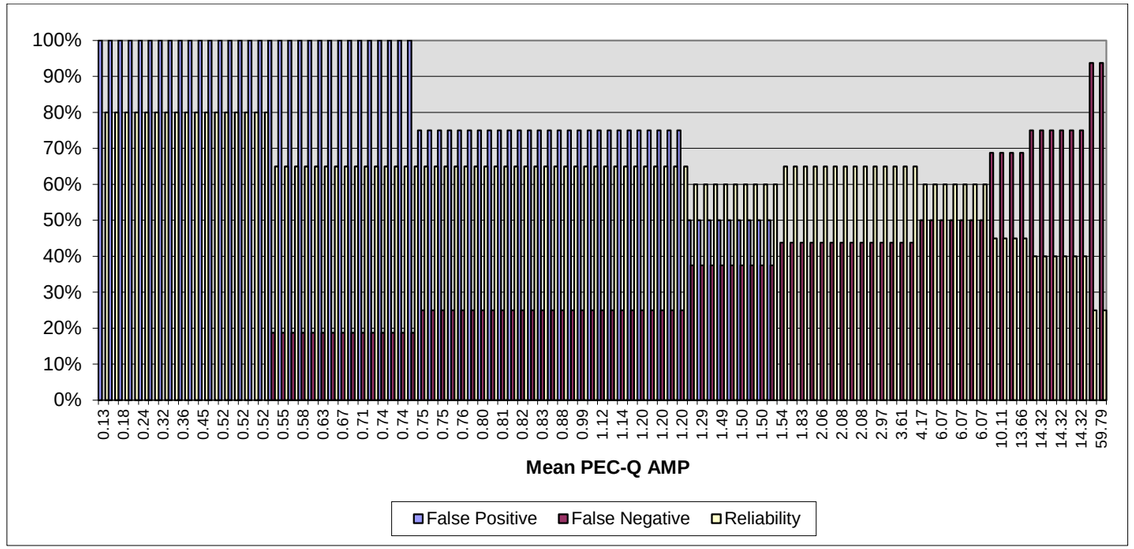

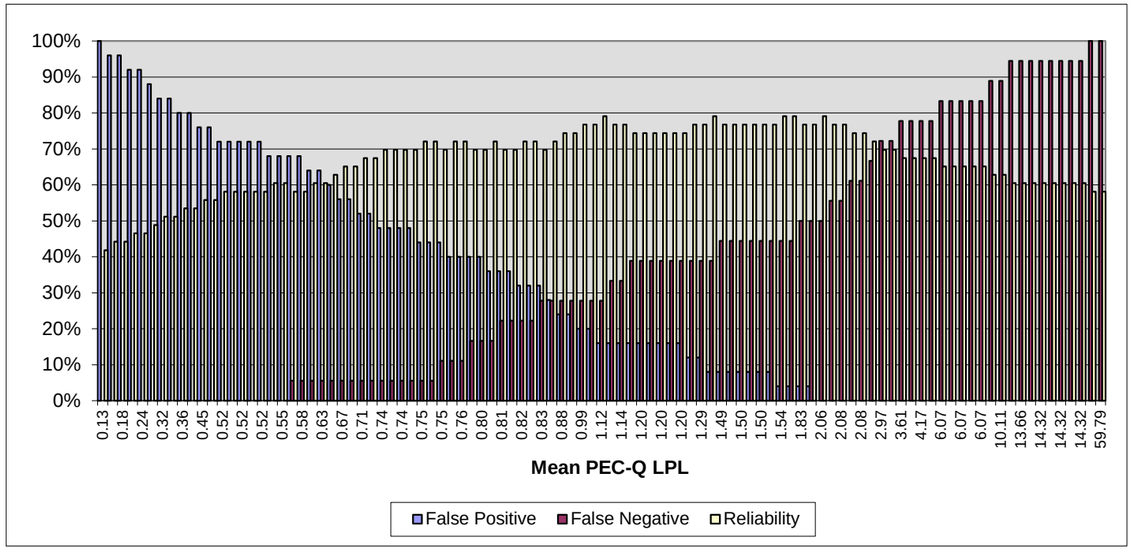

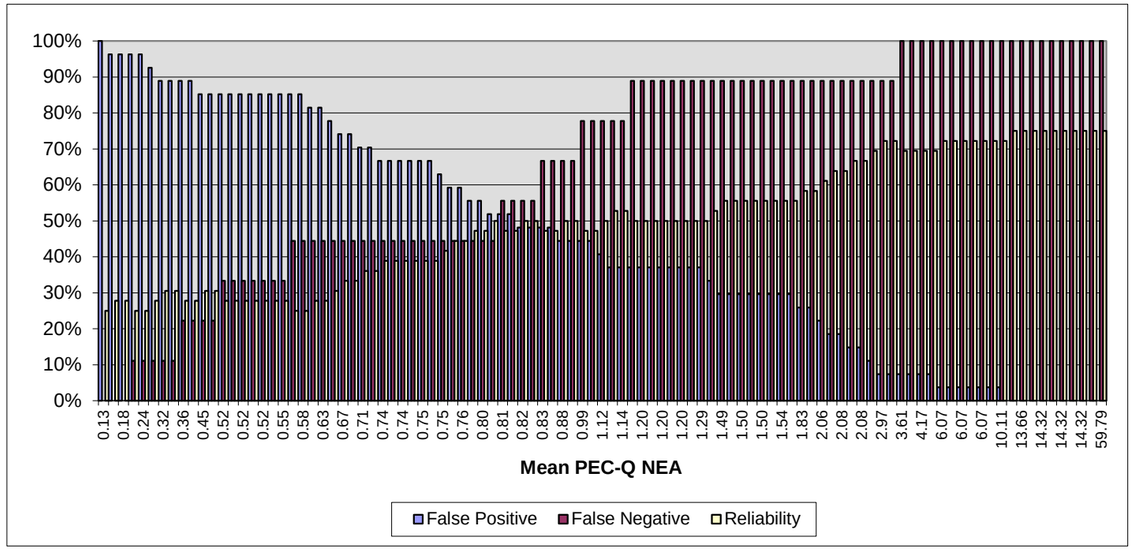

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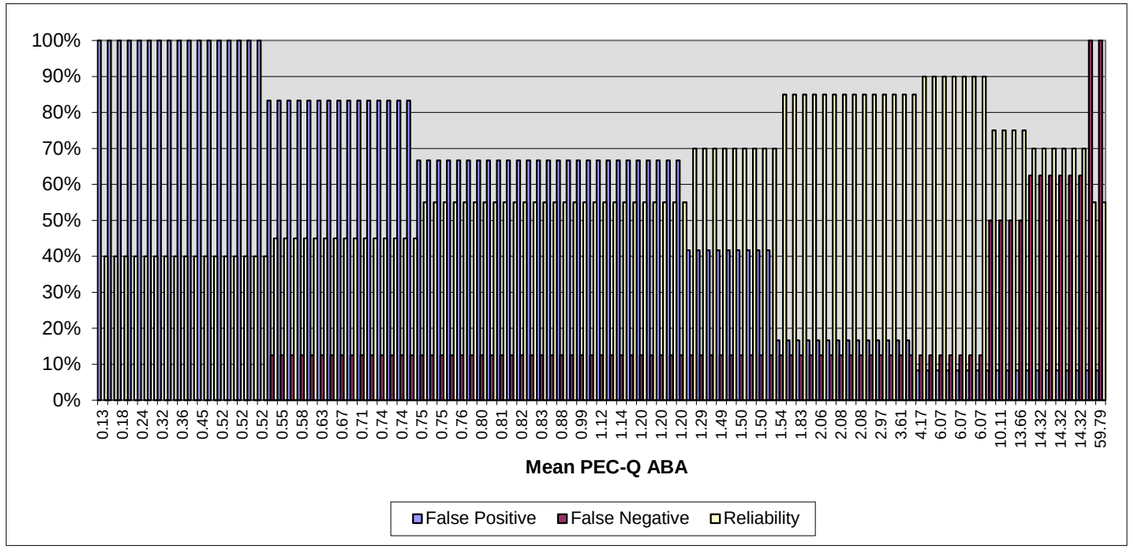

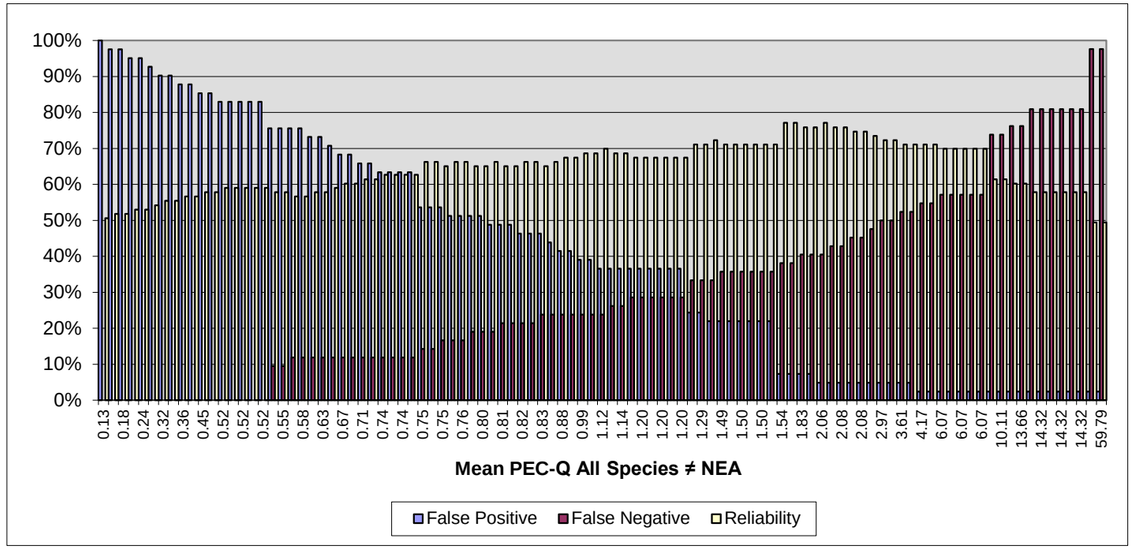

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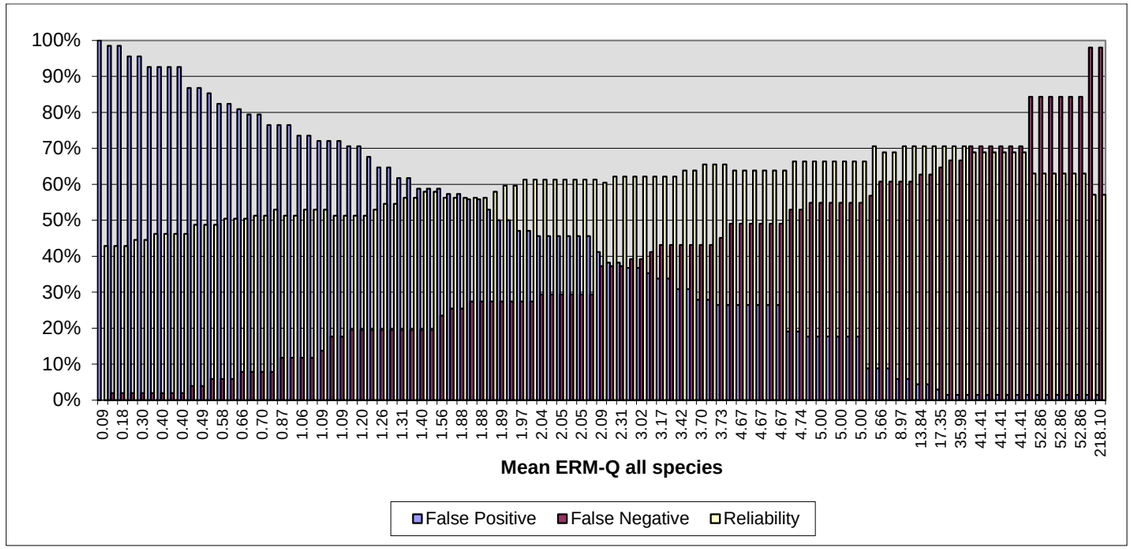

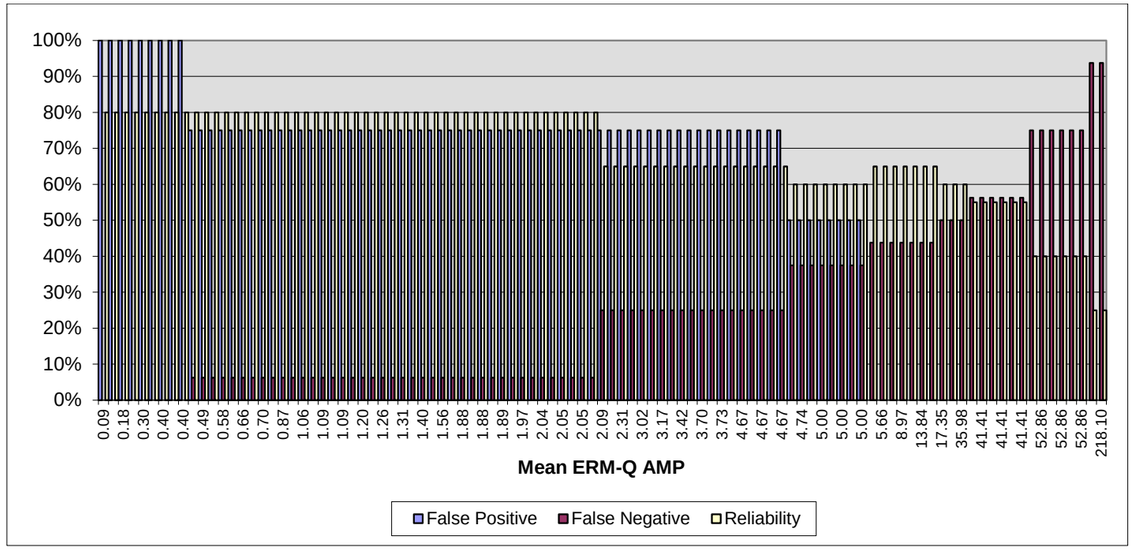

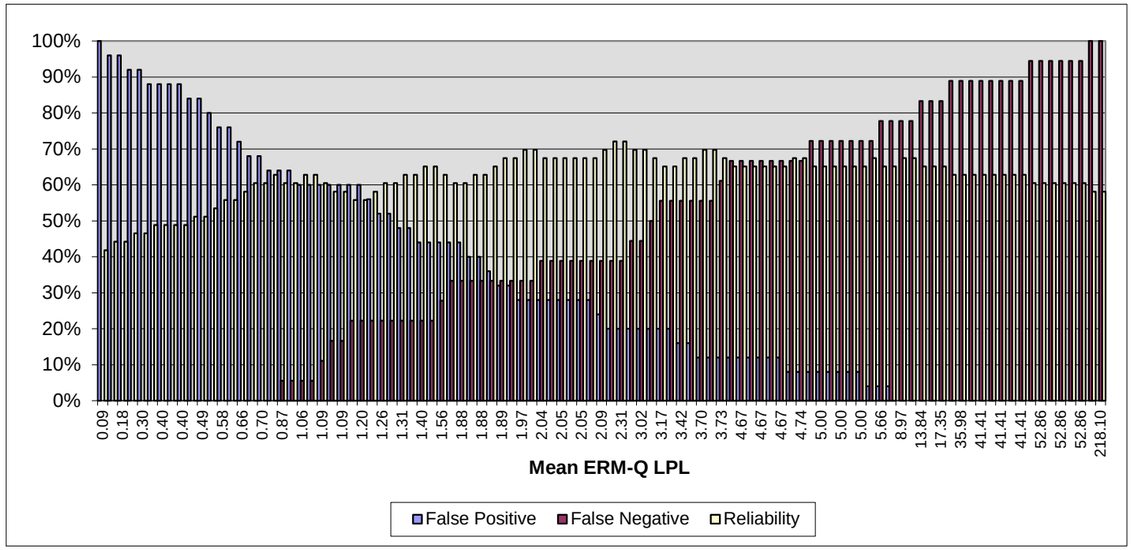

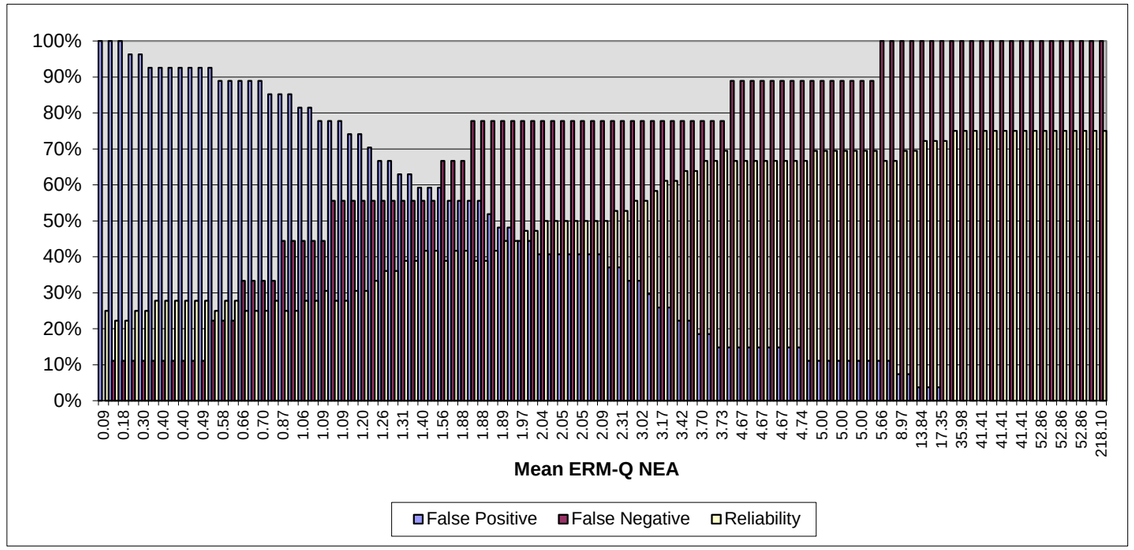

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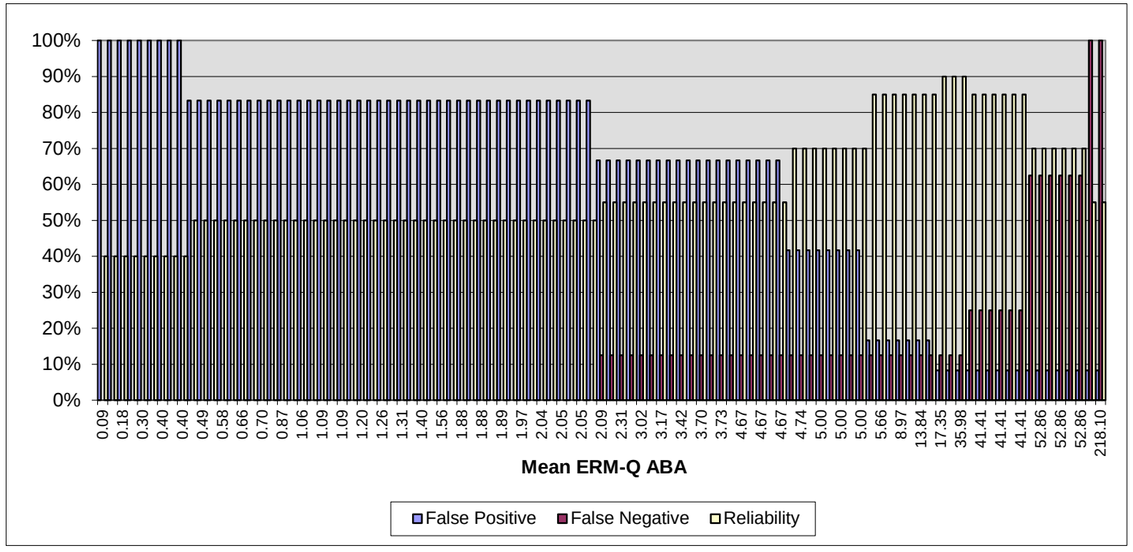

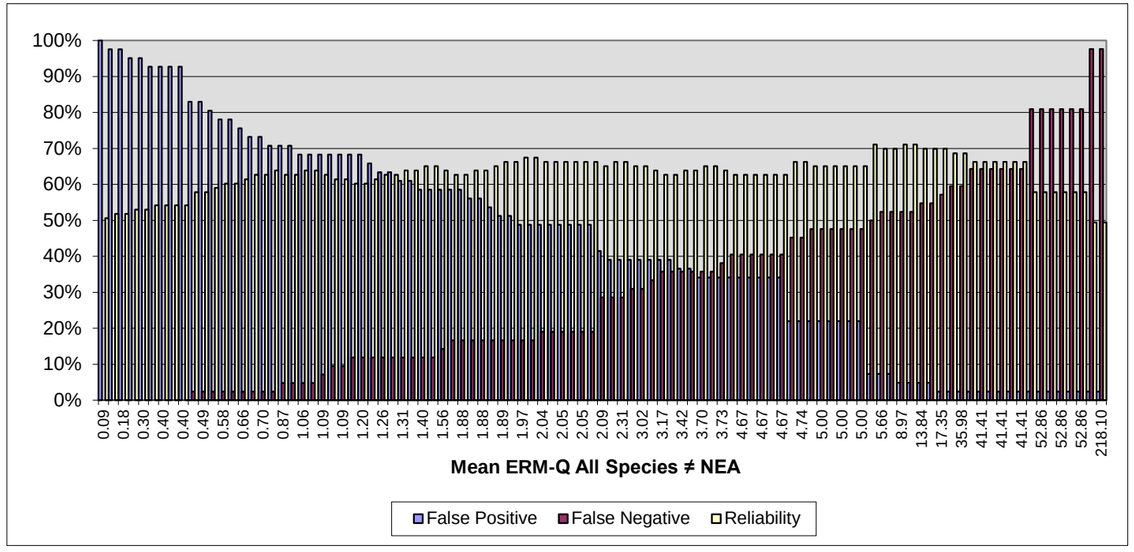

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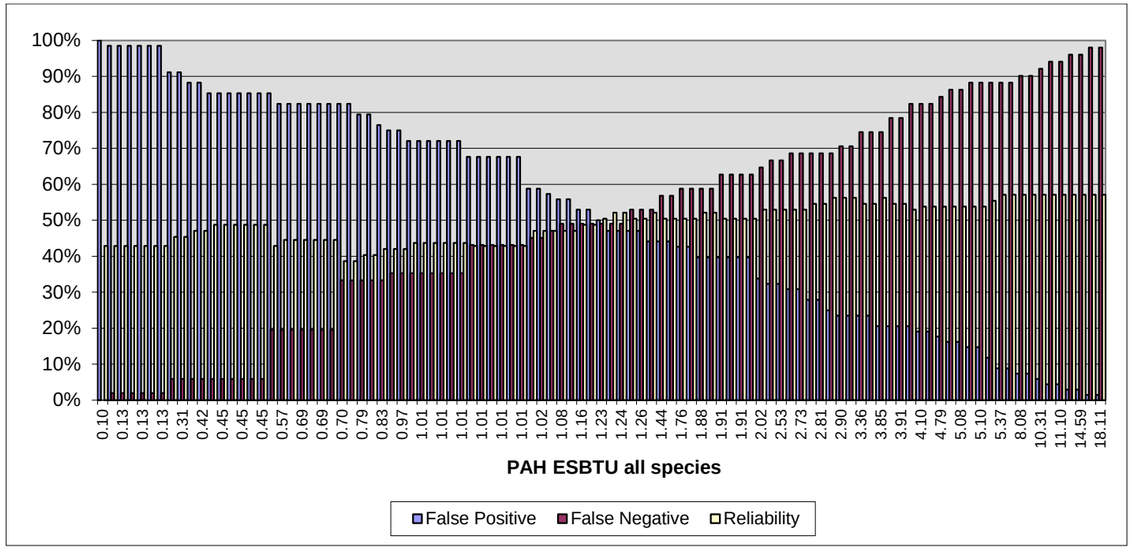

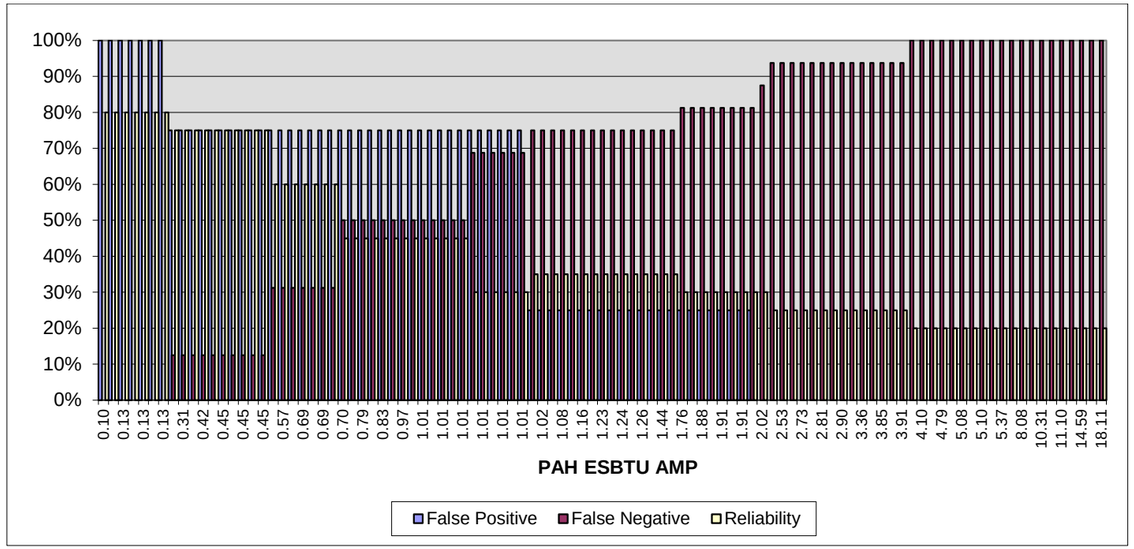

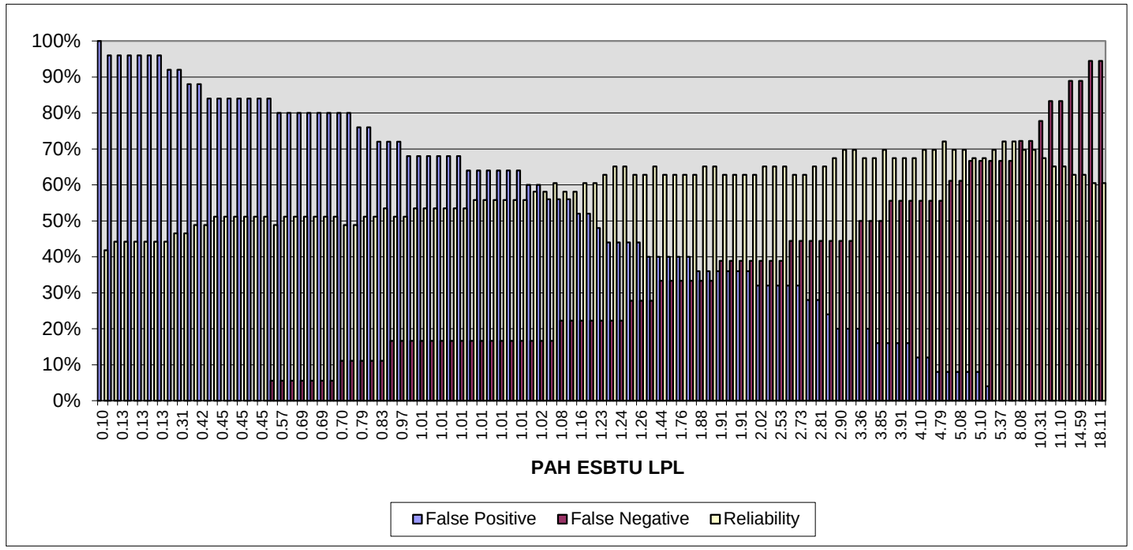

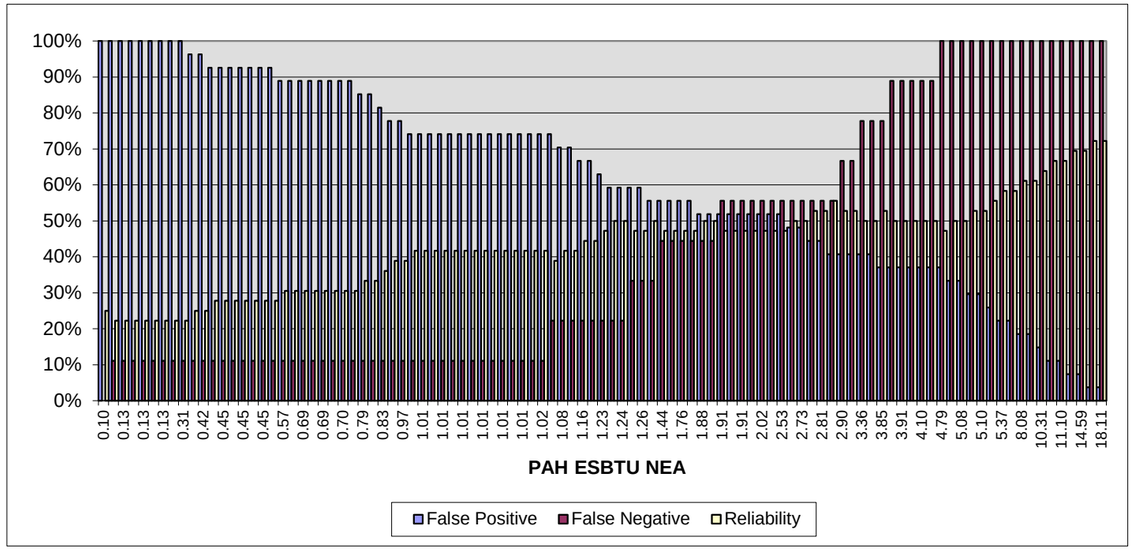

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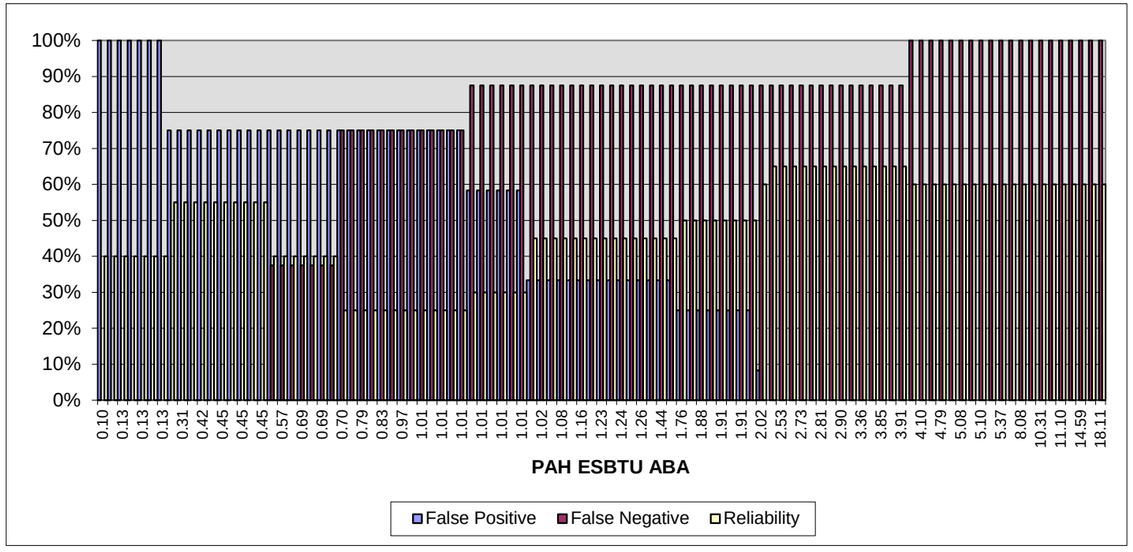

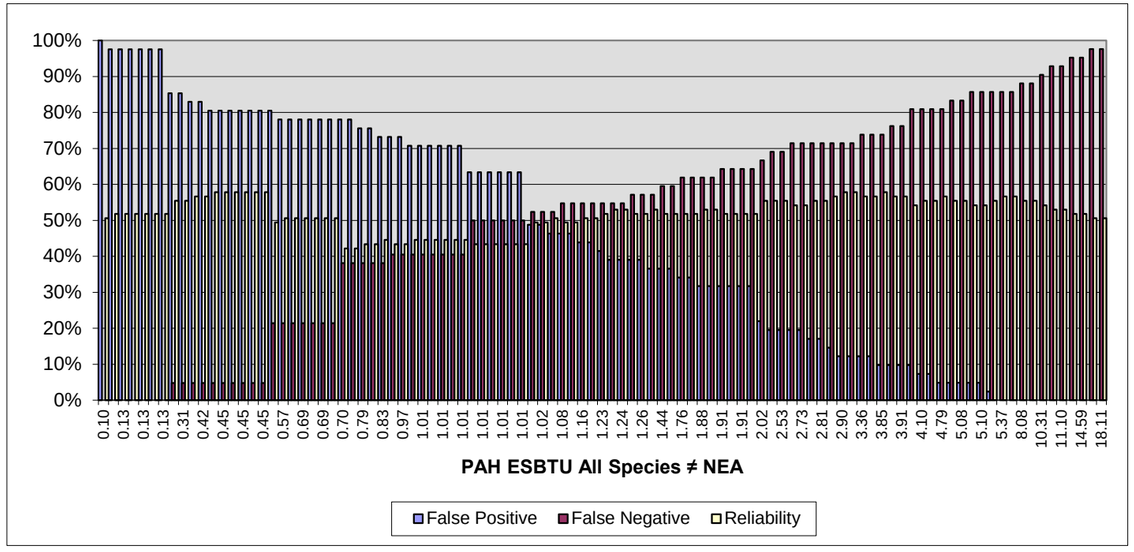

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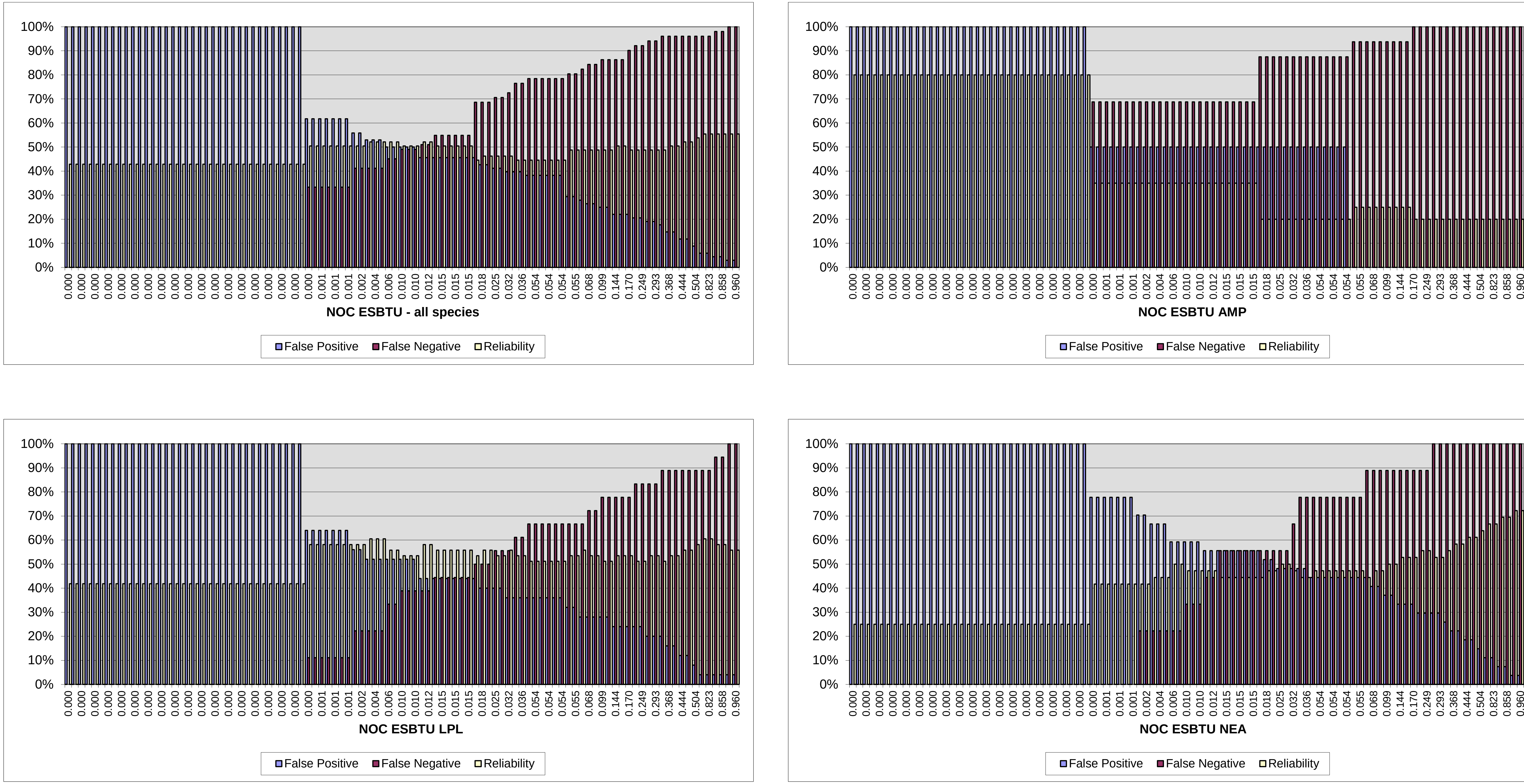

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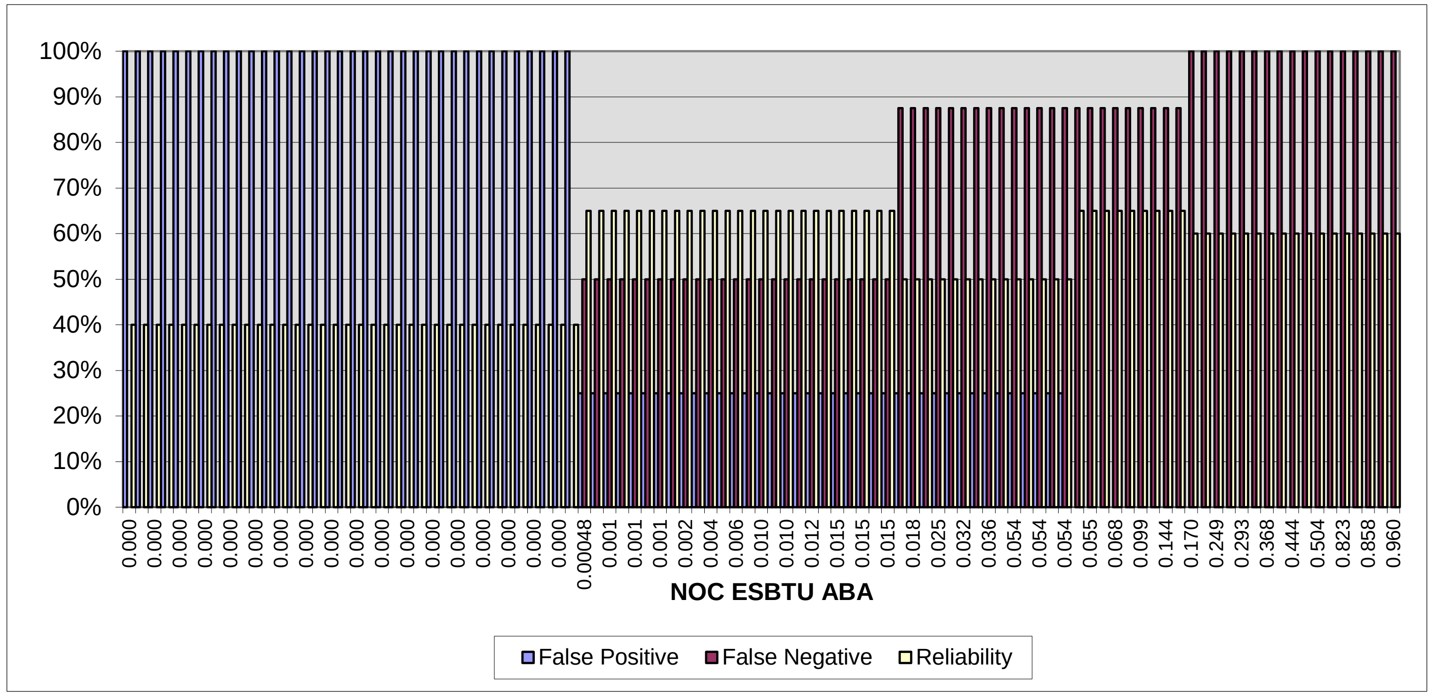

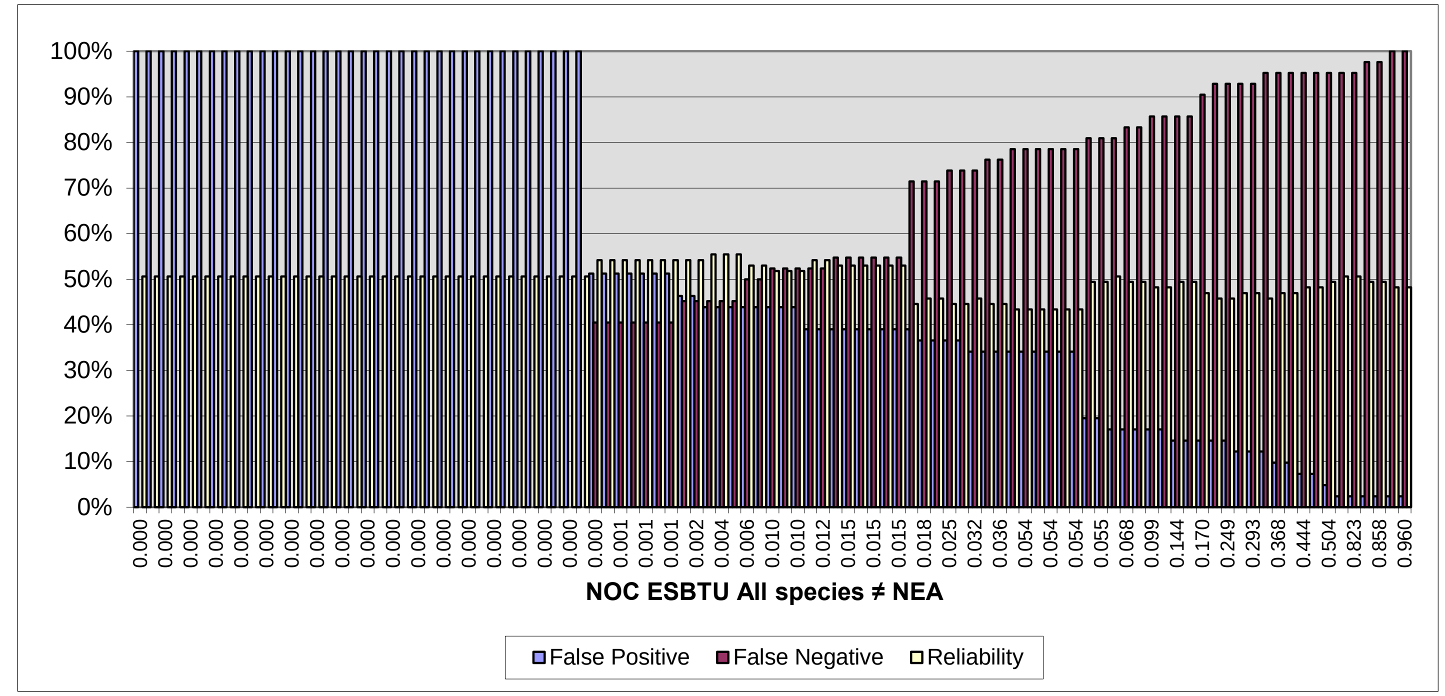

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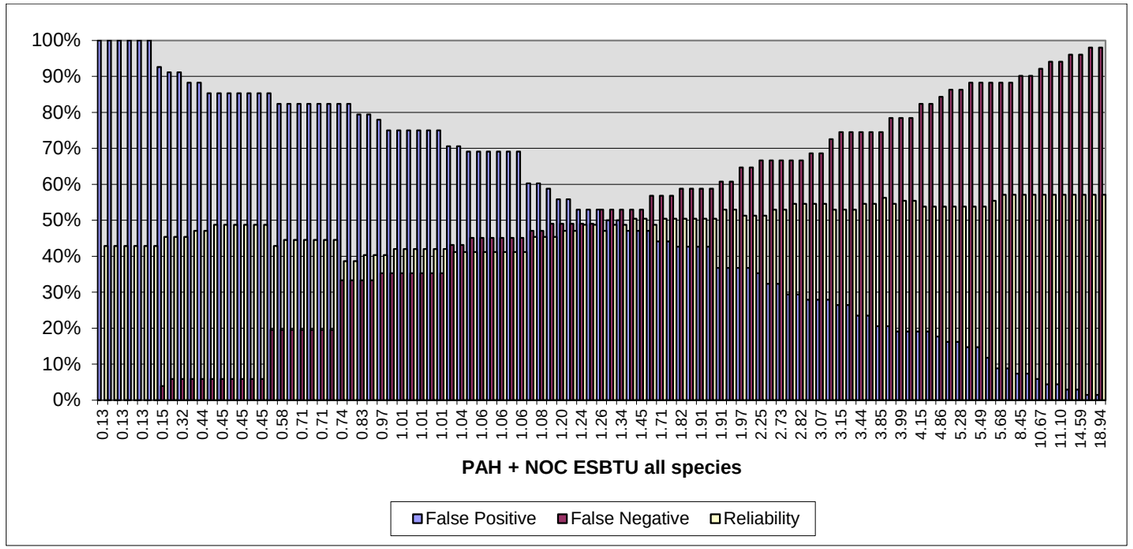

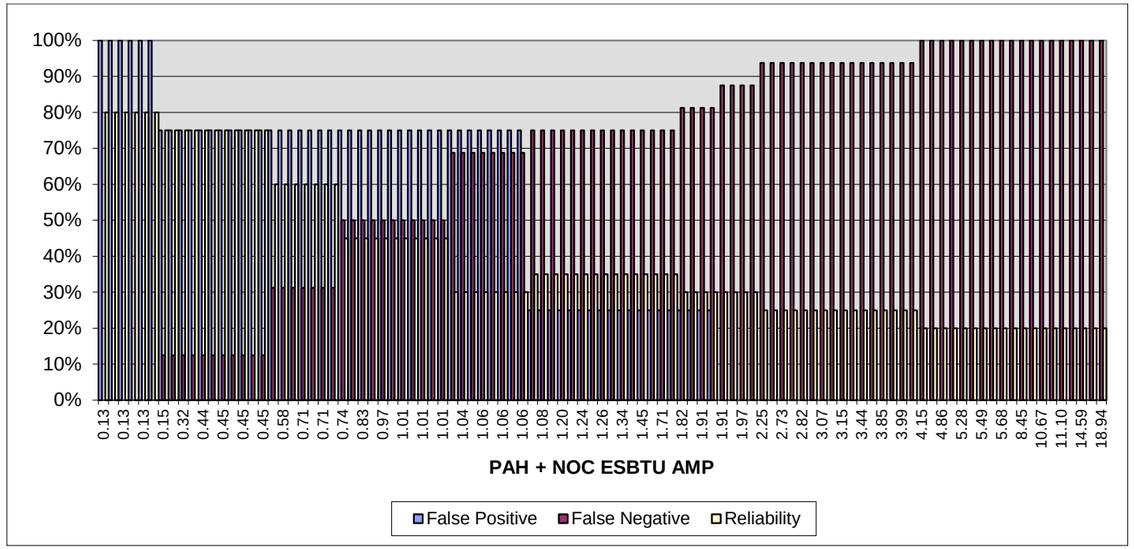

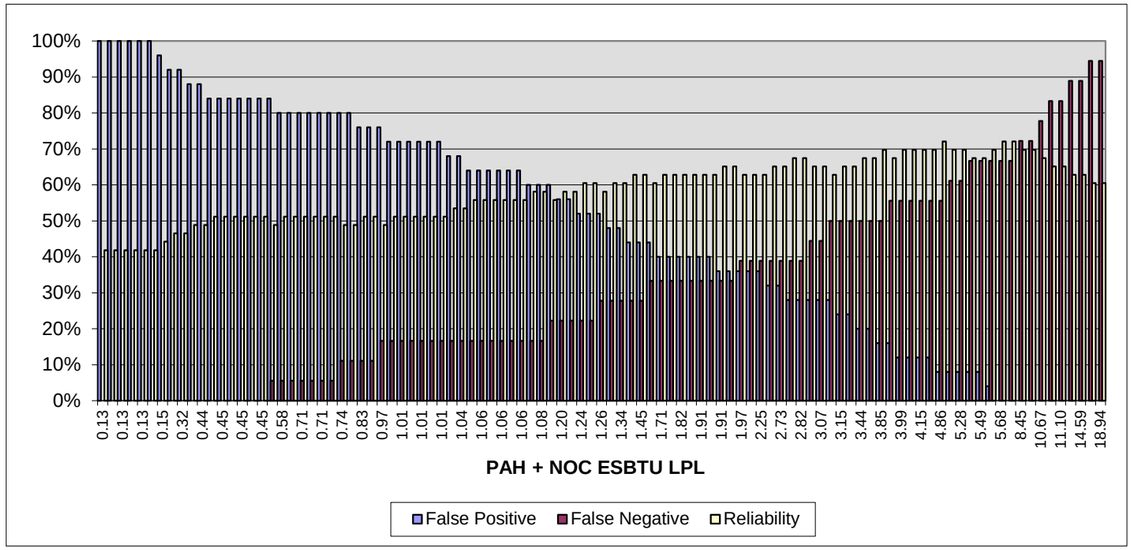

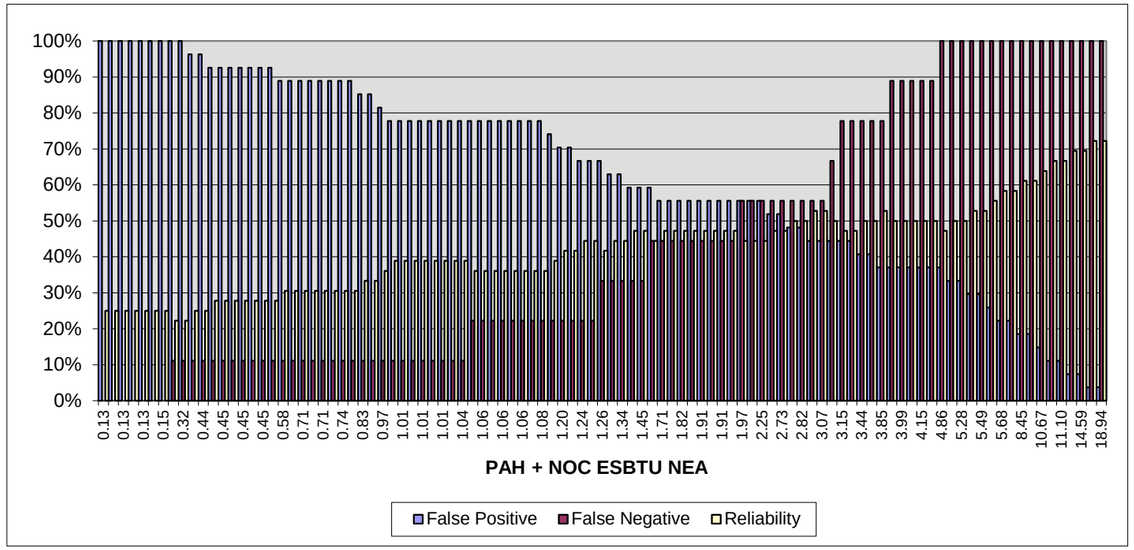

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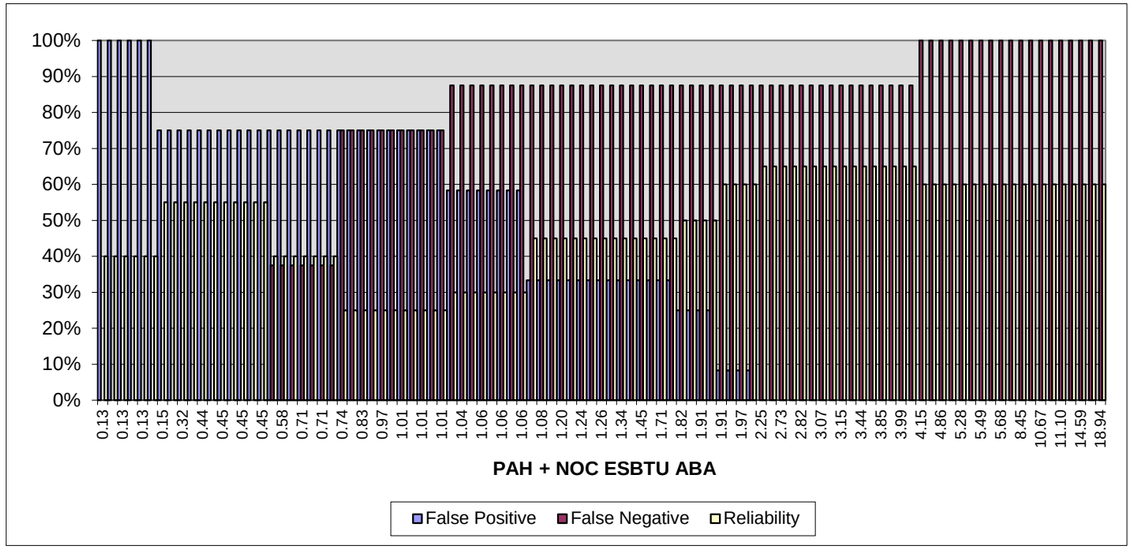

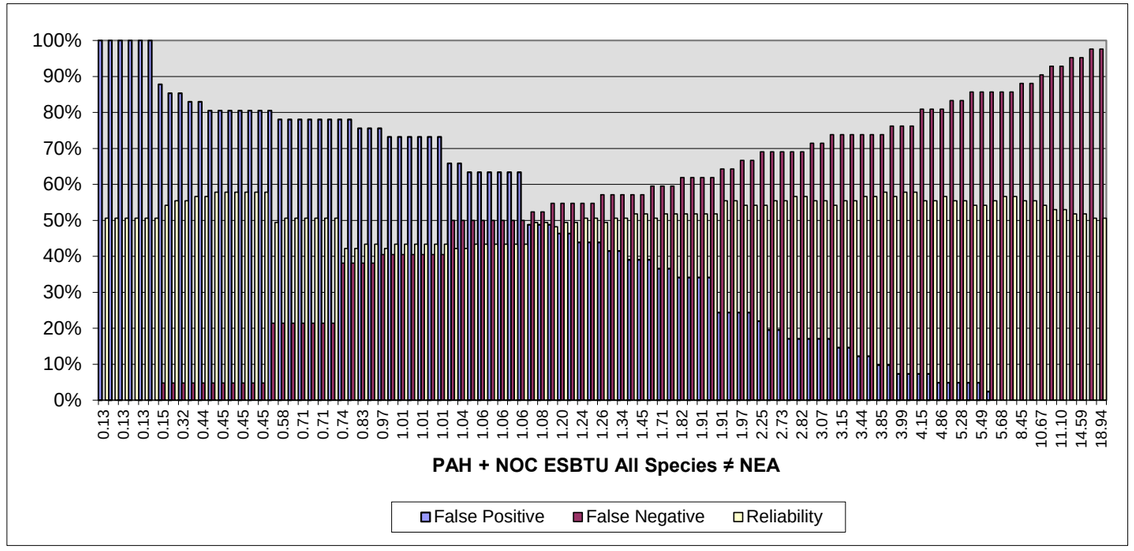

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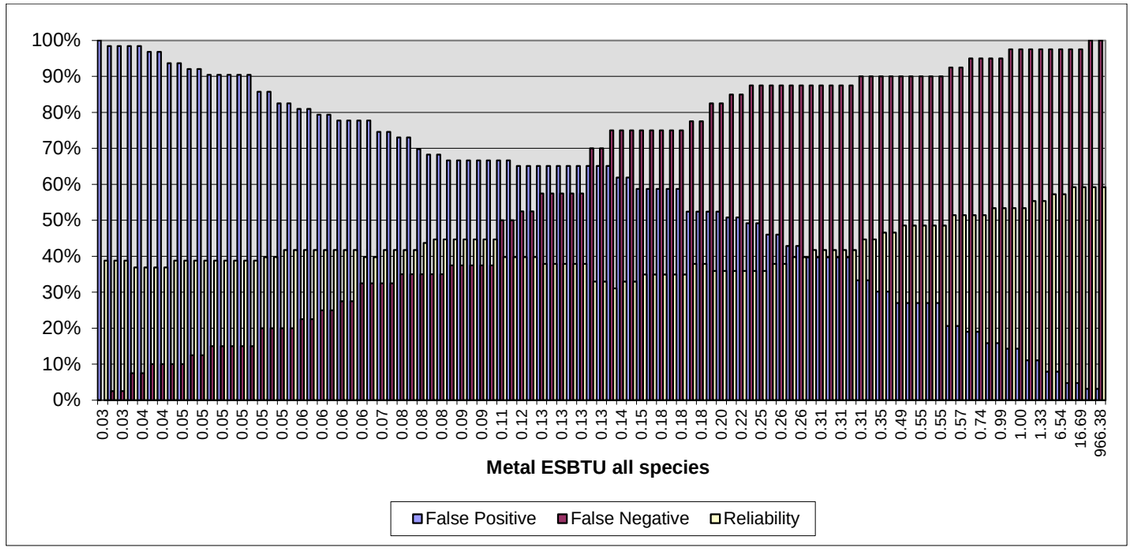

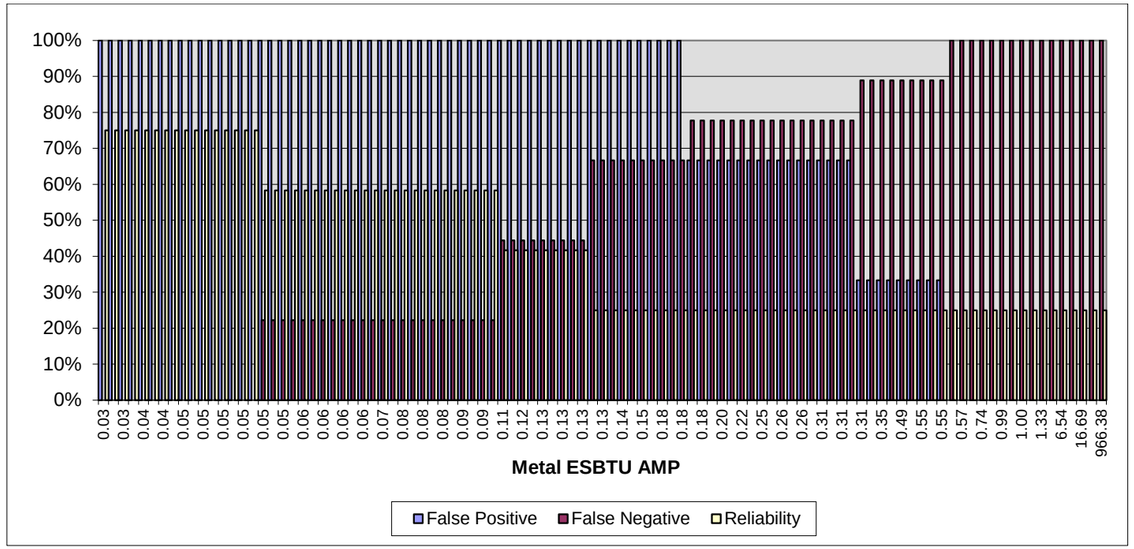

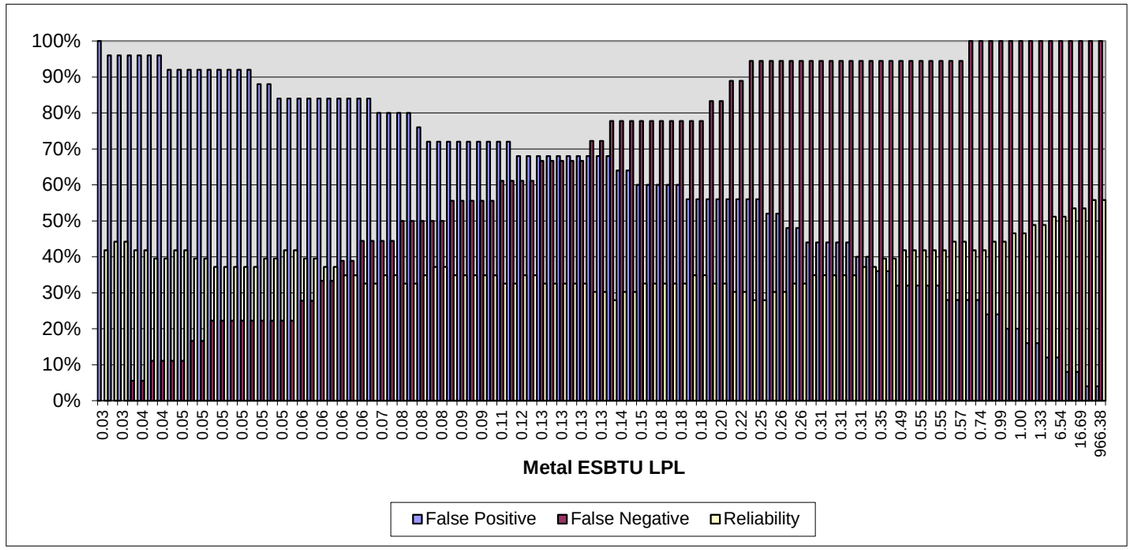

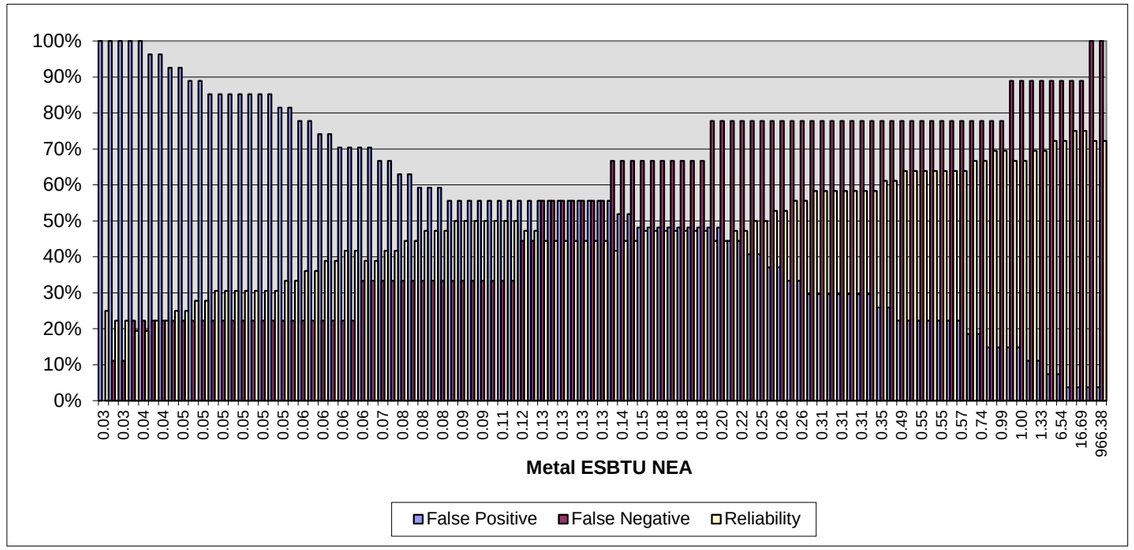

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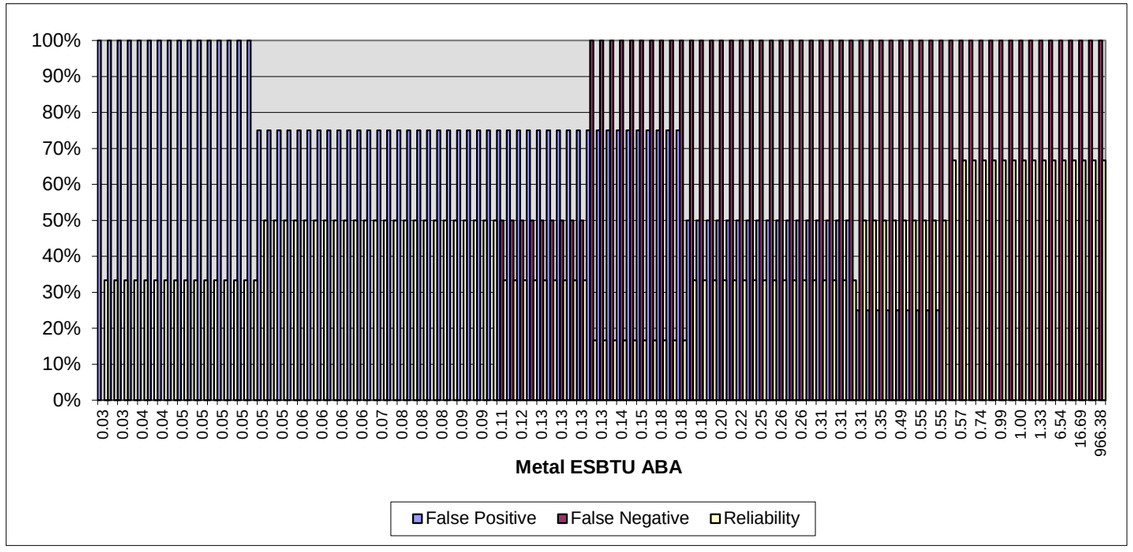


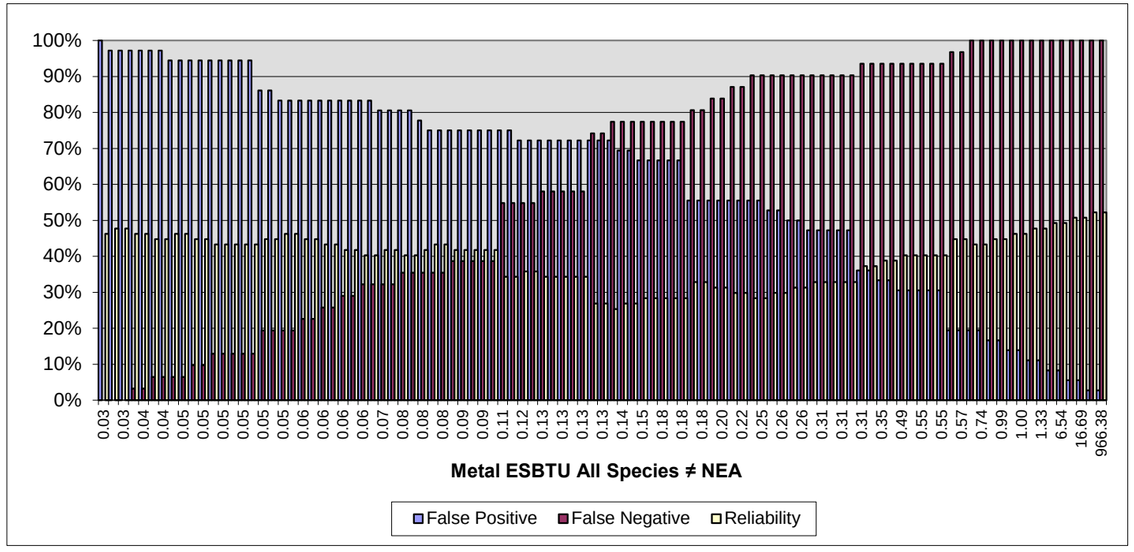


EXHIBIT E-1.2
HYPOTHESIS TESTING COPC WITHOUT SQGS

Exhibit E-1.2
Hypothesis Testing COPC Without SQGs

From File: C:\Users\jkase\Documents\AnchorQEA\Projects_Active\Patrick Bayou\Active\Task 01_02 BERA\Analysis\Benthic\Sediment models\Feb 2012 Evaluation\Individual COPC results for model worksheet for ProUCL.wst

Summary Statistics for Raw Data Sets With NDs Using Detected Data Only

				Raw Statistics Using Detected Observations							
Variable	**Num Ds**	**NumNDs**	**% NDs**	**Minimum**	**Maximum**	**Mean**	**Median**	**SD**	**MAD/0.675**	**Skewness**	**CV**
Ammonia (0)	2	0	0.00%	17.5	39.7	28.6	28.6	15.7	16.46	N/A	0.549
Ammonia (1)	2	0	0.00%	134	362	248	248	161.2	169	N/A	0.65
Barium (0)	25	0	0.00%	60.8	447	277.3	270	100.3	105.3	-0.101	0.362
Barium (1)	18	0	0.00%	218	23500	1700	365.5	5443	155.7	4.235	3.201
Hexachlorobenzene (0)	15	10	40.00%	13.8	201000	32934	3400	58847	5020	2.201	1.787
Hexachlorobenzene (1)	12	6	33.33%	39.9	8790	2176	579.4	2953	798.3	1.407	1.357
Hexachlorobutadiene (0)	13	12	48.00%	57.8	222000	32940	7260	64051	10678	2.629	1.944
Hexachlorobutadiene (1)	10	8	44.44%	55.7	23300	5416	425.2	8026	522.5	1.549	1.482
Benzidine (0)	6	19	76.00%	103	503	261.5	187	169.7	94.89	0.834	0.649
Benzidine (1)	10	8	44.44%	119	27000	3148	464	8387	480.4	3.154	2.664
bis(2-Chloroisopropyl) ether (0)	10	15	60.00%	0.257	410	88.07	36.1	126.4	29.68	2.233	1.435
bis(2-Chloroisopropyl) ether (1)	13	5	27.78%	12.4	3320	661.4	417	957.8	511.5	2.214	1.448
Total Xylene (0)	0	21	100.00%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Xylene (1)	4	12	75.00%	11	1900	771.3	587	841.6	664.2	0.976	1.091
Isopropylbenzene (Cumene) (0)	3	18	85.71%	15	22.9	18.3	17	4.107	2.965	1.282	0.224
Isopropylbenzene (Cumene) (1)	8	8	50.00%	25.4	29000	7282	1620	11730	2248	1.489	1.611
n-Butylbenzene (0)	0	21	100.00%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
n-Butylbenzene (1)	2	14	87.50%	176	699	437.5	437.5	369.8	387.7	N/A	0.845
n-Propylbenzene (0)	0	21	100.00%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
n-Propylbenzene (1)	4	12	75.00%	66	1400	529	325	605.1	299.5	1.561	1.144
sec-Butylbenzene (0)	0	21	100.00%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
sec-Butylbenzene (1)	4	12	75.00%	10	383	147.9	99.35	162.5	73.39	1.572	1.098
tert-Butylbenzene (0)	0	21	100.00%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
tert-Butylbenzene (1)	3	13	81.25%	40.9	1160	436.3	108	627.6	99.48	1.71	1.439

NOTES:

Number in parenthesis after chemical name denotes toxic and non-toxic datasets based on L. plumulosus survival; (0) = nontoxic, (1) = toxic

Exhibit E-1.2
Hypothesis Testing COPC Without SQGs

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options

From File	C:\Users\jkase\Documents\AnchorQEA\Projects_Active\Patrick Bayou\Active\Task 01_02 BERA\Analysis\Benthic\Sediment models\Feb 2012 Evaluation\Individual COPC results for model worksheet for ProUCL.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Barium(1)

Background Data: Barium(0)

Raw Statistics

	Site	Background
Number of Valid Observations	18	25
Number of Distinct Observations	18	25
Minimum	218	60.8
Maximum	23500	447
Mean	1700	277.3
Median	365.5	270
SD	5443	100.3
SE of Mean	1283	20.07

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	503.5
WMW Test U-Stat	2.634
WMW Critical Value (0.050)	1.645
P-Value	0.00422

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

P-Value < alpha (0.05)

Exhibit E-1.2
Hypothesis Testing COPC Without SQGs

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	C:\Users\jkase\Documents\AnchorQEA\Projects_Active\Patrick Bayou\Active\Task 01_02 BERA\Analysis\Benthic\Sediment models\Feb 2012 Evaluation\Individual COPC results for model worksheet for ProUCL.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference (S)	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Benzidine(1)

Background Data: Benzidine(0)

Raw Statistics

	Site	Background
Number of Valid Data	18	25
Number of Non-Detect Data	8	19
Number of Detect Data	10	6
Minimum Non-Detect	41.9	31
Maximum Non-Detect	417	408
Percent Non detects	44.44%	76.00%
Minimum Detected	119	103
Maximum Detected	27000	503
Mean of Detected Data	3148	261.5
Median of Detected Data	464	187
SD of Detected Data	8387	169.7

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 417 (Max DL) are ranked the same

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	456
WMW Test U-Stat	1.465
WMW Critical Value (0.050)	1.645
P-Value	0.0715

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Exhibit E-1.2
Hypothesis Testing COPC Without SQGs

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	C:\Users\jkase\Documents\AnchorQEA\Projects_Active\Patrick Bayou\Active\Task 01_02 BERA\Analysis\Benthic\Sediment models\Feb 2012 Evaluation\Individual COPC results for model worksheet for ProUCL.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference (S)	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: bis(2-Chloroisopropyl) ether(1)

Background Data: bis(2-Chloroisopropyl) ether(0)

Raw Statistics

	Site	Background
Number of Valid Data	18	25
Number of Non-Detect Data	5	15
Number of Detect Data	13	10
Minimum Non-Detect	16.4	12.1
Maximum Non-Detect	417	660
Percent Non detects	27.78%	60.00%
Minimum Detected	12.4	0.257
Maximum Detected	3320	410
Mean of Detected Data	661.4	88.07
Median of Detected Data	417	36.1
SD of Detected Data	957.8	126.4

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 660 (Max DL) are ranked the same

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	446
WMW Test U-Stat	1.219
WMW Critical Value (0.050)	1.645
P-Value	0.111

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Exhibit E-1.2
Hypothesis Testing COPC Without SQGs

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

HCB	C:\Users\jkase\Documents\AnchorQEA\Projects_Active\Patrick Bayou\Active\Task 01_02 BERA\Analysis\Benthic\Sediment models\Feb 2012 Evaluation\Individual COPC results for model worksheet for ProUCL.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference (S)	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Hexachlorobenzene(1)

Background Data: Hexachlorobenzene(0)

Raw Statistics

	Site	Background
Number of Valid Data	18	25
Number of Non-Detect Data	6	10
Number of Detect Data	12	15
Minimum Non-Detect	377	24.9
Maximum Non-Detect	417	400
Percent Non detects	33.33%	40.00%
Minimum Detected	39.9	13.8
Maximum Detected	8790	201000
Mean of Detected Data	2176	32934
Median of Detected Data	579.4	3400
SD of Detected Data	2953	58847

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 417 (Max DL) are ranked the same

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	364
WMW Test U-Stat	-0.8
WMW Critical Value (0.050)	1.645
P-Value	0.212

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Exhibit E-1.2
Hypothesis Testing COPC Without SQGs

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	C:\Users\jkase\Documents\AnchorQEA\Projects_Active\Patrick Bayou\Active\Task 01_02 BERA\Analysis\Benthic\Sediment models\Feb 2012 Evaluation\Individual COPC results for model worksheet for ProUCL.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference (S)	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Hexachlorobutadiene(1)

Background Data: Hexachlorobutadiene(0)

Raw Statistics

	Site	Background
Number of Valid Data	18	25
Number of Non-Detect Data	8	12
Number of Detect Data	10	13
Minimum Non-Detect	27.6	20.5
Maximum Non-Detect	417	408
Percent Non detects	44.44%	48.00%
Minimum Detected	55.7	57.8
Maximum Detected	23300	222000
Mean of Detected Data	5416	32940
Median of Detected Data	425.2	7260
SD of Detected Data	8026	64051

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 417 (Max DL) are ranked the same

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	345.5
WMW Test U-Stat	-1.256
WMW Critical Value (0.050)	1.645
P-Value	0.105

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Exhibit E-1.2
Hypothesis Testing COPC Without SQGs

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	C:\Users\jkase\Documents\AnchorQEA\Projects_Active\Patrick Bayou\Active\Task 01_02 BERA\Analysis\Benthic\Sediment models\Feb 2012 Evaluation\Individual COPC results for model worksheet for ProUCL.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference (S)	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Silver(1)

Background Data: Silver(0)

Raw Statistics

	Site	Background
Number of Valid Data	18	25
Number of Non-Detect Data	0	2
Number of Detect Data	18	23
Minimum Non-Detect	N/A	0.0695
Maximum Non-Detect	N/A	0.0745
Percent Non detects	0.00%	8.00%
Minimum Detected	0.173	0.0739
Maximum Detected	1.53	1.57
Mean of Detected Data	0.612	0.402
Median of Detected Data	0.579	0.269
SD of Detected Data	0.349	0.358

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 0.0745 (Max DL) are ranked the same

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	506.5
WMW Test U-Stat	2.708
WMW Critical Value (0.050)	1.645
P-Value	0.00338

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

P-Value < alpha (0.05)

APPENDIX E-2
DATA AND CALCULATIONS FOR THE BENTHIC TOXICITY LINE OF EVIDENCE

Appendix E-2.1
Sediment Toxicity Data Evaluated in Benthic Risk Assessment

Location	Data Source[a]	Sample Date	Percent Control Adjusted Survival				Number of Toxic Results[b]	Number of Bioassay Tests	Proportion Toxic[c]
			Americamysis bahia	*Ampelisca abdita*	*Leptocheirus plumulosus*	*Neanthes arenaceodentata*			
2.5	TMDL	Sep-2000	--	--	90	96	0	2	0.00
2.5	TMDL	Apr-2001	--	--	87	94	0	2	0.00
3	EPA/TCEQ	Aug-2003	93	87	--	--	0	2	0.00
3	EPA/TCEQ	Aug-2006	10	0	--	--	2	2	1.00
3	TMDL	Sep-2000	--	--	76	109	0	2	0.00
3	TMDL	Apr-2001	--	--	0	86	1	2	0.50
3	TMDL	Aug-2003	98	68	95	--	0	3	0.00
4A	EPA/TCEQ	Aug-2003	79	0	--	--	1	2	0.50
4A	EPA/TCEQ	Aug-2006	93	0	--	--	1	2	0.50
4A	TMDL	Sep-2000	--	--	89	96	0	2	0.00
4A	TMDL	Apr-2001	--	--	6	69	1	2	0.50
4A	TMDL	Aug-2003	60	1	30		2	3	0.67
5	TMDL	Sep-2000	--	--	103	83	0	2	0.00
5	TMDL	Apr-2001	--	--	0	94	1	2	0.50
6A	EPA/TCEQ	Aug-2003	21	0	--	--	2	2	1.00
6A	EPA/TCEQ	Aug-2006	100	67	--	--	0	2	0.00
6A	TMDL	Sep-2000	--	--	25	109	1	2	0.50
6A	TMDL	Apr-2001	--	--	0	61	1	2	0.50
6A	TMDL	Aug-2003	32	0	31		3	3	1.00
E	TMDL	Sep-2000	--	--	104	87	0	2	0.00
E	TMDL	Apr-2001	--	--	57	98	1	2	0.50
G	TMDL	Sep-2000	--	--	104	91	0	2	0.00
G	TMDL	Apr-2001	--	--	93	37	1	2	0.50
Q	TMDL	Sep-2000	--	--	80	100	0	2	0.00
Q	TMDL	Apr-2001	--	--	4	82	1	2	0.50
S	TMDL	Sep-2000	--	--	100	91	0	2	0.00
S	TMDL	Apr-2001	--	--	66	86	0	2	0.00
T	TMDL	Sep-2000	--	--	91	104	0	2	0.00
T	TMDL	Apr-2001	--	--	72	78	0	2	0.00
U	TMDL	Sep-2000	--	--	98	91	0	2	0.00
U	TMDL	Apr-2001	--	--	83	69	0	2	0.00
V	TMDL	Sep-2000	--	--	102	70	0	2	0.00
V	TMDL	Apr-2001	--	--	79	94	0	2	0.00

Appendix E-2.1
Sediment Toxicity Data Evaluated in Benthic Risk Assessment

Location	Data Source[a]	Sample Date	Percent Control Adjusted Survival				Number of Toxic Results[b]	Number of Bioassay Tests	Proportion Toxic[c]
			Americamysis bahia	*Ampelisca abdita*	*Leptocheirus plumulosus*	*Neanthes arenaceodentata*			

Notes:

[a] Data Source References:

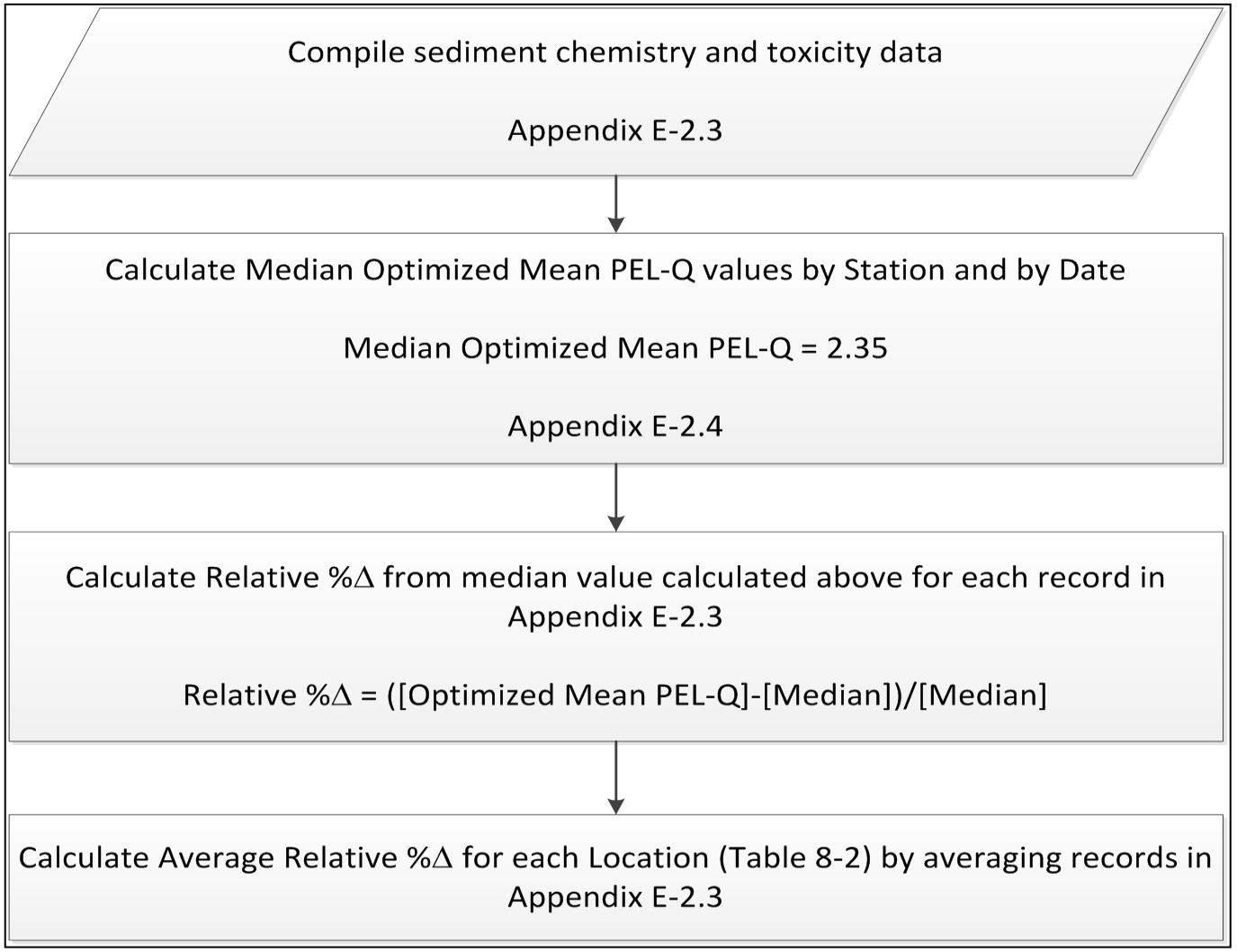
TMDL - Parsons et al. (2002, 2004)

EPA/TCEQ - L. Broach (no date)

[b] Control adjusted survival < 60%

[c] Proportion Toxic = (Number of toxic results)/(Number of bioassay tests)

Appendix E-2.2
Flowchart Describing Calculation of Average Relative % Difference from Median Optimized Mean PEL-Q



Notes:
PEL-Q - probable effect level quotient
%Δ - percent difference

Appendix E-2.3
Sediment Chemistry and PEL-Q Values by Sample

Location	Sample ID	Sample Date	Source[a]	Total PCB Result	Units	Total PCB PEL	Total PAH Result	Units	Total PAH PEL	BEHP Result	Units	BEHP PEL	Lead Result	Units	Lead PEL	Total PCB PEL-Q	Total PAH PEL-Q	BEHP PEL-Q	Lead PEL-Q	Optimized Mean PEL-Q	Median Optimized Mean PEL-Q	Relative % Δ from Median
2.5	2.5-4/23/2001	4/1/2001	TMDL	525	µg/kg	189	43,235	µg/kg	16,770	2,800	µg/kg	2,647	34.8	mg/kg	112	2.78	2.58	1.06	0.31	1.68	2.35	-29%
2.5	2.5-4/25/2001	4/1/2001	TMDL	525	µg/kg	189	43,235	µg/kg	16,770	2,800	µg/kg	2,647	34.8	mg/kg	112	2.78	2.58	1.06	0.31	1.68	2.35	-29%
2.5	2.5-9/5/2000	9/1/2000	TMDL	328	µg/kg	189	30,858	µg/kg	16,770	1,060	µg/kg	2,647	30	mg/kg	112	1.74	1.84	0.40	0.27	1.06	2.35	-55%
2.5	2.5-9/8/2000	9/1/2000	TMDL	328	µg/kg	189	30,858	µg/kg	16,770	1,060	µg/kg	2,647	30	mg/kg	112	1.74	1.84	0.40	0.27	1.06	2.35	-55%
3	3-4/24/2001	4/1/2001	TMDL	6,720	µg/kg	189	230,683	µg/kg	16,770	3,940	µg/kg	2,647	308	mg/kg	112	35.6	13.8	1.49	2.75	13.4	2.35	469%
3	3-4/25/2001	4/1/2001	TMDL	6,720	µg/kg	189	230,683	µg/kg	16,770	3,940	µg/kg	2,647	308	mg/kg	112	35.6	13.8	1.49	2.75	13.4	2.35	469%
3	3-8/12/2003	8/1/2003	TMDL	1,360	µg/kg	189	18,236	µg/kg	16,770	1,120	µg/kg	2,647	43.4	mg/kg	112	7.20	1.09	0.42	0.39	2.27	2.35	-3%
3	3-8/12/2003	8/1/2003	TMDL	1,360	µg/kg	189	18,236	µg/kg	16,770	1,120	µg/kg	2,647	43.4	mg/kg	112	7.20	1.09	0.42	0.39	2.27	2.35	-3%
3	3-8/12/2003	8/1/2003	TMDL	1,360	µg/kg	189	18,236	µg/kg	16,770	1,120	µg/kg	2,647	43.4	mg/kg	112	7.20	1.09	0.42	0.39	2.27	2.35	-3%
3	3-8/12/2003	8/1/2003	TMDL	1,360	µg/kg	189	18,236	µg/kg	16,770	1,120	µg/kg	2,647	43.4	mg/kg	112	7.20	1.09	0.42	0.39	2.27	2.35	-3%
3	3-8/12/2003	8/1/2003	TMDL	1,360	µg/kg	189	18,236	µg/kg	16,770	1,120	µg/kg	2,647	43.4	mg/kg	112	7.20	1.09	0.42	0.39	2.27	2.35	-3%
3	3-8/12/2003-EPA/TCEQ	8/1/2003	EPA/TCEQ	1,360	µg/kg	189	18,505	µg/kg	16,770	1,340	µg/kg	2,647	43.4	mg/kg	112	7.20	1.10	0.51	0.39	2.30	2.35	-2%
3	3-8/12/2003-EPA/TCEQ	8/1/2003	EPA/TCEQ	1,360	µg/kg	189	18,505	µg/kg	16,770	1,340	µg/kg	2,647	43.4	mg/kg	112	7.20	1.10	0.51	0.39	2.30	2.35	-2%
3	3-8/31/2006-EPA/TCEQ	8/1/2006	EPA/TCEQ	17,000	µg/kg	189	111,530	µg/kg	16,770	2,060	µg/kg	2,647	498	mg/kg	112	89.9	6.65	0.78	4.45	25.5	2.35	982%
3	3-8/31/2006-EPA/TCEQ	8/1/2006	EPA/TCEQ	17,000	µg/kg	189	111,530	µg/kg	16,770	2,060	µg/kg	2,647	498	mg/kg	112	89.9	6.65	0.78	4.45	25.5	2.35	982%
3	3-9/5/2000	9/1/2000	TMDL	1,080	µg/kg	189	42,091	µg/kg	16,770	1,540	µg/kg	2,647	67.7	mg/kg	112	5.71	2.51	0.58	0.60	2.35	2.35	0%
3	3-9/6/2000	9/1/2000	TMDL	1,080	µg/kg	189	42,091	µg/kg	16,770	1,540	µg/kg	2,647	67.7	mg/kg	112	5.71	2.51	0.58	0.60	2.35	2.35	0%
4A	4A-4/24/2001	4/1/2001	TMDL	398	µg/kg	189	16,133	µg/kg	16,770	4,630	µg/kg	2,647	39.7	mg/kg	112	2.11	0.96	1.75	0.35	1.29	2.35	-45%
4A	4A-4/25/2001	4/1/2001	TMDL	398	µg/kg	189	16,133	µg/kg	16,770	4,630	µg/kg	2,647	39.7	mg/kg	112	2.11	0.96	1.75	0.35	1.29	2.35	-45%
4A	4a-8/12/2003	8/1/2003	TMDL	34,600	µg/kg	189	14,201	µg/kg	16,770	1,135	µg/kg	2,647	55.9	mg/kg	112	183.1	0.85	0.43	0.50	46.2	2.35	1864%
4A	4a-8/12/2003	8/1/2003	TMDL	34,600	µg/kg	189	14,201	µg/kg	16,770	1,135	µg/kg	2,647	55.9	mg/kg	112	183.1	0.85	0.43	0.50	46.2	2.35	1864%
4A	4A-8/12/2003	8/1/2003	TMDL	34,600	µg/kg	189	14,201	µg/kg	16,770	1,135	µg/kg	2,647	55.9	mg/kg	112	183.1	0.85	0.43	0.50	46.2	2.35	1864%
4A	4a-8/12/2003	8/1/2003	TMDL	34,600	µg/kg	189	14,201	µg/kg	16,770	1,135	µg/kg	2,647	55.9	mg/kg	112	183.1	0.85	0.43	0.50	46.2	2.35	1864%
4A	4a-8/12/2003	8/1/2003	TMDL	34,600	µg/kg	189	14,201	µg/kg	16,770	1,135	µg/kg	2,647	55.9	mg/kg	112	183.1	0.85	0.43	0.50	46.2	2.35	1864%
4A	4a-8/12/2003	8/1/2003	TMDL	34,600	µg/kg	189	14,201	µg/kg	16,770	1,135	µg/kg	2,647	55.9	mg/kg	112	183.1	0.85	0.43	0.50	46.2	2.35	1864%
4A	4A-8/12/2003-EPA/TCEQ	8/1/2003	EPA/TCEQ	34,600	µg/kg	189	16,192	µg/kg	16,770	1,500	µg/kg	2,647	55.9	mg/kg	112	183.1	0.97	0.57	0.50	46.3	2.35	1867%
4A	4A-8/12/2003-EPA/TCEQ	8/1/2003	EPA/TCEQ	34,600	µg/kg	189	16,192	µg/kg	16,770	1,500	µg/kg	2,647	55.9	mg/kg	112	183.1	0.97	0.57	0.50	46.3	2.35	1867%
4A	4A-8/31/2006-EPA/TCEQ	8/1/2006	EPA/TCEQ	150,000	µg/kg	189	18,430	µg/kg	16,770	2,305	µg/kg	2,647	58.8	mg/kg	112	793.7	1.10	0.87	0.53	199.0	2.35	8360%
4A	4A-8/31/2006-EPA/TCEQ	8/1/2006	EPA/TCEQ	150,000	µg/kg	189	18,430	µg/kg	16,770	2,305	µg/kg	2,647	58.8	mg/kg	112	793.7	1.10	0.87	0.53	199.0	2.35	8360%
4A	4A-9/5/2000	9/1/2000	TMDL	1,690	µg/kg	189	14,655	µg/kg	16,770	1,780	µg/kg	2,647	36	mg/kg	112	8.94	0.87	0.67	0.32	2.70	2.35	15%
4A	4A-9/5/2000	9/1/2000	TMDL	1,690	µg/kg	189	14,655	µg/kg	16,770	1,780	µg/kg	2,647	36	mg/kg	112	8.94	0.87	0.67	0.32	2.70	2.35	15%
5	5-4/24/2001	4/1/2001	TMDL	1,910	µg/kg	189	78,263	µg/kg	16,770	7,670	µg/kg	2,647	125	mg/kg	112	10.1	4.67	2.90	1.12	4.70	2.35	100%
5	5-4/25/2001	4/1/2001	TMDL	1,910	µg/kg	189	78,263	µg/kg	16,770	7,670	µg/kg	2,647	125	mg/kg	112	10.1	4.67	2.90	1.12	4.70	2.35	100%
5	5-9/5/2000	9/1/2000	TMDL	780	µg/kg	189	11,337	µg/kg	16,770	1,700	µg/kg	2,647	39.5	mg/kg	112	4.13	0.68	0.64	0.35	1.45	2.35	-38%
5	5-9/5/2000	9/1/2000	TMDL	780	µg/kg	189	11,337	µg/kg	16,770	1,700	µg/kg	2,647	39.5	mg/kg	112	4.13	0.68	0.64	0.35	1.45	2.35	-38%
6A	6A-4/25/2001	4/1/2001	TMDL	2,060	µg/kg	189	5,886	µg/kg	16,770	2,330	µg/kg	2,647	50.6	mg/kg	112	10.9	0.35	0.88	0.45	3.15	2.35	34%
6A	6A-4/25/2001	4/1/2001	TMDL	2,060	µg/kg	189	5,886	µg/kg	16,770	2,330	µg/kg	2,647	50.6	mg/kg	112	10.9	0.35	0.88	0.45	3.15	2.35	34%
6A	6a-8/12/2003	8/1/2003	TMDL	10,900	µg/kg	189	11,974	µg/kg	16,770	1,068	µg/kg	2,647	76.6	mg/kg	112	57.7	0.71	0.40	0.68	14.9	2.35	532%
6A	6a-8/12/2003	8/1/2003	TMDL	10,900	µg/kg	189	11,974	µg/kg	16,770	1,068	µg/kg	2,647	76.6	mg/kg	112	57.7	0.71	0.40	0.68	14.9	2.35	532%
6A	6A-8/12/2003	8/1/2003	TMDL	10,900	µg/kg	189	11,974	µg/kg	16,770	1,068	µg/kg	2,647	76.6	mg/kg	112	57.7	0.71	0.40	0.68	14.9	2.35	532%
6A	6a-8/12/2003	8/1/2003	TMDL	10,900	µg/kg	189	11,974	µg/kg	16,770	1,068	µg/kg	2,647	76.6	mg/kg	112	57.7	0.71	0.40	0.68	14.9	2.35	532%
6A	6a-8/12/2003	8/1/2003	TMDL	10,900	µg/kg	189	11,974	µg/kg	16,770	1,068	µg/kg	2,647	76.6	mg/kg	112	57.7	0.71	0.40	0.68	14.9	2.35	532%
6A	6A-8/12/2003-EPA/TCEQ	8/1/2003	EPA/TCEQ	10,900	µg/kg	189	27,538	µg/kg	16,770	1,860	µg/kg	2,647	76.6	mg/kg	112	57.7	1.64	0.70	0.68	15.2	2.35	545%
6A	6A-8/12/2003-EPA/TCEQ	8/1/2003	EPA/TCEQ	10,900	µg/kg	189	27,538	µg/kg	16,770	1,860	µg/kg	2,647	76.6	mg/kg	112	57.7	1.64	0.70	0.68	15.2	2.35	545%
6A	6A-8/31/2006-EPA/TCEQ	8/1/2006	EPA/TCEQ	7,700	µg/kg	189	3,642	µg/kg	16,770	1,195	µg/kg	2,647	23.3	mg/kg	112	40.7	0.22	0.45	0.21	10.4	2.35	342%
6A	6A-8/31/2006-EPA/TCEQ	8/1/2006	EPA/TCEQ	7,700	µg/kg	189	3,642	µg/kg	16,770	1,195	µg/kg	2,647	23.3	mg/kg	112	40.7	0.22	0.45	0.21	10.4	2.35	342%
6A	6A-9/5/2000	9/1/2000	TMDL	9,370	µg/kg	189	60,074	µg/kg	16,770	1,610	µg/kg	2,647	34.6	mg/kg	112	49.6	3.58	0.61	0.31	13.5	2.35	475%
6A	6A-9/5/2000	9/1/2000	TMDL	9,370	µg/kg	189	60,074	µg/kg	16,770	1,610	µg/kg	2,647	34.6	mg/kg	112	49.6	3.58	0.61	0.31	13.5	2.35	475%
E	E-4/23/2001	4/1/2001	TMDL	1,580	µg/kg	189	45,108	µg/kg	16,770	2,550	µg/kg	2,647	47.5	mg/kg	112	8.36	2.69	0.96	0.42	3.11	2.35	32%
E	E-4/25/2001	4/1/2001	TMDL	1,580	µg/kg	189	45,108	µg/kg	16,770	2,550	µg/kg	2,647	47.5	mg/kg	112	8.36	2.69	0.96	0.42	3.11	2.35	32%
E	E-9/5/2000	9/1/2000	TMDL	370	µg/kg	189	13,475	µg/kg	16,770	1,170	µg/kg	2,647	25	mg/kg	112	1.96	0.80	0.44	0.22	0.86	2.35	-64%
E	E-9/6/2000	9/1/2000	TMDL	370	µg/kg	189	13,475	µg/kg	16,770	1,170	µg/kg	2,647	25	mg/kg	112	1.96	0.80	0.44	0.22	0.86	2.35	-64%

Appendix E-2.3
Sediment Chemistry and PEL-Q Values by Sample

Location	Sample ID	Sample Date	Source[a]	Total PCB Result	Units	Total PCB PEL	Total PAH Result	Units	Total PAH PEL	BEHP Result	Units	BEHP PEL	Lead Result	Units	Lead PEL	Total PCB PEL-Q	Total PAH PEL-Q	BEHP PEL-Q	Lead PEL-Q	Optimized Mean PEL-Q	Median Optimized Mean PEL-Q	Relative % Δ from Median
G	G-4/24/2001	4/1/2001	TMDL	197	µg/kg	189	9,737	µg/kg	16,770	507	µg/kg	2,647	52	mg/kg	112	1.04	0.58	0.19	0.46	0.57	2.35	-76%
G	G-4/25/2001	4/1/2001	TMDL	197	µg/kg	189	9,737	µg/kg	16,770	507	µg/kg	2,647	52	mg/kg	112	1.04	0.58	0.19	0.46	0.57	2.35	-76%
G	G-9/5/2000	9/1/2000	TMDL	399	µg/kg	189	14,235	µg/kg	16,770	809	µg/kg	2,647	39.8	mg/kg	112	2.11	0.85	0.31	0.36	0.91	2.35	-62%
G	G-9/6/2000	9/1/2000	TMDL	399	µg/kg	189	14,235	µg/kg	16,770	809	µg/kg	2,647	39.8	mg/kg	112	2.11	0.85	0.31	0.36	0.91	2.35	-62%
Q	Q-4/25/2001	4/1/2001	TMDL	1,070	µg/kg	189	16,350	µg/kg	16,770	12,000	µg/kg	2,647	193	mg/kg	112	5.66	0.97	4.53	1.72	3.22	2.35	37%
Q	Q-4/25/2001	4/1/2001	TMDL	1,070	µg/kg	189	16,350	µg/kg	16,770	12,000	µg/kg	2,647	193	mg/kg	112	5.66	0.97	4.53	1.72	3.22	2.35	37%
Q	Q-9/5/2000	9/1/2000	TMDL	3,780	µg/kg	189	30,926	µg/kg	16,770	1,960	µg/kg	2,647	27.3	mg/kg	112	20.0	1.84	0.74	0.24	5.71	2.35	143%
Q	Q-9/5/2000	9/1/2000	TMDL	3,780	µg/kg	189	30,926	µg/kg	16,770	1,960	µg/kg	2,647	27.3	mg/kg	112	20.0	1.84	0.74	0.24	5.71	2.35	143%
S	S-4/24/2001	4/1/2001	TMDL	2,090	µg/kg	189	116,399	µg/kg	16,770	14,400	µg/kg	2,647	124	mg/kg	112	11.1	6.94	5.44	1.11	6.14	2.35	161%
S	S-4/25/2001	4/1/2001	TMDL	2,090	µg/kg	189	116,399	µg/kg	16,770	14,400	µg/kg	2,647	124	mg/kg	112	11.1	6.94	5.44	1.11	6.14	2.35	161%
S	S-9/5/2000	9/1/2000	TMDL	113	µg/kg	189	6,812	µg/kg	16,770	196	µg/kg	2,647	47.8	mg/kg	112	0.60	0.41	0.07	0.43	0.38	2.35	-84%
S	S-9/5/2000	9/1/2000	TMDL	113	µg/kg	189	6,812	µg/kg	16,770	196	µg/kg	2,647	47.8	mg/kg	112	0.60	0.41	0.07	0.43	0.38	2.35	-84%
T	T-4/25/2001	4/1/2001	TMDL	626	µg/kg	189	17,373	µg/kg	16,770	2,550	µg/kg	2,647	127	mg/kg	112	3.31	1.04	0.96	1.13	1.61	2.35	-32%
T	T-4/25/2001	4/1/2001	TMDL	626	µg/kg	189	17,373	µg/kg	16,770	2,550	µg/kg	2,647	127	mg/kg	112	3.31	1.04	0.96	1.13	1.61	2.35	-32%
T	T-9/5/2000	9/1/2000	TMDL	837	µg/kg	189	10,712	µg/kg	16,770	1,180	µg/kg	2,647	28.9	mg/kg	112	4.43	0.64	0.45	0.26	1.44	2.35	-39%
T	T-9/5/2000	9/1/2000	TMDL	837	µg/kg	189	10,712	µg/kg	16,770	1,180	µg/kg	2,647	28.9	mg/kg	112	4.43	0.64	0.45	0.26	1.44	2.35	-39%
U	U-4/24/2001	4/1/2001	TMDL	13	µg/kg	189	444	µg/kg	16,770	--	µg/kg	2,647	16.8	mg/kg	112	0.07	0.03	--	0.15	0.08	2.35	-97%
U	U-4/25/2001	4/1/2001	TMDL	13	µg/kg	189	444	µg/kg	16,770	--	µg/kg	2,647	16.8	mg/kg	112	0.07	0.03	--	0.15	0.08	2.35	-97%
U	U-9/5/2000	9/1/2000	TMDL	79	µg/kg	189	2,602	µg/kg	16,770	200	µg/kg	2,647	15	mg/kg	112	0.42	0.16	0.08	0.13	0.20	2.35	-92%
U	U-9/6/2000	9/1/2000	TMDL	79	µg/kg	189	2,602	µg/kg	16,770	200	µg/kg	2,647	15	mg/kg	112	0.42	0.16	0.08	0.13	0.20	2.35	-92%
V	V-4/23/2001	4/1/2001	TMDL	442	µg/kg	189	24,025	µg/kg	16,770	2,250	µg/kg	2,647	50.9	mg/kg	112	2.34	1.43	0.85	0.45	1.27	2.35	-46%
V	V-4/25/2001	4/1/2001	TMDL	442	µg/kg	189	24,025	µg/kg	16,770	2,250	µg/kg	2,647	50.9	mg/kg	112	2.34	1.43	0.85	0.45	1.27	2.35	-46%
V	V-9/5/2000	9/1/2000	TMDL	447	µg/kg	189	26,994	µg/kg	16,770	1,390	µg/kg	2,647	48.2	mg/kg	112	2.37	1.61	0.53	0.43	1.23	2.35	-48%
V	V-9/5/2000	9/1/2000	TMDL	447	µg/kg	189	26,994	µg/kg	16,770	1,390	µg/kg	2,647	48.2	mg/kg	112	2.37	1.61	0.53	0.43	1.23	2.35	-48%

Notes:
[a] Data Source References:
TMDL - Parsons et al. (2002, 2004)
EPA/TCEQ - L. Broach (no date)
µg/kg - microgram per kilogram
mg/kg - milligram per kilogram
PCB - polychorinated biphenyl
PAH - polycyclic aromatic hydrocarbon
BEHP - bis(2-ethylhexyl)phthalate
PEL - probable effect level
PEL-Q - probable effect level quotient
%Δ - percent difference

Appendix E-2.4
Average Optimized Mean PEL-Q Values by Location

Location	Sample Date	Data Source[a]	Average Total PCB PEL-Q	Average Total PAH PEL-Q	Average BEHP PEL-Q	Average Lead PEL-Q	Average Optimized Mean PEL-Q
2.5	9/1/2000	TMDL	1.74	1.84	0.400	0.268	1.06
2.5	4/1/2001	TMDL	2.78	2.58	1.06	0.311	1.68
3	9/1/2000	TMDL	5.71	2.51	0.582	0.604	2.35
3	4/1/2001	TMDL	35.6	13.8	1.49	2.75	13.4
3	8/1/2003	EPA/TCEQ	7.20	1.10	0.506	0.388	2.30
3	8/1/2003	TMDL	7.20	1.09	0.423	0.388	2.27
3	8/1/2006	EPA/TCEQ	89.9	6.65	0.778	4.45	25.5
4A	9/1/2000	TMDL	8.94	0.874	0.672	0.321	2.70
4A	4/1/2001	TMDL	2.11	0.962	1.75	0.354	1.29
4A	8/1/2003	EPA/TCEQ	183	0.966	0.567	0.499	46.3
4A	8/1/2003	TMDL	183	0.847	0.429	0.499	46.2
4A	8/1/2006	EPA/TCEQ	794	1.10	0.871	0.525	199
5	9/1/2000	TMDL	4.13	0.676	0.642	0.353	1.45
5	4/1/2001	TMDL	10.1	4.67	2.90	1.12	4.70
6A	9/1/2000	TMDL	49.6	3.58	0.608	0.309	13.5
6A	4/1/2001	TMDL	10.9	0.351	0.880	0.452	3.15
6A	8/1/2003	EPA/TCEQ	57.7	1.64	0.703	0.684	15.2
6A	8/1/2003	TMDL	57.7	0.714	0.403	0.684	14.9
6A	8/1/2006	EPA/TCEQ	40.7	0.217	0.451	0.208	10.4
E	9/1/2000	TMDL	1.96	0.804	0.442	0.223	0.857
E	4/1/2001	TMDL	8.36	2.69	0.963	0.424	3.11
G	9/1/2000	TMDL	2.11	0.849	0.306	0.355	0.905
G	4/1/2001	TMDL	1.04	0.581	0.192	0.464	0.570
Q	9/1/2000	TMDL	20.0	1.84	0.740	0.244	5.71
Q	4/1/2001	TMDL	5.66	0.975	4.53	1.72	3.22
S	9/1/2000	TMDL	0.598	0.406	0.0740	0.427	0.376
S	4/1/2001	TMDL	11.1	6.94	5.44	1.11	6.14
T	9/1/2000	TMDL	4.43	0.639	0.446	0.258	1.44
T	4/1/2001	TMDL	3.31	1.04	0.963	1.13	1.61
U	9/1/2000	TMDL	0.417	0.155	0.0756	0.134	0.195
U	4/1/2001	TMDL	0.0677	0.0265	--	0.150	0.0814
V	9/1/2000	TMDL	2.37	1.61	0.525	0.430	1.23
V	4/1/2001	TMDL	2.34	1.43	0.850	0.454	1.27

Appendix E-2.4
Average Optimized Mean PEL-Q Values by Location

Location	Sample Date	Data Source[a]	Average Total PCB PEL-Q	Average Total PAH PEL-Q	Average BEHP PEL-Q	Average Lead PEL-Q	Average Optimized Mean PEL-Q
		MEDIAN:	7.20	1.04	0.625	0.427	2.35

Notes:

[a] Data Source References:

TMDL - Parsons et al. (2002, 2004)

EPA/TCEQ - L. Broach (no date)

PCB - polychorinated biphenyl

PAH - polycyclic aromatic hydrocarbon

BEHP - bis(2-ethylhexyl)phthalate

PEL-Q - probable effect level quotient

APPENDIX E-3
BENTHIC HABITAT EVALUATION

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1 BENTHIC HABITAT

In estuaries, structure and composition of the benthic assemblage is strongly related to variation in salinity, sediment type, DO, temperature, and water depth (e.g., Boesch 1973, 1977; Dauer et al. 1987; Holland et al. 1987; Schaffner et al. 1987; Chester et al. 1983; Engle et al. 1994; Ferraro et al. 1991). These non-chemical stressors impose physical limitations on the overall health of the benthic community, even in the absence of anthropogenic stressors (Wilson and Jeffrey 1994). A graphical model from Gaston et al. (1998) is useful to help visualize the interrelationships among biological and physical conditions and broad benthic patterns throughout the northern Gulf of Mexico (GOM) (Figure E-3.1). The figure illustrates that as salinity and DO increase, increases in dominance of crustaceans, trophic diversity, and benthic organism abundance occur; likewise, as silt/clay components and contaminant amounts increase, annelids increase in dominance, trophic simplification occurs, and benthos are less abundant. The following sections describe observed patterns of these non-chemical stressors within the Site and how they are expected to affect the expected condition of the benthic communities present.

