Screening Level Ecological Risk Assessment (Terrestrial)

Volume IIIB of Remedial Investigation Report

Chlor-Alkali (Former) Superfund Site
Berlin, New Hampshire

Remedial Investigation/Feasibility Study
EPA Task Order No. 0013-RI-CO-01BQ

REMEDIAL ACTION CONTRACT
No. EP-S1-06-03

FOR

US Environmental Protection Agency
Region 1

BY

Nobis Engineering, Inc.

Nobis Project No. 80013

February 2014

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U.S. Environmental Protection Agency

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APPENDICES

ACRONYMS

AE	Assimilation Efficiency
amsl	above mean sea level
As	arsenic
Avatar	Avatar Environmental, LLC.
AWQC	Ambient Water Quality Criteria
bgs	below ground surface
BW	Body Weight
Cd	Cadmium
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHP	Cell House Property
CLP	Contract Laboratory Program
COPEC	Chemical of Potential Concern
Cr	Chromium
Cu	Copper
CSM	conceptual site model
DQO	Data Quality Objective
DW	Dry Weight
Eco SSL	Ecological Soil Screening Level
EDQL	ecological data quality level
EEQ	Ecological Effects Quotient
EFSA	Eastern Facility Study Area
EPA	Environmental Protection Agency (U.S.)
EPC	Exposure Point Concentration
EqP	equilibrium partitioning-based
ERA	Ecological Risk Assessment
ERL	effect range low value
ESL	Ecological Screening Level
FCV	final chronic value
Fe	Iron
FIR	Food Intake Rate
FMR	Field Metabolic Rate
FOE	frequency of exceedance

FSA	Facility Study Area
Ft	Feet
G	Gram
GE	Gross Energy
Hg	mercury
HMW	high molecular weight
HQ	Hazard Quotient
Kcal	kilocalorie
Kg	kilogram
KM	Kaplan-Meier
K_{oc}	soil or sediment to water partition coefficient
LEL	lowest effect level
LMW	low molecular weight
LOAEL	Lowest Observed Adverse Effect Level
LOEC	Lowest Observed Effect Concentration
meHg	methylmercury
MET	minimal effect threshold
Mg	Milligram
Mn	Manganese
ND	Non-detect
NEL	No Effect Level
NHNHB	New Hampshire Natural Heritage Bureau
NHDES	New Hampshire Department of Environmental Services
Ni	Nickel
NOAEL	No Observed Adverse Effect Level
Nobis	Nobis Engineering, Inc.
NOEL	No Observed Effect Level
NPL	National Priorities List
OMEE	Ontario Ministry of the Environment and Energy
PAH	Polycyclic aromatic hydrocarbon
Pb	Lead
PCBs	polychlorinated biphenyls
PEC	probable effect concentration
PRG	Preliminary Remediation Goal

PWQOs/Gs	Provincial Water Quality Objectives and Guidelines
QC	Quality Control
RAC	Response Action Contract
RAGS	Risk Assessment Guidance for Superfund
RI/FS	Remedial Investigation/Feasibility Study
RME	Reasonable Maximum Exposure
RSA	Androscoggin River Study Area
SARA	Superfund Amendments and Reauthorization Act
SEL	significant-effect level
SFSA	Southern Facility Study Area
Site	Former Chlor-Alkali Facility Superfund Site
SLC	screening level concentration
SLERA	Screening-Level Ecological Risk Assessment
SMDP	Scientific/Management Decision Points
SQAL	sediment quality advisory level
SQB	sediment quality benchmark
SQC	sediment quality criteria
SQG	sediment quality guideline
SQL	Sample Quantitation Limit
SSLC	species screening level concentration
SVOCs	semi-volatile organic compounds
TDI	Total Daily Intake
TEC	threshold effect concentration
TEL	threshold effect level
TEQ	Toxic Equivalency Quotient
TOC	Total Organic Carbon
tPCB	total polychlorinated biphenyls
TRV	Toxicity Reference Value
UCL	Upper Confidence Limit
UF	Uncertainty Factor
USFWS	United States Fish and Wildlife Service
VOCs	volatile organic compounds
WW	Wet Weight
Zn	Zinc

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1.0 INTRODUCTION

Nobis Engineering, Inc. (Nobis), and its Team Subcontractor, Avatar Environmental, LLC (Avatar) have prepared this Screening Level Ecological Risk Assessment (SLERA) for the terrestrial habitats at the Chlor-Alkali Facility (Former) Superfund Site (Site) in Berlin, New Hampshire. This work was performed in accordance with the United States Environmental Protection Agency (EPA) Region I Response Action Contract (RAC) No. EP-S1-06-03, Task Order No. 0013-RI-CO-01BQ.

1.1 Purpose and Approach

The SLERA was prepared as Volume IIIB of the Remedial Investigation report and documents the potential exposure and consequent risks to ecological receptors exposed to soil and sediment contamination within the Study Area (see Section 2.1). This SLERA presents the approach and the results of the ecological risk assessment for the terrestrial portions of the Study Area, and is a companion to the Human Health Risk Assessment prepared for the same investigation area.

The purpose of the SLERA is to assess the need, and if required, the level of effort necessary to conduct a detailed baseline ecological risk assessment for the Study Area. During the SLERA process, contaminants of potential ecological concern (COPECs) are identified, the potential for wildlife exposure is evaluated, and a conservative analysis of the consequent ecological risk is conducted.

1.2 Ecological Risk Assessment Guidance

The Site was listed to the National Priorities List (NPL) in 2005. As such, this SLERA was prepared under the authority of EPA Region 1 and in accordance with risk assessment guidance developed by EPA under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986.

EPA's *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (hereafter, referred to as the Guidance) (EPA, 1997) and *EPA's ECO Update: The Role of Screening-Level Risk Assessments and Refining*

Contaminants of Concern in Baseline Ecological Risk Assessments (EPA, 2001) served as the primary sources of guidance in developing this SLERA. The Guidance outlines an 8-step process including several scientific/management decision points (SMDPs). An SMDP represents a significant communication point requiring the interaction of the risk manager and the risk assessment team. The purpose of the SMDP is to evaluate the relevant information provided in prior process steps to determine if changes in the scope, focus, or direction of the risk assessment are needed. Although this SLERA did not explicitly require multiple SMDPs, meetings between EPA's risk managers and the risk assessment team have occurred throughout the process. The SLERA for the Study Area comprises Steps 1 and 2 (Screening-Level Problem Formulation and Ecological Effect Evaluation, and Screening-level Exposure Estimate and Risk Calculation) of the 8-step ecological risk assessment (ERA) process (Figure 1-1).

In addition to and incorporated within the framework of the guidance discussed previously, the following documents were used in the development of this SLERA:

- *Guidelines for Ecological Risk Assessment* (EPA, 1998).
- *Framework for Ecological Risk Assessment* (EPA, 1992).
- *Wildlife Exposure Factors Handbook, Volumes I and II* (EPA 600R-93/187a and 187b) (EPA, 1993b).
- *Risk Assessment Guidance for Superfund (RAGS), Volume II: Environmental Evaluation Manual (EPA 540/1-89/001)* (EPA, 1989).
- *Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference Document (EPA 600/3-89/013)* (Suter II, 1989).
- *Ecological Risk Assessment Issue Papers (EPA/630R-94/009)* (Suter II et al., 1994).
- ECO Updates, Volumes 1-4 (EPA Office of Solid Waste and Emergency Response) (EPA, 1991-1994).
- *Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (EPA 530-D-99-001A) (EPA, 1999).

1.3 Report Overview

The remainder of this report describes the comprehensive ERA process, which includes a number of technical components. A summary of each key component is provided below.