1.1 General Conditions

The upstream and southern portion of the Site has a significantly higher gradient (about 10 feet of elevation change over 5,000 linear feet) when compared to the middle and lower portions of Patrick Bayou (less than 1 foot of elevation change over 8,000 linear feet) (Anchor 2006). The water depth in the upstream portions of Patrick Bayou to the downstream limit of the gunite-lined channel generally does not exceed -3 feet North American Vertical Datum 1988 (NAVD88). Below this, Patrick Bayou exhibits water depths ranging to -6 feet NAVD88. The downstream-most portion of the channel widens prior to its intersection with the HSC and areas of deposition and channel flow are more clearly defined. Depths in this area range between -3 and -6 feet (NAVD88) in depth. Water depths at the transition between the Site and HSC range between -11 and -17 feet NAVD88.

Due to the shallow nature of the Site, many areas of intertidal and even subtidal habitat can be dewatered for significant periods of time due to wind driven water level fluctuations. These prolonged periods of exposure can have significant effects on the benthic community. In addition, areas with high hydraulic gradients and shallow soft sediments are indicative of

areas where sediment stability is low. Even in areas that are considered net depositional, high bed shear stress during stormwater runoff events results in periodic erosional events. Sediment resuspension and transport may have significant effects on the benthic community at the Site, since benthic communities in the GOM tend to be concentrated in the shallowest portion of the sediment column (< 2 cm) compared to more northern estuaries (e.g., Chesapeake Bay; Brown et al. 2000; Gaston et al. 1998). For the Site, sediment scouring deeper than 2 cm would not be expected due to a 2-year storm event (Anchor QEA 2011). However, up to 10 percent of the sediment surface area at the Site would be expected to be scoured deeper than 2 cm after a 5-year storm event and 12 percent of the Site would be scoured after a 10-year storm event.

1.2 Salinity

Salinity has been shown to have a significant influence on benthic community structure in GOM estuaries (Brown et al. 2000; Dobberstine et al. 2007; TCEQ 2003). Benthic communities are generally more diverse and more abundant at high salinity ranges (>25 percent salinity) (Brown et al. 2000; Gaston et al. 1998; TCEQ 2003), and contain less subsurface deposit feeders (Gaston et al. 1998). TCEQ's sampling effort in Galveston Bay (TCEQ 2003) labeled salinity a "key determinant" in the distribution of estuarine fauna. In addition, Engle et al. (1994) observed strong salinity effects on species richness in estuaries. Stability in the salinity range is also a factor; communities in Galveston Bay were more diverse in areas with stable salinity and less diverse where salinity fluctuations are more frequent and over a greater range, such as the upper HSC (Lester and Gonzales 2002). Montague and Ley (1993) observed that the standard deviation of salinity observations was the best environmental correlate with benthic community abundance in a North Florida estuary.

Patrick Bayou is generally a mesohaline system with a salinity gradient between the downstream and upstream limits of the Site as a result of storm water runoff, upstream flow, and tidal effects. Salinity ranged from freshwater (<0.5 ppt) up to 12 ppt during continuous measurements collected at four locations monitored between October 2006 and 2007 (Figure E-3.2). Median daily salinity values ranged from 4.0 to 2.3 ppt from downstream to

upstream[1]. Rapid changes in salinity associated with rainfall were observed (Figure E-3.3). Box plots and a table of salinity levels for the four continuous monitoring locations show the high variance in salinity levels at the Site (Figure E-3-4 and Table E-3.1). Salinity changes occurred over a period of hours and were often transient (returning to previous levels over a period of hours) but were commonly associated with lasting (i.e., weeks) change in salinity regime. Longer-term variability (e.g., months) was also observed. This short- and long-term variability may have a significant effect on the condition of the benthic community at the Site.

1.3 Grain Size

The average grain size distribution for portions of Patrick Bayou ranges from sand to clay (Anchor 2006). Sediment in upstream portions of the Site and upstream of the Site itself contain a higher proportion of sand, including some gravel, while downstream areas tend to have a higher proportion of silt and clay and little to no gravel. This change in the distribution of grain size is consistent with transition from a higher water velocity and steep slope environment in the upstream portion of the Site, to the lower slope lower water velocity environment in downstream areas.

Grain size is another key driver of benthic community structure, both for type of species present, as well as species diversity and organism abundance. Smaller grain size fractions (silt/clay) have been observed to contain more surface deposit feeding benthos, as opposed to suspension feeders (Rhoads and Young 1970; Levinton 1972; Day et al. 1989; Peterson 1991). Diversity and organism density have both been shown to be lower at muddy versus sandy sites in northern GOM estuaries (Brown 2000). Changes in grain size, therefore, would be expected to affect benthic community characteristics.

1.4 Dissolved Oxygen

DO conditions are known to affect species diversity, abundance, and type of organisms present in GOM estuaries. Some studies have indicated stronger relationships than others.

[1] The East Fork tributary (EF005) was distinctly lower in salinity than Patrick Bayou itself. Median daily salinity was 0.4 ppt.

Brown et al. (2000) found more species diversity, greater biota abundance, and higher proportions of certain feeding groups at sites with higher DO (>5 ppm) than at lower DO (i.e., hypoxic) sites (<2 ppm), but DO conditions were not statistically correlated with the overall structure of benthic communities. Dominant species did differ, crustaceans and mollusks were more dominant at high DO sites, while worms dominated in low DO environments (Brown et al. 2000). Gaston et al. (1998) data did not show statistically significant relationships between trophic groups and level of DO. Changes in DO conditions could thus have some effects on benthic organisms and community. One example of these effects was reported from modeling work in Chesapeake Bay, where Dauer (2003) found that modeled stations exposed to low DO events resulted in reduced biomass and species richness, and more opportunistic species overall. Intermittent hypoxia was also shown in an experimental study in the Chesapeake Bay to result in significant decreases in macrobenthic abundance and the local extinction of several worm taxa (Llanso 1992).

At the Site, continuous measurements of DO from October 2006 to June 2007 (Figure E-3.5) demonstrated that hypoxic conditions (24-hour DO average less than 2.0 milligrams per liter [mg/L]) did exist in upstream areas (i.e., PB-075) nearly 40 percent of the time (100 of 257 daily records). There was an apparent seasonality to DO levels, as well as short-term (days) fluctuations linked to runoff events. Box plots and a table of DO levels for the four continuous monitoring locations also show the high variance in DO levels at the Site (Figure E-3-6 and Table E-3.2). Thus, DO likely plays a significant role in benthic community structure in upstream areas of the Site, acting to limit diversity and abundance in upstream areas.

1.5 Summary of Non-Chemical Stressor Effects

Common events like flushing flows from storms would have implications for multiple physical variables at once, such as DO, temperature, sediment resuspension, and salinity. Flushing flows in shallow tributaries or bayous with increased impervious surface area would be expected to create multiple, frequent high peak flow events which are observed at the Site.

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TABLES

Table E-3.1
Salinity (ppt)

Station	N	Minimum	Maximum	Median	Arithmetic Mean	Standard Deviation	Coefficient of Variation	5th Percentile	20th Percentile	80th Percentile	95th Percentile
EF005	12,401	0.04	7.31	0.4	1.014	1.219	1.202	0.12	0.19	1.83	3.64
PB020	28,257	0.107	12.354	3.965	4.569	2.921	0.639	0.796	1.818	7.156	10.348
PB045	24,783	0.04	11.92	3.67	4.001	2.56	0.64	0.52	1.61	6.37	8.38
PB075	26,309	0.04	10.58	2.27	2.407	1.424	0.592	0.28	1.26	3.42	4.84

Table E-3.2
Dissolved Oxygen (mg/L)

Station	N	Minimum	Maximum	Median	Arithmetic Mean	Standard Deviation	Coefficient of Variation	5th Percentile	20th Percentile	80th Percentile	95th Percentile
EF005	12,401	0.31	32.65	5.34	5.613	2.716	0.484	1.66	3.56	7.26	10.06
PB020	28,257	0.09	15.76	6.663	6.75	2.125	0.315	3.33	4.89	8.63	10.071
PB045	24,783	0.79	30.93	6.75	6.888	2.42	0.351	3.16	4.69	8.98	10.64
PB075	26,309	0	12.56	2.78	2.978	2.234	0.75	0.11	0.68	4.89	6.95

FIGURES

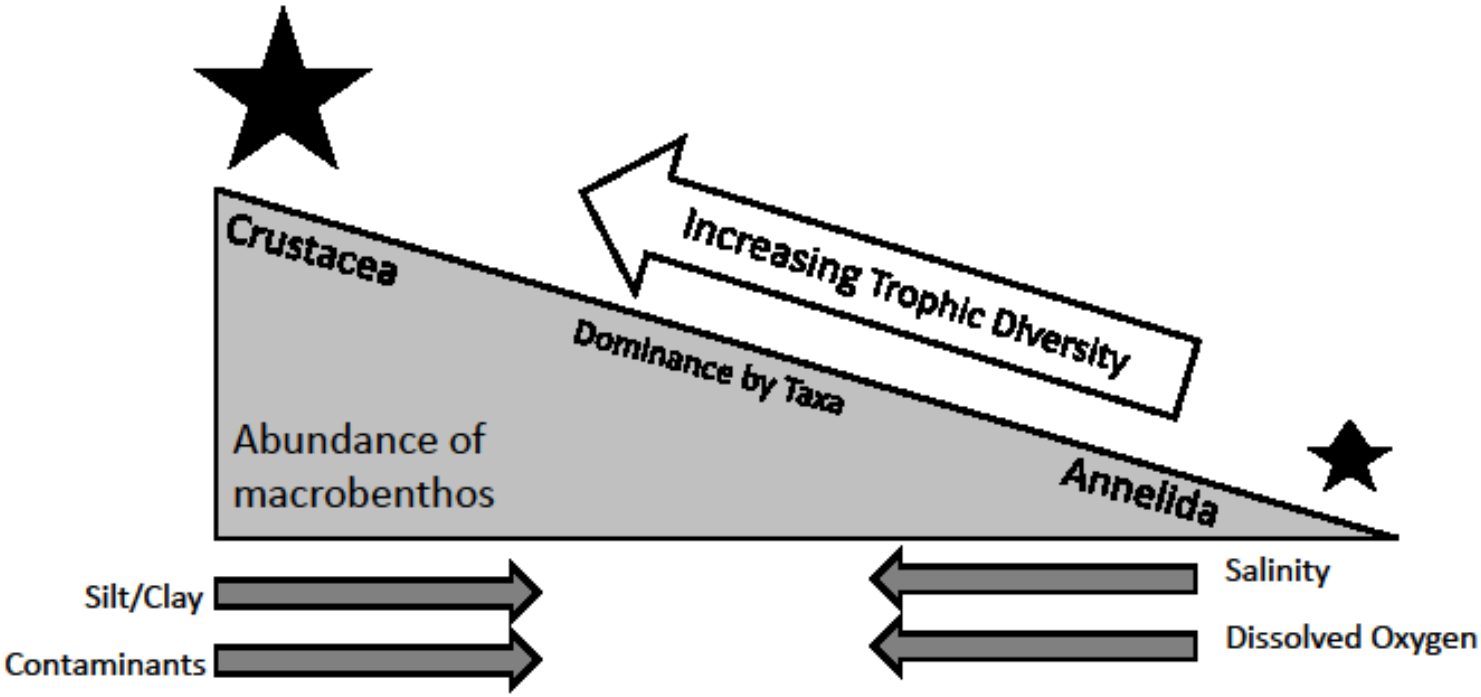

Figure E-3.1
Visual Model Showing Relationships Among Macrobenthos Metrics, Contaminants, and Natural Environmental Factors
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

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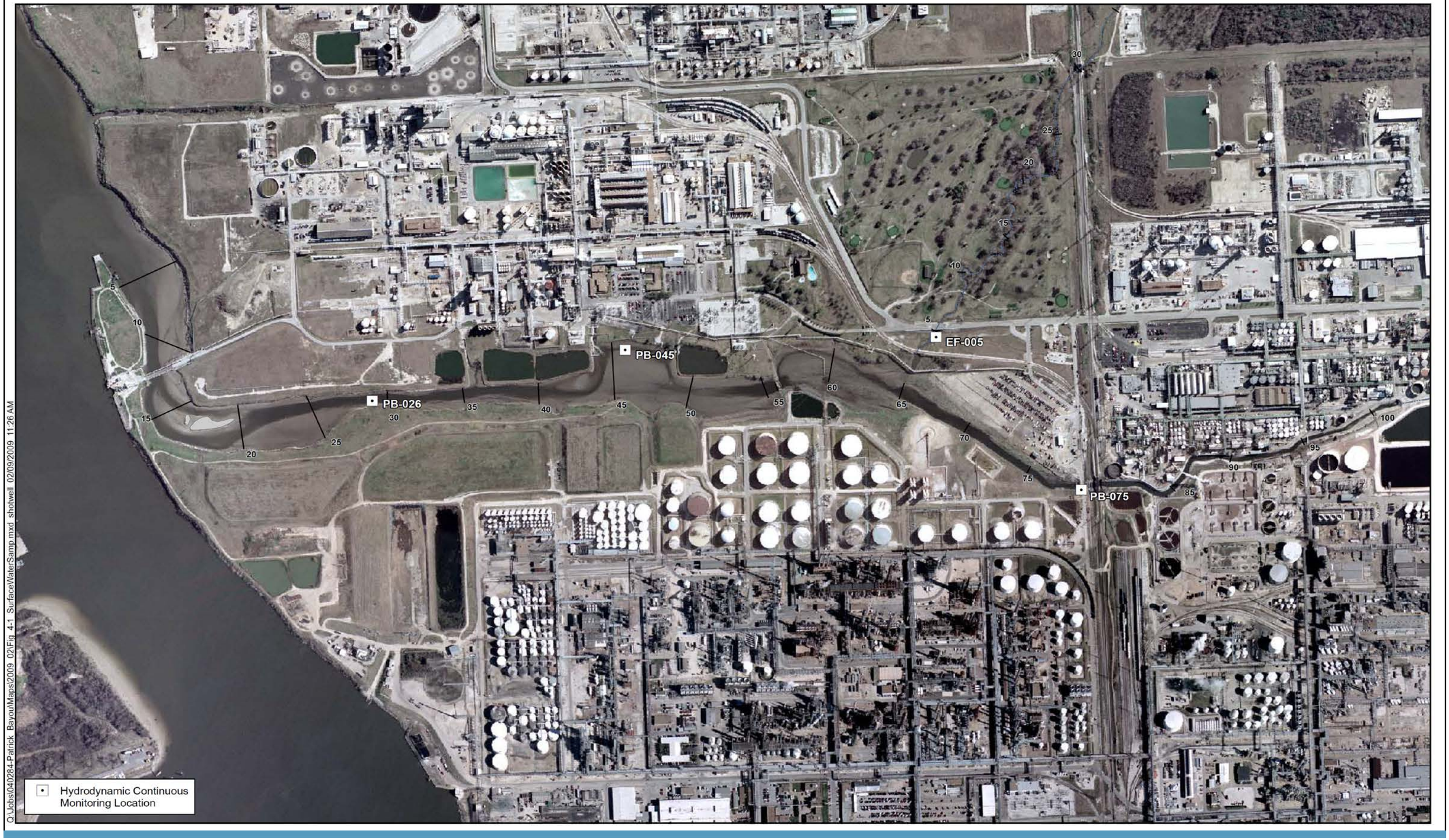

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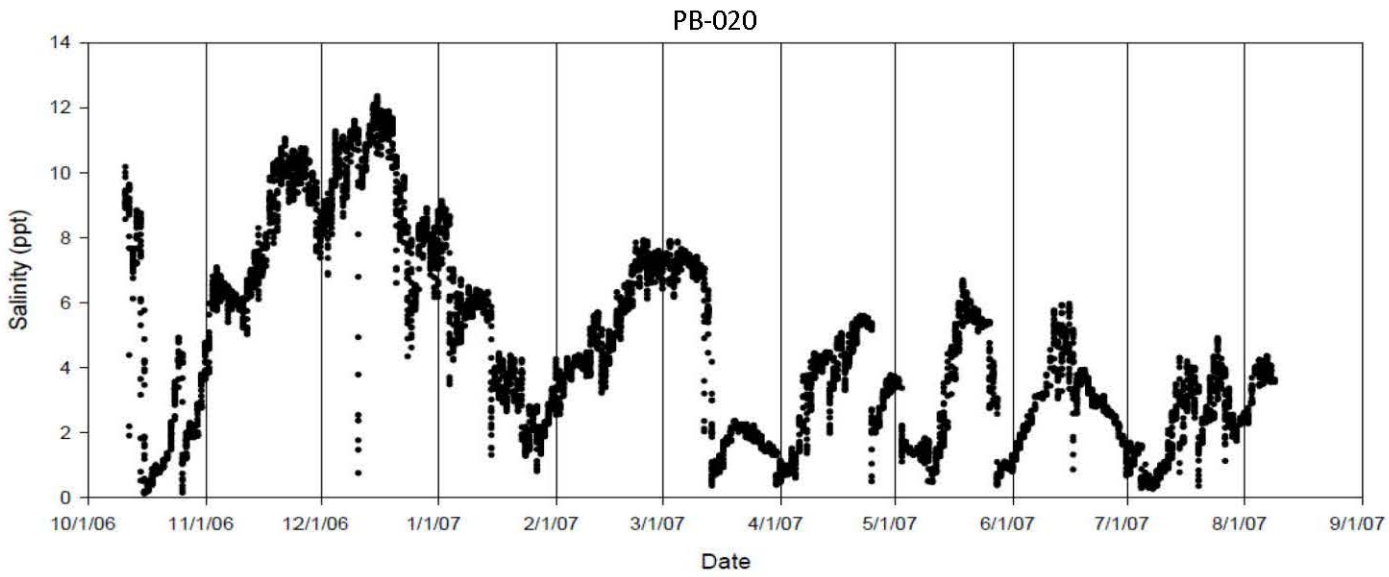
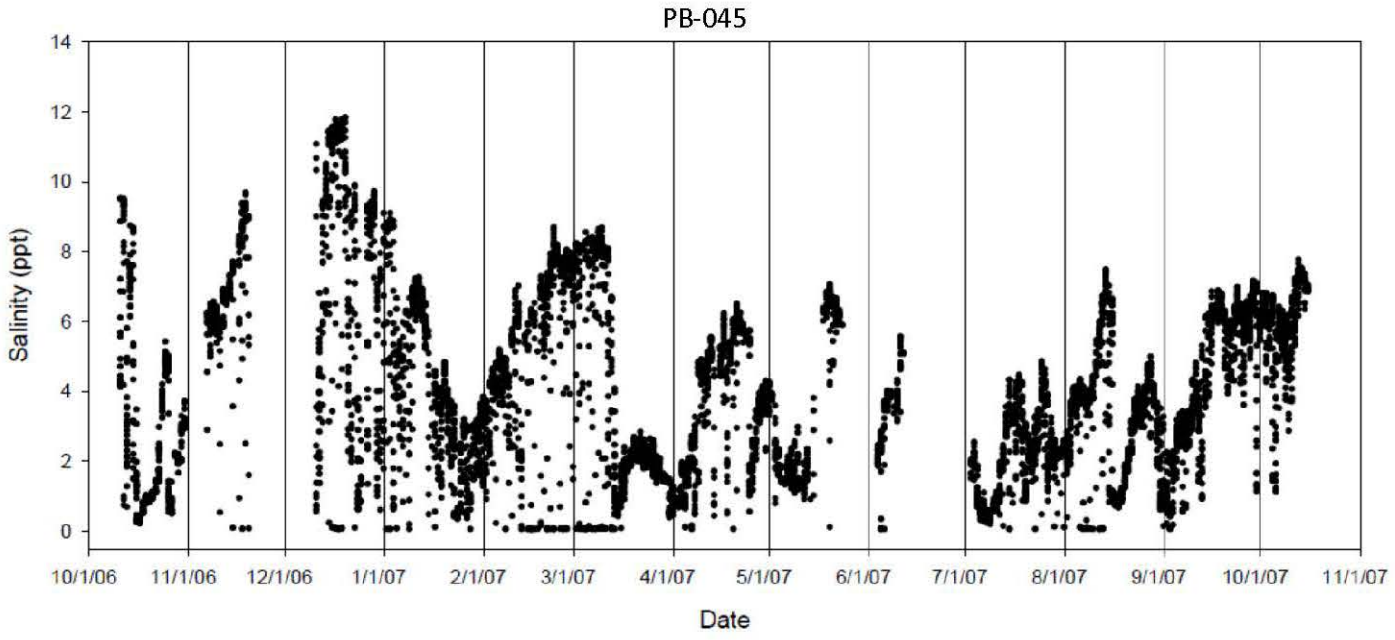
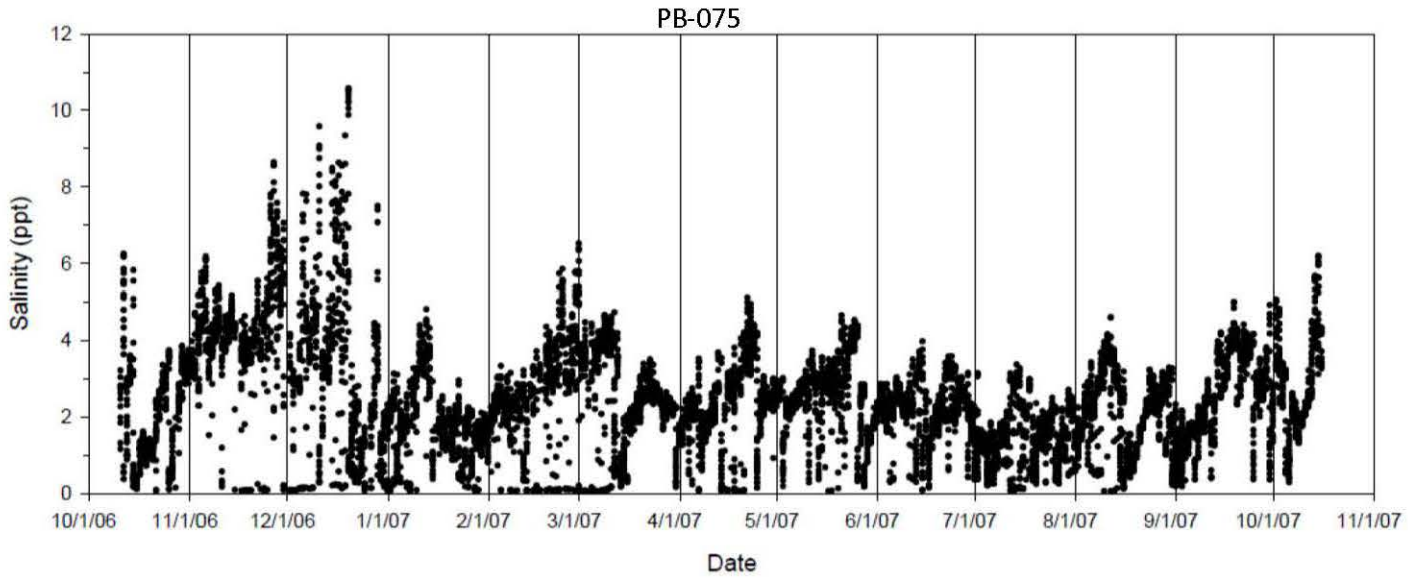
Figure E-3.2
Hydrodynamic Continuous Monitoring Locations
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas







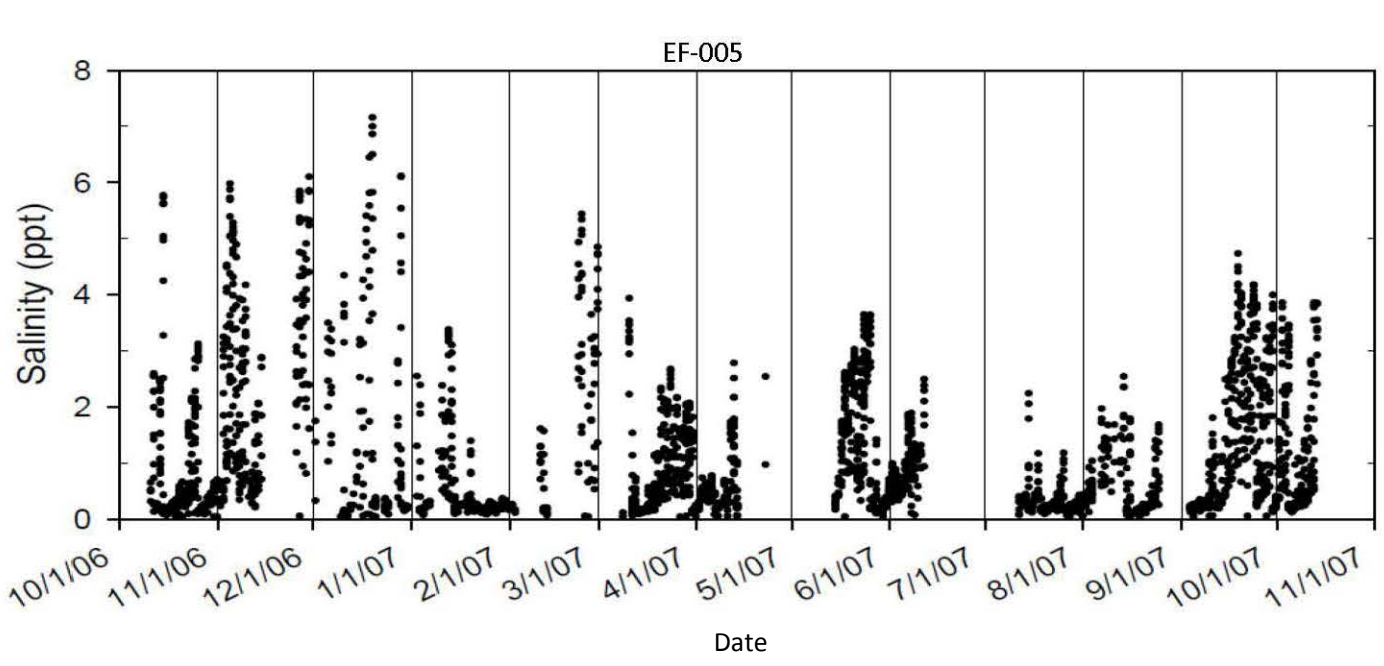


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Figure E-3.3
Salinity Time Series Plot
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

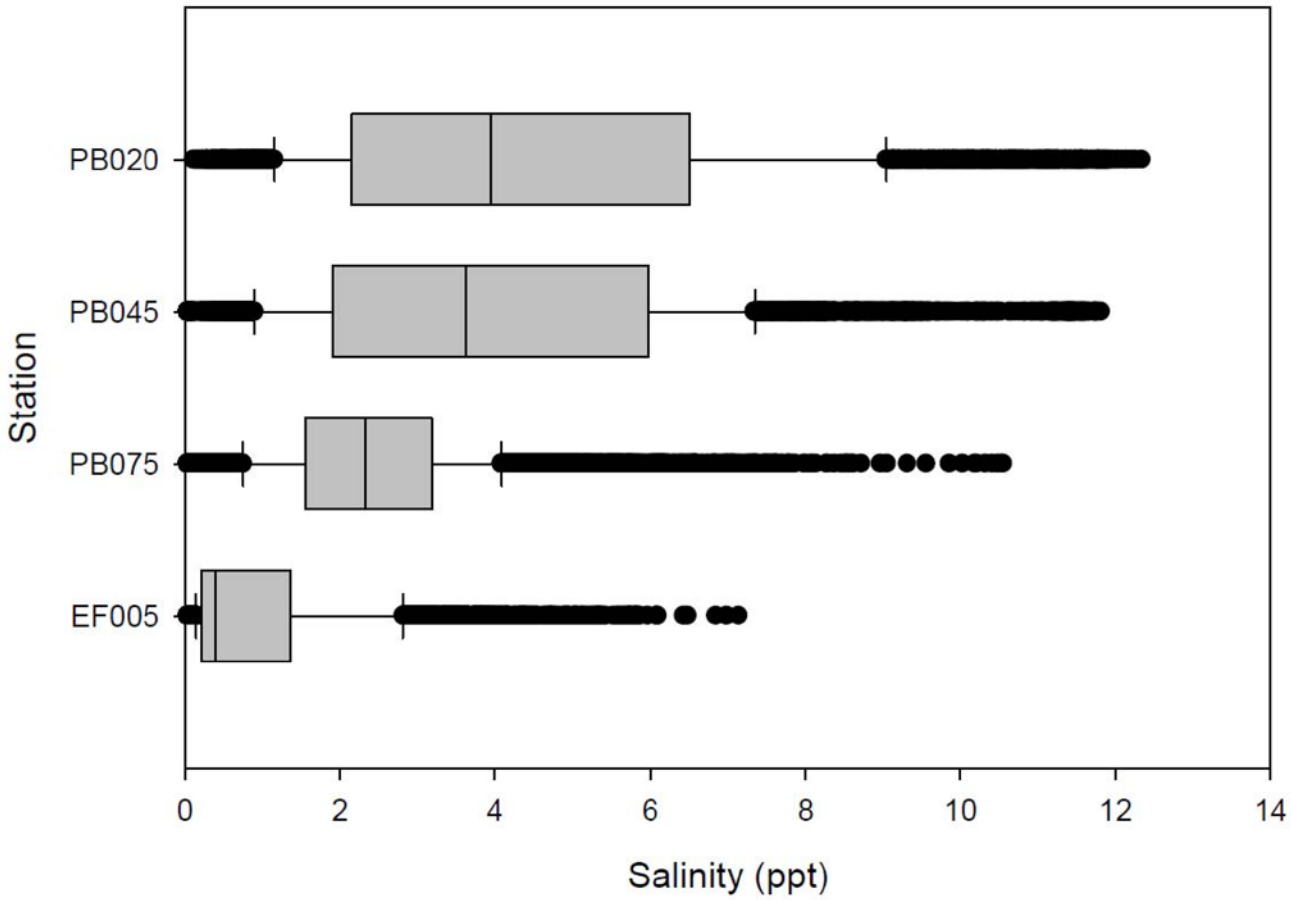
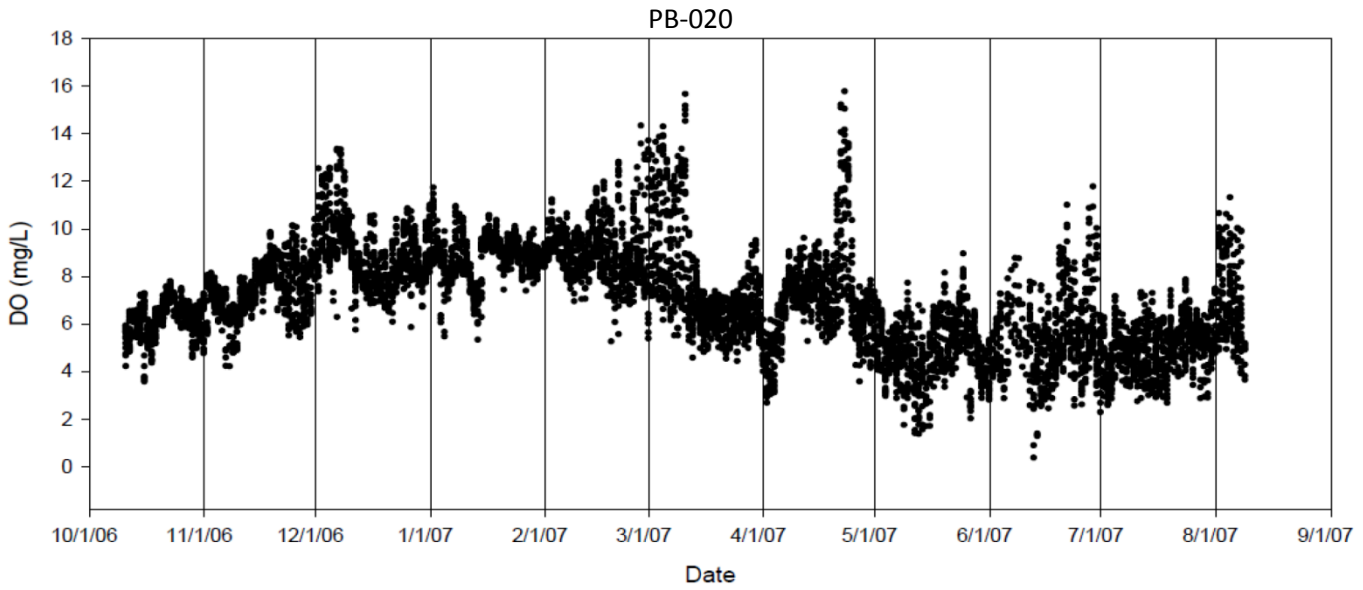
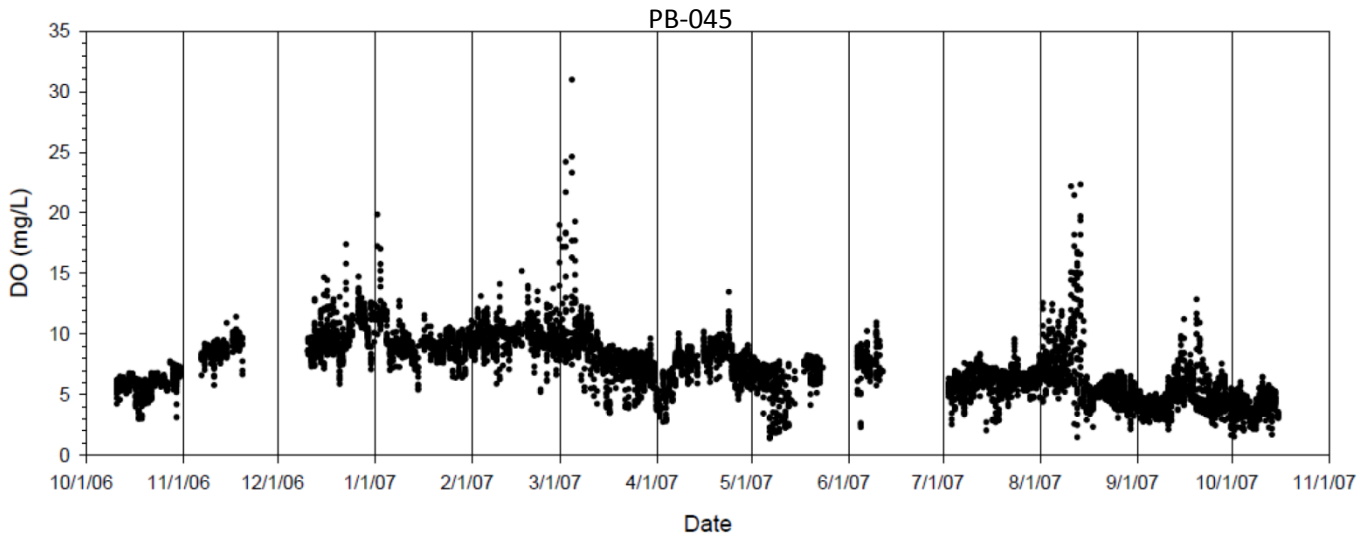
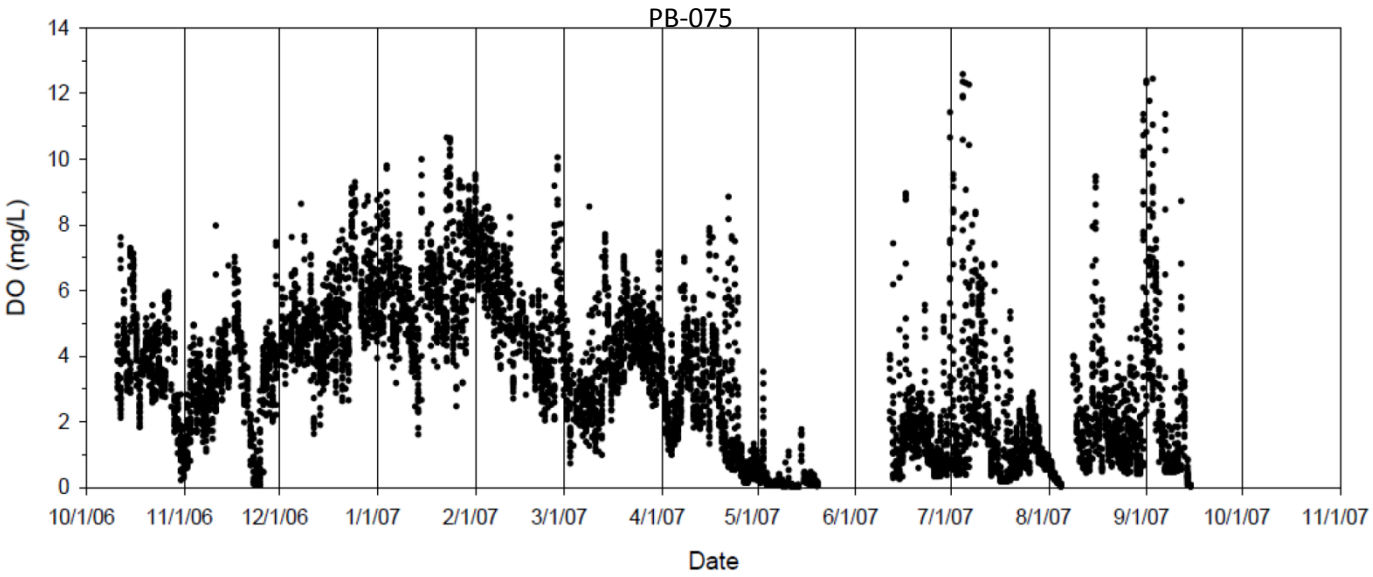


Figure E-3.4
Surface Water Salinity Box Plots
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas







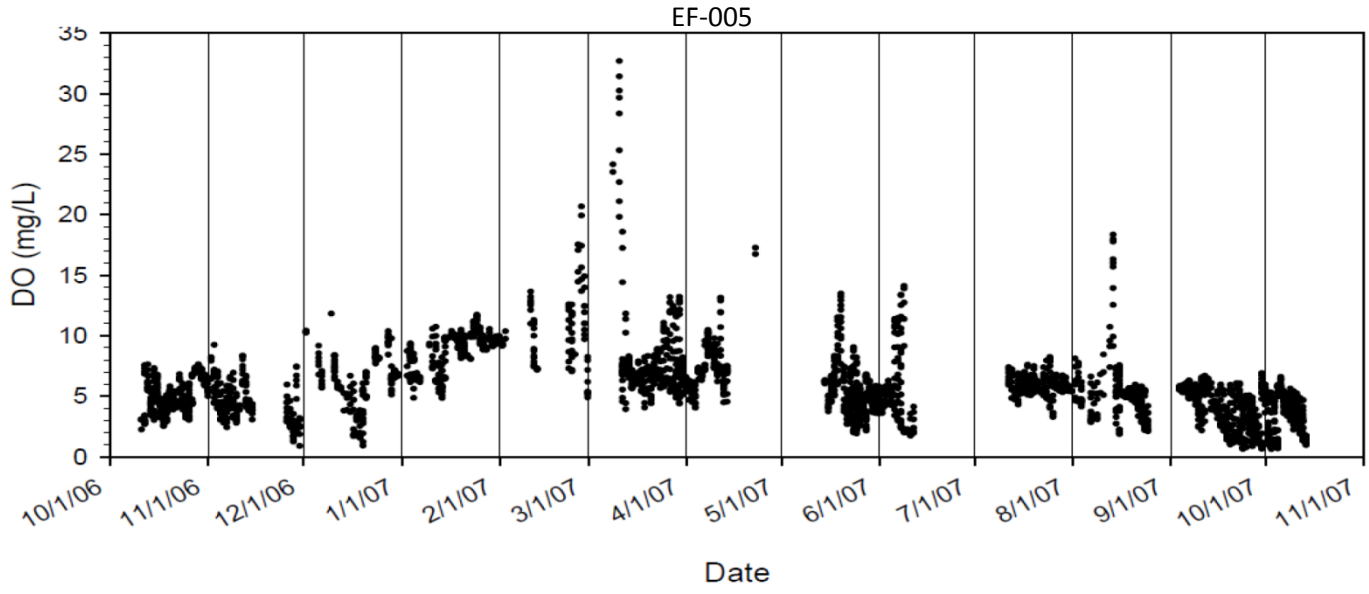


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Figure E-3.5
Dissolved Oxygen Time Series Plot
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

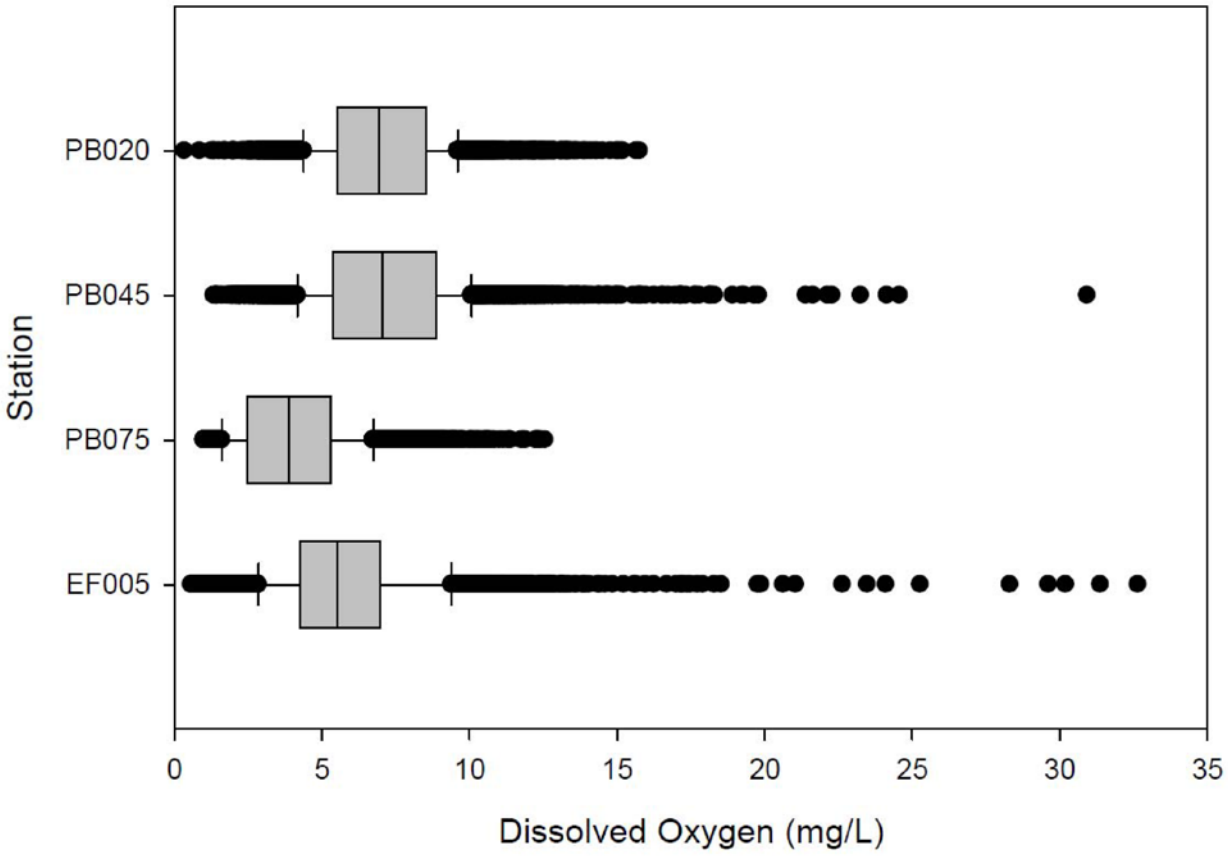

Figure E-3.6
Surface Water Dissolved Oxygen Box Plots
Baseline Ecological Risk Assessment
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

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APPENDIX E-4
BENTHIC INDEX EVALUATION

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Table E-4.6 TCEQ Tidal Stream Metric Score Calculations

Table E-4.7A Patrick Bayou September 2000 Benthic Community Data and TCEQ BI Scores

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Table E-4.8 Summary of TCEQ Benthic Index

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Attachment E-4.1 ProUCL Statistics

1 ENGLE AND SUMMERS

Engle and Summers (1999) developed an indicator of benthic condition, Engle and Summers Biotic Index (ES-BI), for northern Gulf of Mexico estuaries. The ES-BI was developed based on data from USEPA's Environmental Monitoring and Assessment Program (EMAP) using samples collected from estuaries in the Louisiana Province from 1991 to 1994.

The ES-BI developed by Engle and Summers (1999), is based on a combination of five metrics: the percentage of expected species diversity, the mean abundance of tubificid oligochaetes, the percent total abundance represented by capitellid polychaetes (relative abundance of capitellid polychaetes), the relative abundance of bivalve mollusks, and the relative abundance of amphipods. The percentage of expected species diversity is based on a salinity adjustment (Engle and Summers 1999). The percentage of expected species diversity = the mean diversity (H')/expected diversity. Where the expected diversity is calculated based on the salinity at each site when the sample was collected (Engle and Summers 1999) using the following equation:

Expected diversity = 2.618426-(0.044795 x salinity) + (0.007278 x salinity 2) + (-0.000119 x salinity)

The ES-BI used for this evaluation is the same benthic index used by Parsons Engineering (2002) during the third party TMDL investigations performed at the Site. However, the index for this assessment was recalculated to evaluate the September 2000 and April 2001 data separately without any reference site data. Typically, the ES-BI is calculated using site of interest data and nearby reference area data. However, for this evaluation, appropriate reference area data are not available. Thus, the ES-BI was calculated using only Site data. Thus, the score is a relative index of community condition within the Site and is not related to absolute scoring to determine condition of the community. The relative index is appropriate for the analysis because only Site data are of interest in understanding the condition of the benthic community on a by station basis. Use of appropriate reference data would be of benefit if the goal was to assess the Site benthic community to determine the potential for a gradient from a stressed to a reference condition at the Site.

Samples included in this LOE were collected from Patrick Bayou in 2000 and 2001[1]. Sample locations are identified in Figure E-4.1. For the recalculation, transformed data for each metric were derived directly from the Parsons Engineering (2002) report. As noted above, the ES-BI scores were calculated separating the data into two seasonal groups. The first set is the "summer" data group that included data for samples collected in September 2000 from the Site (Parsons 2002). The second data group was for spring collected samples, April 2001. No attempt was made to verify the calculation of the metrics. The recalculation of the ES-BI is presented in Tables E-4.1 and E-4.2. The ES-BI is calculated following four steps (Engle and Summers 1999).

Step 1: Calculate arithmetic mean and standard deviation of the benthic variables using the Patrick Bayou data (Table E-4.1).

Step 2: Normalize (standardize) the data using this mean and standard deviation calculated in Step 1. The normalization is conducted using the following equation:

$$x_1' = \frac{(S \times (x_1 - \bar{x}) + M)}{S_x}$$

where

x_1' = new standardized value

S = desired standard deviation (one)

M = desired mean (zero)

x_1 = observation's original value

$\bar{x}$ = variable's mean from Step 1

S_x = variable's standard deviation from Step 1

With Step 3: Each new standardized value is then scored using the following relationships developed by Engle and Summers (1999) for the ES-BI:

Discriminant Score = (1.571 x Percentage of expected species diversity) +

[1] Benthic invertebrate data from 2003 were not used, as salinity data were not available. Salinity data are needed to calculate the ES-BI. Furthermore, only four stations were evaluated in October 2001, so the data were not used.

(-1.0335 x mean abundance of tubificid oligochaetes) +
(-0.5607 x relative abundance of capitellid polychaetes) +
(-0.447 x relative abundance of bivalves) +
(0.5023 x relative abundance of amphipods)

Finally, with Step 4: The benthic index is calculated from the discriminant scores as follows:

ES-BI = [((Discriminant Score – (-3.21)) / 7.50)]*10

Patrick Bayou stations 2, Y, R, 7, 8, 9, and 10 are not being evaluated in this report as they are not within the Site area or are in the gunite channel. A summary of E-S BI Scores are presented in Table E-4.3.

2 TCEQ BIOTIC INDEX

A second benthic invertebrate community index was selected for a sensitivity analysis to evaluate Site benthic invertebrate community data. A biotic index specific to tidal streams in Texas was used. The TCEQ Biotic Index is being developed for evaluating tidal streams in Texas (TCEQ 2012). It is in draft form and has not been peer reviewed. However, this index was used here as requested by USEPA. This index has six different metrics:

- Taxa Richness
- Diversity (Shannon-Weiner)
- Percent Tolerant Taxa
- Percent Intolerant Taxa
- Presence of Five Key Taxa Groups, (Polychaetes, Crustacea, Nemertea, Bivalvia, Gastropoda)
- Three Most Dominant Taxa

The macroinvertebrate taxa that are assumed to be tolerant are presented in Table E-4.4 and intolerant in Table E-4.5. The selection of the taxa that are tolerant or intolerant in tidal streams of Texas has not been peer reviewed.

The benthic community data were scored using the approach described by TCEQ (Table E-4.6). The TCEQ BI scoring system is based on 94 samples from tidal streams and side bays in the Galveston Bay system (TCEQ 2012). Samples were included in the TCEQ evaluation if they were collected in summer (June through September) and where salinity was less than 20 ppt at time of collection (TCEQ 2012). Samples were collected between 1992 and 2008 for various special studies or for routine monitoring. The 94 samples were collected from 64 stations.

In this analysis the evaluation of a score for a station was not in comparison to a reference condition (e.g., stressed or not stressed) but in the context of the other scores at the Site (a relative score). The TCEQ BIs for this assessment were calculated to evaluate the September 2000, April 2001 and August 2003 monitoring events. The Site benthic community data, TCEQ metric scores and TCEQ BI Scores are presented in Tables E-4.7A, E-4.7B, and E-4.7C. A summary of TCEQ BI Scores is presented in Table E-4.8.

3 INCREMENTAL RISK CALCULATIONS

Next, overall incremental risk to the benthic community as measured by the overall composition and health of the benthic community risk was categorized for each location according to the following criteria:

- Probable Risk – relative ES-BI score was less than the 15th percentile (lowest 15 percent) of locations within the Site
- Indeterminate Risk – relative ES-BI score was greater than the 15th percentile but was equal to or less than the Site-wide average
- Low Risk – relative ES-BI score was greater than the Site-wide average

These statistics were calculated using ProUCL Version 4.1 software (USEPA 2010). The statistics for the E-S BI and TCEQ BI scores are presented in Attachment E-4.1. The results of this evaluation are presented in Table 8-3.

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TABLES

Table E-4.1
ES-BI September 2000 Calculations

Site Information			Transformed Data					Normalized Data					Discriminant Scores						Benthic Index, "summer"
Site	Station	Date	Mean Diversity Proportion	Log Turbellaria Abundunce	Arc-sin, % Bivalves	Arc-sin, % Capitillids	Arc-sin, % Amphipods	Mean Diversity Proportion	Log Turbellaria Abundunce	Arc-sin, % Bivalves	Arc-sin, % Capitillids	Arc-sin, % Amphipods	Mean Diversity Proportion	Log Turbellaria Abundunce	Arc-sin, % Bivalves	Arc-sin, % Capitillids	Arc-sin, % Amphipods	Sum Discriminant Score	ES-BI
Patrick Bayou	V	September 2000	0.078	0	0	0	0	-0.7954	-0.5756	0	-0.6879	-0.3015	-1.2495	0.5949	0	0.3857	-0.1514	-0.4204	3.719
Patrick Bayou	2.5	September 2000	0.138	0	0	0	0	-0.3207	-0.5756	0	-0.6879	-0.3015	-0.5039	0.5949	0	0.3857	-0.1514	0.3253	4.714
Patrick Bayou	S	September 2000	0.287	0	0	0.021	0	0.8579	-0.5756	0	1.9605	-0.3015	1.3478	0.5949	0	-1.0993	-0.1514	0.6920	5.203
Patrick Bayou	U	September 2000	0.002	0	0	0	0	-1.3966	-0.5756	0	-0.6879	-0.3015	-2.1940	0.5949	0	0.3857	-0.1514	-1.3649	2.460
Patrick Bayou	3	September 2000	0.127	0.097	0	0	0.041	-0.4078	-0.4325	0	-0.6879	3.0151	-0.6406	0.4470	0	0.3857	1.5145	1.7066	6.555
Patrick Bayou	G	September 2000	0.218	0.000	0	0	0	0.3121	-0.5756	0	-0.6879	-0.3015	0.4903	0.5949	0	0.3857	-0.1514	1.3195	6.039
Patrick Bayou	4A	September 2000	0.060	0.176	0	0.015	0	-0.9378	-0.3159	0	1.2038	-0.3015	-1.4732	0.3265	0	-0.6750	-0.1514	-1.9732	1.649
Patrick Bayou	5	September 2000	0.060	0.352	0	0.013	0	-0.9378	-0.0562	0	0.9516	-0.3015	-1.4732	0.0581	0	-0.5336	-0.1514	-2.1002	1.480
Patrick Bayou	T	September 2000	0.362	0.966	0	0	0	1.4512	0.8498	0	-0.6879	-0.3015	2.2799	-0.8783	0	0.3857	-0.1514	1.6359	6.461
Patrick Bayou	6A	September 2000	0.290	2.223	0	0.011	0	0.8817	2.7046	0	0.6994	-0.3015	1.3851	-2.7952	0	-0.3921	-0.1514	-1.9537	1.675
Patrick Bayou	Q	September 2000	0.342	0.477	0	0	0	1.2930	0.1282	0	-0.6879	-0.3015	2.0314	-0.1325	0	0.3857	-0.1514	2.1331	7.124
		Mean	0.179	0.390	0	0.00545	0.00373												
		Standard Deviation	0.126	0.678	0	0.00793	0.0124												

Table E-4.2
ES-BI April 2001 Calculations

Site Information			Transformed Data					Normalized Data					Discriminant Scores						Benthic Index
Site	Station	Date	Mean Diversity Proportion	Log Turbellaria Abundance	Arc-sin, % Bivalves	Arc-sin, % Capitillids	Arc-sin, % Amphipods	Mean Diversity Proportion	Log Turbellaria Abundance	Arc-sin, % Bivalves	Arc-sin, % Capitillids	Arc-sin, % Amphipods	Mean Diversity Proportion	Log Turbellaria Abundance	Arc-sin, % Bivalves	Arc-sin, % Capitillids	Arc-sin, % Amphipods	Sum Discriminant Score	ES-BI
Patrick Bayou	V	April 2001	0.503	0.352	0.008	0.284	0	0.326	-0.754	0.449	2.81	-0.489	0.512	0.780	-0.201	-1.58	-0.246	-0.730	3.31
Patrick Bayou	2.5	April 2001	0.488	0.243	0.002	0.141	0	0.240	-0.932	-0.286	1.12	-0.489	0.378	0.963	0.128	-0.626	-0.246	0.597	5.08
Patrick Bayou	S	April 2001	0.482	0.903	0	0.035	0.005	0.206	0.14	-0.531	-0.140	0.522	0.324	-0.145	0.237	0.079	0.262	0.757	5.29
Patrick Bayou	E	April 2001	0.644	0.978	0.023	0.041	0.017	1.13	0.262	2.29	-0.0691	2.95	1.78	-0.270	-1.02	0.039	1.48	2.00	6.95
Patrick Bayou	U	April 2001	0.367	0.954	0	0.008	0.004	-0.451	0.224	-0.531	-0.460	0.320	-0.708	-0.231	0.237	0.258	0.161	-0.283	3.90
Patrick Bayou	3	April 2001	0.68	0.978	0	0.005	0	1.34	0.262	-0.531	-0.496	-0.489	2.10	-0.270	0.237	0.278	-0.246	2.10	7.08
Patrick Bayou	G	April 2001	0.437	0.176	0	0.025	0.003	-0.0509	-1.04	-0.531	-0.259	0.118	-0.0800	1.08	0.237	0.145	0.0593	1.44	6.20
Patrick Bayou	4A	April 2001	0.506	0.301	0.019	0	0	0.343	-0.837	1.80	-0.555	-0.489	0.539	0.865	-0.803	0.311	-0.246	0.667	5.17
Patrick Bayou	5	April 2001	0.484	0.176	0	0	0	0.218	-1.04	-0.531	-0.555	-0.489	0.342	1.08	0.237	0.311	-0.246	1.72	6.57
Patrick Bayou	T	April 2001	0.527	0.889	0	0.023	0	0.463	0.118	-0.531	-0.282	-0.489	0.728	-0.122	0.237	0.158	-0.246	0.756	5.29
Patrick Bayou	6A	April 2001	0.147	1.90	0	0	0	-1.71	1.76	-0.531	-0.555	-0.489	-2.68	-1.82	0.237	0.311	-0.246	-4.20	-1.32
Patrick Bayou	Q	April 2001	0.086	1.95	0	0	0	-2.06	1.84	-0.531	-0.555	-0.489	-3.23	-1.90	0.237	0.311	-0.246	-4.82	-2.15
		Mean	0.446	0.817	0.00433	0.0468	0.00242												
		Standard Deviation	0.175	0.616	0.00816	0.0844	0.00494												

Table E-4.3
Summary of Engle and Summers Benthic Index

Station	Date	ES-BI Score[1]	Mean % Sand[2]
V	9/5/2000	3.72	21
V	4/24/2001	3.31	
2.5	9/5/2000	4.71	52
2.5	4/23/2001	5.08	
S	9/5/2000	5.20	46
S	4/24/2001	5.29	
E	4/23/2001	6.95	56
U	9/5/2000	2.46	22
U	4/24/2001	3.90	
3	9/5/2000	6.56	43
3	4/24/2001	7.08	
G	9/5/2000	6.04	78
G	4/24/2001	6.20	
4A	9/5/2000	1.65	30
4A	4/24/2001	5.17	
5	9/5/2000	1.48	42
5	4/24/2001	6.57	
T	9/5/2000	6.46	77
T	4/25/2001	5.29	
6A	9/5/2000	1.68	82
6A	4/25/2001	-1.32	
Q	9/5/2000	7.12	67
Q	4/25/2001	-2.15	

Notes:

[1] Engle and Summers (1999) Benthic Index.

[2] Mean based on all sample events for each Patrick Bayou station.

Table E-4.4
TCEQ Tidal Stream-Tolerant/Opportunistic/Pollution Indicative Taxa

Class/Phylum	Organism	Reference
Oligochaeta	Oligochaeta	Brown et al., 2000; Ritter and Montagna, 1999; Weisberg et al., 1997
Polychaeta	*Capitella* spp	Rakocinski et al., 1997; Weisberg et al., 1997
	Laeonereis culveri	Lerberg et al., 2000
	Paraprionospio pinnata	Dauer et al., 1992; Weisberg et al., 1997
	Streblospio benedicti	Dauer et al., 1992; Rakocinski et al., 1997; Ritter and Montagna, 1999; Roach et al., 1992; Weisberg et al., 1997
Insecta	Chironomidae	Weisberg et al., 1997
Mollusca	*Macoma mitchilli*	Rakocinski et al., 1997
	Mulinia lateralis	Dauer et al., 1992; Weisberg et al., 1997

Notes:
Table derived from draft TCEQ white paper, "Development of a Tidal Stream Benthic Index in Galveston Bay, Texas" (TCEQ, May 2012)

Table E-4.5
TCEQ Tidal Stream-Intolerant/Pollution Sensitive Taxa

Class/Phylum	Organism	Reference
Polychaeta	*Aricidea philbinae*	Rakocinski et al., 1997
	Asychis elongata	Dauer et al., 1992; Weisberg et al., 1997
	Clymenella torquata	Dauer et al., 1992; Weisberg et al., 1997
	Diopatra cuprea	Dauer et al., 1992; Weisberg et al., 1997
	Glycera americana	Weisberg et al., 1997
	Glycinde solitaria	Weisberg et al., 1997
	Heteromastus filiformis	Lerberg et al., 2000
	Mediomastus	Brown et al., 2000; Weisberg et al., 1997
	Spiochaetopterus costarum	Weisberg et al., 1997
	Spiophanes bombyx	Weisberg et al., 1997
Crustacea	*Listriella clymenellae*	Weisberg et al., 1997
Mollusca	*Cyrtopleura costata*	Dauer et al., 1992; Weisberg et al., 1997
	Rangia cuneata	Dauer et al., 1992; Weisberg et al., 1997
	Tagelus divisus	Dauer et al., 1992; Rakocinski et al., 1997; Weisberg et al., 1997
Nemertea	Nemertea	Lerberg et al., 2000
Echinodermata	*Micropholis atra*	Dauer et al., 1992; Weisberg et al., 1997

Notes:
Table derived from draft TCEQ white paper, "Development of a Tidal Stream Benthic Index in Galveston Bay, Texas" (TCEQ, May 2012)

Table E-4.6
TCEQ Tidal Stream Metric Score Calculations

Metric	Metric Explanation	Tidal Stream Reference Group 90th Percentile (or 10th)	Computation of Metric Score	Range[b]
Taxa	# of taxa in sample	13	(Taxa/13)*10	0 to 10
Diversity	H' = Shannon-Weiner diversity	1.85	(Div/1.85)*10	0 to 10
Major Taxa	Polychaeta, Crustacea, Nemertea, Bivalvia, Gastropoda	5	#MajorTaxa*2	0 to 10
% Intolerant	% of individuals from intolerant taxa	0.7	(%Intol/0.70)*10	0 to 10
% Tolerant[a]	% of individuals from tolerant taxa	0.16 (10th %ile)	10*(1-%Toler)/(1-0.16)	0 to 10
% Dominant[a]	% of the sample from the top 3 species	0.71 (10th %ile)	10*(1-%Dom)/(1-0.71)	0 to 10

Notes:
a - If no organisms present in sample, value of metric is 0.
b - If a metric score exceeds 10, it is set equal to 10.
Table derived from draft TCEQ white paper, "Development of a Tidal Stream Benthic Index in Galveston Bay, Texas" (TCEQ, May 2012)

Table E-4.7A
Patrick Bayou September 2000 Benthic Community Data and TCEQ BI Scores

Taxon	STATION*																		TCEQ, Intolerant	TCEQ, Tolerant	Taxa group
	9	8	7	R	Y	Q	6A	T	5	4A	G	3	U	E	S	2.5	V	2			
Nemertea					1					1					2			5	Y		Nemertea
Nematoda							4											5			Nematoda
Hirudinea		17																			Annelida
Oligochaeta		20	14	10	80	9	715	36	5	2		1						5		Y	Annelida
Streblospio benedicti						1	4	5	11	6					32	14	170	264		Y	Polychaeta
Laeonereis culveri								85	682	573	3	46	16	101	58	99	1	2		Y	Polychaeta
Amphicteis floridus [1]					23	29	168	179		3					2						Polychaeta
Parandalia americana																2		10			Polychaeta
Neanthes succinea							40											1			Polychaeta
Capitella capitata									10	9					3					Y	Polychaeta
Mediomastus californiensis							6												Y		Polychaeta
Gastropoda (U)												1									Gastropoda
Ostracoda					1																Crustacea
Acartia tonsa											1	1									Crustacea
Gammarus sp.												1									Crustacea
Ericthonius sp.												1									Crustacea
Macrobrachium sp.											2										Crustacea
Callinectes sapidus			1																		Crustacea
Americamysis bahia																	11	22			Crustacea
Chironomidae	9465	46		1	1	3	10													Y	Insecta
Total Abundance	9465	83	15	11	106	42	947	305	708	594	6	51	16	101	97	115	182	314			
Richness	**1**	**3**	**2**	**2**	**5**	**4**	**7**	**4**	**4**	**6**	**3**	**6**	**1**	**1**	**5**	**3**	**3**	**8**			
Diversity not salinity corrected. From Parsons 2002	NC	0.997	0.244	0.324	0.682	0.871	0.782	0.991	0.196	0.206	0.713	0.421	0.005	NC	0.956	0.46	0.26	0.701			
Diversity, calculation	0.000	0.995	0.245	0.305	0.676	0.863	0.779	0.988	0.196	0.201	1.011	0.479	0.000	0.000	0.941	0.456	0.262	0.690			
TCEQ, Taxa, Score	0.769	2.308	1.538	1.538	3.846	3.077	5.385	3.077	3.077	4.615	2.308	4.615	0.769	0.769	3.846	2.308	2.308	6.154			
TCEQ, Diversity Score, New	0.000	5.377	1.324	1.647	3.654	4.667	4.210	5.343	1.059	1.088	5.467	2.587	0.000	0.000	5.086	2.464	1.416	3.730			
TCEQ, Diversity Score, Parsons	0.000	5.389	1.319	1.751	3.686	4.708	4.227	5.357	1.059	1.114	3.854	2.276	0.027	0.000	5.168	2.486	1.405	3.789			
TCEQ, Intolerant, %; Score	0.000	0.000	0.000	0.000	0.135	0.000	0.091	0.000	0.000	0.024	0.000	0.000	0.000	0.000	0.295	0.000	0.000	0.227			
TCEQ, Tolerant, %; Score	0.000	2.438	0.794	0.000	2.808	8.220	2.740	6.987	0.000	0.080	5.952	0.934	0.000	0.000	0.491	0.207	0.720	1.630			
TCEQ Five Taxa, Score	0.000	0.000	2.000	0.000	6.000	2.000	2.000	2.000	2.000	4.000	4.000	6.000	2.000	2.000	4.000	2.000	4.000	6.000			
Top Three Taxa Score	0.000	0.000	0.000	0.000	0.651	0.821	0.874	0.565	0.244	0.348	0.000	2.028	0.000	0.000	1.422	0.000	0.000	1.977			
Total of Metric Scores, Parsons Diversity	0.769	10.135	5.651	3.290	17.126	18.826	15.317	17.986	6.380	10.181	16.114	15.853	2.796	2.769	15.221	7.001	8.433	19.778			
Total of Metric Scores	0.769	10.123	5.656	3.185	17.093	18.785	15.300	17.972	6.379	10.156	17.727	16.164	2.769	2.769	15.140	6.979	8.443	19.719			

Notes:
Values are mean number of individuals per square meter
*Data from Parsons et al. 2002; samples collected September 2000
[1]Formerly *Hobsonia (Hypaniola) florida*
NC = No Calculation

Table E-4.7B
Patrick Bayou April 2001 Benthic Community Data and TCEQ BI Scores

Taxon	STATION*																TCEQ, Intolerant	TCEQ, Tolerant	Taxa group
	7	R	Y	Q	6A	T	5	4A	G	3	U	E	S	2.5	V	2			
Turbellaria	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	1.1	0.0	0.0	2.2	0.0	0.0	0.0			Turbellaria
Nemertea	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	1.1	0.0	0.0	0.0	Y		Nemertea
Nematoda	0.0	0.0	2.2	3.2	0.0	1.1	0.0	0.0	0.0	8.6	0.0	20.5	7.5	0.0	0.0	0.0			Nematoda
Hirudinea	3.2	24.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	0.0	0.0	0.0	0.0	0.0	0.0			Annelida
Oligochaeta	116.9	285.5	1186.3	377.1	339.4	29.1	2.2	4.3	2.2	36.6	34.5	36.6	30.2	3.2	5.4	14.0		Y	Annelida
Streblospio benedicti	1.1	0.0	0.0	0.0	1.1	2.2	0.0	0.0	1.1	1.1	0.0	0.0	0.0	0.0	23.7	0.0		Y	Polychaeta
Laeonereis culveri	0.0	0.0	0.0	0.0	1.1	1.1	25.9	2.2	133.6	40.9	141.2	6.5	167.0	208.0	55.0	0.0		Y	Polychaeta
Amphicteis floridus [1]	0.0	1.1	1.1	1.1	18.3	18.3	14.0	9.7	55.0	93.7	33.4	90.5	38.8	86.2	200.4	0.0			Polychaeta
Parandalia americana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			Polychaeta
Neanthes succinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	6.5	8.6	55.0	145.5	0.0			Polychaeta
Capitella capitata	0.0	1.1	0.0	0.0	0.0	1.1	0.0	0.0	1.1	1.1	1.1	6.5	8.6	55.0	145.5	0.0		Y	Polychaeta
Mediomastus californiensis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	Y		Polychaeta
Polydora sp.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0			Polychaeta
Littoridina sp.	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			Gastropoda
Macoma mitchelli	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	5.4	0.0	1.1	1.1	0.0		Y	Mollusca
Ostracoda	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0			Crustacea
Calanoida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	0.0	0.0	2.2	0.0			Crustacea
Acartia tonsa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	0.0	0.0	0.0			Crustacea
Cyclopoida	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	1.1	9.7	0.0	2.2	2.2	0.0	0.0	1.1			Crustacea
Harpacticoida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			Crustacea
Gammarus sp.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0			Crustacea
Ericthonius sp.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.2	1.1	0.0	0.0	0.0			Crustacea
Idoteidae	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	4.3			Crustacea
Cladocera	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	0.0			Crustacea
Chironomidae (larvae)	78.7	176.7	19.4	14.0	11.9	25.9	14.0	35.6	8.6	50.6	0.0	42.0	9.7	0.0	1.1	2.2		Y	Insecta
Odonata (Larvae)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0			Insecta
Total Abundance	206.4	490.3	1211.2	395.4	371.8	79.9	56.1	56.2	204.9	262.9	213.5	225.5	278.1	409.6	581.0	21.6			
Richness	**6**	**6**	**5**	**4**	**5**	**8**	**4**	**8**	**9**	**14**	**7**	**14**	**12**	**7**	**10**	**4**			
Diversity, calculation	0.905	0.875	0.116	0.219	0.376	1.406	1.177	1.224	0.954	1.827	0.967	1.821	1.394	1.281	1.515	0.987			
TCEQ, Taxa, Score	4.615	4.615	3.846	3.077	3.846	6.154	3.077	6.154	6.923	10.000	5.385	10.000	9.231	5.385	7.692	3.077			
TCEQ, Diversity Score, New	4.894	4.728	0.626	1.183	2.033	7.597	6.360	6.616	5.157	9.877	5.226	9.844	7.534	6.924	8.186	5.333			
TCEQ, Intolerant, %; Score	0.000	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060	0.000	0.000	0.057	0.000	0.027	0.000			
TCEQ, Tolerant, %; Score	0.559	0.656	0.054	0.129	0.586	3.054	2.971	2.754	3.387	6.004	2.046	6.784	2.680	4.136	7.155	2.976			
TCEQ Five Taxa, Score	4.000	4.000	4.000	2.000	2.000	4.000	2.000	6.000	4.000	6.000	4.000	6.000	6.000	4.000	6.000	2.000			
Top Three Taxa Score	0.902	0.232	0.094	0.096	0.204	2.848	1.352	4.050	1.296	10.000	0.711	8.625	5.220	5.085	5.318	1.756			
Total of Metric Scores	14.971	14.263	8.620	6.485	8.669	23.654	15.760	25.573	20.763	41.942	17.367	41.253	30.721	25.530	34.379	15.142			

Notes:

Values are mean number of individuals per square meter

*Data from Parsons et al. 2002; samples collected April 2001

[1]Formerly *Hobsonia (Hypaniola) florida*

Table E-4.7C
Patrick Bayou August 2003 Benthic Community Data and TCEQ BI Scores

Taxon	STATION*						TCEQ, Intolerant	TCEQ, Tolerant	Taxa group
	E	3	4A	6A	R	7			
Empididae (Diptera larva)	0	0	0	2.75	0	0			Insecta
Hirudinea	0	5.5	0	0	0	5.5			Annelida
Oligochaeta	427.75	1692	72.75	998	266.25	86		Y	Annelida
Capitella capitata	0	5.5	2.75	0	0	0		Y	Polychaeta
Amphicteis floridus [1]	616	449.25	53.75	8	0	0			Polychaeta
Laeonereis culveri	390	1331.5	395.5	8	0	0		Y	Polychaeta
Mediomastus ambiseta	0	2.75	0	0	0	0	Y		Polychaeta
Polydora ligni	5.5	0	0	0	0	0			Polychaeta
Streblospio benedicti	118.25	56.5	161.5	0	0	0		Y	Polychaeta
Mulinia lateralis	2.75	0	0	0	0	0			Bivalvia
Rangia cuneata	2.75	0	0	0	0	0	Y		Bivalvia
Texadina sp.	13.5	2.75	0	0	0	0			Gastropoda
Chironomidae	10.75	8	0	5.5	13.5	13.5		Y	Insecta
Gnathiidae	0	0	0	0	0	0			Crustacea
Edotia sp.[2]	0	8	2.75	0	0	0			Crustacea
Amphipoda	5.5	0	0	0	0	0			Crustacea
Ampelisca sp.	0	0	0	2.75	0	0			Crustacea
Total Abundance	1592.75	3561.75	689	1025	279.75	105			
Richness	**10**	**10**	**6**	**6**	**2**	**3**			
Diversity, Calculation	1.393	1.107	1.139	0.162	0.193	0.582			
TCEQ, Taxa, Score	7.692	7.692	4.615	4.615	1.538	2.308			
TCEQ, Diversity Score	7.532	5.982	6.158	0.873	1.045	3.144			
TCEQ, Intolerant, %; Score	0.025	0.011	0.000	0.000	0.000	0.000			
TCEQ, Tolerant, %; Score	4.828	1.565	0.976	0.157	0.000	0.624			
TCEQ Five Taxa, Score	8.000	6.000	4.000	4.000	0.000	0.000			
Top Three Taxa Score	3.442	0.862	2.965	0.370	0.000	0.000			
Mean of Metric Scores	31.519	22.113	18.715	10.016	2.584	6.076			

Notes:

Values are mean number of individuals per square meter

*Data from Parsons et al. 2004; samples collected August 2003

[1]Formerly *Hobsonia (Hypaniola) florida*

[2]Originally *Edotea* (invalid; literature misspelling)

Table E-4.8
Summary of TCEQ Benthic Index

Station	Date	TCEQ Total Scores
V	9/5/2000	8.44
V	4/24/2001	34.38
2.5	9/5/2000	6.98
2.5	4/23/2001	25.53
S	9/5/2000	15.14
S	4/24/2001	30.72
E	9/5/2000	2.77
E	4/23/2001	41.25
E	8/12/2003	31.52
U	9/5/2000	2.77
U	4/24/2001	17.37
3	9/5/2000	16.16
3	4/24/2001	41.94
3	8/12/2003	22.11
G	9/5/2000	17.73
G	4/24/2001	20.76
4A	9/5/2000	10.16
4A	4/24/2001	25.57
4A	8/12/2003	18.71
5	9/5/2000	6.38
5	4/24/2001	15.76
T	9/5/2000	17.97
T	4/25/2001	23.65
6A	9/5/2000	15.30
6A	4/25/2001	8.67
6A	8/12/2003	10.02
Q	9/5/2000	18.78
Q	4/25/2001	6.49

ATTACHMENT E-4.1
PROUCL STATISTICS

Attachment E-4.1
ProUCL Statistics

From File: C:\Patrick Bayou\BERA 2012\Comments\Benthic_Community\Analysis\E_S_TCEQ_Total_2.xls.wst

Summary Statistics for Raw Full Data Sets

Variable	NumObs	Minimum	Maximum	Mean	Median	Variance	SD	MAD/0.675	Skewness	Kurtosis	CV
TCEQ Total Score	12	10.07	26.74	17.99	18.7	32.79	5.726	7.632	-0.0297	-1.341	0.318
ES-BI Relative Benthic Indexc	12	0.177	6.953	4.391	4.461	3.94	1.985	1.996	-0.627	0.275	0.452

Percentiles for Raw Full Data Sets

Variable	NumObs	5%ile	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
TCEQ Total Score	12	10.62	11.1	11.59	12.31	18.7	21.79	22.63	24.96	25.88	26.57
ES-BI Relative Benthic Indexc	12	1.447	2.556	3.227	3.352	4.461	5.935	6.069	6.747	6.878	6.938

APPENDIX E-5
PROUCL CALCULATIONS FOR SURFACE WATER TOTAL PCB EXPOSURE POINT CONCENTRATION

Appendix E-5
95 UCL Results for PCB Congeners (U=1/2)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

TPCB

General Statistics

Number of Valid Observations	18	Number of Distinct Observations	18

Raw Statistics		**Log-transformed Statistics**	
Minimum	5.65	Minimum of Log Data	1.732
Maximum	431	Maximum of Log Data	6.066
Mean	141.6	Mean of log Data	4.708
Geometric Mean	110.8	SD of log Data	0.882
Median	114.6		
SD	92.7		
Std. Error of Mean	21.85		
Coefficient of Variation	0.655		
Skewness	1.83		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.845	Shapiro Wilk Test Statistic	0.782
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	179.6	95% H-UCL	277.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	315.9
95% Adjusted-CLT UCL (Chen-1995)	187.6	97.5% Chebyshev (MVUE) UCL	383.8
95% Modified-t UCL (Johnson-1978)	181.2	99% Chebyshev (MVUE) UCL	517.3

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.866	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	75.89		
MLE of Mean	141.6		
MLE of Standard Deviation	103.6		
nu star	67.16		
Approximate Chi Square Value (.05)	49.3	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0357	95% CLT UCL	177.5
Adjusted Chi Square Value	47.83	95% Jackknife UCL	179.6
		95% Standard Bootstrap UCL	176.6
Anderson-Darling Test Statistic	0.631	95% Bootstrap-t UCL	196.8
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL	328.7

Appendix E-5
95 UCL Results for PCB Congeners (U=1/2)

Kolmogorov-Smirnov Test Statistic	0.184	95% Percentile Bootstrap UCL	178.5
Kolmogorov-Smirnov 5% Critical Value	0.206	95% BCA Bootstrap UCL	188.4
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	236.8
		97.5% Chebyshev(Mean, Sd) UCL	278
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	359
95% Approximate Gamma UCL (Use when n >= 40)	192.9		
95% Adjusted Gamma UCL (Use when n < 40)	198.8		
Potential UCL to Use		Use 95% Approximate Gamma UCL	192.9

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

APPENDIX F
COMMENTS AND RESPONSES MATRIX FOR TCEQ, NOAA, AND USEPA DRAFT BASELINE ECOLOGICAL RISK ASSESSMENT

Appendix F
Comments and Responses Matrix for TCEQ, NOAA, and USEPA
Draft Baseline Ecological Risk Assessment

Comment No.	Section	Comment	Response to Comment - Proposed Revision
Overall Comment - TCEQ		Using historical benthic community data from the site and nearby tidal bayous, the BERA concludes that the condition of the benthic community at the site does not differ significantly from local comparison sites, that there is no significant relationship between chemicals of potential concern (COPCs) and the condition of the benthic community, and that COPCs are not identified that represent an unacceptable adverse risk to the benthic community at the site. No risk management recommendations were deemed necessary for this receptor group. We disagree with this assessment. First, we believe the benthic community evaluation was flawed for reasons outlined in the comments that follow. In fact, our analysis indicates that the benthic community in Patrick Bayou is degraded compared to the comparison sites presented in the BERA. This conclusion withstands even when data for the gunite-lined portion of the bayou is removed from the evaluation. Secondly, Patrick Bayou appears impacted by site COPCs based on the other two legs of the sediment quality triad (i.e., Chapman 1990). Surficial sediment concentrations for mercury, PCBs (polychlorinated biphenyls), and Total PAHs (polycyclic aromatic hydrocarbons) consistently exceed the second effects level which indicate a concentration threshold above which adverse effects can frequently occur (i.e., Long et al. 1995; TCEQ 2006). Additionally, sediment toxicity tests conducted as part of the TMDL (Total Maximum Daily Load) effort and by U.S. EPA/TCEQ indicated that site sediments were frequently toxic on multiple occasions at multiple locations (e.g., BERA Work Plan, Table 17). As this was a draft document, we believe continued discussions with regulators should occur before the final BERA is submitted. We can provide details of our benthic evaluation, and we can discuss potential responses to comments along with corresponding changes to the BERA. However, we believe the ultimate risk management decision for the benthic invertebrate exposure pathway should reflect a concentration-based remedial target for PAHs, mercury, and PCBs (and possibly some volatiles) in surficial sediments in Patrick Bayou that would be reasonably protective of the benthic community. Deeper sediments should also be targeted where sediment instability indicates potential future source areas of COPCs.	We note the overall concerns expressed by TCEQ regarding the benthic risk assessment. We have attempted to respond to specific agency comments and concerns regarding the benthic risk assessment in the responses that follow.
1	4	BERA Dataset - The information for notes a and b in Table 4-1 should be added.	The requested information will be provided in the revised BERA.
2	4.1.2.3	Toxic Equivalency Quotients - The table reference for the source of the toxic equivalency factors (TEFs) provided by U.S. EPA (2008) should be Table 4 rather than Table 4-2.	The text is referring to Table 4-2 in the BERA Report, which was taken from USEPA (2008).
3	4.7.2	Comparison Site Data - The discussion should include additional information on the benthic sample collection effort in Dobberstine (2007). In the Dobberstine study, five replicate 4-inch cores were collected at each sample location. This methodology results in a sediment sample volume of about 405 cm2 compared to a volume of roughly 929 cm2 for samples collected in Patrick Bayou. Normally in estuarine benthic communities, a few species are relatively abundant whereas other species are less abundant or relatively rare. Amphipods, gastropods, bivalves, and nemerteans are usually among these less common species. When smaller sample sizes are used, the rare species are often missed. This affects estimates of species richness and diversity because fewer species are found. This also affects any metrics that use these rarer species, such as percent bivalves, amphipods, or intolerant organisms. Please revise the BERA text.	The use of different sample devices may result in differences in estimates of abundance and diversity due to differences in area (i.e., cm2) sampled and sample depth retrieval. Without side by side sample collection at the Site and representative reference sites it is not known if the differences in sampling devices between the Site and reference area are significant. However, the significance of these differences are not relevant as we are no longer using the Dobberstine (2007) data in the BERA.
4	6.1.2.1.1	Prey Groupings - Analysis by Prey Species - Looking at Appendix C and Table 6-2, it seems appropriate that Gulf killifish as prey were separated out for assessing exposure to PCB toxic equivalent quotient (TEQ, avian) concentrations. However, it appears that PCB TEQ (avian) concentrations in Gulf menhaden and striped mullet were statistically higher than those for pinfish and sand sea trout. Why were these fish not separated out as well?	Gulf menhaden and striped mullet will be separated from sand seatrout and pinfish in the prey grouping and EPC calculations for PCB TEQ (avian). Hazard Quotients (HQ) for belted kingfisher and carnivorous bird will be recalculated using the revised groupings and associated EPCs. Revised HQs will be presented in the BERA.

5	6.1.2.1.1	Prey Groupings - Spatial Trend Analysis - Appendix C-1.2 displays plots of tissue concentrations by distance from the mouth of Patrick Bayou. The intent was to evaluate potential spatial trends in prey item concentrations along the bayou. Overall, the discussion indicates that significant spatial patterns were not apparent for most COPCs and species, and no prey subgroups were identified based on spatial differences in COPC concentrations in prey tissue. The text in this section provides a few r^2 and p-values. No similar information was provided with the figures in Appendix C-1.2. The appendix should be revised to include this information, as appropriate, for each COPC/prey item pair.	R^2 and p-values for each COPC / prey item species will be provided in Appendix C-1.2 of the revised BERA.
6	6.1.2.1.2	95UCL - The exposure point concentrations (EPCs) for each receptor and their respective prey groups are provided in Table 6-3. For the most part, the various ProUCL summary pages indicating the 95% Upper Confidence Limits (UCLs) for each prey grouping were provided in Appendix C. However, we could not locate the 95% UCL information for the blue crab/oyster/white shrimp prey grouping. Please provide this information. Additionally, if a maximum or non-detect proxy value was used, please indicate this in Table 6-3.	The 95UCL output / calculation sheets for the blue crab/white shrimp/oyster prey subgroup will be provided in Appendix C-2 of the revised BERA. Table 6-3 will be revised to identify any prey item exposure point concentrations (EPCs) based on a maximum detected value or a proxy value (i.e., non-detect).
7	6.1.2.2.1	Sediment Surface Weighted Average Concentration (SWAC) - Section 1.1 (Method Selection) of Appendix B compares inverse distance weighting (IDW) and Kriging interpolation methods using lead and hexachlorobenzene. Please present a similar comparison (graphics, calculated values) for PCBs (congeners, TEQ) since this was the primary risk driver for wildlife.	Appendix B will be updated to include a comparison of IDW and Kriging for PCB Congener TEQ (mammalian and avian TEQs).
8	6.1.2.2.1	Sediment Surface Weighted Average Concentration (SWAC) - Was the gunite-lined portion of Patrick Bayou included in the SWAC calculations for wildlife? Either way, what was the basis for the decision?	Yes, the gunite channel was included in the SWAC calculation for estimating the $C_{k,SD}$ term, as some intertidal habitat is available in this portion of the Site. However, the available intertidal habitat (0.006 km^2) in this portion of the Site is minimal and has no significant incremental effect on the Ck,SD term. To support this statement, the uncertainty section will evaluate the differences in wildlife COPC SWACs with and without the gunite channel included and the incremental effect on the risk characterization for these scenarios (Appendix C-5.8). In addition, as discussed in the December 10, 2012 meeting among USEPA, TCEQ, trustees, and the JDG, this portion of the Site has limited and poor quality benthic habitat that does not support a benthic community. Thus, feeding and foraging by wildlife receptors would be limited.
9	6.1.2.2.1	Sediment Surface Weighted Average Concentration (SWAC) - Section 6.1.2.1 of the BERA Work Plan states that a hot spot analysis will be performed as part of the uncertainty assessment for the concentration term (i.e., Ck,SD) to evaluate if areas of elevated sediment COPC may occur within a foraging area that would lead to potentially higher exposure than indicated by use of a SWAC for this term. Was this done? If not, this evaluation should be added to the BERA.	Areas of elevated COPCs will be defined as a station where concentrations of a COPC exceed the 90th percentile of Site-wide surface weighted average concentration. The minimum reported home range estimate for a given receptor will be applied to define the distance from the elevated COPC location that will be used in the calculation of the sediment concentration term. Centered on the location, the exposure concentration will be calculated as the mean of the raster surface within the home range areas as appropriately defined by the area the receptor is able to forage within. For example, the sediment concentration term for raccoon would be calculated from the raster surface defined by the supratidal and intertidal zones within a 1.33 km distance centered on the elevated location. This analysis and results will be provided in the wildlife risk assessment uncertainty discussion.
10	6.1.2.2.1	Sediment Surface Weighted Average Concentration (SWAC) - Methylmercury Estimates in Sediment - Available Site data were evaluated to estimate the proportion of methylmercury (MeHg) to total mercury in site sediments. These proportions were then used to estimate bulk sediment concentrations of MeHg and inorganic mercury for the incidental sediment ingestion pathway exposure assessment (for wildlife). In summary, estimates of MeHg in sediments were developed using simple equilibrium partitioning models and site-specific measurements of porewater MeHg, dissolved organic carbon (DOC), and bulk sediment total organic carbon (TOC). Details of this analysis are provided in Appendix C-3. Please provide a general discussion indicating why MeHg was not analyzed in site (bulk) sediment samples.	The requested discussion will be provided. The discussion will focus on the advantages of porewater analysis of MeHg over bulk sediment.

11	6.1.2.2.1	Sediment Surface Weighted Average Concentration (SWAC) - Methylmercury Estimates in Sediment - After a quick on-line search, it appears that the Skyllberg (2008) reference in Appendix C-3 is actually an article in Journal of Geophysical Research – Biogeosciences. Please update the reference as appropriate.	The reference will be updated in the revised BERA as: Skyllberg, U. (2008). Competition among thiols and inorganic sulfides and polysulfides for Hg and MeHg in wetland soils and sediments under suboxic conditions: illumination of controversies and implications for MeHg net production. J Geophys Res Biogeosci 113:536–554. doi:G00c0310.1029/2008jg000745.
12A	6.1.2.2.1	Sediment Surface Weighted Average Concentration (SWAC) - Methylmercury Estimates in Sediment - Using the formulas indicated in Appendix C-3, an estimated $MeHg_{sed}$ value was calculated for each sample location (Table 2 and 3) using bulk sediment TOC data for the nearest surface grab. It is unclear how the nearest surface grab was selected to pair with the porewater (DOC and MeHg) data. Also, since these analyses were not based on contemporaneous sampling events (2007 and 2009, footnotes page C-2), there is some uncertainty in the application of the assumptions. Please provide more information on both of these points.	A figure will be included to show the location and distances between bulk sediment TOC samples and MeHg porewater samples (Appendix C-3, Figure C-1). Sensitivity analysis will be performed using the range of observed bulk sediment TOC values to evaluate the uncertainty in the lack of synoptic sampling for this analysis.
12B	6.1.2.2.1	Sediment Surface Weighted Average Concentration (SWAC) - Methylmercury Estimates in Sediment - Using the formulas indicated in Appendix C-3, an estimated $MeHg_{sed}$ value was calculated for each sample location (Table 2 and 3) using bulk sediment TOC data for the nearest surface grab. It is unclear how the nearest surface grab was selected to pair with the porewater (DOC and MeHg) data. Also, since these analyses were not based on contemporaneous sampling events (2007 and 2009, footnotes page C-2), there is some uncertainty in the application of the assumptions. Please provide more information on both of these points.	A figure will be included to show the location and distances between bulk sediment TOC samples and MeHg porewater samples. Sensitivity analysis will be performed using the range of observed bulk sediment TOC values to evaluate the uncertainty in the lack of synoptic sampling for this analysis.
13	6.1.2.2.1	Sediment Surface Weighted Average Concentration (SWAC) - Methylmercury Estimates in Sediment - Please revise Appendix C-3 (page 2) to better explain the various depth intervals over which TOC concentrations (from any one sample location) were obtained and used in this approach. As it is, the draft language does not pair up with the information in Table 2 of the appendix. Anchor QEA representatives have proposed revised language in an e-mail to TCEQ.	Appendix C-3 will be revised to clarify the depth intervals over which TOC were obtained and included in the analysis. This revised language will reflect the previous proposed language shared with TCEQ.
14	6.1.2.3	Terrestrial Animals and Plant Matter - Regarding terrestrial animals as prey for carnivorous birds and raccoons, the discussion states that none of these prey items would be expected to have significant exposure to bioaccumulative COPCs in site sediments and surface water; so, the terrestrial animal diet component for the raccoon and carnivorous birds was set to zero for the risk characterization. This statement is in conflict with a response to comment on the BERA Work Plan. In a comment regarding Section 6.2 of the Work Plan, we had asked (see page 20 of the response to comments table) if the intent was to model hypothetical exposure to terrestrial prey that have foraged within Patrick Bayou. The response was: "Yes, our intent is to model hypothetical exposure to terrestrial prey that may forage in Patrick Bayou (see Sections 6.2.2 and 6.2.4 in the BERA [Work Plan] for references to the equations we will use)." Please justify this apparent shift in the approach.	While exposure to sediment-associated COPCs to carnivorous birds and raccoon from ingestion of terrestrial animals and plants in the riparian zone are likely to be negligible, the baseline risk estimates will be revised to include these exposure pathways. Estimation of exposure through ingestion of terrestrial plant and animal matter will follow the procedures presented in the BERA Work Plan (2011). Revised baseline HQ reflecting these exposure pathways will be presented in the baseline risk characterization discussion. The relative contribution of terrestrial animal and plants to exposure and risk will be compared to the contributions from consumption of fish and invertebrates and incidental ingestion of sediment and summarized as part of the uncertainty analysis.
15	6.1.3	Area Use Factors - We were not able to duplicate the average (belted kingfisher) and upper 75th percentile (belted kingfisher and spotted sandpiper) home range values provided in Table 6-5. Please verify these calculations.	The average belted kingfisher home range will be revised to 2.0 in the revised BERA. Statistical documentation of the upper quartiles for belted kingfisher and spotted sandpiper will be included in Appendix C-4 (Exhibit C-4.2) of the revised BERA.
16	6.2.1	Development of Inorganic Mercury TRV (Toxicity Reference Value) - The avian LOAEL (lowest observed adverse effect level) TRV for Total PAH (325 mg/kg/day, Table 6-6) differs from the value of 40 mg/kg/day set out in the BERA Work Plan (Table 29). Please provide the justification for this change and present the derivation of the final value based on the LOAEL value in the cited study.	The difference in the TRV in the Work Plan and that used in the BERA is due to assumptions for food uptake rate and body weight used to calculate the LOAEL as presented in the BERA Work Plan and that used in the BERA itself. The same study was used in the derivation of the TRV for both the Work Plan and the BERA. The effect level at the LOAEL was 4,000 mg/kg total PAHs (Patton and Dieter 1980). In the Work Plan we assumed that the food uptake was 1% of the body weight and the body was assumed to 1.0 kg. Therefore, we assumed a low food uptake rate for a duck. For the BERA itself, the assumptions were updated so that food uptake was 100 mg/day (0.1 kg/day) and the weight was derived from the original study, 1.23 kg. These two new assumptions allowed the calculation of 325 mg/kg/day as the LOAEL.

17	6.3.2.4	Spotted Sandpiper - For the spotted sandpiper, incidental sediment ingestion was modeled as 18% of the total daily intake of food (Table 6-1). This conflicts with the value of 30% that was presented in the approved BERA Work Plan (Table 28 and Section 6.2.1). Please provide a justification for this move from the value presented in the BERA Work Plan.	The incidental sediment ingestion rate of 30% was intended to be used during the selection of wildlife COPC but was not intended for use in the baseline risk assessment. During a review of Beyer et al. (1994) it was noted that sediment ingestion by four sandpiper species (i.e., stilt sandpiper, semipalmated sandpiper, least sandpiper, and western sandpiper) ranged from 7.3 to 30% of the dry diet, with an average incidental sediment ingestion of 18%. An incidental sediment ingestion rate of 18% was selected for the baseline risk assessment consistent with the selection of more realistic exposure parameters for wildlife in the baseline risk assessment and consistent with another CERCLA Site (i.e., Portland Harbor). The BERA will be revised to discuss this as a change from the Work Plan and the basis for the change (described above) will be included.
18	6.3.3.1.1	Prey Item Grouping - It does not appear that the uncertainty associated with Total PCB congeners was part of this analysis. Please add this COPC to the uncertainty evaluation or explain why it was excluded.	The uncertainty assessment associated with prey item grouping is intended to evaluate uncertainty in a particular element of the exposure assessment. As discussed in Section 6.3.1 of the BERA, risk characterization was performed using TEQ for dioxin-like PCB congeners only due to the uncertainty in the effects assessment for commercial Aroclor mixtures applied to weathered environmental samples. Thus, combining the prey item grouping uncertainty assessment (exposure) with the uncertainty in the effects assessment for PCB congeners (effects) would in effect 'mix' the different sources of uncertainty in the outcome (HQs); a situation that should be avoided. Uncertainty in the exposure assessment (e.g., mg/kg-bw/day) for Total PCB congeners associated with prey item grouping could be performed but should stop short of characterizing the associated risk (HQ) to avoid this situation. However, we feel that this type of assessment would not provide the context to meaningfully assess the effect of this uncertainty in a way that could be applied to risk management decision making.
19	6.3.3.1.1	Prey Item Grouping - Why were oysters excluded as food in the kingfisher evaluation (all prey species separate)?	Appendix C-5.3 will be revised to include oysters in the uncertainty assessment of prey item grouping for belted kingfisher. Oysters will be included in the diet as an individual prey item and HQs recalculated for this uncertainty scenario. Table 6-9 (Uncertainty Analysis Scenario 1) HQs for belted kingfisher will be updated based on revised Appendix C-5.3

20	6.3.3.1.3	Area Use Factor (AUF) - To evaluate the potential uncertainty associated with the AUF, the AUF was varied for each receptor using the upper bound and lower bound home range estimates, and hazard quotients for each scenario were then determined. For the sandpiper, the hazard quotient for PCB Congener TEQ was 0.80 based on a lower-bound estimate of its home range and 3.1 based on an upper-bound estimate of its home range. Based on this evaluation, the BERA concludes that the uncertainty associated with the range of AUF values used in the baseline risk characterization is considered low. Given this outcome for the sandpiper evaluation, please discuss the conservatism and confidence in the AUF selected for the sandpiper.	Several (n = 8) studies were evaluated for the shorebird guild (sandpiper) to determine expected home ranges. All studies included in this evaluation were conducted at relatively undisturbed habitats that represented generally high quality, continuous habitat conditions. Under such conditions, species are likely to have shorter foraging distances to meet their energetic requirements than lower quality, fragmented habitats. As such, the home ranges used in development of the AUF are all considered conservative representatives of home ranges for species that may forage at the Site. This conservatism was addressed through the use of a 75th percentile estimate of the home ranges to determine the AUF. However, even this assumption may not fully account for the quality of habitat at the Site relative to home ranges identified in the literature. Overall, the AUF used in the baseline is considered a conservative estimate for this guild. Another consideration to include in evaluating the conservatism / uncertainty in the AUF guild is the relative amount of intertidal habitat along the Sites length. Figure 6-1 of the draft BERA indicates that much of the Site has little areal intertidal habitat. This is in contrast to many of the study sites used in assessing home ranges that are located in areas with significant intertidal habitat (mudflats, sand bars) along an estuary gradient. Thus, all stream distances may not be equal in terms of intertidal foraging area and quality; unfortunately most shorebird foraging studies are expressed in terms of distance metrics. Thus, a kilometer of habitat in many of the studies is likely to have a greater amount of foraging habitat available than what is available at the site; the result being an underestimate of the foraging distance necessary for shorebirds at the Site. Notwithstanding the factors discussed above, the uncertainty discussion regarding uncertainty in the AUF will be modified. Text will be included to note that while the selected AUF is considered representative for the Site, the selection of the AUF term does have a significant effect on whether the baseline HQ for this receptor falls above or below a level associated with adverse effects (i.e., HQ > 1.0).
21	6.4	Risk Conclusions - The discussion repeats that for the spotted sandpiper, the uncertainty analysis indicates that the hazard quotient varies around one depending on the exposure assumptions, and that the hazard quotients range between 3.1 and 0.8 in the uncertainty analysis indicating that the probability of adverse effects above a LOAEL threshold are expected to be relatively low. The discussion adds that this generally translates into a low probability of adverse effects at the population level for this receptor group. Please provide more discussion regarding the potential for risks to the population level for this guild.	More discussion will be provided in the revised BERA. Consistent with the response to USEPA comments #1 and #2 (below), language in the BERA will be removed that states HQs above 1.0 are not associated with potential risk to population levels for this receptor. Rather, this type of evaluation will be limited to the uncertainty discussion and will focus on the uncertainty of risk characterization using a deterministic approach based on a single TRV to represent risk to a population or guild.
22	7.1	Bioaccumulative COPCs Risk Assessment - The discussion at the beginning of this section states that based on the previous screening, the potentially bioaccumulative COPCs included in the BERA for fish are mercury, PCBs, and selenium. This conflicts with the BERA Work Plan which included dioxins/furans (as TEQ) as bioaccumulative COPCs for fish (from the surface water to fish pathway). In fact, the March 2011 response to comment document (page 9) states the following: "Based on the results of the surface water screen for COPCs, dioxins/furans were identified as COPCs. We did state that due to the lack of a surface water screening value for dioxins/furans and the uncertainty with evaluating the bioavailability of dioxins/furans in the water column, an approach that used body burden data would be the best way to evaluate this COPC. As such, risks from dioxin/furan congeners in surface water will be assessed as a bioaccumulative COPC using a body burden approach for fish. Therefore, dioxins/furans will be included as an analyte in the fish and invertebrate SAP for the BERA." Please clarify if dioxins/furans were evaluated as bioaccumulative COPCs for fish as we do not see them in the summary tables for this section. If dioxins/furans were not evaluated in the BERA as a COPC for fish, please provide a robust rationale for this omission.	Dioxin/furans are considered fish COPC and are to be evaluated as bioaccumulative COPC for this receptor. An exposure assessment based on the empirical whole body tissue data for fish will be included in the revised BERA. Risk characterization will be performed following the same approach for other fish bioaccumulative COPC. HQs will be provided in the revised BERA.
23	7.1.1	Exposure Assessment - Looking at Appendix C and Appendix D, we could not find the presentation of the 95% UCL determination for the following combinations: Mercury: all species PCB Congener TEQ (Fish): GKF; all species Total PCBs: GM, STM, PNF, SAS; all species Please provide this information.	Appendix D will be updated to include UCL95 calculation sheets for the indicated COPC / species groups in the revised BERA.

24	7.1.2	Tissue Based Effects Assessment - Details of the data used to derive the fish tissue-based selenium TRV were not provided in Appendix D. Please provide this information.	We will update Appendix D to include the data used to derive the fish tissue based selenium TRV.
25	7.3	Risk Conclusions - Based on the assessment of bioaccumulation-based and surface water exposures for fish, the BERA concludes there are no COPCs for fish. With the exception of selenium, this was primarily based on comparison of tissue residue-based TRVs with empirical tissue data for smaller (< 15 cm) fish collected from Patrick Bayou. In our comments on a draft of the BERA Work Plan, we had suggested collection of larger fish to more adequately assess the risks associated with bioaccumulative COPCs in Patrick Bayou. The final Work Plan stated (page 72) that "exploratory data analysis (e.g., coefficient of variation within and between species) will also be performed to assess the representativeness of larger size class fish (i.e., greater than 30 cm) as a measurement endpoint for the fish risk analysis and risk characterization." Was this analysis performed? If not, why not?	This analysis was not performed in the draft BERA due to the very low body burdens and associated HQ for whole body fish collected as part of the BERA tissue investigation. In addition, there is continued uncertainty that the body burdens in larger size class fish, whether measured or estimated, are representative of exposure to Site COPC or reflect exposure from offsite sources (due to larger expected foraging range of larger fish). Notwithstanding this uncertainty, to evaluate potential exposure of larger, higher trophic level fish, the following approach will be evaluated for assessing potential risk to larger size class fish. Food chain multipliers (FCM) will be developed from the literature to assess potential biomagnification of COPC to larger size class fish using the empirical fish tissue data for lower trophic level fish. These estimated tissue concentrations in higher trophic level fish will be compared to whole-body TRVs to calculate HQ for higher trophic level fish. Results will be presented in the uncertainty assessment for the fish risk assessment.
26	8	Benthic Invertebrate Risk Assessment - The introductory discussion indicates that the BERA problem formulation identified three lines of evidence (LOEs) for benthic invertebrate risk. These included an assessment of predicted sediment toxicity based on sediment chemistry and bioassay tests (i.e., the chemical and toxic LOE of the sediment quality triad); benthic indices that describe the condition of the benthic community; and a surface water exposure pathway risk assessment in which chemical concentrations in water are compared to TRVs derived for the protection of aquatic organisms. This conflicts with the problem formulation discussion (Section 3.3.1) of the BERA Work Plan which limited the benthic evaluation measurement endpoints to the use of a site-specific predictive sediment toxicity model and an evaluation of surface water exposure concentrations compared to water quality criteria. In fact, the Work Plan stated that the "predictive sediment toxicity model will be the primary measurement endpoint used to assess risks to the benthic invertebrate community on a site-wide basis." Please provide a clear explanation why the toxicity model was not presented in the BERA. Was the analysis performed?	The toxicity model initially developed during the Work Plan was refined and reevaluated during the BERA (this refinement and additional evaluation can be found in Appendix E). During the development of the BERA, it became apparent that the toxicity model had several weaknesses that we were unable to resolve as initially conceived, and that led to a significant amount of uncertainty in its utility and relevance as a primary line of evidence. Specifically, and in no particular order of priority, they are; the lack of a reference area toxicity tests to account for naturally present confounding factors (salinity acclimation, porewater ammonia, etc.) results in an unknown but potentially significant amount of conservative bias in the toxicity attributed to Site COPCs; the model, when applied to other test species, results in a high percentage of false positives, leading to a potentially significant amount of Site sediments to be falsely predicted as toxic; and the analytical uncertainty in the PCB analysis in the toxicity sample dataset confounds the extrapolation of the sediment chemistry data to more recent samples. Therefore, the primary issue is the reliance on this single line of evidence to characterize risk to the assessment endpoint; the health of the benthic community. In this case, the uncertainty in the model, which is primarily a function of the uncertainty in the data used to develop the model, does not lead to a sufficient level of confidence in the model to define the magnitude and extent of risks to the benthic community. As noted in Appendix E, we agree that there is some apparent association between Site COPC and sediment toxicity for a subset of COPC, including PCBs, PAHs, lead, and BEHP. However, the data, in conjunction with site conditions, do not provide a predictive dose-response model capable of defining the magnitude of risks to the benthic community as a function of sediment COPC concentrations for the four COPCs noted above. Per the discussions during the December 10, 2012 meeting between USEPA, TCEQ, trustees, and the JDG, the revised BERA will incorporate this LOE into a WOE approach to identify potential risks to the benthic community. In addition, per the discussions during the December 10, 2012 meeting, we also will reanalyze the sediment chemistry and toxicity data used to develop the benthic toxicity model to evaluate whether there are some potential areas which show a relatively stronger correspondence between chemistry and toxicity that is not apparent in the model results. This reanalysis will also be coordinated with a reanalysis of the Site-specific benthic community data collected at the same time the chemistry and toxicity data were collected (see response to Comment #30 below).
27	8.1.2	Benthic Predictive Model Risk Characterization - The discussion states that since a dose-response relationship for the sediment-toxicity dataset was not observed, this suggests that other mechanisms are acting to cause the observed mortality in test species. This is too broad of a statement. The toxicity demonstrated in the historical toxicity tests could have been a result of unique site COPCs or a combination thereof, or as a result of a combination of site COPCs and non-site COPCs. Please revise the BERA text.	See response to Comment 26 above.

28	8.1.3	Applicability of Benthic Toxicity Predictive Model - This section states that Leptocheirus is not considered a representative receptor for the species expected to be found at the site. We disagree with this statement. Amphipods are an important component of estuarine macrobenthic communities, even in tidal streams. In 110 tidal stream samples collected by TCEQ between 1988 and 2008, amphipods were present in 21% of those samples (TCEQ unpublished data). In the Patrick Bayou samples presented in the BERA, amphipods were present in 18% of the samples. In the Dobberstine (2007) study (presented in the BERA), amphipods were only present in 8% of the samples. The most likely reason for this difference in abundance is that less sediment volume was collected in the Dobberstine (2007) study compared to the benthic evaluations performed as part of the TMDL effort and the TCEQ's benthic evaluations. As a result, these less abundant organisms were simply missed.	This text will be revised. Text will included to state that *Leptocheirus* , relative to other species tested, is considered a sensitive indicator of sediment toxicity and, therefore, a conservative measurement endpoint for assessing the response of the benthic community to Site COPC. With regards to the frequency of amphipods in reference area samples, please see the response to TCEQ Comment #3.
29	8.2.1.1	Setting and General Conditions - This discussion should be revised so that it is clear that the areas of Patrick Bayou that are channelized or that have patchy benthic habitat are limited to the upper gunite-lined portion. This only affects four benthic sampling locations. The remainder of Patrick Bayou exhibits typical benthic habitat, which is not patchy or overly scoured. In fact, the benthic habitat in the lower portion of Patrick Bayou is less disturbed than that of other comparison tidal streams (e.g., Carpenter Bayou and Cedar Bayou are both channelized for much of their lower length and both are used for barge traffic). Additionally, Patrick Bayou is not subject to boat traffic (and its associated prop washing) because of the low bridge near the mouth of the bayou.	The text on patchy benthic habitat has been removed and the overall discussion on the benthic habitat has been revised as appropriate. The current approach no longer includes direct comparison to reference sites and, by extension, reference site conditions. The JDG maintains that understanding conditions between the Site and reference areas are important should such a direct comparison be included in any future evaluations (e.g., Feasibility Study).
30	8.2.2	Benthic Community Measurement Endpoints - This section of the BERA used two different benthic indices to evaluate the Patrick Bayou benthic community data compared with a group of reference sites sampled by Dobberstine (2007). Both of these benthic indices were developed using primarily open bay stations across the northern Gulf of Mexico. Neither of these indices have been used or tested in tidal streams. Similar to the Dobberstine et al. (2007) reference in Section 8.2.1.5, tidal streams are not expected to have the same macrobenthic community composition as open bay sites. It is not appropriate to use these open bay indexes to assess a tidal stream such as Patrick Bayou. In developing quantitative biocriteria, U.S. EPA guidance suggests using measures of diversity, richness, trophic structure, and the presence or absence of species that are considered tolerant or intolerant in comparison to a population of reference sites (U.S. EPA, 2000). In the absence of a tested index for tidal streams, we suggest evaluating the benthic community in Patrick Bayou and reference locations using five traditional metrics. The metrics we recommend are: species richness, diversity, percent dominance, percent tolerant individuals, and percent intolerant individuals. We evaluated the Patrick Bayou and comparison tidal stream benthic data using these five metrics in addition to a novel metric that evaluates the presence or absence of five major taxonomic groups that are generally present in tidal stream benthic communities. These six metrics performed well in evaluations of tidal stream reference and degraded benthic communities in the	The Gulf of Mexico (GOM) Biotic Index (BI) and Engle and Summers BI are peer-reviewed approaches that have been applied to estuarine site across the GOM. These BI's are currently the most appropriate standardized indices available for this Site. Per the concerns expressed by TCEQ during the December 10, 2012 meeting between USEPA, TCEQ, trustees, and the JDG, the GOM BI will not be used to evaluate the Site. Therefore, only the Engle and Summers BI will be used to evaluate the Site in the revised BERA. In addition, although not thoroughly peer-reviewed, the index proposed by TCEQ during this meeting will be evaluated as part of the uncertainty assessment for the benthic community line of evidence. In addition, per the discussions at the December 10, 2012 meeting, we will also reanalyze the Site-specific sediment chemistry data and the benthic community data to evaluate whether there are some potential areas which show a relatively stronger correspondence between chemistry and benthic community degradation that is not apparent in the benthic community analysis completed to date. This reanalysis will also be coordinated with a reanalysis of the Site-specific chemistry and toxicity data collected at the same time the benthic community data were collected (see response to Comment #26 above).
31	8.2.2.1	Benthic Indices (and Figures 8-8 and 8-11) - In the BERA evaluation of benthic community data (using these indices), benthic data from different seasons were combined. Macrobenthic communities show large seasonal fluctuations. For this reason, both of these indices were developed using summer data only. Summer data should not be combined with data from other seasons when evaluating macrobenthic communities. The statements that discuss the variability in the benthic scores over time and season should acknowledge that seasonal changes are expected. Further, the discussions should not attempt to use these differences as evidence that COPCs are not affecting the benthic community. Summer and non-summer scores are not expected to be the same.	We will update the assessment of the Site by separating the data into seasonal groups (Summer vs. Non-summer seasons) for the Engle and Summers BI based evaluations. Summer will include the months of June through September for purposes of this evaluation.
32	8.4.1	Exposure Assessment - The recommended total PCB 95% UCL was calculated to be 193 ng/L. Calculations are summarized in Appendix E-4, and the surface water data is presented in Appendix A-2. We calculated a slightly higher value (220 ng/L) based on the values in Table A-2 which totaled 21 values, rather than 25. Please verify the dataset and explain the discrepancy (if confirmed).	The output sheet for the total PCB congener surface water 95UCL is incorrect; the wrong sheet was included in the draft BERA. The correct 95UCL calculation sheet will be included in the revised BERA. Appendix A-2 includes results for 18 normal samples and three field duplicates (n=21). Treating field duplicates as normal samples does yield a 95UCL of 220 ng/L. When only the 18 normal samples are included, the approach specified in the Work Plan, a 95UCL of 193 ng/L is arrived at. This should be the appropriate EPC for the exposure assessment.

33	8.4.2	Effects Assessment - The BERA proposed an alternate final chronic value (protective of benthos) of 540 ng/L based on the presentation in Fuchsman, et al. (2006). This paper relied on toxicity data for Aroclor 1254 to derive the final acute value (FAV) and acute and chronic toxicity data for Aroclors 1242, 1248, and 1254 to calculate the acute-to-chronic ratio. Since the Patrick Bayou surface water data was based on total congeners rather than Aroclors, please discuss the uncertainty associated with this approach.	Although there is some uncertainty associated with the extrapolation between Aroclor and congener based PCB data, the uncertainty in this extrapolation is considered relatively low. Previous Aroclor analysis in Site sediments resulted in detected values for Aroclor 1248 and 1254, suggesting that the PCBs present in Site sediments are similar in composition to those used to derive the FAV and ACRs. Congener analysis in Site surface water supports this observation with congener composition profiles similar to what is found in commercial Aroclor 1248 mixtures. Thus, the congener compositions used in the studies to derive the alternate FCV are considered a reasonable match to what has been observed in Site media. The uncertainty associated with this approach and the information described above will be provided in the revised BERA.
34	8.5.2	Surface Water - Based on the alternate PCB surface water chronic value used, the BERA concludes that risk to benthic invertebrates from PCBs in surface water is determined to be negligible and no surface water COPCs are identified. We understand the basis for this statement. However, the PCB concentration (193 ng/L 95% UCL) exceeds the Texas Surface Water Quality Standard chronic criterion of 30 ng/L. This should be addressed later in the Superfund process.	Noted. The 95UCL does exceed the TSWQS saltwater chronic value which is equal to the USEPA saltwater CCC. The ecological relevance of the USEPA saltwater CCC is described in the BERA.
35	10	Conclusions and Risk Management Recommendations - We disagree with the conclusions regarding the evaluation of risks to the benthic invertebrate community and will revisit the risk management recommendations for this pathway after revision of the BERA and/or development of a consensus-based remedial target for the COPC risk drivers for this pathway. By consensus we mean a collective decision from the JDG, regulators, and Trustee agencies, where possible.	The final BERA, including Section 10, will incorporate and reflect all responses herein.
1	Section 8	BERA, General Comment, Section 8 - Benthic Invertebrate Risk Assessment: The benthic community risk assessment should be revised to include the Work Plan approved toxicity modeling approach, or at least include a toxicity based line of evidence in the evaluation. The BERA indicated that the PEC-Q metric met the acceptability criteria (particularly after modifications were made), and yet this approach was discarded in favor of the community indices – an explanation or justification would be helpful to understand this. The benthic assessment should not rely only on the community population data included in the draft BERA, particularly since that approach can be improved to provide a more accurate assessment (based on discussion with Linda Broach of TCEQ).	Please see response to TCEQ Comment #26.
2	Section 7	BERA, Specific Comment, Section 7 – Fish Risk Assessment: It is not clear why some of the fish tissue EPCs were presented as NA in table 7-2. Please provide more information regarding the fish EPCs, and in particular either the values depicted as NA in table 7-2 or justification for not including them. It would seem that “not applicable” does not apply to the PCB congener TEQ for Gulf Menhaden, at the least, since all 17 were detected in at least one sample and 11 were detected in all samples. Please provide the EPCs for all fish for the PCB congener TEQ.	During the exposure assessment for fish, the distribution of each COPC in fish tissue was evaluated by species. If a particular COPC demonstrated ‘subpopulations’ among the different species, these species were pooled in subgroups prior to estimating 95UCLs to avoid a violation of the statistical principles in calculating the 95UCL. Thus, some species subgroups were different for different COPCs. For example, Gulf menhaden PCB TEQ were not statistically distinct from pinfish, seatrout, or striped mullet. Thus, a PCB TEQ 95UCL was calculated for all four species grouped. Alternatively, Gulf killifish were statistically distinct from other species and 95UCL for that individual species calculated for PCB TEQ. The table will be reformatted and footnoted to make these distinctions more transparent; we agree it is confusing as presented.
1	Page 5, Executive Summary, Conclusions and Risk Management Recommendations, Item 1, and Page 42, Risk Conclusions:	The risk assessment found that the risk to sediment-probing birds (e.g., sandpiper) and piscivorous birds (e.g., kingfisher) exceeded the threshold associated with potential adverse effects (with hazard quotients (HQs) as high as three) for individuals. The distinction of the risk to individuals vs. local populations is artificial since the toxicity tests used to develop the toxicity reference values (TRVs) are performed on groups of animals and the exposure assumptions are based upon populations of animals. Superfund remedial actions are expected to protect local populations (OSWER Directive 9285.7-28 P). The characterization of risk to sediment-probing birds and piscivorous birds would indicate that local populations would not be protected with HQs as high as three.	The BERA will be revised to clarify the conclusions associated with HQs > 1.0 based on a LOAEL TRV. Language in the risk characterization and conclusions stating that HQ > 1.0 based on the LOAEL TRV would not result in adverse population effects will be removed. The uncertainty discussion will address the significance of HQ > 1.0 based on a deterministic evaluation using a single TRV to assess population level effects and the range of HQs associated with variability in home range (i.e., AUFs).

2	Page 72, Conclusions and Risk Management Recommendations:	In the second paragraph, the potential unacceptable ecological risks associated with the protection and maintenance of shorebird (sediment- probing birds) and piscivorous bird populations is acknowledged. Then the remaining part of the paragraph minimizes the ecological risk with a discussion of risk to individual receptors. Superfund ecological risk assessment are designed to characterize the risk to a local population of receptors therefore risks found to exceed the threshold associated with potential adverse effects would indicate that a local population of receptors would not be protected.	Similar to the response to USEPA Comment #1, language will be removed / modified in Section 10 regarding the significance of HQs > 1.0 for wildlife receptors.

ATTACHMENT 1
ECOLOGICAL FISH AND INVERTEBRATE TISSUE SAMPLING DATA REPORT

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LIST OF ACRONYMS AND ABBREVIATIONS

µg/kg	microgram/kilogram
µm	micrometer
Alpha	Alpha Analytical
AOC	Administrative Order on Consent
BERA	Baseline Ecological Risk Assessment
BSAF	biota-sediment accumulation factors
cm	centimeter
COPC	contaminant of potential concern
DGPS	differential global positioning system
HpCDF	1,2,3,4,7,8,9-heptachlorodibenzofuran
HSC	Houston Ship Channel
HxCDF	1,2,3,7,8,9-hexachlorodibenzofuran
JDG	Patrick Bayou Joint Defense Group
LCS/LSCD	laboratory control sample/laboratory control sample duplicate
LDC	Laboratory Data Consultants, Inc.
LELAP	Louisiana Environmental Lab Accreditation Program
mg/kg	milligram/kilogram
MS/MSD	matrix spike/matrix spike duplicate
NELAC	National Environmental Laboratory Accreditation Certified
ng/kg	nanograms/kilogram
PAH	polyaromatic hydrocarbons
PB	Patrick Bayou
PCB	polychlorinated biphenyl
PQL	practical quantitation limit
QA	quality assurance
QAPP	Quality Assurance Project Plan
RI/FS	Remedial Investigation/Feasibility Study
SAP	Final Fish and Invertebrate Tissue Sampling and Analysis Plan
SDG	sample delivery group
SGS	SGS North America
SH	State Highway

Site	Patrick Bayou Superfund Site
SVOC	semivolatile organic carbons
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency

1 INTRODUCTION AND PURPOSE

This data report summarizes the results of the tissue collection activities conducted during the implementation of the *Final Fish and Invertebrate Tissue Sampling and Analysis Plan* (SAP; Anchor QEA 2011a). This work was performed as part of the Remedial Investigation/Feasibility Study (RI/FS) being conducted by the Patrick Bayou Joint Defense Group (JDG) in response to an Administrative Order on Consent (AOC) and Settlement Agreement with the U.S. Environmental Protection Agency (USEPA), dated January 31, 2006.

1.1 Site Description

Patrick Bayou is a tidally influenced tributary of the Houston Ship Channel (HSC) in Harris County, Texas (Figure 1). The Patrick Bayou Superfund Site (Site) originates south of State Highway (SH) 225 in the City of Deer Park, Texas, and flows approximately 2.5 miles in a northerly direction, discharging into the south side of the HSC approximately 2.3 miles upstream of its confluence with the San Jacinto River. From the south side of SH 225, the bayou is contained in box culverts, which emerge into a gunite-lined channel approximately 0.3 miles downstream. The gunite-lined portion of the bayou extends approximately 0.45 miles downstream to a more natural channel bottom that makes up the remainder of the Site. A tributary of Patrick Bayou, referred to as the East Fork, joins the bayou approximately 1.4 miles downstream of SH 225.

Patrick Bayou has historically been utilized for residential, municipal, and industrial stormwater and wastewater discharge. Its urbanized/industrial nature is evident from many of the physical modifications to the channel, banks, and surrounding topography. The most obvious physical modifications are the box culvert and gunite channel in the upstream portion of the bayou. Downstream of these modifications, bulkheads and riprap revetments armor some stream banks. Stream bank heights in areas with bulkhead and riprap are generally steep. Areas without bank modifications, which include much of the middle section of the bayou, typically have low, sloping banks. Bank cover in areas without riprap or bulkheads is generally mowed grass with some low shrubs and bare earth. In many areas, impervious surfaces, such as parking lots and roads, are located adjacent to the bank of Patrick Bayou. A detailed description of the Site and its physical features is provided in the

Preliminary Site Characterization Report (Anchor 2006), and the *Work Package 2 Hydrodynamic Field Data Collection and Contaminant Source Evaluation Data Report* (Anchor 2007a).

1.2 Sampling Objectives

The primary focus of this investigation was to support the *Baseline Ecological Risk Assessment* (BERA). Existing Site data and data collected during previous RI/FS tasks for the Site (Anchor 2007b, 2007c) were used to perform preliminary and refined assessments of ecological contaminants of potential concern (COPCs; Anchor 2007d, 2008a, and 2008b). These assessments identified several bioaccumulative COPCs for fish and aquatic-dependent wildlife receptors, such as birds and mammals. The site-specific exposure data provided by this study is intended to reduce uncertainty in the risk estimates performed as part of the BERA. In particular, site-specific exposure data are required to evaluate potential risks to fish and wildlife receptors in the BERA. This includes biota that represents both the fish species targeted as endpoints in the BERA and the typical dietary components of aquatic-dependent wildlife receptors that may be present at the Site. These data will be used to refine the baseline exposure assessment for fish and wildlife receptors that consume aquatic-based prey items from the Site. In addition, assessing the benefits of alternative remediation plans will require an understanding of the relationship between contaminant concentrations in the sediments of Patrick Bayou and contaminant concentrations in the target species (fish bodies and wildlife diet). For organisms tied primarily to local sediments, the relationship between sediment and organism can be used to estimate how changes in Site sediment concentrations due to various remedial actions would affect changes in tissue concentrations (and subsequently exposure and risk) to ecological receptors. Finally, a robust pre-remediation dataset is required for monitoring the consequences of remedial decisions.

The specific objectives of this investigation were to:

- Collect sufficient data to support exposure assessments in the BERA
- Collect sufficient data to develop site-specific biota-sediment accumulation factors (BSAF) for modeling future conditions and remedial scenarios
- Establish baseline tissue concentrations of COPCs to provide a point of comparison for long-term (post-remediation) monitoring data

2 TISSUE COLLECTION AND PROCESSING

This section describes the methods used to collect and process fish and invertebrate tissue samples at the Site. Additional details regarding collection methods are presented in the SAP. A summary of all fish and invertebrate tissue samples and analyses is provided in Table 1. Copies of field notes, tissue sample collection forms, sample processing forms, and completed chain-of-custody forms are provided in Appendix A.

Four Prey Groups (two invertebrate and two fish) were established to reflect differences in body size, habitat preference, and distribution. Targeted fish and invertebrate species were assigned to a Prey Group based on these factors in the SAP. Predators were assumed to not prefer one species over another within a prey group. To further reflect variation in movement patterns and trophic levels, these numeric Prey Groups were subdivided into alphabetical (A and B) groups. Prey Groups are listed below and a complete description is provided in the SAP.

Group 1 Invertebrate. This group includes small, sedentary epibenthic invertebrates with localized distribution. The group is further subdivided into two groups (A and B), reflecting their feeding strategies, life cycles, and other attributes. Group 1A includes bivalves and Group 1B includes small crustaceans, such as juvenile blue crabs.

Group 2 Invertebrate. This group includes medium-sized invertebrates with a broader distribution and migratory patterns. This group is further subdivided into two groups reflecting trophic level. Group 2A includes lower trophic level organisms, such as shrimp, while Group 2B includes higher trophic level invertebrates (blue crabs).

Group 1 Fish. This group includes small bentho-pelagic fish (e.g., killifish and minnows) that inhabit shallow water and have localized distribution. Total length of an individual fish in Group 1 is less than 15 centimeters (cm).

Group 2 Fish. This group includes small pelagic fish that inhabit any water depth and have a broad foraging range relative to Group 1 fish. This group is further subdivided into two groups (A and B) based on their trophic level. Group 2A fish include lower trophic level

fishes, such as mullet and menhaden, while Group 2B includes higher trophic level fishes, such as spot and croaker. Total length of an individual fish in Group 2 is less than 15 cm.

2.1 Sample Identification Scheme

Each tissue sample was assigned a unique alphanumeric identifier using the format described below:

- Each location was identified by "PB" to depict the project location (Patrick Bayou), and a number, 01 through 04, identifying the reach (e.g., PB01 for the mouth of Patrick Bayou). A complete description of how the bayou was divided into reaches is provided in the SAP.
- Individual organisms to comprise each sample were identified by the same alphanumeric identifier used to identify the location followed by a three digit species identifier (e.g., "GKF" for Gulf killifish).
- Individual organisms that comprise one sample were frozen together in one package. Identifiers for each package were numbered using the following approach:

PB##-X-Y-ZZZ-W-###-YYYYMMDD

Where:

PB##	=	Patrick Bayou sample reach (## = 01, 02, 03, 04)
X	=	I or F (Invertebrate or Fish, respectively)
Y	=	Size class (A or B)
ZZZ	=	Species code
###	=	Sequential sample number (001, 002, 003, …, 999)
YYYYMMDD	=	Year, month, day sample was collected

In some instances, individual samples were composited together to meet minimum tissue requirements for laboratory analyses. In these cases, the composite sample was given a new name, following the nomenclature below:

PB##-X-Y-ZZZ-###-COMP-YYYYMM

Where:

PB##	=	Patrick Bayou sample reach (## = 01, 02, 03, 04)

X	=	I or F (Invertebrate or Fish, respectively)
Y	=	Size class (A or B)
ZZZ	=	Species code
###	=	Sequential composite sample number (001, 002, 003, …, 999)
COMP	=	Composite sample
YYYYMM	=	Year and month that samples within the composite were collected

2.2 Sample Locations

Locations of stationary sampling gear were recorded using a differential global positioning system (DGPS). For active sampling gear (i.e., trawls), the sampling track was recorded using DGPS. Prey Group 1A Fish and Group 1A/B Invertebrates sample locations were selected randomly from among the set of sediment sample locations previously sampled as part of the sediment and surface water COPC delineation effort (Anchor QEA 2010). Five randomly selected stations were sampled for Group 1A Fish and Group 1 Invertebrates in each of Reaches 1, 2, and 3. Reach 4 only had three sampling sites, due to its restricted size. Samples were collected from within a 15-meter radius of the designated coordinates.

Collection efforts for Group 2 Fish and Group 2A Invertebrates were performed on a reach-wide basis (i.e., sampling locations were selected opportunistically based on Site conditions such as substrate, water depth, etc.).

2.3 Sample Collection Methods

Organisms were collected using a combination of stationary and semi-stationary sampling gear, including: crab traps, minnow traps, gillnets, cast nets, and seine nets. The number and types of gear deployed was determined in the field based on targeted organisms, habitat type, and initial sampling efficiency observations. Gear was deployed from shore or boat, depending on water depth and substrate type.

Sampling was conducted over a period of two weeks from June 15, 2011 to June 28, 2011. At the beginning of the sampling event, baited minnow traps (three per station) were set at five randomly selected stations within Reaches 1, 2, and 3. Only three stations were set in Reach 4, due to the size of this reach and access restrictions within the gunite channel.

Baited minnow traps and crab traps were checked at regular intervals (i.e., daily) for three days. If sufficient fish were collected at a station to create at least two composite samples during that time, then the traps were moved to the next randomly selected station within a sample reach. If, after three days, insufficient numbers and volume of fish were collected at a station for two composite samples, then the traps were moved to the next randomly selected station within the sample reach. This cycling of traps was continued until the completion of the sampling event.

For active sampling and other passive gear aside from minnow or crab traps (e.g., gill nets), four days of sampling were performed in Reaches 1, 2, and 3, while two days of sampling were performed in Reach 4. The sampling crew completed the circuit of the four reaches in this manner.

To ensure that discrete locations were being sampled, a sampling area was specified for each Prey Group in order for sampling efforts targeting those Prey Groups to be considered the same "location". This was for the purpose of compositing samples, if necessary, to meet analytical tissue volume requirements. For Group 1A Fish and Group 1A/B Invertebrates, samples were collected within 30 meters of each other. For Group 2A/B Fish and Group 2A Invertebrates, samples were collected within 300 meters of each other. Organisms within a Prey Group collected outside of these limits were not combined across samples.

2.4 Invertebrate Depuration Methods

Consistent with USEPA/U.S. Army Corps of Engineers (USACE) guidance (1998), digestive tracts of benthic invertebrates and bivalves were emptied prior to homogenization and analysis. Organisms were allowed to void the material in their digestive tracts by being held for 24 hours in filtered (0.45 micrometer [µm]) Site surface water. No sediment was included in the containers and temperature conditions were maintained at field collection conditions. Only organisms collected from within the same reach of the bayou were placed together in a depuration container.

2.5 Sample Processing Methods

Collected organisms were kept alive in live wells on a boat supplied with Site water or wrapped in aluminum foil and placed in polyethylene bags (e.g., Ziplocs) on ice until they could be taken to the processing area. Invertebrates requiring depuration (oysters and blue crabs) were placed into depuration tanks to begin the required 24 hour depuration period. All other organisms were processed immediately. Organisms collected were identified to species.

The following steps, as recommended by USEPA (2000), were taken to process the organisms (with the exception of Group 1A Invertebrates) for shipping to the lab:

1. Whole organisms were euthanized by packing in ice and were then rinsed with distilled water to remove any debris.
2. Each organism was inspected for acceptability. Any specimens showing any severe skin, shell, or carapace laceration or fin deterioration, due to sampling gear were not included in the sample.
3. Each organism within a target species was measured to determine total body length to the nearest millimeter and weighed to the nearest 0.1 gram. If apparent, sex was determined (i.e., blue crabs). For small species such as killifish that require many individuals per sample, a subset of ten individuals from the sample were measured and weighed.
4. Organisms were composited according to the criteria outlined in the SAP (compositing methods are summarized in the following section), wrapped in aluminum foil, and placed in zip-sealed plastic bags with an identification label containing all relevant sample information. Bags were stored in a freezer at -4˚C.

Bivalves were dissected prior to analysis. Shells were removed and only the soft tissue was retained for analysis. Shell length and soft tissue mass were measured.

2.6 Sample Compositing Methods

Composite samples are homogeneous mixtures of samples from two or more individual organisms of the same species collected at a particular location and analyzed as a single sample. Composite samples were limited to the minimum number of organisms needed to

obtain sufficient sample volume (190 grams) required to meet the laboratory analytical reporting limits.

Organisms used in a composite sample were required to meet the following criteria:

- Must all have been of the same species.
- Must have been collected from the same location. Depending on the Prey Group, samples were considered from the same location if they met the proximity requirements presented in Section 2.3.
- Must be within the same size class.
- Needed to include sufficient numbers of individuals to meet the sample tissue volume requirements for analysis of recommended target analytes.

These requirements were met in most cases. However, the number of samples for the Invertebrate Prey Groups was below the minimum targeted number of samples using these criteria. To achieve the minimum sampling objective identified in the SAP for Prey Group 1 Invertebrates, a modification to the proximity limits for compositing purposes was necessary. An increase in the proximity limit from 30 meters to 90 meters in areas of Site downstream of the gunite channel provided an additional seven samples. Samples from locations approximately 400 meters apart from within the gunite channel were composited together to create an additional sample. These modifications to the compositing scheme were outlined in a Memorandum to USEPA (Anchor QEA 2011b) and approved by USEPA.

2.7 Field Deviations from the Quality Assurance Project Plan (QAPP) or SAP

The only deviation from the SAP during the implementation of this investigation was the modifications made to the compositing scheme described in the previous section.

3 LABORATORY METHODS

This section briefly describes the analytical methods used to generate the chemistry data for the tissue samples in this report. A detailed description of the analytical methods can be found in the SAP (Anchor QEA 2011a). This section also summarizes any deviations by the laboratory from the SAP. Analyses included conventional parameters (lipid and percent moisture), metals, polyaromatic hydrocarbons (PAH), semivolatile organic carbons (SVOC), polychlorinated biphenyls (PCB), and dioxins and furans.

3.1 Methods for Chemical Analysis

Table 1 summarizes the number of tissue samples that were analyzed for each of the chemical methods listed below. This report includes data analyses performed by SGS North America (SGS) in Wilmington, North Carolina and Alpha Analytical (Alpha) in Mansfield, Massachusetts. SGS performed the PCB congener and dioxin/furan analyses and the remaining analyses were performed by Alpha. Alpha is National Environmental Laboratory Accreditation Certified (NELAC) accredited by the Louisiana Environmental Lab Accreditation Program (LELAP), Certificate No. 03090. SGS is NELAC accredited by the State of Florida Department of Health, Bureau of Laboratories, Certificate No. E87634. Fourteen data reports were received and validated from the laboratories. The laboratory data reports are provided in Appendix B. Eleven of the data reports were sent to Laboratory Data Consultants, Inc. (LDC) for data validation and three were validated by Anchor QEA staff. All data presented in this report reflect any findings reported in the validation reports.

3.2 Laboratory Deviations from the QAPP or SAP

This section discusses each of the laboratory's deviations from the SAP (Anchor QEA 2011a). SGS and Alpha adhered to the methods and procedures outlined in the SAP and as listed in SAP Table 4-2 with the following exceptions:

- The lipids analyses were done according to Alpha's internally developed method instead of the Bligh & Dyer method specified in the SAP. The methods are similar, however, so data are comparable, and this is not expected to affect data quality.
- Mercury analyses were performed using USEPA method 7474 instead of method 7471A. The two methods are comparable and all sample results were above the

detection limits.

- All of the Project Target Reporting Limits for non-detected SVOC results were not achieved, however; all non-detected practical quantitation limits (PQL) were well below the Risk-based Target Tissue PQL values, so data quality is not expected to be affected.
- Ten dioxin/furan non-detected detection limits were slightly above the Project Reporting Limit and nine of these results were above the Risk-Based Tissue Target PQL values, due to high concentrations of target and non-target analytes.
- Several PCB congener non-detected detection limits were above the Project Reporting Limits and the Risk-Based Tissue Target PQL values, due to high concentrations of target and non-target analytes.

4 ANALYTICAL DATA VALIDATION AND DATA MANAGEMENT

Third party data validation was performed on each dataset of chemical and physical analyses with the exceptions of two data reports from SGS and one report from Alpha which were validated by Anchor QEA staff. Data validation verified the accuracy and precision of chemical and physical determinations performed during this investigation. This section presents the data validation results conducted by LDC and Anchor QEA. The following sections summarize the overall data quality and do not necessarily address each individual sample result affected by data qualification. Detailed information regarding sample result qualifications is available in the data validation report in Appendix C.

4.1 Overall Data Quality

A review of the validation reports indicates that the overall data quality of the chemistry data generated was considered acceptable. Eighty-three tissue samples and two equipment blanks were collected and submitted to Alpha for SVOCs, mercury, lipids, and moisture analyses. Of these 85 samples, 21 were analyzed for lead and PAHs by Alpha. The data for these analyses were reported under seven sample delivery groups (SDGs): L1109178, L1109180, L1109182, L1109487, L1112532, L1112545, and L1120213. Eighty-three tissue samples were sent to SGS for PCB congener analyses and 76 samples were analyzed for dioxin/furan analyses. The data for these analyses were reported under seven SDGs: 31101717, 31101719, 31101798, 31101800, 31102315, 31103442, and 31103475. All of these data reports were validated under six validation reports. The four from LDC are: 26320-1, 26460, 25915, and 26422. Two validation reports were prepared by Anchor QEA.

Detailed data quality objectives and quality assurance (QA) procedures are provided in the SAP (Anchor QEA 2011a). Data packages were validated by LDC and Anchor QEA under USEPA National Functional Guidelines (USEPA 1999, 2004, 2005, 2008), as described in the SAP. The validation report is in Appendix C. Any data qualifiers applied to the data during the final validation procedures have been incorporated into the final database for this project. Data qualifiers assigned as a result of the data validation and their definitions are shown on the analytical results table (Appendix D). All data were considered useable as reported or as qualified with the exceptions of two PCB congener results. The PCB-169 result for sample PB03-F-A-GKF-W-002-20110615 was rejected, due to no recovery in the

matrix spike duplicate analyzed on this sample. The PCB-002 result was rejected for sample PB03-F-A-GKF-W-001-20110615, due to no recovery in the associated labeled compound. These rejections are not expected to impact overall data quality and completeness goals were met. Other data may have been qualified as estimated for a particular analysis based on method or technical criterion as stated in the functional guidelines (USEPA 1999, 2004, 2005, 2008). Data qualified with a "J" indicates that the associated numerical value is the approximate concentration of the analyte. Data qualified with a "UJ" indicates the approximate reporting limit below which the analyte was not detected. Data reported as "R" are rejected and unusable for any purpose. In some cases, reporting limits were raised to account for method blank contamination or matrix interference.

4.2 Sample Transport and Holding Times

Samples were received at the laboratories intact and appropriately preserved with two exceptions. Samples logged in under SDG L1109182 and all samples sent to SGS were received at a temperature above the -20° C requirement listed in the SAP. These discrepancies did not impact the data and no data were qualified because of them.
All analyses were performed within recommended holding times.

4.3 Laboratory Quality Control

The validation reports indicate the majority of the data results did not require qualification. The laboratories followed the specified analytical methods or used comparable methods and all requested analyses were completed. Accuracy was acceptable as demonstrated by the surrogate, laboratory control sample/laboratory control sample duplicate (LCS/LCSD), matrix spike/matrix spike duplicate (MS/MSD), and internal standard recoveries with some exceptions. Precision was acceptable as demonstrated by the duplicate, LCS/LCSD, and MS/MSD relative percent difference values with some exceptions. Two results were rejected based on failure to meet the data quality objectives. One PCB congener result was rejected in two samples. Some reporting limits were elevated, due to method blank contamination. Most data are acceptable as reported or as qualified.

5 RESULTS

This section presents the results of the chemical analyses conducted on the fish and invertebrate tissue samples collected as part of this investigation. Only the final reporting limits and analytical results are presented in the tables associated with this section. The complete data table is presented in Appendix D.

For samples with laboratory duplicates, only the 'normal' sample value is presented and discussed. One-half of the detection limit was used for calculating total values for PCB congeners, PAHs, and dioxin/furans.

Table 2 presents a list of the analyzed samples, stations from which the samples were collected, species, and size class. Tables 3 through 13 present a summary of the analytical results for each invertebrate and fish species collected. For species where more than one size class was collected (i.e., blue crab and white shrimp), the size classes were summarized individually. Also included in these tables is the number of detected samples, range of detected concentrations, average detected concentrations, range of reporting limits for chemicals with reported non-detects, and average concentrations, including non-detected values (non-detected values are included in the calculations at values equal to one-half the detection limit). Data tables containing the results for each sample, including laboratory duplicates, are presented in Appendix D.

5.1 General Summary

A total of 83 samples were analyzed in fulfillment of this investigation. These samples were comprised of 33 invertebrate samples and 50 fish samples. Four different invertebrate species were collected and analyzed. These included blue crab (*Callinectes sapidus*), brown shrimp (*Penaeus aztecus*), oyster (*Crassostrea virginica*), and white shrimp (*Penaeus setiferus*) (Figure 2). Five different fish species were collected and analyzed. These included Gulf killifish (*Fundulus grandis*), Gulf menhaden (*Brevoortia patronus*), pinfish (*Lagodon rhomboids*), sand seatrout (*Cynoscion arenarius*), and striped mullet (*Mugil cephalus*) (Figure 3). The number of samples for individual species is provided in Table 1.

5.2 Blue Crab Size Class A

This section presents a summary of the analytical results from tissue samples comprised of blue crabs ranging in size from 2.5 cm to 7.5 cm. Eighteen samples were analyzed. Table 3 presents a summary of the results for the 18 crab tissue samples analyzed for conventional parameters, metals, PAHs, SVOCs, PCBs, and dioxin/furans.

5.2.1 Conventional Parameters

Lipids and moisture content were included in the conventional parameters analyses. Lipids ranged from 0.555 percent to 3.73 percent. The average lipid content for all samples was 1.59 percent. Moisture ranged from 66.1 percent to 74.0 percent. The average moisture content for all samples was 70.3 percent.

5.2.2 Metals

Lead and mercury were included in the metal analyses. Both were detected in all 18 samples. Lead concentrations ranged from 0.092 milligrams/kilogram (mg/kg) to 0.518 mg/kg. The average lead concentration for all samples was 0.178 mg/kg. Mercury concentrations ranged from 0.009 mg/kg to 0.072 mg/kg. The average mercury concentration for all samples was 0.0475 mg/kg.

5.2.3 PAHs

Four individual PAHs were detected in at least one sample (acenaphthene, naphthalene, phenanthrene, and pyrene) and 13 were not detected in any of the samples. Five samples were reported with at least one detected PAH. All PAHs were reported as non-detect in 13 samples. Total PAH concentrations for samples with at least one detected PAH ranged from 60.9 micrograms/kilogram (µg/kg) to 124 µg/kg. The average total PAH concentration for all samples (including non-detects) was 25.9 µg/kg.

5.2.4 SVOCs

Four chemicals were included in the SVOC analysis: 1,3-dichlorobenzene, 1,4-dichlorobenzene, hexachlorobenzene, and hexachlorobutadiene. Hexachlorobenzene was the only detected SVOC (detected in nine samples). Concentrations of detected

hexachlorobenzene ranged from 191 µg/kg to 5,430 µg/kg. The average concentration of hexachlorobenzene for all samples (including non-detects) was 612 µg/kg.

5.2.5 PCB Congeners

One-hundred and ninety-two PCB congeners were detected in at least one sample. One-hundred and twenty-five were detected in all 18 samples. Concentrations of total PCB congeners ranged from 229 µg/kg to 1,264 µg/kg. The average concentration of total PCB congeners was 655 µg/kg.

5.2.6 Dioxin/Furan Congeners

Sixteen dioxin/furan congeners were detected in at least one sample. 1,2,3,7,8,9-hexachlorodibenzofuran (HxCDF) was the only congener not detected in any samples. Five were detected in all 18 samples. Concentrations of total dioxin/furan congeners ranged from 17.3 nanograms/kilogram (ng/kg) to 235 ng/kg. The average concentration of total dioxin/furan congeners was 63.6 ng/kg.

5.3 Blue Crab Size Class B

This section presents a summary of the analytical results from tissue samples comprised of blue crabs ranging in size from 7.5 cm to 13 cm. Three samples were analyzed. Table 4 presents a summary of the results for the three crab tissue samples that were analyzed for conventional parameters, mercury, SVOCs, and PCBs.

5.3.1 Conventional Parameters

Lipids and moisture content were included in the conventional parameters analyses. Lipids ranged from 0.575 percent to 0.943 percent. The average lipid content for all samples was 0.725 percent. Moisture ranged from 69.0 percent to 76.5 percent. The average moisture content for all samples was 73.1 percent.

5.3.2 Mercury

Mercury was detected in all three blue crab samples. Mercury concentrations ranged from 0.058 mg/kg to 0.083 mg/kg. The average mercury concentration was 0.067 mg/kg.

5.3.3 SVOCs

Two chemicals were included in the SVOC analyses: 1,3-dichlorobenzene and hexachlorobenzene. Neither chemical was detected in any of the samples.

5.3.4 PCBs

One-hundred and eighty-five PCB congeners were detected in at least one sample. One-hundred and sixty-one were detected in all three samples. Total PCB congener concentrations ranged from 722 µg/kg to 936 µg/kg. The average total PCB congener concentration for all samples was 804 µg/kg.

5.4 Brown Shrimp

This section presents a summary of the analytical results from brown shrimp tissue samples made up of brown shrimp ranging in size from 7.5 cm to 13 cm. Eight samples were analyzed. Table 5 presents a summary of the results for the eight brown shrimp tissue samples that were analyzed for conventional parameters, mercury, SVOCs, and PCBs.

5.4.1 Conventional Parameters

Lipids and moisture content were included in the conventional parameters analyses. Lipids ranged from 1.15 percent to 1.64 percent. The average lipid content for all samples was 1.37 percent. Moisture ranged from 74.0 percent to 76.2 percent. The average moisture content for all samples was 75.1 percent.

5.4.2 Mercury

Mercury was detected in all eight brown shrimp samples. Mercury concentrations ranged from 0.025 mg/kg to 0.065 mg/kg. The average mercury concentration was 0.041 mg/kg.

5.4.3 SVOCs

Two chemicals were included in the SVOC analyses: 1,3-dichlorobenzene and hexachlorobenzene. 1,3-dichlorobenzene was not detected in any of the samples. Hexachlorobenzene was detected in all samples. Concentration of hexachlorobenzene

ranged from 537 µg/kg to 913 µg/kg. The average concentration of hexachlorobenzene for all samples was 710 µg/kg.

5.4.4 PCB Congeners

One-hundred and ninety-nine PCB congeners were detected in at least one sample. One-hundred and sixty-one were detected in all eight samples. Total PCB congener concentrations ranged from 997 µg/kg to 2,192 µg/kg. The average total PCB congener concentration for all samples was 1,716 µg/kg.

5.5 Oyster

This section presents a summary of the analytical results from an oyster tissue sample made up of oysters ranging in size from 2.5 cm to 7.5 cm. One sample was analyzed. Table 6 presents a summary of the results for the oyster sample that was analyzed for conventional parameters, metals, PAHs, SVOCs, PCBs, and dioxin/furans.

5.5.1 Conventional Parameters

Lipids and moisture content were included in the conventional parameters analyses. The lipid content was reported at 1.1 percent. Moisture content was reported at 82.7 percent.

5.5.2 Metals

Lead and mercury were included in the metal analyses. Both were detected in the sample. The reported concentration of lead was 0.331 mg/kg. The reported concentration of mercury was 0.051 mg/kg.

5.5.3 PAHs

Eleven individual PAH chemicals were detected. The concentration of total PAHs was 552 µg/kg.

5.5.4 SVOCs

Four chemicals were included in the SVOC analysis: 1,3-dichlorobenzene, 1,4-dichlorobenzene, hexachlorobenzene, and hexachlorobutadiene. None of these chemicals were detected in the oyster sample.

5.5.5 PCB Congeners

One hundred and eighty eight PCB congeners were detected in the oyster sample. The concentration of total PCB congeners was 1,429 µg/kg.

5.5.6 Dixon/Furan Congeners

Eight dioxin/furan congeners were detected in the oyster sample. The concentration of total dioxin/furan congeners was 41.7 ng/kg.

5.6 White Shrimp Size Class A

This section presents a summary of the analytical results of a tissue sample comprised of white shrimp ranging in size from 2.5 cm to 7.5 cm. One sample was analyzed. Table 7 presents a summary of the results for the white shrimp sample that was analyzed for conventional parameters, metals, PAHs, SVOCs, PCBs, and dioxin/furans.

5.6.1 Conventional Parameters

Lipids and moisture content were included in the conventional parameters analyses. The lipid content was reported at 0.914 percent. Moisture content was reported at 76.9 percent.

5.6.2 Metals

Lead and mercury were included in the metal analyses. Both were detected in the sample. The reported concentration of lead was 0.116 mg/kg. The reported concentration of mercury was 0.041 mg/kg.

5.6.3 PAHs

Three individual PAHs were detected: fluoranthene, phenanthrene, and pyrene. The concentration of total PAHs was 162 µg/kg.

5.6.4 SVOCs

Four chemicals were included in the SVOC analysis: 1,3-dichlorobenzene, 1,4-dichlorobenzene, hexachlorobenzene, and hexachlorobutadiene. Hexachlorobenzene was the only chemical detected in the sample and had a concentration of 483 µg/kg.

5.6.5 PCB Congeners

One-hundred and seventy-six PCB congeners were detected in the white shrimp sample. The concentration of total PCB congeners was 837 µg/kg.

5.6.6 Dixon/Furan Congeners

Eight dioxin/furan congeners were detected in the sample. The concentration of total dioxin/furan congeners was 69.4 ng/kg.

5.7 White Shrimp Size Class B

This section presents a summary of the analytical results from tissue samples comprised of white shrimp ranging in size from 7.5 cm to 13 cm. Two samples were analyzed. Table 8 presents a summary of the results for the two white shrimp tissue samples that were analyzed for conventional parameters, mercury, SVOCs, and PCBs.

5.7.1 Conventional Parameters

Lipids and moisture content were included in the conventional parameters analyses. Lipids ranged from 1.13 percent to 1.30 percent. The average lipid content for all samples was 1.22 percent. Moisture ranged from 74.6 percent to 75.3 percent. The average moisture content for all samples was 75.0 percent.

5.7.2 Mercury

Mercury was detected in both white shrimp samples. Mercury concentrations ranged from 0.026 mg/kg to 0.042 mg/kg. The average mercury concentration for the two samples was 0.034 mg/kg.

5.7.3 SVOCs

Two chemicals were included in the SVOC analyses: 1,3-dichlorobenzene and hexachlorobenzene. 1,3-Dichlorobenzene was not detected in any of the samples. Hexachlorobenzene was detected in both samples. Concentrations of hexachlorobenzene ranged from 380 µg/kg to 682 µg/kg. The average concentration of hexachlorobenzene for both samples was 531 µg/kg.

5.7.4 PCB Congeners

One-hundred and eighty-three PCB congeners were detected in at least one sample. One-hundred and seventy-seven were detected in both samples. Total PCB congener concentrations ranged from 584 µg/kg to 919 µg/kg. The average total PCB congener concentration for both samples was 733 µg/kg.

5.8 Gulf Killifish

This section presents a summary of the analytical results from tissue samples comprised of Gulf killifish with total lengths less than 15 cm. Twenty five samples were analyzed. Table 9 presents a summary of the results for the Gulf killifish tissue samples that were analyzed for conventional parameters, mercury, SVOCs, PCBs, and dioxin/furans.

5.8.1 Conventional Parameters

Lipids and moisture content were included in the conventional parameters analyses. Lipids ranged from 1.65 percent to 3.64 percent. The average lipid content for all samples was 2.72 percent. Moisture ranged from 71.9 percent to 75.9 percent. The average moisture content for all samples was 74.2 percent.

5.8.2 Mercury

Mercury was detected in all 25 Gulf killifish samples. Concentrations ranged from 0.025 mg/kg to 0.109 mg/kg. The average mercury concentration for all samples was 0.0524 mg/kg.

5.8.3 SVOCs

Two chemicals were included in the SVOC analyses: 1,3-dichlorobenzene and hexachlorobenzene. 1,3-dichlorobenzene was not detected in any of the samples. Hexachlorobenzene was detected in ten samples. Detected concentrations of hexachlorobenzene ranged from 200 µg/kg to 2,360 µg/kg. The average concentration of hexachlorobenzene for all samples (including non-detects) was 441 µg/kg.

5.8.4 PCB Congeners

Two-hundred and four PCB congeners were detected in at least one sample. One-hundred and forty-seven congeners were detected in all samples. Total PCB congener concentrations ranged from 1,965 µg/kg to 8,848 µg/kg. The average total PCB congener concentration for all samples was 5,216 µg/kg.

5.8.5 Dioxin/Furan Congeners

Fifteen dioxin/furan congeners were detected in at least one sample. 1,2,3,4,7,8,9-heptachlorodibenzofuran (HpCDF) and 1,2,3,7,8,9- HxCDF were not detected in any sample. Five were detected in all samples. Total dioxin/furan congener concentrations ranged from 19.1 ng/kg to 98.6 ng/kg. The average total dioxin/furan congener concentration for all samples was 36.2 ng/kg.

5.9 Gulf Menhaden

This section presents a summary of the analytical results from tissue samples comprised of Gulf menhaden with total lengths less than 15 cm. Ten samples were analyzed. Table 10 presents a summary of the results for the Gulf menhaden tissue samples that were analyzed for conventional parameters, mercury, SVOCs, PCBs, and dioxin/furans.

5.9.1 Conventional Parameters

Lipids and moisture content were included in the conventional parameters analyses. Lipids ranged from 1.23 percent to 2.02 percent. The average lipid content for all samples was 1.67 percent. Moisture ranged from 77.5 percent to 80.0 percent. The average moisture content for all samples was 78.8 percent.

5.9.2 Mercury

Mercury was detected in all ten Gulf menhaden samples. Concentrations ranged from 0.068 mg/kg to 0.199 mg/kg. The average mercury concentration for all samples was 0.116 mg/kg.

5.9.3 SVOCs

Two chemicals were included in the SVOC analyses: 1,3-dichlorobenzene and hexachlorobenzene. 1,3-dichlorobenzene was not detected in any of the samples. Hexachlorobenzene was detected in six samples. Detected concentrations of hexachlorobenzene ranged from 398 µg/kg to 671 µg/kg. The average concentration of hexachlorobenzene for all samples (including non-detects) was 440 µg/kg.

5.9.4 PCB Congeners

Two hundred and five PCB congeners were detected in at least one sample. One-hundred and sixty-one congeners were detected in all samples. Total PCB congener concentrations ranged from 1,259 µg/kg to 4,005 µg/kg. The average total PCB congener concentration for all samples was 2,642 µg/kg.

5.9.5 Dioxin/Furan Congeners

All 17 dioxin/furan congeners were detected in at least one sample. Eleven were detected in all samples. Total dioxin/furan congener concentrations ranged from 154 ng/kg to 1,946 ng/kg. The average total dioxin/furan congener concentration for all samples was 763 ng/kg.

5.10 Pinfish

This section presents a summary of the analytical results from tissue samples comprised of pinfish with total lengths less than 15 cm. Four samples were analyzed. Table 11 presents a

summary of the results for the pinfish tissue samples that were analyzed for conventional parameters, mercury, SVOCs, PCBs, and dioxin/furans.

5.10.1 Conventional Parameters

Lipids and moisture content were included in the conventional parameters analyses. Lipids ranged from 2.34 percent to 3.93 percent. The average lipid content for all samples was 2.86 percent. Moisture ranged from 73.2 percent to 74.9 percent. The average moisture content for all samples was 73.9 percent.

5.10.2 Mercury

Mercury was detected in all four pinfish samples. Concentrations ranged from 0.025 mg/kg to 0.083 mg/kg. The average mercury concentration for all samples was 0.0430 mg/kg.

5.10.3 SVOCs

Two chemicals were included in the SVOC analyses: 1,3-dichlorobenzene and hexachlorobenzene. 1,3-dichlorobenzene was not detected in any of the samples. Hexachlorobenzene was detected in three samples. Detected concentrations of hexachlorobenzene ranged from 397 µg/kg to 2,290 µg/kg. The average concentration of hexachlorobenzene for all samples (including non-detects) was 872 µg/kg.

5.10.4 PCB Congeners

One-hundred and ninety-seven PCB congeners were detected in at least one sample. One-hundred and sixty-eight congeners were detected in all samples. Total PCB congener concentrations ranged from 2,114 µg/kg to 4,334 µg/kg. The average total PCB congener concentration for all samples was 3,157 µg/kg.

5.10.5 Dioxin/Furan Congeners

Eleven dioxin/furan congeners were detected in at least one sample. Six were detected in all samples. Total dioxin/furan congener concentrations ranged from 14.6 ng/kg to 210 ng/kg. The average total dioxin/furan congener concentration for all samples was 74.5 ng/kg.

5.11 Sand Seatrout

This section presents a summary of the analytical results from tissue samples comprised of sand seatrout with total lengths less than 15 cm. Two samples were analyzed. Table 12 presents a summary of the results for the two sand seatrout tissue samples that were analyzed for conventional parameters, mercury, SVOCs, PCBs, and dioxin/furans.

5.11.1 Conventional Parameters

Lipids and moisture content were included in the conventional parameters analyses. Lipids ranged from 0.931 percent to 1.18 percent. The average lipid content for all samples was 1.06 percent. Moisture ranged from 78.7 percent to 79.2 percent. The average moisture content for all samples was 79.0 percent.

5.11.2 Mercury

Mercury was detected in both sand seatrout samples. Concentrations ranged from 0.045 mg/kg to 0.063 mg/kg. The average mercury concentration for all samples was 0.0540 mg/kg.

5.11.3 SVOCs

Two chemicals were included in the SVOC analyses: 1,3-dichlorobenzene and hexachlorobenzene. 1,3-dichlorobenzene was not detected in any of the samples. Hexachlorobenzene was detected in both samples. Concentrations of hexachlorobenzene ranged from 240 µg/kg to 325 µg/kg. The average concentration of hexachlorobenzene for both samples was 283 µg/kg.

5.11.4 PCB Congeners

One-hundred and ninety-six PCB congeners were detected in at least one sample. One-hundred and eighty-one congeners were detected in all samples. Total PCB congener concentrations ranged from 1,449 µg/kg to 2,512 µg/kg. The average total PCB congener concentration for all samples was 1,980 µg/kg.

5.11.5 Dioxin/Furan Congeners

Twelve dioxin/furan congeners were detected in at least one sample. Nine were detected in all samples. Total dioxin/furan congener concentrations ranged from 11.6 ng/kg to 13.1 ng/kg. The average total dioxin/furan congener concentration for all samples was 12.3 ng/kg.

5.12 Striped Mullet

This section presents a summary of the analytical results from tissue samples comprised of striped mullet with total lengths less than 15 cm. Nine samples were analyzed. Table 13 presents a summary of the results for the striped mullet tissue samples that were analyzed for conventional parameters, mercury, SVOCs, PCBs, and dioxin/furans.

5.12.1 Conventional Parameters

Lipids and moisture content were included in the conventional parameters analyses. Lipids ranged from 1.24 percent to 2.36 percent. The average lipid content for all samples was 1.74 percent. Moisture ranged from 73.1 percent to 75.4 percent. The average moisture content for all samples was 74.0 percent.

5.12.2 Mercury

Mercury was detected in all nine striped mullet samples. Concentrations ranged from 0.024 mg/kg to 0.122 mg/kg. The average mercury concentration for all samples was 0.0516 mg/kg.

5.12.3 SVOCs

Two chemicals were included in the SVOC analyses: 1,3-dichlorobenzene and hexachlorobenzene. 1,3-dichlorobenzene was not detected in any of the samples. Hexachlorobenzene was detected in seven samples. Detected concentrations of hexachlorobenzene ranged from 389 µg/kg to 1,830 µg/kg. The average concentration of hexachlorobenzene for all samples (including non-detects) was 721 µg/kg.

5.12.4 PCB Congeners

Two-hundred and two PCB congeners were detected in at least one sample. One-hundred and seventy-eight congeners were detected in all samples. Total PCB congener

concentrations ranged from 596 µg/kg to 4,539 µg/kg. The average total PCB congener concentration for all samples was 2,246 µg/kg.

5.12.5 Dioxin/Furan Congeners

Fourteen dioxin/furan congeners were detected in at least one sample. Ten were detected in all samples. Total dioxin/furan congener concentrations ranged from 70.5 ng/kg to 931 ng/kg. The average total dioxin/furan congener concentration for all samples was 332 ng/kg.

5.13 Summary of Chemical Concentrations in Tissue

The chemical analyses conducted on fish and invertebrate tissue samples included metals, PAHs, SVOCs, PCBs, and dioxin/furans. Table 14 presents the average chemical concentration for each species. Lead concentrations were measured for size class A invertebrates, including blue crab, oyster, and white shrimp. The highest average lead concentration (0.331 mg/kg) was reported in the oyster sample. Mercury concentrations were measured in all tissue samples, both invertebrate and fish. The highest average mercury concentration for the invertebrate samples was reported in the blue crab (size class B) samples (0.0667 mg/kg) and in the Gulf menhaden samples for fish (0.116 mg/kg). Chemical analyses for PAHs were conducted on the size class A Invertebrates. The highest average total PAH concentration (552 µg/kg) was reported in the oyster sample. Of the four SVOCs analyzed, only hexachlorobenzene was detected. The highest average hexachlorobenzene concentration for the invertebrate samples was reported in the brown shrimp samples (710 µg/kg) and in the pinfish samples for fish (872 µg/kg). PCB and dioxin/furan concentrations were measured in all tissue samples. The highest average total PCB concentration for the invertebrates was reported in the brown shrimp samples (1,716 µg/kg) and in the Gulf killifish samples for fish (5,216 µg/kg). The highest average total dioxin/furan concentration for the invertebrates was reported in the white shrimp (size class A) samples (69.4 ng/kg) and in the Gulf menhaden for fish (763 ng/kg).

6 SUMMARY

During this investigation, 33 invertebrate tissue samples and 50 fish tissue samples were successfully collected and analyzed. Species sampled included blue crab, brown shrimp, oyster, white shrimp, Gulf killifish, Gulf menhaden, pinfish, sand seatrout, and striped mullet. Overall, these samples were collected consistent with the SAP and are of sufficient quality to meet the sampling objectives outlined in Section 1.2.

The data collected during this investigation were used to support exposure assessment in the BERA. Sufficient data was also collected for the development of site-specific BSAF for modeling future conditions and remedial scenarios. Baseline tissue concentrations of COPCs have also been established, which will provide a point of comparison for long-term (post-remediation) monitoring data.

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TABLES

Table 1
Sample Analysis Summary

Species	Number of Samples Collected	Analysis											
		Lipid	Percent Moisture	Mercury	Lead	PAHs	1,3-Dichlorobenzene	1,4-Dichlororbenzene	2-Methylnapthalene	Hexachlorobenzene	Hexachlorobutadiene	Dioxins/Furans	PCB Congeners
Fish													
Gulf Killifish	25	X	X	X			X			X		X	X
Gulf Menhaden	10	X	X	X			X			X		X	X
Sand Seatrout	2	X	X	X			X			X		X	X
Striped Mullet	9	X	X	X			X			X		X	X
Pinfish	4	X	X	X			X			X		X	X
Invertebrate (Size Class A)													
Blue Crab	18	X	X	X	X	X	X	X	X	X	X	X	X
Oyster	1	X	X	X	X	X	X	X	X	X	X	X	X
White Shrimp	1	X	X	X	X	X	X	X	X	X	X	X	X
Invertebrate (Size Class B)													
Blue Crab	3	X	X	X			X			X			X
White Shrimp	2	X	X	X			X			X			X
Brown Shrimp	8	X	X	X			X			X			X

Table 2
Sample List

Station ID	Reach	Sample ID	Species Group	Species	Size Class
PB015_A	1	PB01-F-A-GKF-W-001-COMP-201106	FISH	Gulf Killifish	A
PB015.1	1	PB01-F-A-GKF-W-002-COMP-201106	FISH	Gulf Killifish	A
PB016.2	1	PB01-F-A-GKF-W-003-COMP-201106	FISH	Gulf Killifish	A
PB013.3	1	PB01-F-A-GKF-W-004-COMP-201106	FISH	Gulf Killifish	A
PB019_A	1	PB01-F-A-GKF-W-005-COMP-201106	FISH	Gulf Killifish	A
PB024.1	1	PB01-F-A-GM-W-001-20110615	FISH	Gulf Menhaden	A
PB024.1	1	PB01-F-A-GM-W-002-20110615	FISH	Gulf Menhaden	A
PB025_A	1	PB01-F-A-GM-W-004-20110615	FISH	Gulf Menhaden	A
PB010	1	PB01-F-A-GM-W-008-20110618	FISH	Gulf Menhaden	A
PB019.1	1	PB01-F-A-SAS-W-005-20110622	FISH	Sand Seatrout	A
PB026.1	1	PB01-F-A-STM-W-002-20110616	FISH	Striped Mullet	A
PB013.3	1	PB01-F-A-STM-W-003-20110616	FISH	Striped Mullet	A
PB003.1	1	PB01-F-A-STM-W-006-20110618	FISH	Striped Mullet	A
PB002.1	1	PB01-I-A-BCR-W-001-COMP-201106	INVERTEBRATE	Blue Crab	A
PB005.1	1	PB01-I-A-BCR-W-002-COMP-201106	INVERTEBRATE	Blue Crab	A
PB010.3	1	PB01-I-A-BCR-W-003-COMP-201106	INVERTEBRATE	Blue Crab	A
PB015.2	1	PB01-I-A-BCR-W-004-COMP-201106	INVERTEBRATE	Blue Crab	A
PB024.4	1	PB01-I-A-BCR-W-005-COMP-201106	INVERTEBRATE	Blue Crab	A
PB015_A	1	PB01-I-A-BCR-W-006-COMP-201106	INVERTEBRATE	Blue Crab	A
PB015_A	1	PB01-I-A-BCR-W-007-COMP-201106	INVERTEBRATE	Blue Crab	A
PB019_A	1	PB01-I-A-BCR-W-008-COMP-201106	INVERTEBRATE	Blue Crab	A
PB015_A	1	PB01-I-A-BCR-W-009-COMP-201106	INVERTEBRATE	Blue Crab	A
PB013.1_A	1	PB01-I-A-BCR-W-010-COMP-201106	INVERTEBRATE	Blue Crab	A
PB019.2	1	PB01-I-A-OYS-W-001-COMP-201106	INVERTEBRATE	Oyster	A
PB010.1	1	PB01-I-A-WHS-W-001-COMP-201106	INVERTEBRATE	White Shrimp	A
PB015_A	1	PB01-I-B-BRS-W-001-COMP-201106	INVERTEBRATE	Brown Shrimp	B
PB019.1	1	PB01-I-B-BRS-W-012-20110621	INVERTEBRATE	Brown Shrimp	B
PB019.1	1	PB01-I-B-BRS-W-014-20110621	INVERTEBRATE	Brown Shrimp	B
PB019.1	1	PB01-I-B-BRS-W-015-20110621	INVERTEBRATE	Brown Shrimp	B
PB019.1	1	PB01-I-B-BRS-W-019-20110621	INVERTEBRATE	Brown Shrimp	B
PB019.1	1	PB01-I-B-BRS-W-022-20110622	INVERTEBRATE	Brown Shrimp	B
PB019.1	1	PB01-I-B-BRS-W-023-20110622	INVERTEBRATE	Brown Shrimp	B
PB008.2	1	PB01-I-B-WHS-W-001-COMP-201106	INVERTEBRATE	White Shrimp	B
PB006.1	1	PB01-I-B-WHS-W-002-COMP-201106	INVERTEBRATE	White Shrimp	B
PB049_A	2	PB02-F-A-GKF-W-001-COMP-201106	FISH	Gulf Killifish	A
PB056_A	2	PB02-F-A-GKF-W-010-20110618	FISH	Gulf Killifish	A
PB056_A	2	PB02-F-A-GKF-W-011-20110618	FISH	Gulf Killifish	A
PB053_B	2	PB02-F-A-GKF-W-013-20110618	FISH	Gulf Killifish	A
PB053.2	2	PB02-F-A-GKF-W-025-20110621	FISH	Gulf Killifish	A
PB053.2	2	PB02-F-A-GKF-W-029-20110622	FISH	Gulf Killifish	A
PB048.3	2	PB02-F-A-GM-W-001-20110616	FISH	Gulf Menhaden	A
PB048.3	2	PB02-F-A-GM-W-002-20110616	FISH	Gulf Menhaden	A
PB047.1_A	2	PB02-F-A-PNF-W-002-20110615	FISH	Pinfish	A
PB032_A	2	PB02-F-A-PNF-W-009-20110617	FISH	Pinfish	A
PB052.1	2	PB02-F-A-SAS-W-002-20110616	FISH	Sand Seatrout	A
PB048.3	2	PB02-F-A-STM-W-001-20110616	FISH	Striped Mullet	A
PB052.1	2	PB02-F-A-STM-W-003-20110616	FISH	Striped Mullet	A

Table 2
Sample List

Station ID	Reach	Sample ID	Species Group	Species	Size Class
PB037.2	2	PB02-F-A-STM-W-006-20110616	FISH	Striped Mullet	A
PB047.3	2	PB02-I-A-BCR-W-001-COMP-201106	INVERTEBRATE	Blue Crab	A
PB037.6	2	PB02-I-A-BCR-W-002-COMP-201106	INVERTEBRATE	Blue Crab	A
PB049_A	2	PB02-I-A-BCR-W-003-COMP-201106	INVERTEBRATE	Blue Crab	A
PB037_A	2	PB02-I-A-BCR-W-004-COMP-201106	INVERTEBRATE	Blue Crab	A
PB037.4	2	PB02-I-B-BCR-W-001-COMP-201106	INVERTEBRATE	Blue Crab	B
PB037.5	2	PB02-I-B-BRS-W-001-COMP-201106	INVERTEBRATE	Brown Shrimp	B
PB057_B	3	PB03-F-A-GKF-W-001-20110615	FISH	Gulf Killifish	A
PB069_A	3	PB03-F-A-GKF-W-002-20110615	FISH	Gulf Killifish	A
PB059.1_A	3	PB03-F-A-GKF-W-003-20110615	FISH	Gulf Killifish	A
PB063.2_A	3	PB03-F-A-GKF-W-005-20110615	FISH	Gulf Killifish	A
PB057_B	3	PB03-F-A-GKF-W-006-20110617	FISH	Gulf Killifish	A
PB069_A	3	PB03-F-A-GKF-W-007-20110617	FISH	Gulf Killifish	A
PB063.1_A	3	PB03-F-A-GKF-W-009-20110617	FISH	Gulf Killifish	A
PB063.1_A	3	PB03-F-A-GKF-W-010-20110617	FISH	Gulf Killifish	A
PB063.2_A	3	PB03-F-A-GKF-W-013-20110617	FISH	Gulf Killifish	A
PB057.2	3	PB03-F-A-GM-W-001-20110617	FISH	Gulf Menhaden	A
PB058.1	3	PB03-F-A-GM-W-003-20110618	FISH	Gulf Menhaden	A
PB058.1	3	PB03-F-A-GM-W-004-20110618	FISH	Gulf Menhaden	A
PB058.1	3	PB03-F-A-GM-W-005-20110618	FISH	Gulf Menhaden	A
PB057_B	3	PB03-F-A-PNF-W-001-COMP-201106	FISH	Pinfish	A
PB057.2	3	PB03-F-A-STM-W-001-20110617	FISH	Striped Mullet	A
PB057.2	3	PB03-F-A-STM-W-001-COMP-201106	FISH	Striped Mullet	A
PB057.2	3	PB03-F-A-STM-W-002-20110617	FISH	Striped Mullet	A
PB059.5	3	PB03-I-A-BCR-W-001-COMP-201106	INVERTEBRATE	Blue Crab	A
PB069_A	3	PB03-I-A-BCR-W-002-COMP-201106	INVERTEBRATE	Blue Crab	A
PB059.1_A	3	PB03-I-A-BCR-W-003-COMP-201106	INVERTEBRATE	Blue Crab	A
PB059.3	3	PB03-I-B-BCR-W-002-20110627	INVERTEBRATE	Blue Crab	B
PB059.4	3	PB03-I-B-BCR-W-003-20110628	INVERTEBRATE	Blue Crab	B
PB101_D	4	PB04-F-A-GKF-W-001-20110627	FISH	Gulf Killifish	A
PB101_D	4	PB04-F-A-GKF-W-001-COMP-201106	FISH	Gulf Killifish	A
PB084.1	4	PB04-F-A-GKF-W-005-20110627	FISH	Gulf Killifish	A
PB101_D	4	PB04-F-A-GKF-W-009-20110627	FISH	Gulf Killifish	A
PB084.1	4	PB04-F-A-GKF-W-013-20110627	FISH	Gulf Killifish	A
PB102	4	PB04-F-A-PNF-W-001-COMP-201106	FISH	Pinfish	A
PB095.2	4	PB04-I-A-BCR-W-001-COMP-201106	INVERTEBRATE	Blue Crab	A

Table 3
Blue Crab Size Class A Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
Conventional Parameters (percent)									
Lipids	18	18	0	0.555	3.73	1.59	--	--	1.59
Moisture, percent	18	18	0	66.1	74.0	70.3	--	--	70.3
Metals (mg/kg)									
Lead	18	18	0	0.092	0.518	0.178	--	--	0.178
Mercury	18	18	0	0.009	0.072	0.0475	--	--	0.0475
Polyaromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	18	0	18	--	--	--	6.93	14.8	6.56
Acenaphthene	18	2	16	5.72	11	8.36	6.93	14.8	5.98
Acenaphthylene	18	0	18	--	--	--	6.93	14.8	5.65
Anthracene	18	0	18	--	--	--	6.93	14.8	5.65
Benzo(a)anthracene	18	0	18	--	--	--	6.93	14.8	5.65
Benzo(a)pyrene	18	0	18	--	--	--	6.93	14.8	5.65
Benzo(b)fluoranthene	18	0	18	--	--	--	6.93	14.8	5.65
Benzo(g,h,i)perylene	18	0	18	--	--	--	6.93	14.8	5.65
Benzo(k)fluoranthene	18	0	18	--	--	--	6.93	14.8	5.65
Chrysene	18	0	18	--	--	--	6.93	14.8	5.65
Dibenzo(a,h)anthracene	18	0	18	--	--	--	6.93	14.8	5.65
Fluoranthene	18	0	18	--	--	--	6.93	14.8	5.65
Fluorene	18	0	18	--	--	--	6.93	14.8	5.65
Indeno(1,2,3-c,d)pyrene	18	0	18	--	--	--	6.93	14.8	5.65
Naphthalene	18	4	14	4.19	8.23	5.91	6.93	14.8	6.13
Phenanthrene	18	1	17	3.81	3.81	3.81	6.93	14.8	5.63
Pyrene	18	1	17	6.08	6.08	6.08	6.93	14.8	5.75
Total HPAH (U = 1/2)	18	1	17	39.6	39.6	39.6	6.93	14.8	7.62
Total LPAH (U = 1/2)	18	5	13	25.5	53.3	33.4	6.93	14.8	13.7
Total PAH (U = 1/2)	18	5	13	60.9	124	77.2	6.93	14.8	25.9
Semivolatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	18	0	18	--	--	--	341	745	213
1,4-Dichlorobenzene	18	0	18	--	--	--	341	745	213
Hexachlorobenzene	18	9	9	191	5,430	1,021	347	727	612
Hexachlorobutadiene	26	0	26	--	--	--	341	745	213
PCBs (µg/kg)									
PCB-001	18	2	16	0.00249	0.00384	0.00317	0.00131	0.00783	0.00379
PCB-002	18	2	16	0.000956	0.001	0.000978	0.000847	0.00719	0.00149
PCB-003	18	0	18	--	--	--	0.000816	0.00768	0.00164
PCB-004	18	3	15	0.012	0.147	0.0690	0.00701	0.108	0.022
PCB-005	18	0	18	--	--	--	0.00165	0.0181	0.00318
PCB-006	18	5	13	0.00635	0.0786	0.0257	0.00229	0.0114	0.00948
PCB-007	18	1	17	0.00665	0.00665	0.00665	0.00147	0.0166	0.00314
PCB-008	18	17	1	0.0387	0.369	0.0854	0.0289	0.0289	0.0815
PCB-009	18	1	17	0.00477	0.00477	0.00477	0.00151	0.0167	0.00312
PCB-010	18	0	18	--	--	--	0.00233	0.0313	0.00394
PCB-011	18	0	18	--	--	--	0.0112	0.0578	0.016
PCB-012/013	18	15	3	0.00855	0.0567	0.0189	0.0112	0.0117	0.0167

Table 3
Blue Crab Size Class A Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-014	18	0	18	--	--	--	0.00142	0.0158	0.00275
PCB-015	18	18	0	0.393	3.99	1.72	--	--	1.72
PCB-016	18	10	8	0.00507	0.0944	0.0232	0.00489	0.0106	0.0146
PCB-017	18	18	0	0.0245	0.549	0.0875	--	--	0.0875
PCB-018/030	18	18	0	0.0269	1.03	0.144	--	--	0.144
PCB-019	18	4	14	0.00657	0.052	0.0265	0.00299	0.0126	0.00893
PCB-020/028	18	18	0	18.6	185	79.1	--	--	79.1
PCB-021/033	18	18	0	0.0218	1.03	0.186	--	--	0.186
PCB-022	18	18	0	0.0559	1.12	0.343	--	--	0.343
PCB-023	18	0	18	--	--	--	0.00101	0.00769	0.00164
PCB-024	18	0	18	--	--	--	0.00107	0.00798	0.00169
PCB-025	18	18	0	0.0125	0.209	0.0619	--	--	0.0619
PCB-026/029	18	18	0	0.0175	0.603	0.130	--	--	0.130
PCB-027	18	13	5	0.00352	0.0764	0.0133	0.00253	0.00721	0.0102
PCB-031	18	18	0	0.286	5.33	1.48	--	--	1.48
PCB-032	18	18	0	0.0272	0.819	0.148	--	--	0.148
PCB-034	18	17	1	0.00432	0.0605	0.0163	0.00485	0.00485	0.0156
PCB-035	18	12	6	0.00558	0.0436	0.0174	0.00402	0.012	0.0131
PCB-036	18	1	17	0.0852	0.0852	0.0852	0.0032	0.0116	0.00795
PCB-037	18	18	0	1.35	14.3	6.26	--	--	6.26
PCB-038	18	7	11	0.0129	0.0399	0.0286	0.00336	0.0118	0.0133
PCB-039	18	13	5	0.0212	0.108	0.0584	0.00429	0.0105	0.0431
PCB-040/071	18	18	0	0.135	3.18	0.660	--	--	0.660
PCB-041	18	8	10	0.00592	0.0507	0.0279	0.00408	0.0281	0.0151
PCB-042	18	18	0	0.0527	1.41	0.264	--	--	0.264
PCB-043	18	15	3	0.0205	0.416	0.0942	0.00506	0.0146	0.0794
PCB-044/047/065	18	18	0	12.5	87.5	38.4	--	--	38.4
PCB-045/051	18	17	1	0.0179	0.229	0.0555	0.013	0.013	0.0528
PCB-046	18	5	13	0.00291	0.0487	0.0185	0.00256	0.018	0.00789
PCB-048	18	18	0	0.0238	0.752	0.120	--	--	0.120
PCB-049/069	18	18	0	0.0885	2.67	0.514	--	--	0.514
PCB-050/053	18	18	0	0.00824	0.213	0.0399	--	--	0.0399
PCB-052	18	18	0	0.113	3.32	0.614	--	--	0.614
PCB-054	18	0	18	--	--	--	0.00135	0.0135	0.00283
PCB-055	18	4	14	0.0757	0.238	0.158	0.00313	0.0265	0.04
PCB-056	18	18	0	0.0282	1.96	0.442	--	--	0.442
PCB-057	18	9	9	0.00623	0.0442	0.0164	0.00564	0.0238	0.0117
PCB-058	18	7	11	0.0128	0.037	0.0248	0.00568	0.0243	0.0136
PCB-059/062/075	18	18	0	1.16	6.26	3.08	--	--	3.08
PCB-060	18	18	0	8.53	59.9	29.4	--	--	29.4
PCB-061/070/074/076	18	18	0	19.3	249	74.3	--	--	74.3
PCB-063	18	18	0	0.26	137	8.66	--	--	8.66
PCB-064	18	18	0	0.149	4.18	1.06	--	--	1.06
PCB-066	18	17	1	34.3	259	112	0.024	0.024	105
PCB-067	18	17	1	0.0242	0.194	0.0771	0.0172	0.0172	0.0733

Table 3
Blue Crab Size Class A Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-068	18	18	0	0.0863	0.435	0.252	--	--	0.252
PCB-072	18	17	1	0.0309	0.226	0.0802	0.0177	0.0177	0.0762
PCB-073	18	7	11	0.0058	0.0497	0.0177	0.00269	0.0185	0.00799
PCB-077	18	18	0	1.63	13.4	6.12	--	--	6.12
PCB-078	18	0	18	--	--	--	0.00309	0.0252	0.00578
PCB-079	18	9	9	0.0405	0.173	0.102	0.0051	0.0215	0.0534
PCB-080	18	3	15	0.00442	0.0119	0.00848	0.0049	0.0239	0.00626
PCB-081	18	18	0	0.0787	0.683	0.313	--	--	0.313
PCB-082	18	11	7	0.00589	0.103	0.0296	0.00506	0.0212	0.0205
PCB-083	18	0	18	--	--	--	0.00238	0.0277	0.00487
PCB-084	18	18	0	0.0259	0.328	0.0842	--	--	0.0842
PCB-085/116/117	18	18	0	4.79	34.9	15.3	--	--	15.3
PCB-086/087/097/108/119/125	18	18	0	1.3	5.21	2.90	--	--	2.90
PCB-088/091	18	18	0	0.0452	0.817	0.223	--	--	0.223
PCB-089	18	2	16	0.00256	0.00835	0.00546	0.00356	0.0264	0.00505
PCB-090/101/113	18	18	0	0.441	5.62	1.86	--	--	1.86
PCB-092	18	18	0	0.0236	0.74	0.142	--	--	0.142
PCB-093/100	18	18	0	0.297	1.05	0.541	--	--	0.541
PCB-094	18	16	2	0.00561	0.0583	0.0212	0.00542	0.0198	0.0196
PCB-095	18	18	0	0.0603	0.949	0.236	--	--	0.236
PCB-096	18	1	17	0.00296	0.00296	0.00296	0.000738	0.011	0.00211
PCB-098/102	18	17	1	0.014	0.224	0.0559	0.00542	0.00542	0.0529
PCB-099	18	18	0	18.5	95.4	42.6	--	--	42.6
PCB-103	18	8	10	0.00292	0.0609	0.0167	0.00424	0.0184	0.00992
PCB-104	18	0	18	--	--	--	0.00093	0.00974	0.0019
PCB-105	18	18	0	8.74	60.3	28.5	--	--	28.5
PCB-106	18	0	18	--	--	--	0.00382	0.0278	0.00601
PCB-107/124	18	17	1	0.0227	0.234	0.0888	0.0192	0.0192	0.0844
PCB-109	18	18	0	1.08	6.54	3.46	--	--	3.46
PCB-110/115	18	18	0	0.825	5.96	3.15	--	--	3.15
PCB-111	18	17	1	0.0241	0.109	0.0452	0.0097	0.0097	0.043
PCB-112	18	2	16	0.0264	0.0444	0.0354	0.00147	0.0189	0.00692
PCB-114	18	18	0	0.62	4.09	2.05	--	--	2.05
PCB-118	18	18	0	22.7	119	62.2	--	--	62.2
PCB-120	18	18	0	0.0873	0.421	0.253	--	--	0.253
PCB-121	18	10	8	0.0134	0.061	0.0234	0.00146	0.014	0.0146
PCB-122	18	4	14	0.00788	0.0495	0.0224	0.0055	0.0308	0.0107
PCB-123	18	18	0	0.476	3.45	1.54	--	--	1.54
PCB-126	18	18	0	0.0688	0.419	0.209	--	--	0.209
PCB-127	18	5	13	0.0141	0.0675	0.0413	0.00357	0.028	0.0155
PCB-128/166	18	18	0	1.25	5.74	2.98	--	--	2.98
PCB-129/138/163	18	18	0	8.94	38.2	22.7	--	--	22.7
PCB-130	18	18	0	0.115	1.26	0.489	--	--	0.489
PCB-131	18	11	7	0.0077	0.0351	0.0184	0.00717	0.0407	0.015
PCB-132	18	14	4	0.0142	0.12	0.0327	0.0181	0.0378	0.0283

Table 3
Blue Crab Size Class A Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-133	18	18	0	0.183	0.908	0.407	--	--	0.407
PCB-134	18	1	17	0.013	0.013	0.013	0.00317	0.0408	0.00752
PCB-135/151	18	17	1	0.0392	0.754	0.116	0.0132	0.0132	0.11
PCB-136	18	16	2	0.00562	0.0885	0.0188	0.00764	0.0113	0.0177
PCB-137	18	18	0	0.511	3.03	1.53	--	--	1.53
PCB-139/140	18	18	0	0.273	1.22	0.637	--	--	0.637
PCB-141	18	10	8	0.00755	0.416	0.110	0.00335	0.033	0.0636
PCB-142	18	2	16	0.0131	0.015	0.0141	0.00298	0.0373	0.00695
PCB-143	18	1	17	0.00322	0.00322	0.00322	0.00351	0.0346	0.00602
PCB-144	18	17	1	0.0131	0.134	0.0394	0.00972	0.00972	0.0375
PCB-145	18	0	18	--	--	--	0.00052	0.0118	0.00182
PCB-146	18	18	0	1.54	8.87	4.66	--	--	4.66
PCB-147/149	18	18	0	0.153	4.01	0.966	--	--	0.966
PCB-148	18	18	0	0.0169	0.301	0.0836	--	--	0.0836
PCB-150	18	0	18	--	--	--	0.00048	0.0114	0.00175
PCB-152	18	0	18	--	--	--	0.000469	0.0111	0.00171
PCB-153/168	18	18	0	9.79	40.5	26.1	--	--	26.1
PCB-154	18	18	0	0.211	1.68	0.721	--	--	0.721
PCB-155	18	18	0	0.0132	0.397	0.0993	--	--	0.0993
PCB-156/157	18	18	0	1.35	6.3	3.35	--	--	3.35
PCB-158	18	18	0	1.1	5.06	2.93	--	--	2.93
PCB-159	18	5	13	0.00727	0.0131	0.0101	0.00356	0.023	0.00642
PCB-160	18	0	18	--	--	--	0.00195	0.0288	0.00475
PCB-161	18	0	18	--	--	--	0.00183	0.024	0.00421
PCB-162	18	18	0	0.0483	0.207	0.133	--	--	0.133
PCB-164	18	10	8	0.0126	0.261	0.0853	0.0019	0.0238	0.0493
PCB-165	18	15	3	0.00473	0.0463	0.0167	0.0138	0.0261	0.0155
PCB-167	18	18	0	0.601	2.2	1.28	--	--	1.28
PCB-169	18	4	14	0.00826	0.0295	0.0209	0.00174	0.0342	0.00865
PCB-170	18	18	0	0.61	4.04	2.41	--	--	2.41
PCB-171/173	18	18	0	0.287	1.63	1.02	--	--	1.02
PCB-172	18	18	0	0.207	1	0.605	--	--	0.605
PCB-174	18	16	2	0.0149	0.454	0.0631	0.0112	0.0209	0.057
PCB-175	18	18	0	0.0517	0.37	0.171	--	--	0.171
PCB-176	18	16	2	0.00535	0.112	0.0275	0.00158	0.00659	0.0247
PCB-177	18	18	0	0.0947	1.96	0.681	--	--	0.681
PCB-178	18	18	0	0.283	1.81	0.758	--	--	0.758
PCB-179	18	15	3	0.00453	0.118	0.0153	0.0044	0.00726	0.0133
PCB-180/193	18	18	0	2.7	13.1	8.69	--	--	8.69
PCB-181	18	18	0	0.0237	0.12	0.0638	--	--	0.0638
PCB-182	18	17	1	0.0247	0.165	0.0557	0.0085	0.0085	0.0528
PCB-183/185	18	18	0	0.861	4.39	2.64	--	--	2.64
PCB-184	18	18	0	0.0117	0.183	0.0562	--	--	0.0562
PCB-186	18	0	18	--	--	--	0.000463	0.00806	0.00141
PCB-187	18	18	0	1.34	9.74	5.25	--	--	5.25

Table 3
Blue Crab Size Class A Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-188	18	18	0	0.011	0.167	0.0557	--	--	0.0557
PCB-189	18	18	0	0.0451	0.238	0.151	--	--	0.151
PCB-190	18	18	0	0.152	0.869	0.579	--	--	0.579
PCB-191	18	18	0	0.0511	0.249	0.158	--	--	0.158
PCB-192	18	2	16	0.00175	0.0144	0.00808	0.00126	0.0763	0.0055
PCB-194	18	18	0	0.282	1.72	1.06	--	--	1.06
PCB-195	18	18	0	0.0732	0.603	0.331	--	--	0.331
PCB-196	18	18	0	0.261	1.59	0.892	--	--	0.892
PCB-197/200	18	18	0	0.0376	0.665	0.235	--	--	0.235
PCB-198/199	18	18	0	0.505	3.32	1.68	--	--	1.68
PCB-201	18	18	0	0.0722	0.803	0.307	--	--	0.307
PCB-202	18	18	0	0.148	3.2	0.759	--	--	0.759
PCB-203	18	18	0	0.25	1.55	0.879	--	--	0.879
PCB-204	18	17	1	0.00767	0.157	0.0361	0.00738	0.00738	0.0343
PCB-205	18	17	1	0.0107	0.141	0.0424	0.0124	0.0124	0.0404
PCB-206	18	18	0	0.111	3.44	0.928	--	--	0.928
PCB-207	18	18	0	0.0958	3.24	0.888	--	--	0.888
PCB-208	18	18	0	0.119	4.92	1.12	--	--	1.12
PCB-209	18	18	0	1.64	175	27.8	--	--	27.8
Total PCB Congener (U = 1/2)	18	18	0	229	1,264	655	--	--	655
Dioxins and Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	18	18	0	1.71	184	21.6	--	--	21.6
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	18	18	0	3.97	50.6	14.1	--	--	14.1
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	18	18	0	0.49	13.7	3.16	--	--	3.16
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	18	12	6	0.808	5.08	2.00	1.02	2.71	1.63
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	18	2	16	0.447	1.39	0.919	0.191	0.48	0.245
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	18	12	6	0.668	2.48	1.58	0.417	1.91	1.23
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	18	2	16	0.535	0.819	0.677	0.156	1.21	0.299
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	18	10	8	0.352	1.21	0.750	0.156	1.12	0.539
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	18	5	13	0.408	0.5	0.451	0.178	1.17	0.333
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	18	0	18	--	--	--	0.121	0.44	0.135
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	18	1	17	0.425	0.425	0.425	0.169	1.22	0.265
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	18	15	3	1.15	6.65	3.10	0.334	1.46	2.66
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	18	9	9	0.309	1.12	0.536	0.133	0.488	0.333
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	18	2	16	0.294	0.434	0.364	0.118	0.634	0.16
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	18	16	2	1.28	6.19	2.90	0.554	1.14	2.63
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	18	18	0	1.65	33	11.3	--	--	11.3
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	18	18	0	0.398	4.75	2.92	--	--	2.92
Total Dioxin/Furan (U = 1/2)	18	18	0	17.3	235	63.6	--	--	63.6

Notes:
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
ng/kg - nanograms per kilogram

PCB - polychlorinated biphenyl
-- Results not applicable

Table 4
Blue Crab Size Class B Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
Conventional Parameters (percent)									
Lipids	3	3	0	0.575	0.943	0.725	--	--	0.725
Moisture, percent	3	3	0	69.0	76.5	73.1	--	--	73.1
Metals (mg/kg)									
Mercury	3	3	0	0.058	0.083	0.067	--	--	0.067
Semivolatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	3	0	3	--	--	--	357	748	304
Hexachlorobenzene	3	0	3	--	--	--	357	748	304
PCBs (µg/kg)									
PCB-001	3	2	1	0.00439	0.0049	0.00465	0.00317	0.00317	0.00363
PCB-002	3	1	2	0.00252	0.00252	0.00252	0.000766	0.00292	0.00145
PCB-003	3	0	3	--	--	--	0.00276	0.00419	0.00166
PCB-004	3	2	1	0.0303	0.0398	0.0351	0.0392	0.0392	0.0299
PCB-005	3	0	3	--	--	--	0.00201	0.00987	0.00237
PCB-006	3	2	1	0.0156	0.0234	0.0195	0.00797	0.00797	0.0143
PCB-007	3	0	3	--	--	--	0.00171	0.00831	0.002
PCB-008	3	3	0	0.0654	0.119	0.100	--	--	0.100
PCB-009	3	0	3	--	--	--	0.00437	0.00895	0.00307
PCB-010	3	0	3	--	--	--	0.0013	0.0155	0.00306
PCB-011	3	0	3	--	--	--	0.0178	0.0292	0.0116
PCB-012/013	3	3	0	0.0159	0.0255	0.0207	--	--	0.0207
PCB-014	3	0	3	--	--	--	0.0017	0.00839	0.00201
PCB-015	3	3	0	1.58	1.92	1.8	--	--	1.8
PCB-016	3	3	0	0.0128	0.0255	0.0209	--	--	0.0209
PCB-017	3	3	0	0.0619	0.226	0.139	--	--	0.139
PCB-018/030	3	3	0	0.184	0.459	0.328	--	--	0.328
PCB-019	3	3	0	0.00903	0.0203	0.0165	--	--	0.0165
PCB-020/028	3	3	0	69.2	74.2	71.9	--	--	71.9
PCB-021/033	3	3	0	0.14	0.281	0.195	--	--	0.195
PCB-022	3	3	0	0.307	0.66	0.515	--	--	0.515
PCB-023	3	0	3	--	--	--	0.000778	0.00242	0.000705
PCB-024	3	0	3	--	--	--	0.000809	0.00231	0.000698
PCB-025	3	3	0	0.0748	0.0869	0.0796	--	--	0.0796
PCB-026/029	3	3	0	0.142	0.294	0.206	--	--	0.206
PCB-027	3	3	0	0.00793	0.0507	0.0264	--	--	0.0264
PCB-031	3	3	0	1.64	2.05	1.80	--	--	1.80
PCB-032	3	3	0	0.107	0.549	0.290	--	--	0.290
PCB-034	3	3	0	0.0107	0.0289	0.0169	--	--	0.0169
PCB-035	3	3	0	0.0108	0.0211	0.0164	--	--	0.0164
PCB-036	3	0	3	--	--	--	0.00205	0.0065	0.00182
PCB-037	3	3	0	5.99	7.65	6.62	--	--	6.62
PCB-038	3	2	1	0.0209	0.0252	0.0231	0.00677	0.00677	0.0165
PCB-039	3	2	1	0.0396	0.0585	0.0491	0.00677	0.00677	0.0338
PCB-040/071	3	3	0	0.486	3.62	1.77	--	--	1.77
PCB-041	3	1	2	0.0423	0.0423	0.0423	0.00378	0.00636	0.0175
PCB-042	3	3	0	0.316	0.681	0.508	--	--	0.508
PCB-043	3	3	0	0.0665	0.444	0.232	--	--	0.232
PCB-044/047/065	3	3	0	44.3	50.2	47.0	--	--	47.0