Step 1 – Screening-Level Problem Formulation and Ecological Effects Evaluation

For this evaluation, the following information is provided:

1. a description of habitats potentially affected;
2. a list of flora and fauna present or potential for these habitats;
3. the preliminary conceptual site model (e.g., pathways by which the receptors may be exposed);
4. the preliminary assessment and measurement endpoints;
5. the data available to evaluate the Study Area; and
6. the screening benchmarks appropriate for use in the screening of ecological risk.

Step 2 – Screening-Level Exposure Estimates and Risk Calculation

In this step, site-specific concentration data are compared with benchmarks to determine the potential for ecological risk; and, if so, the COPECs for each exposure medium are defined.

Altogether, in the problem formulation phase, the risk assessment objectives are stated, the problem is defined in the form of a conceptual model, and the approach for analyzing and characterizing the ecological risk(s) is determined. The problem formulation typically results in several primary products that include:

1. COPECs that will be evaluated for potential ecological risk;
2. complete exposure pathways that integrate fate and transport information with potential ecological receptor occurrence;
3. assessment endpoints that adequately reflect the ecosystems under investigation and risk management goals;
4. a conceptual site model that describes key relationships between the contaminant(s) and assessment endpoints; and
5. questions regarding risk that the site investigation will address.

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2.0 PROBLEM FORMULATION

Problem Formulation encompasses descriptions of the area of concern, its environmental history, a screening-level formulation and effects evaluation, and the preliminary exposure estimates and risk calculations. Each of these components is described in detail in the following sections.

2.1 Site Description and History

The Site is located in the City of Berlin, Coos County, New Hampshire. For the RI, principal areas evaluated included the Cell House Property (CHP), the Facility Study Area (FSA), and the River Study Area (RSA) (Figures 2-1 and 2-2). For the purpose of this report, the term “Study Area” is used to describe the area investigated during the RI that includes the CHP and FSA, which represents the area occupied by the former chemical plant and adjoining areas. The Study Area was part of a former pulp and paper mills complex that encompassed more than 170 acres. Over the years, land occupied by the former mill complex was divided and sold to new owners.

This SLERA evaluates the potential ecological risk to flora and fauna inhabiting the Study Area from direct and indirect release of chemicals from historical operations of the former chemical plant. The following narrative presents a brief description of the Study Area. A more comprehensive discussion of the Study Area is presented in Section 1.2 of Volume I of the RI report.

The CHP is a 4.6-acre property on the east bank of the Androscoggin River immediately downstream of the Sawmill Dam (Figure 2-1). The CHP is bounded on the north by the Sawmill Dam and the Androscoggin River; on the east by a former penstock canal as well as inactive and overgrown industrial areas with Hutchins Street beyond; on the south by inactive and overgrown industrial areas containing a derelict railroad siding and rail bridge; and on the western boundary by the Androscoggin River.

The CHP consists of a relatively flat parcel currently covered with a landfill containing demolition debris. Ground surface elevation of the capped area ranges between 1,090 feet (ft) and 1,102 ft above mean sea level (amsl).

The area immediately adjacent to the CHP is designated the FSA, which was subdivided as the Southern FSA (SFSA) and the Eastern FSA (EFSA) for remedial investigation purposes. The SFSA and the EFSA represent a 38-acre area that lies to the south, east, and north of the CHP (Figure 2-1). The SFSA was previously used as a rail yard and included portions of the former chemical plant. Some of the contaminants present in the SFSA may be related to past rail yard activities (i.e., loading and unloading of chemicals) or support activities of the former chemical plant.

Although the area surrounding the Study Area is largely industrial, residential communities lie to the east, west, and south.

The detailed Site history is provided in Section 1.3 of the RI Report, Volume I.

2.2 Screening-level Problem Formulation and Ecological Effects Evaluation (Step 1)

The components of Step 1 in the ecological risk assessment process are as follows:

- Ecological Setting,
- Preliminary Conceptual Site Model,
- Preliminary Endpoints,
- Available Data,
- Data Evaluation and Reduction,
- Data Summary, and
- Development of Screening-Level Benchmarks.

2.2.1 Ecological Setting

Part of the problem formulation is to assess whether the COPECs, ecological habitats, and associated receptor species co-occur, resulting in exposure and the potential for adverse effects to those species. A principal component in making this determination is the evaluation of the ecological setting.

The purpose of this ecological setting subsection is to present the key findings of previous biological assessments at the Study Area. Moreover, the ecological attributes of the Study Area are integrated with data from the contaminant characterization to select assessment endpoints – those valued attributes of the Study Area ecology requiring protection and upon which risk management actions are focused.

The ecological setting description has been divided into the following subsections: general habitat description; common wildlife; and threatened and endangered species and species; and habitats of special concern.

2.2.1.1 Habitat and Biological Community Analysis

The information provided in the narrative below is largely based on a habitat survey of the Study Area conducted 2 through 7 August 2010. In addition, a wetland evaluation of the Study Area was conducted on 13 and 14 November 2012 to confirm a wetland characterization/delineation that was performed previously in 2009 for the City of Berlin in anticipation of the construction of a realignment of Hutchins Street through the EFSA. The habitat evaluation was conducted to identify potential ecological habitats and associated flora and fauna that may be potentially exposed to contaminants in surface soil or wetland surface water/sediment from historical operations and accidental releases from the former chemical plant. As part of the habitat survey, a map of the terrestrial and wetland habitats located throughout the Study Area was prepared and is presented in Figure 2-3.

In advance of the field survey, a literature review was conducted to identify the potential wildlife communities and the species present in each habitat type occurring in the Study Area. A list of potential species was created based on known habitat requirements of each species and available habitats in or near the Study Area. Field surveys were then conducted to verify the occurrence of individual wildlife species, species groups, and required habitats. The methods that were used were reconnaissance-level, habitat-based assessment surveys. A comprehensive review of the technical approach used to conduct the Habitat Survey is provided in the *Chlor-Alkali Quality Assurance Project Plan* (Nobis, 2009, as amended 2010).

In keeping with the investigative area designations used in the RI, the description of the habitats is divided into three investigative areas that include: 1) the CHP (4.6 acres); 2) the SFSA (18 acres); and 3) the EFSA (20 acres). A former railroad grade provides the approximate boundary between SFSA and the EFSA. The SFSA includes a portion of the former chemical plant and the former rail grade. The SFSA was thought to have a different chemical signature than that of the EFSA because of past potential releases from the chemical plant that may have affected the SFSA. The EFSA, situated east of the former rail grade, was not known to have been used for chemical plant operations; it was thought to have been used primarily to store lumber.

Although the vegetative communities and faunal use of these areas often overlap, they will nevertheless be discussed as discrete areas.

2.2.1.1.1 Cell House Property

The CHP represents the location of the 4.6-acre capped landfill, which includes most of the former chemical plant footprint. As described in Section 1.3 of Volume I of the RI Report, the various structures of former chemical plant were demolished through the 1990s. The last structure was demolished in 1999. A cap was installed in the CHP covering demolition debris and contaminated soil. The cap consists of a sand layer, a geomembrane, and a top layer of 2 to 3 feet of wood chips. The landscape of the CHP slopes west toward the river and has little topographic relief.

2.2.1.1.1.1 Plant Community

The presence of this wood chip layer presents a vegetative barrier to native soils. As such, the quality of the plant community on the CHP is poor in response to limited nutrient and organic supply. Terrestrial vegetation is characterized by pioneer weeds, forbs, and patches of grasses with some early successional shrubs and sapling trees. In general, saplings are few with a height of less than 6 ft and a diameter of less than 0.5 inch (in). A more mature stand of trees and shrubs occurs along the southwestern perimeter between the CHP and the river. The trees in this area serve as perches for raptors and Passeriformes (perching song birds). In general, animal species diversity is positively correlated with habitat structural complexity in many terrestrial habitats. The lack of a diverse vegetative community at this early successional stage as well as the absence of topographic relief provides scant habitat structure that, in turn, results in a limited diversity of fauna on the CHP. Table 2-1 presents a list of plants observed on the CHP at the time of the habitat survey (August 2010).