Table 4
Blue Crab Size Class B Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-045/051	3	3	0	0.04	0.165	0.109	--	--	0.109
PCB-046	3	3	0	0.00654	0.0215	0.0157	--	--	0.0157
PCB-048	3	3	0	0.139	0.356	0.268	--	--	0.268
PCB-049/069	3	3	0	0.478	1.04	0.819	--	--	0.819
PCB-050/053	3	3	0	0.0366	0.149	0.0972	--	--	0.0972
PCB-052	3	3	0	0.808	1.9	1.40	--	--	1.40
PCB-054	3	1	2	0.00187	0.00187	0.00187	0.00102	0.00396	0.00145
PCB-055	3	1	2	0.129	0.129	0.129	0.00448	0.005	0.0446
PCB-056	3	3	0	0.693	0.974	0.854	--	--	0.854
PCB-057	3	2	1	0.0153	0.0334	0.0244	0.0116	0.0116	0.0182
PCB-058	3	2	1	0.0169	0.0262	0.0216	0.00437	0.00437	0.0151
PCB-059/062/075	3	3	0	3.36	3.67	3.48	--	--	3.48
PCB-060	3	3	0	34.9	38.8	36.9	--	--	36.9
PCB-061/070/074/076	3	3	0	72.1	89.1	80.6	--	--	80.6
PCB-063	3	3	0	1.3	1.72	1.46	--	--	1.46
PCB-064	3	3	0	1.42	2.45	1.89	--	--	1.89
PCB-066	3	3	0	122	163	140	--	--	140
PCB-067	3	3	0	0.0948	0.127	0.111	--	--	0.111
PCB-068	3	3	0	0.192	0.305	0.241	--	--	0.241
PCB-072	3	3	0	0.0572	0.117	0.0795	--	--	0.0795
PCB-073	3	0	3	--	--	--	0.00231	0.00435	0.00164
PCB-077	3	3	0	7.25	8.4	7.94	--	--	7.94
PCB-078	3	0	3	--	--	--	0.0041	0.0124	0.00351
PCB-079	3	1	2	0.101	0.101	0.101	0.00403	0.0102	0.036
PCB-080	3	0	3	--	--	--	0.00393	0.011	0.00322
PCB-081	3	3	0	0.4	0.454	0.430	--	--	0.430
PCB-082	3	3	0	0.0373	0.0528	0.0431	--	--	0.0431
PCB-083	3	0	3	--	--	--	0.00458	0.00769	0.00282
PCB-084	3	3	0	0.106	0.463	0.283	--	--	0.283
PCB-085/116/117	3	3	0	23.9	25.6	24.6	--	--	24.6
PCB-086/087/097/108/119/125	3	3	0	3.96	4.31	4.08	--	--	4.08
PCB-088/091	3	3	0	0.179	0.735	0.444	--	--	0.444
PCB-089	3	2	1	0.0146	0.0162	0.0154	0.00663	0.00663	0.0114
PCB-090/101/113	3	3	0	2.06	3.13	2.63	--	--	2.63
PCB-092	3	3	0	0.135	0.519	0.323	--	--	0.323
PCB-093/100	3	3	0	0.716	0.797	0.748	--	--	0.748
PCB-094	3	3	0	0.0187	0.109	0.0553	--	--	0.0553
PCB-095	3	3	0	0.274	1.33	0.718	--	--	0.718
PCB-096	3	2	1	0.00374	0.00457	0.00416	0.0022	0.0022	0.00314
PCB-098/102	3	3	0	0.0566	0.248	0.147	--	--	0.147
PCB-099	3	3	0	59	66.1	61.8	--	--	61.8
PCB-103	3	3	0	0.00935	0.0145	0.0121	--	--	0.0121
PCB-104	3	1	2	0.00634	0.00634	0.00634	0.0015	0.00323	0.0029
PCB-105	3	3	0	36.9	51	42.37	--	--	42.37
PCB-106	3	0	3	--	--	--	0.00498	0.0138	0.00397
PCB-107/124	3	3	0	0.106	0.154	0.123	--	--	0.123

Table 4
Blue Crab Size Class B Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-109	3	3	0	4.17	5.2	4.63	--	--	4.63
PCB-110/115	3	3	0	4.87	5.75	5.19	--	--	5.19
PCB-111	3	3	0	0.0309	0.0565	0.0408	--	--	0.0408
PCB-112	3	0	3	--	--	--	0.00286	0.00458	0.00173
PCB-114	3	3	0	2.84	3.78	3.20	--	--	3.20
PCB-118	3	3	0	81.2	110	91.0	--	--	91.0
PCB-120	3	3	0	0.199	0.372	0.264	--	--	0.264
PCB-121	3	3	0	0.0141	0.0231	0.0171	--	--	0.0171
PCB-122	3	3	0	0.0191	0.101	0.053	--	--	0.053
PCB-123	3	3	0	1.97	2.82	2.29	--	--	2.29
PCB-126	3	3	0	0.26	0.366	0.302	--	--	0.302
PCB-127	3	2	1	0.0519	0.0536	0.0528	0.0135	0.0135	0.0374
PCB-128/166	3	3	0	4.11	5.82	4.72	--	--	4.72
PCB-129/138/163	3	3	0	26.1	44.7	32.8	--	--	32.8
PCB-130	3	3	0	0.397	0.66	0.518	--	--	0.518
PCB-131	3	2	1	0.0165	0.0237	0.0201	0.0112	0.0112	0.0153
PCB-132	3	3	0	0.037	0.0475	0.0408	--	--	0.0408
PCB-133	3	3	0	0.34	0.672	0.465	--	--	0.465
PCB-134	3	1	2	0.0159	0.0159	0.0159	0.0119	0.0121	0.0093
PCB-135/151	3	3	0	0.0779	0.204	0.138	--	--	0.138
PCB-136	3	3	0	0.021	0.0492	0.0349	--	--	0.0349
PCB-137	3	3	0	2.21	2.81	2.45	--	--	2.45
PCB-139/140	3	3	0	0.816	0.923	0.853	--	--	0.853
PCB-141	3	2	1	0.105	0.109	0.107	0.00983	0.00983	0.073
PCB-142	3	0	3	--	--	--	0.00608	0.0101	0.00436
PCB-143	3	1	2	0.0058	0.0058	0.00580	0.00911	0.00938	0.00502
PCB-144	3	3	0	0.0278	0.0702	0.0465	--	--	0.0465
PCB-145	3	0	3	--	--	--	0.00195	0.00366	0.00129
PCB-146	3	3	0	4.24	7.64	5.42	--	--	5.42
PCB-147/149	3	3	0	0.868	1.37	1.04	--	--	1.04
PCB-148	3	3	0	0.0553	0.09	0.0672	--	--	0.0672
PCB-150	3	0	3	--	--	--	0.00187	0.00354	0.00124
PCB-152	3	2	1	0.000974	0.00252	0.00175	0.00353	0.00353	0.00175
PCB-153/168	3	3	0	26.1	46.5	33.3	--	--	33.3
PCB-154	3	3	0	0.573	1.1	0.753	--	--	0.753
PCB-155	3	3	0	0.0343	0.0889	0.0526	--	--	0.0526
PCB-156/157	3	3	0	3.98	6.94	5.02	--	--	5.02
PCB-158	3	3	0	3.72	5.56	4.41	--	--	4.41
PCB-159	3	1	2	0.00921	0.00921	0.00921	0.00418	0.0142	0.00613
PCB-160	3	0	3	--	--	--	0.00472	0.00772	0.00327
PCB-161	3	0	3	--	--	--	0.00403	0.00696	0.00293
PCB-162	3	3	0	0.106	0.163	0.134	--	--	0.134
PCB-164	3	3	0	0.0461	0.101	0.0680	--	--	0.0680
PCB-165	3	3	0	0.0107	0.0201	0.0141	--	--	0.0141
PCB-167	3	3	0	1.41	2.51	1.81	--	--	1.81
PCB-169	3	0	3	--	--	--	0.00451	0.0122	0.00354

Table 4
Blue Crab Size Class B Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-170	3	3	0	2.29	5.92	3.52	--	--	3.52
PCB-171/173	3	3	0	0.949	2.08	1.34	--	--	1.34
PCB-172	3	3	0	0.482	1.43	0.806	--	--	0.806
PCB-174	3	3	0	0.0407	0.0587	0.0490	--	--	0.0490
PCB-175	3	3	0	0.142	0.311	0.200	--	--	0.200
PCB-176	3	2	1	0.0109	0.026	0.0185	0.00172	0.00172	0.0126
PCB-177	3	3	0	0.36	1.13	0.642	--	--	0.642
PCB-178	3	3	0	0.579	1.45	0.893	--	--	0.893
PCB-179	3	3	0	0.00727	0.0109	0.00898	--	--	0.00898
PCB-180/193	3	3	0	7.45	21	12.2	--	--	12.2
PCB-181	3	3	0	0.062	0.118	0.0826	--	--	0.0826
PCB-182	3	3	0	0.0398	0.0883	0.0567	--	--	0.0567
PCB-183/185	3	3	0	2.54	5.18	3.43	--	--	3.43
PCB-184	3	3	0	0.0284	0.0369	0.0317	--	--	0.0317
PCB-186	3	0	3	--	--	--	0.00182	0.00425	0.00142
PCB-187	3	3	0	3.67	12.6	6.75	--	--	6.75
PCB-188	3	3	0	0.0207	0.0495	0.0319	--	--	0.0319
PCB-189	3	3	0	0.133	0.321	0.196	--	--	0.196
PCB-190	3	3	0	0.481	1.42	0.812	--	--	0.812
PCB-191	3	3	0	0.139	0.4	0.230	--	--	0.230
PCB-192	3	0	3	--	--	--	0.00273	0.00485	0.00175
PCB-194	3	3	0	0.824	2.74	1.47	--	--	1.47
PCB-195	3	3	0	0.257	0.714	0.414	--	--	0.414
PCB-196	3	3	0	0.76	1.99	1.17	--	--	1.17
PCB-197/200	3	3	0	0.136	0.25	0.175	--	--	0.175
PCB-198/199	3	3	0	1.32	3.15	1.94	--	--	1.94
PCB-201	3	3	0	0.208	0.405	0.275	--	--	0.275
PCB-202	3	3	0	0.329	0.771	0.480	--	--	0.480
PCB-203	3	3	0	0.712	1.85	1.10	--	--	1.10
PCB-204	3	3	0	0.0146	0.0234	0.0178	--	--	0.0178
PCB-205	3	2	1	0.0176	0.0197	0.0187	0.0571	0.0571	0.022
PCB-206	3	3	0	0.405	0.988	0.609	--	--	0.609
PCB-207	3	3	0	0.408	0.827	0.556	--	--	0.556
PCB-208	3	3	0	0.458	1.01	0.648	--	--	0.648
PCB-209	3	3	0	8.14	22.2	13.3	--	--	13.3
Total PCB Congener (U = 1/2)	3	3	0	722	936	804	--	--	804

Notes:
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
-- Results not applicable
PCB - polychlorinated biphenyl

Table 5
Brown Shrimp Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
Conventional Parameters (percent)									
Lipids	8	8	0	1.15	1.64	1.37	--	--	1.37
Moisture, percent	8	8	0	74.0	76.2	75.1	--	--	75.1
Metals (mg/kg)									
Mercury	8	8	0	0.025	0.065	0.041	--	--	0.041
Semivolatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	8	0	8	--	--	--	340	709	223
Hexachlorobenzene	8	8	0	537	913	710	--	--	710
PCBs (µg/kg)									
PCB-001	8	8	0	0.0552	0.446	0.163	--	--	0.163
PCB-002	8	3	5	0.00536	0.0611	0.0349	0.00197	0.0472	0.0206
PCB-003	8	6	2	0.0317	0.216	0.0913	0.0265	0.0422	0.0727
PCB-004	8	8	0	0.239	0.698	0.461	--	--	0.461
PCB-005	8	1	7	0.0557	0.0557	0.0557	0.00676	0.0971	0.0245
PCB-006	8	8	0	0.262	0.64	0.484	--	--	0.484
PCB-007	8	7	1	0.0595	0.119	0.092	0.0797	0.0797	0.0854
PCB-008	8	8	0	1.81	4.33	3.06	--	--	3.06
PCB-009	8	8	0	0.082	0.204	0.147	--	--	0.147
PCB-010	8	3	5	0.0132	0.0333	0.027	0.0196	0.072	0.0213
PCB-011	8	8	0	0.0835	0.286	0.195	--	--	0.195
PCB-012/013	8	8	0	0.18	0.33	0.274	--	--	0.274
PCB-014	8	0	8	--	--	--	0.00568	0.0805	0.0157
PCB-015	8	8	0	1.46	2.49	1.96	--	--	1.96
PCB-016	8	8	0	0.573	2.03	1.33	--	--	1.33
PCB-017	8	8	0	2.63	5.5	4.35	--	--	4.35
PCB-018/030	8	8	0	4.11	12.3	8.67	--	--	8.67
PCB-019	8	8	0	0.113	0.317	0.223	--	--	0.223
PCB-020/028	8	8	0	64.4	121	91.3	--	--	91.3
PCB-021/033	8	8	0	7.95	15.7	12.3	--	--	12.3
PCB-022	8	8	0	9.79	18.9	15.3	--	--	15.3
PCB-023	8	2	6	0.00591	0.0152	0.0106	0.00281	0.0569	0.0135
PCB-024	8	8	0	0.0358	0.0821	0.0647	--	--	0.0647
PCB-025	8	8	0	1.32	3.06	2.37	--	--	2.37
PCB-026/029	8	8	0	5.84	11	8.75	--	--	8.75
PCB-027	8	8	0	0.263	0.662	0.514	--	--	0.514
PCB-031	8	8	0	52.1	107	81.7	--	--	81.7
PCB-032	8	8	0	2.19	5.47	4.03	--	--	4.03
PCB-034	8	8	0	0.107	0.298	0.215	--	--	0.215
PCB-035	8	8	0	0.484	0.912	0.745	--	--	0.745
PCB-036	8	0	8	--	--	--	0.0052	0.13	0.0259
PCB-037	8	8	0	6.72	13	10.1	--	--	10.1
PCB-038	8	1	7	0.0781	0.0781	0.0781	0.00629	0.131	0.0351
PCB-039	8	2	6	0.504	0.609	0.557	0.00547	0.0639	0.152
PCB-040/071	8	8	0	4.8	13.4	10.1	--	--	10.1
PCB-041	8	8	0	0.797	1.87	1.27	--	--	1.27
PCB-042	8	8	0	4.85	14.1	10.8	--	--	10.8

Table 5
Brown Shrimp Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-043	8	2	6	0.381	1.03	0.706	0.0106	0.285	0.207
PCB-044/047/065	8	8	0	40	102	79.3	--	--	79.3
PCB-045/051	8	8	0	0.647	2.36	1.65	--	--	1.65
PCB-046	8	8	0	0.107	0.487	0.339	--	--	0.339
PCB-048	8	8	0	3.65	10.5	7.54	--	--	7.54
PCB-049/069	8	8	0	32.1	90.9	66.1	--	--	66.1
PCB-050/053	8	8	0	0.693	3.02	2.09	--	--	2.09
PCB-052	8	8	0	44.7	124	89.0	--	--	89.0
PCB-054	8	4	4	0.0124	0.0276	0.0184	0.0369	0.11	0.0246
PCB-055	8	5	3	0.391	1.82	1.29	0.0312	0.232	0.826
PCB-056	8	8	0	22.3	45.3	37.2	--	--	37.2
PCB-057	8	8	0	0.325	0.877	0.553	--	--	0.553
PCB-058	8	8	0	0.221	0.648	0.440	--	--	0.440
PCB-059/062/075	8	8	0	3.41	7.91	6.15	--	--	6.15
PCB-060	8	8	0	20.9	41	32.9	--	--	32.9
PCB-061/070/074/076	8	8	0	152	356	275	--	--	275
PCB-063	8	8	0	4.23	8.82	6.70	--	--	6.70
PCB-064	8	8	0	15.7	36.8	28.7	--	--	28.7
PCB-066	8	8	0	104	205	167	--	--	167
PCB-067	8	8	0	1.44	3.45	2.48	--	--	2.48
PCB-068	8	8	0	0.404	1.13	0.806	--	--	0.806
PCB-072	8	8	0	0.816	2.2	1.64	--	--	1.64
PCB-073	8	6	2	0.357	0.913	0.684	0.0044	0.0884	0.518
PCB-077	8	8	0	6.31	12	9.32	--	--	9.32
PCB-078	8	0	8	--	--	--	0.00884	0.218	0.0372
PCB-079	8	2	6	0.938	1.1	1.02	0.00771	0.183	0.277
PCB-080	8	0	8	--	--	--	0.00838	0.197	0.0337
PCB-081	8	8	0	0.321	0.57	0.429	--	--	0.429
PCB-082	8	8	0	1.12	2.87	2.19	--	--	2.19
PCB-083	8	3	5	1.14	1.87	1.47	0.0136	0.223	0.579
PCB-084	8	8	0	0.68	2.28	1.66	--	--	1.66
PCB-085/116/117	8	8	0	14.7	30.2	23.3	--	--	23.3
PCB-086/087/097/108/119/125	8	8	0	20.1	43.3	33.2	--	--	33.2
PCB-088/091	8	8	0	1.32	3.82	2.87	--	--	2.87
PCB-089	8	7	1	0.0629	0.203	0.132	0.195	0.195	0.128
PCB-090/101/113	8	8	0	43.9	105	77.8	--	--	77.8
PCB-092	8	8	0	5.5	12	9.23	--	--	9.23
PCB-093/100	8	8	0	0.401	1.19	0.823	--	--	0.823
PCB-094	8	6	2	0.0282	0.0872	0.0658	0.104	0.202	0.0685
PCB-095	8	8	0	4.29	12	9.18	--	--	9.18
PCB-096	8	7	1	0.0187	0.0911	0.0594	0.127	0.127	0.0599
PCB-098/102	8	8	0	0.376	1.22	0.882	--	--	0.882
PCB-099	8	8	0	33.9	69.3	55.8	--	--	55.8
PCB-103	8	8	0	0.29	0.908	0.622	--	--	0.622
PCB-104	8	0	8	--	--	--	0.00297	0.126	0.0191
PCB-105	8	8	0	27.2	45.8	37.2	--	--	37.2

Table 5
Brown Shrimp Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-106	8	0	8	--	--	--	0.0107	0.171	0.032
PCB-107/124	8	8	0	2.31	4.44	3.44	--	--	3.44
PCB-109	8	8	0	4.89	9.19	7.33	--	--	7.33
PCB-110/115	8	8	0	19.9	43.3	33.9	--	--	33.9
PCB-111	8	7	1	0.0397	0.111	0.0780	0.133	0.133	0.0766
PCB-112	8	1	7	0.415	0.415	0.415	0.00436	0.134	0.0691
PCB-114	8	8	0	1.95	3.3	2.62	--	--	2.62
PCB-118	8	8	0	59.2	113	84.9	--	--	84.9
PCB-120	8	8	0	0.213	0.565	0.424	--	--	0.424
PCB-121	8	2	6	0.0305	0.0318	0.0312	0.00421	0.135	0.0275
PCB-122	8	8	0	0.804	1.64	1.19	--	--	1.19
PCB-123	8	8	0	1.48	2.69	2.15	--	--	2.15
PCB-126	8	6	2	0.17	0.309	0.226	0.0512	0.2	0.185
PCB-127	8	2	6	0.101	0.106	0.104	0.0101	0.168	0.0536
PCB-128/166	8	8	0	3.09	9.82	6.32	--	--	6.32
PCB-129/138/163	8	8	0	23.6	66.4	44.5	--	--	44.5
PCB-130	8	8	0	1.48	4.7	3.17	--	--	3.17
PCB-131	8	7	1	0.0575	0.237	0.126	0.269	0.269	0.127
PCB-132	8	8	0	0.659	2.24	1.49	--	--	1.49
PCB-133	8	8	0	0.438	1.31	0.874	--	--	0.874
PCB-134	8	7	1	0.298	1.09	0.690	0.0431	0.0431	0.606
PCB-135/151	8	8	0	2.39	7.65	5.01	--	--	5.01
PCB-136	8	8	0	0.102	0.508	0.299	--	--	0.299
PCB-137	8	8	0	1.25	3.39	2.21	--	--	2.21
PCB-139/140	8	8	0	0.417	1.32	0.836	--	--	0.836
PCB-141	8	8	0	3.36	9.22	5.99	--	--	5.99
PCB-142	8	0	8	--	--	--	0.00614	0.268	0.0346
PCB-143	8	1	7	0.0157	0.0157	0.0157	0.00768	0.25	0.0339
PCB-144	8	8	0	0.581	1.59	1.08	--	--	1.08
PCB-145	8	1	7	0.00104	0.00104	0.00104	0.00124	0.114	0.0159
PCB-146	8	8	0	0.0368	11.2	6.49	--	--	6.49
PCB-147/149	8	8	0	6.09	20.5	13.0	--	--	13.0
PCB-148	8	8	0	0.0506	0.208	0.122	--	--	0.122
PCB-150	8	4	4	0.00827	0.0273	0.0183	0.02	0.11	0.0238
PCB-152	8	4	4	0.00434	0.0133	0.00827	0.0197	0.108	0.0185
PCB-153/168	8	8	0	18.7	59.9	37.55	--	--	37.55
PCB-154	8	8	0	0.457	1.65	1.01	--	--	1.01
PCB-155	8	8	0	0.0615	0.252	0.169	--	--	0.169
PCB-156/157	8	8	0	3.21	6.23	4.68	--	--	4.68
PCB-158	8	8	0	2.68	6.7	4.73	--	--	4.73
PCB-159	8	2	6	0.16	0.2	0.180	0.00422	0.158	0.603
PCB-160	8	0	8	--	--	--	0.00443	0.193	0.251
PCB-161	8	1	7	8.24	8.24	8.24	0.00421	0.186	1.05
PCB-162	8	7	1	0.135	0.326	0.236	0.0165	0.0165	0.208
PCB-164	8	8	0	1.13	3.19	2.13	--	--	2.13
PCB-165	8	4	4	0.0115	0.0358	0.0195	0.0304	0.206	0.0336

Table 5
Brown Shrimp Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-167	8	8	0	1.14	2.16	1.73	--	--	1.73
PCB-169	8	0	8	--	--	--	0.00376	0.288	0.0411
PCB-170	8	8	0	2.95	7.29	5.68	--	--	5.68
PCB-171/173	8	8	0	0.862	2.11	1.59	--	--	1.59
PCB-172	8	8	0	0.605	1.63	1.21	--	--	1.21
PCB-174	8	8	0	1.33	3.03	2.27	--	--	2.27
PCB-175	8	8	0	0.159	0.429	0.315	--	--	0.315
PCB-176	8	8	0	0.0532	0.261	0.179	--	--	0.179
PCB-177	8	8	0	1.77	4.68	3.52	--	--	3.52
PCB-178	8	8	0	0.742	2.08	1.52	--	--	1.52
PCB-179	8	8	0	0.18	0.618	0.433	--	--	0.433
PCB-180/193	8	8	0	7.89	17.7	13.8	--	--	13.8
PCB-181	8	6	2	0.0555	0.148	0.104	0.0457	0.0874	0.0863
PCB-182	8	5	3	0.0323	0.114	0.0683	0.00526	0.0828	0.0502
PCB-183/185	8	8	0	2.32	5.66	4.33	--	--	4.33
PCB-184	8	7	1	0.0211	0.091	0.0656	0.0338	0.0338	0.0595
PCB-186	8	0	8	--	--	--	0.00119	0.0679	0.00964
PCB-187	8	8	0	5.64	13.9	11.2	--	--	11.2
PCB-188	8	7	1	0.0275	0.0899	0.0641	0.102	0.102	0.0625
PCB-189	8	8	0	0.143	0.35	0.256	--	--	0.256
PCB-190	8	8	0	0.754	1.81	1.36	--	--	1.36
PCB-191	8	8	0	0.15	0.387	0.293	--	--	0.293
PCB-192	8	2	6	0.00415	0.00785	0.00600	0.00597	0.0739	0.0135
PCB-194	8	8	0	1.06	2.85	2.13	--	--	2.13
PCB-195	8	8	0	0.351	0.88	0.689	--	--	0.689
PCB-196	8	8	0	0.564	1.28	1.04	--	--	1.04
PCB-197/200	8	8	0	0.15	0.418	0.324	--	--	0.324
PCB-198/199	8	8	0	1.19	2.94	2.31	--	--	2.31
PCB-201	8	8	0	0.166	0.402	0.313	--	--	0.313
PCB-202	8	8	0	0.494	1.37	0.991	--	--	0.991
PCB-203	8	8	0	0.704	1.62	1.30	--	--	1.30
PCB-204	8	6	2	0.014	0.0443	0.0322	0.0334	0.0627	0.0302
PCB-205	8	8	0	0.0543	0.14	0.107	--	--	0.107
PCB-206	8	8	0	0.623	1.59	1.22	--	--	1.22
PCB-207	8	8	0	0.343	1.09	0.812	--	--	0.812
PCB-208	8	8	0	0.483	1.39	1.05	--	--	1.05
PCB-209	8	8	0	14.2	44.8	29.5	--	--	29.5
Total PCB Congener (U = 1/2)	8	8	0	997	2192	1716	--	--	1716

Notes:
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
-- Results not applicable
PCB - polychlorinated biphenyl

Table 6
Oyster Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
Conventional Parameters (percent)									
Lipids	1	1	0	1.1	1.1	1.1	--	--	1.1
Moisture, percent	1	1	0	82.7	82.7	82.7	--	--	82.7
Metals (mg/kg)									
Lead	1	1	0	0.331	0.331	0.331	--	--	0.331
Mercury	1	1	0	0.051	0.051	0.051	--	--	0.051
Polyaromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	1	0	1	--	--	--	13.7	13.7	13.7
Acenaphthene	1	0	1	--	--	--	13.7	13.7	13.7
Acenaphthylene	1	1	0	16.1	16.1	16.1	--	--	16.1
Anthracene	1	1	0	14.5	14.5	14.5	--	--	14.5
Benzo(a)anthracene	1	1	0	38.5	38.5	38.5	--	--	38.5
Benzo(a)pyrene	1	1	0	13.8	13.8	13.8	--	--	13.8
Benzo(b)fluoranthene	1	1	0	37.5	37.5	37.5	--	--	37.5
Benzo(g,h,i)perylene	1	1	0	9.32	9.32	9.32	--	--	9.32
Benzo(k)fluoranthene	1	1	0	13.8	13.8	13.8	--	--	13.8
Chrysene	1	1	0	68.8	68.8	68.8	--	--	68.8
Dibenzo(a,h)anthracene	1	0	1	--	--	--	13.7	13.7	13.7
Fluoranthene	1	1	0	118	118	118	--	--	118
Fluorene	1	0	1	--	--	--	13.7	13.7	13.7
Indeno(1,2,3-c,d)pyrene	1	0	1	--	--	--	13.7	13.7	13.7
Naphthalene	1	0	1	--	--	--	13.7	13.7	13.7
Phenanthrene	1	1	0	18.7	18.7	18.7	--	--	18.7
Pyrene	1	1	0	162	162	162	--	--	162
Total HPAH (U = 1/2)	1	1	0	475	475	475	--	--	475
Total LPAH (U = 1/2)	1	1	0	76.7	76.7	76.7	--	--	76.7
Total PAH (U = 1/2)	1	1	0	552	552	552	--	--	552
Semivolatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	1	0	1	--	--	--	704	704	704
1,4-Dichlorobenzene	1	0	1	--	--	--	704	704	704
Hexachlorobenzene	1	0	1	--	--	--	704	704	704
Hexachlorobutadiene	1	0	1	--	--	--	704	704	704
PCBs (µg/kg)									
PCB-001	1	1	0	0.0392	0.0392	0.0392	--	--	0.0392
PCB-002	1	1	0	0.00943	0.00943	0.00943	--	--	0.00943
PCB-003	1	1	0	0.0241	0.0241	0.0241	--	--	0.0241
PCB-004	1	1	0	1	1	1	--	--	1
PCB-005	1	1	0	0.0316	0.0316	0.0316	--	--	0.0316
PCB-006	1	1	0	0.506	0.506	0.506	--	--	0.506
PCB-007	1	1	0	0.0845	0.0845	0.0845	--	--	0.0845
PCB-008	1	1	0	2.34	2.34	2.34	--	--	2.34
PCB-009	1	1	0	0.188	0.188	0.188	--	--	0.188
PCB-010	1	1	0	0.0235	0.0235	0.0235	--	--	0.0235
PCB-011	1	1	0	0.169	0.169	0.169	--	--	0.169
PCB-012/013	1	1	0	0.287	0.287	0.287	--	--	0.287
PCB-014	1	0	1	--	--	--	0.00608	0.00608	0.00608

Table 6
Oyster Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-015	1	1	0	1.67	1.67	1.67	--	--	1.67
PCB-016	1	1	0	3.65	3.65	3.65	--	--	3.65
PCB-017	1	1	0	11.8	11.8	11.8	--	--	11.8
PCB-018/030	1	1	0	22.8	22.8	22.8	--	--	22.8
PCB-019	1	1	0	1.83	1.83	1.83	--	--	1.83
PCB-020/028	1	1	0	69.7	69.7	69.7	--	--	69.7
PCB-021/033	1	1	0	18.9	18.9	18.9	--	--	18.9
PCB-022	1	1	0	14.4	14.4	14.4	--	--	14.4
PCB-023	1	1	0	0.0252	0.0252	0.0252	--	--	0.0252
PCB-024	1	0	1	--	--	--	0.00376	0.00376	0.00376
PCB-025	1	1	0	2.49	2.49	2.49	--	--	2.49
PCB-026/029	1	1	0	8.89	8.89	8.89	--	--	8.89
PCB-027	1	1	0	1.04	1.04	1.04	--	--	1.04
PCB-031	1	1	0	62.2	62.2	62.2	--	--	62.2
PCB-032	1	1	0	8.7	8.7	8.7	--	--	8.7
PCB-034	1	1	0	0.402	0.402	0.402	--	--	0.402
PCB-035	1	1	0	0.864	0.864	0.864	--	--	0.864
PCB-036	1	0	1	--	--	--	0.0118	0.0118	0.0118
PCB-037	1	1	0	6.96	6.96	6.96	--	--	6.96
PCB-038	1	1	0	0.13	0.13	0.13	--	--	0.13
PCB-039	1	0	1	--	--	--	0.0124	0.0124	0.0124
PCB-040/071	1	1	0	29.8	29.8	29.8	--	--	29.8
PCB-041	1	1	0	6.41	6.41	6.41	--	--	6.41
PCB-042	1	1	0	16.4	16.4	16.4	--	--	16.4
PCB-043	1	1	0	2.47	2.47	2.47	--	--	2.47
PCB-044/047/065	1	1	0	75.6	75.6	75.6	--	--	75.6
PCB-045/051	1	1	0	9.42	9.42	9.42	--	--	9.42
PCB-046	1	1	0	1.65	1.65	1.65	--	--	1.65
PCB-048	1	1	0	16.3	16.3	16.3	--	--	16.3
PCB-049/069	1	1	0	60.8	60.8	60.8	--	--	60.8
PCB-050/053	1	1	0	8.35	8.35	8.35	--	--	8.35
PCB-052	1	1	0	97.9	97.9	97.9	--	--	97.9
PCB-054	1	1	0	0.193	0.193	0.193	--	--	0.193
PCB-055	1	1	0	0.637	0.637	0.637	--	--	0.637
PCB-056	1	1	0	37.3	37.3	37.3	--	--	37.3
PCB-057	1	1	0	0.335	0.335	0.335	--	--	0.335
PCB-058	1	1	0	0.333	0.333	0.333	--	--	0.333
PCB-059/062/075	1	1	0	6.5	6.5	6.5	--	--	6.5
PCB-060	1	1	0	19	19	19	--	--	19
PCB-061/070/074/076	1	1	0	177	177	177	--	--	177
PCB-063	1	1	0	4.05	4.05	4.05	--	--	4.05
PCB-064	1	1	0	37.7	37.7	37.7	--	--	37.7
PCB-066	1	1	0	113	113	113	--	--	113
PCB-067	1	1	0	2.23	2.23	2.23	--	--	2.23
PCB-068	1	1	0	0.553	0.553	0.553	--	--	0.553
PCB-072	1	1	0	1.09	1.09	1.09	--	--	1.09

Table 6
Oyster Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-073	1	0	1	--	--	--	0.0125	0.0125	0.0125
PCB-077	1	1	0	6.24	6.24	6.24	--	--	6.24
PCB-078	1	0	1	--	--	--	0.0132	0.0132	0.0132
PCB-079	1	0	1	--	--	--	0.0115	0.0115	0.0115
PCB-080	1	0	1	--	--	--	0.0125	0.0125	0.0125
PCB-081	1	1	0	0.288	0.288	0.288	--	--	0.288
PCB-082	1	1	0	5.71	5.71	5.71	--	--	5.71
PCB-083	1	1	0	2.99	2.99	2.99	--	--	2.99
PCB-084	1	1	0	9.59	9.59	9.59	--	--	9.59
PCB-085/116/117	1	1	0	12.8	12.8	12.8	--	--	12.8
PCB-086/087/097/108/119/125	1	1	0	38	38	38	--	--	38
PCB-088/091	1	1	0	9.49	9.49	9.49	--	--	9.49
PCB-089	1	1	0	0.995	0.995	0.995	--	--	0.995
PCB-090/101/113	1	1	0	56.3	56.3	56.3	--	--	56.3
PCB-092	1	1	0	9.13	9.13	9.13	--	--	9.13
PCB-093/100	1	1	0	0.885	0.885	0.885	--	--	0.885
PCB-094	1	1	0	0.383	0.383	0.383	--	--	0.383
PCB-095	1	1	0	29.5	29.5	29.5	--	--	29.5
PCB-096	1	1	0	0.479	0.479	0.479	--	--	0.479
PCB-098/102	1	1	0	2.64	2.64	2.64	--	--	2.64
PCB-099	1	1	0	35.9	35.9	35.9	--	--	35.9
PCB-103	1	1	0	0.677	0.677	0.677	--	--	0.677
PCB-104	1	1	0	0.0369	0.0369	0.0369	--	--	0.0369
PCB-105	1	1	0	20.3	20.3	20.3	--	--	20.3
PCB-106	1	0	1	--	--	--	0.011	0.011	0.011
PCB-107/124	1	1	0	1.85	1.85	1.85	--	--	1.85
PCB-109	1	1	0	4.79	4.79	4.79	--	--	4.79
PCB-110/115	1	1	0	47.9	47.9	47.9	--	--	47.9
PCB-111	1	1	0	0.0456	0.0456	0.0456	--	--	0.0456
PCB-112	1	0	1	--	--	--	0.00794	0.00794	0.00794
PCB-114	1	1	0	1.29	1.29	1.29	--	--	1.29
PCB-118	1	1	0	56.1	56.1	56.1	--	--	56.1
PCB-120	1	1	0	0.253	0.253	0.253	--	--	0.253
PCB-121	1	0	1	--	--	--	0.00766	0.00766	0.00766
PCB-122	1	1	0	0.758	0.758	0.758	--	--	0.758
PCB-123	1	1	0	1.22	1.22	1.22	--	--	1.22
PCB-126	1	1	0	0.175	0.175	0.175	--	--	0.175
PCB-127	1	0	1	--	--	--	0.0104	0.0104	0.0104
PCB-128/166	1	1	0	2.4	2.4	2.4	--	--	2.4
PCB-129/138/163	1	1	0	21	21	21	--	--	21
PCB-130	1	1	0	1.31	1.31	1.31	--	--	1.31
PCB-131	1	1	0	0.173	0.173	0.173	--	--	0.173
PCB-132	1	1	0	5.8	5.8	5.8	--	--	5.8
PCB-133	1	1	0	0.452	0.452	0.452	--	--	0.452
PCB-134	1	1	0	0.973	0.973	0.973	--	--	0.973
PCB-135/151	1	1	0	6.39	6.39	6.39	--	--	6.39

Table 6
Oyster Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-136	1	1	0	1.96	1.96	1.96	--	--	1.96
PCB-137	1	1	0	0.138	0.138	0.138	--	--	0.138
PCB-139/140	1	1	0	0.334	0.334	0.334	--	--	0.334
PCB-141	1	1	0	0.235	0.235	0.235	--	--	0.235
PCB-142	1	0	1	--	--	--	0.00848	0.00848	0.00848
PCB-143	1	0	1	--	--	--	0.00773	0.00773	0.00773
PCB-144	1	1	0	0.502	0.502	0.502	--	--	0.502
PCB-145	1	1	0	0.0094	0.0094	0.0094	--	--	0.0094
PCB-146	1	1	0	4.16	4.16	4.16	--	--	4.16
PCB-147/149	1	1	0	16.3	16.3	16.3	--	--	16.3
PCB-148	1	1	0	0.0619	0.0619	0.0619	--	--	0.0619
PCB-150	1	1	0	0.0657	0.0657	0.0657	--	--	0.0657
PCB-152	1	1	0	0.0243	0.0243	0.0243	--	--	0.0243
PCB-153/168	1	1	0	22.3	22.3	22.3	--	--	22.3
PCB-154	1	1	0	0.599	0.599	0.599	--	--	0.599
PCB-155	1	1	0	0.126	0.126	0.126	--	--	0.126
PCB-156/157	1	1	0	1.65	1.65	1.65	--	--	1.65
PCB-158	1	1	0	0.253	0.253	0.253	--	--	0.253
PCB-159	1	0	1	--	--	--	0.00579	0.00579	0.00579
PCB-160	1	0	1	--	--	--	0.00613	0.00613	0.00613
PCB-161	1	0	1	--	--	--	0.00581	0.00581	0.00581
PCB-162	1	1	0	0.205	0.205	0.205	--	--	0.205
PCB-164	1	1	0	1.15	1.15	1.15	--	--	1.15
PCB-165	1	1	0	0.0165	0.0165	0.0165	--	--	0.0165
PCB-167	1	1	0	0.762	0.762	0.762	--	--	0.762
PCB-169	1	0	1	--	--	--	0.00606	0.00606	0.00606
PCB-170	1	1	0	0.565	0.565	0.565	--	--	0.565
PCB-171/173	1	1	0	0.54	0.54	0.54	--	--	0.54
PCB-172	1	1	0	0.101	0.101	0.101	--	--	0.101
PCB-174	1	1	0	0.208	0.208	0.208	--	--	0.208
PCB-175	1	1	0	0.0788	0.0788	0.0788	--	--	0.0788
PCB-176	1	1	0	0.316	0.316	0.316	--	--	0.316
PCB-177	1	1	0	2.09	2.09	2.09	--	--	2.09
PCB-178	1	1	0	0.804	0.804	0.804	--	--	0.804
PCB-179	1	1	0	1.29	1.29	1.29	--	--	1.29
PCB-180/193	1	1	0	0.628	0.628	0.628	--	--	0.628
PCB-181	1	1	0	0.00768	0.00768	0.00768	--	--	0.00768
PCB-182	1	0	1	--	--	--	0.00262	0.00262	0.00262
PCB-183/185	1	1	0	1.16	1.16	1.16	--	--	1.16
PCB-184	1	1	0	0.0238	0.0238	0.0238	--	--	0.0238
PCB-186	1	0	1	--	--	--	0.0019	0.0019	0.0019
PCB-187	1	1	0	6.63	6.63	6.63	--	--	6.63
PCB-188	1	1	0	0.0416	0.0416	0.0416	--	--	0.0416
PCB-189	1	1	0	0.053	0.053	0.053	--	--	0.053
PCB-190	1	1	0	0.087	0.087	0.087	--	--	0.087
PCB-191	1	1	0	0.00888	0.00888	0.00888	--	--	0.00888

Table 6
Oyster Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-192	1	0	1	--	--	--	0.00297	0.00297	0.00297
PCB-194	1	1	0	0.0706	0.0706	0.0706	--	--	0.0706
PCB-195	1	1	0	0.0269	0.0269	0.0269	--	--	0.0269
PCB-196	1	1	0	0.0155	0.0155	0.0155	--	--	0.0155
PCB-197/200	1	1	0	0.0418	0.0418	0.0418	--	--	0.0418
PCB-198/199	1	1	0	0.167	0.167	0.167	--	--	0.167
PCB-201	1	1	0	0.11	0.11	0.11	--	--	0.11
PCB-202	1	1	0	0.917	0.917	0.917	--	--	0.917
PCB-203	1	1	0	0.0992	0.0992	0.0992	--	--	0.0992
PCB-204	1	1	0	0.00312	0.00312	0.00312	--	--	0.00312
PCB-205	1	1	0	0.00742	0.00742	0.00742	--	--	0.00742
PCB-206	1	1	0	0.0342	0.0342	0.0342	--	--	0.0342
PCB-207	1	1	0	0.0327	0.0327	0.0327	--	--	0.0327
PCB-208	1	1	0	0.0459	0.0459	0.0459	--	--	0.0459
PCB-209	1	1	0	0.911	0.911	0.911	--	--	0.911
Total PCB Congener (U = 1/2)	1	1	0	1,429	1,429	1,429	--	--	1,429
Dioxins and Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	1	1	0	10.9	10.9	10.9	--	--	10.9
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	1	1	0	6.89	6.89	6.89	--	--	6.89
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	1	1	0	0.794	0.794	0.794	--	--	0.794
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	1	1	0	0.988	0.988	0.988	--	--	0.988
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	1	0	1	--	--	--	0.454	0.454	0.454
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	1	0	1	--	--	--	0.257	0.257	0.257
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	1	0	1	--	--	--	0.328	0.328	0.328
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	1	0	1	--	--	--	0.251	0.251	0.251
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	1	0	1	--	--	--	0.359	0.359	0.359
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	1	0	1	--	--	--	0.425	0.425	0.425
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	1	0	1	--	--	--	0.349	0.349	0.349
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	1	1	0	1.05	1.05	1.05	--	--	1.05
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	1	0	1	--	--	--	0.325	0.325	0.325
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	1	0	1	--	--	--	0.361	0.361	0.361
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	1	1	0	2.62	2.62	2.62	--	--	2.62
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	1	1	0	14.5	14.5	14.5	--	--	14.5
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1	1	0	2.36	2.36	2.36	--	--	2.36
Total Dioxin/Furan (U = 1/2)	1	1	0	41.7	41.7	41.7	--	--	41.7

Notes:
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
ng/kg - nanograms per kilogram
-- Results not applicable
PCB - polychlorinated biphenyl

Table 7
White Shrimp Size Class A Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
Conventional Parameters (percent)									
Lipids	1	1	0	0.914	0.914	0.914	--	--	0.914
Moisture, percent	1	1	0	76.9	76.9	76.9	--	--	76.9
Metals (mg/kg)									
Lead	1	1	0	0.116	0.116	0.116	--	--	0.116
Mercury	1	1	0	0.041	0.041	0.041	--	--	0.041
Polyaromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	1	0	1	--	--	--	14.2	14.2	14.2
Acenaphthene	1	0	1	--	--	--	14.2	14.2	14.2
Acenaphthylene	1	0	1	--	--	--	14.2	14.2	14.2
Anthracene	1	0	1	--	--	--	14.2	14.2	14.2
Benzo(a)anthracene	1	0	1	--	--	--	14.2	14.2	14.2
Benzo(a)pyrene	1	0	1	--	--	--	14.2	14.2	14.2
Benzo(b)fluoranthene	1	0	1	--	--	--	14.2	14.2	14.2
Benzo(g,h,i)perylene	1	0	1	--	--	--	14.2	14.2	14.2
Benzo(k)fluoranthene	1	0	1	--	--	--	14.2	14.2	14.2
Chrysene	1	0	1	--	--	--	14.2	14.2	14.2
Dibenzo(a,h)anthracene	1	0	1	--	--	--	14.2	14.2	14.2
Fluoranthene	1	1	0	14.8	14.8	14.8	--	--	14.8
Fluorene	1	0	1	--	--	--	14.2	14.2	14.2
Indeno(1,2,3-c,d)pyrene	1	0	1	--	--	--	14.2	14.2	14.2
Naphthalene	1	0	1	--	--	--	14.2	14.2	14.2
Phenanthrene	1	1	0	18.2	18.2	18.2	--	--	18.2
Pyrene	1	1	0	29.9	29.9	29.9	--	--	29.9
Total HPAH (U = 1/2)	1	1	0	102	102	102	--	--	102
Total LPAH (U = 1/2)	1	1	0	60.8	60.8	60.8	--	--	60.8
Total PAH (U = 1/2)	1	1	0	162	162	162	--	--	162
Semivolatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	1	0	1	--	--	--	714	714	714
1,4-Dichlorobenzene	1	0	1	--	--	--	714	714	714
Hexachlorobenzene	1	1	0	483	483	483	--	--	483
Hexachlorobutadiene	1	0	1	--	--	--	714	714	714
PCBs (µg/kg)									
PCB-001	1	1	0	0.0948	0.0948	0.0948	--	--	0.0948
PCB-002	1	0	1	--	--	--	0.00401	0.00401	0.00401
PCB-003	1	1	0	0.0493	0.0493	0.0493	--	--	0.0493
PCB-004	1	1	0	0.148	0.148	0.148	--	--	0.148
PCB-005	1	0	1	--	--	--	0.0244	0.0244	0.0244
PCB-006	1	1	0	0.18	0.18	0.180	--	--	0.180
PCB-007	1	0	1	--	--	--	0.0204	0.0204	0.0204
PCB-008	1	1	0	1.19	1.19	1.19	--	--	1.19
PCB-009	1	1	0	0.0657	0.0657	0.0657	--	--	0.0657
PCB-010	1	0	1	--	--	--	0.0178	0.0178	0.0178
PCB-011	1	1	0	0.0735	0.0735	0.0735	--	--	0.0735
PCB-012/013	1	1	0	0.119	0.119	0.119	--	--	0.119
PCB-014	1	0	1	--	--	--	0.0202	0.0202	0.0202

Table 7
White Shrimp Size Class A Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-015	1	1	0	0.899	0.899	0.899	--	--	0.899
PCB-016	1	1	0	0.45	0.45	0.45	--	--	0.45
PCB-017	1	1	0	1.68	1.68	1.68	--	--	1.68
PCB-018/030	1	1	0	3.61	3.61	3.61	--	--	3.61
PCB-019	1	1	0	0.0617	0.0617	0.0617	--	--	0.0617
PCB-020/028	1	1	0	40.4	40.4	40.4	--	--	40.4
PCB-021/033	1	1	0	6.72	6.72	6.72	--	--	6.72
PCB-022	1	1	0	7.36	7.36	7.36	--	--	7.36
PCB-023	1	0	1	--	--	--	0.00546	0.00546	0.00546
PCB-024	1	1	0	0.0193	0.0193	0.0193	--	--	0.0193
PCB-025	1	1	0	1.15	1.15	1.15	--	--	1.15
PCB-026/029	1	1	0	4.36	4.36	4.36	--	--	4.36
PCB-027	1	1	0	0.233	0.233	0.233	--	--	0.233
PCB-031	1	1	0	37.3	37.3	37.3	--	--	37.3
PCB-032	1	1	0	2.19	2.19	2.19	--	--	2.19
PCB-034	1	1	0	0.133	0.133	0.133	--	--	0.133
PCB-035	1	1	0	0.402	0.402	0.402	--	--	0.402
PCB-036	1	1	0	0.0276	0.0276	0.0276	--	--	0.0276
PCB-037	1	1	0	4.6	4.6	4.6	--	--	4.6
PCB-038	1	0	1	--	--	--	0.0161	0.0161	0.0161
PCB-039	1	0	1	--	--	--	0.0140	0.0140	0.0140
PCB-040/071	1	1	0	5.35	5.35	5.35	--	--	5.35
PCB-041	1	1	0	0.597	0.597	0.597	--	--	0.597
PCB-042	1	1	0	4.43	4.43	4.43	--	--	4.43
PCB-043	1	1	0	0.474	0.474	0.474	--	--	0.474
PCB-044/047/065	1	1	0	39.5	39.5	39.5	--	--	39.5
PCB-045/051	1	1	0	0.576	0.576	0.576	--	--	0.576
PCB-046	1	1	0	0.112	0.112	0.112	--	--	0.112
PCB-048	1	1	0	2.18	2.18	2.18	--	--	2.18
PCB-049/069	1	1	0	33.1	33.1	33.1	--	--	33.1
PCB-050/053	1	1	0	1.07	1.07	1.07	--	--	1.07
PCB-052	1	1	0	57.6	57.6	57.6	--	--	57.6
PCB-054	1	0	1	--	--	--	0.0100	0.0100	0.0100
PCB-055	1	1	0	0.420	0.420	0.420	--	--	0.420
PCB-056	1	1	0	19.1	19.1	19.1	--	--	19.1
PCB-057	1	1	0	0.208	0.208	0.208	--	--	0.208
PCB-058	1	1	0	0.206	0.206	0.206	--	--	0.206
PCB-059/062/075	1	1	0	3.16	3.16	3.16	--	--	3.16
PCB-060	1	1	0	13.9	13.9	13.9	--	--	13.9
PCB-061/070/074/076	1	1	0	124	124	124	--	--	124
PCB-063	1	1	0	2.7	2.7	2.7	--	--	2.7
PCB-064	1	1	0	18.5	18.5	18.5	--	--	18.5
PCB-066	1	1	0	72.3	72.3	72.3	--	--	72.3
PCB-067	1	1	0	1.06	1.06	1.06	--	--	1.06
PCB-068	1	1	0	0.364	0.364	0.364	--	--	0.364
PCB-072	1	1	0	0.753	0.753	0.753	--	--	0.753

Table 7
White Shrimp Size Class A Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-073	1	0	1	--	--	--	0.0170	0.0170	0.0170
PCB-077	1	1	0	4.76	4.76	4.76	--	--	4.76
PCB-078	1	0	1	--	--	--	0.0515	0.0515	0.0515
PCB-079	1	0	1	--	--	--	0.0430	0.0430	0.0430
PCB-080	1	0	1	--	--	--	0.0462	0.0462	0.0462
PCB-081	1	1	0	0.217	0.217	0.217	--	--	0.217
PCB-082	1	1	0	0.905	0.905	0.905	--	--	0.905
PCB-083	1	1	0	1.11	1.11	1.11	--	--	1.11
PCB-084	1	1	0	0.778	0.778	0.778	--	--	0.778
PCB-085/116/117	1	1	0	10.8	10.8	10.8	--	--	10.8
PCB-086/087/097/108/119/125	1	1	0	15.9	15.9	15.9	--	--	15.9
PCB-088/091	1	1	0	1.82	1.82	1.82	--	--	1.82
PCB-089	1	1	0	0.0692	0.0692	0.0692	--	--	0.0692
PCB-090/101/113	1	1	0	37.8	37.8	37.8	--	--	37.8
PCB-092	1	1	0	4.78	4.78	4.78	--	--	4.78
PCB-093/100	1	1	0	0.341	0.341	0.341	--	--	0.341
PCB-094	1	1	0	0.0348	0.0348	0.0348	--	--	0.0348
PCB-095	1	1	0	4.85	4.85	4.85	--	--	4.85
PCB-096	1	1	0	0.0170	0.0170	0.0170	--	--	0.0170
PCB-098/102	1	1	0	0.388	0.388	0.388	--	--	0.388
PCB-099	1	1	0	25.3	25.3	25.3	--	--	25.3
PCB-103	1	1	0	0.249	0.249	0.249	--	--	0.249
PCB-104	1	0	1	--	--	--	0.00993	0.00993	0.00993
PCB-105	1	1	0	20.0	20.0	20.0	--	--	20.0
PCB-106	1	0	1	--	--	--	0.0219	0.0219	0.0219
PCB-107/124	1	1	0	1.62	1.62	1.62	--	--	1.62
PCB-109	1	1	0	2.99	2.99	2.99	--	--	2.99
PCB-110/115	1	1	0	24.3	24.3	24.3	--	--	24.3
PCB-111	1	1	0	0.0391	0.0391	0.0391	--	--	0.0391
PCB-112	1	0	1	--	--	--	0.0133	0.0133	0.0133
PCB-114	1	1	0	1.33	1.33	1.33	--	--	1.33
PCB-118	1	1	0	46.2	46.2	46.2	--	--	46.2
PCB-120	1	1	0	0.218	0.218	0.218	--	--	0.218
PCB-121	1	0	1	--	--	--	0.0131	0.0131	0.0131
PCB-122	1	1	0	0.573	0.573	0.573	--	--	0.573
PCB-123	1	1	0	1.12	1.12	1.12	--	--	1.12
PCB-126	1	1	0	0.147	0.147	0.147	--	--	0.147
PCB-127	1	0	1	--	--	--	0.0219	0.0219	0.0219
PCB-128/166	1	1	0	2.74	2.74	2.74	--	--	2.74
PCB-129/138/163	1	1	0	19.2	19.2	19.2	--	--	19.2
PCB-130	1	1	0	1.32	1.32	1.32	--	--	1.32
PCB-131	1	0	1	--	--	--	0.0212	0.0212	0.0212
PCB-132	1	1	0	0.825	0.825	0.825	--	--	0.825
PCB-133	1	1	0	0.382	0.382	0.382	--	--	0.382
PCB-134	1	1	0	0.383	0.383	0.383	--	--	0.383
PCB-135/151	1	1	0	2.46	2.46	2.46	--	--	2.46

Table 7
White Shrimp Size Class A Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-136	1	1	0	0.114	0.114	0.114	--	--	0.114
PCB-137	1	1	0	0.959	0.959	0.959	--	--	0.959
PCB-139/140	1	1	0	0.344	0.344	0.344	--	--	0.344
PCB-141	1	1	0	2.97	2.97	2.97	--	--	2.97
PCB-142	1	0	1	--	--	--	0.0213	0.0213	0.0213
PCB-143	1	0	1	--	--	--	0.0189	0.0189	0.0189
PCB-144	1	1	0	0.409	0.409	0.409	--	--	0.409
PCB-145	1	0	1	--	--	--	0.00542	0.00542	0.00542
PCB-146	1	1	0	3.77	3.77	3.77	--	--	3.77
PCB-147/149	1	1	0	6.47	6.47	6.47	--	--	6.47
PCB-148	1	1	0	0.0442	0.0442	0.0442	--	--	0.0442
PCB-150	1	0	1	--	--	--	0.00546	0.00546	0.00546
PCB-152	1	0	1	--	--	--	0.00519	0.00519	0.00519
PCB-153/168	1	1	0	14.9	14.9	14.9	--	--	14.9
PCB-154	1	1	0	0.435	0.435	0.435	--	--	0.435
PCB-155	1	1	0	0.0963	0.0963	0.0963	--	--	0.0963
PCB-156/157	1	1	0	2.57	2.57	2.57	--	--	2.57
PCB-158	1	1	0	2.05	2.05	2.05	--	--	2.05
PCB-159	1	0	1	--	--	--	0.0119	0.0119	0.0119
PCB-160	1	0	1	--	--	--	0.0157	0.0157	0.0157
PCB-161	1	0	1	--	--	--	0.0151	0.0151	0.0151
PCB-162	1	1	0	0.172	0.172	0.172	--	--	0.172
PCB-164	1	1	0	1.02	1.02	1.02	--	--	1.02
PCB-165	1	0	1	--	--	--	0.0161	0.0161	0.0161
PCB-167	1	1	0	0.892	0.892	0.892	--	--	0.892
PCB-169	1	1	0	0.0231	0.0231	0.0231	--	--	0.0231
PCB-170	1	1	0	2.74	2.74	2.74	--	--	2.74
PCB-171/173	1	1	0	0.854	0.854	0.854	--	--	0.854
PCB-172	1	1	0	0.598	0.598	0.598	--	--	0.598
PCB-174	1	1	0	1.5	1.5	1.5	--	--	1.5
PCB-175	1	1	0	0.16	0.16	0.16	--	--	0.16
PCB-176	1	1	0	0.0709	0.0709	0.0709	--	--	0.0709
PCB-177	1	1	0	1.61	1.61	1.61	--	--	1.61
PCB-178	1	1	0	0.779	0.779	0.779	--	--	0.779
PCB-179	1	1	0	0.289	0.289	0.289	--	--	0.289
PCB-180/193	1	1	0	7.19	7.19	7.19	--	--	7.19
PCB-181	1	1	0	0.0526	0.0526	0.0526	--	--	0.0526
PCB-182	1	1	0	0.0428	0.0428	0.0428	--	--	0.0428
PCB-183/185	1	1	0	1.90	1.90	1.90	--	--	1.90
PCB-184	1	1	0	0.0358	0.0358	0.0358	--	--	0.0358
PCB-186	1	0	1	--	--	--	0.00447	0.00447	0.00447
PCB-187	1	1	0	6.13	6.13	6.13	--	--	6.13
PCB-188	1	1	0	0.0329	0.0329	0.0329	--	--	0.0329
PCB-189	1	1	0	0.138	0.138	0.138	--	--	0.138
PCB-190	1	1	0	0.670	0.670	0.670	--	--	0.670
PCB-191	1	1	0	0.156	0.156	0.156	--	--	0.156

Table 7
White Shrimp Size Class A Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-192	1	0	1	--	--	--	0.00727	0.00727	0.00727
PCB-194	1	1	0	0.919	0.919	0.919	--	--	0.919
PCB-195	1	0	1	--	--	--	0.718	0.718	0.718
PCB-196	1	1	0	0.538	0.538	0.538	--	--	0.538
PCB-197/200	1	1	0	0.177	0.177	0.177	--	--	0.177
PCB-198/199	1	1	0	1.11	1.11	1.11	--	--	1.11
PCB-201	1	1	0	0.137	0.137	0.137	--	--	0.137
PCB-202	1	1	0	0.545	0.545	0.545	--	--	0.545
PCB-203	1	1	0	0.598	0.598	0.598	--	--	0.598
PCB-204	1	0	1	--	--	--	0.0115	0.0115	0.0115
PCB-205	1	0	1	--	--	--	0.517	0.517	0.517
PCB-206	1	1	0	0.654	0.654	0.654	--	--	0.654
PCB-207	1	1	0	0.440	0.440	0.440	--	--	0.440
PCB-208	1	1	0	0.600	0.600	0.600	--	--	0.600
PCB-209	1	1	0	17.3	17.3	17.3	--	--	17.3
Total PCB Congener (U = 1/2)	1	1	0	837	837	837	--	--	837
Dioxins and Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	1	1	0	25.2	25.2	25.2	--	--	25.2
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	1	1	0	10.9	10.9	10.9	--	--	10.9
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	1	1	0	3.08	3.08	3.08	--	--	3.08
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	1	0	1	--	--	--	1.00	1.00	1.00
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	1	0	1	--	--	--	0.705	0.705	0.705
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	1	1	0	1.66	1.66	1.66	--	--	1.66
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	1	0	1	--	--	--	0.526	0.526	0.526
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	1	0	1	--	--	--	0.493	0.493	0.493
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	1	0	1	--	--	--	0.567	0.567	0.567
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	1	0	1	--	--	--	0.608	0.608	0.608
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	1	0	1	--	--	--	0.556	0.556	0.556
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	1	1	0	4.65	4.65	4.65	--	--	4.65
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	1	0	1	--	--	--	0.480	0.480	0.480
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	1	0	1	--	--	--	0.622	0.622	0.622
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	1	1	0	4.07	4.07	4.07	--	--	4.07
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	1	1	0	13.7	13.7	13.7	--	--	13.7
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1	1	0	3.36	3.36	3.36	--	--	3.36
Total Dioxin/Furan (U = 1/2)	1	1	0	69.4	69.4	69.4	--	--	69.4

Notes:
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
ng/kg - nanograms per kilogram
-- Results not applicable
PCB - polychlorinated biphenyl

Table 8
White Shrimp Size Class B Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
Conventional Parameters (percent)									
Lipids	2	2	0	1.13	1.3	1.22	--	--	1.22
Moisture, percent	2	2	0	74.6	75.3	75.0	--	--	75.0
Metals (mg/kg)									
Mercury	2	2	0	0.026	0.042	0.034	--	--	0.034
Semivolatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	2	0	2	--	--	--	691	758	362
Hexachlorobenzene	2	2	0	380	682	531	--	--	531
PCBs (µg/kg)									
PCB-001	2	2	0	0.0270	0.113	0.0700	--	--	0.0700
PCB-002	2	0	2	--	--	--	0.00229	0.00581	0.00203
PCB-003	2	2	0	0.0169	0.0616	0.0393	--	--	0.0393
PCB-004	2	1	1	0.22	0.22	0.220	0.0354	0.0354	0.119
PCB-005	2	0	2	--	--	--	0.0126	0.022	0.00865
PCB-006	2	2	0	0.144	0.246	0.195	--	--	0.195
PCB-007	2	2	0	0.0315	0.0583	0.0449	--	--	0.0449
PCB-008	2	2	0	0.941	1.69	1.32	--	--	1.32
PCB-009	2	2	0	0.0498	0.0894	0.0696	--	--	0.0696
PCB-010	2	0	2	--	--	--	0.0145	0.0186	0.00828
PCB-011	2	2	0	0.0596	0.0751	0.0674	--	--	0.0674
PCB-012/013	2	2	0	0.0918	0.135	0.113	--	--	0.113
PCB-014	2	0	2	--	--	--	0.0104	0.0182	0.00715
PCB-015	2	2	0	0.604	1.23	0.917	--	--	0.917
PCB-016	2	2	0	0.241	0.61	0.426	--	--	0.426
PCB-017	2	2	0	0.971	2.28	1.63	--	--	1.63
PCB-018/030	2	2	0	1.93	4.38	3.16	--	--	3.16
PCB-019	2	2	0	0.0343	0.0898	0.0621	--	--	0.0621
PCB-020/028	2	2	0	25.7	49.3	37.5	--	--	37.5
PCB-021/033	2	2	0	4.59	8.02	6.31	--	--	6.31
PCB-022	2	2	0	3.91	9.13	6.52	--	--	6.52
PCB-023	2	0	2	--	--	--	0.00245	0.00629	0.00219
PCB-024	2	2	0	0.0101	0.0224	0.0163	--	--	0.0163
PCB-025	2	2	0	0.738	1.4	1.07	--	--	1.07
PCB-026/029	2	2	0	2.74	4.67	3.71	--	--	3.71
PCB-027	2	2	0	0.131	0.258	0.195	--	--	0.195
PCB-031	2	2	0	25.6	50.4	38	--	--	38
PCB-032	2	2	0	1.23	2.69	1.96	--	--	1.96
PCB-034	2	2	0	0.0843	0.158	0.121	--	--	0.121
PCB-035	2	2	0	0.244	0.458	0.351	--	--	0.351
PCB-036	2	0	2	--	--	--	0.00977	0.0128	0.00564
PCB-037	2	2	0	2.59	5.17	3.88	--	--	3.88
PCB-038	2	0	2	--	--	--	0.0108	0.0142	0.00625
PCB-039	2	0	2	--	--	--	0.00946	0.0124	0.00547
PCB-040/071	2	2	0	2.72	6.03	4.38	--	--	4.38
PCB-041	2	2	0	0.189	0.542	0.366	--	--	0.366
PCB-042	2	2	0	2.15	5.06	3.61	--	--	3.61

Table 8
White Shrimp Size Class B Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-043	2	2	0	0.196	0.53	0.363	--	--	0.363
PCB-044/047/065	2	2	0	23.3	41.8	32.6	--	--	32.6
PCB-045/051	2	2	0	0.234	0.516	0.375	--	--	0.375
PCB-046	2	2	0	0.0428	0.103	0.0729	--	--	0.0729
PCB-048	2	2	0	0.955	2.71	1.83	--	--	1.83
PCB-049/069	2	2	0	19.8	34.8	27.3	--	--	27.3
PCB-050/053	2	2	0	0.357	0.85	0.604	--	--	0.604
PCB-052	2	2	0	29.8	56.2	43.0	--	--	43.0
PCB-054	2	0	2	--	--	--	0.00627	0.0125	0.00469
PCB-055	2	1	1	0.32	0.32	0.320	0.0242	0.0242	0.166
PCB-056	2	2	0	9.61	20.2	14.9	--	--	14.9
PCB-057	2	2	0	0.131	0.248	0.190	--	--	0.190
PCB-058	2	2	0	0.138	0.232	0.185	--	--	0.185
PCB-059/062/075	2	2	0	1.89	3.28	2.59	--	--	2.59
PCB-060	2	2	0	7.9	14.8	11.4	--	--	11.4
PCB-061/070/074/076	2	2	0	81.8	147	114	--	--	114
PCB-063	2	2	0	1.7	3.11	2.41	--	--	2.41
PCB-064	2	2	0	10	19.7	14.9	--	--	14.9
PCB-066	2	2	0	46.7	80.1	63.4	--	--	63.4
PCB-067	2	2	0	0.681	1.2	0.941	--	--	0.941
PCB-068	2	2	0	0.275	0.422	0.349	--	--	0.349
PCB-072	2	2	0	0.525	0.885	0.705	--	--	0.705
PCB-073	2	0	2	--	--	--	0.00557	0.0114	0.00424
PCB-077	2	2	0	3.1	5.45	4.28	--	--	4.28
PCB-078	2	0	2	--	--	--	0.0163	0.0241	0.0101
PCB-079	2	0	2	--	--	--	0.0136	0.0201	0.00843
PCB-080	2	0	2	--	--	--	0.0146	0.0216	0.00905
PCB-081	2	2	0	0.135	0.233	0.184	--	--	0.184
PCB-082	2	2	0	0.448	0.935	0.692	--	--	0.692
PCB-083	2	2	0	0.515	1.11	0.813	--	--	0.813
PCB-084	2	2	0	0.344	0.727	0.536	--	--	0.536
PCB-085/116/117	2	2	0	7.85	11.8	9.83	--	--	9.83
PCB-086/087/097/108/119/125	2	2	0	10.6	18.1	14.4	--	--	14.4
PCB-088/091	2	2	0	1.12	1.95	1.54	--	--	1.54
PCB-089	2	2	0	0.0225	0.0601	0.0413	--	--	0.0413
PCB-090/101/113	2	2	0	29.8	38.9	34.4	--	--	34.4
PCB-092	2	2	0	2.36	4.55	3.46	--	--	3.46
PCB-093/100	2	2	0	0.272	0.313	0.293	--	--	0.293
PCB-094	2	2	0	0.015	0.0346	0.0248	--	--	0.0248
PCB-095	2	2	0	2.69	4.81	3.75	--	--	3.75
PCB-096	2	2	0	0.00719	0.0134	0.0103	--	--	0.0103
PCB-098/102	2	2	0	0.203	0.437	0.320	--	--	0.320
PCB-099	2	2	0	21	27.3	24.2	--	--	24.2
PCB-103	2	2	0	0.156	0.248	0.202	--	--	0.202
PCB-104	2	0	2	--	--	--	0.00419	0.00731	0.00288
PCB-105	2	2	0	13.4	21.2	17.3	--	--	17.3

Table 8
White Shrimp Size Class B Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-106	2	0	2	--	--	--	0.0153	0.0411	0.0141
PCB-107/124	2	2	0	1.26	1.72	1.49	--	--	1.49
PCB-109	2	2	0	2.4	3.46	2.93	--	--	2.93
PCB-110/115	2	2	0	17.6	27.6	22.6	--	--	22.6
PCB-111	2	2	0	0.0284	0.0424	0.0354	--	--	0.0354
PCB-112	2	0	2	--	--	--	0.00559	0.0077	0.00332
PCB-114	2	2	0	0.978	1.47	1.22	--	--	1.22
PCB-118	2	2	0	32.7	48.8	40.8	--	--	40.8
PCB-120	2	2	0	0.173	0.22	0.197	--	--	0.197
PCB-121	2	0	2	--	--	--	0.0055	0.00757	0.00327
PCB-122	2	2	0	0.418	0.629	0.524	--	--	0.524
PCB-123	2	2	0	0.758	1.1	0.929	--	--	0.929
PCB-126	2	2	0	0.0696	0.133	0.101	--	--	0.101
PCB-127	2	0	2	--	--	--	0.0153	0.0411	0.0141
PCB-128/166	2	2	0	1.8	2.7	2.25	--	--	2.25
PCB-129/138/163	2	2	0	14	19.8	16.9	--	--	16.9
PCB-130	2	2	0	1.01	1.45	1.23	--	--	1.23
PCB-131	2	1	1	0.0241	0.0241	0.0241	0.0692	0.0692	0.0294
PCB-132	2	2	0	0.414	0.885	0.650	--	--	0.650
PCB-133	2	2	0	0.3	0.375	0.338	--	--	0.338
PCB-134	2	2	0	0.159	0.276	0.218	--	--	0.218
PCB-135/151	2	2	0	1.29	2.14	1.72	--	--	1.72
PCB-136	2	2	0	0.0552	0.103	0.0791	--	--	0.0791
PCB-137	2	2	0	0.73	1.03	0.880	--	--	0.880
PCB-139/140	2	2	0	0.229	0.304	0.267	--	--	0.267
PCB-141	2	2	0	2.25	2.98	2.62	--	--	2.62
PCB-142	2	0	2	--	--	--	0.00867	0.0695	0.0195
PCB-143	2	1	1	0.0120	0.0120	0.0120	0.0619	0.0619	0.0215
PCB-144	2	2	0	0.228	0.405	0.317	--	--	0.317
PCB-145	2	0	2	--	--	--	0.0025	0.00297	0.00137
PCB-146	2	2	0	3.01	3.57	3.29	--	--	3.29
PCB-147/149	2	2	0	4.27	6.19	5.23	--	--	5.23
PCB-148	2	2	0	0.0299	0.0429	0.0364	--	--	0.0364
PCB-150	2	2	0	0.00588	0.00814	0.00701	--	--	0.00701
PCB-152	2	0	2	--	--	--	0.00239	0.00284	0.00131
PCB-153/168	2	2	0	12.4	15.1	13.8	--	--	13.8
PCB-154	2	2	0	0.36	0.419	0.390	--	--	0.390
PCB-155	2	2	0	0.0602	0.0933	0.0768	--	--	0.0768
PCB-156/157	2	2	0	1.84	2.62	2.23	--	--	2.23
PCB-158	2	2	0	1.52	2.1	1.81	--	--	1.81
PCB-159	2	0	2	--	--	--	0.00452	0.0105	0.00376
PCB-160	2	0	2	--	--	--	0.00641	0.0514	0.0145
PCB-161	2	0	2	--	--	--	0.00618	0.0495	0.0139
PCB-162	2	2	0	0.052	0.163	0.108	--	--	0.108
PCB-164	2	2	0	0.726	1.03	0.878	--	--	0.878
PCB-165	2	0	2	--	--	--	0.00656	0.0526	0.0148

Table 8
White Shrimp Size Class B Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-167	2	2	0	0.676	0.908	0.792	--	--	0.792
PCB-169	2	2	0	0.0151	0.0177	0.0164	--	--	0.0164
PCB-170	2	2	0	1.93	2.45	2.19	--	--	2.19
PCB-171/173	2	2	0	0.615	0.743	0.679	--	--	0.679
PCB-172	2	2	0	0.51	0.582	0.546	--	--	0.546
PCB-174	2	2	0	0.984	1.39	1.19	--	--	1.19
PCB-175	2	2	0	0.11	0.131	0.121	--	--	0.121
PCB-176	2	2	0	0.0358	0.0621	0.0490	--	--	0.0490
PCB-177	2	2	0	1.13	1.45	1.29	--	--	1.29
PCB-178	2	2	0	0.581	0.673	0.627	--	--	0.627
PCB-179	2	2	0	0.178	0.214	0.196	--	--	0.196
PCB-180/193	2	2	0	5.67	6.7	6.19	--	--	6.19
PCB-181	2	2	0	0.0401	0.0427	0.0414	--	--	0.0414
PCB-182	2	2	0	0.0239	0.0288	0.0264	--	--	0.0264
PCB-183/185	2	2	0	1.62	1.88	1.75	--	--	1.75
PCB-184	2	2	0	0.0321	0.0326	0.0324	--	--	0.0324
PCB-186	2	0	2	--	--	--	0.00227	0.00396	0.00156
PCB-187	2	2	0	3.89	6.13	5.01	--	--	5.01
PCB-188	2	2	0	0.0222	0.0308	0.0265	--	--	0.0265
PCB-189	2	2	0	0.093	0.13	0.112	--	--	0.112
PCB-190	2	2	0	0.512	0.635	0.574	--	--	0.574
PCB-191	2	2	0	0.116	0.136	0.126	--	--	0.126
PCB-192	2	1	1	0.00600	0.00600	0.00600	0.00443	0.00443	0.00411
PCB-194	2	2	0	0.707	1.02	0.864	--	--	0.864
PCB-195	2	2	0	0.227	0.352	0.290	--	--	0.290
PCB-196	2	2	0	0.362	0.53	0.446	--	--	0.446
PCB-197/200	2	2	0	0.13	0.173	0.152	--	--	0.152
PCB-198/199	2	2	0	0.994	1.23	1.11	--	--	1.11
PCB-201	2	2	0	0.0963	0.134	0.115	--	--	0.115
PCB-202	2	2	0	0.526	0.614	0.570	--	--	0.570
PCB-203	2	2	0	0.55	0.704	0.627	--	--	0.627
PCB-204	2	2	0	0.0115	0.0182	0.0149	--	--	0.0149
PCB-205	2	2	0	0.0388	0.0554	0.0471	--	--	0.0471
PCB-206	2	2	0	0.473	0.623	0.548	--	--	0.548
PCB-207	2	2	0	0.276	0.406	0.341	--	--	0.341
PCB-208	2	2	0	0.46	0.607	0.534	--	--	0.534
PCB-209	2	2	0	13	16.9	15.0	--	--	15.0
Total PCB Congener (U = 1/2)	2	2	0	548	919	733	--	--	733

Notes:
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
-- Results not applicable
PCB - polychlorinated biphenyl

Table 9
Gulf Killifish Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
Conventional Parameters (percent)									
Lipids	25	25	0	1.65	3.64	2.72	--	--	2.72
Moisture, percent	25	25	0	71.9	75.9	74.2	--	--	74.2
Metals (mg/kg)									
Mercury	25	25	0	0.025	0.109	0.0524	--	--	0.0524
Semivolatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	25	0	25	--	--	--	351	763	283
Hexachlorobenzene	25	10	15	200	2,360.00	664	351	763	441
PCBs (µg/kg)									
PCB-001	25	25	0	0.104	0.462	0.276	--	--	0.276
PCB-002	25	16	9	0.00632	0.0292	0.0134	0.00448	0.0152	0.0101
PCB-003	25	25	0	0.0217	0.113	0.0549	--	--	0.0549
PCB-004	25	25	0	1.17	7.72	4.12	--	--	4.12
PCB-005	25	20	5	0.0332	0.226	0.114	0.0343	0.0843	0.0962
PCB-006	25	25	0	0.512	3.33	1.83	--	--	1.83
PCB-007	25	25	0	0.0619	0.483	0.237	--	--	0.237
PCB-008	25	25	0	3.08	19.1	11.2	--	--	11.2
PCB-009	25	25	0	0.162	1.2	0.619	--	--	0.619
PCB-010	25	24	1	0.0309	0.217	0.121	0.0356	0.0356	0.117
PCB-011	25	20	5	0.0808	1.18	0.220	0.0367	0.171	0.185
PCB-012/013	25	25	0	0.0471	0.379	0.160	--	--	0.160
PCB-014	25	0	25	--	--	--	0.00387	0.0704	0.00878
PCB-015	25	25	0	0.538	2.31	1.45	--	--	1.45
PCB-016	25	25	0	3.38	21.2	12.7	--	--	12.7
PCB-017	25	25	0	10.3	52	32.7	--	--	32.7
PCB-018/030	25	25	0	17.8	112	71.5	--	--	71.5
PCB-019	25	25	0	1.02	4.6	3.10	--	--	3.10
PCB-020/028	25	25	0	71.9	441	231	--	--	231
PCB-021/033	25	25	0	6.78	45.3	25.7	--	--	25.7
PCB-022	25	25	0	11.9	79.7	41.0	--	--	41.0
PCB-023	25	25	0	0.0229	0.168	0.0915	--	--	0.0915
PCB-024	25	24	1	0.137	0.694	0.444	0.00411	0.00411	0.427
PCB-025	25	25	0	2.06	12.1	7.07	--	--	7.07
PCB-026/029	25	25	0	7.41	44.9	25.0	--	--	25.0
PCB-027	25	25	0	1.05	6.1	3.73	--	--	3.73
PCB-031	25	25	0	66	366	196	--	--	196
PCB-032	25	25	0	10.6	54.7	31.5	--	--	31.5
PCB-034	25	25	0	0.205	1.09	0.634	--	--	0.634
PCB-035	25	7	18	0.0124	0.0472	0.0252	0.0106	1.06	0.0481
PCB-036	25	0	25	--	--	--	0.00331	1.07	0.042
PCB-037	25	25	0	2.12	7.64	5.16	--	--	5.16
PCB-038	25	20	5	0.0799	0.497	0.275	0.00719	1.08	0.252
PCB-039	25	8	17	0.493	2.45	1.04	0.00314	1.05	0.371
PCB-040/071	25	24	1	32.9	165	99.2	0.127	0.127	95.2
PCB-041	25	24	1	3.84	24.7	13.4	0.166	0.166	12.9
PCB-042	25	24	1	16.1	89.1	48.9	0.14	0.14	47.0

Table 9
Gulf Killifish Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-043	25	17	8	2.8	21.1	10.9	0.0178	0.463	7.44
PCB-044/047/065	25	24	1	103	457	271	0.124	0.124	260
PCB-045/051	25	25	0	7.57	44.2	26.5	--	--	26.5
PCB-046	25	25	0	0.855	5.23	2.94	--	--	2.94
PCB-048	25	24	1	11.1	82.8	42.1	0.137	0.137	40.4
PCB-049/069	25	24	1	109	440	260	0.118	0.118	250
PCB-050/053	25	25	0	8.75	46.8	27.1	--	--	27.1
PCB-052	25	24	1	182	648	417	0.14	0.14	400
PCB-054	25	25	0	0.0717	0.32	0.217	--	--	0.217
PCB-055	25	19	6	0.495	4.69	1.93	0.0161	0.149	1.47
PCB-056	25	25	0	21	126	63.8	--	--	63.8
PCB-057	25	24	1	0.383	2.6	1.26	0.868	0.868	1.23
PCB-058	25	24	1	0.277	5.35	0.917	0.932	0.932	0.899
PCB-059/062/075	25	24	1	8.46	40.3	23.1	0.106	0.106	22.2
PCB-060	25	25	0	31.5	174	93.9	--	--	93.9
PCB-061/070/074/076	25	25	0	227	1190	636	--	--	636
PCB-063	25	25	0	6.32	38.8	19.4	--	--	19.4
PCB-064	25	24	1	55.9	262	150	0.0991	0.0991	144
PCB-066	25	25	0	175	805	438	--	--	438
PCB-067	25	25	0	1.17	7.23	3.69	--	--	3.69
PCB-068	25	25	0	0.612	3.02	1.59	--	--	1.59
PCB-072	25	25	0	1.31	6.4	3.40	--	--	3.40
PCB-073	25	8	17	0.562	14.8	9.13	0.00564	0.111	2.93
PCB-077	25	25	0	4.4	19.1	12.9	--	--	12.9
PCB-078	25	0	25	--	--	--	0.0148	0.91	0.0404
PCB-079	25	9	16	0.541	2.82	1.92	0.0128	0.766	0.718
PCB-080	25	0	25	--	--	--	0.0141	0.798	0.0363
PCB-081	25	24	1	0.257	1.08	0.700	1.08	1.08	0.694
PCB-082	25	25	0	2.04	14.1	7.97	--	--	7.97
PCB-083	25	21	4	1.98	10.1	6.31	0.0189	0.0604	5.31
PCB-084	25	25	0	4.03	19.8	12.6	--	--	12.6
PCB-085/116/117	25	25	0	22.6	106	65.0	--	--	65.0
PCB-086/087/097/108/119/125	25	24	1	38.2	192	119	0.0185	0.0185	115
PCB-088/091	25	25	0	10.4	45.5	29.1	--	--	29.1
PCB-089	25	25	0	0.568	3.39	2.04	--	--	2.04
PCB-090/101/113	25	25	0	78.7	339	212	--	--	212
PCB-092	25	25	0	14.2	64.1	38.8	--	--	38.8
PCB-093/100	25	25	0	1.06	4.63	2.68	--	--	2.68
PCB-094	25	25	0	0.31	1.6	0.961	--	--	0.961
PCB-095	25	25	0	33.1	131	90.3	--	--	90.3
PCB-096	25	25	0	0.213	1.16	0.671	--	--	0.671
PCB-098/102	25	25	0	2.13	10.9	6.75	--	--	6.75
PCB-099	25	25	0	63.2	229	151	--	--	151
PCB-103	25	25	0	0.825	2.84	1.85	--	--	1.85
PCB-104	25	23	2	0.0148	0.0794	0.0395	0.0203	0.0238	0.0372
PCB-105	25	25	0	34.1	143	98.6	--	--	98.6

Table 9
Gulf Killifish Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-106	25	2	23	0.0621	0.101	0.0816	0.00611	0.0973	0.0224
PCB-107/124	25	25	0	1.98	12.2	6.88	--	--	6.88
PCB-109	25	25	0	6.62	31.6	19.0	--	--	19.0
PCB-110/115	25	25	0	54.8	257	162	--	--	162
PCB-111	25	25	0	0.0509	0.193	0.120	--	--	0.120
PCB-112	25	6	19	0.617	1.42	0.904	0.00415	0.0788	0.224
PCB-114	25	25	0	2.75	12.2	7.84	--	--	7.84
PCB-118	25	25	0	78.5	282	204	--	--	204
PCB-120	25	25	0	0.276	1.24	0.710	--	--	0.710
PCB-121	25	15	10	0.0225	0.0635	0.0410	0.00408	0.08	0.0294
PCB-122	25	25	0	0.294	1.59	0.910	--	--	0.910
PCB-123	25	25	0	1.82	8.84	5.59	--	--	5.59
PCB-126	25	24	1	0.2	1.22	0.675	0.0473	0.0473	0.649
PCB-127	25	18	7	0.0852	0.397	0.267	0.00617	0.0504	0.196
PCB-128/166	25	25	0	5.19	23.1	15.3	--	--	15.3
PCB-129/138/163	25	25	0	42.8	162	106	--	--	106
PCB-130	25	25	0	2.57	10.7	6.82	--	--	6.82
PCB-131	25	24	1	0.0815	0.51	0.281	0.0243	0.0243	0.270
PCB-132	25	25	0	4.96	24	14.2	--	--	14.2
PCB-133	25	25	0	0.851	3.06	1.84	--	--	1.84
PCB-134	25	24	1	0.629	2.87	1.85	0.0199	0.0199	1.78
PCB-135/151	25	25	0	8.96	33.8	20.6	--	--	20.6
PCB-136	25	25	0	1.27	5.12	3.23	--	--	3.23
PCB-137	25	25	0	2.63	11.5	7.31	--	--	7.31
PCB-139/140	25	25	0	0.93	4.2	2.41	--	--	2.41
PCB-141	25	25	0	5.29	24.3	15.3	--	--	15.3
PCB-142	25	3	22	0.0135	0.28	0.103	0.00762	0.066	0.0238
PCB-143	25	17	8	0.0122	0.277	0.175	0.0146	0.0613	0.124
PCB-144	25	25	0	1.52	6.22	3.76	--	--	3.76
PCB-145	25	24	1	0.00924	0.0366	0.0230	0.0124	0.0124	0.0223
PCB-146	25	24	1	0.0604	23.2	13.4	0.0327	0.0327	12.8
PCB-147/149	25	25	0	18.4	77.3	44.4	--	--	44.4
PCB-148	25	25	0	0.083	0.309	0.177	--	--	0.177
PCB-150	25	25	0	0.0565	0.193	0.115	--	--	0.115
PCB-152	25	25	0	0.0196	0.0991	0.0591	--	--	0.0591
PCB-153/168	25	25	0	43.4	161	96.9	--	--	96.9
PCB-154	25	25	0	0.799	3.01	1.68	--	--	1.68
PCB-155	25	25	0	0.0527	0.224	0.135	--	--	0.135
PCB-156/157	25	25	0	4.76	18.8	12.7	--	--	12.7
PCB-158	25	25	0	4.38	17.4	11.3	--	--	11.3
PCB-159	25	9	16	0.16	0.561	0.386	0.00571	0.0492	0.145
PCB-160	25	0	25	--	--	--	0.0055	0.049	0.00918
PCB-161	25	5	20	14.2	23.8	18.1	0.00495	0.0469	3.62
PCB-162	25	25	0	0.224	1.07	0.599	--	--	0.599
PCB-164	25	25	0	1.9	7.53	4.84	--	--	4.84
PCB-165	25	23	2	0.0222	0.101	0.0551	0.0306	0.0506	1.31

Table 9
Gulf Killifish Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-167	25	25	0	1.96	7.39	4.93	--	--	4.93
PCB-169	25	8	17	0.024	0.222	0.0856	0.00852	0.0853	0.0345
PCB-170	25	25	0	6.02	22	15.3	--	--	15.3
PCB-171/173	25	25	0	2.02	7.17	4.60	--	--	4.60
PCB-172	25	25	0	1.19	4.38	2.84	--	--	2.84
PCB-174	25	25	0	3.1	13.6	8.08	--	--	8.08
PCB-175	25	25	0	0.369	1.37	0.840	--	--	0.840
PCB-176	25	25	0	0.463	2.02	1.09	--	--	1.09
PCB-177	25	25	0	3.05	10.9	6.75	--	--	6.75
PCB-178	25	25	0	1.71	5.71	3.63	--	--	3.63
PCB-179	25	25	0	1.51	5.61	3.26	--	--	3.26
PCB-180/193	25	25	0	16	58	38.6	--	--	38.6
PCB-181	25	25	0	0.102	0.429	0.255	--	--	0.255
PCB-182	25	24	1	0.0501	0.266	0.151	0.00431	0.00431	3.63
PCB-183/185	25	25	0	5.21	20.9	12.3	--	--	12.3
PCB-184	25	25	0	0.0646	0.203	0.122	--	--	0.122
PCB-186	25	8	17	0.0031	0.00649	0.00465	0.0017	0.0123	0.0034
PCB-187	25	25	0	8.82	33.1	22.0	--	--	22.0
PCB-188	25	25	0	0.0349	0.146	0.0889	--	--	0.0889
PCB-189	25	25	0	0.212	0.78	0.500	--	--	0.500
PCB-190	25	25	0	1.01	3.72	2.50	--	--	2.50
PCB-191	25	25	0	0.297	1.14	0.755	--	--	0.755
PCB-192	25	7	18	0.00536	0.0155	0.00846	0.00256	0.0246	0.00629
PCB-194	25	25	0	2	8.7	5.78	--	--	5.78
PCB-195	25	25	0	0.943	3.89	2.51	--	--	2.51
PCB-196	25	25	0	1.55	7.13	4.30	--	--	4.30
PCB-197/200	25	25	0	0.503	2.25	1.16	--	--	1.16
PCB-198/199	25	25	0	3.19	15.1	8.67	--	--	8.67
PCB-201	25	25	0	0.604	2.65	1.42	--	--	1.42
PCB-202	25	25	0	1.03	3.86	2.50	--	--	2.50
PCB-203	25	25	0	1.48	7.68	4.36	--	--	4.36
PCB-204	25	25	0	0.025	0.18	0.0789	--	--	0.0789
PCB-205	25	24	1	0.0964	0.345	0.225	0.32	0.32	0.222
PCB-206	25	25	0	1.26	4.51	2.99	--	--	2.99
PCB-207	25	25	0	1.43	6.45	3.55	--	--	3.55
PCB-208	25	25	0	1.63	7.08	4.29	--	--	4.29
PCB-209	25	25	0	33.4	172	83.0	--	--	83.0
Total PCB Congener (U = 1/2)	25	25	0	1,965	8,848	5,216	--	--	5,216
Dioxins and Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	25	18	7	0.467	24.7	4.38	0.204	0.49	3.20
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	25	25	0	1.93	48.2	10.0	--	--	10.0
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	25	18	7	0.291	3.59	1.06	0.107	0.42	0.789
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	25	21	4	0.401	5.55	1.01	0.252	4.71	1.05
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	25	0	25	--	--	--	0.142	1.14	0.174
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	25	15	10	0.147	0.789	0.339	0.095	0.534	0.246
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	25	1	24	0.348	0.348	0.348	0.0871	3.05	0.256

Table 9
Gulf Killifish Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	25	13	12	0.12	0.529	0.277	0.0981	0.529	0.195
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	25	8	17	0.204	0.569	0.314	0.152	3.06	0.331
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	25	0	25	--	--	--	0.11	0.76	0.132
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	25	1	24	0.185	0.185	0.185	0.0913	3.16	0.262
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	25	25	0	0.559	2.88	1.17	--	--	1.17
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	25	19	6	0.425	2.37	0.976	0.116	1.22	0.810
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	25	1	24	0.118	0.118	0.118	0.112	0.666	0.122
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	25	25	0	1.31	4.55	2.43	--	--	2.43
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	25	25	0	6.08	15.6	9.96	--	--	9.96
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	25	25	0	2.85	8.53	5.00	--	--	5.00
Total Dioxin/Furan (U = 1/2)	25	25	0	19.1	98.6	36.2	--	--	36.2

Notes:
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
ng/kg - nanograms per kilogram
-- Results not applicable
PCB - polychlorinated biphenyl

Table 10
Gulf Menhaden Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
Conventional Parameters (percent)									
Lipids	10	10	0	1.23	2.02	1.67	--	--	1.67
Moisture, percent	10	10	0	77.5	80.0	78.8	--	--	78.8
Metals (mg/kg)									
Mercury	10	10	0	0.068	0.199	0.116	--	--	0.116
Semivolatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	10	0	10	--	--	--	341	765	267
Hexachlorobenzene	10	6	4	398	671	491	699	765	440
PCBs (µg/kg)									
PCB-001	10	10	0	0.0902	0.283	0.169	--	--	0.169
PCB-002	10	7	3	0.0091	0.0134	0.0116	0.00556	0.00814	0.00919
PCB-003	10	10	0	0.0301	0.0582	0.0419	--	--	0.0419
PCB-004	10	10	0	0.907	3.33	2.11	--	--	2.11
PCB-005	10	7	3	0.0357	0.111	0.0709	0.0165	0.0287	0.0532
PCB-006	10	10	0	0.508	1.62	1.16	--	--	1.16
PCB-007	10	10	0	0.0865	0.256	0.175	--	--	0.175
PCB-008	10	10	0	2.1	9.42	5.47	--	--	5.47
PCB-009	10	10	0	0.18	0.562	0.414	--	--	0.414
PCB-010	10	10	0	0.0265	0.114	0.0689	--	--	0.0689
PCB-011	10	2	8	0.0495	0.0703	0.0599	0.0232	0.149	0.0407
PCB-012/013	10	9	1	0.0763	0.245	0.145	0.0234	0.0234	0.132
PCB-014	10	0	10	--	--	--	0.00423	0.025	0.00648
PCB-015	10	10	0	0.215	1.56	0.690	--	--	0.690
PCB-016	10	10	0	2.59	20.8	9.64	--	--	9.64
PCB-017	10	10	0	7.35	36.5	20.3	--	--	20.3
PCB-018/030	10	10	0	12.7	92.7	46.9	--	--	46.9
PCB-019	10	10	0	0.923	4.62	2.50	--	--	2.50
PCB-020/028	10	10	0	47.6	149	110	--	--	110
PCB-021/033	10	10	0	13.6	51	32.6	--	--	32.6
PCB-022	10	10	0	9.63	41	25.7	--	--	25.7
PCB-023	10	10	0	0.0201	0.0722	0.0504	--	--	0.0504
PCB-024	10	10	0	0.0978	0.584	0.281	--	--	0.281
PCB-025	10	10	0	1.75	6.55	4.40	--	--	4.40
PCB-026/029	10	10	0	5.56	19.7	13.6	--	--	13.6
PCB-027	10	10	0	0.737	4.44	2.34	--	--	2.34
PCB-031	10	10	0	44.6	149	107	--	--	107
PCB-032	10	10	0	5.66	29.8	17.0	--	--	17.0
PCB-034	10	10	0	0.305	0.567	0.486	--	--	0.486
PCB-035	10	7	3	0.0388	0.125	0.0821	0.0184	0.0551	0.0624
PCB-036	10	0	10	--	--	--	0.00814	0.0533	0.0108
PCB-037	10	10	0	1.66	8.36	4.40	--	--	4.40
PCB-038	10	10	0	0.0677	0.189	0.126	--	--	0.126
PCB-039	10	3	7	0.544	1.19	0.968	0.0152	0.0505	0.299

Table 10
Gulf Menhaden Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-040/071	10	8	2	23.3	104	61.0	0.01	0.0136	48.8
PCB-041	10	8	2	3.62	23.5	11.9	0.0118	0.017	9.48
PCB-042	10	8	2	14.8	63.6	37.7	0.0106	0.0147	30.2
PCB-043	10	3	7	1.99	9.76	7.15	0.0117	0.0523	2.16
PCB-044/047/065	10	8	2	58	233	142	0.0095	0.0129	113
PCB-045/051	10	10	0	6.04	41.8	19.5	--	--	19.5
PCB-046	10	10	0	1.24	11.3	4.68	--	--	4.68
PCB-048	10	8	2	13.3	55.5	34.5	0.0104	0.0141	27.6
PCB-049/069	10	8	2	51.8	175	117	0.00903	0.0122	93.3
PCB-050/053	10	10	0	5.69	40.2	18.7	--	--	18.7
PCB-052	10	8	2	78.9	312	190	0.0102	0.0143	152
PCB-054	10	10	0	0.0813	0.311	0.188	--	--	0.188
PCB-055	10	8	2	0.487	2.3	1.64	0.03	0.031	1.32
PCB-056	10	10	0	24	81.2	60.6	--	--	60.6
PCB-057	10	10	0	0.274	0.942	0.672	--	--	0.672
PCB-058	10	8	2	0.253	0.562	0.407	0.0145	0.0167	0.327
PCB-059/062/075	10	8	2	4.54	17.4	10.7	0.00812	0.0112	8.54
PCB-060	10	10	0	15.1	53.4	39.5	--	--	39.5
PCB-061/070/074/076	10	10	0	137	410	315	--	--	315
PCB-063	10	10	0	3.21	11	7.80	--	--	7.80
PCB-064	10	8	2	29.2	120	73.4	0.00757	0.0106	58.7
PCB-066	10	10	0	84.6	245	183	--	--	183
PCB-067	10	10	0	1.34	4.76	3.48	--	--	3.48
PCB-068	10	9	1	0.505	0.867	0.717	0.0213	0.0213	0.647
PCB-072	10	10	0	1.03	1.9	1.60	--	--	1.60
PCB-073	10	5	5	2.01	4.75	3.40	0.00826	0.0137	1.70
PCB-077	10	10	0	3.39	12.4	7.50	--	--	7.50
PCB-078	10	0	10	--	--	--	0.0134	0.0524	0.0133
PCB-079	10	3	7	0.628	1.15	0.959	0.0202	0.0448	0.297
PCB-080	10	0	10	--	--	--	0.0121	0.0477	0.0122
PCB-081	10	10	0	0.147	1.22	0.428	--	--	0.428
PCB-082	10	10	0	4.07	21.8	12.0	--	--	12.0
PCB-083	10	7	3	1.39	9.52	5.01	0.00989	0.0428	3.51
PCB-084	10	10	0	5.86	42.8	19.2	--	--	19.2
PCB-085/116/117	10	10	0	10.7	41.4	26.6	--	--	26.6
PCB-086/087/097/108/119/125	10	10	0	26.2	109	67.4	--	--	67.4
PCB-088/091	10	10	0	6.71	33.1	18.0	--	--	18.0
PCB-089	10	10	0	0.571	4.12	1.94	--	--	1.94
PCB-090/101/113	10	10	0	41.1	142	93.3	--	--	93.3
PCB-092	10	10	0	6.9	25.5	16.2	--	--	16.2
PCB-093/100	10	10	0	0.55	2.46	1.40	--	--	1.40
PCB-094	10	10	0	0.253	1.59	0.794	--	--	0.794
PCB-095	10	10	0	19	109	55.0	--	--	55.0

Table 10
Gulf Menhaden Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-096	10	10	0	0.236	2.29	0.912	--	--	0.912
PCB-098/102	10	10	0	1.5	8.1	4.21	--	--	4.21
PCB-099	10	10	0	28.7	87.8	60.4	--	--	60.4
PCB-103	10	10	0	0.504	1.62	1.01	--	--	1.01
PCB-104	10	9	1	0.0147	0.0511	0.0303	0.0102	0.0102	0.0278
PCB-105	10	10	0	16.9	57.5	38.7	--	--	38.7
PCB-106	10	1	9	0.0326	0.0326	0.0326	0.0155	0.0441	0.014
PCB-107/124	10	10	0	1.56	4.73	3.67	--	--	3.67
PCB-109	10	10	0	3.42	9.68	7.55	--	--	7.55
PCB-110/115	10	10	0	36.6	139	87.3	--	--	87.3
PCB-111	10	10	0	0.0405	0.0754	0.0615	--	--	0.0615
PCB-112	10	2	8	0.0936	0.473	0.283	0.00591	0.0289	0.0629
PCB-114	10	10	0	1.15	4.12	2.73	--	--	2.73
PCB-118	10	10	0	37.8	112	80.1	--	--	80.1
PCB-120	10	10	0	0.26	0.466	0.359	--	--	0.359
PCB-121	10	9	1	0.0164	0.0397	0.0263	0.0282	0.0282	0.0251
PCB-122	10	10	0	0.569	1.75	1.30	--	--	1.30
PCB-123	10	10	0	0.866	2.71	1.98	--	--	1.98
PCB-126	10	10	0	0.104	0.392	0.261	--	--	0.261
PCB-127	10	9	1	0.0518	0.136	0.103	0.0426	0.0426	0.0952
PCB-128/166	10	10	0	3.59	9.39	7.15	--	--	7.15
PCB-129/138/163	10	10	0	25.7	64	49.1	--	--	49.1
PCB-130	10	10	0	1.87	4.3	3.42	--	--	3.42
PCB-131	10	10	0	0.238	0.981	0.589	--	--	0.589
PCB-132	10	10	0	5.01	19.4	11.9	--	--	11.9
PCB-133	10	10	0	0.55	1.11	0.902	--	--	0.902
PCB-134	10	10	0	0.8	3.68	2.04	--	--	2.04
PCB-135/151	10	10	0	6.18	18.1	11.9	--	--	11.9
PCB-136	10	10	0	1.64	7.15	3.79	--	--	3.79
PCB-137	10	10	0	1.29	3.74	2.82	--	--	2.82
PCB-139/140	10	10	0	0.514	1.5	1.09	--	--	1.09
PCB-141	10	10	0	3.7	10.6	7.78	--	--	7.78
PCB-142	10	8	2	0.0113	0.0349	0.0267	0.0185	0.0329	0.0240
PCB-143	10	2	8	0.0458	0.109	0.0774	0.00914	0.0322	0.0231
PCB-144	10	10	0	0.919	2.82	1.87	--	--	1.87
PCB-145	10	10	0	0.00599	0.0281	0.0131	--	--	0.0131
PCB-146	10	9	1	0.0239	10.2	3.85	0.027	0.027	3.46
PCB-147/149	10	10	0	15.2	46.3	30.8	--	--	30.8
PCB-148	10	10	0	0.0797	0.134	0.109	--	--	0.109
PCB-150	10	10	0	0.0763	0.177	0.120	--	--	0.120
PCB-152	10	10	0	0.0162	0.0856	0.0441	--	--	0.0441
PCB-153/168	10	10	0	25.4	56.5	44.0	--	--	44.0
PCB-154	10	10	0	0.674	1.2	0.967	--	--	0.967

Table 10
Gulf Menhaden Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-155	10	10	0	0.0745	0.13	0.103	--	--	0.103
PCB-156/157	10	10	0	2.8	7.11	5.37	--	--	5.37
PCB-158	10	10	0	2.44	6.38	4.90	--	--	4.90
PCB-159	10	3	7	0.206	0.323	0.276	0.00722	0.0235	0.0878
PCB-160	10	0	10	--	--	--	0.00663	0.0229	0.00674
PCB-161	10	6	4	5.02	8.68	6.84	0.00607	0.0172	4.11
PCB-162	10	10	0	0.106	0.314	0.224	--	--	0.224
PCB-164	10	10	0	1.66	3.77	2.99	--	--	2.99
PCB-165	10	10	0	0.018	0.0633	0.0421	--	--	0.0421
PCB-167	10	10	0	1.09	2.64	1.99	--	--	1.99
PCB-169	10	2	8	0.00912	0.0519	0.0305	0.00581	0.016	0.0111
PCB-170	10	10	0	4.93	11.4	8.08	--	--	8.08
PCB-171/173	10	10	0	1.61	3.64	2.66	--	--	2.66
PCB-172	10	10	0	1.02	2.34	1.73	--	--	1.73
PCB-174	10	10	0	4.03	9.01	7.08	--	--	7.08
PCB-175	10	10	0	0.318	0.596	0.465	--	--	0.465
PCB-176	10	10	0	0.623	1.26	1.01	--	--	1.01
PCB-177	10	10	0	2.82	6.32	4.64	--	--	4.64
PCB-178	10	10	0	1.43	2.69	2.09	--	--	2.09
PCB-179	10	10	0	1.78	3.97	3.01	--	--	3.01
PCB-180/193	10	10	0	12.5	28.8	20.6	--	--	20.6
PCB-181	10	10	0	0.0768	0.18	0.137	--	--	0.137
PCB-182	10	10	0	0.0489	0.117	0.0849	--	--	0.0849
PCB-183/185	10	10	0	4.17	9.13	6.81	--	--	6.81
PCB-184	10	10	0	0.061	0.096	0.0806	--	--	0.0806
PCB-186	10	3	7	0.00257	0.00353	0.00301	0.00255	0.0062	0.00229
PCB-187	10	10	0	8.39	18.3	12.5	--	--	12.5
PCB-188	10	10	0	0.0456	0.0788	0.0595	--	--	0.0595
PCB-189	10	10	0	0.215	0.423	0.327	--	--	0.327
PCB-190	10	10	0	1.03	2.33	1.64	--	--	1.64
PCB-191	10	10	0	0.253	0.538	0.390	--	--	0.390
PCB-192	10	7	3	0.0069	0.0147	0.0106	0.0082	0.0124	0.00888
PCB-194	10	10	0	2.74	6.01	4.28	--	--	4.28
PCB-195	10	10	0	0.999	2.07	1.51	--	--	1.51
PCB-196	10	10	0	1.55	2.94	2.27	--	--	2.27
PCB-197/200	10	10	0	0.531	1.1	0.875	--	--	0.875
PCB-198/199	10	10	0	3.55	6.69	5.17	--	--	5.17
PCB-201	10	10	0	0.568	0.922	0.765	--	--	0.765
PCB-202	10	10	0	1.31	2.05	1.61	--	--	1.61
PCB-203	10	10	0	1.97	3.73	2.89	--	--	2.89
PCB-204	10	10	0	0.0397	0.0668	0.0509	--	--	0.0509
PCB-205	10	10	0	0.21	0.357	0.274	--	--	0.274
PCB-206	10	10	0	2.79	4.68	3.67	--	--	3.67

Table 10
Gulf Menhaden Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-207	10	10	0	1.92	3.27	2.68	--	--	2.68
PCB-208	10	10	0	2.64	4.54	3.67	--	--	3.67
PCB-209	10	10	0	71.8	152	110	--	--	110
Total PCB Congener (U = 1/2)	10	10	0	1,259	4,005	2,642	--	--	2,642
Dioxins and Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	10	10	0	57.5	1500	512	--	--	512
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	10	10	0	57.7	293	165	--	--	165
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	10	10	0	4.46	54.8	21.8	--	--	21.8
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	10	10	0	6.42	30.6	17.9	--	--	17.9
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	10	10	0	0.697	13.4	4.32	--	--	4.32
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	10	10	0	1.58	6.41	3.40	--	--	3.40
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	10	2	8	0.343	0.362	0.353	0.189	2.83	0.419
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	10	10	0	0.712	2.94	1.70	--	--	1.70
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	10	8	2	0.547	1.59	1.05	2.35	2.76	1.10
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	10	3	7	1.01	1.39	1.15	0.3	0.679	0.507
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	10	3	7	0.733	0.981	0.863	0.198	2.89	0.602
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	10	10	0	3.11	5.86	4.56	--	--	4.56
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	10	8	2	0.673	1.08	0.855	0.618	0.687	0.749
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	10	9	1	0.552	2.2	1.25	0.671	0.671	1.16
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	10	10	0	3.1	6.39	4.91	--	--	4.91
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	10	10	0	9.79	17	13.8	--	--	13.8
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	10	10	0	5.86	11	8.66	--	--	8.66
Total Dioxin/Furan (U = 1/2)	10	10	0	154	1,946	763	--	--	763

Notes:
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
ng/kg - nanograms per kilogram
-- Results not applicable
PCB - polychlorinated biphenyl

Table 11
Pinfish Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
Conventional Parameters (percent)									
Lipids	4	4	0	2.34	3.93	2.86	--	--	2.86
Moisture, percent	4	4	0	73.2	74.9	73.9	--	--	73.9
Metals (mg/kg)									
Mercury	4	4	0	0.025	0.083	0.0430	--	--	0.0430
Semivolatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	4	0	4	--	--	--	671	765	359
Hexachlorobenzene	4	3	1	397	2,290	1,045	708	708	872
PCBs (µg/kg)									
PCB-001	4	4	0	0.106	0.441	0.204	--	--	0.204
PCB-002	4	0	4	--	--	--	0.0013	0.00938	0.00264
PCB-003	4	3	1	0.011	0.0195	0.0164	0.00824	0.00824	0.0133
PCB-004	4	4	0	1.12	5.21	2.19	--	--	2.19
PCB-005	4	2	2	0.0204	0.086	0.0532	0.0265	0.0358	0.0344
PCB-006	4	4	0	0.345	1.5	0.661	--	--	0.661
PCB-007	4	3	1	0.044	0.164	0.0862	0.0311	0.0311	0.0685
PCB-008	4	4	0	1.36	5.27	2.38	--	--	2.38
PCB-009	4	4	0	0.237	0.808	0.423	--	--	0.423
PCB-010	4	4	0	0.0317	0.116	0.0560	--	--	0.0560
PCB-011	4	0	4	--	--	--	0.0243	0.111	0.0246
PCB-012/013	4	3	1	0.0238	0.0551	0.0392	0.0318	0.0318	0.0334
PCB-014	4	0	4	--	--	--	0.0033	0.0308	0.00746
PCB-015	4	4	0	0.113	0.496	0.224	--	--	0.224
PCB-016	4	4	0	1.64	8.81	3.59	--	--	3.59
PCB-017	4	4	0	4.27	18.5	7.92	--	--	7.92
PCB-018/030	4	4	0	16.4	71.1	32.8	--	--	32.8
PCB-019	4	4	0	0.64	3.11	1.36	--	--	1.36
PCB-020/028	4	4	0	92.6	259	148	--	--	148
PCB-021/033	4	4	0	2.33	9.76	4.49	--	--	4.49
PCB-022	4	4	0	7.32	22.5	11.8	--	--	11.8
PCB-023	4	4	0	0.0245	0.0884	0.0411	--	--	0.0411
PCB-024	4	4	0	0.161	0.687	0.326	--	--	0.326
PCB-025	4	4	0	1.12	3.93	1.91	--	--	1.91
PCB-026/029	4	4	0	9.41	29.7	15.7	--	--	15.7
PCB-027	4	4	0	0.388	1.77	0.752	--	--	0.752
PCB-031	4	4	0	81.2	244	137	--	--	137
PCB-032	4	4	0	1.78	8.83	3.70	--	--	3.70
PCB-034	4	4	0	0.144	0.511	0.254	--	--	0.254
PCB-035	4	1	3	0.0103	0.0103	0.0103	0.0281	0.173	0.0340
PCB-036	4	0	4	--	--	--	0.00415	0.166	0.0305
PCB-037	4	4	0	0.903	1.94	1.34	--	--	1.34
PCB-038	4	3	1	0.133	0.205	0.160	0.169	0.169	0.141
PCB-039	4	1	3	0.148	0.148	0.148	0.0248	0.159	0.0656

Table 11
Pinfish Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-040/071	4	4	0	7.43	29.2	14.4	--	--	14.4
PCB-041	4	3	1	0.786	0.852	0.812	6.55	6.55	1.43
PCB-042	4	4	0	13.8	50.1	26.7	--	--	26.7
PCB-043	4	2	2	1.8	1.98	1.89	0.0829	6.73	1.80
PCB-044/047/065	4	4	0	122	320	200	--	--	200
PCB-045/051	4	4	0	5.97	25	11.9	--	--	11.9
PCB-046	4	4	0	0.41	1.77	0.791	--	--	0.791
PCB-048	4	4	0	4.08	14.6	7.29	--	--	7.29
PCB-049/069	4	4	0	105	279	177	--	--	177
PCB-050/053	4	4	0	2.16	8.62	3.85	--	--	3.85
PCB-052	4	4	0	190	395	284	--	--	284
PCB-054	4	4	0	0.104	0.348	0.180	--	--	0.180
PCB-055	4	2	2	0.399	0.738	0.569	0.0919	0.532	0.362
PCB-056	4	4	0	11.3	41.9	21.9	--	--	21.9
PCB-057	4	4	0	0.259	0.895	0.556	--	--	0.556
PCB-058	4	3	1	0.256	0.464	0.330	0.512	0.512	0.312
PCB-059/062/075	4	4	0	9.86	22.2	15.0	--	--	15.0
PCB-060	4	4	0	37.8	82.9	61.0	--	--	61.0
PCB-061/070/074/076	4	4	0	282	629	450	--	--	450
PCB-063	4	4	0	8.18	17.8	12.4	--	--	12.4
PCB-064	4	4	0	58.2	174	107	--	--	107
PCB-066	4	4	0	190	428	311	--	--	311
PCB-067	4	4	0	0.829	2.24	1.42	--	--	1.42
PCB-068	4	4	0	0.623	1.39	1.07	--	--	1.07
PCB-072	4	4	0	1.28	2.9	2.17	--	--	2.17
PCB-073	4	1	3	1.73	1.73	1.73	0.024	3.95	0.934
PCB-077	4	4	0	0.602	1.65	0.972	--	--	0.972
PCB-078	4	0	4	--	--	--	0.0184	0.492	0.0797
PCB-079	4	1	3	1.00	1.00	1.00	0.0156	0.428	0.315
PCB-080	4	0	4	--	--	--	0.0167	0.465	0.0747
PCB-081	4	3	1	0.265	0.494	0.387	0.479	0.479	0.350
PCB-082	4	4	0	3.63	9.39	6.48	--	--	6.48
PCB-083	4	4	0	1.69	3.13	2.25	--	--	2.25
PCB-084	4	4	0	5.58	14.9	9.57	--	--	9.57
PCB-085/116/117	4	4	0	24.5	59.1	38.2	--	--	38.2
PCB-086/087/097/108/119/125	4	4	0	46.9	111	73.3	--	--	73.3
PCB-088/091	4	4	0	11.3	24.1	17.9	--	--	17.9
PCB-089	4	4	0	0.148	0.538	0.282	--	--	0.282
PCB-090/101/113	4	4	0	83.5	191	129	--	--	129
PCB-092	4	4	0	9.31	21.7	15.3	--	--	15.3
PCB-093/100	4	4	0	0.888	2	1.46	--	--	1.46
PCB-094	4	3	1	0.0326	0.102	0.0637	0.0899	0.0899	0.0590
PCB-095	4	4	0	24.6	54.6	40.9	--	--	40.9

Table 11
Pinfish Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-096	4	4	0	0.196	0.694	0.377	--	--	0.377
PCB-098/102	4	4	0	0.288	0.885	0.524	--	--	0.524
PCB-099	4	4	0	59	123	87.0	--	--	87.0
PCB-103	4	4	0	0.577	1.45	1.03	--	--	1.03
PCB-104	4	1	3	0.0467	0.0467	0.0467	0.00159	0.0206	0.0165
PCB-105	4	4	0	35.8	86.4	58.6	--	--	58.6
PCB-106	4	0	4	--	--	--	0.00453	0.0868	0.0211
PCB-107/124	4	4	0	3.01	7.08	4.50	--	--	4.50
PCB-109	4	4	0	7.03	16.2	10.2	--	--	10.2
PCB-110/115	4	4	0	54.5	129	89.7	--	--	89.7
PCB-111	4	3	1	0.0401	0.0694	0.0522	0.0581	0.0581	0.0464
PCB-112	4	0	4	--	--	--	0.00304	0.0649	0.0139
PCB-114	4	4	0	2.66	6.68	4.50	--	--	4.50
PCB-118	4	4	0	87.1	188	128	--	--	128
PCB-120	4	4	0	0.245	0.637	0.411	--	--	0.411
PCB-121	4	1	3	0.0304	0.0304	0.0304	0.00302	0.061	0.0176
PCB-122	4	4	0	0.525	0.939	0.731	--	--	0.731
PCB-123	4	4	0	2.16	4.91	3.32	--	--	3.32
PCB-126	4	4	0	0.186	0.407	0.292	--	--	0.292
PCB-127	4	2	2	0.0913	0.191	0.141	0.00424	0.0454	0.0768
PCB-128/166	4	4	0	5.53	14.3	8.17	--	--	8.17
PCB-129/138/163	4	4	0	41.6	93.7	57.0	--	--	57.0
PCB-130	4	4	0	1.93	4.82	2.85	--	--	2.85
PCB-131	4	4	0	0.263	0.605	0.399	--	--	0.399
PCB-132	4	4	0	5.68	11.6	7.85	--	--	7.85
PCB-133	4	3	1	0.399	0.92	0.64	0.00418	0.00418	0.481
PCB-134	4	4	0	0.224	1.02	0.580	--	--	0.580
PCB-135/151	4	4	0	4.27	10.5	6.62	--	--	6.62
PCB-136	4	4	0	1.26	3.08	2.07	--	--	2.07
PCB-137	4	4	0	2.24	5.78	3.46	--	--	3.46
PCB-139/140	4	4	0	0.838	1.82	1.18	--	--	1.18
PCB-141	4	4	0	5.41	12.5	7.57	--	--	7.57
PCB-142	4	0	4	--	--	--	0.00456	0.0518	0.0120
PCB-143	4	0	4	--	--	--	0.00423	0.0481	0.0111
PCB-144	4	4	0	1.29	2.78	1.76	--	--	1.76
PCB-145	4	2	2	0.00267	0.00613	0.00440	0.00924	0.0132	0.00500
PCB-146	4	4	0	0.0406	7.81	5.51	--	--	5.51
PCB-147/149	4	4	0	14.4	33.7	22.1	--	--	22.1
PCB-148	4	4	0	0.0525	0.136	0.0948	--	--	0.0948
PCB-150	4	4	0	0.0456	0.113	0.0797	--	--	0.0797
PCB-152	4	3	1	0.00525	0.018	0.0121	0.0127	0.0127	0.0107
PCB-153/168	4	4	0	35.8	82.7	51.8	--	--	51.8
PCB-154	4	4	0	0.474	1.13	0.760	--	--	0.760

Table 11
Pinfish Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-155	4	4	0	0.0379	0.199	0.0985	--	--	0.0985
PCB-156/157	4	4	0	4.66	11.1	6.92	--	--	6.92
PCB-158	4	4	0	4.17	10	5.94	--	--	5.94
PCB-159	4	1	3	0.181	0.181	0.181	0.00352	0.0329	0.0503
PCB-160	4	0	4	--	--	--	0.00298	0.0356	0.00832
PCB-161	4	1	3	12.1	12.1	12.1	0.0028	0.0157	3.03
PCB-162	4	4	0	0.165	0.363	0.243	--	--	0.243
PCB-164	4	4	0	1.69	4.07	2.44	--	--	2.44
PCB-165	4	3	1	0.0138	0.0423	0.0307	0.0116	0.0116	0.0245
PCB-167	4	4	0	1.8	4.16	2.56	--	--	2.56
PCB-169	4	2	2	0.0412	0.0465	0.0439	0.0033	0.00384	0.0228
PCB-170	4	4	0	5.91	15.5	8.76	--	--	8.76
PCB-171/173	4	4	0	1.82	4.24	2.54	--	--	2.54
PCB-172	4	4	0	0.927	2.64	1.44	--	--	1.44
PCB-174	4	4	0	2.26	6.02	3.51	--	--	3.51
PCB-175	4	4	0	0.287	0.735	0.439	--	--	0.439
PCB-176	4	4	0	0.389	1.06	0.631	--	--	0.631
PCB-177	4	4	0	1.44	4.34	2.49	--	--	2.49
PCB-178	4	4	0	0.727	1.98	1.17	--	--	1.17
PCB-179	4	4	0	0.958	2.43	1.50	--	--	1.50
PCB-180/193	4	4	0	15	38.1	21.6	--	--	21.6
PCB-181	4	4	0	0.0941	0.249	0.144	--	--	0.144
PCB-182	4	3	1	0.0486	0.0902	0.0629	0.00805	0.00805	0.0482
PCB-183/185	4	4	0	4.33	11.3	6.52	--	--	6.52
PCB-184	4	4	0	0.0215	0.0902	0.0524	--	--	0.0524
PCB-186	4	0	4	--	--	--	0.000818	0.00960	0.00237
PCB-187	4	4	0	7.64	22.2	12.5	--	--	12.5
PCB-188	4	4	0	0.0311	0.0979	0.0619	--	--	0.0619
PCB-189	4	4	0	0.202	0.464	0.282	--	--	0.282
PCB-190	4	4	0	1.18	3.35	1.85	--	--	1.85
PCB-191	4	4	0	0.266	0.721	0.415	--	--	0.415
PCB-192	4	3	1	0.00531	0.0164	0.00905	0.019	0.019	0.00916
PCB-194	4	4	0	1.79	7.58	3.69	--	--	3.69
PCB-195	4	4	0	0.897	2.61	1.44	--	--	1.44
PCB-196	4	4	0	1.38	3.93	2.21	--	--	2.21
PCB-197/200	4	4	0	0.354	0.931	0.600	--	--	0.600
PCB-198/199	4	4	0	2.15	6.46	3.58	--	--	3.58
PCB-201	4	4	0	0.418	1.02	0.645	--	--	0.645
PCB-202	4	4	0	0.477	1.71	1.06	--	--	1.06
PCB-203	4	4	0	1.71	5.14	2.78	--	--	2.78
PCB-204	4	4	0	0.0183	0.0717	0.0401	--	--	0.0401
PCB-205	4	4	0	0.149	0.389	0.241	--	--	0.241
PCB-206	4	4	0	1.24	4.34	2.65	--	--	2.65

Table 11
Pinfish Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-207	4	4	0	0.776	2.75	1.80	--	--	1.80
PCB-208	4	4	0	0.728	3.16	1.94	--	--	1.94
PCB-209	4	4	0	14.3	92.3	48.9	--	--	48.9
Total PCB Congener (U = 1/2)	4	4	0	2,114	4,334	3,157	--	--	3,157
Dioxins and Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	4	4	0	1.56	169	45.3	--	--	45.3
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	4	4	0	3.46	15	8.60	--	--	8.60
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	4	3	1	0.255	5.41	2.16	0.140	0.140	1.64
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	4	2	2	1.23	1.24	1.24	0.253	0.357	0.694
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	4	0	4	--	--	--	0.207	0.573	0.176
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	4	3	1	0.405	0.62	0.506	0.110	0.110	0.393
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	4	0	4	--	--	--	0.135	0.235	0.0930
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	4	2	2	0.251	0.276	0.264	0.102	0.153	0.164
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	4	0	4	--	--	--	0.141	0.242	0.0990
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	4	0	4	--	--	--	0.156	0.419	0.130
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	4	0	4	--	--	--	0.140	0.242	0.0980
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	4	4	0	0.678	2.38	1.50	--	--	1.50
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	4	3	1	0.262	0.652	0.394	0.152	0.152	0.314
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	4	0	4	--	--	--	0.145	0.364	0.115
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	4	4	0	0.916	3.19	1.84	--	--	1.84
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	4	4	0	4.27	11.4	9.27	--	--	9.27
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	4	4	0	2.29	7.96	4.09	--	--	4.09
Total Dioxin/Furan (U = 1/2)	4	4	0	14.6	210	74.5	--	--	74.5

Notes:
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
ng/kg - nanograms per kilogram
-- Results not applicable
PCB - polychlorinated biphenyl

Table 12
Sand Seatrout Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
Conventional Parameters (percent)									
Lipids	2	2	0	0.931	1.18	1.06	--	--	1.06
Moisture, percent	2	2	0	78.7	79.2	79.0	--	--	79.0
Metals (mg/kg)									
Mercury	2	2	0	0.045	0.063	0.0540	--	--	0.0540
Semivolatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	2	0	2	--	--	--	353	370	181
Hexachlorobenzene	2	2	0	240	325	283	--	--	283
PCBs (µg/kg)									
PCB-001	2	2	0	0.0597	0.176	0.118	--	--	0.118
PCB-002	2	1	1	0.0191	0.0191	0.0191	0.00834	0.00834	0.0116
PCB-003	2	1	1	0.072	0.072	0.0720	0.00642	0.00642	0.0376
PCB-004	2	2	0	0.76	0.767	0.764	--	--	0.764
PCB-005	2	0	2	--	--	--	0.00389	0.0197	0.00590
PCB-006	2	2	0	0.403	0.57	0.487	--	--	0.487
PCB-007	2	2	0	0.0659	0.0914	0.0787	--	--	0.0787
PCB-008	2	2	0	2.38	3.07	2.73	--	--	2.73
PCB-009	2	2	0	0.143	0.217	0.180	--	--	0.180
PCB-010	2	2	0	0.0277	0.0293	0.0285	--	--	0.0285
PCB-011	2	0	2	--	--	--	0.0288	0.0922	0.0303
PCB-012/013	2	1	1	0.0282	0.0282	0.0282	0.0164	0.0164	0.0182
PCB-014	2	0	2	--	--	--	0.00339	0.016	0.00485
PCB-015	2	2	0	0.088	0.191	0.140	--	--	0.140
PCB-016	2	2	0	3.09	4.2	3.65	--	--	3.65
PCB-017	2	2	0	7.68	12.4	10.0	--	--	10.0
PCB-018/030	2	2	0	15.7	28	21.9	--	--	21.9
PCB-019	2	2	0	0.708	1.08	0.894	--	--	0.894
PCB-020/028	2	2	0	54.5	101	77.8	--	--	77.8
PCB-021/033	2	2	0	11.8	21.9	16.9	--	--	16.9
PCB-022	2	2	0	9.77	17.8	13.8	--	--	13.8
PCB-023	2	2	0	0.0231	0.0509	0.0370	--	--	0.0370
PCB-024	2	2	0	0.132	0.208	0.170	--	--	0.170
PCB-025	2	2	0	1.36	2.62	1.99	--	--	1.99
PCB-026/029	2	2	0	5.94	11	8.47	--	--	8.47
PCB-027	2	2	0	0.785	1.35	1.07	--	--	1.07
PCB-031	2	2	0	42	81.6	61.8	--	--	61.8
PCB-032	2	2	0	6.4	11.3	8.85	--	--	8.85
PCB-034	2	2	0	0.250	0.389	0.320	--	--	0.320
PCB-035	2	0	2	--	--	--	0.00715	0.0314	0.00964
PCB-036	2	0	2	--	--	--	0.00692	0.0297	0.00916
PCB-037	2	2	0	0.704	1.16	0.932	--	--	0.932
PCB-038	2	2	0	0.0626	0.168	0.115	--	--	0.115
PCB-039	2	0	2	--	--	--	0.00656	0.0281	0.00867

Table 12
Sand Seatrout Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-040/071	2	2	0	23.3	43.9	33.6	--	--	33.6
PCB-041	2	2	0	4.58	6.74	5.66	--	--	5.66
PCB-042	2	2	0	12.4	19.4	15.9	--	--	15.9
PCB-043	2	1	1	4.01	4.01	4.01	0.0212	0.0212	2.01
PCB-044/047/065	2	2	0	69.7	115	92.4	--	--	92.4
PCB-045/051	2	2	0	5.67	7.58	6.63	--	--	6.63
PCB-046	2	2	0	1.01	1.48	1.25	--	--	1.25
PCB-048	2	2	0	15.8	28.2	22.0	--	--	22.0
PCB-049/069	2	2	0	53	86	69.5	--	--	69.5
PCB-050/053	2	2	0	3.3	5	4.15	--	--	4.15
PCB-052	2	2	0	85.3	148	117	--	--	117
PCB-054	2	2	0	0.0851	0.165	0.125	--	--	0.125
PCB-055	2	1	1	1.43	1.43	1.43	0.0171	0.0171	0.719
PCB-056	2	2	0	15.9	31.6	23.8	--	--	23.8
PCB-057	2	2	0	0.302	0.567	0.435	--	--	0.435
PCB-058	2	2	0	0.225	0.357	0.291	--	--	0.291
PCB-059/062/075	2	2	0	5.84	9.59	7.72	--	--	7.72
PCB-060	2	2	0	25	48.7	36.9	--	--	36.9
PCB-061/070/074/076	2	2	0	168	307	238	--	--	238
PCB-063	2	2	0	4.87	8.4	6.64	--	--	6.64
PCB-064	2	2	0	35.6	61.4	48.5	--	--	48.5
PCB-066	2	2	0	121	217	169	--	--	169
PCB-067	2	2	0	1.12	2.06	1.59	--	--	1.59
PCB-068	2	2	0	0.524	0.655	0.590	--	--	0.590
PCB-072	2	2	0	1.07	1.53	1.30	--	--	1.30
PCB-073	2	1	1	1.33	1.33	1.33	0.0634	0.0634	0.681
PCB-077	2	2	0	1.37	2.94	2.16	--	--	2.16
PCB-078	2	0	2	--	--	--	0.0162	0.0567	0.0182
PCB-079	2	1	1	0.969	0.969	0.969	0.0139	0.0139	0.488
PCB-080	2	0	2	--	--	--	0.0146	0.0521	0.0167
PCB-081	2	2	0	0.0462	0.138	0.0921	--	--	0.0921
PCB-082	2	2	0	4.06	8.13	6.10	--	--	6.10
PCB-083	2	1	1	3.68	3.68	3.68	0.012	0.012	1.84
PCB-084	2	2	0	4.81	8.55	6.68	--	--	6.68
PCB-085/116/117	2	2	0	18.1	31.5	24.8	--	--	24.8
PCB-086/087/097/108/119/125	2	2	0	29.2	51.9	40.6	--	--	40.6
PCB-088/091	2	2	0	5.13	7.97	6.55	--	--	6.55
PCB-089	2	2	0	0.409	0.836	0.623	--	--	0.623
PCB-090/101/113	2	2	0	46.7	75.2	61.0	--	--	61.0
PCB-092	2	2	0	7.7	12.9	10.3	--	--	10.3
PCB-093/100	2	2	0	0.810	1.13	0.970	--	--	0.970
PCB-094	2	2	0	0.078	0.177	0.128	--	--	0.128
PCB-095	2	2	0	12	19.4	15.7	--	--	15.7

Table 12
Sand Seatrout Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-096	2	2	0	0.327	0.512	0.420	--	--	0.420
PCB-098/102	2	2	0	0.926	1.5	1.21	--	--	1.21
PCB-099	2	2	0	44.8	66.2	55.5	--	--	55.5
PCB-103	2	2	0	0.591	0.790	0.691	--	--	0.691
PCB-104	2	2	0	0.0131	0.0254	0.0193	--	--	0.0193
PCB-105	2	2	0	25.2	48.7	37.0	--	--	37.0
PCB-106	2	0	2	--	--	--	0.0114	0.0506	0.0155
PCB-107/124	2	2	0	1.71	3.42	2.57	--	--	2.57
PCB-109	2	2	0	5.03	8.85	6.94	--	--	6.94
PCB-110/115	2	2	0	44.1	82.6	63.4	--	--	63.4
PCB-111	2	2	0	0.0507	0.0631	0.0569	--	--	0.0569
PCB-112	2	1	1	0.360	0.360	0.360	0.00718	0.00718	0.182
PCB-114	2	2	0	1.84	3.81	2.83	--	--	2.83
PCB-118	2	2	0	55.6	107	81.3	--	--	81.3
PCB-120	2	2	0	0.317	0.409	0.363	--	--	0.363
PCB-121	2	1	1	0.0174	0.0174	0.0174	0.0223	0.0223	0.0143
PCB-122	2	2	0	0.137	0.568	0.353	--	--	0.353
PCB-123	2	2	0	1.04	2.28	1.66	--	--	1.66
PCB-126	2	1	1	0.202	0.202	0.202	0.0139	0.0139	0.104
PCB-127	2	2	0	0.0748	0.136	0.105	--	--	0.105
PCB-128/166	2	2	0	5.12	9.2	7.16	--	--	7.16
PCB-129/138/163	2	2	0	36.4	59.5	48.0	--	--	48.0
PCB-130	2	2	0	1.4	2.49	1.95	--	--	1.95
PCB-131	2	2	0	0.222	0.401	0.312	--	--	0.312
PCB-132	2	2	0	3.96	7.33	5.65	--	--	5.65
PCB-133	2	2	0	0.628	0.916	0.772	--	--	0.772
PCB-134	2	2	0	0.57	1.14	0.855	--	--	0.855
PCB-135/151	2	2	0	4.3	6.59	5.45	--	--	5.45
PCB-136	2	2	0	1.08	1.69	1.39	--	--	1.39
PCB-137	2	2	0	2.23	3.77	3.00	--	--	3.00
PCB-139/140	2	2	0	0.858	1.26	1.06	--	--	1.06
PCB-141	2	2	0	4.22	7.46	5.84	--	--	5.84
PCB-142	2	1	1	0.0154	0.0154	0.0154	0.0315	0.0315	0.0156
PCB-143	2	1	1	0.0582	0.0582	0.0582	0.0109	0.0109	0.0318
PCB-144	2	2	0	1.04	1.53	1.29	--	--	1.29
PCB-145	2	2	0	0.00528	0.0119	0.00859	--	--	0.00859
PCB-146	2	2	0	0.0256	0.0429	0.0343	--	--	0.0343
PCB-147/149	2	2	0	7.78	11.6	9.69	--	--	9.69
PCB-148	2	2	0	0.073	0.0871	0.0801	--	--	0.0801
PCB-150	2	2	0	0.0602	0.0675	0.0639	--	--	0.0639
PCB-152	2	2	0	0.0186	0.0298	0.0242	--	--	0.0242
PCB-153/168	2	2	0	38.5	55.9	47.2	--	--	47.2
PCB-154	2	2	0	0.877	0.996	0.937	--	--	0.937

Table 12
Sand Seatrout Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-155	2	2	0	0.110	0.125	0.118	--	--	0.118
PCB-156/157	2	2	0	3.95	7.26	5.61	--	--	5.61
PCB-158	2	2	0	3.76	6.35	5.06	--	--	5.06
PCB-159	2	0	2	--	--	--	0.00852	0.0195	0.00701
PCB-160	2	0	2	--	--	--	0.00841	0.0216	0.00750
PCB-161	2	2	0	3.54	5.02	4.28	--	--	4.28
PCB-162	2	2	0	0.165	0.344	0.255	--	--	0.255
PCB-164	2	2	0	1.36	2.47	1.92	--	--	1.92
PCB-165	2	2	0	0.0176	0.0286	0.0231	--	--	0.0231
PCB-167	2	2	0	1.39	2.45	1.92	--	--	1.92
PCB-169	2	0	2	--	--	--	0.00704	0.0135	0.00514
PCB-170	2	2	0	6.92	12	9.46	--	--	9.46
PCB-171/173	2	2	0	2.2	3.46	2.83	--	--	2.83
PCB-172	2	2	0	1.32	2.22	1.77	--	--	1.77
PCB-174	2	2	0	2.11	3.9	3.01	--	--	3.01
PCB-175	2	2	0	0.341	0.500	0.421	--	--	0.421
PCB-176	2	2	0	0.416	0.622	0.519	--	--	0.519
PCB-177	2	2	0	1.47	2.59	2.03	--	--	2.03
PCB-178	2	2	0	1.46	2.09	1.78	--	--	1.78
PCB-179	2	2	0	1.03	1.74	1.39	--	--	1.39
PCB-180/193	2	2	0	19	31.1	25.1	--	--	25.1
PCB-181	2	2	0	0.124	0.194	0.159	--	--	0.159
PCB-182	2	2	0	0.0829	0.109	0.0960	--	--	0.0960
PCB-183/185	2	2	0	6.27	8.88	7.58	--	--	7.58
PCB-184	2	2	0	0.0948	0.0955	0.0952	--	--	0.0952
PCB-186	2	0	2	--	--	--	0.00127	0.00395	0.00131
PCB-187	2	2	0	5.52	9.98	7.75	--	--	7.75
PCB-188	2	2	0	0.0585	0.0758	0.0672	--	--	0.0672
PCB-189	2	2	0	0.248	0.428	0.338	--	--	0.338
PCB-190	2	2	0	1.43	2.45	1.94	--	--	1.94
PCB-191	2	2	0	0.359	0.566	0.463	--	--	0.463
PCB-192	2	2	0	0.0107	0.0172	0.0140	--	--	0.0140
PCB-194	2	2	0	4.33	7.61	5.97	--	--	5.97
PCB-195	2	2	0	1.42	2.43	1.93	--	--	1.93
PCB-196	2	2	0	2.3	3.48	2.89	--	--	2.89
PCB-197/200	2	2	0	0.736	1	0.868	--	--	0.868
PCB-198/199	2	2	0	3.78	6.33	5.06	--	--	5.06
PCB-201	2	2	0	0.744	0.997	0.871	--	--	0.871
PCB-202	2	2	0	1.43	2.18	1.81	--	--	1.81
PCB-203	2	2	0	3.03	4.61	3.82	--	--	3.82
PCB-204	2	2	0	0.0636	0.0748	0.0692	--	--	0.0692
PCB-205	2	1	1	0.38	0.38	0.380	0.207	0.207	0.242
PCB-206	2	2	0	4.25	6.59	5.42	--	--	5.42

Table 12
Sand Seatrout Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-207	2	2	0	3.67	5.4	4.54	--	--	4.54
PCB-208	2	2	0	4.5	6.72	5.61	--	--	5.61
PCB-209	2	2	0	112	175	144	--	--	144
Total PCB Congener (U = 1/2)	2	2	0	1,449	2,512	1,980	--	--	1,980
Dioxins and Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	2	2	0	3.2	5.39	4.30	--	--	4.30
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	2	2	0	2.81	3.08	2.95	--	--	2.95
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	2	2	0	0.441	0.469	0.455	--	--	0.455
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	2	2	0	0.549	0.662	0.606	--	--	0.606
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	2	0	2	--	--	--	0.240	0.294	0.134
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	2	2	0	0.221	0.403	0.312	--	--	0.312
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	2	0	2	--	--	--	0.121	0.136	0.0643
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	2	2	0	0.155	0.243	0.199	--	--	0.199
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	2	1	1	0.285	0.285	0.285	0.145	0.145	0.179
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	2	0	2	--	--	--	0.165	0.181	0.0865
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	2	0	2	--	--	--	0.129	0.143	0.0680
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	2	2	0	0.871	1.08	0.976	--	--	0.976
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	2	0	2	--	--	--	0.108	0.162	0.0675
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	2	1	1	0.181	0.181	0.181	0.147	0.147	0.127
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	2	2	0	0.216	0.356	0.286	--	--	0.286
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	2	1	1	0.877	0.877	0.877	1.05	1.05	0.701
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	2	2	0	0.800	15.5	0.825	--	--	0.825
Total Dioxin/Furan (U = 1/2)	2	2	0	11.6	13.1	12.3	--	--	12.3

Notes:
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
ng/kg - nanograms per kilogram
-- Results not applicable
PCB - polychlorinated biphenyl

Table 13
Striped Mullet Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
Conventional Parameters (percent)									
Lipids	9	9	0	1.24	2.36	1.74	--	--	1.74
Moisture, percent	9	9	0	73.1	75.4	74.0	--	--	74.0
Metals (mg/kg)									
Mercury	9	9	0	0.024	0.122	0.0516	--	--	0.0516
Semivolatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	9	0	9	--	--	--	342	769	304
Hexachlorobenzene	9	7	2	389	1,830	823	727	742	721
PCBs (µg/kg)									
PCB-001	9	9	0	0.0785	0.237	0.127	--	--	0.127
PCB-002	9	3	6	0.00426	0.0133	0.00999	0.00543	0.0164	0.0062
PCB-003	9	8	1	0.0275	0.0625	0.0392	0.0142	0.0142	0.0356
PCB-004	9	9	0	0.91	2.87	1.49	--	--	1.49
PCB-005	9	5	4	0.046	0.127	0.0735	0.017	0.0414	0.0461
PCB-006	9	9	0	0.342	1.64	0.818	--	--	0.818
PCB-007	9	9	0	0.0901	0.303	0.149	--	--	0.149
PCB-008	9	9	0	2.42	8.4	4.33	--	--	4.33
PCB-009	9	9	0	0.147	0.757	0.360	--	--	0.360
PCB-010	9	9	0	0.0246	0.11	0.0530	--	--	0.0530
PCB-011	9	0	9	--	--	--	0.0333	0.176	0.0403
PCB-012/013	9	8	1	0.0654	0.248	0.114	0.0335	0.0335	0.103
PCB-014	9	0	9	--	--	--	0.00252	0.0327	0.00802
PCB-015	9	9	0	0.438	2.01	0.904	--	--	0.904
PCB-016	9	9	0	1.13	12	5.63	--	--	5.63
PCB-017	9	9	0	3.63	27.4	13.3	--	--	13.3
PCB-018/030	9	9	0	6.22	74.3	34.1	--	--	34.1
PCB-019	9	9	0	0.478	3.53	1.71	--	--	1.71
PCB-020/028	9	9	0	24.4	218	107	--	--	107
PCB-021/033	9	9	0	6.49	40	18.4	--	--	18.4
PCB-022	9	9	0	4.26	42.4	19.5	--	--	19.5
PCB-023	9	9	0	0.012	0.091	0.0458	--	--	0.0458
PCB-024	9	9	0	0.0566	0.493	0.234	--	--	0.234
PCB-025	9	9	0	1.00	7.49	3.68	--	--	3.68
PCB-026/029	9	9	0	3.00	26.6	13.0	--	--	13.0
PCB-027	9	9	0	0.378	3.18	1.53	--	--	1.53
PCB-031	9	9	0	22.1	212	99.4	--	--	99.4
PCB-032	9	9	0	2.71	24.2	11.6	--	--	11.6
PCB-034	9	9	0	0.165	0.69	0.388	--	--	0.388
PCB-035	9	7	2	0.044	0.131	0.0630	0.0356	0.0403	0.0532
PCB-036	9	0	9	--	--	--	0.00614	0.0464	0.0133
PCB-037	9	9	0	1.80	10.8	4.53	--	--	4.53
PCB-038	9	9	0	0.0463	0.294	0.133	--	--	0.133
PCB-039	9	1	8	0.592	0.592	0.592	0.00581	0.044	0.0781

Table 13
Striped Mullet Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-040/071	9	9	0	9.95	77.5	37.0	--	--	37.0
PCB-041	9	9	0	1.09	9.99	4.42	--	--	4.42
PCB-042	9	9	0	6.67	45.1	22.3	--	--	22.3
PCB-043	9	4	5	0.732	9.41	4.96	0.0235	0.0805	2.22
PCB-044/047/065	9	9	0	29.4	252	126	--	--	126
PCB-045/051	9	9	0	2.84	26.6	13.2	--	--	13.2
PCB-046	9	9	0	0.632	5.35	2.50	--	--	2.50
PCB-048	9	9	0	5.45	45.8	22.1	--	--	22.1
PCB-049/069	9	9	0	25.5	208	107	--	--	107
PCB-050/053	9	9	0	2.58	23.5	11.4	--	--	11.4
PCB-052	9	9	0	38.2	330	167	--	--	167
PCB-054	9	9	0	0.0547	0.345	0.176	--	--	0.176
PCB-055	9	9	0	0.167	3.28	1.39	--	--	1.39
PCB-056	9	9	0	10.5	116	51.7	--	--	51.7
PCB-057	9	9	0	0.121	1.53	0.710	--	--	0.710
PCB-058	9	9	0	0.138	0.807	0.395	--	--	0.395
PCB-059/062/075	9	9	0	2.41	20.3	10.2	--	--	10.2
PCB-060	9	9	0	5.83	82.3	36.5	--	--	36.5
PCB-061/070/074/076	9	9	0	64.5	623	296	--	--	296
PCB-063	9	9	0	1.27	16	7.54	--	--	7.54
PCB-064	9	9	0	13	121	59.3	--	--	59.3
PCB-066	9	9	0	41.2	372	179	--	--	179
PCB-067	9	9	0	0.68	7.52	3.50	--	--	3.50
PCB-068	9	9	0	0.31	1.19	0.704	--	--	0.704
PCB-072	9	9	0	0.6	2.63	1.49	--	--	1.49
PCB-073	9	5	4	1.62	4.57	2.58	0.00782	0.0611	1.44
PCB-077	9	9	0	1.81	13.1	5.90	--	--	5.90
PCB-078	9	0	9	--	--	--	0.00907	0.0783	0.0217
PCB-079	9	3	6	0.379	1.82	1.13	0.0127	0.0575	0.389
PCB-080	9	0	9	--	--	--	0.00819	0.0719	0.0198
PCB-081	9	9	0	0.0789	0.815	0.387	--	--	0.387
PCB-082	9	9	0	1.67	11.1	5.06	--	--	5.06
PCB-083	9	7	2	0.76	7.1	3.50	0.0139	0.0396	2.73
PCB-084	9	9	0	2.89	25.2	11.8	--	--	11.8
PCB-085/116/117	9	9	0	4.49	47.8	22.4	--	--	22.4
PCB-086/087/097/108/119/125	9	9	0	12.3	103	49.0	--	--	49.0
PCB-088/091	9	9	0	3.31	23.1	11.2	--	--	11.2
PCB-089	9	9	0	0.222	2.19	0.952	--	--	0.952
PCB-090/101/113	9	9	0	20.9	158	78.9	--	--	78.9
PCB-092	9	9	0	3.23	26.9	13.5	--	--	13.5
PCB-093/100	9	9	0	0.322	2.3	1.22	--	--	1.22
PCB-094	9	9	0	0.105	0.904	0.400	--	--	0.400
PCB-095	9	9	0	9.52	71.1	34.9	--	--	34.9

Table 13
Striped Mullet Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-096	9	9	0	0.122	1.25	0.641	--	--	0.641
PCB-098/102	9	9	0	0.847	6.05	2.91	--	--	2.91
PCB-099	9	9	0	14.1	95.6	50.5	--	--	50.5
PCB-103	9	9	0	0.281	1.44	0.835	--	--	0.835
PCB-104	9	9	0	0.0131	0.0528	0.0349	--	--	0.0349
PCB-105	9	9	0	7.36	74.6	34.3	--	--	34.3
PCB-106	9	3	6	0.0136	0.269	0.138	0.00702	0.0561	0.0552
PCB-107/124	9	9	0	0.725	7.25	3.32	--	--	3.32
PCB-109	9	9	0	1.52	14.1	6.75	--	--	6.75
PCB-110/115	9	9	0	18.2	143	68.1	--	--	68.1
PCB-111	9	9	0	0.023	0.093	0.0521	--	--	0.0521
PCB-112	9	3	6	0.0345	0.732	0.391	0.0027	0.0284	0.136
PCB-114	9	9	0	0.487	5.78	2.56	--	--	2.56
PCB-118	9	9	0	17.6	151	72.0	--	--	72.0
PCB-120	9	9	0	0.148	0.45	0.303	--	--	0.303
PCB-121	9	5	4	0.0111	0.0365	0.0222	0.00268	0.0387	0.0178
PCB-122	9	9	0	0.261	2.69	1.13	--	--	1.13
PCB-123	9	9	0	0.44	4.15	1.98	--	--	1.98
PCB-126	9	8	1	0.0418	0.423	0.193	0.00919	0.00919	0.172
PCB-127	9	7	2	0.0273	0.152	0.0803	0.00656	0.0545	0.0659
PCB-128/166	9	9	0	1.82	11.3	5.77	--	--	5.77
PCB-129/138/163	9	9	0	13.3	72.1	39.2	--	--	39.2
PCB-130	9	9	0	0.949	4.86	2.62	--	--	2.62
PCB-131	9	9	0	0.11	0.708	0.380	--	--	0.380
PCB-132	9	9	0	2.74	11.3	6.02	--	--	6.02
PCB-133	9	9	0	0.291	1.09	0.687	--	--	0.687
PCB-134	9	9	0	0.433	2.58	1.303	--	--	1.303
PCB-135/151	9	9	0	3.07	12.9	7.97	--	--	7.97
PCB-136	9	9	0	0.958	4.13	2.52	--	--	2.52
PCB-137	9	9	0	0.66	4.64	2.32	--	--	2.32
PCB-139/140	9	9	0	0.285	1.40	0.785	--	--	0.785
PCB-141	9	9	0	1.92	11.3	6.05	--	--	6.05
PCB-142	9	1	8	0.0127	0.0127	0.0127	0.00584	0.0389	0.0116
PCB-143	9	3	6	0.0273	0.173	0.106	0.00326	0.0324	0.0412
PCB-144	9	9	0	0.482	2.37	1.38	--	--	1.38
PCB-145	9	9	0	0.00394	0.0328	0.0156	--	--	0.0156
PCB-146	9	8	1	0.0187	10.1	2.89	0.0177	0.0177	2.57
PCB-147/149	9	9	0	8.6	30.3	17.6	--	--	17.6
PCB-148	9	9	0	0.0414	0.121	0.0756	--	--	0.0756
PCB-150	9	9	0	0.0486	0.118	0.0807	--	--	0.0807
PCB-152	9	9	0	0.0115	0.078	0.0413	--	--	0.0413
PCB-153/168	9	9	0	13.7	60.1	35.1	--	--	35.1
PCB-154	9	9	0	0.363	0.953	0.687	--	--	0.687

Table 13
Striped Mullet Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-155	9	9	0	0.0305	0.141	0.0683	--	--	0.0683
PCB-156/157	9	9	0	1.3	8.83	4.47	--	--	4.47
PCB-158	9	9	0	1.29	7.49	3.98	--	--	3.98
PCB-159	9	0	9	--	--	--	0.00376	0.0286	0.00833
PCB-160	9	0	9	--	--	--	0.0023	0.0267	0.00724
PCB-161	9	5	4	3.64	7.46	5.53	0.00215	0.026	3.07
PCB-162	9	9	0	0.0513	0.302	0.1727	--	--	0.1727
PCB-164	9	9	0	0.845	3.50	1.89	--	--	1.89
PCB-165	9	9	0	0.011	0.0631	0.0367	--	--	0.0367
PCB-167	9	9	0	0.513	3.18	1.64	--	--	1.64
PCB-169	9	1	8	0.0161	0.0161	0.0161	0.00722	0.021	0.00791
PCB-170	9	9	0	2.1	11.9	6.52	--	--	6.52
PCB-171/173	9	9	0	0.689	3.16	1.87	--	--	1.87
PCB-172	9	9	0	0.418	2.24	1.27	--	--	1.27
PCB-174	9	9	0	1.62	5.45	3.21	--	--	3.21
PCB-175	9	9	0	0.135	0.505	0.331	--	--	0.331
PCB-176	9	9	0	0.284	1.05	0.678	--	--	0.678
PCB-177	9	9	0	1.27	4.98	2.99	--	--	2.99
PCB-178	9	9	0	0.615	2.15	1.42	--	--	1.42
PCB-179	9	9	0	0.84	3.25	2.10	--	--	2.10
PCB-180/193	9	9	0	5.22	28.5	16.0	--	--	16.0
PCB-181	9	8	1	0.0348	0.194	0.112	0.0312	0.0312	0.101
PCB-182	9	9	0	0.0182	0.100	0.0608	--	--	0.0608
PCB-183/185	9	9	0	1.86	8.14	5.02	--	--	5.02
PCB-184	9	9	0	0.0202	0.0876	0.0440	--	--	0.0440
PCB-186	9	2	7	0.00281	0.00571	0.00426	0.00169	0.00716	0.00253
PCB-187	9	9	0	3.67	16.0	9.24	--	--	9.24
PCB-188	9	9	0	0.019	0.0691	0.0421	--	--	0.0421
PCB-189	9	9	0	0.0783	0.396	0.226	--	--	0.226
PCB-190	9	9	0	0.43	2.34	1.30	--	--	1.30
PCB-191	9	9	0	0.107	0.542	0.304	--	--	0.304
PCB-192	9	1	8	0.00282	0.00282	0.00282	0.00425	0.025	0.00567
PCB-194	9	9	0	0.871	5.00	2.71	--	--	2.71
PCB-195	9	9	0	0.37	1.72	0.980	--	--	0.980
PCB-196	9	9	0	0.567	2.48	1.48	--	--	1.48
PCB-197/200	9	9	0	0.256	0.731	0.490	--	--	0.490
PCB-198/199	9	9	0	1.28	5.24	3.05	--	--	3.05
PCB-201	9	9	0	0.23	0.671	0.448	--	--	0.448
PCB-202	9	9	0	0.501	1.59	1.00	--	--	1.00
PCB-203	9	9	0	0.721	3.14	1.83	--	--	1.83
PCB-204	9	9	0	0.011	0.0518	0.0271	--	--	0.0271
PCB-205	9	9	0	0.0777	0.250	0.162	--	--	0.162
PCB-206	9	9	0	0.736	2.63	1.55	--	--	1.55

Table 13
Striped Mullet Tissue Sample Summary

Chemical	Number of Samples	Number of Detected Samples	Number of Non-Detected Samples	Minimum Detection	Maximum Detection	Average Detection	Minimum Non-Detection	Maximum Non-Detection	Average
PCB-207	9	9	0	0.445	1.96	0.966	--	--	0.966
PCB-208	9	9	0	0.586	2.53	1.28	--	--	1.28
PCB-209	9	9	0	12.3	92.1	35.6	--	--	35.6
Total PCB Congener (U = 1/2)	9	9	0	596	4,539	2,246	--	--	2,246
Dioxins and Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	9	9	0	15.2	747	234	--	--	234
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	9	9	0	21.7	75.8	47.2	--	--	47.2
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	9	9	0	1.31	22.6	7.91	--	--	7.91
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	9	9	0	2.38	7.91	5.02	--	--	5.02
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	9	4	5	0.721	3.28	2.44	0.211	0.702	1.23
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	9	9	0	0.767	2.17	1.34	--	--	1.34
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	9	0	9	--	--	--	0.136	0.513	0.143
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	9	9	0	0.34	0.99	0.638	--	--	0.638
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	9	4	5	0.289	0.462	0.364	0.236	0.591	0.271
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	9	0	9	--	--	--	0.145	0.681	0.202
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	9	0	9	--	--	--	0.146	0.561	0.152
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	9	9	0	1.16	3.48	2.22	--	--	2.22
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	9	6	3	0.382	0.501	0.448	0.163	0.322	0.336
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	9	4	5	0.223	0.739	0.522	0.273	0.617	0.358
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	9	9	0	1.37	4.15	2.73	--	--	2.73
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	9	9	0	8.12	59.2	22.5	--	--	22.5
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	9	9	0	1.43	15.5	6.10	--	--	6.10
Total Dioxin/Furan (U = 1/2)	9	9	0	70.5	931	332	--	--	332

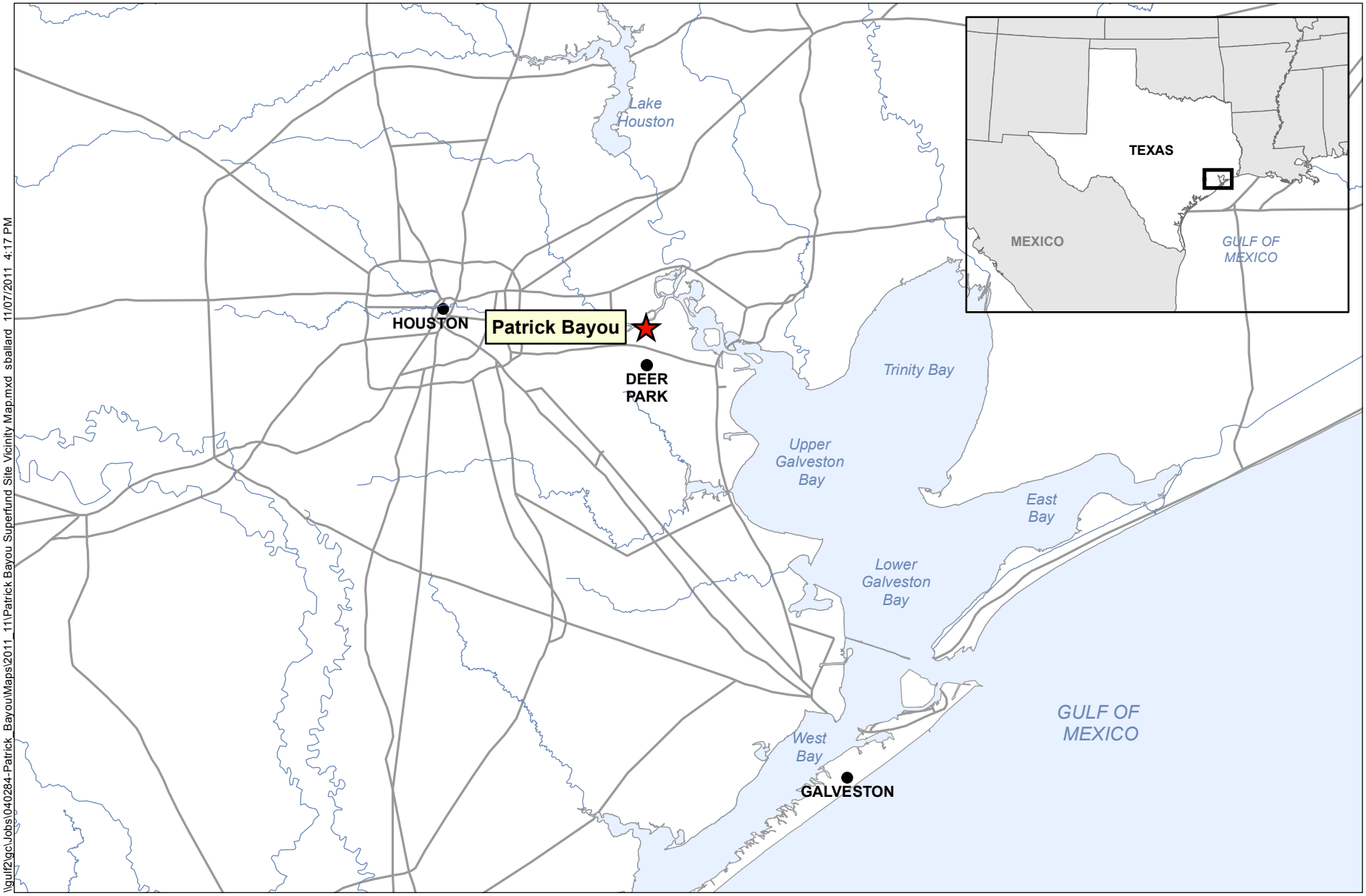
Notes:
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
ng/kg - nanograms per kilogram
-- Results not applicable
PCB - polychlorinated biphenyl

Table 14
Average Chemical Concentration for Each Sampled Species

Tissue Sample Type	Average Concentration								
	Lead (mg/kg)	Mercury (mg/kg)	Total PAHs (µg/kg)	1,3-Dichlorobenzene (µg/kg)	1,4-Dichlorobenzene (µg/kg)	HCB (µg/kg)	HCBD (µg/kg)	Total PCB Congeners (µg/kg)	Total Dioxin/Furan Congeners (ng/kg)
Blue Crab Size Class A	0.178	0.0475	25.9	All ND	All ND	612	All ND	655	63.6
Blue Crab Size Class B	--	0.0667	--	All ND	--	All ND	--	804	--
Brown Shrimp	--	0.041	--	All ND	--	710	--	1,716	--
Oyster	0.331	0.051	552	All ND	All ND	All ND	All ND	1,429	41.7
White Shrimp Size Class A	0.116	0.041	162	All ND	All ND	483	All ND	837	69.4
White Shrimp Size Class B	--	0.034	--	All ND	--	531	--	733	--
Gulf Killifish	--	0.0524	--	All ND	--	441	--	5,216	36.2
Gulf Menhaden	--	0.116	--	All ND	--	440	--	2,642	763
Pinfish	--	0.043	--	All ND	--	872	--	3,157	74.5
Sand Seatrout	--	0.054	--	All ND	--	283	--	1,980	12.3
Striped Mullet	--	0.0516	--	All ND	--	721	--	2,246	332

Notes:
mg/kg - milligrams per kilogram
µg/kg - micrograms per kilogram
ng/kg - nanograms per kilogram
-- Results not applicable
All ND = All samples were non-detect
HCB = hexachlorobenzene
HCBD - hexachlorobutadiene
PAH - polyaromatic hydrocarbons
PCB - polychlorinated biphenyl

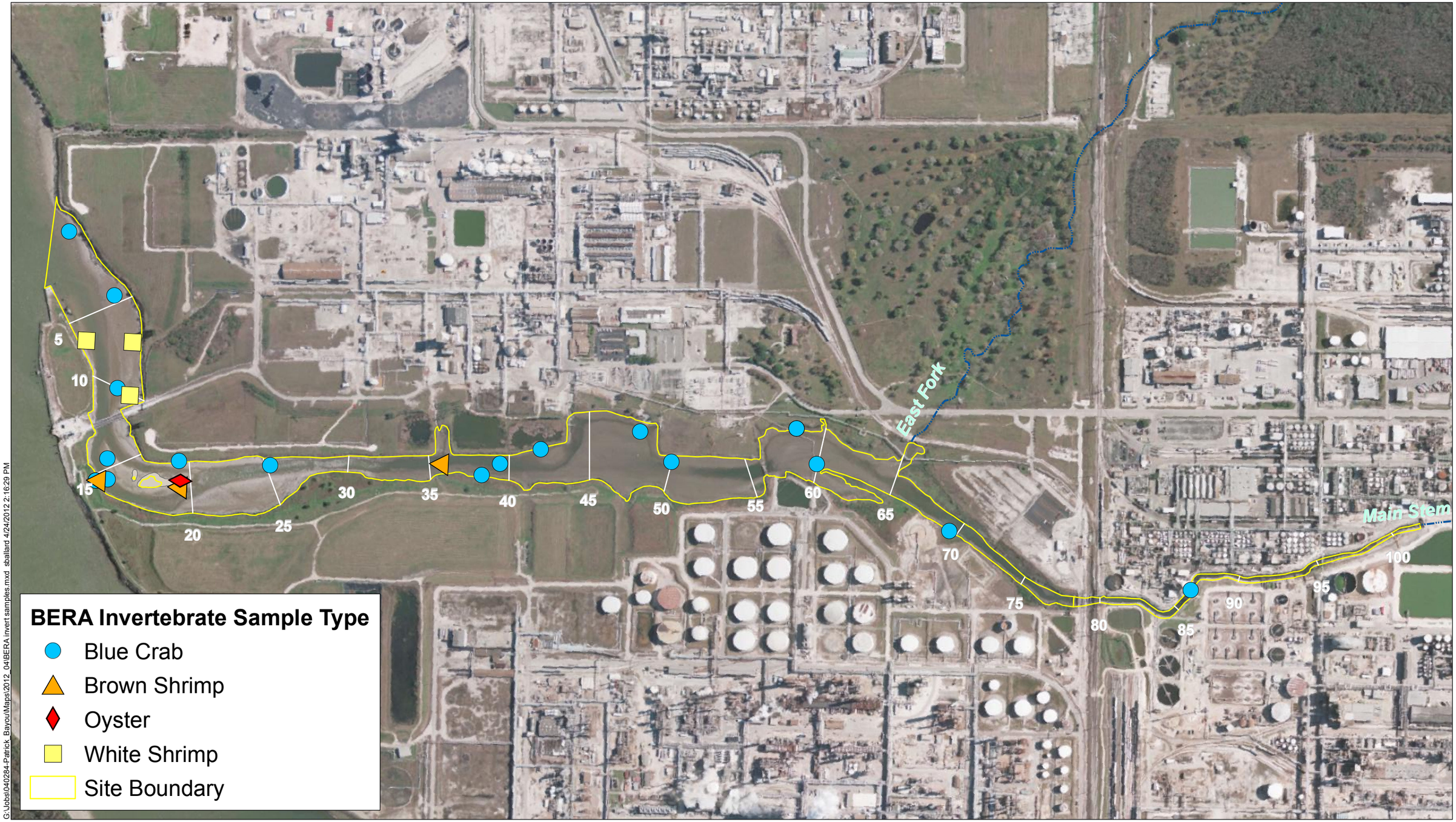
FIGURES



ANCHOR QEA

Miles
0 10

Figure 1
Patrick Bayou Superfund Site Vicinity Map
Ecological Fish and Invertebrate Tissue Sampling Data Report
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas



ANCHOR QEA

Notes:
Multiple samples may be associated with some sample locations.
Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: December 2007.

Feet
0 280 560 840 1,120

Figure 2
Invertebrate Tissue Sample Locations
Ecological Fish and Invertebrate Tissue Sampling Data Report
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

Notes:
Multiple samples may be associated with some sample locations.
Station numbers from Patrick Bayou PSCR indicate length along channel in hundreds of feet.
Aerial orthoimagery: December 2007.

Feet
0 280 560 840 1,120

Figure 3
Fish Tissue Sample Locations
Ecological Fish and Invertebrate Tissue Sampling Data Report
Patrick Bayou Superfund Site Remedial Investigation, Deer Park, Texas

APPENDIX A
(AVAILABLE ON CD)

APPENDIX B
(AVAILABLE ON CD)

APPENDIX C
(AVAILABLE ON CD)

APPENDIX D
TISSUE ANALYTICAL RESULTS

Appendix D
Tissue Analytical Results

	Location ID	Field QC	Field QC	PB002.1	PB003.1	PB005.1	PB006.1	PB008.2	PB010	PB010.1
	Sample ID	EB-110621-A01	EB-110624-A01	PB01-I-A-BCR-W-001-COMP-201106	PB01-F-A-STM-W-006-20110618	PB01-I-A-BCR-W-002-COMP-201106	PB01-I-B-WHS-W-002-COMP-201106	PB01-I-B-WHS-W-001-COMP-201106	PB01-F-A-GM-W-008-20110618	PB01-I-A-WHS-W-001-COMP-201106
	Sample Date	6/24/2011	6/24/2011	6/20/2011	6/18/2011	6/20/2011	6/20/2011	6/19/2011	6/18/2011	6/20/2011
	Sample Type	EB	EB	N	N	N	N	N	N	N
	X			3202691	3202445.49	3202312	3202026.63	3202032	3201710.87	3201704.8
	Y			13836499	13836263.53	13836201	13836356.8	13836072	13836029.16	13836071.32
	Scientific_Name			Callinectes sapidus	Mugil cephalus	Callinectes sapidus	Penaeus setiferus	Penaeus setiferus	Brevoortia patronus	Penaeus setiferus
	Size_Class			>2 to =<7.5	=<15	>2 to =<7.5	>7.5 to =<13	>7.5 to =<13	=<15	>2 to =<7.5
	Tissue_Category			Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Migratory
	Tissue_Type			Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Conventional Parameters (pct)										
Lipids	LIPID	4.24	--	3.02	1.24	3.73	1.13	1.3	1.23	0.914
Moisture, percent	MOIST	71.2	--	69.1	73.1	70.5	75.3	74.6	77.5	76.9
Metals (mg/kg)										
Lead	7439-92-1	0.474	--	0.121	--	0.111	--	--	--	0.116
Mercury	7439-97-6	0.042	--	0.051	0.085	0.051	0.042	0.026	0.078	0.041
Polyaromatic Hydrocarbons (µg/kg)										
2-Methylnaphthalene	91-57-6	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.2 U
Acenaphthene	83-32-9	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.2 U
Acenaphthylene	208-96-8	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.2 U
Anthracene	120-12-7	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.2 U
Benzo(a)anthracene	56-55-3	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.2 U
Benzo(a)pyrene	50-32-8	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.2 U
Benzo(b)fluoranthene	205-99-2	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.2 U
Benzo(g,h,i)perylene	191-24-2	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.2 U
Benzo(k)fluoranthene	207-08-9	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.2 U
Chrysene	218-01-9	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.2 U
Dibenzo(a,h)anthracene	53-70-3	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.2 U
Fluoranthene	206-44-0	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.8
Fluorene	86-73-7	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.2 U
Indeno(1,2,3-c,d)pyrene	193-39-5	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.2 U
Naphthalene	91-20-3	3.44 U	--	6.93 U	--	7.23 U	--	--	--	14.2 U
Phenanthrene	85-01-8	3.44 U	--	6.93 U	--	7.23 U	--	--	--	18.2
Pyrene	129-00-0	3.44 U	--	6.93 U	--	7.23 U	--	--	--	29.9
Total HPAH (9 of 16) (U = 1/2)	tPAH_17_HM_N	3.44 U	--	6.93 U	--	7.23 U	--	--	--	101.5
Total LPAH (7 of 16) (U = 1/2)	tPAH_17_LM_N	3.44 U	--	6.93 U	--	7.23 U	--	--	--	60.8
Total PAH (16) (U = 1/2)	tPAH_17_N	3.44 U	--	6.93 U	--	7.23 U	--	--	--	162.3
Semi-volatile Organic Carbons (µg/kg)										
1,3-Dichlorobenzene	541-73-1	721 U	--	388 U	344 U	372 U	691 U	758 U	357 U	714 U
1,4-Dichlorobenzene	106-46-7	721 U	--	388 U	--	372 U	--	--	--	714 U
Hexachlorobenzene	118-74-1	721 U	--	388 U	389	372 U	682 J	380 J	443	483 J
Hexachlorobutadiene	87-68-3	721 U	--	388 U	--	372 U	--	--	--	714 U
PCB Congeners (ng/kg)										
PCB-001	PCB-001	--	5.03 UJ	1.86 U	110	6.33 U	113	27	90.9 J	94.8 J
PCB-002	PCB-002	--	6.05 U	1.7 U	5.43 U	1.33 U	5.81 U	2.29 U	8.14 U	4.01 U
PCB-003	PCB-003	--	4.68 U	1.8 U	34.1	1.42 U	61.6 J	16.9 J	30.1 J	49.3
PCB-004	PCB-004	--	22.3 J	22.9 U	910 J	11.9 U	220	35.4 U	907 J	148 J
PCB-005	PCB-005	--	10.5 U	4.17 U	17 UJ	2.9 U	22 U	12.6 U	26.3 UJ	24.4 U
PCB-006	PCB-006	--	16.1 J	13.8 J	342 J	4.86 U	246	144	508 J	180
PCB-007	PCB-007	--	9.79 U	3.82 U	95.3 J	2.66 U	58.3 J	31.5 J	86.5 J	20.4 U
PCB-008	PCB-008	--	42.6 J	28.9 U	3190 J	42	1690	941	2100 J	1190
PCB-009	PCB-009	--	10.2 U	3.86 U	147 J	2.68 U	89.4 J	49.8	180 J	65.7 J
PCB-010	PCB-010	--	6.3 U	3.83 U	24.6 J	2.74 U	18.6 U	14.5 U	26.5 J	17.8 U
PCB-011	PCB-011	--	51.9	22.7 U	55.5 UJ	30.4 U	75.1	59.6 J	23.2 UJ	73.5
PCB-012/013	PCB-012/013	--	9.48 U	10.6 J	65.4 J	8.55 J	135	91.8	23.4 UJ	119
PCB-014	PCB-014	--	9.45 U	3.66 U	14.7 UJ	2.54 U	18.2 U	10.4 U	22.7 UJ	20.2 U
PCB-015	PCB-015	--	7.73 U	393	844	429	1230	604	215	899
PCB-016	PCB-016	--	40.2	4.89 U	1130	6.65 U	610	241	2590	450

Appendix D
Tissue Analytical Results

	Location ID	PB010.3	PB013.1_A	PB013.3	PB013.3	PB015.1	PB015.2	PB015_A	PB015_A
	Sample ID	PB01-I-A-BCR-W-003-COMP-201106	PB01-I-A-BCR-W-010-COMP-201106	PB01-F-A-GKF-W-004-COMP-201106	PB01-F-A-STM-W-003-20110616	PB01-F-A-GKF-W-002-COMP-201106	PB01-I-A-BCR-W-004-COMP-201106	PB01-F-A-GKF-W-001-COMP-201106	PB01-I-A-BCR-W-006-COMP-201106
	Sample Date	6/19/2011	6/22/2011	6/21/2011	6/15/2011	6/15/2011	6/16/2011	6/25/2011	6/22/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201743	3201306.47	3201433.88	3201433.88	3201175	3201180	3201168.73	3201168.73
	Y	13836152	13836191.23	13836075.12	13836075.12	13836251	13836183	13836254.66	13836254.66
	Scientific_Name	Callinectes sapidus	Callinectes sapidus	Fundulus grandis	Mugil cephalus	Fundulus grandis	Callinectes sapidus	Fundulus grandis	Callinectes sapidus
	Size_Class	>2 to =<7.5	>2 to =<7.5	=<15	=<15	=<15	>2 to =<7.5	=<15	>2 to =<7.5
	Tissue_Category	Sedentary	Sedentary	Sedentary	Migratory	Sedentary	Sedentary	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Conventional Parameters (pct)									
Lipids	LIPID	1.73	1.15	2.94	1.94	3.57	2.84	3.64	0.983
Moisture, percent	MOIST	70.3	71.3	73.6	73.4	73.5	69.6	74.2	69.6
Metals (mg/kg)									
Lead	7439-92-1	0.345	0.13	--	--	--	0.114	--	0.518
Mercury	7439-97-6	0.037	0.046	0.109	0.04	0.074	0.046	0.107	0.053
Polyaromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	91-57-6	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Acenaphthene	83-32-9	6.97 U	11 J	--	--	--	7.17 U	--	14.6 U
Acenaphthylene	208-96-8	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Anthracene	120-12-7	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Benzo(a)anthracene	56-55-3	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Benzo(a)pyrene	50-32-8	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Benzo(b)fluoranthene	205-99-2	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Benzo(g,h,i)perylene	191-24-2	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Benzo(k)fluoranthene	207-08-9	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Chrysene	218-01-9	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Dibenzo(a,h)anthracene	53-70-3	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Fluoranthene	206-44-0	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Fluorene	86-73-7	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Indeno(1,2,3-c,d)pyrene	193-39-5	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Naphthalene	91-20-3	5.17 J	14.1 U	--	--	--	7.17 U	--	14.6 U
Phenanthrene	85-01-8	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Pyrene	129-00-0	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Total HPAH (9 of 16) (U = 1/2)	tPAH_17_HM_N	6.97 U	14.1 U	--	--	--	7.17 U	--	14.6 U
Total LPAH (7 of 16) (U = 1/2)	tPAH_17_LM_N	26.08 J	53.3 J	--	--	--	7.17 U	--	14.6 U
Total PAH (16) (U = 1/2)	tPAH_17_N	60.93 J	123.8 J	--	--	--	7.17 U	--	14.6 U
Semi-volatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	541-73-1	382 U	377 U	707 U	372 U	686 U	341 U	752 U	745 U
1,4-Dichlorobenzene	106-46-7	382 U	377 U	--	--	--	341 U	--	745 U
Hexachlorobenzene	118-74-1	268 J	345 J	759	1110	822	465	920	542 J
Hexachlorobutadiene	87-68-3	382 U	377 U	--	--	--	341 U	--	745 U
PCB Congeners (ng/kg)									
PCB-001	PCB-001	1.47 U	2.49 J	199	99.5	235	5.82 U	201	5.93 U
PCB-002	PCB-002	1.38 U	0.847 U	8.1 J	12.4 J	12.1 J	1.6 U	6.32 J	5.47 U
PCB-003	PCB-003	1.5 U	0.816 U	40.9	38.4	50.3	4.67 U	28	5.66 U
PCB-004	PCB-004	13.1 U	16.3 U	2390	1180	2630	9.15 U	3020	33.6 U
PCB-005	PCB-005	3.74 U	3.21 U	64.1 J	46 J	80.6 J	4.38 U	87 J	7.15 U
PCB-006	PCB-006	7.72 U	2.74 U	1210	680	1210	3.82 U	1420	17.1 J
PCB-007	PCB-007	3.43 U	2.92 U	152	108 J	160	4.02 U	178	6.02 U
PCB-008	PCB-008	119	61.3	6950	3280	6890	54 J	7660	90.5
PCB-009	PCB-009	3.46 U	3.1 U	402	271	384	4.06 U	523	6.48 U
PCB-010	PCB-010	3.24 U	5.41 U	60.6	39.4	65.7	4.44 U	81.5 J	13.4 U
PCB-011	PCB-011	54.2 U	23.9 U	88.4	64.3 U	98.1 J	42.4 U	118	28.1 U
PCB-012/013	PCB-012/013	22.8	14.2 J	89.6	82.2 J	86.3	15.6 J	84.5 J	13.6
PCB-014	PCB-014	3.28 U	2.76 U	4.72 U	10.2 U	6.82 U	3.85 U	6.19 U	6.08 U
PCB-015	PCB-015	1110	1420	1300	606	1200	1550	1170	1210
PCB-016	PCB-016	10.4 U	7.09	8970	3960	7610	7.56 U	11000	24.5

Appendix D
Tissue Analytical Results

	Location ID	PB015_A	PB015_A	PB015_A	PB016.2	PB019.1	PB019.1	PB019.1	PB019.1
	Sample ID	PB01-I-A-BCR-W-007-COMP-201106	PB01-I-A-BCR-W-009-COMP-201106	PB01-I-B-BRS-W-001-COMP-201106	PB01-F-A-GKF-W-003-COMP-201106	PB01-F-A-SAS-W-005-20110622	PB01-I-B-BRS-W-012-20110621	PB01-I-B-BRS-W-014-20110621	PB01-I-B-BRS-W-015-20110621
	Sample Date	6/22/2011	6/22/2011	6/20/2011	6/15/2011	6/22/2011	6/21/2011	6/21/2011	6/21/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201168.73	3201168.73	3201168.73	3201190	3201152.87	3201152.87	3201152.87	3201152.87
	Y	13836254.66	13836254.66	13836254.66	13836042	13835753.58	13835753.58	13835753.58	13835753.58
	Scientific_Name	Callinectes sapidus	Callinectes sapidus	Penaeus aztecus	Fundulus grandis	Cynoscion arenarius	Penaeus aztecus	Penaeus aztecus	Penaeus aztecus
	Size_Class	>2 to =<7.5	>2 to =<7.5	>7.5 to =<13	=<15	=<15	>7.5 to =<13	>7.5 to =<13	>7.5 to =<13
	Tissue_Category	Sedentary	Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Conventional Parameters (pct)									
Lipids	LIPID	1.08	1.64	1.19	2.31	0.931	1.64	1.54	1.17
Moisture, percent	MOIST	72.1	66.9	74.6	73.9	79.2	74.4	75.1	76.2
Metals (mg/kg)									
Lead	7439-92-1	0.107	0.157	--	--	--	--	--	--
Mercury	7439-97-6	0.058	0.065	0.045	0.077	0.063	0.036	0.034	0.029
Polyaromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	91-57-6	14 U	14.6 U	--	--	--	--	--	--
Acenaphthene	83-32-9	14 U	14.6 U	--	--	--	--	--	--
Acenaphthylene	208-96-8	14 U	14.6 U	--	--	--	--	--	--
Anthracene	120-12-7	14 U	14.6 U	--	--	--	--	--	--
Benzo(a)anthracene	56-55-3	14 U	14.6 U	--	--	--	--	--	--
Benzo(a)pyrene	50-32-8	14 U	14.6 U	--	--	--	--	--	--
Benzo(b)fluoranthene	205-99-2	14 U	14.6 U	--	--	--	--	--	--
Benzo(g,h,i)perylene	191-24-2	14 U	14.6 U	--	--	--	--	--	--
Benzo(k)fluoranthene	207-08-9	14 U	14.6 U	--	--	--	--	--	--
Chrysene	218-01-9	14 U	14.6 U	--	--	--	--	--	--
Dibenzo(a,h)anthracene	53-70-3	14 U	14.6 U	--	--	--	--	--	--
Fluoranthene	206-44-0	14 U	14.6 U	--	--	--	--	--	--
Fluorene	86-73-7	14 U	14.6 U	--	--	--	--	--	--
Indeno(1,2,3-c,d)pyrene	193-39-5	14 U	14.6 U	--	--	--	--	--	--
Naphthalene	91-20-3	14 U	14.6 U	--	--	--	--	--	--
Phenanthrene	85-01-8	14 U	14.6 U	--	--	--	--	--	--
Pyrene	129-00-0	14 U	14.6 U	--	--	--	--	--	--
Total HPAH (9 of 16) (U = 1/2)	tPAH_17_HM_N	14 U	14.6 U	--	--	--	--	--	--
Total LPAH (7 of 16) (U = 1/2)	tPAH_17_LM_N	14 U	14.6 U	--	--	--	--	--	--
Total PAH (16) (U = 1/2)	tPAH_17_N	14 U	14.6 U	--	--	--	--	--	--
Semi-volatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	541-73-1	348 U	734 U	709 U	714 U	353 U	341 U	344 U	340 U
1,4-Dichlorobenzene	106-46-7	348 U	734 U	--	--	--	--	--	--
Hexachlorobenzene	118-74-1	386	638 J	913	470 J	325 J	710	618	591
Hexachlorobutadiene	87-68-3	348 U	734 U	--	--	--	--	--	--
PCB Congeners (ng/kg)									
PCB-001	PCB-001	4.06 U	3.82 U	55.2	104	176 J	128	109 J	92
PCB-002	PCB-002	3.55 U	3.73 U	5.36 J	6.6	19.1	47.2 U	18.4 U	25.6 U
PCB-003	PCB-003	3.53 U	4.08 U	31.7	29.7	72 J	42.2 U	62.6	52.3 J
PCB-004	PCB-004	16.1 U	108 U	239	1170	760 J	469	505	414
PCB-005	PCB-005	3.12 U	12.6 U	20.4 U	33.2	3.89 U	97.1 U	35.1 U	59.4 U
PCB-006	PCB-006	6.35 J	10.2 U	262	512	403	640	495	432
PCB-007	PCB-007	2.63 U	10.6 U	59.5 J	61.9	65.9	79.7 U	107 J	100
PCB-008	PCB-008	38.7	48.7 J	1810	3080	2380	4330	3340	2600
PCB-009	PCB-009	2.83 U	11.4 U	91.3 J	162	143	204	159	140
PCB-010	PCB-010	4.71 U	31.3 U	19.6 U	30.9	27.7	72 U	21.7 U	31.1 U
PCB-011	PCB-011	27.4 U	11.2 U	96.5	36.7 U	28.8 U	286 J	193 J	223
PCB-012/013	PCB-012/013	15.2	11.2 U	207	47.1 J	28.2	330	256	274
PCB-014	PCB-014	2.66 U	10.7 U	17 U	5.58 U	3.39 U	80.5 U	29.1 U	49.2 U
PCB-015	PCB-015	1410	2500	1560	538	191	2490	2140	1780
PCB-016	PCB-016	5.07	6.17	628	3380	3090	1450	1400	1230

Appendix D
Tissue Analytical Results

	Location ID	PB019.1	PB019.1	PB019.1	PB019.2	PB019_A	PB019_A	PB024.1	PB024.1
	Sample ID	PB01-I-B-BRS-W-019-20110621	PB01-I-B-BRS-W-022-20110622	PB01-I-B-BRS-W-023-20110622	PB01-I-A-OYS-W-001-COMP-201106	PB01-F-A-GKF-W-005-COMP-201106	PB01-I-A-BCR-W-008-COMP-201106	PB01-F-A-GM-W-001-20110615	PB01-F-A-GM-W-002-20110615
	Sample Date	6/21/2011	6/22/2011	6/22/2011	6/28/2011	6/21/2011	6/23/2011	6/15/2011	6/15/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201152.87	3201152.87	3201152.87	3201194.8	3201314.96	3201314.96	3201090.96	3201090.96
	Y	13835753.58	13835753.58	13835753.58	13835735.1	13835750.59	13835750.59	13835160.37	13835160.37
	Scientific_Name	Penaeus aztecus	Penaeus aztecus	Penaeus aztecus	Crassostrea virginica	Fundulus grandis	Callinectes sapidus	Brevoortia patronus	Brevoortia patronus
	Size_Class	>7.5 to =<13	>7.5 to =<13	>7.5 to =<13	>2 to =<7.5	=<15	>2 to =<7.5	=<15	=<15
	Tissue_Category	Migratory	Migratory	Migratory	Sedentary	Sedentary	Sedentary	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Conventional Parameters (pct)									
Lipids	LIPID	1.57	1.26	1.46	1.1	2.32	0.712	1.71	1.67
Moisture, percent	MOIST	74	76.1	74.9	82.7	74.9	70.8	78.3	77.6
Metals (mg/kg)									
Lead	7439-92-1	--	--	--	0.331	--	0.103	--	--
Mercury	7439-97-6	0.025	0.049	0.048	0.051	0.091	0.071	0.186	0.199
Polyaromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	91-57-6	--	--	--	13.7 U	--	14.5 U	--	--
Acenaphthene	83-32-9	--	--	--	13.7 U	--	14.5 U	--	--
Acenaphthylene	208-96-8	--	--	--	16.1	--	14.5 U	--	--
Anthracene	120-12-7	--	--	--	14.5	--	14.5 U	--	--
Benzo(a)anthracene	56-55-3	--	--	--	38.5	--	14.5 U	--	--
Benzo(a)pyrene	50-32-8	--	--	--	13.8	--	14.5 U	--	--
Benzo(b)fluoranthene	205-99-2	--	--	--	37.5	--	14.5 U	--	--
Benzo(g,h,i)perylene	191-24-2	--	--	--	9.32 J	--	14.5 U	--	--
Benzo(k)fluoranthene	207-08-9	--	--	--	13.8	--	14.5 U	--	--
Chrysene	218-01-9	--	--	--	68.8	--	14.5 U	--	--
Dibenzo(a,h)anthracene	53-70-3	--	--	--	13.7 U	--	14.5 U	--	--
Fluoranthene	206-44-0	--	--	--	118	--	14.5 U	--	--
Fluorene	86-73-7	--	--	--	13.7 U	--	14.5 U	--	--
Indeno(1,2,3-c,d)pyrene	193-39-5	--	--	--	13.7 U	--	14.5 U	--	--
Naphthalene	91-20-3	--	--	--	13.7 U	--	14.5 U	--	--
Phenanthrene	85-01-8	--	--	--	18.7	--	14.5 U	--	--
Pyrene	129-00-0	--	--	--	162	--	14.5 U	--	--
Total HPAH (9 of 16) (U = 1/2)	tPAH_17_HM_N	--	--	--	475.42 J	--	14.5 U	--	--
Total LPAH (7 of 16) (U = 1/2)	tPAH_17_LM_N	--	--	--	76.7	--	14.5 U	--	--
Total PAH (16) (U = 1/2)	tPAH_17_N	--	--	--	552.12 J	--	14.5 U	--	--
Semi-volatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	541-73-1	363 U	383 U	388 U	704 U	725 U	371 U	362 U	341 U
1,4-Dichlorobenzene	106-46-7	--	--	--	704 U	--	371 U	--	--
Hexachlorobenzene	118-74-1	679	841	794	704 U	2360	927	671	552
Hexachlorobutadiene	87-68-3	--	--	--	704 U	--	371 U	--	--
PCB Congeners (ng/kg)									
PCB-001	PCB-001	88.2 J	318	446	39.2	240	1.31 U	118	90.2
PCB-002	PCB-002	27 U	38.2 J	61.1 J	9.43	16.6 J	3.99 U	12.5	7.43 U
PCB-003	PCB-003	26.5 U	150	216	24.1	58.8	4.02 U	44	43.8
PCB-004	PCB-004	392	683	698	1000	2770	30.1 U	1070	1030
PCB-005	PCB-005	52.7 U	6.76 U	55.7 J	31.6 J	75.3	7.16 U	36.7	35.7
PCB-006	PCB-006	529 J	580	638	506	1070	5.78 U	646	627
PCB-007	PCB-007	94.5 J	103	119 J	84.5	148 J	6.03 U	97.4	95.5 J
PCB-008	PCB-008	3380	3280	3800	2340	6130	95.4	3400	3310
PCB-009	PCB-009	137 J	175	190	188	461	6.5 U	244	234
PCB-010	PCB-010	36.2 U	33.3	33.2 J	23.5	35.6 U	10.5 U	34.4 J	31.7
PCB-011	PCB-011	249	208	217	169	103	29.2 U	89.3 U	81.8 U
PCB-012/013	PCB-012/013	324	303	316 J	287	92.2 J	18.8 J	103	76.3 J
PCB-014	PCB-014	43.7 U	5.68 U	17.8 U	6.08 U	16.8 U	6.09 U	10.4 U	20.1 U
PCB-015	PCB-015	2260	1990	1990	1670	1080	1620	367 J	320
PCB-016	PCB-016	1330	2030	1970	3650	6400	11.9	4570	4480

Appendix D
Tissue Analytical Results

	Location ID	PB024.4	PB025_A	PB026.1	PB032_A	PB037.2	PB037.4	PB037.5	PB037.6
	Sample ID	PB01-I-A-BCR-W-005-COMP-201106	PB01-F-A-GM-W-004-20110615	PB01-F-A-STM-W-002-20110616	PB02-F-A-PNF-W-009-20110617	PB02-F-A-STM-W-006-20110616	PB02-I-B-BCR-W-001-COMP-201106	PB02-I-B-BRS-W-001-COMP-201106	PB02-I-A-BCR-W-002-COMP-201106
	Sample Date	6/20/2011	6/15/2011	6/15/2011	6/17/2011	6/16/2011	6/17/2011	6/17/2011	6/16/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201319	3201214.42	3201153.65	3201407.03	3201346.97	3201504	3201380	3201402
	Y	13835188	13835154.42	13835079.21	13834542.25	13834038.02	13833530	13834151	13833775
	Scientific_Name	Callinectes sapidus	Brevoortia patronus	Mugil cephalus	Lagodon rhomboides	Mugil cephalus	Callinectes sapidus	Penaeus aztecus	Callinectes sapidus
	Size_Class	>2 to =<7.5	=<15	=<15	=<15	=<15	>7.5 to =<13	>7.5 to =<13	>2 to =<7.5
	Tissue_Category	Sedentary	Migratory	Migratory	Migratory	Migratory	Migratory	Migratory	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Conventional Parameters (pct)									
Lipids	LIPID	1.76	1.78	2.36	2.69	2.06	0.943	1.15	1.68
Moisture, percent	MOIST	69.1	77.5	74.3	74.2	73.6	69	75.1	70.6
Metals (mg/kg)									
Lead	7439-92-1	0.212	--	--	--	--	--	--	0.292
Mercury	7439-97-6	0.065	0.142	0.036	0.083	0.028	0.083	0.065	0.05
Polyaromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	91-57-6	7.45 U	--	--	--	--	--	--	7.77 U
Acenaphthene	83-32-9	5.72 J	--	--	--	--	--	--	7.77 U
Acenaphthylene	208-96-8	7.45 U	--	--	--	--	--	--	7.77 U
Anthracene	120-12-7	7.45 U	--	--	--	--	--	--	7.77 U
Benzo(a)anthracene	56-55-3	7.45 U	--	--	--	--	--	--	7.77 U
Benzo(a)pyrene	50-32-8	7.45 U	--	--	--	--	--	--	7.77 U
Benzo(b)fluoranthene	205-99-2	7.45 U	--	--	--	--	--	--	7.77 U
Benzo(g,h,i)perylene	191-24-2	7.45 U	--	--	--	--	--	--	7.77 U
Benzo(k)fluoranthene	207-08-9	7.45 U	--	--	--	--	--	--	7.77 U
Chrysene	218-01-9	7.45 U	--	--	--	--	--	--	7.77 U
Dibenzo(a,h)anthracene	53-70-3	7.45 U	--	--	--	--	--	--	7.77 U
Fluoranthene	206-44-0	7.45 U	--	--	--	--	--	--	7.77 U
Fluorene	86-73-7	7.45 U	--	--	--	--	--	--	7.77 U
Indeno(1,2,3-c,d)pyrene	193-39-5	7.45 U	--	--	--	--	--	--	7.77 U
Naphthalene	91-20-3	6.03 J	--	--	--	--	--	--	8.23
Phenanthrene	85-01-8	3.81 J	--	--	--	--	--	--	7.77 U
Pyrene	129-00-0	6.08 J	--	--	--	--	--	--	7.77 U
Total HPAH (9 of 16) (U = 1/2)	tPAH_17_HM_N	39.61 J	--	--	--	--	--	--	7.77 U
Total LPAH (7 of 16) (U = 1/2)	tPAH_17_LM_N	30.46 J	--	--	--	--	--	--	31.54
Total PAH (16) (U = 1/2)	tPAH_17_N	70.07 J	--	--	--	--	--	--	70.39
Semi-volatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	541-73-1	371 U	348 U	342 U	765 U	694 U	357 U	699 U	354 U
1,4-Dichlorobenzene	106-46-7	371 U	--	--	--	--	--	--	354 U
Hexachlorobenzene	118-74-1	5430	416	1830	2290	997	357 U	537 J	354 U
Hexachlorobutadiene	87-68-3	371 U	--	--	--	--	--	--	354 U
PCB Congeners (ng/kg)									
PCB-001	PCB-001	7.83 U	151	134 J	142 J	190	3.17 U	71.3	2.25 U
PCB-002	PCB-002	7.19 U	13.4	13.3 J	9.38 U	6.75 U	2.92 U	1.97 U	1.96 U
PCB-003	PCB-003	7.68 U	34.9	36.4	8.24 U	53.8 J	3.02 U	34.9	1.98 U
PCB-004	PCB-004	147	1730	1480	1190 J	2090	39.2 U	290	23.9 U
PCB-005	PCB-005	18.1 U	57.7 J	67.7	35.8 UJ	77.1 J	9.87 U	9.08 U	4.43 U
PCB-006	PCB-006	78.6 J	1040	829	358 J	1170	7.97 U	295	9.76 U
PCB-007	PCB-007	16.6 U	161	136	31.1 UJ	209	8.31 U	60.1	4.07 U
PCB-008	PCB-008	369	4970	4060	1480 J	6020	119	1940	103
PCB-009	PCB-009	16.7 U	392	353	275 J	495	8.95 U	82	4.1 U
PCB-010	PCB-010	12.2 U	51.1	54.7	36.5 J	78	15.5 U	13.2	3.91 U
PCB-011	PCB-011	57.8 U	58 U	88.3 U	31.5 UJ	107 U	29.2 U	83.5	47.3 U
PCB-012/013	PCB-012/013	56.7 J	109	89.1	31.8 UJ	126	25.5 J	180	17.1
PCB-014	PCB-014	15.8 U	9.34 U	12 U	30.8 UJ	16.4 U	8.39 U	7.59 U	3.89 U
PCB-015	PCB-015	1880	557	438 J	116	1120	1580	1460	1450
PCB-016	PCB-016	94.4	7810	5990	1640	7440	12.8 J	573	8.73 U

Appendix D
Tissue Analytical Results

	Location ID	PB037_A	PB047.1_A	PB047.3	PB048.3	PB048.3	PB048.3	PB049_A	PB049_A
	Sample ID	PB02-I-A-BCR-W-004-COMP-201106	PB02-F-A-PNF-W-002-20110615	PB02-I-A-BCR-W-001-COMP-201106	PB02-F-A-GM-W-001-20110616	PB02-F-A-GM-W-002-20110616	PB02-F-A-STM-W-001-20110616	PB02-F-A-GKF-W-001-COMP-201106	PB02-I-A-BCR-W-003-COMP-201106
	Sample Date	6/19/2011	6/15/2011	6/19/2011	6/16/2011	6/16/2011	6/16/2011	6/15/2011	6/22/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201325.97	3201461.79	3201645	3201519.15	3201519.15	3201519.15	3201468.39	3201468.39
	Y	13833885.45	13833007.68	13832925	13832869.89	13832869.89	13832869.89	13832722.8	13832722.8
	Scientific_Name	Callinectes sapidus	Lagodon rhomboides	Callinectes sapidus	Brevoortia patronus	Brevoortia patronus	Mugil cephalus	Fundulus grandis	Callinectes sapidus
	Size_Class	>2 to =<7.5	=<15	>2 to =<7.5	=<15	=<15	=<15	=<15	>2 to =<7.5
	Tissue_Category	Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Conventional Parameters (pct)									
Lipids	LIPID	1.14	2.34	1.7	2	1.73	1.78	3.14	1.63
Moisture, percent	MOIST	72.6	73.2	69.1	79.4	79.9	73.7	75.4	66.1
Metals (mg/kg)									
Lead	7439-92-1	0.138	--	0.099	--	--	--	--	0.263
Mercury	7439-97-6	0.033	0.034	0.046	0.071	0.078	0.041	0.068	0.072
Polyaromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	91-57-6	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Acenaphthene	83-32-9	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Acenaphthylene	208-96-8	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Anthracene	120-12-7	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Benzo(a)anthracene	56-55-3	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Benzo(a)pyrene	50-32-8	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Benzo(b)fluoranthene	205-99-2	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Benzo(g,h,i)perylene	191-24-2	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Benzo(k)fluoranthene	207-08-9	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Chrysene	218-01-9	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Dibenzo(a,h)anthracene	53-70-3	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Fluoranthene	206-44-0	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Fluorene	86-73-7	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Indeno(1,2,3-c,d)pyrene	193-39-5	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Naphthalene	91-20-3	14.2 U	--	4.19 J	--	--	--	--	14.8 U
Phenanthrene	85-01-8	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Pyrene	129-00-0	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Total HPAH (9 of 16) (U = 1/2)	tPAH_17_HM_N	14.2 U	--	7.09 U	--	--	--	--	14.8 U
Total LPAH (7 of 16) (U = 1/2)	tPAH_17_LM_N	14.2 U	--	25.46 J	--	--	--	--	14.8 U
Total PAH (16) (U = 1/2)	tPAH_17_N	14.2 U	--	60.91 J	--	--	--	--	14.8 U
Semi-volatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	541-73-1	366 U	671 U	368 U	385 U	697 U	769 U	741 U	727 U
1,4-Dichlorobenzene	106-46-7	366 U	--	368 U	--	--	--	--	727 U
Hexachlorobenzene	118-74-1	366 U	447 J	191 J	398	464 J	460 J	741 U	727 U
Hexachlorobutadiene	87-68-3	366 U	--	368 U	--	--	--	--	727 U
PCB Congeners (ng/kg)									
PCB-001	PCB-001	1.32 U	127	6.24 U	210	180	89.9	289	2.08 U
PCB-002	PCB-002	1.09 U	8.79 U	5.6 U	12.1 J	5.56 U	6.11 U	13.6 J	0.956 J
PCB-003	PCB-003	1.75 U	19.5 J	5.84 U	41	35.8 J	29.6 J	58.1	1.86 U
PCB-004	PCB-004	16.1 U	1230	21.3 U	2550	2260	1350	2910	7.01 U
PCB-005	PCB-005	2.68 U	26.5 U	13 U	76.2	75.9	18.6 U	95.2	1.65 U
PCB-006	PCB-006	2.29 U	441	11.4 U	1350	1260	855	1190	5.49 U
PCB-007	PCB-007	2.44 U	50.5	12 U	211	184	141	162	1.47 U
PCB-008	PCB-008	64.6	1360	70.2	6630	5920	4350	8020	47.6
PCB-009	PCB-009	2.58 U	371	12.1 U	509	469	396	499	1.51 U
PCB-010	PCB-010	5.46 U	39.7	12.2 U	81.5	78.1	57.2	81.5 J	3.08 U
PCB-011	PCB-011	19.6 U	111 U	35 U	149 U	72 U	110 U	98.9	31.3 U
PCB-012/013	PCB-012/013	13.9	38.6 J	11.7 U	133	118	109 J	110	16.5
PCB-014	PCB-014	2.31 U	21.5 U	11.4 U	9.56 U	8.96 U	15.1 U	6.29 U	1.42 U
PCB-015	PCB-015	3990	113 J	1780	440	363	1150	1230	2210
PCB-016	PCB-016	12.6 J	1900	10.6 U	9620	8370	6410	8590	5.76 U

Appendix D
Tissue Analytical Results

	Location ID	PB052.1	PB052.1	PB053.2	PB053.2	PB053_B	PB056_A	PB056_A	PB057.2
	Sample ID	PB02-F-A-SAS-W-002-20110616	PB02-F-A-STM-W-003-20110616	PB02-F-A-GKF-W-025-20110621	PB02-F-A-GKF-W-029-20110622	PB02-F-A-GKF-W-013-20110618	PB02-F-A-GKF-W-010-20110618	PB02-F-A-GKF-W-011-20110618	PB03-F-A-GM-W-001-20110617
	Sample Date	6/16/2011	6/16/2011	6/21/2011	6/22/2011	6/18/2011	6/18/2011	6/18/2011	6/17/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201515.24	3201515.24	3201266.16	3201266.16	3201390.48	3201420.22	3201420.22	3201603.32
	Y	13832564.31	13832564.31	13832433.69	13832433.69	13832440.54	13832183.54	13832183.54	13832054.52
	Scientific_Name	Cynoscion arenarius	Mugil cephalus	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Brevoortia patronus
	Size_Class	=<15	=<15	=<15	=<15	=<15	=<15	=<15	=<15
	Tissue_Category	Migratory	Migratory	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Conventional Parameters (pct)									
Lipids	LIPID	1.18	1.76	3.33	2.14	2.75	2.36	2.68	2.02
Moisture, percent	MOIST	78.7	75.4	73	75.2	74.1	74.2	73.1	80
Metals (mg/kg)									
Lead	7439-92-1	--	--	--	--	--	--	--	--
Mercury	7439-97-6	0.045	0.024	0.045	0.075	0.058	0.049	0.051	0.068
Polyaromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	91-57-6	--	--	--	--	--	--	--	--
Acenaphthene	83-32-9	--	--	--	--	--	--	--	--
Acenaphthylene	208-96-8	--	--	--	--	--	--	--	--
Anthracene	120-12-7	--	--	--	--	--	--	--	--
Benzo(a)anthracene	56-55-3	--	--	--	--	--	--	--	--
Benzo(a)pyrene	50-32-8	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	205-99-2	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	191-24-2	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	207-08-9	--	--	--	--	--	--	--	--
Chrysene	218-01-9	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	53-70-3	--	--	--	--	--	--	--	--
Fluoranthene	206-44-0	--	--	--	--	--	--	--	--
Fluorene	86-73-7	--	--	--	--	--	--	--	--
Indeno(1,2,3-c,d)pyrene	193-39-5	--	--	--	--	--	--	--	--
Naphthalene	91-20-3	--	--	--	--	--	--	--	--
Phenanthrene	85-01-8	--	--	--	--	--	--	--	--
Pyrene	129-00-0	--	--	--	--	--	--	--	--
Total HPAH (9 of 16) (U = 1/2)	tPAH_17_HM_N	--	--	--	--	--	--	--	--
Total LPAH (7 of 16) (U = 1/2)	tPAH_17_LM_N	--	--	--	--	--	--	--	--
Total PAH (16) (U = 1/2)	tPAH_17_N	--	--	--	--	--	--	--	--
Semi-volatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	541-73-1	370 U	721 U	365 U	372 U	763 U	351 U	390 U	765 U
1,4-Dichlorobenzene	106-46-7	--	--	--	--	--	--	--	--
Hexachlorobenzene	118-74-1	240 J	416 J	243 J	224 J	763 U	369	200 J	765 U
Hexachlorobutadiene	87-68-3	--	--	--	--	--	--	--	--
PCB Congeners (ng/kg)									
PCB-001	PCB-001	59.7	237	313	291	308	312 J	296	147
PCB-002	PCB-002	8.34 U	9.78 U	13.2	12.2 J	5.88 UJ	11.4 U	12.2 U	11.9 J
PCB-003	PCB-003	6.42 U	62.5	51.2	55.6 J	66.9 J	62.2	61.5 J	31
PCB-004	PCB-004	767	2870	5070 J	4610	5280 J	4270 J	4450 J	2250 J
PCB-005	PCB-005	19.7 U	127 J	133 J	127	121 J	40.3 UJ	34.3 UJ	16.5 U
PCB-006	PCB-006	570	1640	2500 J	2130	2110 J	1480 J	1990 J	1360
PCB-007	PCB-007	91.4	303	316 J	267	290 J	214 J	269 J	214
PCB-008	PCB-008	3070	8400	19100 J	15500	13900 J	11400 J	13000 J	4520
PCB-009	PCB-009	217	757	852 J	714	756 J	503 J	698 J	506
PCB-010	PCB-010	29.3	110	138 J	121	118 J	97.9 J	128 J	75.1
PCB-011	PCB-011	92.2 U	176 U	110 J	115	80.8 J	1170 J	1180 J	55.7 U
PCB-012/013	PCB-012/013	16.4 U	248	172 J	180	191 J	178 J	169 J	129
PCB-014	PCB-014	16 U	25.2 U	9.23 UJ	7.58 U	11.5 UJ	34.8 UJ	29.6 UJ	14.4 U
PCB-015	PCB-015	88	2010	1370	1240	1960 J	1640	1640	598
PCB-016	PCB-016	4200	12000	21200 J	16400	14300 J	9620	9740	8350