2.2.1.1.1.2 Soil Fauna Community

In conjunction with the habitat evaluation, a soil faunal survey was conducted to, among other things, identify the macroinvertebrate community inhabiting the soils of the CHP and the surrounding FSA. In coordination with the habitat survey, soil invertebrates (earthworms) were collected to provide chemical residue data to support dietary exposure modeling for the SLERA of the CHP and FSA. Soil arthropods and earthworms are important to the soil processes as they facilitate organic matter decomposition as they graze on bacteria, fungi, and plant residues. The passage and processing of soil in the digestive tract of these soil fauna accelerates aggregation and nutrient cycling thereby increasing nutrient availability to plants and other invertebrates. In addition, burrowing activity of soil invertebrates mixes soils and creates macropores that help aerate soil and increase water infiltration and flow. As importantly, invertebrates serve the dietary needs of upper trophic species of birds and other invertivorous and omnivorous animals.

Because the surface layer of the CHP is composed primarily of wood chips and has very little organic soil from the surface to a depth of 2 ft, invertebrates inhabiting these soils are indicative of a highly disturbed infaunal community. Soil taxa observed in this area were limited to crickets (*Orphoptera*), spiders (*Arachnida*), ants (*Hymenoptera*), sow bugs (*Isopoda*), millipedes (*Diplopoda*), centipedes (*Chilopoda*) and several species of beetles (*Coleoptera*). Where organic soils were sufficient - typically in soils in the vicinity of plant roots - additional species including beetle larvae and earthworms *(Annelida*) were present but in limited numbers. As such, soil fauna at the CHP provide little substantive forage for insectivorous or vermivorous birds (e.g., thrush) and mammals (e.g., shrew). The limited vegetation on the CHP, however, does provide some nutrition to the avian and mammalian herbivores.

2.2.1.1.1.3 Avian Community

Because of the poor soil conditions, soil fauna in the CHP provide little substantive forage for insectivorous or vermivorous birds (e.g., the thrushes). Because the landscape is open, raptors (e.g., red-tailed hawk) may forage the CHP for animals such as field mice and snakes. Although the habitat is of poor quality, the CHP does provide herbaceous diet to the avian herbivores that feed on seeds and berries of plants like thistle and chokecherry. Some bird species inhabit the property year-round; whereas others are migratory and make transient visits to the area for foraging or nesting. Table 2-2 presents a list of birds observed on the CHP at the time of the habitat survey.

2.2.1.1.1.4 Mammal Community

As previously discussed, soil invertebrates are scant and little forage is available for invertivorous mammals. Although there are soil invertebrates present as noted above, the quantity and quality of the soil fauna are unlikely to support populations of invertivorous mammals. The most significant forage available on the CHP is associated with plant material (seeds, berries, and stems) that support the diet of herbivores and omnivores. Table 2-3 presents a list of mammals observed on the CHP at the time of the habitat survey.

2.2.1.1.2 Southern Facility Study Area

The SFSA is an 18-acre portion of the Study Area that encompasses the area south of the CHP as well as a portion of the former chemical plant and the former rail grade east of the CHP. The landscape consists of several habitat types including an open ruderal field that has been heavily disturbed and wooded fringe areas that occur along the river's edge and along the eastern portion of the SFSA where a railroad bed previously extended from about the pump house to the southern boundary of the SFSA. Because of their narrow configuration and limited size, neither of the woodlots qualifies as valuable forest habitat. As a habitat type, they are more representative of woodland edge. Because of an increased diversity of vegetative types, the SFSA is better habitat than that of the CHP although it is still of only moderate habitat quality. Soils in SFSA are mixed. At the southern end of the SFSA, the soils of the open field are gravelly and contain debris presumably associated with previous rail yard activities. Remnant tracks are still located in the southern portion of the SFSA. Along the wooded eastern perimeter of the SFSA, the soils contain a significantly greater amount of organic material, presumably from the decomposition and incorporation of years of leaf litter. Moreover, this area may have seen less soil disturbance as this was occupied by the rail right-of-way.

2.2.1.1.2.1 Plant Community

The terrestrial vegetation of the SFSA represents a more advanced stage of plant succession than found at the CHP. In the open field where soils are significantly disturbed and organic enrichment is limited, the vegetative community is characterized by pioneer weeds, forbs, and patches of grasses with some early successional shrubs and sapling trees. A fairly dense growth of early successional trees (predominantly maple saplings) and shrubs are prevalent in the western portion of this area along the roadway approaching the railroad bridge. Because of the dense structure, this area represents moderate to good habitat for a variety of birds and small mammals. In the fringe woodlands along the river and in the vicinity of the historical rail bed previously noted, vegetation consists primarily of white birch, aspen and some fir as well as a variety of shrubs such as sumac and autumn olive.

Table 2-1 presents a list of plants observed on the SFSA at the time of the habitat survey in August 2010.

2.2.1.1.2.2 Soil Fauna Community

As noted, the soils of the open ruderal southern portion of the SFSA are highly disturbed and lack sufficient organic enrichment to support a diverse soil fauna. Similar in physical and soil characteristics of the CHP, soil invertebrates of these highly disturbed soils included crickets (*Orphoptera*), spiders (*Arachnida*), ants (*Hymenoptera*), sow bugs (*Isopoda*), millipedes (*Diplopoda*), centipedes (*Chilopoda*) and several species of beetles (*Coleoptera*). Soils located in both the immature and mature woodlots of the SFSA have a much higher organic content and consequently, contain a more numerous and diverse soil invertebrate community. By comparison with the disturbed ruderal fields, a greater number of earthworms and larval beetles were observed. These organisms provide a more nutritional and caloric benefit to ground foraging birds, mammals, and herpetofauna.

2.2.1.1.2.3 Avian Community

The variety of habitat types in the SFSA is expected to support a fairly diverse avifauna community. The wooded edge and the advanced seral stage of some of the open area (e.g., the dense stand of sapling red maples and associated shrubs) is expected to provide shelter and forage to support the breeding, nesting and maintenance of both ground- and shrub-foraging birds. Table 2-2 presents a list of birds observed on the SFSA at the time of the habitat survey.

2.2.1.1.2.4 Mammal Community

As with the avian community, the small mammal community benefits from a more diverse plant community that includes open, although disturbed fields, stands of dense sapling growth and mature woodland edge. As noted previously, the associated organic enrichment of soils in mature woodlands and the sapling growth support soil infauna that provide for greater dietary sustenance for ground-foraging mammals. Table 2-3 presents a list of mammals observed on the SFSA at the time of the habitat survey.

2.2.1.1.3 Eastern Facility Study Area

The EFSA is a 20-acre undeveloped and former industrial property situated east of the former rail grade. It is bounded on the east by Hutchins Street and on the south by the Study Area fence line. The EFSA was not known to have been used for chemical plant operations; it was thought to have been used primarily to store lumber. The EFSA encompasses several habitat types including open field, woodlot, open water, wetland, and wooded edge. Wetland habitats are discussed separately in Subsection 2.2.1.1.3.5 below.

2.2.1.1.3.1 Plant Community

The plant community of the EFSA is represented by two vegetative community types that include terrestrial upland and wetland associates. Terrestrial upland vegetation is principally related to deciduous stands of woodland and early successional ruderal fields. Woodlands occur in the southeast corner of the Study Area and on the fringe bordering the wetland drainages on the western perimeter of the EFSA, as well as the slope adjacent Hutchins Street. Early successional open fields occur in the southern sector of this area.

Table 2-1 presents a list of plants observed on the EFSA at the time of the habitat surveys in August 2010 and November 2012.