Appendix D
Tissue Analytical Results

	Location ID	PB057.2	PB057.2	PB057.2	PB057_B	PB057_B	PB057_B	PB058.1	PB058.1
	Sample ID	PB03-F-A-STM-W-001-20110617	PB03-F-A-STM-W-001-COMP-201106	PB03-F-A-STM-W-002-20110617	PB03-F-A-GKF-W-001-20110615	PB03-F-A-GKF-W-006-20110617	PB03-F-A-PNF-W-001-COMP-201106	PB03-F-A-GM-W-003-20110618	PB03-F-A-GM-W-004-20110618
	Sample Date	6/17/2011	6/17/2011	6/17/2011	6/15/2011	6/17/2011	6/15/2011	6/18/2011	6/18/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201603.32	3201603.32	3201603.32	3201644.06	3201644.06	3201644.06	3201682.3	3201682.3
	Y	13832054.52	13832054.52	13832054.52	13832071.63	13832071.63	13832071.63	13832011.93	13832011.93
	Scientific_Name	Mugil cephalus	Mugil cephalus	Mugil cephalus	Fundulus grandis	Fundulus grandis	Lagodon rhomboides	Brevoortia patronus	Brevoortia patronus
	Size_Class	=<15	=<15	=<15	=<15	=<15	=<15	=<15	=<15
	Tissue_Category	Migratory	Migratory	Migratory	Sedentary	Sedentary	Migratory	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Conventional Parameters (pct)									
Lipids	LIPID	1.4	1.78	1.34	2.68	2.52	2.49	1.68	1.26
Moisture, percent	MOIST	74.5	73.5	74.6	74	74.7	74.9	79.2	78.9
Metals (mg/kg)									
Lead	7439-92-1	--	--	--	--	--	--	--	--
Mercury	7439-97-6	0.047	0.122	0.041	0.044	0.044	0.03	0.075	0.116
Polyaromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	91-57-6	--	--	--	--	--	--	--	--
Acenaphthene	83-32-9	--	--	--	--	--	--	--	--
Acenaphthylene	208-96-8	--	--	--	--	--	--	--	--
Anthracene	120-12-7	--	--	--	--	--	--	--	--
Benzo(a)anthracene	56-55-3	--	--	--	--	--	--	--	--
Benzo(a)pyrene	50-32-8	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	205-99-2	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	191-24-2	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	207-08-9	--	--	--	--	--	--	--	--
Chrysene	218-01-9	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	53-70-3	--	--	--	--	--	--	--	--
Fluoranthene	206-44-0	--	--	--	--	--	--	--	--
Fluorene	86-73-7	--	--	--	--	--	--	--	--
Indeno(1,2,3-c,d)pyrene	193-39-5	--	--	--	--	--	--	--	--
Naphthalene	91-20-3	--	--	--	--	--	--	--	--
Phenanthrene	85-01-8	--	--	--	--	--	--	--	--
Pyrene	129-00-0	--	--	--	--	--	--	--	--
Total HPAH (9 of 16) (U = 1/2)	tPAH_17_HM_N	--	--	--	--	--	--	--	--
Total LPAH (7 of 16) (U = 1/2)	tPAH_17_LM_N	--	--	--	--	--	--	--	--
Total PAH (16) (U = 1/2)	tPAH_17_N	--	--	--	--	--	--	--	--
Semi-volatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	541-73-1	727 U	753 U	742 U	360 U	716 U	708 U	699 U	718 UJ
1,4-Dichlorobenzene	106-46-7	--	--	--	--	--	--	--	--
Hexachlorobenzene	118-74-1	727 U	556 J	742 U	271 J	716 U	708 U	699 U	718 UJ
Hexachlorobutadiene	87-68-3	--	--	--	--	--	--	--	--
PCB Congeners (ng/kg)									
PCB-001	PCB-001	78.5 J	125	80	271	313 J	106	175	283
PCB-002	PCB-002	16.4 U	4.26 J	7.23 U	-- R	14.4 J	1.3 U	11.8	9.1 J
PCB-003	PCB-003	14.2 U	27.5	31.3 J	44.5 J	61.7	11 J	43.3	57
PCB-004	PCB-004	992 J	1260	1240 J	4580	4980	1120	2610 J	3330
PCB-005	PCB-005	41.4 UJ	49.8	17.9 U	147	185	20.4	28.7 U	103
PCB-006	PCB-006	495 J	634	717	1950	2310	345	1600	1620
PCB-007	PCB-007	90.1 J	112	145	222 J	309	44 J	256	221
PCB-008	PCB-008	2420 J	3390	3860	12800	13600	1410	5250	9140
PCB-009	PCB-009	241 J	263	314	635	808	237	562	520
PCB-010	PCB-010	31.7 J	35.2	46.5	162 J	151	31.7 J	84.6	112
PCB-011	PCB-011	33.3 UJ	39.8 U	50.5 U	99.7	171 U	24.3 U	70.3 J	49.5
PCB-012/013	PCB-012/013	33.5 UJ	75.9	114 J	140 J	173	23.8 J	245	194
PCB-014	PCB-014	32.7 UJ	2.52 U	15.6 U	28 U	11 U	3.3 U	25 U	4.91 U
PCB-015	PCB-015	610	805	554	977	1260	172	944	1540
PCB-016	PCB-016	2720	5500	5520 J	14700	17400	2010	10200	19600

Appendix D
Tissue Analytical Results

	Location ID	PB058.1	PB059.1_A	PB059.1_A	PB059.3	PB059.4	PB059.4	PB059.5	PB063.1_A
	Sample ID	PB03-F-A-GM-W-005-20110618	PB03-F-A-GKF-W-003-20110615	PB03-I-A-BCR-W-003-COMP-201106	PB03-I-B-BCR-W-002-20110627	PB03-I-B-BCR-W-003-20110628	PB03-I-B-BCR-W-003-20110628DUP	PB03-I-A-BCR-W-001-COMP-201106	PB03-F-A-GKF-W-009-20110617
	Sample Date	6/18/2011	6/15/2011	6/19/2011	6/26/2011	6/27/2011	6/27/2011	6/27/2011	6/17/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201682.3	3201501.32	3201501.32	3201714.16	3201714.16	3201714.16	3201714	3201509.99
	Y	13832011.93	13831828.71	13831828.71	13831964.63	13831964.63	13831964.63	13831965	13831505.57
	Scientific_Name	Brevoortia patronus	Fundulus grandis	Callinectes sapidus	Callinectes sapidus	Callinectes sapidus		Callinectes sapidus	Fundulus grandis
	Size_Class	=<15	=<15	>2 to =<7.5	>7.5 to =<13	>7.5 to =<13		>2 to =<7.5	=<15
	Tissue_Category	Migratory	Sedentary	Sedentary	Migratory	Migratory		Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body		Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Conventional Parameters (pct)									
Lipids	LIPID	1.63	2.26	1.04	0.575	0.658	--	0.555	2.81
Moisture, percent	MOIST	79.2	74.3	71.3	73.7	76.5	--	72.8	74.4
Metals (mg/kg)									
Lead	7439-92-1	--	--	0.092	--	--	--	0.113	--
Mercury	7439-97-6	0.149	0.025	0.032	0.059	0.058	--	0.045	0.032
Polyaromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	91-57-6	--	--	14.5 U	--	--	--	14.8 U	--
Acenaphthene	83-32-9	--	--	14.5 U	--	--	--	14.8 U	--
Acenaphthylene	208-96-8	--	--	14.5 U	--	--	--	14.8 U	--
Anthracene	120-12-7	--	--	14.5 U	--	--	--	14.8 U	--
Benzo(a)anthracene	56-55-3	--	--	14.5 U	--	--	--	14.8 U	--
Benzo(a)pyrene	50-32-8	--	--	14.5 U	--	--	--	14.8 U	--
Benzo(b)fluoranthene	205-99-2	--	--	14.5 U	--	--	--	14.8 U	--
Benzo(g,h,i)perylene	191-24-2	--	--	14.5 U	--	--	--	14.8 U	--
Benzo(k)fluoranthene	207-08-9	--	--	14.5 U	--	--	--	14.8 U	--
Chrysene	218-01-9	--	--	14.5 U	--	--	--	14.8 U	--
Dibenzo(a,h)anthracene	53-70-3	--	--	14.5 U	--	--	--	14.8 U	--
Fluoranthene	206-44-0	--	--	14.5 U	--	--	--	14.8 U	--
Fluorene	86-73-7	--	--	14.5 U	--	--	--	14.8 U	--
Indeno(1,2,3-c,d)pyrene	193-39-5	--	--	14.5 U	--	--	--	14.8 U	--
Naphthalene	91-20-3	--	--	14.5 U	--	--	--	14.8 U	--
Phenanthrene	85-01-8	--	--	14.5 U	--	--	--	14.8 U	--
Pyrene	129-00-0	--	--	14.5 U	--	--	--	14.8 U	--
Total HPAH (9 of 16) (U = 1/2)	tPAH_17_HM_N	--	--	14.5 U	--	--	--	14.8 U	--
Total LPAH (7 of 16) (U = 1/2)	tPAH_17_LM_N	--	--	14.5 U	--	--	--	14.8 U	--
Total PAH (16) (U = 1/2)	tPAH_17_N	--	--	14.5 U	--	--	--	14.8 U	--
Semi-volatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	541-73-1	727 UJ	377 U	363 U	718 UJ	748 UJ	--	347 U	351 U
1,4-Dichlorobenzene	106-46-7	--	--	363 U	--	--	--	347 U	--
Hexachlorobenzene	118-74-1	727 UJ	377 U	363 U	718 UJ	748 UJ	--	347 U	351 U
Hexachlorobutadiene	87-68-3	--	--	363 U	--	--	--	347 U	--
PCB Congeners (ng/kg)									
PCB-001	PCB-001	244	351	2.15 U	4.9 J	4.39 J	3.04 U	2.74 U	241
PCB-002	PCB-002	10.5 J	18.7	1 J	2.52 J	0.766 U	2.58 U	2.75 U	15.2 U
PCB-003	PCB-003	58.2	74.3	2.06 U	4.19 U	2.76 U	2.54 U	2.7 U	61.3 J
PCB-004	PCB-004	3320	5900	12 J	30.3	39.8	38	23.8 UJ	4480 J
PCB-005	PCB-005	111	84.3 U	3.98 U	2.31 U	2.01 U	4.23 U	6.53 UJ	45.2 U
PCB-006	PCB-006	1610	2660	3.52 U	15.6 J	23.4	22.9	5.58 UJ	2080
PCB-007	PCB-007	223	350 J	3.65 U	1.96 U	1.71 U	3.88 U	5.94 UJ	290
PCB-008	PCB-008	9420	18100	76.1	65.4	117	109	61.1 J	11800
PCB-009	PCB-009	522	872	3.72 U	4.37 U	5.11 U	5 U	6.3 UJ	787
PCB-010	PCB-010	114	187	2.33 U	1.55 U	1.3 U	2.3 U	7.88 UJ	157
PCB-011	PCB-011	45.9 U	71.4 U	33 U	22.8 U	17.8 U	22.5 U	21.4 UJ	113 J
PCB-012/013	PCB-012/013	198	214 J	19.1 J	20.6	15.9	16.6 J	16.1 J	207
PCB-014	PCB-014	4.23 U	70.4 U	3.33 U	1.95 U	1.7 U	3.73 U	5.62 UJ	37.5 U
PCB-015	PCB-015	1560	1500	1680	1920	1900	1690	1590	1850
PCB-016	PCB-016	20800	17400	9.6 J	24.4	25.5	25.4 J	17	12200

Appendix D
Tissue Analytical Results

	Location ID	PB063.1_A	PB063.2_A	PB063.2_A	PB069_A	PB069_A	PB069_A	PB084.1	PB084.1
	Sample ID	PB03-F-A-GKF-W-010-20110617	PB03-F-A-GKF-W-005-20110615	PB03-F-A-GKF-W-013-20110617	PB03-F-A-GKF-W-002-20110615	PB03-F-A-GKF-W-007-20110617	PB03-I-A-BCR-W-002-COMP-201106	PB04-F-A-GKF-W-005-20110627	PB04-F-A-GKF-W-013-20110627
	Sample Date	6/17/2011	6/15/2011	6/17/2011	6/15/2011	6/17/2011	6/19/2011	6/27/2011	6/27/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201509.99	3201561.28	3201561.28	3201132.36	3201132.36	3201132.36	3200727.85	3200727.85
	Y	13831505.57	13831519.55	13831519.55	13830993.22	13830993.22	13830993.22	13829784.47	13829784.47
	Scientific_Name	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Callinectes sapidus	Fundulus grandis	Fundulus grandis
	Size_Class	=<15	=<15	=<15	=<15	=<15	>2 to =<7.5	=<15	=<15
	Tissue_Category	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Conventional Parameters (pct)									
Lipids	LIPID	2.76	1.76	1.65	3.4	2.58	1.18	2.77	2.75
Moisture, percent	MOIST	75.3	74.3	74.6	71.9	74.3	70	75.7	75.9
Metals (mg/kg)									
Lead	7439-92-1	--	--	--	--	--	0.117	--	--
Mercury	7439-97-6	0.04	0.044	0.036	0.027 J	0.028	0.025	0.046	0.042
Polyaromatic Hydrocarbons (µg/kg)									
2-Methylnaphthalene	91-57-6	--	--	--	--	--	14.3 U	--	--
Acenaphthene	83-32-9	--	--	--	--	--	14.3 U	--	--
Acenaphthylene	208-96-8	--	--	--	--	--	14.3 U	--	--
Anthracene	120-12-7	--	--	--	--	--	14.3 U	--	--
Benzo(a)anthracene	56-55-3	--	--	--	--	--	14.3 U	--	--
Benzo(a)pyrene	50-32-8	--	--	--	--	--	14.3 U	--	--
Benzo(b)fluoranthene	205-99-2	--	--	--	--	--	14.3 U	--	--
Benzo(g,h,i)perylene	191-24-2	--	--	--	--	--	14.3 U	--	--
Benzo(k)fluoranthene	207-08-9	--	--	--	--	--	14.3 U	--	--
Chrysene	218-01-9	--	--	--	--	--	14.3 U	--	--
Dibenzo(a,h)anthracene	53-70-3	--	--	--	--	--	14.3 U	--	--
Fluoranthene	206-44-0	--	--	--	--	--	14.3 U	--	--
Fluorene	86-73-7	--	--	--	--	--	14.3 U	--	--
Indeno(1,2,3-c,d)pyrene	193-39-5	--	--	--	--	--	14.3 U	--	--
Naphthalene	91-20-3	--	--	--	--	--	14.3 U	--	--
Phenanthrene	85-01-8	--	--	--	--	--	14.3 U	--	--
Pyrene	129-00-0	--	--	--	--	--	14.3 U	--	--
Total HPAH (9 of 16) (U = 1/2)	tPAH_17_HM_N	--	--	--	--	--	14.3 U	--	--
Total LPAH (7 of 16) (U = 1/2)	tPAH_17_LM_N	--	--	--	--	--	14.3 U	--	--
Total PAH (16) (U = 1/2)	tPAH_17_N	--	--	--	--	--	14.3 U	--	--
Semi-volatile Organic Carbons (µg/kg)									
1,3-Dichlorobenzene	541-73-1	384 U	361 U	735 U	364 U	366 U	370 U	722 UJ	748 UJ
1,4-Dichlorobenzene	106-46-7	--	--	--	--	--	370 U	--	--
Hexachlorobenzene	118-74-1	384 U	361 U	735 U	364 U	366 U	370 U	722 UJ	748 UJ
Hexachlorobutadiene	87-68-3	--	--	--	--	--	370 U	--	--
PCB Congeners (ng/kg)									
PCB-001	PCB-001	275	223	261	462	373	3.84 J	230	345
PCB-002	PCB-002	8.64 U	10.1 U	4.48 U	23.7 J	29.2 J	1.74 U	8.23 J	9 J
PCB-003	PCB-003	59	37.9 J	50.7	113	94.1	1.63 U	31.4 J	55.7
PCB-004	PCB-004	5130 J	4040	4060 J	7720 J	6540 J	48.1 J	2820	4490
PCB-005	PCB-005	64.7 U	119 J	116	226	207	3.4 U	67.8	125
PCB-006	PCB-006	2620	1820	1560	3330	2710	12.8	1320	1930
PCB-007	PCB-007	368	227	202	483	404	6.65 J	134	218
PCB-008	PCB-008	15800	11600	10000	18100	13700	69.8	6390	10500
PCB-009	PCB-009	965	615	495	1200	963	4.77 J	347	545
PCB-010	PCB-010	177	130 J	93.8	217	191	3.62 U	87.2	136
PCB-011	PCB-011	54.8 U	132 U	90.7	144 J	114	31.2 U	112	146
PCB-012/013	PCB-012/013	242	186 J	153	379	310	24.3	96.9	167
PCB-014	PCB-014	54 U	23 U	9.83 U	22.9 U	17 U	2.93 U	3.87 U	5.13 U
PCB-015	PCB-015	1560	1470	1340	2210	2310	3580	1150	2210
PCB-016	PCB-016	14700	13600	11900	17600	13400	43.3	11800	17900

Appendix D
Tissue Analytical Results

	Location ID	PB095.2	PB101_D	PB101_D	PB101_D	PB102
	Sample ID	PB04-I-A-BCR-W-001-COMP-201106	PB04-F-A-GKF-W-001-20110627	PB04-F-A-GKF-W-001-COMP-201106	PB04-F-A-GKF-W-009-20110627	PB04-F-A-PNF-W-001-COMP-201106
	Sample Date	6/29/2011	6/27/2011	6/27/2011	6/27/2011	6/27/2011
	Sample Type	N	N	N	N	N
	X	3200882	3201317.36	3201317.36	3201317.36	3201302.69
	Y	13829528	13828141.83	13828141.83	13828141.83	13828160.48
	Scientific_Name	Callinectes sapidus	Fundulus grandis	Fundulus grandis	Fundulus grandis	Lagodon rhomboides
	Size_Class	>2 to =<7.5	=<15	=<15	=<15	=<15
	Tissue_Category	Sedentary	Sedentary	Sedentary	Sedentary	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**
Conventional Parameters (pct)						
Lipids	LIPID	1.02	3.36	3.37	2.13	3.93
Moisture, percent	MOIST	74	74	73.8	73.7	73.2
Metals (mg/kg)						
Lead	7439-92-1	0.173	--	--	--	--
Mercury	7439-97-6	0.009 J	0.029	0.04	0.028	0.025
Polyaromatic Hydrocarbons (µg/kg)						
2-Methylnaphthalene	91-57-6	7.71 U	--	--	--	--
Acenaphthene	83-32-9	7.71 U	--	--	--	--
Acenaphthylene	208-96-8	7.71 U	--	--	--	--
Anthracene	120-12-7	7.71 U	--	--	--	--
Benzo(a)anthracene	56-55-3	7.71 U	--	--	--	--
Benzo(a)pyrene	50-32-8	7.71 U	--	--	--	--
Benzo(b)fluoranthene	205-99-2	7.71 U	--	--	--	--
Benzo(g,h,i)perylene	191-24-2	7.71 U	--	--	--	--
Benzo(k)fluoranthene	207-08-9	7.71 U	--	--	--	--
Chrysene	218-01-9	7.71 U	--	--	--	--
Dibenzo(a,h)anthracene	53-70-3	7.71 U	--	--	--	--
Fluoranthene	206-44-0	7.71 U	--	--	--	--
Fluorene	86-73-7	7.71 U	--	--	--	--
Indeno(1,2,3-c,d)pyrene	193-39-5	7.71 U	--	--	--	--
Naphthalene	91-20-3	7.71 U	--	--	--	--
Phenanthrene	85-01-8	7.71 U	--	--	--	--
Pyrene	129-00-0	7.71 U	--	--	--	--
Total HPAH (9 of 16) (U = 1/2)	tPAH_17_HM_N	7.71 U	--	--	--	--
Total LPAH (7 of 16) (U = 1/2)	tPAH_17_LM_N	7.71 U	--	--	--	--
Total PAH (16) (U = 1/2)	tPAH_17_N	7.71 U	--	--	--	--
Semi-volatile Organic Carbons (µg/kg)						
1,3-Dichlorobenzene	541-73-1	360 U	705 UJ	719 U	699 UJ	727 U
1,4-Dichlorobenzene	106-46-7	360 U	--	--	--	--
Hexachlorobenzene	118-74-1	360 U	705 UJ	719 U	699 UJ	397 J
Hexachlorobutadiene	87-68-3	360 U	--	--	--	--
PCB Congeners (ng/kg)						
PCB-001	PCB-001	6.69 U	205	417 J	145	441
PCB-002	PCB-002	5.8 U	4.49 U	15 J	8.06 J	1.66 U
PCB-003	PCB-003	5.81 U	37.3 J	67.7 J	21.7 J	18.6
PCB-004	PCB-004	25 U	2960	4820	1840	5210
PCB-005	PCB-005	12.2 U	75.9	138	48.3	86 J
PCB-006	PCB-006	10.8 U	1470	2230	938	1500
PCB-007	PCB-007	11.3 U	160	257	88.8	164
PCB-008	PCB-008	41.1 J	7560	12200	5170	5270
PCB-009	PCB-009	11.3 U	396	653	245	808
PCB-010	PCB-010	11.7 U	88.7	139	57.8	116
PCB-011	PCB-011	30 U	159	154	105	29.8 U
PCB-012/013	PCB-012/013	11.4 U	103	164 J	69.3	55.1 J
PCB-014	PCB-014	10.8 U	4.37 U	8.56 U	4.56 U	4.09 U
PCB-015	PCB-015	1100	1300	1790	866	496
PCB-016	PCB-016	7.55 U	12800	15600	9740	8810

Appendix D
Tissue Analytical Results

	Location ID	Field QC	Field QC	PB002.1	PB003.1	PB005.1	PB006.1	PB008.2	PB010	PB010.1
	Sample ID	EB-110621-A01	EB-110624-A01	PB01-I-A-BCR-W-001-COMP-201106	PB01-F-A-STM-W-006-20110618	PB01-I-A-BCR-W-002-COMP-201106	PB01-I-B-WHS-W-002-COMP-201106	PB01-I-B-WHS-W-001-COMP-201106	PB01-F-A-GM-W-008-20110618	PB01-I-A-WHS-W-001-COMP-201106
	Sample Date	6/24/2011	6/24/2011	6/20/2011	6/18/2011	6/20/2011	6/20/2011	6/19/2011	6/18/2011	6/20/2011
	Sample Type	EB	EB	N	N	N	N	N	N	N
	X			3202691	3202445.49	3202312	3202026.63	3202032	3201710.87	3201704.8
	Y			13836499	13836263.53	13836201	13836356.8	13836072	13836029.16	13836071.32
	Scientific_Name			Callinectes sapidus	Mugil cephalus	Callinectes sapidus	Penaeus setiferus	Penaeus setiferus	Brevoortia patronus	Penaeus setiferus
	Size_Class			>2 to =<7.5	=<15	>2 to =<7.5	>7.5 to =<13	>7.5 to =<13	=<15	>2 to =<7.5
	Tissue_Category			Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Migratory
	Tissue_Type			Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result	Result
PCB-017	PCB-017	--	237	24.5	3630	32.9	2280	971	7350	1680
PCB-018/030	PCB-018/030	--	302	59.2	6220	27.3	4380	1930	12700	3610
PCB-019	PCB-019	--	24.3 J	9.64 U	478	3.47 U	89.8 J	34.3	923	61.7
PCB-020/028	PCB-020/028	--	1870	18600	24400	31300	49300	25700	47600	40400
PCB-021/033	PCB-021/033	--	203	22.3 J	6490	40.7	8020	4590	13600	6720
PCB-022	PCB-022	--	243	55.9 J	4260	132	9130	3910	9630	7360
PCB-023	PCB-023	--	7.99 U	1.63 U	12 J	1.7 U	6.29 U	2.45 U	20.1	5.46 U
PCB-024	PCB-024	--	8.05 U	1.69 U	56.6	1.76 U	22.4 J	10.1	97.8	19.3
PCB-025	PCB-025	--	190	28.6	1000	26.6	1400	738	1750	1150
PCB-026/029	PCB-026/029	--	391	56.9	3000	35.7	4670	2740	5560	4360
PCB-027	PCB-027	--	39.9	5.27 J	378	2.65 U	258	131	737	233
PCB-031	PCB-031	--	1350	348	22100	469	50400	25600	44600	37300
PCB-032	PCB-032	--	183	27.2	2710	57.5	2690	1230	5660	2190
PCB-034	PCB-034	--	28 J	4.32 J	165	11.7	158	84.3	305	133
PCB-035	PCB-035	--	14.5 U	4.02 U	44	5.58	458	244	38.8 J	402
PCB-036	PCB-036	--	14.3 U	3.8 U	6.14 U	3.77 U	12.8 U	9.77 U	8.14 U	27.6
PCB-037	PCB-037	--	43.8 J	1350	1800	2020	5170	2590	1660	4600
PCB-038	PCB-038	--	14.1 U	12.9	46.3	20	14.2 U	10.8 U	67.7	16.1 U
PCB-039	PCB-039	--	13.4 U	21.2	5.81 U	34.5	12.4 U	9.46 U	544	14 U
PCB-040/071	PCB-040/071	--	1410	150	9950 J	394	6030 J	2720	23300 J	5350
PCB-041	PCB-041	--	75.9	4.08 U	1090 J	4.81 U	542 J	189	3620 J	597
PCB-042	PCB-042	--	1040	62.4	6670 J	84.1	5060 J	2150	14800 J	4430
PCB-043	PCB-043	--	35.5 U	21.4	732 J	21.9	530 J	196	1990 J	474
PCB-044/047/065	PCB-044/047/065	--	4030	12500	29400 J	22100	41800 J	23300	58000 J	39500
PCB-045/051	PCB-045/051	--	234	19.6	2840 J	22	516 J	234	6040 J	576
PCB-046	PCB-046	--	39.4	4.46 U	632 J	3.87 U	103 J	42.8	1240 J	112
PCB-048	PCB-048	--	400	23.8 J	5450 J	36.2	2710 J	955	13300 J	2180
PCB-049/069	PCB-049/069	--	4330	109	25500 J	146	34800 J	19800	51800 J	33100
PCB-050/053	PCB-050/053	--	251	20.5	2580 J	8.7 J	850 J	357	5690 J	1070
PCB-052	PCB-052	--	5350	277	38200 J	113	56200 J	29800	78900 J	57600
PCB-054	PCB-054	--	15.1 U	3.27 U	54.7 J	2.33 U	12.5 U	6.27 U	81.3 J	10 U
PCB-055	PCB-055	--	43.9 J	5.79 U	219 J	5.45 U	320 J	24.2 U	487 J	420
PCB-056	PCB-056	--	840	64.6	10500 J	156	20200 J	9610	24000 J	19100
PCB-057	PCB-057	--	57.8	5.64 U	121 J	6.23	248 J	131	274 J	208
PCB-058	PCB-058	--	35.7 J	5.68 U	138 J	23.5	232 J	138	253 J	206
PCB-059/062/075	PCB-059/062/075	--	345	1160	2410 J	2020	3280 J	1890	4540 J	3160
PCB-060	PCB-060	--	558	8530	5830 J	12200	14800 J	7900	15100 J	13900
PCB-061/070/074/076	PCB-CE12	--	6960	19300	64500 J	31700	147000 J	81800	137000 J	124000
PCB-063	PCB-063	--	342	260	1270 J	469	3110 J	1700	3210 J	2700
PCB-064	PCB-064	--	1320	252	13000 J	310	19700 J	10000	29200 J	18500
PCB-066	PCB-066	--	4880	34300	41200 J	56400	80100 J	46700	84600 J	72300
PCB-067	PCB-067	--	123	24.2	680 J	34.4	1200 J	681	1340 J	1060
PCB-068	PCB-068	--	165	121	310 J	210	422 J	275	505 J	364
PCB-072	PCB-072	--	238	30.9	600 J	57.7	885	525	1030 J	753
PCB-073	PCB-073	--	85.5	2.69 U	7.82 UJ	5.8	11.4 U	5.57 U	13.1 UJ	17 U
PCB-077	PCB-077	--	265 J	1630	1810	2490	5450	3100	3390	4760
PCB-078	PCB-078	--	37.7 U	5.51 U	9.07 UJ	5.18 U	16.3 U	24.1 U	13.4 UJ	51.5 U
PCB-079	PCB-079	--	32.2 U	40.5	379 J	64.6	13.6 U	20.1 U	628 J	43 U

Appendix D
Tissue Analytical Results

	Location ID	PB010.3	PB013.1_A	PB013.3	PB013.3	PB015.1	PB015.2	PB015_A	PB015_A
	Sample ID	PB01-I-A-BCR-W-003-COMP-201106	PB01-I-A-BCR-W-010-COMP-201106	PB01-F-A-GKF-W-004-COMP-201106	PB01-F-A-STM-W-003-20110616	PB01-F-A-GKF-W-002-COMP-201106	PB01-I-A-BCR-W-004-COMP-201106	PB01-F-A-GKF-W-001-COMP-201106	PB01-I-A-BCR-W-006-COMP-201106
	Sample Date	6/19/2011	6/22/2011	6/21/2011	6/15/2011	6/15/2011	6/16/2011	6/25/2011	6/22/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201743	3201306.47	3201433.88	3201433.88	3201175	3201180	3201168.73	3201168.73
	Y	13836152	13836191.23	13836075.12	13836075.12	13836251	13836183	13836254.66	13836254.66
	Scientific_Name	Callinectes sapidus	Callinectes sapidus	Fundulus grandis	Mugil cephalus	Fundulus grandis	Callinectes sapidus	Fundulus grandis	Callinectes sapidus
	Size_Class	>2 to =<7.5	>2 to =<7.5	=<15	=<15	=<15	>2 to =<7.5	=<15	>2 to =<7.5
	Tissue_Category	Sedentary	Sedentary	Sedentary	Migratory	Sedentary	Sedentary	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-017	PCB-017	88.3	52.4	24700	9660	21000	41	34200	96
PCB-018/030	PCB-018/030	104	44	41400	23800	35300	26.9 J	57200	152
PCB-019	PCB-019	6.44 U	2.99 U	2370	1310	2600	4.59 U	3010	9.11 U
PCB-020/028	PCB-020/028	56200	73800	177000	76900	151000	83900	241000	64400
PCB-021/033	PCB-021/033	241	138	18000	12600	19200	21.8	21100	206
PCB-022	PCB-022	527	279	30500	13200	24600	222	35200	221
PCB-023	PCB-023	1.69 U	1.01 U	59.4	26.3 J	49.2	2.51 U	80.9	5.14 U
PCB-024	PCB-024	1.76 U	1.07 U	263	170	197	2.6 U	499	4.9 U
PCB-025	PCB-025	103	38.6	4810	2740	4110	53.3	6260	39.4
PCB-026/029	PCB-026/029	140	79.6	17500	9780	13600	48.6	24700	103
PCB-027	PCB-027	7.27	7.13	2350	1160	1980	2.53 U	3650	13.3 J
PCB-031	PCB-031	2500	948	154000	71900	122000	1250	188000	798
PCB-032	PCB-032	157	160	23100	8380	19800	56.2	29900	131
PCB-034	PCB-034	14.8	16.3	527	351	468	7.07	746	24.2
PCB-035	PCB-035	19.5	10.2	25.6	49.3 J	187 U	13.1	284 U	10.9 U
PCB-036	PCB-036	5.02 U	3.2 U	10.3 U	21.2 U	189 U	5.74 U	288 U	9.58 U
PCB-037	PCB-037	4000	5790	4820	2850	3830	5720	4640	4810
PCB-038	PCB-038	5.35 U	3.36 U	173	103	189 U	35.8	288 U	9.98 U
PCB-039	PCB-039	4.85 U	52.3	530	20.3 U	183 U	62.9	278 U	57
PCB-040/071	PCB-040/071	683	565	81200	25600	55800	259	79200	590
PCB-041	PCB-041	12.5 J	5.92	8460	2280	7390	5.96 U	9970	38.2
PCB-042	PCB-042	588	102	35000	14800	30400	180	38700	111
PCB-043	PCB-043	58.9	41.3	10700	40.8 U	8540	31	9480	14.6 U
PCB-044/047/065	PCB-044/047/065	38400	26500	103000	94600	181000	50000	266000	31300
PCB-045/051	PCB-045/051	46.7 J	26.5	19000	8790	18100	30.8 J	22600	39.1 J
PCB-046	PCB-046	6.63 J	2.91	2130	1670	2040	7.08 U	2640	12.4 U
PCB-048	PCB-048	119	50.4	21900	13500	24100	35.5	35200	88.4
PCB-049/069	PCB-049/069	1220	163	195000	81100	178000	243	267000	319
PCB-050/053	PCB-050/053	29.6 J	14.1	18600	8120	16000	12 J	25600	31.4
PCB-052	PCB-052	833	290	291000	128000	228000	115	413000	489
PCB-054	PCB-054	2.52 U	1.35 U	158	131	144	4.43 U	197	8.96 U
PCB-055	PCB-055	75.7	3.13 U	34.2 U	1070	851	10.9 U	1260	19.5 U
PCB-056	PCB-056	961	284	46700	33700	40200	252	46000	284
PCB-057	PCB-057	10.7	6.95	856	463	630 J	10.6 U	662 J	18.7 U
PCB-058	PCB-058	29.4	20.2	645	302	498	10.7 U	699	19.1 U
PCB-059/062/075	PCB-059/062/075	3170	2200	17300	7720	13100	4270	20300	2680
PCB-060	PCB-060	26400	22200	60100	23200	54800	32900	76200	21500
PCB-061/070/074/076	PCB-CE12	64400	50500	428000	217000	407000	78400	551000	53700
PCB-063	PCB-063	1610	759	12700	5050	11600	1490	16800	564
PCB-064	PCB-064	2440	494	109000	43700	102000	971	131000	472
PCB-066	PCB-066	104000	84300	311000	132000	299000	131000	410000	105000
PCB-067	PCB-067	111	42.4	1960	2330	2130	87.6	2610	45.1
PCB-068	PCB-068	333	158	1390	671	1120	376	1640	220
PCB-072	PCB-072	102	50.1	2960	1440	2470	62.6	3460	67.6
PCB-073	PCB-073	6.11	7.14	25.3 U	1620	18 U	3.93 U	562	49.7
PCB-077	PCB-077	4640	4480	9690	3880	8640	6110	11500	5070
PCB-078	PCB-078	8.46 U	3.09 U	32.4 U	34.5 U	19.3 U	10.4 U	48.4 U	19.9 U
PCB-079	PCB-079	7.22 U	80.2	27.2 U	29.6 U	16.3 U	8.85 U	40.9 U	16.4 U

Appendix D
Tissue Analytical Results

	Location ID	PB015_A	PB015_A	PB015_A	PB016.2	PB019.1	PB019.1	PB019.1	PB019.1
	Sample ID	PB01-I-A-BCR-W-007-COMP-201106	PB01-I-A-BCR-W-009-COMP-201106	PB01-I-B-BRS-W-001-COMP-201106	PB01-F-A-GKF-W-003-COMP-201106	PB01-F-A-SAS-W-005-20110622	PB01-I-B-BRS-W-012-20110621	PB01-I-B-BRS-W-014-20110621	PB01-I-B-BRS-W-015-20110621
	Sample Date	6/22/2011	6/22/2011	6/20/2011	6/15/2011	6/22/2011	6/21/2011	6/21/2011	6/21/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201168.73	3201168.73	3201168.73	3201190	3201152.87	3201152.87	3201152.87	3201152.87
	Y	13836254.66	13836254.66	13836254.66	13836042	13835753.58	13835753.58	13835753.58	13835753.58
	Scientific_Name	Callinectes sapidus	Callinectes sapidus	Penaeus aztecus	Fundulus grandis	Cynoscion arenarius	Penaeus aztecus	Penaeus aztecus	Penaeus aztecus
	Size_Class	>2 to =<7.5	>2 to =<7.5	>7.5 to =<13	=<15	=<15	>7.5 to =<13	>7.5 to =<13	>7.5 to =<13
	Tissue_Category	Sedentary	Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-017	PCB-017	32.9	27.2	2790	10300	7680	4980	4620	3960
PCB-018/030	PCB-018/030	56.9	36.2	4200	17800	15700	9880	9070	7980
PCB-019	PCB-019	6.98 U	11.1 U	113 J	1020	708	253 J	226	189 J
PCB-020/028	PCB-020/028	62400	89800	76000	71900	54500	96200	92300	76200
PCB-021/033	PCB-021/033	122	165	8030	6780	11800	14300	12700	10400
PCB-022	PCB-022	201	221	11500	11900	9770	16300	15400	13400
PCB-023	PCB-023	2.43 U	3.57 U	2.81 U	22.9	23.1	56.9 U	21.1 U	37.5 U
PCB-024	PCB-024	2.32 U	3.4 U	47.5	137	132	74.8 J	60.6 J	67 J
PCB-025	PCB-025	34.7	34.1	1610	2060	1360	2850	2540	2150
PCB-026/029	PCB-026/029	62.4	71.6	6780	7410	5940	9510	9240	7530
PCB-027	PCB-027	4.36 J	3.7 U	274	1050	785	608	544	505
PCB-031	PCB-031	662	702	56200	66000	42000	89800	85400	73900
PCB-032	PCB-032	54.3	56.1	2190	10600	6400	4330	4110	3530
PCB-034	PCB-034	9.1	9.36	149	205	250	246	242	205
PCB-035	PCB-035	14.6	19.3 J	614	14.5 J	7.15 U	722	843	722
PCB-036	PCB-036	6.1 U	10.1 U	9.13 U	3.31 U	6.92 U	130 U	65.9 U	66.6 U
PCB-037	PCB-037	5670	9160	7600	2120	704	10400	11600	9540
PCB-038	PCB-038	6.35 U	10.6 U	11 U	80.2	62.6	131 U	66.5 U	67.2 U
PCB-039	PCB-039	59.2	10.5 U	9.6 U	3.14 U	6.56 U	504	63.2 U	63.9 U
PCB-040/071	PCB-040/071	249 J	262 J	5750	32900	23300 J	13400	10400	8730
PCB-041	PCB-041	6.83 UJ	6.5 UJ	862	3840	4580 J	1540	1170	1110 J
PCB-042	PCB-042	52.7 J	55.4 J	6030	16100	12400 J	13800	11200	9060
PCB-043	PCB-043	5.06 UJ	20.5 J	10.6 U	2800	21.2 UJ	285 U	71.4 U	57.9 U
PCB-044/047/065	PCB-044/047/065	21300 J	28500 J	49800	106000	69700 J	102000	82400	68000
PCB-045/051	PCB-045/051	18.3 J	17.9 J	806	7570	5670 J	2080	1640	1460
PCB-046	PCB-046	2.56 UJ	2.85 UJ	142	855	1010 J	478 J	327	327 J
PCB-048	PCB-048	43 J	33.9 J	4010	11100	15800 J	10500	7640	6420
PCB-049/069	PCB-049/069	123 J	97.7 J	38800	109000	53000 J	90900	64200	56400
PCB-050/053	PCB-050/053	10.8 J	9.12 J	946	8750	3300 J	3020	2000	2050
PCB-052	PCB-052	170 J	166 J	54300	182000	85300 J	124000	81900	80400
PCB-054	PCB-054	3.99 U	5.64 U	13.7	71.7	85.1	110 U	36.9 U	48.6 U
PCB-055	PCB-055	6.97 UJ	157 J	31.2 U	495	17.1 UJ	232 U	1020	85.6 U
PCB-056	PCB-056	201 J	288 J	26000	21000	15900 J	44700	39400	33100
PCB-057	PCB-057	6.68 UJ	9.49 UJ	363	383	302 J	877	559	466
PCB-058	PCB-058	6.81 UJ	12.8 J	284	277	225 J	648	501	343
PCB-059/062/075	PCB-059/062/075	1880 J	2480 J	4070	8460	5840 J	7910	5980	5470
PCB-060	PCB-060	22200 J	29200 J	22800	31500	25000 J	39800	33100	27900
PCB-061/070/074/076	PCB-CE12	48600 J	66200 J	172000	227000	168000 J	356000	289000	261000
PCB-063	PCB-063	798 J	993 J	4490	6320	4870 J	8820	6760	5760
PCB-064	PCB-064	356 J	353 J	18300	55900	35600 J	33800	28900	24800
PCB-066	PCB-066	88900 J	123000 J	117000	175000	121000 J	205000	174000	157000
PCB-067	PCB-067	40.7 J	50.7 J	1630	1170	1120 J	3450	2540	2150
PCB-068	PCB-068	186 J	239 J	546	753	524 J	1130	803	630
PCB-072	PCB-072	50.2 J	58 J	1090	1420	1070 J	2200	1700	1440
PCB-073	PCB-073	26.7 J	4.45 UJ	357	5.64 U	1330 J	913 J	571	549
PCB-077	PCB-077	5130 J	7540 J	7510	4400	1370 J	10400	10200	8830
PCB-078	PCB-078	7.11 UJ	10.1 UJ	31.2 U	15.3 U	16.2 UJ	218 U	55.2 U	80.4 U
PCB-079	PCB-079	5.85 UJ	8.32 UJ	27.2 U	13.2 U	13.9 UJ	183 U	46.2 U	67.3 U

Appendix D
Tissue Analytical Results

	Location ID	PB019.1	PB019.1	PB019.1	PB019.2	PB019_A	PB019_A	PB024.1	PB024.1
	Sample ID	PB01-I-B-BRS-W-019-20110621	PB01-I-B-BRS-W-022-20110622	PB01-I-B-BRS-W-023-20110622	PB01-I-A-OYS-W-001-COMP-201106	PB01-F-A-GKF-W-005-COMP-201106	PB01-I-A-BCR-W-008-COMP-201106	PB01-F-A-GM-W-001-20110615	PB01-F-A-GM-W-002-20110615
	Sample Date	6/21/2011	6/22/2011	6/22/2011	6/28/2011	6/21/2011	6/23/2011	6/15/2011	6/15/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201152.87	3201152.87	3201152.87	3201194.8	3201314.96	3201314.96	3201090.96	3201090.96
	Y	13835753.58	13835753.58	13835753.58	13835735.1	13835750.59	13835750.59	13835160.37	13835160.37
	Scientific_Name	Penaeus aztecus	Penaeus aztecus	Penaeus aztecus	Crassostrea virginica	Fundulus grandis	Callinectes sapidus	Brevoortia patronus	Brevoortia patronus
	Size_Class	>7.5 to =<13	>7.5 to =<13	>7.5 to =<13	>2 to =<7.5	=<15	>2 to =<7.5	=<15	=<15
	Tissue_Category	Migratory	Migratory	Migratory	Sedentary	Sedentary	Sedentary	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-017	PCB-017	4970	5380	5500	11800	20100	94.2	11600	11600
PCB-018/030	PCB-018/030	10700	11100	12300	22800	27300	72.1	24700	25800
PCB-019	PCB-019	226	313	317	1830	2070	6.76 U	1180	1140
PCB-020/028	PCB-020/028	121000	99400	105000	69700	160000	75800	72300	67300
PCB-021/033	PCB-021/033	15700	14700	14800	18900	13600	237	20300	18500
PCB-022	PCB-022	18700	18900	18400	14400	26500	553	15000	13600
PCB-023	PCB-023	41.3 U	15.2	14.1 U	25.2 J	58.6	2.76 U	31.5	28.5 J
PCB-024	PCB-024	70.6 J	82.1 J	79.4 J	3.76 U	4.11 U	2.63 U	145	155
PCB-025	PCB-025	3060	2660	2770	2490	4090	92.5	2810	2670
PCB-026/029	PCB-026/029	11000	9880	10200	8890	14700	175	8680	8170
PCB-027	PCB-027	626	627	662	1040	2110	8.12	1290	1260
PCB-031	PCB-031	107000	92600	96200	62200	124000	2130	68800	64600
PCB-032	PCB-032	4740	5470	5450	8700	18900	211	9790	9550
PCB-034	PCB-034	298 J	222	250	402	411	30.2	389	373
PCB-035	PCB-035	912	838	828	864	10.6 U	17.8 J	80.5	66.1
PCB-036	PCB-036	73.4 U	14.5 U	49.9 U	11.8 U	10.4 U	5.54 U	17 U	39.5 U
PCB-037	PCB-037	13000	11300	10500	6960	4170	6040	2470	2330
PCB-038	PCB-038	74.1 U	78.1	49.2 U	130	204	5.77 U	94 J	94.3 J
PCB-039	PCB-039	609	13.4 U	46 U	12.4 U	873	5.77 U	16.3 U	37.9 U
PCB-040/071	PCB-040/071	12100	13000	12600	29800	64800	832	35000	33000
PCB-041	PCB-041	1200	1870	1650	6410	8420	9.28 U	5540	4690
PCB-042	PCB-042	13500	14100	13600	16400	30900	249	21800	20700
PCB-043	PCB-043	1030	19 U	44.2 U	2470	6940	51	25.6 U	52.3 U
PCB-044/047/065	PCB-044/047/065	99600	96800	95600	75600	181000	29100	84600	82000
PCB-045/051	PCB-045/051	1990	2360	2240	9420	13800	34.3 J	9660	8950
PCB-046	PCB-046	399 J	487	444	1650	1210	4.3 U	2020	1960
PCB-048	PCB-048	9100	9580	9400	16300	26200	92	19300	18600
PCB-049/069	PCB-049/069	84500	80300	81400	60800	188000	579	73500	72000
PCB-050/053	PCB-050/053	2460	2830	2710	8350	14300	18.6	9490	9060
PCB-052	PCB-052	110000	109000	108000	97900	312000	533	118000	116000
PCB-054	PCB-054	51.2 U	19.8	27.6 J	193	114	5.36 U	95.6	100
PCB-055	PCB-055	1720	1480	1820 J	637	16.1 U	161	31 U	1310
PCB-056	PCB-056	43300	45300	43700	37300	43700	630	37100	34300
PCB-057	PCB-057	610	612	610	335	849	16.6	393	390
PCB-058	PCB-058	525	505	491	333	545	37	274	320
PCB-059/062/075	PCB-059/062/075	7720	7430	7190	6500	14600	2580	6380	6120
PCB-060	PCB-060	39300	41000	38700	19000	64100	24700	23200	21400
PCB-061/070/074/076	PCB-CE12	325000	324000	317000	177000	448000	60800	211000	196000
PCB-063	PCB-063	7930	7930	7660	4050	12400	1250	4990	4500
PCB-064	PCB-064	35200	36800	36000	37700	105000	1150	45300	42600
PCB-066	PCB-066	200000	191000	191000	113000	330000	108000	123000	114000
PCB-067	PCB-067	2960	2780	2860	2230	2460	86.1	2170	2020
PCB-068	PCB-068	1040	944	950	553	1310	316	593	559
PCB-072	PCB-072	2110	1910	1890	1090	2290	127	1240	1260
PCB-073	PCB-073	88.4 U	801	910	12.5 U	17.2 U	8.65 J	2010	2090
PCB-077	PCB-077	12000	9820	9460	6240	9280	5700	4560	4080
PCB-078	PCB-078	116 U	21.2 U	64.9 U	13.2 U	15 U	11 U	29.6 U	52.4 U
PCB-079	PCB-079	1100	17.9 U	938	11.5 U	12.9 U	9.05 U	25.4 U	44.8 U

Appendix D
Tissue Analytical Results

	Location ID	PB024.4	PB025_A	PB026.1	PB032_A	PB037.2	PB037.4	PB037.5	PB037.6
	Sample ID	PB01-I-A-BCR-W-005-COMP-201106	PB01-F-A-GM-W-004-20110615	PB01-F-A-STM-W-002-20110616	PB02-F-A-PNF-W-009-20110617	PB02-F-A-STM-W-006-20110616	PB02-I-B-BCR-W-001-COMP-201106	PB02-I-B-BRS-W-001-COMP-201106	PB02-I-A-BCR-W-002-COMP-201106
	Sample Date	6/20/2011	6/15/2011	6/15/2011	6/17/2011	6/16/2011	6/17/2011	6/17/2011	6/16/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201319	3201214.42	3201153.65	3201407.03	3201346.97	3201504	3201380	3201402
	Y	13835188	13835154.42	13835079.21	13834542.25	13834038.02	13833530	13834151	13833775
	Scientific_Name	Callinectes sapidus	Brevoortia patronus	Mugil cephalus	Lagodon rhomboides	Mugil cephalus	Callinectes sapidus	Penaeus aztecus	Callinectes sapidus
	Size_Class	>2 to =<7.5	=<15	=<15	=<15	=<15	>7.5 to =<13	>7.5 to =<13	>2 to =<7.5
	Tissue_Category	Sedentary	Migratory	Migratory	Migratory	Migratory	Migratory	Migratory	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-017	PCB-017	549	18200	12100	4500	19100	61.9	2630	65
PCB-018/030	PCB-018/030	1030	40200	33700	16400	47400	184	4110	133
PCB-019	PCB-019	52 J	2140	1760	640	2210	9.03	146	8.87 U
PCB-020/028	PCB-020/028	72000	113000	112000	92600	140000	74200	64400	64600
PCB-021/033	PCB-021/033	1030	31000	15000	2980	26100	140	7950	142
PCB-022	PCB-022	1120	24700	19600	7320	25600	660	9790	517
PCB-023	PCB-023	7.69 U	52 J	43.9	25.4 J	64.3	2.42 U	5.91	1.58 U
PCB-024	PCB-024	7.98 U	231	276	205	300 J	2.31 U	35.8 J	1.64 U
PCB-025	PCB-025	209	4490	3900	1160	5070	74.8	1320	69.4
PCB-026/029	PCB-026/029	603	13800	14100	9410	17500	142 J	5840	134
PCB-027	PCB-027	76.4 J	2110	1490	388	2210	7.93	263	9.57
PCB-031	PCB-031	5330	110000	103000	81200	133000	1640	52100	1740
PCB-032	PCB-032	819	15700	10700	1780	16500	107	2420	113
PCB-034	PCB-034	60.5	543	392	175	592	11.1	107	8.86 J
PCB-035	PCB-035	43.6 J	51.1	49.9	28.1 U	35.6 U	21.1	484	13.2 J
PCB-036	PCB-036	85.2	19.5 U	24.9 U	26.3 U	33.6 U	6.5 U	5.2 U	5.15 U
PCB-037	PCB-037	5970	3420	3190	1070	6170	5990	6720	5670
PCB-038	PCB-038	38.3 J	137	132	133	188 J	6.77 U	6.29 U	26.7 J
PCB-039	PCB-039	108 J	18.7 U	23.9 U	24.8 U	31.9 U	6.77 U	5.47 U	47.4 J
PCB-040/071	PCB-040/071	3180	58200	31000	7430	54000	486 J	4800	580
PCB-041	PCB-041	50.7 J	9960	3180	852	6450	6.36 UJ	797	4.86 U
PCB-042	PCB-042	1410	36100	18700	13800	32400	316 J	4850	362
PCB-043	PCB-043	286	37.1 U	32 U	1800	48.4 U	66.5 J	381	81
PCB-044/047/065	PCB-044/047/065	38700	137000	125000	122000	181000	44300 J	40000	35000
PCB-045/051	PCB-045/051	229	15900	12800	5970	19100	40 J	647	49 J
PCB-046	PCB-046	48.7 J	3450	2350	410	3510	6.54 J	107	4.72 U
PCB-048	PCB-048	752	31600	16800	5140	32300	139 J	3650	91.9
PCB-049/069	PCB-049/069	2670	117000	104000	105000	155000	478 J	32100	661
PCB-050/053	PCB-050/053	213	16100	11300	2270	17600	36.6 J	693	30.5
PCB-052	PCB-052	3320	189000	172000	190000	243000	808 J	44700	813
PCB-054	PCB-054	13.5 U	163	183	104	261	3.96 U	12.4	2.73 U
PCB-055	PCB-055	26.5 U	30 U	1340	738	2320	129 J	391 J	7.77 U
PCB-056	PCB-056	1960	63000	47800	11300	69800	974 J	22300	631
PCB-057	PCB-057	44.2 J	709	695	410	996	11.6 UJ	325	12.2 J
PCB-058	PCB-058	33.4 J	429	379	271	564 J	26.2 J	221	17.3
PCB-059/062/075	PCB-059/062/075	3400	10400	10100	9860	14500	3400 J	3410	2880
PCB-060	PCB-060	26500	40400	36200	37800	47400	38800 J	20900	31900
PCB-061/070/074/076	PCB-CE12	68000	333000	300000	282000	402000	89100 J	152000	64300
PCB-063	PCB-063	1740	8260	7550	8180	10200	1720 J	4230	1340
PCB-064	PCB-064	4180	73700	58400	58200	82900	1420 J	15700	1590
PCB-066	PCB-066	107000	191000	180000	190000	243000	163000 J	104000	103000
PCB-067	PCB-067	194	3560	3390	981	4750	127 J	1440	78
PCB-068	PCB-068	435	804	804	991	1060	305 J	404	240
PCB-072	PCB-072	226	1820	1640	2000	2200	64.3 J	816	82.1
PCB-073	PCB-073	17 U	3450	2340	36.4 U	4570	4.35 UJ	4.4 U	3.2 U
PCB-077	PCB-077	5270	7200	5170	784	7590	8400 J	6310	5690
PCB-078	PCB-078	25.2 U	28.6 U	39.8 U	40.8 U	61.7 U	12.4 UJ	8.84 U	7.39 U
PCB-079	PCB-079	21.5 U	24.5 U	34.1 U	1000	53.4 U	10.2 UJ	7.71 U	104

Appendix D
Tissue Analytical Results

	Location ID	PB037_A	PB047.1_A	PB047.3	PB048.3	PB048.3	PB048.3	PB049_A	PB049_A
	Sample ID	PB02-I-A-BCR-W-004-COMP-201106	PB02-F-A-PNF-W-002-20110615	PB02-I-A-BCR-W-001-COMP-201106	PB02-F-A-GM-W-001-20110616	PB02-F-A-GM-W-002-20110616	PB02-F-A-STM-W-001-20110616	PB02-F-A-GKF-W-001-COMP-201106	PB02-I-A-BCR-W-003-COMP-201106
	Sample Date	6/19/2011	6/15/2011	6/19/2011	6/16/2011	6/16/2011	6/16/2011	6/15/2011	6/22/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201325.97	3201461.79	3201645	3201519.15	3201519.15	3201519.15	3201468.39	3201468.39
	Y	13833885.45	13833007.68	13832925	13832869.89	13832869.89	13832869.89	13832722.8	13832722.8
	Scientific_Name	Callinectes sapidus	Lagodon rhomboides	Callinectes sapidus	Brevoortia patronus	Brevoortia patronus	Mugil cephalus	Fundulus grandis	Callinectes sapidus
	Size_Class	>2 to =<7.5	=<15	>2 to =<7.5	=<15	=<15	=<15	=<15	>2 to =<7.5
	Tissue_Category	Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-017	PCB-017	59.7	4390	53.3 J	20400	20300	16900	25700	36.4
PCB-018/030	PCB-018/030	79.2	25400	51.8	46400	46100	41100	49700	34.5
PCB-019	PCB-019	7.05 U	806	12.6 U	2700	2540	1810	2250	11.4 U
PCB-020/028	PCB-020/028	185000	132000	82700	124000	122000	120000	191000	78600
PCB-021/033	PCB-021/033	129	2330	97.3	35600	34900	23600	17600	209
PCB-022	PCB-022	506	9850	274	28100	27200	22800	30500	270
PCB-023	PCB-023	5.37 U	25.9 J	7.14 U	57	50.8	52.6	70.1	3.89 U
PCB-024	PCB-024	5.88 U	249	7.42 U	267	295	237	319	4.12 U
PCB-025	PCB-025	64	1430	44.3 J	4940	4620	4110	5020	42.8
PCB-026/029	PCB-026/029	86.6	13500	59.8	15400	14400	14900	19800	56.7
PCB-027	PCB-027	7.13	434	7.21 U	2410	2270	1860	2480	3.52 J
PCB-031	PCB-031	2250	120000	864	121000	119000	114000	159000	859
PCB-032	PCB-032	133	2050	105	18000	17200	14400	24700	79.1
PCB-034	PCB-034	11.8 J	186	15.2 J	543	513	463	496	10.8
PCB-035	PCB-035	12 U	50.6 U	14.7 J	18.4 U	24.6 U	40.3 U	1060 U	9.7 U
PCB-036	PCB-036	11.6 U	47.7 U	11.5 U	17.5 U	23.2 U	38 U	1070 U	8.67 U
PCB-037	PCB-037	14300	1430	6410	4270	3850	6320	4210	6060
PCB-038	PCB-038	11.8 U	205	39.9	160	189	144	1080 U	9.11 U
PCB-039	PCB-039	82.9	45.2 U	61.3	16.8 U	22 U	36 U	1050 U	8.17 U
PCB-040/071	PCB-040/071	416	12400	870	13.6 U	10 U	54900	109000	301
PCB-041	PCB-041	23.8	786	28.1 U	17 U	11.8 U	6600	11300	11.4 U
PCB-042	PCB-042	341	27800	169	14.7 U	10.6 U	33200	40600	113
PCB-043	PCB-043	102	82.9 U	70.7	15.1 U	11.7 U	5970	15300	33.4
PCB-044/047/065	PCB-044/047/065	87500	226000	52100	12.9 U	9.5 U	163000	272000	26500
PCB-045/051	PCB-045/051	61.7	9100	63.1	17500	16900	17400	23600	18.9
PCB-046	PCB-046	14.2 U	521	18 U	3910	3670	3220	2160	5.01 U
PCB-048	PCB-048	65.3	5320	60.2 J	14.1 U	10.4 U	34100	42500	27.8 J
PCB-049/069	PCB-049/069	381	201000	281	12.2 U	9.03 U	136000	283000	102
PCB-050/053	PCB-050/053	39.6	2330	24.5 J	16500	16400	15100	23900	8.24
PCB-052	PCB-052	342	341000	219	14.3 U	10.2 U	216000	437000	118
PCB-054	PCB-054	8.36 U	151 J	10.3 U	198	197	184	126	5.98 U
PCB-055	PCB-055	25.2 U	91.9 U	22 U	1770	2080	1970	1590	238
PCB-056	PCB-056	392	21900	247	69600	65900	68200	49400	340
PCB-057	PCB-057	23.8 U	661	21.5 U	799	732	885	868 U	9.2 U
PCB-058	PCB-058	24.3 U	464 J	21.6 U	562	474	434	932 U	9.51 U
PCB-059/062/075	PCB-059/062/075	6120	17600	4220	11.2 U	8.12 U	13000	22100	2180
PCB-060	PCB-060	59900	82900	43700	46700	43300	45900	86000	24700
PCB-061/070/074/076	PCB-CE12	249000	560000	92700	370000	345000	364000	563000	53700
PCB-063	PCB-063	137000	17800	1640	9430	8620	9330	18000	692
PCB-064	PCB-064	1320	120000	869	10.6 U	7.57 U	78100	154000	412
PCB-066	PCB-066	24 U	396000	154000	216000	204000	219000	425000	94400
PCB-067	PCB-067	95.6	1640	89.8 J	4050	3720	4460	2590	39.2 J
PCB-068	PCB-068	353	1390	288	838	796	762	1910	179
PCB-072	PCB-072	57	2900	78.9	1880	1820	1720	4020	38.2
PCB-073	PCB-073	9.2 U	1730	18.5 U	11.2 U	8.26 U	57.3 U	24.5 U	5.88 U
PCB-077	PCB-077	11700	850	7880	7960	7440	7230	11600	4900
PCB-078	PCB-078	23.3 U	86.1 U	20.9 U	29 U	37 U	63.9 U	910 U	9.28 U
PCB-079	PCB-079	173	74.5 U	126	24.9 U	32 U	1200 J	766 U	7.59 U

Appendix D
Tissue Analytical Results

	Location ID	PB052.1	PB052.1	PB053.2	PB053.2	PB053_B	PB056_A	PB056_A	PB057.2
	Sample ID	PB02-F-A-SAS-W-002-20110616	PB02-F-A-STM-W-003-20110616	PB02-F-A-GKF-W-025-20110621	PB02-F-A-GKF-W-029-20110622	PB02-F-A-GKF-W-013-20110618	PB02-F-A-GKF-W-010-20110618	PB02-F-A-GKF-W-011-20110618	PB03-F-A-GM-W-001-20110617
	Sample Date	6/16/2011	6/16/2011	6/21/2011	6/22/2011	6/18/2011	6/18/2011	6/18/2011	6/17/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201515.24	3201515.24	3201266.16	3201266.16	3201390.48	3201420.22	3201420.22	3201603.32
	Y	13832564.31	13832564.31	13832433.69	13832433.69	13832440.54	13832183.54	13832183.54	13832054.52
	Scientific_Name	Cynoscion arenarius	Mugil cephalus	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Brevoortia patronus
	Size_Class	=<15	=<15	=<15	=<15	=<15	=<15	=<15	=<15
	Tissue_Category	Migratory	Migratory	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-017	PCB-017	12400	27400	52000 J	39900	37800 J	26700	27000	19800
PCB-018/030	PCB-018/030	28000	74300	96700 J	84900	81800 J	54600	60900	43100
PCB-019	PCB-019	1080	3530	4440	3650	3930	2210	2440	2020
PCB-020/028	PCB-020/028	101000	218000	441000 J	332000	307000 J	257000	197000	123000
PCB-021/033	PCB-021/033	21900	40000	38400 J	31300	37200 J	21400	21800	33000
PCB-022	PCB-022	17800	42400	79700 J	59400	56800 J	43600	33500	27000
PCB-023	PCB-023	50.9 J	91	168 J	124	136 J	91.4	79.2	59.1
PCB-024	PCB-024	208	493	546 J	469	525 J	301 J	402	283
PCB-025	PCB-025	2620	7490	12100 J	8870	8460 J	6400	5560	4630
PCB-026/029	PCB-026/029	11000	26600	44900 J	33600	31800 J	24200	20600	14500
PCB-027	PCB-027	1350	3180	5440 J	4540	4240 J	2820	2980	2190
PCB-031	PCB-031	81600	212000	366000 J	274000	250000 J	206000	166000	115000
PCB-032	PCB-032	11300	24200	54700 J	43200	37200 J	27800	25500	16800
PCB-034	PCB-034	389	690	1090 J	759	901 J	585	548	521
PCB-035	PCB-035	31.4 U	131	25.9 UJ	21 U	18.3 UJ	36.5 U	45.3 U	55.1 U
PCB-036	PCB-036	29.7 U	46.4 U	25.6 UJ	20.8 U	17.1 UJ	34.1 U	42.3 U	53.3 U
PCB-037	PCB-037	1160	10800	7640 J	5920	6720 J	6130	4060	3890
PCB-038	PCB-038	168	294	497 J	360	427 J	364	250	137
PCB-039	PCB-039	28.1 U	44 U	23.9 UJ	19.4 U	2450 J	1450	1380	50.5 U
PCB-040/071	PCB-040/071	43900	77500	165000 J	135000	119000 J	82400 J	110000	62000
PCB-041	PCB-041	6740	9990	24700 J	19800	18800 J	11800 J	12800	12000
PCB-042	PCB-042	19400	45100	89100 J	65300	58900 J	43400 J	54600	39100
PCB-043	PCB-043	4010	9410	423 UJ	463 U	12900 J	35.1 UJ	75.2 U	28.5 U
PCB-044/047/065	PCB-044/047/065	115000	252000	457000 J	366000	327000 J	242000 J	318000	148000
PCB-045/051	PCB-045/051	7580	26600	37200 J	31900	27000 J	17100 J	27000	17300
PCB-046	PCB-046	1480	5350	3960 J	3070	2960 J	1780 J	2780	3790
PCB-048	PCB-048	28200	45800	66500	41900	54300 J	27500 J	52200	38700
PCB-049/069	PCB-049/069	86000	208000	440000 J	349000	303000 J	230000 J	302000	131000
PCB-050/053	PCB-050/053	5000	23500	32200 J	32800	26300 J	17500 J	28400	16200
PCB-052	PCB-052	148000	330000	648000 J	537000	479000 J	359000 J	497000	194000
PCB-054	PCB-054	165	345 J	283 J	249	272 J	246 J	195	200
PCB-055	PCB-055	1430	3280	51.5 UJ	33.7 U	2380 J	2150 J	1190 J	2110
PCB-056	PCB-056	31600	116000	126000 J	92500	86600 J	68300 J	70400	71100
PCB-057	PCB-057	567	1530	2600 J	1900	1790 J	1380 J	1540	843
PCB-058	PCB-058	357	807	1490 J	1060	1160 J	5350 J	717	480
PCB-059/062/075	PCB-059/062/075	9590	20300	40300 J	32800	29100 J	21000 J	26500	11200
PCB-060	PCB-060	48700	82300	174000 J	148000	135000 J	110000 J	107000	48500
PCB-061/070/074/076	PCB-CE12	307000	623000	1190000 J	928000	825000 J	693000 J	730000	381000
PCB-063	PCB-063	8400	16000	38800 J	30700	27100 J	22100 J	22400	10300
PCB-064	PCB-064	61400	121000	262000 J	220000	179000 J	133000 J	161000	76400
PCB-066	PCB-066	217000	372000	805000 J	638000	576000 J	497000 J	501000	230000
PCB-067	PCB-067	2060	7520	7230 J	5170	5280 J	3710 J	4330	4240
PCB-068	PCB-068	655	1190	3020 J	2340	2190 J	1740 J	2010	21.3 U
PCB-072	PCB-072	1530	2630	6400 J	5190	4720 J	3740 J	4000	1830
PCB-073	PCB-073	63.4 U	61.1 U	14800 J	10900	26.4 UJ	7410 J	9730	4710
PCB-077	PCB-077	2940	13100	18500 J	16000	17400 J	15100	13900	7360
PCB-078	PCB-078	56.7 U	78.3 U	47.2 UJ	30.9 U	28.6 UJ	37.5 UJ	69.7 U	23.5 U
PCB-079	PCB-079	969	1820	40.3 UJ	26.4 U	2590 J	2220 J	1870	20.2 U

Appendix D
Tissue Analytical Results

	Location ID	PB057.2	PB057.2	PB057.2	PB057_B	PB057_B	PB057_B	PB058.1	PB058.1
	Sample ID	PB03-F-A-STM-W-001-20110617	PB03-F-A-STM-W-001-COMP-201106	PB03-F-A-STM-W-002-20110617	PB03-F-A-GKF-W-001-20110615	PB03-F-A-GKF-W-006-20110617	PB03-F-A-PNF-W-001-COMP-201106	PB03-F-A-GM-W-003-20110618	PB03-F-A-GM-W-004-20110618
	Sample Date	6/17/2011	6/17/2011	6/17/2011	6/15/2011	6/17/2011	6/15/2011	6/18/2011	6/18/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201603.32	3201603.32	3201603.32	3201644.06	3201644.06	3201644.06	3201682.3	3201682.3
	Y	13832054.52	13832054.52	13832054.52	13832071.63	13832071.63	13832071.63	13832011.93	13832011.93
	Scientific_Name	Mugil cephalus	Mugil cephalus	Mugil cephalus	Fundulus grandis	Fundulus grandis	Lagodon rhomboides	Brevoortia patronus	Brevoortia patronus
	Size_Class	=<15	=<15	=<15	=<15	=<15	=<15	=<15	=<15
	Tissue_Category	Migratory	Migratory	Migratory	Sedentary	Sedentary	Migratory	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-017	PCB-017	6460	11900	12300 J	34800	47500	4270	22500	34400
PCB-018/030	PCB-018/030	17400	29700	33700 J	84600	112000	18300	49600	88100
PCB-019	PCB-019	846	1810	1600	3000	4110	882	3070	4620
PCB-020/028	PCB-020/028	77000	91100	99700 J	261000	312000	107000	138000	143000
PCB-021/033	PCB-021/033	10400	15700	15800 J	24300	40800	2890	39700	48200
PCB-022	PCB-022	13700	16600	17700 J	44600	56500	7540	31900	39000
PCB-023	PCB-023	33.8 J	36.8	51.5 J	111	123	24.5	72.2	66.2
PCB-024	PCB-024	147	178	251 J	499	675	161	288	468
PCB-025	PCB-025	2470	3050	3320 J	7070	9550	1120	5260	6240
PCB-026/029	PCB-026/029	8680	10800	11900 J	26400	34400	10300	16500	18800
PCB-027	PCB-027	791	1320	1410 J	4310	5410	416	2490	4160
PCB-031	PCB-031	67600	82400	88500 J	220000	275000	103000	132000	143000
PCB-032	PCB-032	6020	10200	11000 J	35800	43700	2130	19100	28500
PCB-034	PCB-034	224	277	338 J	647	863	144	567	539
PCB-035	PCB-035	54.8	47	65.1 J	43.4 U	35.4 U	10.3	125	107
PCB-036	PCB-036	21.4 U	6.58 U	40.3 UJ	41.7 U	33.5 U	4.15 U	16.1 U	10.7 U
PCB-037	PCB-037	2870	4070	2730 J	4330	6760	903	5510	8280
PCB-038	PCB-038	106	82.8	102 J	273	397	143	146	119
PCB-039	PCB-039	21.1 U	592	38.2 UJ	40.5 U	31.3 U	148	15.2 U	1190
PCB-040/071	PCB-040/071	21400 J	27900	30600 J	127 U	134000	8590	69100 J	103000
PCB-041	PCB-041	2620 J	3630	3980 J	166 U	22000	798	15100 J	23500
PCB-042	PCB-042	12400 J	17700	19400 J	140 U	70100	14900	43900 J	63600
PCB-043	PCB-043	23.5 UJ	3740	80.5 UJ	146 U	17.8 U	1980	35.6 UJ	9760
PCB-044/047/065	PCB-044/047/065	78400 J	99900	111000 J	124 U	385000	132000	164000 J	233000
PCB-045/051	PCB-045/051	7430 J	11900	11900 J	30600	37200	7490	20200 J	40700
PCB-046	PCB-046	1310 J	2310	2160 J	3130	4230	463	4530 J	10900
PCB-048	PCB-048	13000 J	17800	20100 J	137 U	62500	4080	43900 J	55500
PCB-049/069	PCB-049/069	67600 J	89400	96900 J	118 U	359000	122000	140000 J	175000
PCB-050/053	PCB-050/053	5920 J	9170	9680 J	32300	39400	2160	18500 J	38500
PCB-052	PCB-052	97100 J	140000	143000 J	140 U	612000	209000	209000 J	312000
PCB-054	PCB-054	128 J	144	149	212	271	115	237 J	311
PCB-055	PCB-055	167 J	613	1520 J	149 U	3790	399 J	2300 J	1720
PCB-056	PCB-056	34400 J	40300	44400 J	67900	87900	12300	80200 J	81200
PCB-057	PCB-057	529 J	504	669 J	1350	1690	259 J	942 J	817
PCB-058	PCB-058	270 J	294	371 J	713	878	256	467 J	16.7 U
PCB-059/062/075	PCB-059/062/075	6760 J	7570	9050 J	106 U	32400	10300	12600 J	17400
PCB-060	PCB-060	26800 J	27800	32900 J	113000	127000	42500	53400 J	52100
PCB-061/070/074/076	PCB-CE12	201000 J	224000	268000 J	730000	859000	328000	410000 J	391000
PCB-063	PCB-063	5720 J	5420	7300 J	22200	25900	9080	11000 J	8930
PCB-064	PCB-064	37600 J	47400	51800 J	99.1 U	203000	77600	82800 J	120000
PCB-066	PCB-066	121000 J	137000	166000 J	508000	582000	230000	245000 J	216000
PCB-067	PCB-067	2590 J	2550	3270 J	3520	5190	829	4760 J	4550
PCB-068	PCB-068	508 J	418	612 J	1720	1880	623	867 J	750
PCB-072	PCB-072	1020 J	920	1280 J	3760	4190	1280	1900 J	1630
PCB-073	PCB-073	1700 J	13.3 U	2680 J	111 U	12800	24 U	4750 J	9.72 U
PCB-077	PCB-077	4380	5600	4350 J	13500	15600	602	8430	12200
PCB-078	PCB-078	21.7 UJ	15 U	66.8 UJ	140 U	57 U	18.4 U	23.9 UJ	15.5 U
PCB-079	PCB-079	18.4 UJ	12.7 U	57.5 UJ	122 U	48.7 U	15.6 U	20.5 UJ	1150

Appendix D
Tissue Analytical Results

	Location ID	PB058.1	PB059.1_A	PB059.1_A	PB059.3	PB059.4	PB059.4	PB059.5	PB063.1_A
	Sample ID	PB03-F-A-GM-W-005-20110618	PB03-F-A-GKF-W-003-20110615	PB03-I-A-BCR-W-003-COMP-201106	PB03-I-B-BCR-W-002-20110627	PB03-I-B-BCR-W-003-20110628	PB03-I-B-BCR-W-003-20110628DUP	PB03-I-A-BCR-W-001-COMP-201106	PB03-F-A-GKF-W-009-20110617
	Sample Date	6/18/2011	6/15/2011	6/19/2011	6/26/2011	6/27/2011	6/27/2011	6/27/2011	6/17/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201682.3	3201501.32	3201501.32	3201714.16	3201714.16	3201714.16	3201714	3201509.99
	Y	13832011.93	13831828.71	13831828.71	13831964.63	13831964.63	13831964.63	13831965	13831505.57
	Scientific_Name	Brevoortia patronus	Fundulus grandis	Callinectes sapidus	Callinectes sapidus	Callinectes sapidus		Callinectes sapidus	Fundulus grandis
	Size_Class	=<15	=<15	>2 to =<7.5	>7.5 to =<13	>7.5 to =<13		>2 to =<7.5	=<15
	Tissue_Category	Migratory	Sedentary	Sedentary	Migratory	Migratory		Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body		Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-017	PCB-017	36500	44900	59.5	128	226	216	62.1	30500
PCB-018/030	PCB-018/030	92700	106000	79.1	341	459	439	87.7	72900
PCB-019	PCB-019	4620	2980	6.57 J	20.3	20.2	18.3	8.74	3040
PCB-020/028	PCB-020/028	149000	312000	88600	72200	69200	67600	93400	197000
PCB-021/033	PCB-021/033	51000	33700	128	164	281	278	122 J	27600
PCB-022	PCB-022	41000	56000	320	307	578	553	308	34800
PCB-023	PCB-023	66.3	143	1.26 U	1.03 U	0.778 U	1.86 U	2.23 U	103
PCB-024	PCB-024	584 J	582	1.34 U	1.07 U	0.809 U	1.97 U	2.37 U	413
PCB-025	PCB-025	6550	8790	66.1	77.2	86.9	84.3	31.1	6790
PCB-026/029	PCB-026/029	19700	32000	146	183	294	291	61.1	23200
PCB-027	PCB-027	4440	4830	4.53 J	20.6	50.7	46.3	5.76	3800
PCB-031	PCB-031	149000	276000	1930	1710	2050	1960	1050	168000
PCB-032	PCB-032	29800	44900	128	213	549	512	115	26900
PCB-034	PCB-034	566	772	14.2	10.7	28.9	28.6	8.58	627
PCB-035	PCB-035	106	49.6 U	14.6 J	17.2	10.8 J	10.9 J	7.82 U	31.5 U
PCB-036	PCB-036	11.3 U	47.6 U	4.55 U	2.35 U	2.05 U	4.47 U	6.99 U	29.3 U
PCB-037	PCB-037	8360	6980	5630	7650	6220	5950	7760	4860
PCB-038	PCB-038	115	48.7 U	4.79 U	25.2	20.9	20.4	7.35 U	275
PCB-039	PCB-039	1170	46.3 U	4.29 U	58.5	39.6	35.6	53.3	28.1 U
PCB-040/071	PCB-040/071	104000	122000	659	1200	3620	3390	398	79900
PCB-041	PCB-041	20400	19400	22	42.3	3.78 U	7.43 U	21.1	11200
PCB-042	PCB-042	61900	59100	276	528	681	663	147	39600
PCB-043	PCB-043	9700	150 U	111	186	444	420	66.4	102 U
PCB-044/047/065	PCB-044/047/065	228000	356000	37300	50200	46400	43100	40800	213000
PCB-045/051	PCB-045/051	41800	34700	39	121	165	145	43.1	20400
PCB-046	PCB-046	11300	3490	5.38 J	19.1	21.5	22.8 J	3.58 U	2400
PCB-048	PCB-048	55000	47700	118	310	356	337	51.9	39900
PCB-049/069	PCB-049/069	173000	335000	526	940	1040	953	325	211000
PCB-050/053	PCB-050/053	40200	35200	22.4	106	149	136	27.6	21300
PCB-052	PCB-052	307000	556000	417	1500	1900	1720	458	329000
PCB-054	PCB-054	302	255	3.47 U	1.02 U	1.87 J	2.23 U	4.95 U	259
PCB-055	PCB-055	1360	2610 J	6.33 U	4.48 U	5 U	10.2 U	6.99 U	73.6 U
PCB-056	PCB-056	79300	83500	414	693	894	883	274	56600
PCB-057	PCB-057	822	1560	8.77 J	15.3	33.4	35.2	11.6	1250
PCB-058	PCB-058	14.5 U	834	6.39 U	4.37 U	16.9	15	7.07 U	658
PCB-059/062/075	PCB-059/062/075	16700	29500	2750	3670	3360	3130	3070	18700
PCB-060	PCB-060	51000	124000	32600	37100	34900	33700	36500	87200
PCB-061/070/074/076	PCB-CE12	379000	838000	72500	80500	72100	71300	82500	584000
PCB-063	PCB-063	8780	24600	1360	1360	1300	1260	1040	18400
PCB-064	PCB-064	117000	193000	1160	1790	2450	2280	532	114000
PCB-066	PCB-066	206000	558000	128000	135000	122000	124000	147000	398000
PCB-067	PCB-067	4410	4490	85.8	94.8	112	107	40	3650
PCB-068	PCB-068	744	1680	181	227	192	184	191	1430
PCB-072	PCB-072	1550	3880	72.6	57.2	117	116	42.2	3190
PCB-073	PCB-073	13.7 U	10600	2.88 U	3.17 U	2.31 U	4.69 U	3.13 U	6200
PCB-077	PCB-077	12400	16200	5980	8160	7250	6880	8710	13200
PCB-078	PCB-078	13.5 U	105 U	6.24 U	4.1 U	4.57 U	9.46 U	6.89 U	69.1 U
PCB-079	PCB-079	1100	91.7 U	5.1 U	101	4.03 U	8.19 U	116	57.9 U

Appendix D
Tissue Analytical Results

	Location ID	PB063.1_A	PB063.2_A	PB063.2_A	PB069_A	PB069_A	PB069_A	PB084.1	PB084.1
	Sample ID	PB03-F-A-GKF-W-010-20110617	PB03-F-A-GKF-W-005-20110615	PB03-F-A-GKF-W-013-20110617	PB03-F-A-GKF-W-002-20110615	PB03-F-A-GKF-W-007-20110617	PB03-I-A-BCR-W-002-COMP-201106	PB04-F-A-GKF-W-005-20110627	PB04-F-A-GKF-W-013-20110627
	Sample Date	6/17/2011	6/15/2011	6/17/2011	6/15/2011	6/17/2011	6/19/2011	6/27/2011	6/27/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201509.99	3201561.28	3201561.28	3201132.36	3201132.36	3201132.36	3200727.85	3200727.85
	Y	13831505.57	13831519.55	13831519.55	13830993.22	13830993.22	13830993.22	13829784.47	13829784.47
	Scientific_Name	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Callinectes sapidus	Fundulus grandis	Fundulus grandis
	Size_Class	=<15	=<15	=<15	=<15	=<15	>2 to =<7.5	=<15	=<15
	Tissue_Category	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-017	PCB-017	39700	37400	29600	47700	35200	162	23600	35400
PCB-018/030	PCB-018/030	96600	89200	63700	112000	81400	488	60200	88500
PCB-019	PCB-019	3530	3380	3520	4600	4330	38.5	2730	4160
PCB-020/028	PCB-020/028	313000	263000	224000	331000	241000	153000	113000	176000
PCB-021/033	PCB-021/033	38900	26300	23700	45300	32800	250	15500	27800
PCB-022	PCB-022	54100	44200	41500	55200	41700	344	24600	38200
PCB-023	PCB-023	129	88.6	88.2	140	107	2.31 U	43.9	65.7
PCB-024	PCB-024	599	471	427	694	562	2.62 U	323	522
PCB-025	PCB-025	9820	7980	6810	11300	8500	124	4820	7300
PCB-026/029	PCB-026/029	34300	28800	24500	37900	28400	398	14500	22500
PCB-027	PCB-027	4800	4240	3200	6100	4600	20.6	3000	4450
PCB-031	PCB-031	265000	229000	188000	284000	204000	2440	102000	157000
PCB-032	PCB-032	38600	36700	29200	43500	32100	211	21900	33900
PCB-034	PCB-034	857	670	590	1030	719	20.6	314	524
PCB-035	PCB-035	41.3 U	75.8 U	16.2 U	43.6 U	24.8 U	22.6 J	20.7	37
PCB-036	PCB-036	39.6 U	71.5 U	15.1 U	39.7 U	22.6 U	4 U	6.6 U	6.94 U
PCB-037	PCB-037	6220	5110	5350	7390	6360	12900	3120	6130
PCB-038	PCB-038	300	340	285	394	329	3.99 U	79.9	7.19 U
PCB-039	PCB-039	38.5 U	67.8 U	14.3 U	39.2 U	22.3 U	96.6	493	6.98 U
PCB-040/071	PCB-040/071	102000	115000	78800	164000	97900 J	1360	64700	102000
PCB-041	PCB-041	11500	13000	11100	18600	11500 J	49.3	10500	15100
PCB-042	PCB-042	47800	54800	40600	76800	45200 J	405	34900	50600
PCB-043	PCB-043	10900	14800	9170	21100	11800 J	416	6680	10500
PCB-044/047/065	PCB-044/047/065	285000	321000	215000	426000	245000 J	85700	175000	266000
PCB-045/051	PCB-045/051	23500	28200	19400	44200	23800 J	185	24800	36600
PCB-046	PCB-046	2600	2830	2140	5230	2780 J	29.1	3530	4940
PCB-048	PCB-048	47700	42900	29300	82800	46100 J	447	29400	48300
PCB-049/069	PCB-049/069	272000	305000	200000	409000	224000 J	1220	145000	225000
PCB-050/053	PCB-050/053	24100	32100	19700	46800	24200 J	178	25600	35900
PCB-052	PCB-052	438000	491000	319000	643000	346000 J	2260	263000	411000
PCB-054	PCB-054	302	241	244	320	290 J	4.86 U	174	253
PCB-055	PCB-055	3350	4690	1640	3190	2020 J	10.5 U	788	1260
PCB-056	PCB-056	75500	72000	59700	91300	63400 J	542	34000	51800
PCB-057	PCB-057	1440	1450	1150	1950	1250 J	30.7	602	915
PCB-058	PCB-058	852	772 J	665	1040	665 J	10.5 U	375	591
PCB-059/062/075	PCB-059/062/075	24600	26500	18600	37200	21800 J	6260	13800	21800
PCB-060	PCB-060	117000	108000	84100	129000	86200 J	53400	43500	68600
PCB-061/070/074/076	PCB-CE12	782000	747000	542000	945000	594000 J	138000	290000	471000
PCB-063	PCB-063	23600	22200	16800	29300	18500 J	2450	7810	12500
PCB-064	PCB-064	155000	169000	116000	228000	133000 J	2080	94000	147000
PCB-066	PCB-066	544000	526000	374000	625000	404000 J	259000	181000	295000
PCB-067	PCB-067	4440	4020	3310	6270	4070 J	166	1830	3040
PCB-068	PCB-068	1870	1650	1360	2300	1450 J	425	612	912
PCB-072	PCB-072	3780	3710	2900	5150	3120 J	160	1310	2040
PCB-073	PCB-073	56.2 U	81.2 U	13 U	22 U	29 UJ	6.03 U	5.96 U	8.84 U
PCB-077	PCB-077	14300	12700	12100	19100	14900	13400	7550	12400
PCB-078	PCB-078	62.6 U	110 U	22.8 U	69.8 U	33.9 UJ	10.5 U	20.5 U	16 U
PCB-079	PCB-079	1970	1810	1590	2820	1880 J	171	541	13.8 U

Appendix D
Tissue Analytical Results

	Location ID	PB095.2	PB101_D	PB101_D	PB101_D	PB102
	Sample ID	PB04-I-A-BCR-W-001-COMP-201106	PB04-F-A-GKF-W-001-20110627	PB04-F-A-GKF-W-001-COMP-201106	PB04-F-A-GKF-W-009-20110627	PB04-F-A-PNF-W-001-COMP-201106
	Sample Date	6/29/2011	6/27/2011	6/27/2011	6/27/2011	6/27/2011
	Sample Type	N	N	N	N	N
	X	3200882	3201317.36	3201317.36	3201317.36	3201302.69
	Y	13829528	13828141.83	13828141.83	13828141.83	13828160.48
	Scientific_Name	Callinectes sapidus	Fundulus grandis	Fundulus grandis	Fundulus grandis	Lagodon rhomboides
	Size_Class	>2 to =<7.5	=<15	=<15	=<15	=<15
	Tissue_Category	Sedentary	Sedentary	Sedentary	Sedentary	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result
PCB-017	PCB-017	39.1	26200	41500	23500	18500
PCB-018/030	PCB-018/030	33	66900	89300	57500	71100
PCB-019	PCB-019	8.96 U	2750	3330	1950	3110
PCB-020/028	PCB-020/028	49800	143000	234000	138000	259000
PCB-021/033	PCB-021/033	49.1	20600	25900	13700	9760
PCB-022	PCB-022	96.3	30400	42800	27200	22500
PCB-023	PCB-023	5 U	57.2	97.1	51.5	88.4
PCB-024	PCB-024	5.19 U	364	538	336	687
PCB-025	PCB-025	12.5 J	5610	9110	5570	3930
PCB-026/029	PCB-026/029	17.5	17700	29400	17400	29700
PCB-027	PCB-027	5.07 U	3270	4750	2740	1770
PCB-031	PCB-031	286	126000	211000	122000	244000
PCB-032	PCB-032	48.2	25000	37100	22800	8830
PCB-034	PCB-034	4.85 U	418	675	399	511
PCB-035	PCB-035	11.2 U	19.3 J	47.2	12.4 J	173 U
PCB-036	PCB-036	10.4 U	8.94 U	15.2 U	8.78 U	166 U
PCB-037	PCB-037	3410	3730	5650	2800	1940
PCB-038	PCB-038	26.6	112	247	112	169 U
PCB-039	PCB-039	22.5 J	597	14.6 U	544 J	159 U
PCB-040/071	PCB-040/071	135	83400	117000	85100	29200
PCB-041	PCB-041	13.5 U	12400	16900	12100	6550 U
PCB-042	PCB-042	52.8 J	42700	67900	40700	50100
PCB-043	PCB-043	12.5 U	8690	15600	9450	6730 U
PCB-044/047/065	PCB-044/047/065	28500	225000	332000	234000	320000
PCB-045/051	PCB-045/051	13 U	28900	35300	28900	25000
PCB-046	PCB-046	15.4 U	3660	4020	2890	1770
PCB-048	PCB-048	26.4	37500	59200	34400	14600
PCB-049/069	PCB-049/069	88.5	195000	304000	211000	279000
PCB-050/053	PCB-050/053	20.4 J	29600	37100	30800	8620
PCB-052	PCB-052	119	345000	491000	382000	395000
PCB-054	PCB-054	9.78 U	173	237	143	348
PCB-055	PCB-055	19.7 U	1090	1260	1050	532 U
PCB-056	PCB-056	28.2 J	42900	73400	43900	41900
PCB-057	PCB-057	18.6 U	842	1350	960	895
PCB-058	PCB-058	19.1 U	389	706	422	512 U
PCB-059/062/075	PCB-059/062/075	2160	18600	26800	19100	22200
PCB-060	PCB-060	19900	63800	83300	65500	80700
PCB-061/070/074/076	PCB-CE12	42300	430000	648000	461000	629000
PCB-063	PCB-063	368	12000	18500	12600	14700
PCB-064	PCB-064	149	128000	168000	132000	174000
PCB-066	PCB-066	71000	276000	433000	287000	428000
PCB-067	PCB-067	17.2 U	2540	4530	2770	2240
PCB-068	PCB-068	86.3	874	1520	1070	1270
PCB-072	PCB-072	17.7 U	1960	3310	2130	2500
PCB-073	PCB-073	19.9	6.63 U	26.8 U	20.1 U	3950 U
PCB-077	PCB-077	3920	10300	13800	11500	1650
PCB-078	PCB-078	17.9 U	16.5 U	27.8 U	14.8 U	492 U
PCB-079	PCB-079	41.6	14.3 U	24.2 U	12.8 U	428 U

Appendix D
Tissue Analytical Results

	Location ID	Field QC	Field QC	PB002.1	PB003.1	PB005.1	PB006.1	PB008.2	PB010	PB010.1
	Sample ID	EB-110621-A01	EB-110624-A01	PB01-I-A-BCR-W-001-COMP-201106	PB01-F-A-STM-W-006-20110618	PB01-I-A-BCR-W-002-COMP-201106	PB01-I-B-WHS-W-002-COMP-201106	PB01-I-B-WHS-W-001-COMP-201106	PB01-F-A-GM-W-008-20110618	PB01-I-A-WHS-W-001-COMP-201106
	Sample Date	6/24/2011	6/24/2011	6/20/2011	6/18/2011	6/20/2011	6/20/2011	6/19/2011	6/18/2011	6/20/2011
	Sample Type	EB	EB	N	N	N	N	N	N	N
	X			3202691	3202445.49	3202312	3202026.63	3202032	3201710.87	3201704.8
	Y			13836499	13836263.53	13836201	13836356.8	13836072	13836029.16	13836071.32
	Scientific_Name			Callinectes sapidus	Mugil cephalus	Callinectes sapidus	Penaeus setiferus	Penaeus setiferus	Brevoortia patronus	Penaeus setiferus
	Size_Class			>2 to =<7.5	=<15	>2 to =<7.5	>7.5 to =<13	>7.5 to =<13	=<15	>2 to =<7.5
	Tissue_Category			Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Migratory
	Tissue_Type			Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result	Result
PCB-080	PCB-080	--	34.4 U	5.21 U	8.19 UJ	4.9 U	14.6 UJ	21.6 U	12.1 UJ	46.2 U
PCB-081	PCB-081	--	32.5 U	78.7	78.9	115	233	135	147	217
PCB-082	PCB-082	--	406	5.06 U	1670 J	8.06 J	935 J	448	4070 J	905
PCB-083	PCB-083	--	327	5.17 U	760 J	5.92 U	1110 J	515 J	1390 J	1110
PCB-084	PCB-084	--	734	37.2	2890 J	30.1	727 J	344	5860 J	778
PCB-085/116/117	PCB-085/116/117	--	1410	4790	4490 J	6640	11800 J	7850	10700 J	10800
PCB-086/087/097/108/119/125	PCB-CE2	--	3880	1300	12300 J	1840	18100 J	10600	26200 J	15900
PCB-088/091	PCB-088/091	--	1060	81.5	3310 J	105	1950 J	1120	6710 J	1820
PCB-089	PCB-089	--	32.7 U	4.92 U	222 J	5.63 U	60.1 J	22.5	571 J	69.2
PCB-090/101/113	PCB-090/101/113	--	8980	598	20900 J	826	38900 J	29800	41100 J	37800
PCB-092	PCB-092	--	1870	59.5	3230 J	42.8	4550 J	2360	6900 J	4780
PCB-093/100	PCB-093/100	--	178	337	322 J	472	313 J	272	550 J	341
PCB-094	PCB-094	--	40.3 J	5.61	105 J	13.2	34.6 J	15 J	253 J	34.8
PCB-095	PCB-095	--	3020	133	9520 J	60.3	4810 J	2690	19000 J	4850
PCB-096	PCB-096	--	14 U	2.81 U	122 J	2.28 U	13.4 J	7.19 J	236 J	17
PCB-098/102	PCB-098/102	--	82.7	17.9 J	847 J	18.3	437 J	203	1500 J	388
PCB-099	PCB-099	--	6300	18500	14100 J	26500	27300 J	21000	28700 J	25300
PCB-103	PCB-103	--	205	4.24 U	281 J	3.76 J	248 J	156	504 J	249
PCB-104	PCB-104	--	12.1 U	2.01 U	13.1 J	1.46 U	7.31 U	4.19 U	14.7 J	9.93 U
PCB-105	PCB-105	--	1890	8740	7360	11700	21200 J	13400	16900	20000 J
PCB-106	PCB-106	--	36.4 U	6.53 U	13.6 J	6.32 U	15.3 UJ	41.1 U	32.6 J	21.9 UJ
PCB-107/124	PCB-107/124	--	213	22.7	725 J	39.7	1720 J	1260	1560 J	1620 J
PCB-109	PCB-109	--	1070	1080	1520 J	1690	3460 J	2400	3420 J	2990 J
PCB-110/115	PCB-110/115	--	5350	825	18200 J	1190	27600 J	17600	36600 J	24300 J
PCB-111	PCB-111	--	34.5	24.1	23 J	31.7 J	42.4 J	28.4	40.5 J	39.1 J
PCB-112	PCB-112	--	23 U	3.53 U	34.5 J	4.04 U	7.7 UJ	5.59 U	93.6 J	13.3 UJ
PCB-114	PCB-114	--	93.7 J	620	487	792	1470	978	1150	1330
PCB-118	PCB-118	--	7030	22700	17600 J	30200	48800 J	32700	37800 J	46200
PCB-120	PCB-120	--	189	157	148 J	205	220 J	173	260 J	218 J
PCB-121	PCB-121	--	22.8 U	16	11.1 J	16.7	7.57 UJ	5.5 U	16.4 J	13.1 UJ
PCB-122	PCB-122	--	38.7 U	7.22 U	261 J	6.98 U	629 J	418	569 J	573 J
PCB-123	PCB-123	--	95 J	476	440	623	1100 J	758	866	1120
PCB-126	PCB-126	--	45.1 U	68.8	41.8 J	95.6	133 J	69.6	104	147 J
PCB-127	PCB-127	--	34 U	14.1 J	27.3 J	6.37 U	15.3 UJ	41.1 U	51.8 J	21.9 UJ
PCB-128/166	PCB-128/166	--	1400	1290	1820	1400	2700 J	1800	3590	2740 J
PCB-129/138/163	PCB-129/138/163	--	12200	11000	13300	12100	19800 J	14000	25700	19200 J
PCB-130	PCB-130	--	780	189	949	268	1450 J	1010	1870	1320 J
PCB-131	PCB-131	--	52.9	7.7 J	110	7.32 U	24.1 J	69.2 U	238	21.2 UJ
PCB-132	PCB-132	--	1640	14.2	2740	14.6	885 J	414	5010	825 J
PCB-133	PCB-133	--	416	237	291	277	375 J	300	550	382 J
PCB-134	PCB-134	--	309	10.4 U	433	8.06 U	276 J	159	800	383 J
PCB-135/151	PCB-135/151	--	3040	50.9	3070	51.2	2140 J	1290	6180	2460 J
PCB-136	PCB-136	--	530	11.6	958	9.4	103 J	55.2	1640	114 J
PCB-137	PCB-137	--	261	511	660	647	1030 J	730	1290	959 J
PCB-139/140	PCB-139/140	--	205	273	285	369	304 J	229	514	344 J
PCB-141	PCB-141	--	783	8.79 U	1920	7.55	2980 J	2250	3700	2970 J
PCB-142	PCB-142	--	23.3 U	8.95 U	5.84 U	6.96 U	8.67 UJ	69.5 U	11.3 J	21.3 UJ
PCB-143	PCB-143	--	22.2 U	8.44 U	27.3	6.56 U	12 J	61.9 U	45.8	18.9 UJ

Appendix D
Tissue Analytical Results

	Location ID	PB010.3	PB013.1_A	PB013.3	PB013.3	PB015.1	PB015.2	PB015_A	PB015_A
	Sample ID	PB01-I-A-BCR-W-003-COMP-201106	PB01-I-A-BCR-W-010-COMP-201106	PB01-F-A-GKF-W-004-COMP-201106	PB01-F-A-STM-W-003-20110616	PB01-F-A-GKF-W-002-COMP-201106	PB01-I-A-BCR-W-004-COMP-201106	PB01-F-A-GKF-W-001-COMP-201106	PB01-I-A-BCR-W-006-COMP-201106
	Sample Date	6/19/2011	6/22/2011	6/21/2011	6/15/2011	6/15/2011	6/16/2011	6/25/2011	6/22/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201743	3201306.47	3201433.88	3201433.88	3201175	3201180	3201168.73	3201168.73
	Y	13836152	13836191.23	13836075.12	13836075.12	13836251	13836183	13836254.66	13836254.66
	Scientific_Name	Callinectes sapidus	Callinectes sapidus	Fundulus grandis	Mugil cephalus	Fundulus grandis	Callinectes sapidus	Fundulus grandis	Callinectes sapidus
	Size_Class	>2 to =<7.5	>2 to =<7.5	=<15	=<15	=<15	>2 to =<7.5	=<15	>2 to =<7.5
	Tissue_Category	Sedentary	Sedentary	Sedentary	Migratory	Sedentary	Sedentary	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-080	PCB-080	8.01 U	4.42	28.4 U	31.5 U	17.5 U	9.81 U	43.8 U	17.7 U
PCB-081	PCB-081	253	218	573	239	492	307	681	223
PCB-082	PCB-082	41.8 J	5.89 J	5310	3120	4670	14.4	5420 J	21.2 UJ
PCB-083	PCB-083	7.82 U	2.38 U	4590	2880	3410	8.93 U	5630 J	23.6 UJ
PCB-084	PCB-084	94.6	42	8170	9070	7900	42.5	10800 J	52.2 J
PCB-085/116/117	PCB-085/116/117	17400	9620	45100	16300	38300	19200	62600 J	11700 J
PCB-086/087/097/108/119/125	PCB-CE2	4070	1940	81900	35200	71400	3760	110000 J	2470 J
PCB-088/091	PCB-088/091	391	109	19400	8880	18300	165	28100 J	117 J
PCB-089	PCB-089	7.44 U	2.56	1410	564	1210	8.48 U	1520 J	20.3 UJ
PCB-090/101/113	PCB-090/101/113	4080	867	144000	63100	123000	2140	218000 J	928 J
PCB-092	PCB-092	205	80.9	28100	10500	24100	56.9	36800 J	88.3 J
PCB-093/100	PCB-093/100	762	348	2090	947	1640	839	2650 J	485 J
PCB-094	PCB-094	22.8	13.8	724	291	624	12.6 J	769 J	19.8 UJ
PCB-095	PCB-095	264	134	70800	28800	56100	89.8	87300 J	152 J
PCB-096	PCB-096	3.14 U	0.738 U	450	467	345	3.68 U	619 J	5.03 UJ
PCB-098/102	PCB-098/102	49.8	27.1	4380	2080	3910	29.5	6280 J	33 J
PCB-099	PCB-099	51400	27400	113000	41600	97800	59000	152000 J	37100 J
PCB-103	PCB-103	23.2	2.92	1600	767	1220	7.32 U	2130 J	18.4 UJ
PCB-104	PCB-104	2.06 U	0.93 U	27.3	34.5	26.1	2.43 U	43.6 J	6.78 UJ
PCB-105	PCB-105	29200	18500	70400	24500	62800	31100	101000	21600
PCB-106	PCB-106	9.73 U	3.82 U	49.9 U	24.9 U	9.84 U	12.7 U	20.2 UJ	20.9 UJ
PCB-107/124	PCB-107/124	189	50.7	4570	2440	4000	90.9	5680 J	42 J
PCB-109	PCB-109	4160	2230	13200	5140	11300	4220	17500 J	2360 J
PCB-110/115	PCB-110/115	4600	2010	115000	53700	103000	3370	156000 J	2140 J
PCB-111	PCB-111	47.7	26.3	103	53.8	87.3	51.6	160 J	39.8 J
PCB-112	PCB-112	5.34 U	1.47 U	5.78 U	16.9 U	5.95 U	6.1 U	14.1 UJ	14 UJ
PCB-114	PCB-114	2180	1340	5700	1650	4800	2300	7790	1430
PCB-118	PCB-118	68400	40600	151000	54000	126000	70900	216000	48500
PCB-120	PCB-120	328	170	581	335	524	348	867 J	292 J
PCB-121	PCB-121	22.8 J	1.46 U	5.67 U	21.3	5.84 U	29.1	13.1 UJ	14 UJ
PCB-122	PCB-122	49.5	7.88	559	696	588 J	14.1 U	516 J	24 UJ
PCB-123	PCB-123	1510	973	3850	1450	3250	1610	5560	1140
PCB-126	PCB-126	196	125	502	132	360 J	213	704	156
PCB-127	PCB-127	54.3 J	3.57 U	50.4 U	81.9 J	9.93 U	12.8 U	19.1 UJ	20.5 UJ
PCB-128/166	PCB-128/166	4190	1720	10600	5490	8820	3570	15900 J	2690
PCB-129/138/163	PCB-129/138/163	31900	14500	77700	38800	70300	28700	124000 J	23500
PCB-130	PCB-130	899	264	5270	2610	4430	640	8080 J	376
PCB-131	PCB-131	18.8	40.7 U	210	324	193	11.1 U	251 J	25.4 U
PCB-132	PCB-132	48.6	37.8 U	10800	5790	9520	23.5	14300 J	23.2 U
PCB-133	PCB-133	464	230	1560	786	1320	457	2580 J	393
PCB-134	PCB-134	13 J	39.6 U	1470	1070	1340	12.2 U	2000 J	27.3 U
PCB-135/151	PCB-135/151	179	49.4	16900	8120	14500	61.6 J	26300 J	78.9
PCB-136	PCB-136	30.5 J	9.72 J	2810	2590	2260	13.2	3860 J	8.79 J
PCB-137	PCB-137	2050	977	5270	2030	4610	1920	8440 J	1220
PCB-139/140	PCB-139/140	853	446	1920	750	1630	866	2920 J	514
PCB-141	PCB-141	182	33 U	11000	5590	9610	49 J	16700 J	11.2 J
PCB-142	PCB-142	11.6 U	37.3 U	9.36 U	20.5 U	10.6 U	13.1 J	13.6 UJ	22.8 U
PCB-143	PCB-143	11 U	34.6 U	141	20 U	122	9.95 U	198 J	21.2 U