2.2.1.1.3.2 Soil Fauna Community

Of the areas associated with the RI, the EFSA provides the greatest diversity of habitat and the soil conditions reflect this. The open-field area, in which soils are coarse with wood chips and other material, is represented by a soil invertebrate community that is similar to the CHP and the open fields of the SFSA. However, due to presence of wooded areas, organically rich wetland soils, and less historical soil disturbance, soil fauna are more representative of native soil conditions. The invertebrate community, though still limited in numbers, is more diverse with larval insects and earthworms comprising a greater proportion of the infaunal community.

2.2.1.1.3.3 Avian Community

The variety of habitat types in EFSA is expected to support a fairly diverse avifauna use. Woodlands, wetlands with associated running water, wet meadow, and upland are expected to provide shelter and forage to support the breeding, nesting, and maintenance of both ground- and shrub-foraging birds. In addition, because of the enhanced use of the EFSA by both birds and small mammals, raptors such as hawks and owls may use the area for hunting. Table 2-2 presents a list of birds observed on the ESFA at the time of the habitat survey.

2.2.1.1.3.4 Mammal Community

Table 2-3 presents a list of mammals observed on the EFSA at the time of the habitat survey.

2.2.1.1.3.5 Wetland Community

As previously noted, a wetland evaluation of the Study Area was conducted on 13 and 14 November 2012 to confirm a wetland characterization/delineation that was performed previously in 2009 for the City of Berlin in anticipation of the construction of a realignment of Hutchins Street through the EFSA. The purpose of the more recent evaluation was to generally confirm the previous delineation and determine if wetland conditions in the Study Area may have changed in response to several years of wetter than normal conditions in the northeast U.S. Based on this survey, wetland conditions in the Study Area were generally in agreement with the previous wetland delineation. The National Wetland Inventory map of the Study Area (Figure 2-4) indicates a forested wetland area only in the north portion of EFSA, not in the review area. Soils of the Study Area (Dumps, chips & organic material (199), Turnbridge - Peru (470B), Colton (22A), and Croghan (613B); Figure 2-5) are all moderate- to well-drained upland soils. The Wood Chips 199 soil shown for most of the EFSA appears to have been removed by local activities, except in the remaining wooded areas along the stream and to the south. Existing soils in this area appear to be a mosaic of historic soils and relocated soils through grading and filling activity.

Wetlands in the EFSA include a range of Palustrine Emergent (PEM), Palustrine Scrub-Shrub (PSS) and Palustrine Forested (PFO) and are generally associated with the larger drainage channel (running north and south) and smaller channels (running east and west) that occur throughout the EFSA. A fairly large wetland drainage complex has formed in the original drainage ditches that were constructed on both the eastern and western sides of the former rail bed. The larger drainage area transports water south where both ditches meet to form a 0.25-acre pond. In addition to meeting hydric soil indicator metrics for the northeast U.S., wetland area soils were also saturated within the upper 12 inches as influenced by the season and rainfall during the review. A dominance of wetland plant species was observed in wetland areas. Table 2-4 presents dominant plant species observed in wetlands and adjacent uplands.

Several areas along the previous 2009 delineation line (Figure 2-6) were observed as meeting wetland conditions that were not previously included as wetlands. This may be the result of changing conditions, particularly a series of wetter than average growing seasons in 2010, 2011, and 2012. All of these changed wetland areas displayed a dominance of wetland plants, as well as hydric soil and hydrology indicators. These recent years of wetter conditions may have also resulted in the dominance of wetland plants and ponded surface water in shallow depressions in the open portion of the review area, shown in Figure 2-6 as isolated wet areas.

These wet areas were dominated by wetland plants including Woolgrass (*Scirpus cyperinus*), Shallow sedge (*Carex lurida*), Common rush (*Juncus effusus*), and other sedges (*Carex spp*.). Hydric soil and hydrology wetland indicators were observed in these isolated wet spots, but a dominance of wetland plants may not persist under average growing season rainfall conditions in these perched shallow depressions.

In addition to the bird and mammal use, the size and quality of the wetlands is expected to support amphibians and reptiles. Frog vocalizations heard and observations made during the habitat survey in August 2010 included bull frog, *Rana catesbeiana*, and northern leopard frog, *Rana pipiens*, and American toad, *Bufo americanus*. Table 2-5 presents a list of reptiles and amphibians that include those herptiles observed as well as those that occur in habitat types similar to those in the CHP, SFSA, and the ESFA throughout the Upper Androscoggin Valley.

In summary, wetland conditions within the Study Area appear to be either associated with stable drainage streams and ditches or shallow depressions from previous grading and history associated with these drainage features. More recent activity in the open portions of the review area, combined with a series of wetter than average growing seasons may have resulted in the development of small isolated wetland areas.

2.2.1.2 Endangered Species, Threatened Species, and Species of Special Concern

The New Hampshire Natural Heritage Bureau (NHNHB) database was searched to determine the potential presence of any endangered, threatened, or rare plant, animals or communities in the vicinity of the Study Area in Coos County, NH (NHNHB, 2012). The database represents from the most comprehensive and current collection of information available with which to assess the presence of threatened or endangered species or species and communities of special concern in New Hampshire. The summary report provided by NHNHB (August 2012) included an evaluation of plant and wildlife data collected from a variety of literature sources, herbaria, museums, universities, and field surveys by staff and cooperating biologists. Plant and wildlife species of special concern as well as sensitive communities in the Androscoggin watershed in Coos County are presented in Table 2-6. None of these species was observed during the habitat survey of the CHP and FSA conducted in August 2010.

In addition, the U.S. Fish and Wildlife Service's (USFWS) "Federally Listed Endangered and Threatened Species in New Hampshire" (November 2012) was obtained and reviewed for potential relevance to the Study Area. Of the two USFWS threatened and endangered species listed for New Hampshire, only two have the potential to be present in the vicinity of the Study Area: Canada lynx (*Lynx canadensis*) and the bald eagle (*Haliaeetus leucocephalus*). Note that neither of these species is expected at the Study Area. The mountain lion (*Puma concolor*) is a historic resident of the entire state and is listed as endangered. Although sightings of mountain lions have been documented, there is little, if any, evidence at this time that a breeding population exists in New England. The bald eagle is delisted as a USFWS threatened or endangered species, but is otherwise protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Coos County, among others, is listed as part of the eagle's distribution area. Bald eagles occur in the Androscoggin RSA, with nests located on Pontook

Reservoir at the upper end of the RSA and in the vicinity of Shelburne Reservoir at the lower end of the RSA.

2.2.2 Preliminary Conceptual Site Model

Based on the habitat types and potential contaminant migration, a preliminary conceptual site model (CSM) was developed for the terrestrial and wetland habitats. Together with Figure 2-7, the CSM narrative outlines the contaminated media, habitats associated with those media, ecological receptors for each potentially affected habitat, and pathways and routes by which these receptors may be exposed.

Ecological exposure pathways represent those transport and uptake mechanisms by which site contaminants may be transferred from a contaminated medium to ecological receptors. Exposure pathways by which terrestrial and wetland receptors may be exposed to chemical contamination include:

- Vascular plants – direct contact with soil/sediment;

- Soil invertebrate community – ingestion and direct contact with soil;

- Sediment invertebrate community – ingestion and direct contact with sediment;

- Terrestrial birds and mammals – direct and indirect ingestion of soil and surface water contaminants (i.e., incidental ingestion of surface soil while foraging, consumption of invertebrates that may have bioaccumulated contaminants, consumption of water);

- Aquatic/wetland birds and mammals – direct and indirect ingestion of sediment and surface water contaminants (i.e., incidental ingestion of sediment while foraging, consumption of invertebrates that may have bioaccumulated contaminants, consumption of water).