Appendix D
Tissue Analytical Results

	Location ID	PB015_A	PB015_A	PB015_A	PB016.2	PB019.1	PB019.1	PB019.1	PB019.1
	Sample ID	PB01-I-A-BCR-W-007-COMP-201106	PB01-I-A-BCR-W-009-COMP-201106	PB01-I-B-BRS-W-001-COMP-201106	PB01-F-A-GKF-W-003-COMP-201106	PB01-F-A-SAS-W-005-20110622	PB01-I-B-BRS-W-012-20110621	PB01-I-B-BRS-W-014-20110621	PB01-I-B-BRS-W-015-20110621
	Sample Date	6/22/2011	6/22/2011	6/20/2011	6/15/2011	6/22/2011	6/21/2011	6/21/2011	6/21/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201168.73	3201168.73	3201168.73	3201190	3201152.87	3201152.87	3201152.87	3201152.87
	Y	13836254.66	13836254.66	13836254.66	13836042	13835753.58	13835753.58	13835753.58	13835753.58
	Scientific_Name	Callinectes sapidus	Callinectes sapidus	Penaeus aztecus	Fundulus grandis	Cynoscion arenarius	Penaeus aztecus	Penaeus aztecus	Penaeus aztecus
	Size_Class	>2 to =<7.5	>2 to =<7.5	>7.5 to =<13	=<15	=<15	>7.5 to =<13	>7.5 to =<13	>7.5 to =<13
	Tissue_Category	Sedentary	Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-080	PCB-080	6.32 UJ	8.98 UJ	29.5 U	14.3 U	14.6 UJ	197 U	49.8 U	72.5 U
PCB-081	PCB-081	238 J	334 J	345	257	46.2	504 J	413	412
PCB-082	PCB-082	11.6 J	26.6 J	1470 J	2040	4060 J	2810	2040 J	1940
PCB-083	PCB-083	5.46 UJ	6.45 UJ	1400 J	1980	12 UJ	223 U	57.4 UJ	107 U
PCB-084	PCB-084	40 J	34.3 J	972 J	4030	4810 J	1940	1600 J	1650
PCB-085/116/117	PCB-085/116/117	10700 J	15100 J	16100 J	22600	18100 J	26800	21900 J	19900
PCB-086/087/097/108/119/125	PCB-CE2	2000 J	2680 J	22600 J	38200	29200 J	38300	32500 J	27500
PCB-088/091	PCB-088/091	106 J	99.1 J	1800 J	10400	5130 J	3820	2740 J	2870
PCB-089	PCB-089	4.7 UJ	5.56 UJ	72.7 J	568	409 J	195 U	128 J	133 J
PCB-090/101/113	PCB-090/101/113	972 J	1230 J	50700 J	78700	46700 J	97400	71000 J	69400
PCB-092	PCB-092	64.9 J	58.1 J	6090 J	14200	7700 J	11400	8240 J	8210
PCB-093/100	PCB-093/100	310 J	371 J	467 J	1060	810 J	1190	738 J	690
PCB-094	PCB-094	7.96 J	5.42 UJ	35.7 J	310	78 J	202 U	78.2 J	87.2
PCB-095	PCB-095	106 J	79.2 J	5590 J	33100	12000 J	11600	8610 J	8980
PCB-096	PCB-096	1.18 UJ	1.31 UJ	28.4 J	213	327 J	127 U	66.4 J	71.4
PCB-098/102	PCB-098/102	20.6 J	20.3 J	511 J	2130	926 J	1220	873 J	866
PCB-099	PCB-099	29400 J	39300 J	38600 J	63200	44800 J	67400	52000 J	53400
PCB-103	PCB-103	4.26 UJ	5.04 UJ	364 J	825	591 J	824	552 J	590
PCB-104	PCB-104	2.28 UJ	2.94 UJ	5.45 UJ	14.8	13.1 J	126 U	39.5 U	55.4 U
PCB-105	PCB-105	22000 J	31100 J	29100	34100	25200 J	43400	39400 J	34200
PCB-106	PCB-106	6.43 UJ	6.31 UJ	12.2 UJ	6.11 U	11.4 UJ	171 U	55.2 UJ	92.3 U
PCB-107/124	PCB-107/124	55.9 J	75.5 J	2400 J	1980	1710 J	3820	3480 J	3230
PCB-109	PCB-109	2710 J	3750 J	5520 J	6620	5030 J	8110	7710 J	6460
PCB-110/115	PCB-110/115	1910 J	2390 J	24100 J	54800	44100 J	38300	35000 J	28700
PCB-111	PCB-111	38.6 J	46.5 J	52.9 J	55	50.7 J	133 U	88.3 J	93
PCB-112	PCB-112	3.25 UJ	26.4 J	7.34 UJ	4.15 U	7.18 UJ	134 U	34.5 UJ	64 U
PCB-114	PCB-114	1620 J	2140 J	2110	2750	1840 J	2970	2850 J	2370
PCB-118	PCB-118	51700 J	69900 J	65800	78500	55600 J	98100	87400 J	76800
PCB-120	PCB-120	225 J	278 J	313 J	325	317 J	463	454 J	407
PCB-121	PCB-121	13.4 J	15.9 J	7.09 UJ	4.08 U	17.4 J	135 U	34.8 UJ	64.6 U
PCB-122	PCB-122	7.36 UJ	7.23 UJ	854 J	294	137 J	1240	1210 J	1160
PCB-123	PCB-123	1180 J	1620 J	1770	1820	1040 J	2610	2190 J	2100
PCB-126	PCB-126	289 J	195 J	190 J	200	13.9 UJ	200 U	51.2 UJ	170 J
PCB-127	PCB-127	6.3 UJ	6.18 UJ	11.5 UJ	6.17 U	74.8 J	168 U	54.3 UJ	90.7 U
PCB-128/166	PCB-128/166	2460	3560	3860	5190	5120 J	7130	6560	6170
PCB-129/138/163	PCB-129/138/163	19000	26100	27700	42800	36400 J	57500	43300	40600
PCB-130	PCB-130	441	550	2090	2570	1400 J	3830	3340	3020
PCB-131	PCB-131	12.1	11.8 J	77.9	81.5	222 J	269 U	116	126
PCB-132	PCB-132	16	19	923	4960	3960 J	2000	1380	1360
PCB-133	PCB-133	336	414	599	851	628 J	1090	792	831
PCB-134	PCB-134	6.94 U	6.22 U	466	629	570 J	1010 J	43.1 U	537
PCB-135/151	PCB-135/151	50.7	56.5	3330	8960	4300 J	6410	4170	4310
PCB-136	PCB-136	9.51 J	9.28 J	152	1270	1080 J	508	257	301
PCB-137	PCB-137	1140	1550	1320	2630	2230 J	2760	2110	2070
PCB-139/140	PCB-139/140	398	512	509	930	858 J	1210	733	740
PCB-141	PCB-141	5.66 U	59.3	3390	5290	4220 J	7530	5590	5300
PCB-142	PCB-142	5.81 U	5.21 U	8.42 U	7.62 U	15.4 J	268 U	39.5 U	68.9 U
PCB-143	PCB-143	5.4 U	4.84 U	7.68 U	62.7	10.9 UJ	250 U	36.8 U	64.2 U

Appendix D
Tissue Analytical Results

	Location ID	PB019.1	PB019.1	PB019.1	PB019.2	PB019_A	PB019_A	PB024.1	PB024.1
	Sample ID	PB01-I-B-BRS-W-019-20110621	PB01-I-B-BRS-W-022-20110622	PB01-I-B-BRS-W-023-20110622	PB01-I-A-OYS-W-001-COMP-201106	PB01-F-A-GKF-W-005-COMP-201106	PB01-I-A-BCR-W-008-COMP-201106	PB01-F-A-GM-W-001-20110615	PB01-F-A-GM-W-002-20110615
	Sample Date	6/21/2011	6/22/2011	6/22/2011	6/28/2011	6/21/2011	6/23/2011	6/15/2011	6/15/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201152.87	3201152.87	3201152.87	3201194.8	3201314.96	3201314.96	3201090.96	3201090.96
	Y	13835753.58	13835753.58	13835753.58	13835735.1	13835750.59	13835750.59	13835160.37	13835160.37
	Scientific_Name	Penaeus aztecus	Penaeus aztecus	Penaeus aztecus	Crassostrea virginica	Fundulus grandis	Callinectes sapidus	Brevoortia patronus	Brevoortia patronus
	Size_Class	>7.5 to =<13	>7.5 to =<13	>7.5 to =<13	>2 to =<7.5	=<15	>2 to =<7.5	=<15	=<15
	Tissue_Category	Migratory	Migratory	Migratory	Sedentary	Sedentary	Sedentary	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-080	PCB-080	104 U	19.2 U	58.8 U	12.5 U	14.1 U	11.9	27 U	47.7 U
PCB-081	PCB-081	570	459	406	288	556	266	196	207
PCB-082	PCB-082	2660	2870	2590	5710 J	4720	6.88 UJ	6770	5780
PCB-083	PCB-083	1870	13.6 U	37.4 U	2990 J	4380	3.75 UJ	2290	42.8 U
PCB-084	PCB-084	2130	2280	2010	9590 J	7500	62.8 J	9920	9020
PCB-085/116/117	PCB-085/116/117	30200	29500	27000	12800 J	40600	12400 J	16800	14600
PCB-086/087/097/108/119/125	PCB-CE2	43300	42400	38700	38000 J	77100	2930 J	41700	36700
PCB-088/091	PCB-088/091	3570	3530	3280	9490 J	19200	202 J	10900	10000
PCB-089	PCB-089	203 J	178	149	995 J	1210	6.59 UJ	965	876
PCB-090/101/113	PCB-090/101/113	105000	97800	86900	56300 J	139000	2170 J	61400	55100
PCB-092	PCB-092	11900	12000	10500	9130 J	25300	155 J	10500	9150
PCB-093/100	PCB-093/100	1150	1040	907	885 J	1620	491 J	878	827
PCB-094	PCB-094	104 U	85.8	79.9	383 J	550	19.7 J	427	395
PCB-095	PCB-095	11900	12000	10500	29500 J	61200	157 J	31700	29600
PCB-096	PCB-096	91.1 J	76.8	63.2	479 J	339	1.29 UJ	412	388
PCB-098/102	PCB-098/102	1140	1080	988	2640 J	4080	38.9 J	2320	2150
PCB-099	PCB-099	68300	69300	63500	35900 J	107000	37500 J	41200	38000
PCB-103	PCB-103	908	762	685	677 J	1460	11.2 J	713	669
PCB-104	PCB-104	60.4 U	4.58 U	11.8 U	36.9 J	28.1 J	3.58 UJ	18.7	10.2 U
PCB-105	PCB-105	45800	40100	38100	20300	71000	25500	25000	21600
PCB-106	PCB-106	110 U	15.9 U	44.1 U	11 UJ	25.2 U	9.56 UJ	22.1 U	44.1 U
PCB-107/124	PCB-107/124	4440	4130	3710	1850 J	4560	118 J	2500	2200
PCB-109	PCB-109	9190	8750	8040	4790 J	13500	3230 J	5230	4600
PCB-110/115	PCB-110/115	43300	42700	39400	47900 J	111000	2840 J	57000	50500
PCB-111	PCB-111	111	86.4	75 J	45.6 J	120	70.4 J	49.9	58.2 J
PCB-112	PCB-112	415 J	8.35 U	22.9 U	7.94 UJ	7.38 U	4.55 UJ	8.91 U	28.9 U
PCB-114	PCB-114	3300	2860	2580	1290	5200	1780	1680	1480
PCB-118	PCB-118	113000	91200	88000	56100	154000	57800	55200	45400
PCB-120	PCB-120	565	514	466	253 J	618	362 J	311	296
PCB-121	PCB-121	69.6 U	31.8	30.5	7.66 UJ	7.24 U	28.7 J	18.7	28.2 U
PCB-122	PCB-122	1640	1390	1250	758 J	438	13.5 J	800	709
PCB-123	PCB-123	2690	2240	2120	1220	3820	1350	1330	1100
PCB-126	PCB-126	309	249 J	256	175	473 J	161	162	137 J
PCB-127	PCB-127	109 U	106	101	10.4 UJ	25.5 U	9.36 UJ	78.1	42.6 U
PCB-128/166	PCB-128/166	9820 J	7540	6400	2400	10100	3540	5930	4690
PCB-129/138/163	PCB-129/138/163	66400 J	52200	44600	21000	81800	28900	41500	33300
PCB-130	PCB-130	4700 J	3780	3150	1310	5330	793	2850	2280
PCB-131	PCB-131	237 J	159	112	173	187	17.9	397	348
PCB-132	PCB-132	2240 J	1850	1480	5800	10300	27.6	8980	7290
PCB-133	PCB-133	1310 J	1080	854	452	1780	712	796	682
PCB-134	PCB-134	1090 J	730	696	973	1500	11.2 U	1410	1230
PCB-135/151	PCB-135/151	7650 J	6630	5170	6390	16700	156	9270	7460
PCB-136	PCB-136	429 J	374	265	1960	2470	14.6	2690	2170
PCB-137	PCB-137	3390 J	2570	2190	138	5190	1630	2210	1710
PCB-139/140	PCB-139/140	1320 J	985	771	334	1730	719	854	715
PCB-141	PCB-141	9220 J	7340	6160	235	11300	127 J	6150	5060
PCB-142	PCB-142	119 UJ	12.8 U	31.5 U	8.48 U	10.2 U	9.34 U	18.5 U	32.9 U
PCB-143	PCB-143	111 UJ	12.2 U	29.8 U	7.73 U	12.2 J	8.68 U	18.1 U	32.2 U

Appendix D
Tissue Analytical Results

	Location ID	PB024.4	PB025_A	PB026.1	PB032_A	PB037.2	PB037.4	PB037.5	PB037.6
	Sample ID	PB01-I-A-BCR-W-005-COMP-201106	PB01-F-A-GM-W-004-20110615	PB01-F-A-STM-W-002-20110616	PB02-F-A-PNF-W-009-20110617	PB02-F-A-STM-W-006-20110616	PB02-I-B-BCR-W-001-COMP-201106	PB02-I-B-BRS-W-001-COMP-201106	PB02-I-A-BCR-W-002-COMP-201106
	Sample Date	6/20/2011	6/15/2011	6/15/2011	6/17/2011	6/16/2011	6/17/2011	6/17/2011	6/16/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201319	3201214.42	3201153.65	3201407.03	3201346.97	3201504	3201380	3201402
	Y	13835188	13835154.42	13835079.21	13834542.25	13834038.02	13833530	13834151	13833775
	Scientific_Name	Callinectes sapidus	Brevoortia patronus	Mugil cephalus	Lagodon rhomboides	Mugil cephalus	Callinectes sapidus	Penaeus aztecus	Callinectes sapidus
	Size_Class	>2 to =<7.5	=<15	=<15	=<15	=<15	>7.5 to =<13	>7.5 to =<13	>2 to =<7.5
	Tissue_Category	Sedentary	Migratory	Migratory	Migratory	Migratory	Migratory	Migratory	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-080	PCB-080	23.9 U	26.1 U	36.3 U	36.8 U	56.6 U	11 UJ	8.38 U	9.11 J
PCB-081	PCB-081	251	346	376	265	466	454 J	321	318
PCB-082	PCB-082	103 J	11800	3540	3630 J	7290	37.3 J	1120	20.4 J
PCB-083	PCB-083	27.7 U	3600	2140 J	1690 J	5010	7.69 UJ	1140	6.93 U
PCB-084	PCB-084	328	16700	12100	6200 J	17000	106 J	680	112
PCB-085/116/117	PCB-085/116/117	14700	27100	23600	24500 J	29900	25600 J	14700	16100
PCB-086/087/097/108/119/125	PCB-CE2	4480	68400	48500	46900 J	68500	4310 J	20100	3100
PCB-088/091	PCB-088/091	817	17600	10700	12100 J	17100	179 J	1320	330
PCB-089	PCB-089	26.4 U	1670	742	191 J	1430	6.63 UJ	62.9	6.58 U
PCB-090/101/113	PCB-090/101/113	5620	96300	85100	92600 J	113000	2060 J	43900	2580
PCB-092	PCB-092	740	16300	14300	11900 J	19600	135 J	5500	205
PCB-093/100	PCB-093/100	715	1370	1330	1190 J	1770	797 J	401	619
PCB-094	PCB-094	58.3 J	726	358	56.5 J	615	18.7 J	28.2	16.3
PCB-095	PCB-095	949	52200	35700	30100 J	53700	274 J	4290	358
PCB-096	PCB-096	9.71 U	697	676	228 J	940	2.2 UJ	18.7	3.3 U
PCB-098/102	PCB-098/102	224 J	3870	2630	431 J	4450	56.6 J	376	57.1
PCB-099	PCB-099	44600	64200	58900	64100 J	66600	66100 J	33900	44500
PCB-103	PCB-103	60.9	1050	957	911 J	1270	9.35 J	290	11.5
PCB-104	PCB-104	8.05 U	28.4 J	44.6	20.6 UJ	37.5	3.23 U	2.97 U	2.4 U
PCB-105	PCB-105	24700	39000	35600	35800 J	42800	51000 J	27200	29900
PCB-106	PCB-106	27.8 U	26.7 U	28.8 U	27.5 UJ	56.1 U	13.8 UJ	10.7 U	9.97 U
PCB-107/124	PCB-107/124	234	4030	3610	3010 J	4310	106 J	2310	121
PCB-109	PCB-109	3980	8080	7470	7030 J	8790	5200 J	4890	3760
PCB-110/115	PCB-110/115	5940	91800	71100	54500 J	95100	4870 J	19900	3830
PCB-111	PCB-111	109 J	75.4	63.2 J	69.4 J	73.6	56.5 J	39.7	41.9
PCB-112	PCB-112	18.9 U	19.6 U	16 U	26.8 UJ	28.4 U	4.58 UJ	4.36 U	4.73 U
PCB-114	PCB-114	1660	2710	2700	2660	3050	3780 J	1950	2170
PCB-118	PCB-118	55100	84900	79900	87100 J	93600	110000 J	59200	64200
PCB-120	PCB-120	421	426	385	425 J	442	372 J	213	267
PCB-121	PCB-121	61 J	28.7	25.3	30.4 J	36.5	23.1 J	4.21 U	14.4 J
PCB-122	PCB-122	30.8 U	1360	1010	580 J	1380	101 J	804	18.9
PCB-123	PCB-123	1200	2120	2050	2160	2540	2820 J	1480	1530
PCB-126	PCB-126	154 J	265	202	186 J	210	366 J	184 J	202
PCB-127	PCB-127	28 U	110	65.9	91.3 J	94	13.5 UJ	10.1 U	43.3
PCB-128/166	PCB-128/166	3200	8130	6950	5960	7880	5820 J	3090	3530
PCB-129/138/163	PCB-129/138/163	26700	56100	47000	42100	54100	44700 J	23600	25200
PCB-130	PCB-130	1260	3870	3000	2430	3780	660 J	1480	546
PCB-131	PCB-131	35.1 J	649	400	263	555	11.2 UJ	57.5	19.6
PCB-132	PCB-132	120	13100	5810	5800	9470	37 J	659	32.3
PCB-133	PCB-133	908	1050	847	601	998	672 J	438	379
PCB-134	PCB-134	40.8 U	2170	1400	672	1870	12.1 UJ	298	13.1 U
PCB-135/151	PCB-135/151	754	13300	9430	6100	12000	77.9 J	2390	115
PCB-136	PCB-136	88.5 J	3990	2980	1850	3940	21 J	102	26.5
PCB-137	PCB-137	1400	3050	2570	2240	3080	2810 J	1250	1730
PCB-139/140	PCB-139/140	812	1220	883	838	1090	923 J	417	694
PCB-141	PCB-141	416 J	8590	6930	5610	8460	9.83 UJ	3360	97.7
PCB-142	PCB-142	35.2 U	27.6	20.3 U	22.9 U	34.9 U	10.1 UJ	6.14 U	11.3 U
PCB-143	PCB-143	33.2 U	21.6 U	19.8 U	21.4 U	32.4 U	9.38 UJ	15.7	10.7 U

Appendix D
Tissue Analytical Results

	Location ID	PB037_A	PB047.1_A	PB047.3	PB048.3	PB048.3	PB048.3	PB049_A	PB049_A
	Sample ID	PB02-I-A-BCR-W-004-COMP-201106	PB02-F-A-PNF-W-002-20110615	PB02-I-A-BCR-W-001-COMP-201106	PB02-F-A-GM-W-001-20110616	PB02-F-A-GM-W-002-20110616	PB02-F-A-STM-W-001-20110616	PB02-F-A-GKF-W-001-COMP-201106	PB02-I-A-BCR-W-003-COMP-201106
	Sample Date	6/19/2011	6/15/2011	6/19/2011	6/16/2011	6/16/2011	6/16/2011	6/15/2011	6/22/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201325.97	3201461.79	3201645	3201519.15	3201519.15	3201519.15	3201468.39	3201468.39
	Y	13833885.45	13833007.68	13832925	13832869.89	13832869.89	13832869.89	13832722.8	13832722.8
	Scientific_Name	Callinectes sapidus	Lagodon rhomboides	Callinectes sapidus	Brevoortia patronus	Brevoortia patronus	Mugil cephalus	Fundulus grandis	Callinectes sapidus
	Size_Class	>2 to =<7.5	=<15	>2 to =<7.5	=<15	=<15	=<15	=<15	>2 to =<7.5
	Tissue_Category	Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-080	PCB-080	22 U	79 U	19.8 U	26.4 U	34 U	58.7 U	798 U	8.71 U
PCB-081	PCB-081	683	494	431	395	375	436	1080 U	240
PCB-082	PCB-082	15.7 U	9390	18.6 U	13000	12100	8750	6260	6.7 UJ
PCB-083	PCB-083	16.5 U	2380	19.1 U	3910	5320	3850	5210	7.26 UJ
PCB-084	PCB-084	100	11600	83.1 J	17800	17100	15700	10800	25.9 J
PCB-085/116/117	PCB-085/116/117	34900	59100	22900	30800	28800	28800	67700	9870 J
PCB-086/087/097/108/119/125	PCB-CE2	5210	111000	3580	76100	72200	67300	121000	2150 J
PCB-088/091	PCB-088/091	271	24100	191	18900	17700	15600	29800	78.8 J
PCB-089	PCB-089	15.2 U	252	18.1 U	1810	1770	1540	1830	6.69 UJ
PCB-090/101/113	PCB-090/101/113	2220	191000	1860	106000	101000	98500	219000	797 J
PCB-092	PCB-092	112	21700	62.8 J	18300	17300	17000	44200	54 J
PCB-093/100	PCB-093/100	1050	2000	778	1470	1440	1660	2870	375 J
PCB-094	PCB-094	28.2	89.9 U	39.1	777	755	591	914	10.5 J
PCB-095	PCB-095	322	54600	146	55200	52300	48100	99000	79.2 J
PCB-096	PCB-096	11 U	389	10.3 U	731	697	869	539	2.62 UJ
PCB-098/102	PCB-098/102	83.9	490	48.2 J	4020	3970	4450	7030	16.2 J
PCB-099	PCB-099	95400	123000	60700	71400	60800	59000	168000	29300 J
PCB-103	PCB-103	13.1 U	1450	15.6 U	1100	1050	1030	2370	5.77 UJ
PCB-104	PCB-104	9.74 U	16.4 U	7.11 U	29.8 J	32.5	35.8	37.5 J	4.01 UJ
PCB-105	PCB-105	60300	86400	40500	47800	42800	39600	111000	21800
PCB-106	PCB-106	16.9 U	86.8 U	23.1 U	21.3 U	32.6 U	131 J	20.1 U	18.7 UJ
PCB-107/124	PCB-107/124	87.7	7080	87	4730	4180	3830	6100	40 J
PCB-109	PCB-109	6380	16200	4780	9350	8810	7920	16900	2430 J
PCB-110/115	PCB-110/115	5960	129000	4040	100000	96300	88000	165000	2020 J
PCB-111	PCB-111	50.8 J	58.1 U	48.8	75.4	71.8	45.9 J	136	46 J
PCB-112	PCB-112	10.6 U	64.9 U	13 U	14.3 U	473	406	8.16 U	44.4 J
PCB-114	PCB-114	4090	6680	3090	3390	3040	2950	8650	1630
PCB-118	PCB-118	119000	188000	89100	103000	90000	82100	219000	51200
PCB-120	PCB-120	311	637	278	466	421	299	726	246 J
PCB-121	PCB-121	10.4 U	61 U	12.9 U	28.1 J	30.7	35.1 U	8.01 U	16.2 J
PCB-122	PCB-122	17.2 U	881	25.5 U	1550	1610	1590	825	21.4 UJ
PCB-123	PCB-123	3450	4910	2090	2640	2130	2100	5480	1170
PCB-126	PCB-126	419	407	263	317	296	232	1220 J	138
PCB-127	PCB-127	15.5 U	191	67.5	136	116	54.5 U	20.3 U	17.5 UJ
PCB-128/166	PCB-128/166	5740	14300	3960	9390	8490	6320	14000	2140
PCB-129/138/163	PCB-129/138/163	38200	93700	27100	64000	59000	42000	109000	18700
PCB-130	PCB-130	497	4820	503	4300	4110	2810	6970	314
PCB-131	PCB-131	19.6	605	23.9 U	640	653	489	214	7.17 U
PCB-132	PCB-132	27.3	11600	23.1 U	13300	12900	8130	13000	17.1
PCB-133	PCB-133	569	920	428	1110	1080	684	1860	355
PCB-134	PCB-134	4.3 U	1020	26.3 U	2060 J	2160	1680	1590	6.96 U
PCB-135/151	PCB-135/151	39.2	10500	60.5	13600	12900	8960	22400	40
PCB-136	PCB-136	13 J	3080	11.3 U	3880	3790	3030	3070	5.62
PCB-137	PCB-137	3030	5780	2130	3560	3260	2510	7660	1050
PCB-139/140	PCB-139/140	1220	1820	827	1290	1260	875	2380	431
PCB-141	PCB-141	3.58 U	12500	22.3 U	9570	8990	6630	15600	61.3
PCB-142	PCB-142	4.05 U	51.8 U	15	27.2	30	30.5 U	9.37 U	6.56 U
PCB-143	PCB-143	3.75 U	48.1 U	21.4 U	15.3 U	109	117 J	179 J	6.08 U

Appendix D
Tissue Analytical Results

	Location ID	PB052.1	PB052.1	PB053.2	PB053.2	PB053_B	PB056_A	PB056_A	PB057.2
	Sample ID	PB02-F-A-SAS-W-002-20110616	PB02-F-A-STM-W-003-20110616	PB02-F-A-GKF-W-025-20110621	PB02-F-A-GKF-W-029-20110622	PB02-F-A-GKF-W-013-20110618	PB02-F-A-GKF-W-010-20110618	PB02-F-A-GKF-W-011-20110618	PB03-F-A-GM-W-001-20110617
	Sample Date	6/16/2011	6/16/2011	6/21/2011	6/22/2011	6/18/2011	6/18/2011	6/18/2011	6/17/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201515.24	3201515.24	3201266.16	3201266.16	3201390.48	3201420.22	3201420.22	3201603.32
	Y	13832564.31	13832564.31	13832433.69	13832433.69	13832440.54	13832183.54	13832183.54	13832054.52
	Scientific_Name	Cynoscion arenarius	Mugil cephalus	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Brevoortia patronus
	Size_Class	=<15	=<15	=<15	=<15	=<15	=<15	=<15	=<15
	Tissue_Category	Migratory	Migratory	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-080	PCB-080	52.1 U	71.9 U	43.1 UJ	28.2 U	25.8 UJ	33.9 UJ	62.9 U	21.2 U
PCB-081	PCB-081	138 J	815	1080	865	1070	890	827	383
PCB-082	PCB-082	8130	11100	14100 J	9410	10700 J	8000 J	8130 J	11200 J
PCB-083	PCB-083	3680	7100	10000 J	6220	5420 J	5560 J	60.4 UJ	19.5 UJ
PCB-084	PCB-084	8550	25200	19800 J	14900	14200 J	8960 J	11500 J	14800 J
PCB-085/116/117	PCB-085/116/117	31500	47800	106000 J	87000	89200 J	68000 J	63500 J	27000 J
PCB-086/087/097/108/119/125	PCB-CE2	51900	103000	192000 J	152000	156000 J	18.5 UJ	124000 J	66800 J
PCB-088/091	PCB-088/091	7970	23100	45500 J	36200	33300 J	23800 J	29700 J	15800 J
PCB-089	PCB-089	836	2190	3390 J	2510	2390 J	1670 J	2080 J	1660 J
PCB-090/101/113	PCB-090/101/113	75200	158000	339000 J	268000	277000 J	205000 J	228000 J	94600 J
PCB-092	PCB-092	12900	26900	64100 J	52200	51300 J	37000 J	41700 J	16500 J
PCB-093/100	PCB-093/100	1130	2300	4630 J	3400	3230 J	2180 J	2760 J	1290 J
PCB-094	PCB-094	177	904	1600 J	1220	1170 J	756 J	1010 J	677 J
PCB-095	PCB-095	19400	71100	131000 J	115000	101000 J	67000 J	87900 J	44600 J
PCB-096	PCB-096	512	1250	841 J	732	640 J	382 J	603 J	639 J
PCB-098/102	PCB-098/102	1500	6050	10900 J	8550	8160 J	5360 J	7070 J	3810 J
PCB-099	PCB-099	66200	95600	229000 J	181000	211000 J	161000 J	169000 J	62500 J
PCB-103	PCB-103	790	1440	2780 J	2370	2280 J	1570 J	1970 J	921 J
PCB-104	PCB-104	25.4	52.8	49.1 J	36.8	45.2 J	79.4 J	58.1 J	24 J
PCB-105	PCB-105	48700	74600	143000 J	121000	142000 J	119000	106000 J	39400 J
PCB-106	PCB-106	50.6 U	269	28.7 UJ	21 U	101 J	19.3 UJ	39.6 UJ	16.7 UJ
PCB-107/124	PCB-107/124	3420	7250	12200 J	9350	10100 J	8070 J	7360 J	4150 J
PCB-109	PCB-109	8850	14100	31600 J	25900	26900 J	22500 J	19600 J	8530 J
PCB-110/115	PCB-110/115	82600	143000	257000 J	209000	205000 J	155000 J	164000 J	81700 J
PCB-111	PCB-111	63.1	93	193 J	147	179 J	138 J	120 J	59.2 J
PCB-112	PCB-112	360	732 J	25.3 UJ	12.3 U	849 J	16 UJ	38.1 UJ	11.7 UJ
PCB-114	PCB-114	3810	5780	11400 J	9400	12100 J	9790	8530	2900 J
PCB-118	PCB-118	107000	151000	282000 J	246000	279000 J	247000 J	211000 J	82500 J
PCB-120	PCB-120	409	450	1240 J	935	1080 J	895 J	770 J	366 J
PCB-121	PCB-121	22.3 U	38.7 U	63.5 J	46.1	51.1 J	41.4 J	37.3 UJ	22.1 J
PCB-122	PCB-122	568 J	2690	1530 J	1000	1540 J	1190 J	888 J	1420 J
PCB-123	PCB-123	2280	4150	8070 J	7040	8840 J	7060	6220	2120 J
PCB-126	PCB-126	202 J	423	992 J	833 J	946 J	823	731 J	281 J
PCB-127	PCB-127	136	152	374 J	272	397 J	361 J	287 J	135 J
PCB-128/166	PCB-128/166	9200	11300	23100 J	21700	21800 J	17100	15000	7060 J
PCB-129/138/163	PCB-129/138/163	59500	72100	162000 J	143000	143000 J	115000	105000	48800 J
PCB-130	PCB-130	2490	4860	10700 J	9360	9120 J	7360	6830	3340 J
PCB-131	PCB-131	401	708	510 J	348	354 J	266	256	512 J
PCB-132	PCB-132	7330	11300	24000 J	19500	17200 J	12700	13400	10100 J
PCB-133	PCB-133	916	1090	3060 J	2520	2440 J	1900	1780	863 J
PCB-134	PCB-134	1140	2580	2870 J	2530 J	2090 J	19.9 U	1610	1570 J
PCB-135/151	PCB-135/151	6590	12900	33800 J	28600	26000 J	17800	19600	10200 J
PCB-136	PCB-136	1690	4130	5120 J	4250	3640 J	2260	2870	2720 J
PCB-137	PCB-137	3770	4640	11500 J	9740	9980 J	7920	7550	2930 J
PCB-139/140	PCB-139/140	1260	1400	4200 J	3440	3180 J	2360	2380	1030 J
PCB-141	PCB-141	7460	11300	24300 J	20900	20400 J	15800	15400	7500 J
PCB-142	PCB-142	31.5 U	38.9 U	21.1 UJ	19.4 U	14.9 J	19.4 U	44.4 U	24.2 J
PCB-143	PCB-143	58.2	173	20.1 UJ	18.6 U	236 J	18.1 U	211	11.8 UJ

Appendix D
Tissue Analytical Results

	Location ID	PB057.2	PB057.2	PB057.2	PB057_B	PB057_B	PB057_B	PB058.1	PB058.1
	Sample ID	PB03-F-A-STM-W-001-20110617	PB03-F-A-STM-W-001-COMP-201106	PB03-F-A-STM-W-002-20110617	PB03-F-A-GKF-W-001-20110615	PB03-F-A-GKF-W-006-20110617	PB03-F-A-PNF-W-001-COMP-201106	PB03-F-A-GM-W-003-20110618	PB03-F-A-GM-W-004-20110618
	Sample Date	6/17/2011	6/17/2011	6/17/2011	6/15/2011	6/17/2011	6/15/2011	6/18/2011	6/18/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201603.32	3201603.32	3201603.32	3201644.06	3201644.06	3201644.06	3201682.3	3201682.3
	Y	13832054.52	13832054.52	13832054.52	13832071.63	13832071.63	13832071.63	13832011.93	13832011.93
	Scientific_Name	Mugil cephalus	Mugil cephalus	Mugil cephalus	Fundulus grandis	Fundulus grandis	Lagodon rhomboides	Brevoortia patronus	Brevoortia patronus
	Size_Class	=<15	=<15	=<15	=<15	=<15	=<15	=<15	=<15
	Tissue_Category	Migratory	Migratory	Migratory	Sedentary	Sedentary	Migratory	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-080	PCB-080	19.4 UJ	13.6 U	60.4 UJ	130 U	51.9 U	16.7 U	21.6 UJ	15 U
PCB-081	PCB-081	343	401	325	696	898	403	433	578
PCB-082	PCB-082	2650 J	4230	3180 J	9550	11500	4040	11900 J	21800
PCB-083	PCB-083	13.9 UJ	2780	39.6 UJ	9050	10100	1800 J	9.89 UJ	9030
PCB-084	PCB-084	6380 J	9740	7810 J	14600	17000	5580	16000 J	42800
PCB-085/116/117	PCB-085/116/117	16000 J	18200	16900 J	81000	87700	26100	27300 J	41400
PCB-086/087/097/108/119/125	PCB-CE2	32300 J	37500	36000 J	151000	161000	49100	68500 J	108000
PCB-088/091	PCB-088/091	6340 J	7690	7770 J	37900	39700	11300	16400 J	32900
PCB-089	PCB-089	502 J	743	635 J	2430	2830	148	1890 J	4120
PCB-090/101/113	PCB-090/101/113	57500 J	53500	60300 J	268000	278000	83500	94300 J	142000
PCB-092	PCB-092	9680 J	10400	10100 J	47800	51100	9310	16400 J	25500
PCB-093/100	PCB-093/100	808 J	994	893 J	3480	3440	888	1330 J	2420
PCB-094	PCB-094	218 J	261	260 J	1120	1310	32.6	791 J	1590
PCB-095	PCB-095	18800 J	26100	22700 J	116000	122000	24600	47800 J	109000
PCB-096	PCB-096	391 J	577	473 J	747	945	196	744 J	2290
PCB-098/102	PCB-098/102	1610 J	2030	2020 J	7960	9400	288	4440 J	8100
PCB-099	PCB-099	42000 J	36800	40300 J	182000	193000	59000	62100 J	87700
PCB-103	PCB-103	569 J	606	596 J	2280	2340	577	937 J	1560
PCB-104	PCB-104	37.7 J	27.6 J	30.2 J	39.5 J	46.9	1.59 U	23.4 J	49.8
PCB-105	PCB-105	27900 J	30700	25200 J	107000	118000	47100	39800 J	57500
PCB-106	PCB-106	15.6 UJ	7.02 U	33.9 UJ	96.7 U	55.8 U	4.53 U	20.4 UJ	16.1 U
PCB-107/124	PCB-107/124	2600 J	2450	2660 J	8050	8840	3150	4100 J	4620
PCB-109	PCB-109	5210 J	5250	5340 J	22400	25400	7610	8180 J	9590
PCB-110/115	PCB-110/115	45100 J	51500	47500 J	207000	217000	60400	83000 J	139000
PCB-111	PCB-111	42.4 J	31	43.4 J	132 J	138 J	40.1	57.6 J	63.8
PCB-112	PCB-112	8.37 UJ	2.7 U	23.6 UJ	78.8 U	24.4 U	3.04 U	5.91 UJ	15.6 U
PCB-114	PCB-114	2230	2320	1900 J	9070	9110	3890	2890 J	3950
PCB-118	PCB-118	56800 J	60000	53300 J	234000	257000	99200	78400 J	112000
PCB-120	PCB-120	263 J	173	232 J	809	837	245	343 J	357
PCB-121	PCB-121	16.9 J	2.68 U	22.5 UJ	80 U	46.7 J	3.02 U	19.3 J	39.7 J
PCB-122	PCB-122	778 J	910	856 J	850	1020	525 J	1490 J	1750
PCB-123	PCB-123	1710	1900	1460 J	6760	6630	2730	2130 J	2710
PCB-126	PCB-126	158 J	9.19 U	143 J	668	731	255	266 J	385
PCB-127	PCB-127	79.7 J	6.56 U	61.4 J	276	249 J	4.24 U	114 J	89.2
PCB-128/166	PCB-128/166	4170	4050	3930 J	18900	18800	5530	6610 J	8790
PCB-129/138/163	PCB-129/138/163	30900	27400	27000 J	121000	129000	41600	45700 J	57900
PCB-130	PCB-130	2010	1830	1750 J	7840	8130	1930	3100 J	4230
PCB-131	PCB-131	254	326	255 J	294	379	300	521 J	981
PCB-132	PCB-132	3460	4170	3280 J	16400	18400	5680	10000 J	19400
PCB-133	PCB-133	587	426	472 J	1910	2130	4.18 U	803 J	1050
PCB-134	PCB-134	949	850	895 J	2430	2780	224	1630 J	3680
PCB-135/151	PCB-135/151	6430	5840	4950 J	22400	26100	4270	10000 J	18100
PCB-136	PCB-136	1640	1960	1460 J	3580	4100	1260	2780 J	7150
PCB-137	PCB-137	1870	1760	1730 J	7870	8770	2610	2790 J	3690
PCB-139/140	PCB-139/140	569	664	549 J	2630	2910	922	988 J	1500
PCB-141	PCB-141	5000	4520	4060 J	17200	19000	5410	7080 J	10600
PCB-142	PCB-142	10.5 U	12.7	22.6 UJ	66 U	31.3 U	4.56 U	24.7 J	34.9 J
PCB-143	PCB-143	9.9 U	3.26 U	20.9 UJ	61.3 U	29.4 U	4.23 U	9.14 UJ	18.8 U

Appendix D
Tissue Analytical Results

	Location ID	PB058.1	PB059.1_A	PB059.1_A	PB059.3	PB059.4	PB059.4	PB059.5	PB063.1_A
	Sample ID	PB03-F-A-GM-W-005-20110618	PB03-F-A-GKF-W-003-20110615	PB03-I-A-BCR-W-003-COMP-201106	PB03-I-B-BCR-W-002-20110627	PB03-I-B-BCR-W-003-20110628	PB03-I-B-BCR-W-003-20110628DUP	PB03-I-A-BCR-W-001-COMP-201106	PB03-F-A-GKF-W-009-20110617
	Sample Date	6/18/2011	6/15/2011	6/19/2011	6/26/2011	6/27/2011	6/27/2011	6/27/2011	6/17/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201682.3	3201501.32	3201501.32	3201714.16	3201714.16	3201714.16	3201714	3201509.99
	Y	13832011.93	13831828.71	13831828.71	13831964.63	13831964.63	13831964.63	13831965	13831505.57
	Scientific_Name	Brevoortia patronus	Fundulus grandis	Callinectes sapidus	Callinectes sapidus	Callinectes sapidus		Callinectes sapidus	Fundulus grandis
	Size_Class	=<15	=<15	>2 to =<7.5	>7.5 to =<13	>7.5 to =<13		>2 to =<7.5	=<15
	Tissue_Category	Migratory	Sedentary	Sedentary	Migratory	Migratory		Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body		Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-080	PCB-080	13 U	97.9 U	5.85 U	3.93 U	4.38 U	9.11 U	6.47 U	62.3 U
PCB-081	PCB-081	1220 J	861	340	437	400	368	456	631
PCB-082	PCB-082	21400	8640	22.8	52.8	39.1	40.2	28.5 J	6930 J
PCB-083	PCB-083	9520	7810	3.87 U	4.65 U	4.58 U	7.87 U	6.18 UJ	36.8 UJ
PCB-084	PCB-084	42000	13200	92.2	280	463	429	61.4 J	8840 J
PCB-085/116/117	PCB-085/116/117	41400	75900	15300	24200	23900	22600	17300 J	57200 J
PCB-086/087/097/108/119/125	PCB-CE2	109000	134000	2460	3960	3980	3810	2680 J	100000 J
PCB-088/091	PCB-088/091	33100	32000	273	419	735	687	113 J	21900 J
PCB-089	PCB-089	4040	2230	3.56 U	14.6	16.2	15.2	5.68 UJ	1590 J
PCB-090/101/113	PCB-090/101/113	141000	239000	1860	2700	3130	2930	1020 J	181000 J
PCB-092	PCB-092	25300	43000	137	314	519	484	80.1 J	31700 J
PCB-093/100	PCB-093/100	2460	3090	327	716	732	682	485 J	2020 J
PCB-094	PCB-094	1550	1070	18.2 J	38.3	109	104	16.7 J	713 J
PCB-095	PCB-095	109000	96200	259	550	1330	1220	168 J	63600 J
PCB-096	PCB-096	2290	703	1.52 U	4.57	3.74 J	4.64 U	1.8 UJ	424 J
PCB-098/102	PCB-098/102	7890	7340	69.7	136	248	241	5.42 UJ	5080 J
PCB-099	PCB-099	87800	167000	37300	60400	59000	55800	38900 J	131000 J
PCB-103	PCB-103	1620	1830	6.41	12.4	14.5	14.3	4.9 UJ	1450 J
PCB-104	PCB-104	51.1	20.3 U	1.88 U	1.5 U	6.34 J	3.31 U	2.43 UJ	23.8 UJ
PCB-105	PCB-105	57000	112000	29700	39200	36900	34100	37600	100000
PCB-106	PCB-106	15.5 U	66.9 U	5.69 U	4.98 U	5.04 U	8.63 U	4.83 UJ	36.6 UJ
PCB-107/124	PCB-107/124	4610	8340	84.8	110	154	147	48.1 J	6880 J
PCB-109	PCB-109	9680	22500	3470	4510	4170	3770	3990 J	20100 J
PCB-110/115	PCB-110/115	137000	184000	3310	4940	5750	5640	3380 J	135000 J
PCB-111	PCB-111	63 J	129	24.9	30.9	34.9	31.2	27 J	109 J
PCB-112	PCB-112	20.1 U	41.8 U	2.39 U	2.91 U	2.86 U	5.18 U	3.82 UJ	22.1 UJ
PCB-114	PCB-114	4120	8340	2290	2970	2840	2630	2780	8460
PCB-118	PCB-118	112000	227000	62100	81200	81900	75000	75000	213000 J
PCB-120	PCB-120	342	748	145	220	199	191	178 J	671 J
PCB-121	PCB-121	33.3 J	42.5 U	2.38 U	14.1 J	14.2 J	13.7 J	3.79 UJ	37.5 J
PCB-122	PCB-122	1720	1040	6.49 U	38.9 J	19.1	19.7 J	5.5 UJ	764 J
PCB-123	PCB-123	2680	6350	1750	2070	1970	1930	2100	6300
PCB-126	PCB-126	392	710	334	279	260	227	254	47.3 U
PCB-127	PCB-127	101	254	5.33 U	53.6	51.9 J	49.9	4.52 UJ	323 J
PCB-128/166	PCB-128/166	8830	17900	2510	4240	4110	3890	2570	17600 J
PCB-129/138/163	PCB-129/138/163	58700	113000	18500	27600	26100	25100	19900	126000 J
PCB-130	PCB-130	4270	7070	336	397	497	496	256	7740 J
PCB-131	PCB-131	949	259	18.8	16.5	23.7	11.7 U	8.86	303 J
PCB-132	PCB-132	19200	13500	21.8	47.5	37.8	38 J	34.8	13300 J
PCB-133	PCB-133	1040	1790	265	340	382	370	243	1930 J
PCB-134	PCB-134	3660	1560	4.57 U	15.9	11.9 U	13.1 U	4.02 U	1460 J
PCB-135/151	PCB-135/151	18000	18700	62.5	132	204	198	51.1	18100 J
PCB-136	PCB-136	7060	2750	12.8	34.5	49.2	46.3	10.3 J	2440 J
PCB-137	PCB-137	3740	7770	1520	2330	2210	2140	1730	9010 J
PCB-139/140	PCB-139/140	1480	2300	555	820	816	787	665	2500 J
PCB-141	PCB-141	10600	15800	3.81 U	105	109	116	3.35 U	17000 J
PCB-142	PCB-142	33.9	39.9 U	4.31 U	6.08 U	9.95 U	24 J	3.79 U	41.6 UJ
PCB-143	PCB-143	24.5 U	37.1 U	3.99 U	5.8	9.11 U	10.3 U	3.51 U	38.8 UJ

Appendix D
Tissue Analytical Results

	Location ID	PB063.1_A	PB063.2_A	PB063.2_A	PB069_A	PB069_A	PB069_A	PB084.1	PB084.1
	Sample ID	PB03-F-A-GKF-W-010-20110617	PB03-F-A-GKF-W-005-20110615	PB03-F-A-GKF-W-013-20110617	PB03-F-A-GKF-W-002-20110615	PB03-F-A-GKF-W-007-20110617	PB03-I-A-BCR-W-002-COMP-201106	PB04-F-A-GKF-W-005-20110627	PB04-F-A-GKF-W-013-20110627
	Sample Date	6/17/2011	6/15/2011	6/17/2011	6/15/2011	6/17/2011	6/19/2011	6/27/2011	6/27/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201509.99	3201561.28	3201561.28	3201132.36	3201132.36	3201132.36	3200727.85	3200727.85
	Y	13831505.57	13831519.55	13831519.55	13830993.22	13830993.22	13830993.22	13829784.47	13829784.47
	Scientific_Name	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Callinectes sapidus	Fundulus grandis	Fundulus grandis
	Size_Class	=<15	=<15	=<15	=<15	=<15	>2 to =<7.5	=<15	=<15
	Tissue_Category	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-080	PCB-080	58.1 U	101 U	20.5 U	62.4 U	30.3 UJ	9.49 U	19.8 U	15.3 U
PCB-081	PCB-081	771	740	653	1010	713	679	377 J	554
PCB-082	PCB-082	7620 J	7900	7240 J	13100 J	8050 J	42 J	6270	8780
PCB-083	PCB-083	4450 J	7260	4620 J	10100 J	6170 J	3.15 UJ	6860	6620
PCB-084	PCB-084	10100 J	13000	9500 J	17700 J	10200 J	251 J	13400	19800
PCB-085/116/117	PCB-085/116/117	73800 J	74300	56500 J	94700 J	65300 J	27400 J	35400	58800
PCB-086/087/097/108/119/125	PCB-CE2	129000 J	131000	102000 J	179000 J	118000 J	4190 J	72400	115000
PCB-088/091	PCB-088/091	26400 J	32100	22000 J	43500 J	25100 J	520 J	21300	33500
PCB-089	PCB-089	1740 J	2160	1650 J	3100 J	1860 J	8.35 J	1730	2520
PCB-090/101/113	PCB-090/101/113	233000 J	236000	174000 J	320000 J	202000 J	3320 J	121000	196000
PCB-092	PCB-092	40600 J	41900	32300 J	57500 J	36300 J	331 J	21500	35300
PCB-093/100	PCB-093/100	2640 J	2860	2110 J	4090 J	2240 J	682 J	1740	2830
PCB-094	PCB-094	827 J	1050	745 J	1490 J	838 J	43.6 J	764	1130
PCB-095	PCB-095	76400 J	97800	65000 J	130000 J	74200 J	714 J	71400	115000
PCB-096	PCB-096	477 J	698	456 J	1100 J	563 J	2.96 J	833	1160
PCB-098/102	PCB-098/102	6070 J	7500	5180 J	10300 J	6320 J	181 J	4840	7760
PCB-099	PCB-099	171000 J	151000	129000 J	223000 J	147000 J	62300 J	78100	132000
PCB-103	PCB-103	1660 J	2040	1420 J	2840 J	1580 J	13.4 J	1080	1720
PCB-104	PCB-104	35.9 J	45.4 J	33.9 J	48.8 J	43.2 J	1.22 UJ	29.5 J	29.4
PCB-105	PCB-105	111000	107000	91800	141000 J	109000	52400	48500	78800
PCB-106	PCB-106	39 UJ	97.3 U	62.1 J	55.4 UJ	19.2 UJ	8.89 UJ	13 U	16.5 U
PCB-107/124	PCB-107/124	8470 J	7330	6420 J	10500 J	7570 J	122 J	3210	5230
PCB-109	PCB-109	24000 J	20800	17800 J	27500 J	20600 J	6540 J	9100	14700
PCB-110/115	PCB-110/115	175000 J	181000	132000 J	236000 J	158000 J	5300 J	99100	158000
PCB-111	PCB-111	130 J	114 J	105 J	179 J	120 J	44 J	50.9	83.8
PCB-112	PCB-112	793 J	1420	617 J	1080 J	663 J	1.95 UJ	9.93 U	17.9 U
PCB-114	PCB-114	9080	8700	7410	12200	8620	3690	3680	5990
PCB-118	PCB-118	217000 J	237000	188000 J	266000 J	217000 J	105000	107000	177000
PCB-120	PCB-120	830 J	696	645 J	1000 J	722 J	248 J	276	448
PCB-121	PCB-121	38.5 J	37.9 U	31.2 J	53.3 J	33.1 J	1.93 UJ	22.5 J	33.4 J
PCB-122	PCB-122	1480 J	1440	1020 J	1590 J	1100 J	10.1 UJ	407	659
PCB-123	PCB-123	6310	6100	4960	8480	6700	2890	2570	4180
PCB-126	PCB-126	682 J	684	577	968 J	765	378	320	523
PCB-127	PCB-127	328 J	263 J	252 J	357 J	295 J	8.32 UJ	85.2	140
PCB-128/166	PCB-128/166	18100	16500	13600	21400	18800 J	4300	7620	11900
PCB-129/138/163	PCB-129/138/163	122000	109000	92500	148000	125000 J	30300	50200	79000
PCB-130	PCB-130	7570	6800	5980	9180	7660 J	547	3420	5460
PCB-131	PCB-131	233	254	241	443	286 J	32.5	218	290
PCB-132	PCB-132	12900	13600	11300	19500	14700 J	40.9	9980	15000
PCB-133	PCB-133	1950	1750	1560	2360	1870 J	479	891	1400
PCB-134	PCB-134	1610	1680	1400	2660	1810 J	3.17 U	1340	1940
PCB-135/151	PCB-135/151	19000	18100	15800	28600	20500 J	117	12300	19700
PCB-136	PCB-136	2360	2800	2260	4650	2780 J	27	2700	3970
PCB-137	PCB-137	8510	7280	6350	10500	8930 J	2310	3480	5660
PCB-139/140	PCB-139/140	2500	2350	1990	3250	2500 J	952	1260	2110
PCB-141	PCB-141	16900	14900	12900	21400	17300 J	84.5	8100	12900
PCB-142	PCB-142	23 U	60.3 U	13.5 J	45 U	19.2 UJ	2.98 U	15.5 U	20.9 U
PCB-143	PCB-143	176	210	177	277	206 J	3.22 J	14.6 U	171

Appendix D
Tissue Analytical Results

	Location ID	PB095.2	PB101_D	PB101_D	PB101_D	PB102
	Sample ID	PB04-I-A-BCR-W-001-COMP-201106	PB04-F-A-GKF-W-001-20110627	PB04-F-A-GKF-W-001-COMP-201106	PB04-F-A-GKF-W-009-20110627	PB04-F-A-PNF-W-001-COMP-201106
	Sample Date	6/29/2011	6/27/2011	6/27/2011	6/27/2011	6/27/2011
	Sample Type	N	N	N	N	N
	X	3200882	3201317.36	3201317.36	3201317.36	3201302.69
	Y	13829528	13828141.83	13828141.83	13828141.83	13828160.48
	Scientific_Name	Callinectes sapidus	Fundulus grandis	Fundulus grandis	Fundulus grandis	Lagodon rhomboides
	Size_Class	>2 to =<7.5	=<15	=<15	=<15	=<15
	Tissue_Category	Sedentary	Sedentary	Sedentary	Sedentary	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result
PCB-080	PCB-080	17.3 U	15.9 U	26.3 U	14.2 U	465 U
PCB-081	PCB-081	205	416 J	699	488	479 U
PCB-082	PCB-082	14.4 U	8280	8790	7910	8860
PCB-083	PCB-083	15 U	22.5 U	7170	18.9 U	3130
PCB-084	PCB-084	26.3 J	16800	16700	16600	14900
PCB-085/116/117	PCB-085/116/117	9780	55100	59200	60300	42900
PCB-086/087/097/108/119/125	PCB-CE2	1380	108000	124000	116000	86200
PCB-088/091	PCB-088/091	45.2 J	30100	35000	33700	24000
PCB-089	PCB-089	14.1 U	2240	2710	2370	538
PCB-090/101/113	PCB-090/101/113	441	186000	216000	204000	150000
PCB-092	PCB-092	23.6 J	33700	40800	36800	18300
PCB-093/100	PCB-093/100	297	2490	2830	2890	1760
PCB-094	PCB-094	13.1 J	998	1230	1100	102 J
PCB-095	PCB-095	73.9 J	100000	105000	116000	54400
PCB-096	PCB-096	8.38 U	1000	908	1050	694
PCB-098/102	PCB-098/102	14 J	6640	9220	7210	885
PCB-099	PCB-099	27300	131000	151000	142000	102000
PCB-103	PCB-103	12 U	1570	2110	1870	1190
PCB-104	PCB-104	6.92 U	26.9	40.8	42.6	46.7 J
PCB-105	PCB-105	16800	79500	95600	84200	64900
PCB-106	PCB-106	18.1 U	15.7 U	27.6 U	15.8 U	49.7 U
PCB-107/124	PCB-107/124	19.2 U	4960	6390	5850	4760
PCB-109	PCB-109	1510	14600	15500	15700	9770
PCB-110/115	PCB-110/115	1650	148000	158000	161000	115000
PCB-111	PCB-111	9.7 U	85.3	104	89.4	47.2
PCB-112	PCB-112	10 U	14.6 U	17.5 U	12.3 U	16.5 U
PCB-114	PCB-114	1260	5940	6940	6410	4760
PCB-118	PCB-118	37400	172000	189000	188000	138000
PCB-120	PCB-120	87.3	460	548	500	336
PCB-121	PCB-121	9.96 U	38.3	36.8	41	16.1 U
PCB-122	PCB-122	20.3 U	522	887	591	939
PCB-123	PCB-123	1010	4180	4610	4540	3490
PCB-126	PCB-126	121	551	639	588	321 J
PCB-127	PCB-127	27.5	147	25.3 U	154	45.4 U
PCB-128/166	PCB-128/166	1250	12900	12100	13100	6870
PCB-129/138/163	PCB-129/138/163	8940	86000	87600	86500	50700
PCB-130	PCB-130	115	5830	5890	5890	2210
PCB-131	PCB-131	18.8 U	24.3 U	379	284	426
PCB-132	PCB-132	18.1 U	15800	15400	16300	8320
PCB-133	PCB-133	183	1530	1690	1520	399
PCB-134	PCB-134	19.6 U	1940	2030	2140	402
PCB-135/151	PCB-135/151	13.2 U	20900	20000	22300	5610
PCB-136	PCB-136	7.64 U	4060	3900	4480	2070
PCB-137	PCB-137	918	6010	6180	6050	3210
PCB-139/140	PCB-139/140	352	2200	2370	2270	1130
PCB-141	PCB-141	16.8 U	13800	13500	14300	6740
PCB-142	PCB-142	17.7 U	280	23 U	22.2 U	16.6 U
PCB-143	PCB-143	16.9 U	193 J	235	175	15.4 U

Appendix D
Tissue Analytical Results

	Location ID	Field QC	Field QC	PB002.1	PB003.1	PB005.1	PB006.1	PB008.2	PB010	PB010.1
	Sample ID	EB-110621-A01	EB-110624-A01	PB01-I-A-BCR-W-001-COMP-201106	PB01-F-A-STM-W-006-20110618	PB01-I-A-BCR-W-002-COMP-201106	PB01-I-B-WHS-W-002-COMP-201106	PB01-I-B-WHS-W-001-COMP-201106	PB01-F-A-GM-W-008-20110618	PB01-I-A-WHS-W-001-COMP-201106
	Sample Date	6/24/2011	6/24/2011	6/20/2011	6/18/2011	6/20/2011	6/20/2011	6/19/2011	6/18/2011	6/20/2011
	Sample Type	EB	EB	N	N	N	N	N	N	N
	X			3202691	3202445.49	3202312	3202026.63	3202032	3201710.87	3201704.8
	Y			13836499	13836263.53	13836201	13836356.8	13836072	13836029.16	13836071.32
	Scientific_Name			Callinectes sapidus	Mugil cephalus	Callinectes sapidus	Penaeus setiferus	Penaeus setiferus	Brevoortia patronus	Penaeus setiferus
	Size_Class			>2 to =<7.5	=<15	>2 to =<7.5	>7.5 to =<13	>7.5 to =<13	=<15	>2 to =<7.5
	Tissue_Category			Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Migratory
	Tissue_Type			Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result	Result
PCB-144	PCB-144	--	259	13.1 J	482	15.2	405 J	228	919	409 J
PCB-145	PCB-145	--	7.62 U	3.63 U	3.94 J	2.83 U	2.97 UJ	2.5 U	5.99 J	5.42 UJ
PCB-146	PCB-146	--	53.1	2580	2360	3040	3570 J	3010	4500	3770 J
PCB-147/149	PCB-147/149	--	7200	416	8600	524	6190 J	4270	15200	6470 J
PCB-148	PCB-148	--	117	57	43.5	74.1	42.9 J	29.9	79.7	44.2 J
PCB-150	PCB-150	--	59.7	3.52 U	48.9	2.74 U	8.14 J	5.88 J	76.3	5.46 UJ
PCB-152	PCB-152	--	7.43 U	3.42 U	11.5	2.66 U	2.84 UJ	2.39 U	16.2	5.19 UJ
PCB-153/168	PCB-153/168	--	16100	16200	13700	17700	15100 J	12400	25400	14900 J
PCB-154	PCB-154	--	638	554	363	642	419 J	360	674	435 J
PCB-155	PCB-155	--	60.8 J	77	57.7	90.3	93.3	60.2	112	96.3
PCB-156/157	PCB-156/157	--	686 J	1350	1300	1610	2620	1840	2800	2570
PCB-158	PCB-158	--	496	1100	1290	1350	2100 J	1520	2440	2050 J
PCB-159	PCB-159	--	20.8 U	4.81 U	3.76 U	3.56 U	10.5 UJ	4.52 U	206	11.9 UJ
PCB-160	PCB-160	--	15.3 U	7.32 U	4.38 U	5.7 U	6.41 UJ	51.4 U	6.63 U	15.7 UJ
PCB-161	PCB-161	--	2910	6.09 U	4.02 U	4.74 U	6.18 UJ	49.5 U	6.07 U	15.1 UJ
PCB-162	PCB-162	--	61.5	63.2	51.3	82.8	163 J	52 J	106	172 J
PCB-164	PCB-164	--	362	12.6 J	845	31.1	1030 J	726	1660	1020 J
PCB-165	PCB-165	--	17.3 U	10.7	12.2 J	11 J	6.56 UJ	52.6 U	18	16.1 UJ
PCB-167	PCB-167	--	437	601	513	693	908	676	1090	892 J
PCB-169	PCB-169	--	16.4 U	8.26 J	16.1 J	4.37 U	17.7 J	15.1	9.12	23.1 J
PCB-170	PCB-170	--	1340	1020	2100	1040	2450	1930	4930	2740
PCB-171/173	PCB-171/173	--	550	525	689	536	743	615	1610	854
PCB-172	PCB-172	--	335	250	418	298	582	510	1020	598
PCB-174	PCB-174	--	1050	14.9	1700	22.7 J	1390	984	4030	1500
PCB-175	PCB-175	--	127	78	135	102	131	110	318	160
PCB-176	PCB-176	--	203	5.9 J	284	13.5 J	62.1	35.8	623	70.9
PCB-177	PCB-177	--	1490	333	1270	444	1450	1130	2820	1610
PCB-178	PCB-178	--	1050	476	615	519	673	581	1430	779
PCB-179	PCB-179	--	927	4.4 U	840	6.5	214	178	1780	289
PCB-180/193	PCB-180/193	--	3980	4340	5220	4180	6700	5670	12500	7190
PCB-181	PCB-181	--	11.4 U	23.7	34.8	31.9	42.7	40.1	76.8	52.6
PCB-182	PCB-182	--	44	24.7	18.2	29.2	28.8	23.9	61.8	42.8 J
PCB-183/185	PCB-183/185	--	1650	1460	1860	1420	1880	1620	4170	1900
PCB-184	PCB-184	--	28.2	40.2	39.4	59.6	32.6	32.1	78.8	35.8
PCB-186	PCB-186	--	4.75 U	2.21 U	1.69 U	1.84 U	3.96 U	2.27 U	2.85 U	4.47 U
PCB-187	PCB-187	--	6580	3100	3670	2840	6130	3890	8390	6130
PCB-188	PCB-188	--	119 J	49.2	28.5	40.3	30.8	22.2	51.8	32.9
PCB-189	PCB-189	--	62.1 J	78.6	78.3	87.1	130	93	215	138
PCB-190	PCB-190	--	243	251	430	259	635	512	1030	670
PCB-191	PCB-191	--	50.6 J	71.3	107	74.7	136	116	253	156
PCB-192	PCB-192	--	9.27 U	3.86 U	2.82 J	3.74 U	6	4.43 U	8.55 J	7.27 U
PCB-194	PCB-194	--	1090	539	871	566	1020	707	2740	919
PCB-195	PCB-195	--	291	154	370	176	352	227	999	718 U
PCB-196	PCB-196	--	622	446	567	442	530	362	1550	538
PCB-197/200	PCB-197/200	--	200	141	285	177	173	130	727	177
PCB-198/199	PCB-198/199	--	1790	752	1280	906	1230	994	3550	1110
PCB-201	PCB-201	--	438	166	230	196	134	96.3	568	137
PCB-202	PCB-202	--	1160	687	753	608	614	526	1430	545

Appendix D
Tissue Analytical Results

	Location ID	PB010.3	PB013.1_A	PB013.3	PB013.3	PB015.1	PB015.2	PB015_A	PB015_A
	Sample ID	PB01-I-A-BCR-W-003-COMP-201106	PB01-I-A-BCR-W-010-COMP-201106	PB01-F-A-GKF-W-004-COMP-201106	PB01-F-A-STM-W-003-20110616	PB01-F-A-GKF-W-002-COMP-201106	PB01-I-A-BCR-W-004-COMP-201106	PB01-F-A-GKF-W-001-COMP-201106	PB01-I-A-BCR-W-006-COMP-201106
	Sample Date	6/19/2011	6/22/2011	6/21/2011	6/15/2011	6/15/2011	6/16/2011	6/25/2011	6/22/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201743	3201306.47	3201433.88	3201433.88	3201175	3201180	3201168.73	3201168.73
	Y	13836152	13836191.23	13836075.12	13836075.12	13836251	13836183	13836254.66	13836254.66
	Scientific_Name	Callinectes sapidus	Callinectes sapidus	Fundulus grandis	Mugil cephalus	Fundulus grandis	Callinectes sapidus	Fundulus grandis	Callinectes sapidus
	Size_Class	>2 to =<7.5	>2 to =<7.5	=<15	=<15	=<15	>2 to =<7.5	=<15	>2 to =<7.5
	Tissue_Category	Sedentary	Sedentary	Sedentary	Migratory	Sedentary	Sedentary	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-144	PCB-144	76.1	16.3	2980	1280	2420	31.2	4480 J	24.7
PCB-145	PCB-145	3.27 U	0.52 U	17.2	12.5	13.6 J	4.68 U	20 J	4.07 U
PCB-146	PCB-146	6710	2720	15100	25.4 J	12400	6460	23200 J	4620
PCB-147/149	PCB-147/149	1870	417	37600	18000	33100	1080	54800 J	609
PCB-148	PCB-148	115	50.9	180	91.5	150	127	291 J	77
PCB-150	PCB-150	3.17 U	0.48 U	112	100	83.5	4.53 U	172 J	3.93 U
PCB-152	PCB-152	3.08 U	0.469 U	41.3	32.1	36.4	4.4 U	55.6 J	3.92 U
PCB-153/168	PCB-153/168	40500	16300	76500	36900	67400	37300	119000 J	27500
PCB-154	PCB-154	1120	442	1680	770	1410	1150	2700 J	691
PCB-155	PCB-155	96.1	58.5	168	141	129	128	224	151
PCB-156/157	PCB-156/157	4460	2060	9930	3830	8240	3990	13700	3040
PCB-158	PCB-158	4190	1760	7980	3800	7040	3690	12500 J	2770
PCB-159	PCB-159	7.12 U	7.27	7.11 U	15.7 U	5.71 U	13.1	7.66 UJ	14 U
PCB-160	PCB-160	9.51 U	24.4 U	6.76 U	14.2 U	7.66 U	8.64 U	9.8 UJ	16.2 U
PCB-161	PCB-161	7.91 U	22.9 U	6.09 U	5730	6.9 U	7.19 U	8.82 UJ	15.7 U
PCB-162	PCB-162	155	87	623	163 J	545	171	1050 J	155
PCB-164	PCB-164	177	23.8 U	3500	1910	3380	43.8	5520 J	16.4 U
PCB-165	PCB-165	18.2	26.1 U	49.8	40.5	37.5	18.4	76.6 J	17.6 U
PCB-167	PCB-167	1850	788	3910	1480	3290	1570	5590	1290
PCB-169	PCB-169	8.25 U	1.74 U	75.5	10.1 U	71.7	10.1 U	222 J	29.5
PCB-170	PCB-170	3760	1450	12800	7580	9910	2830	18500	3120
PCB-171/173	PCB-171/173	1550	674	4330	2160	3330	1290	6030	1240
PCB-172	PCB-172	809	356	2450	1530	2020	691	3560	748
PCB-174	PCB-174	108	25.1	7590	3470	6070	38.4	9830	32.5
PCB-175	PCB-175	251	103	759	389	590	222	1110	179
PCB-176	PCB-176	44.8 J	5.35 J	1000	811	831	30.3 J	1340	14.7 J
PCB-177	PCB-177	1280	418	6780	3690	5110	947	9630	762
PCB-178	PCB-178	883	467	3540	1720	2720	822	5090	854
PCB-179	PCB-179	17.3	5.7	3270	2540	2670	6.7	4640	10.6 J
PCB-180/193	PCB-180/193	13100	5530	33100	19100	25500	11000	45500	10800
PCB-181	PCB-181	86.6	39.7	221	106	169	83.8	307	64.2
PCB-182	PCB-182	70.2	36.3	155	88.1	110 J	59.1 J	202 J	61
PCB-183/185	PCB-183/185	4300	1820	10800	6010	8030	3680	15100	2870
PCB-184	PCB-184	63.6	31.8	152	87.6	109	81.4	198	65.2
PCB-186	PCB-186	3.28 U	0.463 U	4.49 J	3.25 U	3.1	3.9 U	4.2 J	6.43 U
PCB-187	PCB-187	7370	2980	18400	11500	14400	6300	25600	6200
PCB-188	PCB-188	64.2	34.7	105	69.1	78.4	63.9	146	60.7
PCB-189	PCB-189	226	84.7	460	251 J	384	210	644	197
PCB-190	PCB-190	836	337	2000	1540	1680	684	2800	796
PCB-191	PCB-191	229	90.9	616	366	487	192	887	212
PCB-192	PCB-192	5.23 U	1.75 J	6.53	10.2 U	6.39 J	6.51 U	7.54 J	9.58 U
PCB-194	PCB-194	1660	550	4440	3310	3660	1440	5680	1560
PCB-195	PCB-195	539	169	2280	1220	1670	423	3160	437
PCB-196	PCB-196	1310	509	3640	1800	2820	1170	5630	1070
PCB-197/200	PCB-197/200	283	126	1380	695	960	294	1850	241
PCB-198/199	PCB-198/199	2210	947	7980	3720	5850	2110	11900	1860
PCB-201	PCB-201	391	171	1610	604	1090	389	2300	306
PCB-202	PCB-202	714	346	2600	1590	1970	755	3700	750

Appendix D
Tissue Analytical Results

	Location ID	PB015_A	PB015_A	PB015_A	PB016.2	PB019.1	PB019.1	PB019.1	PB019.1
	Sample ID	PB01-I-A-BCR-W-007-COMP-201106	PB01-I-A-BCR-W-009-COMP-201106	PB01-I-B-BRS-W-001-COMP-201106	PB01-F-A-GKF-W-003-COMP-201106	PB01-F-A-SAS-W-005-20110622	PB01-I-B-BRS-W-012-20110621	PB01-I-B-BRS-W-014-20110621	PB01-I-B-BRS-W-015-20110621
	Sample Date	6/22/2011	6/22/2011	6/20/2011	6/15/2011	6/22/2011	6/21/2011	6/21/2011	6/21/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201168.73	3201168.73	3201168.73	3201190	3201152.87	3201152.87	3201152.87	3201152.87
	Y	13836254.66	13836254.66	13836254.66	13836042	13835753.58	13835753.58	13835753.58	13835753.58
	Scientific_Name	Callinectes sapidus	Callinectes sapidus	Penaeus aztecus	Fundulus grandis	Cynoscion arenarius	Penaeus aztecus	Penaeus aztecus	Penaeus aztecus
	Size_Class	>2 to =<7.5	>2 to =<7.5	>7.5 to =<13	=<15	=<15	>7.5 to =<13	>7.5 to =<13	>7.5 to =<13
	Tissue_Category	Sedentary	Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-144	PCB-144	20.9	27.8	728	1520	1040 J	1450 J	876	1010
PCB-145	PCB-145	0.874 U	1.13 U	2.47 U	9.24	5.28 J	114 U	20.7 U	40 U
PCB-146	PCB-146	3780	4940	5460	7850	25.6 J	9570	6990	6900
PCB-147/149	PCB-147/149	636	819	8440	18400	7780 J	16900	11800	11300
PCB-148	PCB-148	51.7	64.3	65.7	97.9	73 J	208	100	124 J
PCB-150	PCB-150	0.845 U	1.09 U	15.7	56.5	60.2 J	110 U	20 U	38.6 U
PCB-152	PCB-152	0.843 U	1.09 U	4.42	19.6	18.6 J	108 U	19.7 U	37.9 U
PCB-153/168	PCB-153/168	20500	27800	24200	43400	38500 J	47100	34300	34200
PCB-154	PCB-154	476	603	688	939	877 J	1290	881	869
PCB-155	PCB-155	81.6	104	137	91	110	192 J	189 J	179
PCB-156/157	PCB-156/157	2750	3710	3630	4760	3950	5280	4880	4360
PCB-158	PCB-158	2320	3130	2930	4380	3760 J	5900	4880	4650
PCB-159	PCB-159	3.88 U	5.56 U	17.2 U	6.1 U	8.52 UJ	158 U	31.4 U	160 J
PCB-160	PCB-160	4.11 U	3.69 U	6.08 U	5.5 U	8.41 UJ	193 U	28.4 U	49.7 U
PCB-161	PCB-161	4.01 U	3.59 U	5.77 U	4.95 U	3540 J	186 U	27.5 U	48 U
PCB-162	PCB-162	137	186	16.5 U	224	165 J	303	205 J	255 J
PCB-164	PCB-164	4.19 U	50.3	1460	1900	1360 J	2550	2070	1880
PCB-165	PCB-165	13.7	13.3	18.8	27.9	17.6 J	206 U	30.4 U	53 U
PCB-167	PCB-167	1090	1510	1400	1960	1390 J	1990	1800	1600
PCB-169	PCB-169	18.5	5.13 U	14.3 U	38.7	7.04 UJ	288 U	25 U	58.6 U
PCB-170	PCB-170	2180 J	3500	4050	6020	6920 J	5600	6150	5140
PCB-171/173	PCB-171/173	886 J	1330	1130	2090	2200 J	1610	1560	1480
PCB-172	PCB-172	589 J	881	921	1200	1320 J	1290	1230	1080
PCB-174	PCB-174	20.8 J	41.1 J	1670	3100	2110 J	2340	2210	1940
PCB-175	PCB-175	141 J	192	220	378	341 J	372 J	301	287
PCB-176	PCB-176	22.9 J	17.6	53.2 J	463	416 J	222 J	177	196
PCB-177	PCB-177	672 J	1090	2680	3200	1470 J	3370	3500	3350
PCB-178	PCB-178	666 J	891	1100	1770	1460 J	1660	1470	1390
PCB-179	PCB-179	4.85 J	5.69	261	1510	1030 J	528	407	426
PCB-180/193	PCB-180/193	7760 J	12100	10400	16200	19000 J	14000	14400	12400
PCB-181	PCB-181	47.5 J	72.4	70	103	124 J	87.4 U	97.5	45.7 U
PCB-182	PCB-182	44.5 J	57.4	46.6	77.6	82.9 J	82.8 U	51.5	32.5 U
PCB-183/185	PCB-183/185	2150 J	3120	3010	5550	6270 J	4600	4440	4230
PCB-184	PCB-184	32.9 J	42	45.2	71.7	95.5 J	91 J	70	72.8
PCB-186	PCB-186	0.671 UJ	1.08 U	2.06 U	1.7 U	1.27 UJ	67.9 U	13.9 U	26.7 U
PCB-187	PCB-187	5710 J	7710	9650	9090	5520 J	11400	13300	10100
PCB-188	PCB-188	45.4	52.6	48.7	46.8	58.5	102 U	68.5 J	83.4 J
PCB-189	PCB-189	125 J	195	203	212	248 J	296	256	259
PCB-190	PCB-190	571 J	852	981	1020	1430 J	1300	1400	1260
PCB-191	PCB-191	149 J	217	220	317	359 J	329	290	253
PCB-192	PCB-192	3.19 UJ	3.05 U	7.85 J	2.56 U	10.7 J	73.9 U	18 U	38.7 U
PCB-194	PCB-194	895	1550	1640	2000	4330	2410	2270	2090
PCB-195	PCB-195	300	536	545	943	1420	689	764	694
PCB-196	PCB-196	832	1250	830	1550	2300	1040	1100	1010
PCB-197/200	PCB-197/200	171	227	232	503	736	369	344	318
PCB-198/199	PCB-198/199	1670	2480	1660	3190	3780	2260	2450	2420
PCB-201	PCB-201	260	337	225	604	744	324	330	303
PCB-202	PCB-202	577	697	839	1070	1430	1010	1090	947

Appendix D
Tissue Analytical Results

	Location ID	PB019.1	PB019.1	PB019.1	PB019.2	PB019_A	PB019_A	PB024.1	PB024.1
	Sample ID	PB01-I-B-BRS-W-019-20110621	PB01-I-B-BRS-W-022-20110622	PB01-I-B-BRS-W-023-20110622	PB01-I-A-OYS-W-001-COMP-201106	PB01-F-A-GKF-W-005-COMP-201106	PB01-I-A-BCR-W-008-COMP-201106	PB01-F-A-GM-W-001-20110615	PB01-F-A-GM-W-002-20110615
	Sample Date	6/21/2011	6/22/2011	6/22/2011	6/28/2011	6/21/2011	6/23/2011	6/15/2011	6/15/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201152.87	3201152.87	3201152.87	3201194.8	3201314.96	3201314.96	3201090.96	3201090.96
	Y	13835753.58	13835753.58	13835753.58	13835735.1	13835750.59	13835750.59	13835160.37	13835160.37
	Scientific_Name	Penaeus aztecus	Penaeus aztecus	Penaeus aztecus	Crassostrea virginica	Fundulus grandis	Callinectes sapidus	Brevoortia patronus	Brevoortia patronus
	Size_Class	>7.5 to =<13	>7.5 to =<13	>7.5 to =<13	>2 to =<7.5	=<15	>2 to =<7.5	=<15	=<15
	Tissue_Category	Migratory	Migratory	Migratory	Sedentary	Sedentary	Sedentary	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-144	PCB-144	1590 J	1350	1070	502	2720	49.7	1390	1130
PCB-145	PCB-145	68.4 UJ	1.24 U	5.15 U	9.4	12.4 U	1.85 U	7.21	7.6 J
PCB-146	PCB-146	11200 J	36.8	7600	4160	15600	7460	31.9	27 U
PCB-147/149	PCB-147/149	20500 J	16000	12800	16300	34300	1360	24500	20700
PCB-148	PCB-148	183 J	140	103	61.9	235	155	96.8	85.7
PCB-150	PCB-150	66.1 UJ	27.3	22.1	65.7	98.6	1.79 U	101	84.4
PCB-152	PCB-152	64.8 UJ	13.3	11 J	24.3	33.5	1.78 U	26.6	25.1
PCB-153/168	PCB-153/168	59900 J	44300	37700	22300	81300	34100	38500	31700
PCB-154	PCB-154	1650 J	1300	932	599	1670	1190	852	719
PCB-155	PCB-155	252	155	187	126	190	397	109	104
PCB-156/157	PCB-156/157	6230	5180	4680	1650	9230	3260	3970	3360
PCB-158	PCB-158	6700 J	5480	4620	253	8020	3460	3960	3190
PCB-159	PCB-159	200 J	10.1 U	24.4 U	5.79 U	32.5 U	19.9 U	16.1 U	23.5 U
PCB-160	PCB-160	85.9 UJ	9.69 U	23.7 U	6.13 U	7.35 U	6.62 U	12.8 U	22.9 U
PCB-161	PCB-161	83 UJ	8240	22.6 U	5.81 U	6.62 U	6.44 U	6150	5020
PCB-162	PCB-162	326 J	237 J	192 J	205	680	127	172	148 J
PCB-164	PCB-164	3190 J	2590	2180	1150	3870	118	2500	2000
PCB-165	PCB-165	91.8 UJ	12	35.8	16.5 J	64.5	32.8	49	40.2
PCB-167	PCB-167	2160	1900	1810	762	3800	1370	1540	1290
PCB-169	PCB-169	247 UJ	6.79 U	13.9 U	6.06 U	91	34.2 U	14 U	16 U
PCB-170	PCB-170	7270	6980	7290	565	13800	2940 J	7330	6120
PCB-171/173	PCB-171/173	2010	2110	1970	540	4300	1230 J	2400	1980
PCB-172	PCB-172	1630	1500	1430	101	2690	902 J	1590	1390
PCB-174	PCB-174	3030	2990	2650	208	7810	68 J	6240	5090
PCB-175	PCB-175	429	413	341	78.8	784	235 J	423	346
PCB-176	PCB-176	261	252	207	316	981	16.7 J	883	750
PCB-177	PCB-177	4470	4680	4360	2090	6690	908 J	4350	3560
PCB-178	PCB-178	1970	2080	1780	804	3630	1060 J	1880	1540
PCB-179	PCB-179	580	618	461	1290	3120	11.3 J	2600	2140
PCB-180/193	PCB-180/193	17700	16900	16800	628	34000	11100 J	19100	16200
PCB-181	PCB-181	148	143	110	7.68	221	97.8 J	119	103
PCB-182	PCB-182	114 J	97.3	5.26 U	2.62 U	192	114 J	86.7	51.4
PCB-183/185	PCB-183/185	5430	5660	4960	1160	10700	3060 J	6210	5030
PCB-184	PCB-184	33.8 U	82.1	76.7	23.8	182	154 J	85	76.9
PCB-186	PCB-186	36.6 U	1.51 U	4.42 U	1.9 U	6.49 J	2.36 UJ	3.53 J	6.2 U
PCB-187	PCB-187	13900	12900	12900	6630	20900	7880 J	11600	9950
PCB-188	PCB-188	89.9	64.4	66.3	41.6	129	151	58.8	54.2
PCB-189	PCB-189	350	274	265	53	464	189 J	284	258
PCB-190	PCB-190	1650	1750	1810	87	2210	745 J	1500	1290
PCB-191	PCB-191	387	364	351	8.88 J	677	225 J	352	311
PCB-192	PCB-192	40.2 U	5.97 U	15.8 U	2.97 U	15.5	14.4 J	10.5	12.4 U
PCB-194	PCB-194	2850	2230	2460	70.6	4790	1210	4140	3780
PCB-195	PCB-195	880	783	803	26.9	2300	502	1410	1260
PCB-196	PCB-196	1240	1280	1240	15.5	4040	1590	2070	1900
PCB-197/200	PCB-197/200	418	390	367	41.8	1380	665	872	781
PCB-198/199	PCB-198/199	2750	2940	2780	167	8140	3160	4780	4200
PCB-201	PCB-201	398	402	355	110	1660	740	715	624
PCB-202	PCB-202	1370	1050	1130	917	3860	2090	1600	1390

Appendix D
Tissue Analytical Results

	Location ID	PB024.4	PB025_A	PB026.1	PB032_A	PB037.2	PB037.4	PB037.5	PB037.6
	Sample ID	PB01-I-A-BCR-W-005-COMP-201106	PB01-F-A-GM-W-004-20110615	PB01-F-A-STM-W-002-20110616	PB02-F-A-PNF-W-009-20110617	PB02-F-A-STM-W-006-20110616	PB02-I-B-BCR-W-001-COMP-201106	PB02-I-B-BRS-W-001-COMP-201106	PB02-I-A-BCR-W-002-COMP-201106
	Sample Date	6/20/2011	6/15/2011	6/15/2011	6/17/2011	6/16/2011	6/17/2011	6/17/2011	6/16/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201319	3201214.42	3201153.65	3201407.03	3201346.97	3201504	3201380	3201402
	Y	13835188	13835154.42	13835079.21	13834542.25	13834038.02	13833530	13834151	13833775
	Scientific_Name	Callinectes sapidus	Brevoortia patronus	Mugil cephalus	Lagodon rhomboides	Mugil cephalus	Callinectes sapidus	Penaeus aztecus	Callinectes sapidus
	Size_Class	>2 to =<7.5	=<15	=<15	=<15	=<15	>7.5 to =<13	>7.5 to =<13	>2 to =<7.5
	Tissue_Category	Sedentary	Migratory	Migratory	Migratory	Migratory	Migratory	Migratory	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-144	PCB-144	134	2020	1590	1390	1960	27.8 J	581	49.1
PCB-145	PCB-145	10.3 U	10.8 J	14.9 J	13.2 U	20.3 J	3.66 UJ	1.04 J	2.72 U
PCB-146	PCB-146	8870	41.4	29	7420	35.8	7640 J	4170	5000
PCB-147/149	PCB-147/149	4010	34800	18700	21100	27700	883 J	6090	1180
PCB-148	PCB-148	301	132	93.8	127	121	90 J	50.6	83.9
PCB-150	PCB-150	9.96 U	135	106	93.9	118	3.54 UJ	8.27	2.63 U
PCB-152	PCB-152	9.67 U	42.1	44.9	12.7 U	64.1	3.53 UJ	4.34 J	2.56 U
PCB-153/168	PCB-153/168	36400	50000	42300	44000	48900	46500 J	18700	30800
PCB-154	PCB-154	1680	1140	905	871	953	1100 J	457	904
PCB-155	PCB-155	279	120	93.3	199	116	88.9	61.5	54.4
PCB-156/157	PCB-156/157	3330	5700	5090	4660	5860	6940	3210	3810
PCB-158	PCB-158	3270	5500	4750	4170	5360	5560 J	2680	3510
PCB-159	PCB-159	23 U	19.2 U	18.2 U	181 J	28.6 U	14.2 UJ	4.22 U	9.29 J
PCB-160	PCB-160	28.8 U	15.4 U	14.1 U	17.1 U	24 U	7.15 UJ	4.43 U	9.27 U
PCB-161	PCB-161	24 U	7980	6280	15.7 U	7460	6.96 UJ	4.21 U	7.71 U
PCB-162	PCB-162	126 J	227	204	165	216	163 J	135	157
PCB-164	PCB-164	261	3410	2050	2090	2800	56.8 J	1130	84.7
PCB-165	PCB-165	46.3	63.3	45 J	36 J	63.1	20.1 J	11.5	12.8 J
PCB-167	PCB-167	1360	2170	1940	1800	2190	2510	1140	1470
PCB-169	PCB-169	25.1 U	14.3 U	12.2 U	41.2	21 U	12.2 UJ	3.76 U	27.4
PCB-170	PCB-170	3240	9670	8700	7070	8920	5920	2950	2730
PCB-171/173	PCB-171/173	1630	3210	2440	2270	2670	2080	862	1140
PCB-172	PCB-172	1000	2050	1650	1210	1750	1430	605	605
PCB-174	PCB-174	454	8350	3240	3310	5450	40.7	1330	50.5
PCB-175	PCB-175	370	544	428	428	474	311	159	175
PCB-176	PCB-176	112	1210	823	640	1050	10.9 J	65	20.4 J
PCB-177	PCB-177	1960	5750	3710	2670	4540	1130	1770	715
PCB-178	PCB-178	1810	2510	1820	1190	2040	1450	742	705
PCB-179	PCB-179	118	3620	2630	1540	3250	8.78	180	9.66
PCB-180/193	PCB-180/193	12800	24400	21300	17900	21800	21000	7890	9800
PCB-181	PCB-181	120	165	145	129	147	118	55.5	75
PCB-182	PCB-182	165	111	86.7	90.2	84.2	88.3	32.3	32.7
PCB-183/185	PCB-183/185	4390	8040	6620	6090	7010	5180	2320	3040
PCB-184	PCB-184	183	92.3	58.3	90.2	73.8	36.9	21.1	32.7
PCB-186	PCB-186	6.76 U	2.9 U	3.66 U	9.6 U	7.16 U	4.25 U	1.19 U	1.83 U
PCB-187	PCB-187	9740	14900	12100	12000	12600	12600	5640	5250
PCB-188	PCB-188	167	71	58.7	97.9	64.4	49.5	27.5	35.4 J
PCB-189	PCB-189	238	377	283	248	307	321	143	175
PCB-190	PCB-190	840	1920	1750	1580	1790	1420	754	669
PCB-191	PCB-191	249	461	399	391	419	400	150	175
PCB-192	PCB-192	17.7 U	13.7 J	8.58 U	16.4	13.5 U	4.85 U	4.15 J	3.75 U
PCB-194	PCB-194	1720	4950	3560	3080	3700	2740	1060	1260
PCB-195	PCB-195	603	1850	1300	1250	1350	714	351	373
PCB-196	PCB-196	1560	2670	1920	1910	1970	1990	564	952
PCB-197/200	PCB-197/200	637	1070	603	725	731	250	150	156
PCB-198/199	PCB-198/199	3320	6190	3920	3200	4210	3150	1190	1610
PCB-201	PCB-201	803	904	565	707	642	405	166	245
PCB-202	PCB-202	3200	1850	1220	1430	1430	771	494	438

Appendix D
Tissue Analytical Results

	Location ID	PB037_A	PB047.1_A	PB047.3	PB048.3	PB048.3	PB048.3	PB049_A	PB049_A
	Sample ID	PB02-I-A-BCR-W-004-COMP-201106	PB02-F-A-PNF-W-002-20110615	PB02-I-A-BCR-W-001-COMP-201106	PB02-F-A-GM-W-001-20110616	PB02-F-A-GM-W-002-20110616	PB02-F-A-STM-W-001-20110616	PB02-F-A-GKF-W-001-COMP-201106	PB02-I-A-BCR-W-003-COMP-201106
	Sample Date	6/19/2011	6/15/2011	6/19/2011	6/16/2011	6/16/2011	6/16/2011	6/15/2011	6/22/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201325.97	3201461.79	3201645	3201519.15	3201519.15	3201519.15	3201468.39	3201468.39
	Y	13833885.45	13833007.68	13832925	13832869.89	13832869.89	13832869.89	13832722.8	13832722.8
	Scientific_Name	Callinectes sapidus	Lagodon rhomboides	Callinectes sapidus	Brevoortia patronus	Brevoortia patronus	Mugil cephalus	Fundulus grandis	Callinectes sapidus
	Size_Class	>2 to =<7.5	=<15	>2 to =<7.5	=<15	=<15	=<15	=<15	>2 to =<7.5
	Tissue_Category	Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-144	PCB-144	27.5	2780	39.1 J	2140	2050	1560	4050	16.3
PCB-145	PCB-145	0.66 U	9.24 U	11.8 U	11.8	12.6 J	18.8 J	23.1 J	1.61 U
PCB-146	PCB-146	6060	40.6	4950	41.9	9550	6150	18300	3820
PCB-147/149	PCB-147/149	739	33700	741	35100	34500	21000	44500	386
PCB-148	PCB-148	64.5	136	90.6	127	122	72.9	192	64.8
PCB-150	PCB-150	0.61 U	113	11.4 U	134	132	83.8	123	1.49 U
PCB-152	PCB-152	0.596 U	18 J	11.1 U	41.9	44.9 J	51.1	56.2	1.45 U
PCB-153/168	PCB-153/168	35100	82700	31200	56500	52200	35600	96400	23300
PCB-154	PCB-154	698	1130	852	1140	1090	678	1760	577
PCB-155	PCB-155	45.6	116	68.4 J	130	121	43.3 J	149	61.7
PCB-156/157	PCB-156/157	6300	11100	4510	6900	6080	4740	13900	2840
PCB-158	PCB-158	5060	10000	3920	6380	5780	4200	11400	2300
PCB-159	PCB-159	12.1	32.9 U	16.8 U	8.9 U	15.7 U	23.9 U	25.2 U	8.5 U
PCB-160	PCB-160	2.65 U	35.6 U	18.6 U	10.9 U	14.8 U	21 U	6.77 U	4.29 U
PCB-161	PCB-161	2.48 U	12100	15.5 U	8680	14.4 U	20.4 U	6.09 U	4.02 U
PCB-162	PCB-162	207	363	170	314	280	200	787	119
PCB-164	PCB-164	2.58 U	4070	43.3	3770	3540	2230	4940	31.4
PCB-165	PCB-165	15.8	42.3 J	16.6 J	58.7	36.7 J	38.8	50.4	15 J
PCB-167	PCB-167	2200	4160	1570	2640	2320	1630	5360	1110
PCB-169	PCB-169	3.67 U	46.5	18.7 U	51.9	11.3 U	19 U	95.8	7.08 U
PCB-170	PCB-170	4040	15500	2610	11400	10100	5800	17500	1950
PCB-171/173	PCB-171/173	1520	4240	1110	3640	3170	1810	5630	805
PCB-172	PCB-172	908	2640	617	2340	2150	1120	3020	538
PCB-174	PCB-174	23.1	6020	20.9 U	9010	9010	3990	9710	21.9 J
PCB-175	PCB-175	238	735	190	596	567	303	993	133
PCB-176	PCB-176	71.9 J	1060	30.1	1260	1160	687	1270	6.32
PCB-177	PCB-177	507	4340	556	6320	5610	2970	8550	524
PCB-178	PCB-178	1030	1980	751	2690	2480	1290	4460	699
PCB-179	PCB-179	4.53	2430	7.26 U	3690	3480	2150	4040	6.17 J
PCB-180/193	PCB-180/193	12600	38100	9680	28800	25000	13900	41900	7920
PCB-181	PCB-181	94.5	249	72.9	180	170	107	308	48.9
PCB-182	PCB-182	45.8	8.05 U	59	117	111	57.9	183	43.5
PCB-183/185	PCB-183/185	3830	11300	3090	9130	8250	4670	13900	2090
PCB-184	PCB-184	32	72.2	90.3	96	88.6	29.7	152	31
PCB-186	PCB-186	0.5 U	6.92 U	8.06 U	2.55 U	3.25 U	5.8 U	4.94 J	1.37 U
PCB-187	PCB-187	6320	22200	5020	18300	15900	8130	22600	4750
PCB-188	PCB-188	29.5	84.4	79.1	78.8	73.2	32.7	94.8	55.3
PCB-189	PCB-189	214	464	188	423	375	196	524	127
PCB-190	PCB-190	869	3350	643	2330	2070	1150	2710	513
PCB-191	PCB-191	224	721	166	538	480	266	769	143
PCB-192	PCB-192	1.33 U	19 U	16.7 U	11.9	14.7	13.1 U	6.41 U	2.56 U
PCB-194	PCB-194	1480	7580	1210	6010	5360	2300	4650	856
PCB-195	PCB-195	460	2610	332	2070	1870	870	2670	268
PCB-196	PCB-196	1160	3930	978	2940	2720	1280	4760	741
PCB-197/200	PCB-197/200	186	931	450	1100	1060	428	1440	160
PCB-198/199	PCB-198/199	2220	6460	1640	6690	6040	2690	9700	1560
PCB-201	PCB-201	311	1020	381	922	888	378	1830	247
PCB-202	PCB-202	557	1710	623	2050	1860	755	2570	493

Appendix D
Tissue Analytical Results

	Location ID	PB052.1	PB052.1	PB053.2	PB053.2	PB053_B	PB056_A	PB056_A	PB057.2
	Sample ID	PB02-F-A-SAS-W-002-20110616	PB02-F-A-STM-W-003-20110616	PB02-F-A-GKF-W-025-20110621	PB02-F-A-GKF-W-029-20110622	PB02-F-A-GKF-W-013-20110618	PB02-F-A-GKF-W-010-20110618	PB02-F-A-GKF-W-011-20110618	PB03-F-A-GM-W-001-20110617
	Sample Date	6/16/2011	6/16/2011	6/21/2011	6/22/2011	6/18/2011	6/18/2011	6/18/2011	6/17/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201515.24	3201515.24	3201266.16	3201266.16	3201390.48	3201420.22	3201420.22	3201603.32
	Y	13832564.31	13832564.31	13832433.69	13832433.69	13832440.54	13832183.54	13832183.54	13832054.52
	Scientific_Name	Cynoscion arenarius	Mugil cephalus	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Brevoortia patronus
	Size_Class	=<15	=<15	=<15	=<15	=<15	=<15	=<15	=<15
	Tissue_Category	Migratory	Migratory	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-144	PCB-144	1530	2370	6220 J	5250	4980 J	3420	3710	1730 J
PCB-145	PCB-145	11.9 J	32.8	28.6 J	24.5 J	32 J	16.3	22.4	9.35 J
PCB-146	PCB-146	42.9 J	10100	94.4 J	76.1	21500 J	16900	15500	25.6 J
PCB-147/149	PCB-147/149	11600	30300	77300 J	62600	54600 J	40100	41800	25900 J
PCB-148	PCB-148	87.1	94.4	309 J	236	234 J	170	182	94.6 J
PCB-150	PCB-150	67.5	105	193 J	154	140 J	98.2	111	93.6 J
PCB-152	PCB-152	29.8 J	78	87 J	74.9	67.6 J	41.4	58	33.7 J
PCB-153/168	PCB-153/168	55900	60100	161000 J	132000	133000 J	106000	98100	44200 J
PCB-154	PCB-154	996	897	3010 J	2280	2320 J	1670	1610	864 J
PCB-155	PCB-155	125	62.6	202	166	182 J	172	117	77.3
PCB-156/157	PCB-156/157	7260	8830	18800 J	15800	18700 J	15400	12900	5610
PCB-158	PCB-158	6350	7490	17400 J	15100	15700 J	12700	11100	4930 J
PCB-159	PCB-159	19.5 U	22.5 U	12.9 UJ	12.5 U	559 J	483	401	7.22 UJ
PCB-160	PCB-160	21.6 U	26.7 U	13.8 UJ	12.8 U	9.23 UJ	14.5 U	33.3 U	9.12 UJ
PCB-161	PCB-161	5020	26 U	23800 J	19500	8.46 UJ	13.3 U	30.5 U	6840 J
PCB-162	PCB-162	344	302	743 J	684	755 J	1070	640 J	213 J
PCB-164	PCB-164	2470	3500	7530 J	6500	6520 J	5210	4810	2820 J
PCB-165	PCB-165	28.6 J	58.2	101 J	66.9	75.2 J	56.7	57.5 J	47.9 J
PCB-167	PCB-167	2450	3180	7390 J	6150	7230 J	5980	5270	2000 J
PCB-169	PCB-169	13.5 U	15.6 U	13.5 UJ	11.6 U	24 J	8.52 U	21.3 U	5.81 UJ
PCB-170	PCB-170	12000	11900	21100	19400	22000 J	20100	15000	8340 J
PCB-171/173	PCB-171/173	3460	3160	7170	6280	6750 J	5590	4550	2580 J
PCB-172	PCB-172	2220	2240	4380	3730	4030 J	3450	2720	1810 J
PCB-174	PCB-174	3900	5300	13600	10900	11100 J	9280	7750	6740 J
PCB-175	PCB-175	500	505	1370	1090	1280 J	1030	857	473 J
PCB-176	PCB-176	622	1040	2020	1550	1520 J	1180	1130	884 J
PCB-177	PCB-177	2590	4980	10900	9300	9520 J	7940	6320	4250 J
PCB-178	PCB-178	2090	2150	5710	4690	5340 J	4230	3540	2000 J
PCB-179	PCB-179	1740	3230	5610	4500	4340 J	3070	3160	2590 J
PCB-180/193	PCB-180/193	31100	28500	58000	49800	55800 J	50500	38300	21800 J
PCB-181	PCB-181	194	194	429	353	394 J	323	249	137 J
PCB-182	PCB-182	109	100 J	266	222	218 J	180	105 J	92.3 J
PCB-183/185	PCB-183/185	8880	8140	20900	17200	18600 J	15200	12400	7120 J
PCB-184	PCB-184	94.8	39	203	151	162 J	128	112	66.1 J
PCB-186	PCB-186	3.95 U	5.71 J	2.67 U	6.19 J	4.42 J	3.67 U	12.3 U	2.92 J
PCB-187	PCB-187	9980	16000	30900	28400	33100 J	31300	21400	12300 J
PCB-188	PCB-188	75.8	49.9	134	118	125	117	89	51.8
PCB-189	PCB-189	428	396	780	616	745 J	618	542	304 J
PCB-190	PCB-190	2450	2340	3440	3160	3720 J	3330	2520	1670 J
PCB-191	PCB-191	566	542	1110	979	1140 J	1020	760	411 J
PCB-192	PCB-192	17.2 J	12.9 U	6.82 U	6.76 U	9.58 J	8.31 J	15.8 U	7.96 J
PCB-194	PCB-194	7610	5000	7800	7470	8450 J	7940	5830	4460
PCB-195	PCB-195	2430	1720	3890	3640	3550 J	3190	2340	1430
PCB-196	PCB-196	3480	2480	7130	5910	6270 J	5590	4180	2340
PCB-197/200	PCB-197/200	1000	705	2250	1690	1720 J	1450	729	837
PCB-198/199	PCB-198/199	6330	5240	15100	12100	12800 J	11500	8390	5160
PCB-201	PCB-201	997	671	2650	1990	2060 J	1670	1320	741
PCB-202	PCB-202	2180	1410	3820	3180	3570	3270	2410	1440