These potential exposure pathways are illustrated in the ecological CSM (Figure 2-7). Although the inhalation of contaminants associated with fugitive dust is a potential exposure pathway for birds and mammals, the pathway is expected to be a relatively minor source of exposure, and therefore is not included.

In addition to the direct or indirect ingestion of contaminated soil, the potential for food chain impacts of bioaccumulative chemicals (e.g., polychlorinated biphenyls (PCBs), mercury) in terrestrial systems is well recognized. Because of the significant bioaccumulation potential associated with mercury and chlorinated organic compounds (e.g., PCBs) at the Study Area, and the potential risk to terminal receptors in the food chain, representative upper trophic level receptors are evaluated as part of the SLERA. Because carnivores and omnivores generally represent the terminal receptors in terrestrial systems, avian and mammalian species foraging upon resident biota may be at substantially higher risk than those receptors at a lower trophic level.

2.2.2.1 Potentially Exposed Populations

The habitats associated with the Study Area support a variety of plant, invertebrate, herptile, avian, and mammalian species that occur as permanent residents or seasonal migrants. As a pragmatic matter, SLERAs cannot evaluate potential adverse effects to every plant, animal, or community present and potentially exposed at contaminated sites. Therefore, receptors that are ecologically significant, of high societal value, highly susceptible, and/or representative of broader groups are typically selected for inclusion in the SLERA. The following is a list of receptors and communities to be evaluated in the SLERA. Specific exposure pathways for each receptor are provided in Figure 2-7.

Terrestrial Habitat:

- Vascular plants
- Soil invertebrates/microbes
- Sediment invertebrates
- Amphibians and reptiles
- Invertivorous birds/mammals (American robin – *Turdus migratorius* and short-tailed shrew – *Blarina brevicauda*)

2.2.2.2 Exposure Areas

Because of differences in historical use and habitats, the terrestrial SLERA is divided into three distinct exposures areas: the CHP, the SFSA, and the EFSA, which also includes a wetland area. A detailed description of these exposure areas was previously provided in Subsection 2.2.1.1.

2.2.3 Preliminary Endpoints

An initial step of the SLERA is deciding which aspects of the environment will be selected for evaluation, because not all organisms or ecosystem features can be studied (EPA, 2003c). Endpoints are defined as ecological characteristics (e.g., invertebrate survival) that may be adversely affected by contaminants (EPA, 1992). In the ERA process, two distinct types of endpoints are identified: assessment endpoints and measurement endpoints.

Assessment endpoints are “explicit expressions of environmental values to be protected, operationally defined as an ecological entity and its attributes” (EPA, 1998).

A measurement endpoint is defined as “a measurable ecological characteristic that is related to the valued characteristic chosen as the assessment endpoint.” Measurement endpoints link the conditions existing on-site to the goals established by the assessment endpoints through the integration of modeled, literature, field, or laboratory data (Maughan, 1993).

It is desirable to have more than one measurement endpoint for each assessment endpoint (if the assessment cannot be measured directly), thereby providing multiple lines of evidence for the evaluation. However, in Steps 1 and 2 of the ERA process, it is important to quickly determine what contaminants, if any, have the potential to cause harm to the ecological receptors on-site. As such, the preliminary measurement endpoints are medium-specific benchmarks that are used as conservative screening levels to determine COPECs as noted below. Specific benchmarks to be used are presented in Subsection 2.2.7.

Receptor	Assessment Endpoint	Measurement Endpoint
Terrestrial Plants	Structure and functioning of plant community - plant growth, yield, and germination.	Ecological Effects Quotient (EEQ) based on comparison of COPEC soil concentrations with literature-based phytotoxicity values.
Wetland Plants	Structure and functioning of plant community - plant growth, yield, and germination.	EEQ based on comparison of COPEC sediment concentrations with literature-based phytotoxicity values.
Soil Invertebrates	Structure and function of soil invertebrate community - Survival, reproduction, and growth.	EEQ based on comparison of COPEC soil concentrations with literature-based soil invertebrate effect values.
Sediment Invertebrates	Structure and function of sediment invertebrate community – Survival, reproduction, and growth.	EEQ based on COPEC soil concentrations with literature-based sediment invertebrate effect values.
Amphibians and Reptiles	Ability to support a functioning amphibian and reptile community.	Suitable toxicity data that link contaminant levels in soil and sediment to toxic effects in reptiles and amphibians have not been found. Therefore, the risk to amphibians and reptiles could not be evaluated. This represents a data gap in this assessment.
Invertivorous Birds	Survival, growth, and reproduction.	EEQ based on dietary intake of COPECs by the avian invertivores surrogate, American robin, using site-specific soil and invertebrate concentrations compared with literature-based effect values.
Invertivorous Mammals	Survival, growth, and reproduction.	EEQ based on dietary intake of COPECs by the small mammal surrogate, short-tailed shrew, using site-specific soil and invertebrate concentrations compared with literature-based effect values.

2.2.4 Available Data

The available data from studies designed specifically for the RI were reviewed and a determination was made as to its usability for ERA purposes. The approach followed to determine the datasets for the SLERA was to ensure suitable spatial coverage, to utilize relatively recent data, and to provide adequate sample size. The sections below discuss chemistry data relevant to the SLERA.

2.2.4.1 Surface Soils

Surface soil chemistry data (0-1 feet below ground surface [ft bgs] – note some samples were collected in the 0-0.5 ft bgs range) used in the SLERA was collected from 2009-2011 as part of the RI site investigation. Specifically, 10 samples were collected from the CHP in 2009; 45 samples were collected from the SFSA; and 12 from the EFSA in 2010; and 6 background samples were collected in 2011. A more detailed description of surface soil collection analysis and justification is provided in Section 2 of the RI. It should be noted that the CHP samples were taken from below the cap and represent a hypothetical exposure only. It also should be noted that the EFSA soil data will be used as surrogate values for the sediment evaluation because these samples were collected in and around the wetland areas and no sediment data were available.

2.2.4.2 Earthworm Data

Twenty-two (22) composite earthworm samples were collected between August 3 and 6, 2010 for mercury analysis. The samples were collected from soil cores obtained with shovels and/or stainless-steel hand augers. Collected earthworms were rinsed with deionized water and placed in pre-cleaned sample containers.

2.2.5 Data Evaluation and Reduction

The following narrative provides a discussion of the data evaluation and data reduction procedures that were used to summarize media-specific data.

The objectives of the data evaluation and reduction are as follows:

- Discuss the quality of the data that are incorporated into the SLERA.
- Provide a discussion of data treatment as it pertains to qualified data, duplicate samples, and multiple sampling rounds.
- Summarize data statistically so that appropriate exposure information is readily available and in a form that permits effective comparisons between data groups.

2.2.5.1 Data Usability and Data Validation

EPA Region 1 discusses data usability issues that should be considered in the risk assessment process in its Risk Update 3 (EPA, 1995). Data usability is defined as the process of ensuring that the quality of the data meets the intended uses and satisfies the data quality objectives (DQOs) established for sampling and analysis. Data usability involves assessing both the analytical quality, sampling methodology, and field errors that may be inherent in the data. Factors evaluated include the level of validation (data validation tier) and data quality indicators such as completeness, comparability, precision and accuracy, and analytical detection limits.

EPA Region 1 recommends that all data used in the risk assessment process be validated using Tier II or Tier III validation procedures. In a Tier II validation, quality control (QC) checks are conducted, analytical procedures are assessed, and data are qualified accordingly. In a Tier III validation, in addition to meeting the Tier II requirements, the raw laboratory data are examined to check for calculation errors, compound misidentification, and transcription errors. A Data Validation report is produced for both Tier II and Tier III validations. All soil and biota data used in the ERA were validated to at least Tier II.

The data selection criteria resulted in datasets that are both spatially representative and sufficiently robust for the SLERA. Sample lists are presented in Appendix A. Raw data used in this SLERA are presented in Appendix B.

2.2.5.2 Data Reduction

Data reduction involves the evaluation of data qualifiers and their potential use in the SLERA process and describes the treatment of field duplicate samples. The following guidelines were used in developing the data sets to evaluate risk:

- All “U” qualified data represent samples for which the analyte was not present or was below the sample quantitation limit (SQL) and reported as a non-detect (ND).
    - If an analyte was not detected in any sample (U-qualified) from a given medium, it was not considered quantitatively for that medium. Potential effects of this decision are discussed in the uncertainty analysis.

  - If an analyte was detected within a medium, but not within a specific sample, the full SQL value was used for ND results when calculating summary statistics. Note, the summary statistic calculations are different from UCL calculations where ProUCL determines concentrations to use for censored (i.e., nondetect) data (Subsection 2.3.1.1).

- Estimated values (J-qualified) were used at the reported value.

When field duplicate samples were collected, the following approach was used to calculate the concentrations to be evaluated in the ERA:

- If the analyte was detected in either the primary or the duplicate sample and was ND in the other sample, the detected concentration was used.

- If the analyte was either detected or ND in both the original (primary) sample and the field duplicate, the average concentration was used in the ERA unless there was a 50 percent or greater relative percent difference in solid media or a 30 percent or greater relative percent difference in aqueous media, in which case the higher of the two concentrations was used.

2.2.6 Data Summary

Tables 2-7 and 2-8 present the data summaries for the Study Area media. The surface soil and biota data collected from the CHP, SFSA, and EFSA were parsed and evaluated separately.

2.2.7 Development of Screening-Level Benchmarks

Preliminary assessment and measurement endpoints were selected for this SLERA based primarily on the preliminary CSM and the available screening-level ecological toxicity values or “benchmarks” for receptors in various media.

Ecological benchmarks represent medium-specific contaminant concentrations considered protective of biota inhabiting that medium. Ecological benchmarks were obtained from a variety of sources including Federal and state regulatory values, EPA, and other agency reports, and scientific literature. At the Study Area, the potential direct exposure media include terrestrial soils and wetland sediments. As such, the following ecological benchmarks for use in the Step 1 (Tier 1 Screening) were compiled.

2.2.7.1 Soil Benchmarks

The following hierarchy of sources was used to obtain what would be considered no effect-based soil benchmarks:

1. *Ecological Soil Screening Levels* (Eco SSLs) (EPA, 2003a, 2003b, 2005a, 2005b, 2005c, 2005d, 2005e, 2005f, 2005g, 2005h, 2005i, 2006, 2007a, 2007c, 2007d, 2007e, 2007f, 2007b, 2007c, 2007d) — The EPA has developed Eco-SSLs for seventeen of the inorganics and four organics. The lowest (i.e., most conservative) Eco-SSL for a specific chemical was selected for use in the COPEC screening.

2. *Preliminary Remediation Goals for Ecological Endpoints* (Efroymson et al., 1997a) — Wildlife preliminary remediation goals (PRGs) for soil were derived by iteratively calculating exposure estimates using different soil concentrations and soil-to-biota contaminant uptake models. Uptake models for plants, earthworms, and small mammals were derived from various sources. Because diets dramatically influence exposures and sensitivity to contaminants vary among species, PRGs were developed for six species: short-tail shrew, white-footed mouse, red fox, white-tailed deer, American woodcock, and red-tailed hawk. In this SLERA, the avian or mammalian species that provided the most conservative estimate of exposure were used. Remediation goals based on wildlife exposure are derived from lowest observed adverse effect level (LOAEL) values. To convert these LOAEL-based values to no observed adverse effect levels (NOAEL), a conversion factor of 10 was applied to all values (i.e., the wildlife PRGs were divided by 10 prior to inclusion in the SLERA).

3. *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Processes* (Efroymson et al., 1997b) — Invertebrate and microbe benchmarks were derived by rank-ordering the lowest observed effect concentration (LOEC) values drawn from the literature. The 10^{th} percentile LOEC value was selected as the benchmark, so the assessor should be 90% certain of protecting invertebrates/microbes growing in the Study Area soil. Rigorous

criteria were applied when selecting studies to be included in the generation of these benchmarks. Earthworm benchmarks were derived for several metals and semi-volatile organic compounds (SVOCs); microbial heterotroph benchmarks were derived for numerous metals and a few organic compounds. The lower of the earthworm and microbe values were used if both were available.

4. *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants* (Efroymson et al., 1997c) — Phytotoxicological benchmarks were derived using the same methodology used to generate the invertebrate/microbe benchmarks (Efroymson et al., 1997c).

5. *RCRA Ecological Screening Levels* (ESLs) (EPA Region 5, 2003) — The ESLs (previously known as ecological data quality levels or EDQLs) are the initial tool utilized in assessing adverse risk to the environment through the RCRA Corrective Action and Permit programs within Region 5. The ESLs provide protective benchmarks for 223 contaminants and 4 environmental media, including air, water, sediment, and soil. With few exceptions, the soil ESLs are based on exposure to a masked shrew (*Sorex cinerus*).

2.2.7.2 Sediment Benchmarks

The following hierarchy of sources was used to obtain what would be considered no effect-based sediment benchmarks.

1. *Threshold Effect Concentrations* (MacDonald et al., 2000) — MacDonald et al. evaluated the predictive ability of previously derived probable effect concentrations for major classes of compounds including metals, polycyclic aromatic hydrocarbons (PAHs), pesticides and PCBs. A database was developed from 92 published reports that included a total of 1657 samples with high-quality matching sediment toxicity and chemistry data. The database was composed primarily of 10- to 14-day or 28- to 42-day toxicity tests with the amphipod *Hyalella azteca* (designated as the HA_{10} or HA_{28} tests) and 10- to 14-day toxicity tests with the midges *Chironomus tentans* or *C. riparius* (designated as the CS_{10} test). Endpoints reported in these tests were primarily survival

or growth. From these data, both threshold effect concentrations (TECs) and probable effect concentrations (PECs) were developed. TECs were used in this screening.

2. TECs identify contaminant concentrations below which harmful effects on sediment-dwelling organisms are not expected. TECs include the following sediment quality guidelines (SQGs): threshold effect levels (TELs), effect range low values (ERLs), lowest effect levels (LELs), minimal effect threshold (METs), and sediment quality advisory levels (SQALs). TECs were calculated by determining the geometric mean of the SQGs. Consensus-based TECs were calculated only if three or more published SQGs were available for a chemical.

3. *Ontario Ministry of the Environment and Energy* (Fletcher et al., 2008; Persaud et al., 1996) — OMEE provides screening benchmarks for various metals, pesticides, PCBs, and PAHs in freshwater sediments. The OMEE Sediment Quality Guidelines define three (3) levels of chronic effects on benthic organisms:

    - The no-effect level (NEL) is defined as the level at which no toxic effects have been observed on aquatic organisms and food chain biomagnification is not expected.

    - The LEL indicates a level of sediment contamination that can be tolerated by most benthic organisms.

    - The significant-effect level (SEL) indicates a level of contamination at which pronounced disturbance of sediment-dwelling organisms will occur and the contaminant concentration will be detrimental to the majority of benthic species.

    The NEL for non-polar organics is calculated using Provincial Water Quality Objectives and Guidelines (PWQOs/Gs). The PWQO/G is multiplied by an organic carbon-normalized sediment to water partition coefficient (K_{oc}). The value is converted to a bulk sediment basis by assuming a 1% total organic carbon (TOC) concentration.