Appendix D
Tissue Analytical Results

	Location ID	PB057.2	PB057.2	PB057.2	PB057_B	PB057_B	PB057_B	PB058.1	PB058.1
	Sample ID	PB03-F-A-STM-W-001-20110617	PB03-F-A-STM-W-001-COMP-201106	PB03-F-A-STM-W-002-20110617	PB03-F-A-GKF-W-001-20110615	PB03-F-A-GKF-W-006-20110617	PB03-F-A-PNF-W-001-COMP-201106	PB03-F-A-GM-W-003-20110618	PB03-F-A-GM-W-004-20110618
	Sample Date	6/17/2011	6/17/2011	6/17/2011	6/15/2011	6/17/2011	6/15/2011	6/18/2011	6/18/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201603.32	3201603.32	3201603.32	3201644.06	3201644.06	3201644.06	3201682.3	3201682.3
	Y	13832054.52	13832054.52	13832054.52	13832071.63	13832071.63	13832071.63	13832011.93	13832011.93
	Scientific_Name	Mugil cephalus	Mugil cephalus	Mugil cephalus	Fundulus grandis	Fundulus grandis	Lagodon rhomboides	Brevoortia patronus	Brevoortia patronus
	Size_Class	=<15	=<15	=<15	=<15	=<15	=<15	=<15	=<15
	Tissue_Category	Migratory	Migratory	Migratory	Sedentary	Sedentary	Migratory	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-144	PCB-144	1150	1060	929 J	4070	4710	1290	1700 J	2820
PCB-145	PCB-145	9.75 J	15.4	11.9 J	22.7	26.6	2.67 J	12.2 J	28.1
PCB-146	PCB-146	18.7 J	4410	17.7 UJ	17900	60.4	6750	23.9 J	10200
PCB-147/149	PCB-147/149	12700	11100	10300 J	48600	58100	14400	25100 J	46300
PCB-148	PCB-148	73.2	41.4	48.8 J	176	186	52.5	91.8 J	134
PCB-150	PCB-150	64.8	51	48.6 J	130	138	45.6	92.3 J	176
PCB-152	PCB-152	28.5	33	28.4 J	61.7	79.1	5.25 J	39.6 J	85.6
PCB-153/168	PCB-153/168	30900	22400	24900 J	105000	114000	35800	40900 J	50000
PCB-154	PCB-154	734	428	459 J	1700	1940	474	810 J	1200
PCB-155	PCB-155	35.8	30.5	34.5 J	163	133	37.9	74.5	85.4
PCB-156/157	PCB-156/157	3710	3580	3250 J	14100	14500	5510	5130 J	7070
PCB-158	PCB-158	3190	2860	2840 J	13000	13300	4310	4600 J	6040
PCB-159	PCB-159	7.98 U	8.33 U	21 UJ	49.2 U	16.3 U	3.52 U	12.1 UJ	298
PCB-160	PCB-160	7.56 U	2.3 U	16.2 UJ	49 U	22 U	2.98 U	7.08 UJ	15.3 U
PCB-161	PCB-161	4530	2.15 U	3640 J	46.9 U	17100	2.8 U	6370 J	13.2 U
PCB-162	PCB-162	130	176	112 J	592 J	599 J	218	240 J	313 J
PCB-164	PCB-164	1390	1160	1150 J	5460	5710	1690	2680 J	3730
PCB-165	PCB-165	36.4	11	24.9 J	50.6 U	55.2	13.8	44.3 J	31.6 J
PCB-167	PCB-167	1360	1250	1180 J	5560	5660	2020	1830 J	2470
PCB-169	PCB-169	7.22 U	8.12 U	17 UJ	32.5 U	12.9 U	3.3 U	9.15 UJ	13.5 U
PCB-170	PCB-170	5310 J	3870	4460 J	21800	17100	5910	7060	7600 J
PCB-171/173	PCB-171/173	1560 J	1150	1200 J	5700	5020	1820	2260	2820 J
PCB-172	PCB-172	1100 J	735	894 J	3770	3030	996	1550	1670 J
PCB-174	PCB-174	2410 J	1620	1670 J	9950	9170	2260	5840	8060 J
PCB-175	PCB-175	304 J	211	229 J	989	893	305	408	469 J
PCB-176	PCB-176	580 J	430	394 J	1270	1290	389	814	1240 J
PCB-177	PCB-177	2420 J	1640	1730 J	8600	7500	1510	3820	4870 J
PCB-178	PCB-178	1310 J	923	936 J	4160	3790	799	1770	2230 J
PCB-179	PCB-179	1700 J	1330	1240 J	3590	3710	958	2370	3870 J
PCB-180/193	PCB-180/193	14000 J	8480	11600 J	50200	42400	15400	18100	19300 J
PCB-181	PCB-181	83.1 J	31.2 U	75.6 J	324	268	94.1	125	146 J
PCB-182	PCB-182	37.4 J	27	47.8 J	122	4.31 U	48.6	79	48.9 J
PCB-183/185	PCB-183/185	4530 J	2670	3700 J	14800	13700	4330	6130	6880 J
PCB-184	PCB-184	24.1 J	20.2	23.7 J	119	111	21.5	61	79.5 J
PCB-186	PCB-186	3.28 UJ	2.81	3.68 UJ	9.26 U	3.63 U	0.818 U	2.57 J	4.54 U
PCB-187	PCB-187	7970 J	4980	6180 J	30000	24800	8060	10600	11300 J
PCB-188	PCB-188	28.9	19	27.8	110	90.8	34.3	45.6	56.1 J
PCB-189	PCB-189	221 J	145	159 J	534	542	202	272	373
PCB-190	PCB-190	1090 J	731	912 J	3650	2880	1180	1400	1530 J
PCB-191	PCB-191	267 J	152	221 J	1010	825	266	347	364 J
PCB-192	PCB-192	4.25 UJ	25 U	8.81 UJ	24.6 U	8.97 U	5.44	6.9	8.56 U
PCB-194	PCB-194	2320	1200	2160	8700	7130	2310	3650	3700
PCB-195	PCB-195	834	465	693	3330	2850	897	1300	1410
PCB-196	PCB-196	1410	714	1140	5380	4670	1380	2080	2130
PCB-197/200	PCB-197/200	395	256	311	1230	1170	354	782	531
PCB-198/199	PCB-198/199	2640	1560	2220	10500	9310	2150	4640	5000
PCB-201	PCB-201	390	236	320	1420	1380	418	683	775
PCB-202	PCB-202	707	501	635	2940	2510	613	1310	1550

Appendix D
Tissue Analytical Results

	Location ID	PB058.1	PB059.1_A	PB059.1_A	PB059.3	PB059.4	PB059.4	PB059.5	PB063.1_A
	Sample ID	PB03-F-A-GM-W-005-20110618	PB03-F-A-GKF-W-003-20110615	PB03-I-A-BCR-W-003-COMP-201106	PB03-I-B-BCR-W-002-20110627	PB03-I-B-BCR-W-003-20110628	PB03-I-B-BCR-W-003-20110628DUP	PB03-I-A-BCR-W-001-COMP-201106	PB03-F-A-GKF-W-009-20110617
	Sample Date	6/18/2011	6/15/2011	6/19/2011	6/26/2011	6/27/2011	6/27/2011	6/27/2011	6/17/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201682.3	3201501.32	3201501.32	3201714.16	3201714.16	3201714.16	3201714	3201509.99
	Y	13832011.93	13831828.71	13831828.71	13831964.63	13831964.63	13831964.63	13831965	13831505.57
	Scientific_Name	Brevoortia patronus	Fundulus grandis	Callinectes sapidus	Callinectes sapidus	Callinectes sapidus		Callinectes sapidus	Fundulus grandis
	Size_Class	=<15	=<15	>2 to =<7.5	>7.5 to =<13	>7.5 to =<13		>2 to =<7.5	=<15
	Tissue_Category	Migratory	Sedentary	Sedentary	Migratory	Migratory		Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body		Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-144	PCB-144	2770	3480	37.6	41.4	70.2	70.8	18.3	3570 J
PCB-145	PCB-145	25.1	20.2	1.21 U	1.95 U	2.14 U	3.48 U	2.82 U	22 J
PCB-146	PCB-146	10200	32.7 U	3160	4370	4240	4070	3030	67 J
PCB-147/149	PCB-147/149	45700	39200	808	868	1370	1330	381	42400 J
PCB-148	PCB-148	128	140	33.5	56.4	55.3	56.2	31.2	150 J
PCB-150	PCB-150	177	84.9	1.12 U	1.87 U	2.05 U	3.38 U	2.61 U	93.3 J
PCB-152	PCB-152	84.8 J	57.3	1.1 U	0.974 J	2.52 J	2.08 J	2.55 U	48.8 J
PCB-153/168	PCB-153/168	50200	97800	17100	27300	26100	25300	20300	113000 J
PCB-154	PCB-154	1180	1390	324	586	573	536	367	1510 J
PCB-155	PCB-155	92.1	117	25.7	34.3	34.7	31.8	22	120
PCB-156/157	PCB-156/157	7110	14000	3050	4130	3980	3700	3790	13900
PCB-158	PCB-158	6190	12300	2510	3940	3720	3600	2920	13500 J
PCB-159	PCB-159	323	32 U	7.33 U	9.21 J	4.18 U	6.29 U	5.3 U	25.3 UJ
PCB-160	PCB-160	19.9 U	29.7 U	2.82 U	4.72 U	7.72 U	8.42 U	2.48 U	30 UJ
PCB-161	PCB-161	17.2 U	14200	2.64 U	4.03 U	6.58 U	7.25 U	2.33 U	15800 J
PCB-162	PCB-162	222	565	106	132	106	107	123	550 J
PCB-164	PCB-164	3740	4840	2.75 U	46.1	101	104	2.42 U	5590 J
PCB-165	PCB-165	30.9	30.6 U	8.05 J	10.7	11.5 J	11.2	4.73 J	73.9 J
PCB-167	PCB-167	2560	5180	1090	1510	1410	1340	1250	5080
PCB-169	PCB-169	15.4 U	19.4 U	6.93 U	4.51 U	4.54 U	6.32 U	4.72 U	85.3 UJ
PCB-170	PCB-170	8220 J	19700	1950	2350 J	2290 J	2120	1650	15300
PCB-171/173	PCB-171/173	2930 J	4820	739	979 J	949 J	898	673	4190
PCB-172	PCB-172	1760 J	3360	441	506 J	482 J	464	405	3030
PCB-174	PCB-174	8410 J	7770	28.3	47.7 J	58.7 J	55.4 J	20.7 J	7020
PCB-175	PCB-175	508 J	807	126	142 J	146 J	139	101	750
PCB-176	PCB-176	1260 J	953	10.7	26 J	1.72 U	3.45 U	1.58 U	833
PCB-177	PCB-177	5090 J	6880	349	360 J	435 J	394	260	5580
PCB-178	PCB-178	2320 J	3440	497	579 J	650 J	609	401	3040
PCB-179	PCB-179	3970 J	2790	5.95 J	10.9 J	7.27 J	8.85	7.61	2460
PCB-180/193	PCB-180/193	20600 J	46200	6380	8060 J	7450 J	6850	6040	41100
PCB-181	PCB-181	152 J	272	48.1	67.8 J	62 J	58	48.6	259
PCB-182	PCB-182	90.2 J	166	31.1	42 J	39.8 J	39.3	33.3	136 J
PCB-183/185	PCB-183/185	7150 J	12400	1850	2570 J	2540 J	2400	1770	11900
PCB-184	PCB-184	81.7 J	90.9	18.5	29.7 J	28.4 J	24.1	16.8	87.9
PCB-186	PCB-186	5.53 U	5.7 U	0.675 U	2.46 U	1.82 U	3.59 U	1.79 U	8.15 U
PCB-187	PCB-187	11900 J	26700	3400	3990 J	3670 J	3410	3340	23100
PCB-188	PCB-188	53.5 J	80.9	23.1	25.4 J	20.7 J	20.5 J	14.7	76.7
PCB-189	PCB-189	386	478	94.7	133	133	122	108	476
PCB-190	PCB-190	1620 J	3300	415	536 J	481 J	443	423	2700
PCB-191	PCB-191	380 J	929	109	151 J	139 J	132	111	813
PCB-192	PCB-192	8.2 U	18.3 U	76.3 U	2.73 U	2.94 U	5.28 U	1.96 U	10.6 U
PCB-194	PCB-194	4020	7440	677	840	824	773	607	6480
PCB-195	PCB-195	1510	2760	183	257	270	254	135	2630
PCB-196	PCB-196	2320	4600	535	773	760	682	537	3870
PCB-197/200	PCB-197/200	994	935	85.8	136	138	126	79	911
PCB-198/199	PCB-198/199	5460	8730	974	1360	1320	1160	901	7480
PCB-201	PCB-201	832	1140	158	213	208	194	123	1070
PCB-202	PCB-202	1650	2240	312	339	329	300	211	2360

Appendix D
Tissue Analytical Results

	Location ID	PB063.1_A	PB063.2_A	PB063.2_A	PB069_A	PB069_A	PB069_A	PB084.1	PB084.1
	Sample ID	PB03-F-A-GKF-W-010-20110617	PB03-F-A-GKF-W-005-20110615	PB03-F-A-GKF-W-013-20110617	PB03-F-A-GKF-W-002-20110615	PB03-F-A-GKF-W-007-20110617	PB03-I-A-BCR-W-002-COMP-201106	PB04-F-A-GKF-W-005-20110627	PB04-F-A-GKF-W-013-20110627
	Sample Date	6/17/2011	6/15/2011	6/17/2011	6/15/2011	6/17/2011	6/19/2011	6/27/2011	6/27/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201509.99	3201561.28	3201561.28	3201132.36	3201132.36	3201132.36	3200727.85	3200727.85
	Y	13831505.57	13831519.55	13831519.55	13830993.22	13830993.22	13830993.22	13829784.47	13829784.47
	Scientific_Name	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Callinectes sapidus	Fundulus grandis	Fundulus grandis
	Size_Class	=<15	=<15	=<15	=<15	=<15	>2 to =<7.5	=<15	=<15
	Tissue_Category	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result	Result	Result	Result
PCB-144	PCB-144	3650	3300	3080	5510	4010 J	73.4	2100	3450
PCB-145	PCB-145	19.4	22.3 J	20	36.6 J	23.1 J	3.53 U	17.8	28.4 J
PCB-146	PCB-146	18300	15900	13500	22200	17800 J	5080	8850	13900
PCB-147/149	PCB-147/149	40700	39800	34600	60500	44500 J	1260	26100	41300
PCB-148	PCB-148	153	142	135	237	158 J	46.6	83	135
PCB-150	PCB-150	86.8	95	85.3	170	103 J	3.26 U	73.2	97.6
PCB-152	PCB-152	52.9	63.7	42.6	99.1	58.3 J	3.19 U	45	76.2
PCB-153/168	PCB-153/168	110000	93400	83300	132000	106000 J	27800	45900	71600
PCB-154	PCB-154	1580	1350	1340	2230	1610 J	497	799	1240
PCB-155	PCB-155	116	112	110	145	97.4	34.1	52.7	78.5
PCB-156/157	PCB-156/157	13500	12900	11500	18500	13500	4720	6250	9560
PCB-158	PCB-158	13100	11400	9980	15900	13500 J	3920	5620	8850
PCB-159	PCB-159	16.1 U	36 U	343	561	424 J	8.69 J	160	10.6 U
PCB-160	PCB-160	17.1 U	41.4 U	7.25 U	32.6 U	13.9 UJ	1.95 U	12.6 U	16.9 U
PCB-161	PCB-161	16.4 U	40.4 U	6.64 U	31 U	13.2 UJ	1.83 U	10.7 U	14.3 U
PCB-162	PCB-162	576	590	479	756	637 J	165	269 J	284
PCB-164	PCB-164	5280	4750	4160	6860	5500 J	1.9 U	2490	3920
PCB-165	PCB-165	54.5	53.6 J	47.4	62.4 J	58.3 J	12.8 J	22.2	41.6
PCB-167	PCB-167	5380	5070	4530	6800	5120	1680	2460	3720
PCB-169	PCB-169	11.9 U	25.7 U	65.8	-- R	25 UJ	1.92 U	11.8 U	11.5 U
PCB-170	PCB-170	19300	16800	13900	19200	15100	2810	6310 J	9460 J
PCB-171/173	PCB-171/173	5060	4540	4140	5550	4130	1110	2020 J	3090 J
PCB-172	PCB-172	3480	2760	2430	3700	2770	652	1190 J	1750 J
PCB-174	PCB-174	7870	7690	6790	10400	7380	39.5	3960 J	5740 J
PCB-175	PCB-175	913	757	765	1080	805	186	369 J	581 J
PCB-176	PCB-176	1000	929	923	1450	924	16.8	557 J	820 J
PCB-177	PCB-177	6920	6190	5830	7730	5640	439	3050 J	4470 J
PCB-178	PCB-178	3780	3120	3240	4540	3330	836	1710 J	2570 J
PCB-179	PCB-179	2900	2700	2620	4140	2610	9.39	1730 J	2710 J
PCB-180/193	PCB-180/193	48200	39500	35800	49300	37300	8620	16000 J	23800 J
PCB-181	PCB-181	286	255	228	325	239	64.8	102 J	164 J
PCB-182	PCB-182	187	144 J	128	196	141	40	50.1 J	95.9 J
PCB-183/185	PCB-183/185	13900	11400	11000	15400	11200	2710	5210 J	8000 J
PCB-184	PCB-184	100	82	90.5	140	77.9	25.3	64.6 J	88.7 J
PCB-186	PCB-186	3.36	6.19 U	3.09 U	9.45 U	4.11 U	0.847 U	4.24 U	3.91 U
PCB-187	PCB-187	26600	24100	20600	28500	22600	5190	8820 J	13000 J
PCB-188	PCB-188	88.6	77.8	87.2	94.5	73.9	25.4	34.9 J	46.9 J
PCB-189	PCB-189	484	459	425	694	499	140	233	338
PCB-190	PCB-190	3130	2590	2230	3140	2460	561	1010 J	1440 J
PCB-191	PCB-191	947	783	703	984	747	163	297 J	456 J
PCB-192	PCB-192	9.21 U	20.6 U	5.36	13 U	5.87 U	1.26 U	6.43 U	7.65 U
PCB-194	PCB-194	7150	7050	4970	7860	5520	990	2570	3620 J
PCB-195	PCB-195	2780	2570	2140	3200	2230	290	1110	1610 J
PCB-196	PCB-196	5020	4100	3850	5720	4060	709	1860	2730 J
PCB-197/200	PCB-197/200	1070	901	1040	1400	946	119	511	711 J
PCB-198/199	PCB-198/199	9670	7680	8160	10800	8080	1400	3590	5290 J
PCB-201	PCB-201	1340	1110	1290	1630	1160	221	605	918 J
PCB-202	PCB-202	2490	2300	2210	2880	2120	464	1030	1540 J

Appendix D
Tissue Analytical Results

	Location ID	PB095.2	PB101_D	PB101_D	PB101_D	PB102
	Sample ID	PB04-I-A-BCR-W-001-COMP-201106	PB04-F-A-GKF-W-001-20110627	PB04-F-A-GKF-W-001-COMP-201106	PB04-F-A-GKF-W-009-20110627	PB04-F-A-PNF-W-001-COMP-201106
	Sample Date	6/29/2011	6/27/2011	6/27/2011	6/27/2011	6/27/2011
	Sample Type	N	N	N	N	N
	X	3200882	3201317.36	3201317.36	3201317.36	3201302.69
	Y	13829528	13828141.83	13828141.83	13828141.83	13828160.48
	Scientific_Name	Callinectes sapidus	Fundulus grandis	Fundulus grandis	Fundulus grandis	Lagodon rhomboides
	Size_Class	>2 to =<7.5	=<15	=<15	=<15	=<15
	Tissue_Category	Sedentary	Sedentary	Sedentary	Sedentary	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	CAS Number	Result	Result	Result	Result	Result
PCB-144	PCB-144	9.72 U	3640	3710	3920	1590
PCB-145	PCB-145	8.06 U	25.6	30.1	29.1	6.13
PCB-146	PCB-146	1540	15300	15300	15200	7810
PCB-147/149	PCB-147/149	153	42500	47000	45600	19000
PCB-148	PCB-148	16.9 J	151	164	147	63.5
PCB-150	PCB-150	7.87 U	110	136	130	66.2
PCB-152	PCB-152	7.63 U	72	68.7	80.7	13.1
PCB-153/168	PCB-153/168	9790	78000	81500	77300	44500
PCB-154	PCB-154	211	1370	1500	1430	563
PCB-155	PCB-155	13.2	107	98.9	123	41.2
PCB-156/157	PCB-156/157	1630	10200	12200	11000	6420
PCB-158	PCB-158	1470	9560	9570	9560	5290
PCB-159	PCB-159	10.3 U	263	26.4 U	282	4.28 U
PCB-160	PCB-160	14 U	18.1 U	17.5 U	18 U	10.9 U
PCB-161	PCB-161	12.6 U	15.3 U	15.5 U	15.3 U	10.2 U
PCB-162	PCB-162	48.3	380	456	432	225
PCB-164	PCB-164	13 U	4190	4270	4370	1910
PCB-165	PCB-165	13.8 U	42 J	44.6 J	47	11.6 U
PCB-167	PCB-167	610	3960	4400	4290	2260
PCB-169	PCB-169	12 U	17.1 U	30.8 U	19.3 U	3.84 U
PCB-170	PCB-170	610	10600 J	11000 J	11200 J	6550
PCB-171/173	PCB-171/173	287	3410 J	3750 J	3630 J	1830
PCB-172	PCB-172	207	1980 J	2370 J	2170 J	927
PCB-174	PCB-174	11.2 U	6480 J	7780 J	7160 J	2450
PCB-175	PCB-175	51.7	640 J	734 J	687 J	287
PCB-176	PCB-176	6.59 U	908 J	1070 J	1030 J	434
PCB-177	PCB-177	94.7	5070 J	5870 J	5550 J	1440
PCB-178	PCB-178	283	2980 J	3250 J	3100 J	727
PCB-179	PCB-179	6.27 U	2800 J	3420 J	3300 J	1060
PCB-180/193	PCB-180/193	2700	26800 J	30400 J	28500 J	15000
PCB-181	PCB-181	28.6	182 J	207 J	194 J	102
PCB-182	PCB-182	8.5 U	110 J	126 J	117 J	49.8
PCB-183/185	PCB-183/185	861	8850 J	11400 J	9640 J	4360
PCB-184	PCB-184	11.7 J	124 J	114 J	147 J	25.6
PCB-186	PCB-186	6.76 U	4.13 U	8.93 UJ	4.67 U	1.65 U
PCB-187	PCB-187	1340	14800 J	15700 J	15600 J	7640
PCB-188	PCB-188	11	55.8 J	67.1 J	55.6 J	31.1
PCB-189	PCB-189	45.1	394	492	452	214
PCB-190	PCB-190	152	1680 J	1800 J	1780 J	1290
PCB-191	PCB-191	51.1 J	512 J	569 J	540 J	282
PCB-192	PCB-192	8.91 U	8.62 U	16.2 UJ	7.58 U	5.31
PCB-194	PCB-194	282	4230	4500	4560	1790
PCB-195	PCB-195	73.2 J	1860	2170	1940	987
PCB-196	PCB-196	261	3070	3760	3250	1600
PCB-197/200	PCB-197/200	37.6	808	1180	885	390
PCB-198/199	PCB-198/199	505	6260	7880	6570	2490
PCB-201	PCB-201	72.2	1040	1390	1110	433
PCB-202	PCB-202	148	1780	2120	1930	477

Appendix D
Tissue Analytical Results

	Location ID	Field QC	Field QC	PB002.1	PB003.1	PB005.1	PB006.1	PB008.2	PB010	PB010.1
	Sample ID	EB-110621-A01	EB-110624-A01	PB01-I-A-BCR-W-001-COMP-201106	PB01-F-A-STM-W-006-20110618	PB01-I-A-BCR-W-002-COMP-201106	PB01-I-B-WHS-W-002-COMP-201106	PB01-I-B-WHS-W-001-COMP-201106	PB01-F-A-GM-W-008-20110618	PB01-I-A-WHS-W-001-COMP-201106
	Sample Date	6/24/2011	6/24/2011	6/20/2011	6/18/2011	6/20/2011	6/20/2011	6/19/2011	6/18/2011	6/20/2011
	Sample Type	EB	EB	N	N	N	N	N	N	N
	X			3202691	3202445.49	3202312	3202026.63	3202032	3201710.87	3201704.8
	Y			13836499	13836263.53	13836201	13836356.8	13836072	13836029.16	13836071.32
	Scientific_Name			Callinectes sapidus	Mugil cephalus	Callinectes sapidus	Penaeus setiferus	Penaeus setiferus	Brevoortia patronus	Penaeus setiferus
	Size_Class			>2 to =<7.5	=<15	>2 to =<7.5	>7.5 to =<13	>7.5 to =<13	=<15	>2 to =<7.5
	Tissue_Category			Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Migratory
	Tissue_Type			Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
PCB-203	PCB-203	--	823	441	721	464	704	550	1970	598
PCB-204	PCB-204	--	7.62	12.9	19.9	18.7	18.2	11.5 J	50.4	11.5 U
PCB-205	PCB-205	--	50.9	20.9 J	77.7	27.3	55.4	38.8	210	517 U
PCB-206	PCB-206	--	1690	503	848	593	623	473	2910	654
PCB-207	PCB-207	--	301	443	579	589	406	276	2300	440
PCB-208	PCB-208	--	1080	647	897	811	607	460	3330	600
PCB-209	PCB-209	--	2190	14200	41000	18300	16900	13000	107000	17300
Total Decachlorobiphenyl homologs (U = 1/2)	tSum_DecPCB_N	--	2190	14200	41000	18300	16900	13000	107000	17300
Total Dichlorobiphenyl homologs (U = 1/2)	tSum_DiPCB_N	--	164.63 J	464.32 J	5661.9 J	509.89 J	3773.2 J	1958.2 J	4070.8 J	2716.6 J
Total Heptachlorobiphenyl homologs (U = 1/2)	tSum_HepPCB_N	--	19841.61 J	12146.74 J	19540.87 J	12006.29 J	23448.98	18096.45	45398.18 J	24954.87 J
Total Hexachlorobiphenyl homologs (U = 1/2)	tSum_HexPCB_N	--	51122.17 J	36659.94 J	56270.44 J	41035 J	64768.2 J	47612.03 J	106457.76 J	64616.74 J
Total Monochlorobiphenyl homologs (U = 1/2)	tSum_MonPCB_N	--	6.05 UJ	1.86 U	146.81	6.33 U	177.5 J	45.05 J	125.07 J	146.1 J
Total Nonachlorobiphenyl homologs (U = 1/2)	tSum_NonPCB_N	--	3071	1593	2324	1993	1636	1209	8540	1694
Total Octachlorobiphenyl homologs (U = 1/2)	tSum_OctPCB_N	--	6472.52	3359.8 J	5174.6	3581	4830.6	3642.6 J	13794.4	4647.3
Total PCB Congener (U = 1/2)	tPCBCong_N	--	166151.68 J	228676.53 J	596176.03 J	324017.32 J	918637.82 J	547939.37 J	1259030.88 J	837229.96 J
Total PCB Congener minus 209 (U = 1/2)	tPCBCong209_N	--	163961.68 J	214476.53 J	555176.03 J	305717.32 J	901737.82 J	534939.37 J	1152030.88 J	819929.96 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	tPCBCngCPB98_N	--	17.5 J	97.57 J	103.7 J	147.29	312.2 J	177.4	197.09 J	277.3 J
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	tPCBCngCPF98_N	--	0.2 J	0.72 J	0.6 J	1.01	1.7 J	1	1.24 J	1.7 J
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	tPCBCongCPM_N	--	2.8 J	8.35 J	5.7 J	11.28	16.7 J	9.3	12.88 J	18.1 J
Total Pentachlorobiphenyl homologs (U = 1/2)	tSum_PenPCB_N	--	44587.6 J	60624.15 J	121974.4 J	83162.72 J	217689.09 J	147236.43 J	253722.6 J	203719.17 J
Total Tetrachlorobiphenyl homologs (U = 1/2)	tSum_TetPCB_N	--	33512.9 J	78996.76 J	266157.14 J	129201.4 J	446355.2 J	244379.72	564484.6 J	406720.8
Total Trichlorobiphenyl homologs (U = 1/2)	tSum_TriPCB_N	--	5181.37 J	20629.13 J	77925.88 J	34223.48	139059.04 J	70759.94	155437.47 J	110714.38
Dioxin Furans (ng/kg)										
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	--	0.301 U	15	747	9.24	21.6	31.1	738	25.2 J
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	--	7.23	9.24	69.6	10.2	8.74	9.66	96.9	10.9
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	--	0.103 U	1.63 J	22.6	1.64 J	2.73	4.1	29.7	3.08 J
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	--	0.738 J	1.43 U	6.64	1.95 U	1.57 J	1.62 J	9.26	1 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	--	0.173 U	0.291 U	2.89 J	0.348 U	0.649 U	0.783 U	5.05	0.705 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	--	0.112 U	0.532 U	1.88 J	0.819 U	1.87 J	1.38 J	2.23 J	1.66 J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	--	0.161 U	0.829 U	0.227 U	1.11 U	0.505 U	0.381 U	0.308 U	0.526 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	--	0.112 U	0.212 U	0.909 J	0.365 U	0.772 J	0.569 J	1.11 J	0.493 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	--	0.17 U	0.785 U	0.236 U	1.1 U	0.505 U	0.425 U	0.547 J	0.567 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	--	0.156 U	0.168 U	0.393 U	0.209 U	0.488 U	0.69 U	0.324 U	0.608 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	--	0.168 U	0.83 U	0.235 U	1.14 U	0.513 U	0.41 U	0.324 U	0.556 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	--	0.357 U	1.01 U	1.73 J	1.46 U	4.55	3.63 J	3.41	4.65
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	--	0.405 J	0.252 U	0.174 U	0.379 U	0.253 U	0.337 U	0.673 J	0.48 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	--	0.134 U	0.136 U	0.739 J	0.174 U	0.426 J	0.514 U	0.728 J	0.622 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	--	0.484 U	1.14 U	2.06 J	1.5 J	5.05	3.5	3.1	4.07
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	51207-31-9	--	3.73	6.8	59.2	7.89	15.5	12	9.79	13.7
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	--	0.579	3.68	15.5	3.67	3.64 J	4.34	7.15	3.36
Total Pentachlorodibenzofuran (PeCDF)	30402-15-4	--	0.841 U	7.66 J	7.53 J	10.1	23.5	17.3 J	8.51	21.8 J
Total Pentachlorodibenzo-p-dioxin (PeCDD)	36088-22-9	--	0.405 J	0.252 U	0.174 U	0.379 U	2.74 J	1.75 J	0.673 J	1.5 J
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	tDioxFurB_N	--	5.016 J	11.366 J	77.754 J	13.512 J	25.179 J	20.709 J	21.947 J	22.169 J
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	tDioxFurF_N	--	1.371 J	4.745 J	20.438 J	5.429 J	7.792 J	7.445 J	10.98 J	6.98 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	tDioxFurM_N	--	1.497 J	4.879 J	23.151 J	5.4 J	7.431 J	7.257 J	11.034 J	6.715 J

Appendix D
Tissue Analytical Results

	Location ID	PB010.3	PB013.1_A	PB013.3	PB013.3	PB015.1	PB015.2	PB015_A	PB015_A
	Sample ID	PB01-I-A-BCR-W-003-COMP-201106	PB01-I-A-BCR-W-010-COMP-201106	PB01-F-A-GKF-W-004-COMP-201106	PB01-F-A-STM-W-003-20110616	PB01-F-A-GKF-W-002-COMP-201106	PB01-I-A-BCR-W-004-COMP-201106	PB01-F-A-GKF-W-001-COMP-201106	PB01-I-A-BCR-W-006-COMP-201106
	Sample Date	6/19/2011	6/22/2011	6/21/2011	6/15/2011	6/15/2011	6/16/2011	6/25/2011	6/22/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201743	3201306.47	3201433.88	3201433.88	3201175	3201180	3201168.73	3201168.73
	Y	13836152	13836191.23	13836075.12	13836075.12	13836251	13836183	13836254.66	13836254.66
	Scientific_Name	Callinectes sapidus	Callinectes sapidus	Fundulus grandis	Mugil cephalus	Fundulus grandis	Callinectes sapidus	Fundulus grandis	Callinectes sapidus
	Size_Class	>2 to =<7.5	>2 to =<7.5	=<15	=<15	=<15	>2 to =<7.5	=<15	>2 to =<7.5
	Tissue_Category	Sedentary	Sedentary	Sedentary	Migratory	Sedentary	Sedentary	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
PCB-203	PCB-203	1300	431	3550	2270	2740	1220	4710	1070
PCB-204	PCB-204	33.7	15.9	116	51.8	73.4	33.6	147	26.3
PCB-205	PCB-205	61.7	16.6	232	221	181	50.9	293	47.8
PCB-206	PCB-206	1220	492	3280	2630	2470	1190	3890	927
PCB-207	PCB-207	1090	399	4990	1960	2990	1060	5670	856
PCB-208	PCB-208	1270	559	5760	2530	3720	1350	7080	1100
PCB-209	PCB-209	25800	12200	115000	92100	70800	31100	124000	26000
Total Decachlorobiphenyl homologs (U = 1/2)	tSum_DecPCB_N	25800	12200	115000	92100	70800	31100	124000	26000
Total Dichlorobiphenyl homologs (U = 1/2)	tSum_DiPCB_N	1297.88	1525.67 J	12709.06 J	6329.8 J	12808.11 J	1657.66 J	14345.09 J	1381.61 J
Total Heptachlorobiphenyl homologs (U = 1/2)	tSum_HepPCB_N	35052.96 J	14491.232 J	108539.02 J	63014.52 J	84207.89 J	29236.81 J	151125.74 J	28294.91 J
Total Hexachlorobiphenyl homologs (U = 1/2)	tSum_HexPCB_N	102197.76 J	43064.795 J	306112.46	148296.3 J	268417.13 J	92122.29 J	469150.14 J	69854.95 J
Total Monochlorobiphenyl homologs (U = 1/2)	tSum_MonPCB_N	1.5 U	3.322 J	248 J	150.3 J	297.4 J	5.82 U	235.32 J	5.93 U
Total Nonachlorobiphenyl homologs (U = 1/2)	tSum_NonPCB_N	3580	1450	14030	7120	9180	3600	16640	2883
Total Octachlorobiphenyl homologs (U = 1/2)	tSum_OctPCB_N	8502.4	3281.5	27828	15481.8	21014.4	7885.5	39370	7368.1
Total PCB Congener (U = 1/2)	tPCBCong_N	680864.4 J	457647.511 J	3781237.62 J	1793318.68 J	3359203.87 J	763874.14 J	5163120.59 J	560775.99 J
Total PCB Congener minus 209 (U = 1/2)	tPCBCong209_N	655064.4 J	445447.511 J	3666237.62 J	1701218.68 J	3288403.87 J	732774.14 J	5039120.59 J	534775.99 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	tPCBCngCPB98_N	281.21	260.92	602.3	234.7 J	526.2 J	362	728.24894 J	294.5
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	tPCBCngCPF98_N	2.11	1.5	5	1.6 J	4 J	2.4	6.77302 J	1.8
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	tPCBCongCPM_N	23.5	14.97	61	16.4 J	45.4 J	25.5	88.92282 J	19.4
Total Pentachlorobiphenyl homologs (U = 1/2)	tSum_PenPCB_N	189759.27 J	106633.234 J	896572.17	368821.4 J	770680.18 J	199620.57 J	1242471.9 J	130929.55 J
Total Tetrachlorobiphenyl homologs (U = 1/2)	tSum_TetPCB_N	250552.35 J	193569.33	1789095.8	853044.2	1694080.5 J	307173.83 J	2444027.5 J	222955.13 J
Total Trichlorobiphenyl homologs (U = 1/2)	tSum_TriPCB_N	64119.63	81428.44	511103.2	238960.3 J	427718.2	91471.43 J	661754.9	71100.21 J
Dioxin Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	15.3	9.46	7.5	671	3.34 J	22	3.42 J	22.8
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	46.4	14.5	5.13	40.6	9.73	50.6	6.88	7.65
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	2.09 J	2.51	1.72 J	18.2	0.87 J	7.16	1.24 J	5.44
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	2.71 U	1.96 J	1.26 J	4.44 J	1.04 J	5.08	1.4 J	1.38 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	0.462 U	0.206 U	0.208 U	3.28	0.292 U	0.447 J	0.417 U	0.393 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	1.38 U	1.51 J	0.469 J	1.35 J	0.372 J	2.48	0.789 J	2.3 J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	1.21 U	0.156 U	0.13 U	0.271 U	0.173 U	0.354 U	0.348 J	0.275 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	0.428 U	0.633 J	0.41 J	0.617 J	0.202 J	0.873 U	0.461 J	1.13 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	1.17 U	0.178 U	0.335 J	0.289 U	0.182 U	0.436 J	0.569 J	0.5 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	0.271 U	0.169 U	0.174 U	0.553 U	0.259 U	0.332 U	0.134 U	0.44 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	1.22 U	0.169 U	0.14 U	0.285 U	0.18 U	0.368 U	0.185 J	0.288 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	2.61	2.5	1.77 J	2.15 J	1.27 J	2.65	2.88	6.65
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	0.488 U	0.14 U	0.886 J	0.501 J	0.137 U	0.323 J	2.37 J	0.411 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	0.234 U	0.294 J	0.128 U	0.523 U	0.225 U	0.383 U	0.273 U	0.434 J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	2.57 J	2.35 J	2.66	2.97	2.21 J	2.64	3.46	6.19
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	51207-31-9	10.7	10.4	11.9	15.9	9.96	9.13 J	13.5	33
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	3.59	2.42	5.82	7.33	5.42	4.02	8.53	4
Total Pentachlorodibenzofuran (PeCDF)	30402-15-4	14 J	14.4 J	5.5 J	8.51 J	4.39 J	16.7 J	9.49 J	27.4 J
Total Pentachlorodibenzo-p-dioxin (PeCDD)	36088-22-9	0.488 U	2.15 J	0.886 J	0.501 J	0.137 U	2.33 J	3.35 J	2.6 J
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	tDioxFurB_N	17.608 J	15.786 J	21.58 J	27.479 J	17.894 J	16.825 J	28.352 J	44.761 J
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	tDioxFurF_N	6.245 J	4.633 J	8.88 J	10.83 J	7.294 J	6.763 J	13.793 J	10.033 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	tDioxFurM_N	6.104 J	4.64 J	8.932 J	11.142 J	7.318 J	6.683 J	13.662 J	10.333 J

Appendix D
Tissue Analytical Results

	Location ID	PB015_A	PB015_A	PB015_A	PB016.2	PB019.1	PB019.1	PB019.1	PB019.1
	Sample ID	PB01-I-A-BCR-W-007-COMP-201106	PB01-I-A-BCR-W-009-COMP-201106	PB01-I-B-BRS-W-001-COMP-201106	PB01-F-A-GKF-W-003-COMP-201106	PB01-F-A-SAS-W-005-20110622	PB01-I-B-BRS-W-012-20110621	PB01-I-B-BRS-W-014-20110621	PB01-I-B-BRS-W-015-20110621
	Sample Date	6/22/2011	6/22/2011	6/20/2011	6/15/2011	6/22/2011	6/21/2011	6/21/2011	6/21/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201168.73	3201168.73	3201168.73	3201190	3201152.87	3201152.87	3201152.87	3201152.87
	Y	13836254.66	13836254.66	13836254.66	13836042	13835753.58	13835753.58	13835753.58	13835753.58
	Scientific_Name	Callinectes sapidus	Callinectes sapidus	Penaeus aztecus	Fundulus grandis	Cynoscion arenarius	Penaeus aztecus	Penaeus aztecus	Penaeus aztecus
	Size_Class	>2 to =<7.5	>2 to =<7.5	>7.5 to =<13	=<15	=<15	>7.5 to =<13	>7.5 to =<13	>7.5 to =<13
	Tissue_Category	Sedentary	Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
PCB-203	PCB-203	827	1240	931	1480	3030	1350	1390	1220
PCB-204	PCB-204	20.3	25.5	24.5	43.7	63.6	62.7 U	44.3	36.4 J
PCB-205	PCB-205	36.5	48.6	89.4	96.4	207 U	140	108 J	108 J
PCB-206	PCB-206	663	921	1010	1370	4250	1350	1270	1220
PCB-207	PCB-207	554	802	657	1910	3670	889	857	844
PCB-208	PCB-208	733	990	873	2180	4500	1200	1180	1030
PCB-209	PCB-209	15800	22000	26800	44400	112000	30300	29200	29300
Total Decachlorobiphenyl homologs (U = 1/2)	tSum_DecPCB_N	15800	22000	26800	44400	112000	30300	29200	29300
Total Dichlorobiphenyl homologs (U = 1/2)	tSum_DiPCB_N	1499.97 J	2657.3 J	4353.8 J	5656.24 J	4016.84 J	8913.6 J	7238 J	6032.9
Total Heptachlorobiphenyl homologs (U = 1/2)	tSum_HepPCB_N	21819.781 J	32368.85 J	36768.58 J	52421.23	50466.24 J	49215 J	51394.4 J	44019 J
Total Hexachlorobiphenyl homologs (U = 1/2)	tSum_HexPCB_N	55759.991 J	75818.36 J	93633.73	161910.13	123693.11 J	184786 J	137480.3 J	133081.5 J
Total Monochlorobiphenyl homologs (U = 1/2)	tSum_MonPCB_N	4.06 U	4.08 U	92.26 J	140.3	267.1 J	172.7	180.8 J	157.1 J
Total Nonachlorobiphenyl homologs (U = 1/2)	tSum_NonPCB_N	1950	2713	2540	5460	12420	3439	3307	3094
Total Octachlorobiphenyl homologs (U = 1/2)	tSum_OctPCB_N	5588.8	8391.1	7015.9	11480.1	17937.1	9623.4	9890.3 J	9146.4 J
Total PCB Congener (U = 1/2)	tPCBCong_N	487928.797 J	674944.25 J	1167288.08 J	1964621.79 J	1448892.45 J	2092123 J	1730559.8 J	1552684.1 J
Total PCB Congener minus 209 (U = 1/2)	tPCBCong209_N	472128.797 J	652944.24 J	1140488.08 J	1920221.8 J	1336892.45 J	2061822.9 J	1701359.8 J	1523384.1 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	tPCBCngCPB98_N	312.4 J	434.33 J	433.2 J	270.7	77.5 J	586.73896 J	559.5 J	504.6 J
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	tPCBCngCPF98_N	2.5 J	2.45 J	2.4 J	2.2	0.64 J	2.57243 J	2 J	2.5 J
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	tPCBCongCPM_N	32.5 J	23.74 J	23.2 J	25.4	3.63 J	20.15058 J	8.2 J	22.5 J
Total Pentachlorobiphenyl homologs (U = 1/2)	tSum_PenPCB_N	125501.57 J	170559.12 J	279032.49 J	455025.05	310793.24 J	464624	383011.3 J	352214.6 J
Total Tetrachlorobiphenyl homologs (U = 1/2)	tSum_TetPCB_N	190602.49 J	260096.18 J	538309.6	1015345.92	656383.8 J	1078482.5 J	858453.7	764013.2 J
Total Trichlorobiphenyl homologs (U = 1/2)	tSum_TriPCB_N	69400.62 J	100334.51 J	178741.77 J	212782.83 J	160915.02	262566.8 J	250404 J	211625.6 J
Dioxin Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	12.8	15.2	124	9.66	5.39	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	9.09	8.36	10.7	3.18 J	2.81 J	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	2.39	2.71	5.65	0.762 J	0.469 J	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	1.25 J	1.37 J	0.799 U	0.581 J	0.662 J	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	0.48 U	0.401 U	1.11 U	0.209 U	0.24 U	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	1.23 J	1.56 J	2.41 J	0.14 U	0.221 J	--	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	0.347 U	0.535 J	0.55 U	0.157 U	0.136 U	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	0.665 J	0.916 J	0.978 J	0.137 U	0.155 J	--	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	0.366 U	0.376 U	0.567 U	0.167 U	0.145 U	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	0.196 U	0.414 U	0.936 U	0.209 U	0.165 U	--	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	0.363 U	0.378 U	0.567 U	0.165 U	0.143 U	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	2.75	4.11	5.89	0.786 J	0.871 J	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	0.42 J	0.291 U	0.395 U	0.116 U	0.108 U	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	0.189 U	0.329 U	0.712 U	0.148 U	0.147 U	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	2.71	4.18	6.77	1.31 J	0.216 J	--	--	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	51207-31-9	12.4	17.8	21.1	6.08	0.877	--	--	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	3.23	4.75	4.54	3.46	0.849	--	--	--
Total Pentachlorodibenzofuran (PeCDF)	30402-15-4	15 J	21.9 J	33 J	2.58 J	1.25 J	--	--	--
Total Pentachlorodibenzo-p-dioxin (PeCDD)	36088-22-9	3.78 J	3.63 J	5.04 J	0.116 U	0.108 U	--	--	--
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	tDioxFurB_N	19.302 J	27.652 J	33.739 J	11.042 J	2.155 J	--	--	--
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	tDioxFurF_N	6.091 J	8.67 J	10.112 J	4.599 J	1.194 J	--	--	--
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	tDioxFurM_N	6.093 J	8.479 J	9.667 J	4.617 J	1.171 J	--	--	--

Appendix D
Tissue Analytical Results

	Location ID	PB019.1	PB019.1	PB019.1	PB019.2	PB019_A	PB019_A	PB024.1	PB024.1
	Sample ID	PB01-I-B-BRS-W-019-20110621	PB01-I-B-BRS-W-022-20110622	PB01-I-B-BRS-W-023-20110622	PB01-I-A-OYS-W-001-COMP-201106	PB01-F-A-GKF-W-005-COMP-201106	PB01-I-A-BCR-W-008-COMP-201106	PB01-F-A-GM-W-001-20110615	PB01-F-A-GM-W-002-20110615
	Sample Date	6/21/2011	6/22/2011	6/22/2011	6/28/2011	6/21/2011	6/23/2011	6/15/2011	6/15/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201152.87	3201152.87	3201152.87	3201194.8	3201314.96	3201314.96	3201090.96	3201090.96
	Y	13835753.58	13835753.58	13835753.58	13835735.1	13835750.59	13835750.59	13835160.37	13835160.37
	Scientific_Name	Penaeus aztecus	Penaeus aztecus	Penaeus aztecus	Crassostrea virginica	Fundulus grandis	Callinectes sapidus	Brevoortia patronus	Brevoortia patronus
	Size_Class	>7.5 to =<13	>7.5 to =<13	>7.5 to =<13	>2 to =<7.5	=<15	>2 to =<7.5	=<15	=<15
	Tissue_Category	Migratory	Migratory	Migratory	Sedentary	Sedentary	Sedentary	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
PCB-203	PCB-203	1580	1620	1580	99.2	3640	1480	2670	2330
PCB-204	PCB-204	33.4 U	38	36	3.12 J	180	140	58	50.5
PCB-205	PCB-205	134 J	116	109	7.42 J	262	92.8	280	248
PCB-206	PCB-206	1590	1320	1370	34.2	4510	2450	4060	3760
PCB-207	PCB-207	1090	868	948	32.7	6450	2260	3100	3150
PCB-208	PCB-208	1390	1050	1200	45.9	7020	3130	4290	4080
PCB-209	PCB-209	44800	29900	31300	911	172000	80800	152000	138000
Total Decachlorobiphenyl homologs (U = 1/2)	tSum_DecPCB_N	44800	29900	31300	911	172000	80800	152000	138000
Total Dichlorobiphenyl homologs (U = 1/2)	tSum_DiPCB_N	7431.8 J	7361.52	8065.8 J	6302.64 J	11955.7 J	1784.88 J	6048.3 J	5811.1 J
Total Heptachlorobiphenyl homologs (U = 1/2)	tSum_HepPCB_N	61474.2 J	59861.54	57840.74	14636.5 J	113501.99 J	31102.38 J	67105.53 J	56249.8
Total Hexachlorobiphenyl homologs (U = 1/2)	tSum_HexPCB_N	222355.5 J	172225.81 J	145866.42 J	89369.8 J	310336.34 J	89767.5 J	167032.26	136616.3 J
Total Monochlorobiphenyl homologs (U = 1/2)	tSum_MonPCB_N	115 J	506.2 J	723.1 J	72.73	315.4 J	4.02 U	174.5	137.72
Total Nonachlorobiphenyl homologs (U = 1/2)	tSum_NonPCB_N	4070	3238	3518	112.8	17980	7840	11450	10990
Total Octachlorobiphenyl homologs (U = 1/2)	tSum_OctPCB_N	11636.7 J	10849	10860	1458.54 J	30252	11669.8	18595	16563.5
Total PCB Congener (U = 1/2)	tPCBCong_N	2192371.5 J	2031988.89 J	1964859.31 J	1429439.04 J	3824700.99 J	695219.28 J	1896422.09 J	1735872.21 J
Total PCB Congener minus 209 (U = 1/2)	tPCBCong209_N	2147571.5 J	2002088.89 J	1933559.31 J	1428528.04 J	3652700.99 J	614419.28 J	1744422.09 J	1597872.21 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	tPCBCngCPB98_N	694.7385 J	567.57 J	544.7	361.21	577.2 J	331.4 J	267.5	241.5 J
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	tPCBCngCPF98_N	3.903825 J	3.18 J	3.1	2.05	4.8 J	2 J	1.8	1.6 J
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	tPCBCongCPM_N	41.1819 J	30.43 J	31	20.74	58.6 J	20 J	19.6	16.6 J
Total Pentachlorobiphenyl homologs (U = 1/2)	tSum_PenPCB_N	509308.6 J	469281.01 J	432038.7 J	350206 J	860048.76 J	149413.98 J	388288.9	341433.6 J
Total Tetrachlorobiphenyl homologs (U = 1/2)	tSum_TetPCB_N	1017143.8 J	1003156.4	989340.5 J	731573.8	1882811.6	237348.65 J	841480.9	798314.6
Total Trichlorobiphenyl homologs (U = 1/2)	tSum_TriPCB_N	314036 J	275609.3 J	285306 J	234795.18 J	425499.16	85487.44 J	244246.6 J	231755.6 J
Dioxin Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	--	--	--	10.9	6.12	49.2	1350	1500
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	--	--	--	6.89	2.56 J	6.16	253	293
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	--	--	--	0.794 J	0.836 J	7.68	49	54.8
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	--	--	--	0.988 J	0.564 J	0.808 J	25.9	30.6
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	--	--	--	0.454 U	0.199 U	0.421 U	9.15	13.4
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	--	--	--	0.257 U	0.394 J	1.79 J	5.14	6.41
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	--	--	--	0.328 U	0.15 U	0.301 U	0.331 U	0.362 J
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	--	--	--	0.251 U	0.118 U	0.934 J	2.46 J	2.94
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	--	--	--	0.359 U	0.152 U	0.329 U	1.35 J	1.59 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	--	--	--	0.425 U	0.177 U	0.395 U	1.05 J	1.39 J
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	--	--	--	0.349 U	0.154 U	0.32 U	0.875 J	0.981 J
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	--	--	--	1.05 J	1.22 J	3.22	5.34	5.86
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	--	--	--	0.325 U	0.495 J	1.12 J	0.897 J	0.931 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	--	--	--	0.361 U	0.165 U	0.362 U	1.81 J	2.2 J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	--	--	--	2.62	2.48	3.53	5.49	6.39
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	51207-31-9	--	--	--	14.5	10.4	13.6	14.8	14.4
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	--	--	--	2.36	5.32	3.42	9.31	10.6
Total Pentachlorodibenzofuran (PeCDF)	30402-15-4	--	--	--	12.4 J	5.02 J	21.8 J	18.1 J	21 J
Total Pentachlorodibenzo-p-dioxin (PeCDD)	36088-22-9	--	--	--	3.27 J	0.495 J	4.16 J	2.58 J	3.48 J
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	tDioxFurB_N	--	--	--	19.853 J	18.902 J	22.413 J	32.954 J	35.225 J
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	tDioxFurF_N	--	--	--	4.773 J	7.748 J	7.62 J	15.878 J	18.132 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	tDioxFurM_N	--	--	--	4.932 J	7.738 J	7.517 J	16.101 J	18.177 J

Appendix D
Tissue Analytical Results

	Location ID	PB024.4	PB025_A	PB026.1	PB032_A	PB037.2	PB037.4	PB037.5	PB037.6
	Sample ID	PB01-I-A-BCR-W-005-COMP-201106	PB01-F-A-GM-W-004-20110615	PB01-F-A-STM-W-002-20110616	PB02-F-A-PNF-W-009-20110617	PB02-F-A-STM-W-006-20110616	PB02-I-B-BCR-W-001-COMP-201106	PB02-I-B-BRS-W-001-COMP-201106	PB02-I-A-BCR-W-002-COMP-201106
	Sample Date	6/20/2011	6/15/2011	6/15/2011	6/17/2011	6/16/2011	6/17/2011	6/17/2011	6/16/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201319	3201214.42	3201153.65	3201407.03	3201346.97	3201504	3201380	3201402
	Y	13835188	13835154.42	13835079.21	13834542.25	13834038.02	13833530	13834151	13833775
	Scientific_Name	Callinectes sapidus	Brevoortia patronus	Mugil cephalus	Lagodon rhomboides	Mugil cephalus	Callinectes sapidus	Penaeus aztecus	Callinectes sapidus
	Size_Class	>2 to =<7.5	=<15	=<15	=<15	=<15	>7.5 to =<13	>7.5 to =<13	>2 to =<7.5
	Tissue_Category	Sedentary	Migratory	Migratory	Migratory	Migratory	Migratory	Migratory	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
PCB-203	PCB-203	1550	3380	2360	2410	2440	1850	704	980
PCB-204	PCB-204	157	66.8	35.9	71.7	45.3	23.4	14	13.3 J
PCB-205	PCB-205	141	325	216	269	230	57.1 U	54.3	32.4 J
PCB-206	PCB-206	3440	4410	2040 J	3450	2260	988	623	709
PCB-207	PCB-207	3240	3260	1240	2720	1460	827	343	585
PCB-208	PCB-208	4920	4540	1620 J	2830	2020	1010	483	694
PCB-209	PCB-209	175000	143000	44600	92300	46900	22200	14200	14900
Total Decachlorobiphenyl homologs (U = 1/2)	tSum_DecPCB_N	175000	143000	44600	92300	46900	22200	14200	14900
Total Dichlorobiphenyl homologs (U = 1/2)	tSum_DiPCB_N	2599.9 J	9101.47 J	7557.6 J	3536 J	11446.8 J	1788.19 J	4412.14	1620.78
Total Heptachlorobiphenyl homologs (U = 1/2)	tSum_HepPCB_N	39598.23	87466.45 J	68247.82	58965.5	74449.73	53599.63 J	25701.15 J	25438.15 J
Total Hexachlorobiphenyl homologs (U = 1/2)	tSum_HexPCB_N	95880.92 J	228773.4 J	172478.2 J	162859.6 J	211230.8 J	127352.43 J	75598.83 J	79552.68 J
Total Monochlorobiphenyl homologs (U = 1/2)	tSum_MonPCB_N	7.83 U	199.3	183.7 J	150.81 J	247.18 J	3.17 U	107.19	2.25 U
Total Nonachlorobiphenyl homologs (U = 1/2)	tSum_NonPCB_N	11600	12210	4900 J	9000	5740	2825	1449	1988
Total Octachlorobiphenyl homologs (U = 1/2)	tSum_OctPCB_N	13691	23255.8	15699.9	15052.7	16748.3	11921.9	4747.3	6059.7 J
Total PCB Congener (U = 1/2)	tPCBCong_N	864807.31 J	2862773.47 J	2310204.97 J	2113550.66 J	3115985.51 J	935995.24 J	996652.52 J	626864.72 J
Total PCB Congener minus 209 (U = 1/2)	tPCBCong209_N	689807.31 J	2719773.47 J	2265604.97 J	2021250.66 J	3069085.51 J	913795.24 J	982452.52 J	611964.73 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	tPCBCngCPB98_N	307.6 J	426.7	321.5	89.6 J	453.3	509.3 J	369.86 J	340.8
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	tPCBCngCPF98_N	1.9 J	2.9	2.4	1.8 J	2.8	3.8 J	2.18 J	2.3
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	tPCBCongCPM_N	19 J	31.6	24.8	24 J	26.7	43.1 J	22.01 J	24.8
Total Pentachlorobiphenyl homologs (U = 1/2)	tSum_PenPCB_N	167042.88 J	618539.7 J	505521.4 J	490407 J	660680.8	278403.36 J	246013.67 J	174124.76 J
Total Tetrachlorobiphenyl homologs (U = 1/2)	tSum_TetPCB_N	270156.8 J	1352624.2	1153568.1	1059613	1639047.1 J	354626.08 J	465520.07 J	249875.45 J
Total Trichlorobiphenyl homologs (U = 1/2)	tSum_TriPCB_N	89226.24 J	387603.2 J	337448.2	221666 J	449494.8 J	83274.04 J	158903.19 J	73302.11 J
Dioxin Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	184	944	327	169	108	7.57	21.4	8.29
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	13.5 J	207	41.7	15	26	9.16	12.2	20.7
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	13.7	35.1	9.7	5.41	3.84 J	3.4	2.77 J	1.71 J
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	2.22 U	21.2	4.42	1.24 J	2.78 J	2.1 J	2.38 J	4.48
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	1.39 J	7.21	2.87	0.573 U	0.599 U	0.378 U	0.75 U	0.191 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	2.05 J	4.21	1.69 J	0.62 J	0.872 J	3.11	2.28 J	1.91 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	0.816 U	0.343 J	0.148 U	0.235 U	0.343 U	0.409 U	0.424 U	0.471 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	1.12 U	2.18 J	0.679 J	0.276 J	0.476 J	1.2 J	0.974 J	0.764 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	0.834 U	1.19 J	0.378 J	0.242 U	0.362 U	0.667 J	0.458 U	0.453 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	0.29 U	1.01 J	0.254 U	0.419 U	0.411 U	0.397 U	0.773 U	0.125 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	0.851 U	0.733 J	0.152 U	0.242 U	0.359 U	0.429 U	0.449 U	0.476 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	2.38	5.58	3.45	1.44 J	2.71 J	5.02	5.53	4.39
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	0.267 U	1.08 J	0.382 J	0.262 J	0.455 J	0.535 J	0.416 U	0.133 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	0.634 U	1.75 J	0.566 J	0.364 U	0.369 U	0.311 U	0.649 U	0.251 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	2.45	5.78	3.71	1.56 J	3.21	4.81	5.71	3.66
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	51207-31-9	9.58	15	23	10.7	28.2	18.5	18.2	12.8
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	2.81 J	9.79	7.19	3.46 J	9.62	5.24	3.79	3.27
Total Pentachlorodibenzofuran (PeCDF)	30402-15-4	18.6 J	14.6 J	9.51 J	4.73 J	8.2 J	21.3 J	28.5 J	21 J
Total Pentachlorodibenzo-p-dioxin (PeCDD)	36088-22-9	1.6 J	1.93 J	0.782 J	0.262 J	0.455 J	2.38 J	4.03 J	2.52 J
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	tDioxFurB_N	15.758 J	33.785 J	35.115 J	16.351 J	42.016 J	30.131 J	28.93 J	20.451 J
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	tDioxFurF_N	5.458 J	16.454 J	11.264 J	5.376 J	13.546 J	9.973 J	8.584 J	6.326 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	tDioxFurM_N	5.361 J	16.393 J	11.728 J	5.592 J	14.276 J	9.856 J	8.225 J	6.14 J

Appendix D
Tissue Analytical Results

	Location ID	PB037_A	PB047.1_A	PB047.3	PB048.3	PB048.3	PB048.3	PB049_A	PB049_A
	Sample ID	PB02-I-A-BCR-W-004-COMP-201106	PB02-F-A-PNF-W-002-20110615	PB02-I-A-BCR-W-001-COMP-201106	PB02-F-A-GM-W-001-20110616	PB02-F-A-GM-W-002-20110616	PB02-F-A-STM-W-001-20110616	PB02-F-A-GKF-W-001-COMP-201106	PB02-I-A-BCR-W-003-COMP-201106
	Sample Date	6/19/2011	6/15/2011	6/19/2011	6/16/2011	6/16/2011	6/16/2011	6/15/2011	6/22/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201325.97	3201461.79	3201645	3201519.15	3201519.15	3201519.15	3201468.39	3201468.39
	Y	13833885.45	13833007.68	13832925	13832869.89	13832869.89	13832869.89	13832722.8	13832722.8
	Scientific_Name	Callinectes sapidus	Lagodon rhomboides	Callinectes sapidus	Brevoortia patronus	Brevoortia patronus	Mugil cephalus	Fundulus grandis	Callinectes sapidus
	Size_Class	>2 to =<7.5	=<15	>2 to =<7.5	=<15	=<15	=<15	=<15	>2 to =<7.5
	Tissue_Category	Sedentary	Migratory	Sedentary	Migratory	Migratory	Migratory	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
PCB-203	PCB-203	1130	5140	1000	3730	3520	1560	3800	764
PCB-204	PCB-204	16.6	51.6	50.5 J	58.7	54.7	17.9	110	22.1
PCB-205	PCB-205	31.6	389	37.5	357	317	132	320 U	26
PCB-206	PCB-206	807	4340	814	4680	4190	1140	2930	735
PCB-207	PCB-207	628	2750	1970	3270	3060	635	3860	517
PCB-208	PCB-208	789	3160	1050	4480	4060	850	4560	742
PCB-209	PCB-209	13000	67300	18800	125000	113000	18600	80600	13500
Total Decachlorobiphenyl homologs (U = 1/2)	tSum_DecPCB_N	13000	67300	18800	125000	113000	18600	80600	13500
Total Dichlorobiphenyl homologs (U = 1/2)	tSum_DiPCB_N	4095.23	3723.3 J	1920.3	12059.98	10768.48	8480 J	14399.75 J	2300.57
Total Heptachlorobiphenyl homologs (U = 1/2)	tSum_HepPCB_N	32602.245 J	115502.58	24978.86	100951.98	90261.13	48668.75	138321.94 J	20407.06 J
Total Hexachlorobiphenyl homologs (U = 1/2)	tSum_HexPCB_N	105899.063 J	323349.22 J	83310.6 J	250905.95 J	236619.3 J	162589.1 J	400033.22 J	57782.83 J
Total Monochlorobiphenyl homologs (U = 1/2)	tSum_MonPCB_N	1.75 U	150.9 J	6.24 U	263.1 J	218.58 J	122.56 J	360.7 J	2.926 J
Total Nonachlorobiphenyl homologs (U = 1/2)	tSum_NonPCB_N	2224	10250	3834	12430	11310	2625	11350	1994
Total Octachlorobiphenyl homologs (U = 1/2)	tSum_OctPCB_N	7552.2	29821.6	6702 J	25927.7	23689.7	10410.9	31690	5137.1
Total PCB Congener (U = 1/2)	tPCBCong_N	1264098.298 J	3972325 J	825405.09 J	2424485.76 J	2275858.27 J	2745075.55 J	5144331.74 J	520316.246 J
Total PCB Congener minus 209 (U = 1/2)	tPCBCong209_N	1251098.298 J	3905025 J	806605.09 J	2299485.76 J	2162858.28 J	2726475.56 J	5063731.74 J	506816.246 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	tPCBCngCPB98_N	703.52	145	469.1	476.1	445.2	433.9	771.8 J	285.97
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	tPCBCngCPF98_N	4.58	3.9	3	3.4	3.1	2.8	9.4 J	1.7
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	tPCBCongCPM_N	49.2	51.4	31.7	39.2	35	28.3	137.1 J	16.86
Total Pentachlorobiphenyl homologs (U = 1/2)	tSum_PenPCB_N	339821.52 J	1053025.5	234814.15 J	694848.1 J	644629.3	602024.5 J	1321625.78 J	123582.52 J
Total Tetrachlorobiphenyl homologs (U = 1/2)	tSum_TetPCB_N	556153.18	2052944.2 J	360217.6 J	768205.6	721529.09	1502390.9 J	2602385.3	209317.02 J
Total Trichlorobiphenyl homologs (U = 1/2)	tSum_TriPCB_N	202748.78 J	316257.6 J	90818.84 J	433893.4	423832.7	389163.8	543565.1	86292.23 J
Dioxin Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	2.97 J	9	4.51 J	98.7	96.5	119	0.279 U	9.53
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	6.05	12.1	11.9	76.7	76.7	75.8	1.93 J	5.24
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	1.51 J	0.821 J	1.27 J	6.03	6.08	5.72	0.107 U	1.86 J
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	1.82 J	1.23 J	1.3 U	9.4	8.36	7.91	0.252 U	0.974 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	0.306 U	0.385 U	0.315 U	1.27 J	1.34 J	0.702 U	0.173 U	0.334 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	2.36 J	0.492 J	1.16 U	2.31 J	2.33 J	2.17 J	0.206 J	1.23 J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	0.819 J	0.209 U	0.668 U	0.321 U	0.403 U	0.513 U	0.129 U	0.337 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	1.21 J	0.251 J	0.496 U	1.06 J	1.18 J	0.99 J	0.167 J	0.603 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	0.287 U	0.226 U	0.664 U	1.16 J	1.05 J	0.591 U	0.229 J	0.359 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	0.339 U	0.235 U	0.21 U	0.492 U	0.679 U	0.51 U	0.147 U	0.32 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	0.425 J	0.221 U	0.687 U	0.348 U	0.421 U	0.561 U	0.136 U	0.354 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	4.9	2.38 J	2.95	4.94	4.79	3.48	0.927 J	2.81
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	0.709 J	0.652 J	0.525 J	0.95 J	0.797 J	0.322 U	0.425 J	0.225 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	0.299 U	0.239 U	0.166 U	0.854 J	0.671 U	0.493 U	0.112 U	0.304 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	4.66	3.19	2.57	5.23	4.54	4.15	1.9 J	2.69
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	51207-31-9	15.2	11.4	11.5	13.4	15.2	28.7	8.81	12 J
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	3.06	7.96	2.47	11	10.6	5.37	3.86	2.7
Total Pentachlorodibenzofuran (PeCDF)	30402-15-4	25.6	6.65 J	15.6 J	12.6 J	11 J	10.5	3.11 J	14.1 J
Total Pentachlorodibenzo-p-dioxin (PeCDD)	36088-22-9	6.05 J	0.652 J	1.8 J	0.95 J	0.797 J	0.322 U	0.425 J	1.26 J
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	tDioxFurB_N	24.612 J	23.569 J	17.533 J	31.658 J	32.176 J	39.227 J	15.152 J	18.049 J
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	tDioxFurF_N	7.927 J	11.062 J	5.294 J	16.123 J	15.298 J	9.803 J	5.809 J	5.223 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	tDioxFurM_N	7.399 J	10.94 J	5.233 J	15.823 J	15.197 J	10.398 J	5.853 J	5.205 J

Appendix D
Tissue Analytical Results

	Location ID	PB052.1	PB052.1	PB053.2	PB053.2	PB053_B	PB056_A	PB056_A	PB057.2
	Sample ID	PB02-F-A-SAS-W-002-20110616	PB02-F-A-STM-W-003-20110616	PB02-F-A-GKF-W-025-20110621	PB02-F-A-GKF-W-029-20110622	PB02-F-A-GKF-W-013-20110618	PB02-F-A-GKF-W-010-20110618	PB02-F-A-GKF-W-011-20110618	PB03-F-A-GM-W-001-20110617
	Sample Date	6/16/2011	6/16/2011	6/21/2011	6/22/2011	6/18/2011	6/18/2011	6/18/2011	6/17/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201515.24	3201515.24	3201266.16	3201266.16	3201390.48	3201420.22	3201420.22	3201603.32
	Y	13832564.31	13832564.31	13832433.69	13832433.69	13832440.54	13832183.54	13832183.54	13832054.52
	Scientific_Name	Cynoscion arenarius	Mugil cephalus	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Brevoortia patronus
	Size_Class	=<15	=<15	=<15	=<15	=<15	=<15	=<15	=<15
	Tissue_Category	Migratory	Migratory	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
PCB-203	PCB-203	4610	3140	7680	6050	6730 J	5890	4420	3020
PCB-204	PCB-204	74.8	28.9 J	138	105	106 J	102	73.6	41.7
PCB-205	PCB-205	380	250	345	283	331 J	289	232	240
PCB-206	PCB-206	6590	2160	4410	3750	4180	3990	3030	2920
PCB-207	PCB-207	5400	1200	5350	4880	4650	4880	3340	2010
PCB-208	PCB-208	6720	1500	6450	5620	5970	6190	3840	2840
PCB-209	PCB-209	175000	30900	127000	107000 J	112000 J	116000	72000	73500
Total Decachlorobiphenyl homologs (U = 1/2)	tSum_DecPCB_N	175000	30900	127000	107000 J	112000 J	116000	72000	73500
Total Dichlorobiphenyl homologs (U = 1/2)	tSum_DiPCB_N	4904.9	16565.6 J	29765.61 J	25007.79	24812.5 J	20990.5 J	23556 J	9695.4 J
Total Heptachlorobiphenyl homologs (U = 1/2)	tSum_HepPCB_N	83018.77 J	90818.06 J	188026.74	162448.57 J	179898 J	158596.14 J	121518 J	73630.08 J
Total Hexachlorobiphenyl homologs (U = 1/2)	tSum_HexPCB_N	196161.1 J	266045.8	629408.7 J	532587.9 J	526082.54 J	410000.46	388340.7 J	192155.23 J
Total Monochlorobiphenyl homologs (U = 1/2)	tSum_MonPCB_N	67.08	304.39	377.4	358.8 J	377.84 J	379.9 J	363.6 J	189.9 J
Total Nonachlorobiphenyl homologs (U = 1/2)	tSum_NonPCB_N	18710	4860	16210	14250	14800	15060	10210	7770
Total Octachlorobiphenyl homologs (U = 1/2)	tSum_OctPCB_N	29091.8	20644.9 J	50803	42418	45587 J	40891	29924.6	19709.7
Total PCB Congener (U = 1/2)	tPCBCong_N	2511956.11 J	4538570.8 J	8847995.31 J	7110917.26 J	6767235.33 J	5242306.61 J	5593763.6 J	2890241.46 J
Total PCB Congener minus 209 (U = 1/2)	tPCBCong209_N	2336956.11 J	4507670.8 J	8720995.31 J	7003917.26 J	6655235.33 J	5126306.61 J	5521763.6 J	2816741.46 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	tPCBCngCPB98_N	188.1 J	789.3	1152.5 J	987 J	1091.86215 J	943.33 J	865.8 J	440.06 J
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	tPCBCngCPF98_N	2.2 J	5.1	9.7 J	8.2 J	9.349275 J	8.09 J	7.2 J	3.01 J
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	tPCBCongCPM_N	25.9 J	51.5	115.7 J	97.5 J	111.43945 J	96.35 J	85.6 J	33.08 J
Total Pentachlorobiphenyl homologs (U = 1/2)	tSum_PenPCB_N	548834.9 J	987795.2 J	1924379.6 J	1571688.6 J	1656118.3 J	1168212.7 J	1304574.8 J	586428.2 J
Total Tetrachlorobiphenyl homologs (U = 1/2)	tSum_TetPCB_N	1159897.1 J	2416992.6 J	4655465.5 J	3715735.1	3325852.4 J	2620869.3 J	3063492.9 J	1512803.4
Total Trichlorobiphenyl homologs (U = 1/2)	tSum_TriPCB_N	296270.5 J	703644.2	1226558.7 J	939422.6	881706.7 J	691306.7 J	579783	414359.5
Dioxin Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	3.2 J	15.2	0.23 U	0.89 J	1.43 J	1.76 J	0.988 J	57.5
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	3.08 J	21.7	5.04	5.13	6.83	6.95	4.03 J	57.7
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	0.441 J	1.31 J	0.132 U	0.326 J	0.217 U	2.08 J	0.353 J	4.46
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	0.549 J	2.38	0.621 J	0.881 J	1.25 J	0.796 J	0.601 J	6.42
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	0.294 U	0.211 U	0.223 U	0.19 U	0.362 U	0.404 U	0.283 U	0.697 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	0.403 J	0.794 J	0.365 J	0.397 J	0.19 U	0.33 J	0.198 U	1.58 J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	0.121 U	0.136 U	0.155 U	0.104 U	0.29 U	0.214 U	0.23 U	0.189 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	0.243 J	0.34 J	0.345 J	0.25 J	0.183 U	0.522 J	0.196 U	0.712 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	0.285 J	0.325 J	0.158 U	0.459 J	0.316 U	0.225 U	0.233 U	0.587 J
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	0.181 U	0.145 U	0.249 U	0.198 U	0.304 U	0.421 U	0.314 U	0.3 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	0.129 U	0.146 U	0.159 U	0.197 U	0.308 U	0.224 U	0.235 U	0.198 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	1.08 J	2.13 J	2.25 J	2.26 J	1.72 J	1.72 J	1.22 J	3.11
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	0.162 U	0.43 J	1.03 J	1.21 J	2.22 J	0.685 J	0.63 J	0.726 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	0.181 J	0.223 J	0.258 U	0.187 U	0.247 U	0.44 U	0.316 U	0.552 J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	0.356 J	2.88	4.55 J	3.87	3.9 J	3.3	2.56	3.43
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	51207-31-9	1.05 U	18.8	15.6	13.2	12.7	12.1	9.91	10.1
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	0.8 J	3.65	8.22	6.18	7.43	6.64	4.81	5.97
Total Pentachlorodibenzofuran (PeCDF)	30402-15-4	1.92 J	6.94	8.09 J	7.04 J	7.23 J	10.8 J	4.71 J	8.67 J
Total Pentachlorodibenzo-p-dioxin (PeCDD)	36088-22-9	0.162 U	0.43 J	1.03 J	1.21 J	2.66 J	0.685 J	0.63 J	0.949 J
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	tDioxFurB_N	1.981 J	26.15 J	29.737 J	24.793 J	26.497 J	23.067 J	18.108 J	20.926 J
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	tDioxFurF_N	1.272 J	6.768 J	12.557 J	10.219 J	12.448 J	9.874 J	7.394 J	9.495 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	tDioxFurM_N	1.219 J	7.126 J	12.372 J	10.099 J	12.251 J	9.771 J	7.334 J	9.356 J

Appendix D
Tissue Analytical Results

	Location ID	PB057.2	PB057.2	PB057.2	PB057_B	PB057_B	PB057_B	PB058.1	PB058.1
	Sample ID	PB03-F-A-STM-W-001-20110617	PB03-F-A-STM-W-001-COMP-201106	PB03-F-A-STM-W-002-20110617	PB03-F-A-GKF-W-001-20110615	PB03-F-A-GKF-W-006-20110617	PB03-F-A-PNF-W-001-COMP-201106	PB03-F-A-GM-W-003-20110618	PB03-F-A-GM-W-004-20110618
	Sample Date	6/17/2011	6/17/2011	6/17/2011	6/15/2011	6/17/2011	6/15/2011	6/18/2011	6/18/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201603.32	3201603.32	3201603.32	3201644.06	3201644.06	3201644.06	3201682.3	3201682.3
	Y	13832054.52	13832054.52	13832054.52	13832071.63	13832071.63	13832071.63	13832011.93	13832011.93
	Scientific_Name	Mugil cephalus	Mugil cephalus	Mugil cephalus	Fundulus grandis	Fundulus grandis	Lagodon rhomboides	Brevoortia patronus	Brevoortia patronus
	Size_Class	=<15	=<15	=<15	=<15	=<15	=<15	=<15	=<15
	Tissue_Category	Migratory	Migratory	Migratory	Sedentary	Sedentary	Migratory	Migratory	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
PCB-203	PCB-203	1700	821	1490	5620	4860	1710	2700	2710
PCB-204	PCB-204	17	11	16.4	73.7	64.7	18.7	39.7	42.5
PCB-205	PCB-205	132	84.6	113	283	248	158	215	267
PCB-206	PCB-206	1080	736	1080	3350	3430	1550	2790	3320
PCB-207	PCB-207	586	445	592	3990	3810	966	1920	2280
PCB-208	PCB-208	739	586	768	5390	4290	1060	2640	3110
PCB-209	PCB-209	15600	12300	18500	94200	83900	21500	71800	83800
Total Decachlorobiphenyl homologs (U = 1/2)	tSum_DecPCB_N	15600	12300	18500	94200	83900	21500	71800	83800
Total Dichlorobiphenyl homologs (U = 1/2)	tSum_DiPCB_N	4950.3 J	6646.06	7032.5 J	21726.7 J	23867	3417.7 J	11648.8 J	16831.96
Total Heptachlorobiphenyl homologs (U = 1/2)	tSum_HepPCB_N	44949.26 J	29164.11	35706.14 J	160714.93	137128.26	44589.349	63061.07 J	72913.05 J
Total Hexachlorobiphenyl homologs (U = 1/2)	tSum_HexPCB_N	117921.73 J	102427.08	99345.8 J	439167.2 J	476852.3 J	142368.5 J	181784.04 J	268118 J
Total Monochlorobiphenyl homologs (U = 1/2)	tSum_MonPCB_N	93.8 J	156.76 J	114.91 J	315.5 J	389.1 J	117.65 J	230.1	349.1 J
Total Nonachlorobiphenyl homologs (U = 1/2)	tSum_NonPCB_N	2405	1767	2440	12730	11530	3576	7350	8710
Total Octachlorobiphenyl homologs (U = 1/2)	tSum_OctPCB_N	10545	5848.6	9098.4	39476.7	34192.7	10008.7	17399.7	18115.5
Total PCB Congener (U = 1/2)	tPCBCong_N	1504838.03 J	1735514.48 J	1870516.01 J	4600511.58 J	7061455.81 J	2206629.039 J	3070347.7 J	4005386.97 J
Total PCB Congener minus 209 (U = 1/2)	tPCBCong209_N	1489238.03 J	1723214.48 J	1852016.01 J	4506311.58 J	6977555.81 J	2185129.039 J	2998547.7 J	3921586.97 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	tPCBCngCPB98_N	273.09 J	324.86	267.9 J	826.9	959.8	102.59	497.01 J	714.3
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	tPCBCngCPF98_N	1.87 J	1.28	1.7 J	6.9	7.7	2.34	3.04 J	4.4
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	tPCBCongCPM_N	19.27 J	4.26	17.7 J	80.2	87.5	30.55	31.62 J	45.7
Total Pentachlorobiphenyl homologs (U = 1/2)	tSum_PenPCB_N	338692.63 J	367426.67 J	348722.8 J	1532099.3 J	1636453.7 J	501612.91 J	591663.4 J	972330.4 J
Total Tetrachlorobiphenyl homologs (U = 1/2)	tSum_TetPCB_N	752136.5 J	924411.3	1043528.6 J	1533578.6	3689904.7	1218044.4 J	1648366.8 J	1975824.46
Total Trichlorobiphenyl homologs (U = 1/2)	tSum_TriPCB_N	217543.8 J	285366.89	306026.8 J	766502.8	967238.1	261393.88	477043.9	588394.6
Dioxin Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	48.6	25.8	44.4	1.06 J	1.47 J	1.69 J	83.7	122
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	52.4	33.4	63.5	5.77	7.4	3.46 J	136	233
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	3.34	2.36 J	4.12	0.463 J	0.315 J	0.255 J	8.89	11.4
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	5.76	3.69	7.12	0.707 J	0.747 J	0.253 U	14.7	28
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	0.679 U	0.382 U	0.721 J	0.142 U	0.248 U	0.207 U	1.27 J	2.13 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	1.17 J	0.767 J	1.33 J	0.241 J	0.231 J	0.11 U	2.6	3.44
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	0.461 U	0.214 U	0.262 U	0.0871 U	0.134 U	0.165 U	0.292 U	2.83 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	0.542 J	0.373 J	0.815 J	0.149 J	0.12 J	0.102 U	1.31 J	2.01 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	0.493 U	0.289 J	0.462 J	0.204 J	0.248 J	0.184 U	0.962 J	2.76 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	0.681 U	0.331 U	0.365 U	0.198 U	0.11 U	0.156 U	0.443 U	0.464 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	0.484 U	0.227 U	0.286 U	0.0913 U	0.144 U	0.178 U	0.294 U	2.89 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	1.43 J	1.16 J	1.74 J	1.01 J	1.12 J	0.678 J	3.29	4.87
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	0.449 J	0.163 U	0.473 J	0.752 J	0.536 J	0.267 J	0.784 J	0.687 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	0.617 U	0.273 U	0.56 J	0.172 U	0.118 J	0.145 U	0.782 J	1.38 J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	1.83 J	1.37 J	2.38 J	2.58	2.59	0.916 J	3.92	5.25
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	51207-31-9	10	8.12	10.5	10.9	10.9	4.27	11.2	16.8
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	2.02	1.43	2.81	6.57	5.64	2.29	5.86 J	8.18
Total Pentachlorodibenzofuran (PeCDF)	30402-15-4	5.97 J	3.57 J	6.91 J	4.53 J	4.68 J	1.59 J	11.7 J	17.8 J
Total Pentachlorodibenzo-p-dioxin (PeCDD)	36088-22-9	0.449 J	0.163 U	0.473 J	0.752 J	0.536 J	0.267 J	1.74 J	0.687 U
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	tDioxFurB_N	14.769 J	11.316 J	16.718 J	20.976 J	19.849 J	7.855 J	22.754 J	32.195 J
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	tDioxFurF_N	4.364 J	2.897 J	5.512 J	9.296 J	8.167 J	3.335 J	10.042 J	13.873 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	tDioxFurM_N	4.494 J	3.045 J	5.614 J	9.3176 J	8.182 J	3.338 J	9.97 J	13.577 J

Appendix D
Tissue Analytical Results

	Location ID	PB058.1	PB059.1_A	PB059.1_A	PB059.3	PB059.4	PB059.4	PB059.5	PB063.1_A
	Sample ID	PB03-F-A-GM-W-005-20110618	PB03-F-A-GKF-W-003-20110615	PB03-I-A-BCR-W-003-COMP-201106	PB03-I-B-BCR-W-002-20110627	PB03-I-B-BCR-W-003-20110628	PB03-I-B-BCR-W-003-20110628DUP	PB03-I-A-BCR-W-001-COMP-201106	PB03-F-A-GKF-W-009-20110617
	Sample Date	6/18/2011	6/15/2011	6/19/2011	6/26/2011	6/27/2011	6/27/2011	6/27/2011	6/17/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201682.3	3201501.32	3201501.32	3201714.16	3201714.16	3201714.16	3201714	3201509.99
	Y	13832011.93	13831828.71	13831828.71	13831964.63	13831964.63	13831964.63	13831965	13831505.57
	Scientific_Name	Brevoortia patronus	Fundulus grandis	Callinectes sapidus	Callinectes sapidus	Callinectes sapidus		Callinectes sapidus	Fundulus grandis
	Size_Class	=<15	=<15	>2 to =<7.5	>7.5 to =<13	>7.5 to =<13		>2 to =<7.5	=<15
	Tissue_Category	Migratory	Sedentary	Sedentary	Migratory	Migratory		Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body		Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
PCB-203	PCB-203	2870	4780	517	727	712	672	486	4340
PCB-204	PCB-204	46.2 J	50.5	7.81	15.3	14.6	10.7	7.67 J	56.2
PCB-205	PCB-205	283	221	16.5	19.7 J	17.6	19.1	10.7	201
PCB-206	PCB-206	3670	2950	417	435	405	403	234	2810
PCB-207	PCB-207	2420	3040	263	408	433	413	230	3130
PCB-208	PCB-208	3350	3880	397	458	475	442	262	3830
PCB-209	PCB-209	92100	76300	5250	8140	9540	8910	4790	74800
Total Decachlorobiphenyl homologs (U = 1/2)	tSum_DecPCB_N	92100	76300	5250	8140	9540	8910	4790	74800
Total Dichlorobiphenyl homologs (U = 1/2)	tSum_DiPCB_N	17103.07	29896.1 J	1813.96 J	2069.37 J	2110.92	1897.32 J	1708.73 J	21805.3 J
Total Heptachlorobiphenyl homologs (U = 1/2)	tSum_HepPCB_N	76888.26 J	141148.8	16554.938 J	20608.1 J	19585.11 J	18193.31 J	15426.38 J	122860.98 J
Total Hexachlorobiphenyl homologs (U = 1/2)	tSum_HexPCB_N	268334.3 J	395884.1	52076.04 J	79130.864 J	76342.01 J	73499.5 J	57726.24 J	432968.5 J
Total Monochlorobiphenyl homologs (U = 1/2)	tSum_MonPCB_N	312.7 J	444	3.11 J	9.52 J	6.153 J	3.04 U	2.75 U	309.9 J
Total Nonachlorobiphenyl homologs (U = 1/2)	tSum_NonPCB_N	9440	9870	1077	1301	1313	1258	726	9770
Total Octachlorobiphenyl homologs (U = 1/2)	tSum_OctPCB_N	19985.2 J	32896.5	3466.11	4680 J	4593.2	4190.8	3097.37 J	29398.2
Total PCB Congener (U = 1/2)	tPCBCong_N	4003442.03 J	6501404.6 J	623702.118 J	752900.594 J	722043.627 J	694017.63 J	695657.24 J	4685390.62 J
Total PCB Congener minus 209 (U = 1/2)	tPCBCong209_N	3911342.03 J	6425104.6 J	618452.118 J	744760.594 J	712503.627 J	685107.63 J	690867.24 J	4610590.62 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	tPCBCngCPB98_N	789.2 J	982.9	370.56	485.08	433.73	408.33	511.7	740 J
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	tPCBCngCPF98_N	4.7 J	7.5	2.94	3.09	2.87	2.6	2.98	3.5 J
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	tPCBCongCPM_N	46.6 J	84.4	37.21	32.85	30.79	27.16	30.16	15.6 J
Total Pentachlorobiphenyl homologs (U = 1/2)	tSum_PenPCB_N	969180.2 J	1404509.7	161350.56 J	229441.19 J	228495.22 J	212821.01 J	186234.23 J	1105174.8 J
Total Tetrachlorobiphenyl homologs (U = 1/2)	tSum_TetPCB_N	1934015.4 J	3462382.3 J	284966.08 J	324368.23	299915.71 J	295170.65 J	322840.44	2275250.4
Total Trichlorobiphenyl homologs (U = 1/2)	tSum_TriPCB_N	616083 J	948073.1	97144.32 J	83152.32	80142.318 J	78072.95 J	103103.76 J	613052.4
Dioxin Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	134	0.49 U	1.71 J	--	--	--	2.52 J	0.204 U
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	215	7.3 J	3.97 J	--	--	--	13.3	3.15 J
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	12.9	0.272 U	0.49 J	--	--	--	1.44 J	0.522 J
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	25	0.647 J	0.977 J	--	--	--	2.31 J	0.401 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	1.72 J	0.467 U	0.202 U	--	--	--	0.359 U	0.217 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	3.7 J	0.205 U	0.668 J	--	--	--	1.12 J	0.095 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	2.29 U	0.24 U	0.18 U	--	--	--	0.275 U	0.154 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	2 J	0.19 U	0.352 J	--	--	--	0.628 J	0.0981 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	2.35 U	0.246 U	0.408 J	--	--	--	0.431 J	0.167 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	0.533 U	0.312 U	0.2 U	--	--	--	0.421 U	0.158 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	2.39 U	0.247 U	0.19 U	--	--	--	0.292 U	0.163 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	4.44	0.827 J	1.16 J	--	--	--	2.27 J	0.624 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	0.618 U	0.613 J	0.309 J	--	--	--	0.593 J	1.31 J
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	1.18 J	0.267 U	0.141 U	--	--	--	0.382 U	0.149 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	5.93 J	2.22 J	1.28 J	--	--	--	1.89 J	1.76 J
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	51207-31-9	17	10.7	4.45	--	--	--	9.23	7.52
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	8.13 J	4.86	1.09 J	--	--	--	2.25 J	3.84
Total Pentachlorodibenzofuran (PeCDF)	30402-15-4	18.9 J	3.86 J	6.46 J	--	--	--	12 J	3.93 J
Total Pentachlorodibenzo-p-dioxin (PeCDD)	36088-22-9	0.618 U	0.613 J	1.86 J	--	--	--	3.78 J	1.31 J
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	tDioxFurB_N	32.922 J	18.549 J	7.39 J	--	--	--	14.451 J	14.5373 J
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	tDioxFurF_N	13.993 J	7.276 J	2.496 J	--	--	--	4.673 J	6.5094 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	tDioxFurM_N	13.618 J	7.332 J	2.459 J	--	--	--	4.732 J	6.5092 J

Appendix D
Tissue Analytical Results

	Location ID	PB063.1_A	PB063.2_A	PB063.2_A	PB069_A	PB069_A	PB069_A	PB084.1	PB084.1
	Sample ID	PB03-F-A-GKF-W-010-20110617	PB03-F-A-GKF-W-005-20110615	PB03-F-A-GKF-W-013-20110617	PB03-F-A-GKF-W-002-20110615	PB03-F-A-GKF-W-007-20110617	PB03-I-A-BCR-W-002-COMP-201106	PB04-F-A-GKF-W-005-20110627	PB04-F-A-GKF-W-013-20110627
	Sample Date	6/17/2011	6/15/2011	6/17/2011	6/15/2011	6/17/2011	6/19/2011	6/27/2011	6/27/2011
	Sample Type	N	N	N	N	N	N	N	N
	X	3201509.99	3201561.28	3201561.28	3201132.36	3201132.36	3201132.36	3200727.85	3200727.85
	Y	13831505.57	13831519.55	13831519.55	13830993.22	13830993.22	13830993.22	13829784.47	13829784.47
	Scientific_Name	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Fundulus grandis	Callinectes sapidus	Fundulus grandis	Fundulus grandis
	Size_Class	=<15	=<15	=<15	=<15	=<15	>2 to =<7.5	=<15	=<15
	Tissue_Category	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary	Sedentary
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
PCB-203	PCB-203	5210	4060	4080	5900	4280	666	1910	2790 J
PCB-204	PCB-204	63.2	53.8	64.3	74.7	51	11.2	25 J	36.3 J
PCB-205	PCB-205	215	196	183	302 J	190	21.3	103	147
PCB-206	PCB-206	2790	2740	2630	3320	2340	469	1260	1800
PCB-207	PCB-207	3000	3060	2780	3370	2360	397	1430	1990
PCB-208	PCB-208	3780	3680	3640	4270	2990	544	1630	2270
PCB-209	PCB-209	75100 J	74600	69500	82200	55400	7980	33400	44200
Total Decachlorobiphenyl homologs (U = 1/2)	tSum_DecPCB_N	75100 J	74600	69500	82200	55400	7980	33400	44200
Total Dichlorobiphenyl homologs (U = 1/2)	tSum_DiPCB_N	26948.8 J	20284.5 J	18115.41 J	34020.4 J	27457.5 J	3766.99 J	12526.84	20469.57
Total Heptachlorobiphenyl homologs (U = 1/2)	tSum_HepPCB_N	145153.57	124890.2 J	111936.6	156574.73	118031.79	23639.244	52722.93 J	78626.28 J
Total Hexachlorobiphenyl homologs (U = 1/2)	tSum_HexPCB_N	426399.9	384274.5 J	333396.54 J	544841.4 J	435476.8 J	84502.58 J	202833.5 J	317819.4 J
Total Monochlorobiphenyl homologs (U = 1/2)	tSum_MonPCB_N	338.32	265.9 J	313.94	598.7 J	496.3 J	5.53 J	269.63 J	409.7 J
Total Nonachlorobiphenyl homologs (U = 1/2)	tSum_NonPCB_N	9570	9480	9050	10960	7690	1410	4320	6060
Total Octachlorobiphenyl homologs (U = 1/2)	tSum_OctPCB_N	35008.2	30020.8	27987.3	39766.7 J	28637	4891.5	13314 J	19392.3 J
Total PCB Congener (U = 1/2)	tPCBCong_N	6000677.74 J	5938890.2 J	4473197.15 J	7758932.13 J	5075277.69 J	1142429.629 J	2915816.39 J	4586762.27 J
Total PCB Congener minus 209 (U = 1/2)	tPCBCong209_N	5925577.73 J	5864290.2 J	4403697.16 J	7676732.12 J	5019877.69 J	1134449.629 J	2882416.4 J	4542562.27 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	tPCBCngCPB98_N	876 J	792.8	741.1 J	1172.78974 J	908.2 J	782.88	454.2 J	739
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	tPCBCngCPF98_N	7 J	6.9	6 J	9.52337 J	7.5 J	4.42	3.4 J	5.5
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	tPCBCongCPM_N	80.9 J	81.6	70.3 J	112.62322 J	89.4 J	44.49	38.2 J	62.3
Total Pentachlorobiphenyl homologs (U = 1/2)	tSum_PenPCB_N	1340980.9 J	1381228 J	1065454.2 J	1818503.8 J	1236961.9 J	276629.09 J	732979.56 J	1183753.8 J
Total Tetrachlorobiphenyl homologs (U = 1/2)	tSum_TetPCB_N	3019963.4	3123259.1 J	2181050.1	4065557.1	2429584.6 J	569039.04	1461402.13 J	2295631.97
Total Trichlorobiphenyl homologs (U = 1/2)	tSum_TriPCB_N	921214.7	790587.2	656393	1005909.3	735541.8	170565.66 J	402047.8	620399.26
Dioxin Furans (ng/kg)									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	0.467 J	0.302 U	0.434 U	1 J	0.925 J	1.8 J	24.7	6.67
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	3.23 J	5.57	6.27	4.83	10.8	4.8	48.2	23.8
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	0.426 J	0.315 J	0.159 U	0.291 J	1.83 J	0.944 J	1.98 J	3.59
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	0.443 J	0.726 J	0.566 J	0.417 J	1.23 J	1.54 J	4.71 U	2.42 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	0.285 U	0.21 U	0.272 U	0.244 U	0.28 U	0.205 U	1.14 U	0.534 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	0.165 J	0.212 J	0.143 U	0.147 J	0.183 J	0.678 J	0.534 U	0.272 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	0.183 U	0.133 U	0.206 U	0.162 U	0.156 U	0.18 U	3.05 U	1.77 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	0.156 J	0.167 J	0.147 U	0.126 J	0.529 J	0.429 J	0.529 U	0.271 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	0.193 U	0.231 J	0.217 U	0.24 J	0.177 U	0.481 J	3.06 U	1.85 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	0.225 U	0.144 U	0.241 U	0.189 U	0.239 U	0.226 U	0.76 U	0.401 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	0.191 U	0.137 U	0.215 U	0.164 U	0.17 U	0.186 U	3.16 U	1.87 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	0.813 J	0.827 J	0.846 J	0.964 J	0.581 J	1.15 J	0.776 J	0.654 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	0.702 J	0.608 J	0.599 J	1.46 J	1.34 J	0.416 J	1.22 U	0.581 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	0.174 U	0.135 U	0.212 U	0.186 U	0.226 U	0.207 U	0.666 U	0.327 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	2.24 J	2.35 J	2.2 J	2.48	1.67 J	1.57 J	1.66 J	1.31 J
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	51207-31-9	9.42	9.36	8.31	10.4	8.16	6	8.86	8.32
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	4.23	4.58	4.06	5	3.34	1.69 J	3	2.85
Total Pentachlorodibenzofuran (PeCDF)	30402-15-4	4.14 J	3.96 J	3.76 J	4.5 J	5.96 J	8.06 J	2.43 J	2.38 J
Total Pentachlorodibenzo-p-dioxin (PeCDD)	36088-22-9	0.702 J	0.608 J	0.599 J	1.46 J	1.34 J	4.18 J	1.22 U	0.581 U
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	tDioxFurB_N	16.747 J	17.051 J	15.311 J	19.502 J	14.698 J	9.955 J	14.617 J	13.089 J
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	tDioxFurF_N	6.67 J	6.966 J	6.311 J	8.363 J	6.109 J	3.444 J	5.875 J	4.812 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	tDioxFurM_N	6.662 J	6.955 J	6.254 J	8.369 J	6.17 J	3.438 J	5.676 J	4.783 J

Appendix D
Tissue Analytical Results

	Location ID	PB095.2	PB101_D	PB101_D	PB101_D	PB102
	Sample ID	PB04-I-A-BCR-W-001-COMP-201106	PB04-F-A-GKF-W-001-20110627	PB04-F-A-GKF-W-001-COMP-201106	PB04-F-A-GKF-W-009-20110627	PB04-F-A-PNF-W-001-COMP-201106
	Sample Date	6/29/2011	6/27/2011	6/27/2011	6/27/2011	6/27/2011
	Sample Type	N	N	N	N	N
	X	3200882	3201317.36	3201317.36	3201317.36	3201302.69
	Y	13829528	13828141.83	13828141.83	13828141.83	13828160.48
	Scientific_Name	Callinectes sapidus	Fundulus grandis	Fundulus grandis	Fundulus grandis	Lagodon rhomboides
	Size_Class	>2 to =<7.5	=<15	=<15	=<15	=<15
	Tissue_Category	Sedentary	Sedentary	Sedentary	Sedentary	Migratory
	Tissue_Type	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Chemical	**CAS Number**	**Result**	**Result**	**Result**	**Result**	**Result**
PCB-203	PCB-203	250	3150	3950	3470	1860
PCB-204	PCB-204	7.38 U	43	72.4 J	47.8	18.3
PCB-205	PCB-205	12.4 U	158	226	180	149
PCB-206	PCB-206	111	2010	3020	2480	1240
PCB-207	PCB-207	95.8	2100	3100	2510	776
PCB-208	PCB-208	119	2500	3810	3000	728
PCB-209	PCB-209	1640	47500	64600	59600	14300
Total Decachlorobiphenyl homologs (U = 1/2)	tSum_DecPCB_N	1640	47500	64600	59600	14300
Total Dichlorobiphenyl homologs (U = 1/2)	tSum_DiPCB_N	1208.4 J	14274.78	22549.28 J	9430.48	13722.05 J
Total Heptachlorobiphenyl homologs (U = 1/2)	tSum_HepPCB_N	6758.01 J	88382.18 J	100131.66 J	94858.73 J	44705.63
Total Hexachlorobiphenyl homologs (U = 1/2)	tSum_HexPCB_N	27359.26 J	341351 J	351778.9 J	349287.2	177881.54
Total Monochlorobiphenyl homologs (U = 1/2)	tSum_MonPCB_N	6.69 U	244.54 J	499.7 J	174.76 J	460.43
Total Nonachlorobiphenyl homologs (U = 1/2)	tSum_NonPCB_N	325.8	6610	9930	7990	2744
Total Octachlorobiphenyl homologs (U = 1/2)	tSum_OctPCB_N	1638.89 J	22399	27248.4 J	23942.8	10194.3
Total PCB Congener (U = 1/2)	tPCBCong_N	361364.24 J	4123009.04 J	5547280.5 J	4322176.71 J	4333632.6 J
Total PCB Congener minus 209 (U = 1/2)	tPCBCong209_N	359724.24 J	4075509.04 J	5482680.5 J	4262576.71 J	4319332.6 J
Total PCB Congener TEQ 1998 (Avian) (U = 1/2)	tPCBCngCPB98_N	231	623.1 J	837.3	694.7	147.6 J
Total PCB Congener TEQ 1998 (Fish) (U = 1/2)	tPCBCngCPF98_N	1.4	5.4 J	6.5	5.8	2.99 J
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	tPCBCongCPM_N	14.5	64.8 J	75.3	69.4	39 J
Total Pentachlorobiphenyl homologs (U = 1/2)	tSum_PenPCB_N	99338.93 J	1114954.9	1260998.8	1217529.5	852292.8 J
Total Tetrachlorobiphenyl homologs (U = 1/2)	tSum_TetPCB_N	169215.94 J	2001760.66 J	2958484.5	2113004	2532762
Total Trichlorobiphenyl homologs (U = 1/2)	tSum_TriPCB_N	53869.91 J	485531.97 J	751059.2	446359.29 J	684569.9
Dioxin Furans (ng/kg)						
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	2.23 J	4.46 J	0.477 U	2.92 J	1.56 J
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	12.7	36	5.74	25.6	3.82 J
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	0.637 J	1.1 J	0.126 U	0.42 U	0.14 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	1.02 U	5.55 J	0.69 J	2.69 U	0.357 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	0.225 U	0.794 U	0.227 U	0.693 U	0.242 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	0.417 U	0.577 J	0.119 U	0.262 U	0.405 J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	0.561 U	1.92 U	0.177 U	2.01 U	0.135 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	0.156 U	0.322 U	0.117 U	0.251 U	0.153 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	0.575 U	2.02 U	0.19 U	1.97 U	0.141 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	0.121 U	0.477 U	0.188 U	0.382 U	0.229 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	0.586 U	2.04 U	0.187 U	2.05 U	0.14 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	0.334 U	0.651 J	0.896 J	0.559 J	1.5 J
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	0.15 U	0.724 U	0.67 J	0.643 U	0.152 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	0.118 U	0.368 U	0.164 U	0.343 U	0.172 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	0.554 U	1.47 J	2.33 J	1.79 J	1.68 J
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	51207-31-9	1.65	6.21	8.24	7.56	10.7
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	0.398 J	3.28	3.99	3.98 J	2.64
Total Pentachlorodibenzofuran (PeCDF)	30402-15-4	4.5 J	2.92 J	3.96 J	3.02 J	3.58 J
Total Pentachlorodibenzo-p-dioxin (PeCDD)	36088-22-9	0.268 J	0.724 U	0.67 J	0.643 U	0.152 U
Total Dioxin/Furan TEQ 1998 (Avian) (U = 1/2)	tDioxFurB_N	2.513 J	11.688 J	15.367 J	13.942 J	15.328 J
Total Dioxin/Furan TEQ 1998 (Fish) (U = 1/2)	tDioxFurF_N	0.899 J	5.361 J	6.36 J	6.197 J	4.272 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	tDioxFurM_N	0.87 J	5.221 J	6.277 J	6.002 J	4.429 J

Notes:

J = Estimated value
U = Compound analyzed, but not detected above detection limit
UJ = Compound analyzed, but not detected above estimated detection limit
R = Rejected

-- Results not reported or not applicable

pct = percent
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
ng/kg = nanograms per kilogram

EB - Equipment Blank
N = Normal Field Sample

TEQ values as of 2005, World Health Organization.