    The LEL and SEL are based on screening level concentrations (SLCs). The SLC uses field data on the co-occurrence of benthic infaunal species and concentration data. The SLC is an estimate of the highest concentration of a contaminant that can be tolerated by a specific proportion of benthic species. Calculation of the SLC is a two-step process. A species SLC (SSLC) is calculated as the 90th percentile of the frequency distribution of the contaminant concentrations over all of the sites (n $\geq$ 10) where the species is present. The chemical-specific SLC is then calculated as the 5th percentile of the SSLC distribution. The LEL for metals, nutrients, and polar organics is the 5th percentile of the SLC. For non-polar organics, the SLC is calculated as above, but using the organic carbon-normalized sediment concentrations. The SLC is then converted back to bulk sediment concentration, assuming a TOC of 1%. The SEL for metals, nutrients, and polar organics is calculated as the 95th percentile of all SSLCs. For non-polar organics, the SLC is calculated using the organic carbon normalized sediment concentrations. The SEL is converted back to bulk sediment concentrations based on site-specific TOC concentrations (1% minimum and 10% maximum).

NELs followed by LELs were used for this screening assessment.

4. *Ecotox Thresholds* (EPA, 1996) — Ecotox thresholds were developed for sediments using three different methods. The preferred method was to derive- sediment quality criteria (SQC) using the equilibrium partitioning-based guidelines (EPA, 1993a). Alternative method 1 was the derivation of sediment quality benchmarks (SQBs), which are essentially SQCs derived with Tier II surface water values instead of Ambient Water Quality Criteria (AWQCs) or final chronic values (FCVs). Lastly, if neither an SQS nor an SQB were calculated, the ERLs from Long et al., (1995) are suggested for use. ER-Ls were not considered in this assessment as some toxicity values used to derive the ER-Ls were from estuarine environments. Estimated SQCs and SQBs assumed a 1% TOC.

5. *Equilibrium Partitioning-based Benchmarks* (Jones et al., 1997) — Jones et al. developed equilibrium partitioning-based (EqP) benchmarks following guidance as in EPA Guidelines for Deriving Site-Specific Sediment Quality Criteria for the Protection of Benthic Organisms (EPA, 1993a). Values were developed using national ambient water quality criteria, secondary chronic values, and lowest chronic values for fish, daphnids, and non-daphnid invertebrates. Bulk sediment values were estimated assuming a 1% TOC. EqP-based benchmarks are not applicable to sediments with less than 0.2% TOC.

2.3 Screening-Level Exposure Estimates and Risk Calculation (Step 2)

The screening-level exposure estimate and risk calculation represent the second step in the ecological risk screening for the Study Area. In this step, the risk is estimated by comparing documented exposure concentrations with the ecotoxicity screening values from Step 1. In the case of potential risk to wildlife from dietary exposure to contaminants, exposure point concentrations are determined from which dietary doses may be estimated and risk calculated. This approach is intended to serve as the screening-level ecological effects/risk characterization with which to evaluate past activities and current levels of contamination in each of the principal habitats in the CHP, SFSA, and EFSA:

1. indicate little or no potential for adverse effects to ecological resources inhabiting the area;
2. indicate the potential for adverse effects to ecological resources of the area; or
3. indicate that the available data are inadequate to make a determination and the process should continue to a more detailed evaluation.

2.3.1 Screening-Level Exposure Estimate

The Screening-Level Exposure Estimate incorporates a two-tier approach. In the initial tier (Tier 1), the maximum detected concentration for each chemical in soil/sediment in each of the CHP, the SFSA, and the EFSA were compared with the previously established ecological benchmarks (see Subsection 2.2.7) to determine a list of chemicals of potential ecological concern (COPECs). The results of the Tier I analysis are presented in Tables 2-9 and 2-10. Note that for the wetland sediment evaluation, only toxicity to benthic macroinvertebrates is shown. As previously mentioned, there were no data available for sediments in the EFSA wetlands. In this assessment, it was assumed that contaminant concentrations in EFSA soils would serve as surrogate concentrations for those sediments. Because the screening analysis for phytotoxicity is the same for soils and sediments in the EFSA, the phytotoxicity of contaminants in wetland sediments was evaluated as part of the terrestrial phytotoxicity assessment and the results are shown therein.

In Tier II, concentrations for the COPECs established in Tier I are compared separately to the phytotoxicity, soil invertebrate, wildlife (avian and mammalian) ecological, and benthic invertebrate screening-level values for each exposure area individually as appropriate. Because the plant community as well as the soil/sediment invertebrate communities (for all practicality) are fixed in place (i.e., non-mobile), the potential risk to these communities is evaluated for each of the locations from which samples were collected (that is, a sample-by-sample approach). Because avian and mammalian wildlife are mobile, average and maximum concentrations are used in the Tier II screening to span the likely exposure concentrations.

Benchmark selection is discussed below and benchmarks are presented in Tables 2-11 and 2-12.

To evaluate the potential for phytotoxicity at the Study Area, available no-effect terrestrial plant toxicity values from three sources were used. The preference hierarchy was as follows:

1. *Plant-based Eco SSL* (EPA, 2003 – 2007) – discussed in Subsection 2.2.7.1.

2. *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants* (Efroymson et al., 1997c) – discussed in Subsection 2.2.7.1.

3. *Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (EPA, 1999) — Plant toxicity reference values (TRVs) were developed largely from information provided in Efroymson et al. (1997c), the Protocol includes additional COPECs. TRVs were developed in a manner similar to that of Efroymson et al., 1997b; however, in some cases, additional margins of safety were incorporated in the Protocol.

To evaluate the potential for toxicity to soil invertebrates at the Study Area, available no-effect soil invertebrate toxicity values from three sources were used. The preference hierarchy was as follows:

1. *Soil invertebrate-based Eco SSL* (EPA 2003 – 2007) – discussed in Subsection 2.2.7.1.

2. *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Processes* - Efroymson et al. (1997c) soil invertebrate values – discussed in Subsection 2.2.7.1.

3. *Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities*. EPA, 1999a.

In addition, Tier II includes the calculation of exposure point concentrations (EPCs) for COPECs in each exposure area that are then compared to mammalian and avian receptor NOAEL and LOAEL-based benchmarks selected using the following hierarchy:

1. *Mammal or bird Eco-SSL* (EPA, 2003-2007) – No-effect values discussed in Subsection 2.2.7.1. Effect (i.e., LOAEL-based) values were derived by EPA Region 1 (EPA, 2008b).

2. *Preliminary Remediation Goals for Ecological Endpoints* (Efroymson et al., 1997a) – discussed in Subsection 2.2.7.1.

3. *Toxicological Benchmarks for Wildlife: 1996 Revision* Food–based benchmarks (Sample et al., 1996)—NOAEL- and LOAEL-based values of contaminants in food were calculated for numerous receptors. Toxicity values identified in the document were integrated with the amount of food consumed to derive the concentration. For the purposes of this assessment, it was assumed the concentrations in soil are equivalent to the concentrations in dietary items.

4. *RCRA Ecological Screening Levels (ESLs) (EPA Region 5, 2003)* – discussed in Subsection 2.2.7.1. Note benchmark is NOAEL-based only.

To provide a more comprehensive and site-specific characterization of ecological risk of dietary exposure of birds and small mammals that may inhabit the areas to mercury, potential mercury exposure for short-tailed shrew and American robin inhabiting each exposure area was calculated using area-specific earthworm tissue data and exposure models presented in Subsections 2.3.1.1 and 2.3.1.2.

2.3.1.1 Exposure Point Concentration Calculation

EPCs were calculated only for use in avian and mammalian wildlife exposures. EPCs were calculated on an area-specific basis.

According to EPA regional guidance (EPA, 1991-1994), risk assessments are conducted using an EPC for each COPEC. The EPC represents the concentration to which a receptor is assumed to be continuously exposed while in contact with an environmental medium. The EPC is generally defined as the 95 percent upper confidence limit on the mean (UCL) and is calculated using EPA's ProUCL software (EPA, 2011a). The following general guidelines were used to determine reasonable maximum exposure (RME) EPCs.

- If fewer than 8 samples were collected, the maximum detected concentration was selected as the EPC.

- If 8 or more samples were collected and the dataset contained more than 5 percent but less than 50 percent detects and at least 4 detects, a nonparametric-based UCL (either Kaplan-Meier (KM) or bootstrapping derived), as per ProUCL's non-parametric-based UCL recommendation, was calculated. Note that the bootstrapping method was not considered unless there were at least 10 detects.

- If 8 or more samples were collected and the dataset contained at least 50 percent detects, the appropriate distribution of the dataset was determined and UCLs were selected as guided by the ProUCL supporting documentation. Note that for datasets with censored results (i.e., non-detects), UCLs calculated using estimation procedures (e.g., KM, bootstrapping) were considered instead of employing the simple substitution method (e.g., using one-half the SQL for non-detects) for selecting appropriate UCLs as guided by the ProUCL supporting documentation. Note, the UCL calculations are different from the summary statistic calculations where the sample quantitation limit was used for nondetect concentrations in that ProUCL determined concentrations to use for censored (i.e., nondetect) data.

UCLs are presented in Tables 2-13 through 2-15. Support documentation (ProUCL Outputs) for the calculation of the UCLs is presented in Appendix C.

2.3.1.2 Avian and Mammalian Receptor Exposure Modeling

The potential for food chain impacts of bioaccumulative chemicals in terrestrial systems is well recognized. Because of the biomagnification potential associated with some COPECs, e.g., PCBs, mercury, and the potential risk to terminal receptors in the terrestrial food chain, representative upper trophic level receptors are evaluated as part of this SLERA.

As previously mentioned, two receptor-specific exposure models are considered in this SLERA. To limit the effort expended as part of the exposure modeling process and still identify potential ecological risks, only the conservative worst-case (i.e., RME) approach was used.

Exposure models used in this SLERA take the following general form:

$$TDI = FT \times \left[\left(FIR \times \sum_{i=1}^{n} C_i \times P_i \right) + SIR \times C_{soil} \right]$$

Where:

TDI	=	Total daily intake (mg/kg body weight [BW]-day)
FT	=	Foraging time in the exposure area (unitless)
FIR	=	Body weight normalized food intake rate (kg wet weight [WW]/kg BW-day)
C_i	=	Concentration in the i^{th} prey item (mg/kg WW)
P_i	=	Proportion of the i^{th} prey item in the diet (unitless)
SIR	=	Soil ingestion rate (kg DW/kg BW-day)
C_{soil}	=	Concentration in soil (mg/kg DW)

Because of the difficulties in measuring intakes of free-ranging wildlife, data on food intake rates (FIRs) are not available for many species. Using FIRs for captive animals potentially underestimates the intake rates because these animals do not expend as much energy as their wild counterparts do, because activities for captive animals do not include behaviors such as foraging and avoiding predators. Therefore, allometric equations using measurements of free metabolic rates (FMRs) are used to determine FIRs.

The FMR represents the daily energy requirement that must be consumed by an animal to maintain, among other things, body temperature, organ function, digestion, and reproduction. To maintain these physiological functions as well as to perform daily behavioral activities such as foraging, avoiding predators, defending territories, and mating, the animal must replace the lost energy by metabolizing and assimilating the energy in its food (i.e., its metabolic fuel). The balance between an animal's energy loss and replenishment is reflected in the quality and quantity of food in the animal's diet. Assuming that the animal's habitat supports a variety of food items, selection of diet may reflect a preference toward more energy-rich foods (i.e., higher gross energy), although one must consider the energy expended in pursuit of prey.

Not all food that is consumed by an animal is converted to usable energy. Depending on the digestibility of the dietary item and the physiology of a particular animal, a substantial portion of the energy may be lost through clearance. Assimilation Efficiency is a measure of the percentage of food energy (i.e., item-specific gross energy) that is assimilated across the gut wall and is available for metabolism.

The equation used to determine FIRs is as follows:

$$\mathrm{FIR}\,(\mathrm{kg\ ww/kg\ BW\text{-}day}) = \frac{\mathrm{FMR}}{\sum_{i=1}^{n}\left(\mathrm{AE_i} \times \mathrm{GE_i} \times \mathrm{P_i}\right)}$$

Where:

FIR	=	Body weight normalized field ingestion rate (kg WW/kg BW-day equals g WW/g BW-day)
FMR	=	Field metabolic rate (kcal/g BW-day; see Table 2-16)
AE_i	=	Assimilation efficiency of the i^{th} food item (unitless; see Table 2-17)
GE_i	=	Gross energy of the i^{th} food item (kcal/g; see Table 2-17)
P_i	=	Proportion of diet comprised of the i^{th} food item (unitless; see Tables 2-18 and 2-19)

Exposure parameters for the calculation of TDI for the short-tailed shrew and American robin are presented in Tables 2-18 and 2-19.

2.3.1.2.1 Receptor Life History

2.3.1.2.1.1 American Robin

The American robin (*Turdus migratorius*) was selected as a surrogate species for invertivorous birds. The American robin inhabits forests, wetlands, swamps, and habitat edges where forested areas meet agricultural and range land (EPA, 1999).

The American robin requires access to freshwater, protected nesting sites, and productive forage in areas for breeding. Breeding habitats include moist forests, swamps, open woodlands, orchards, parks, and lawns. Robins may forage on the ground, along habitat edges, stream edges, or above ground in shrubs and the lower branches of trees (EPA, 1999). The summer foraging home range of adults feeding nestlings averages approximately 0.37 acres and those feeding fledglings approximately 2 acres. Their territory during the breeding season ranges from 0.3 – 2 acres (EPA, 1993b).

Robins eat invertebrates, seeds, and fruit (EPA, 1999). Directly preceding and during the breeding season, robins diet consists of greater than 90% (by volume) invertebrates and some fruit. During the rest of the year, their diet consists of 80-99% (by volume) of fruits. Fruits commonly eaten include plums, dogwood, sumac, hackberries, blackberries, cherries, greenbriers, raspberries, and juniper. Invertebrates commonly taken include beetles, caterpillars, moths, grasshoppers, spiders, millipedes, and earthworms (EPA, 1993b).

The exposure of the American robin to site-specific COPECs is assumed to be through the ingestion of soil invertebrates, as well as the incidental ingestion of soil. Table 2-18 presents the exposure model and summarizes the exposure factors used to estimate COPEC exposure to the American robin.

2.3.1.2.1.2 Short-tailed Shrew

The northern short-tailed shrew (*Blarina brevicauda*) was selected as a surrogate species for invertivorous small mammals. The short-tailed shrew may be found in a variety of habitats with a well-developed layer of leaf litter and humus, including grasslands, brushy thickets, meadows, old fields, and deciduous, coniferous, and mixed forest (Merritt, 1987).

Two different types of nests are constructed by the short-tailed shrew—a breeding nest and a resting nest. Both types are commonly located 6 to 16 inches below ground, or under logs, stumps, or old boards. The home range of the shrew is 0.5 to 1 acre. Population densities of the shrew range from 1 to 10 per acre (Merritt, 1987).

The short-tailed shrew's diet includes invertebrates (e.g., spiders, centipedes, slugs, snails, and earthworms), salamanders, mice, voles, and occasionally birds. It has a preference for animal food, but also eats fungi and plant material such as roots, nuts, fruits, and berries. In winter, insect larvae and pupae serve as important food sources (Merritt, 1987). Predators of the short-tailed shrew include snakes, foxes, and hawks (Merritt, 1987).

The exposure of the short-tailed shrew to site-specific COPECs is assumed to be through the ingestion of soil invertebrates, as well as the incidental ingestion of soil. Table 2-19 presents the exposure model and summarizes the exposure factors used to estimate COPEC exposure to the short-tailed shrew.

2.3.1.2.2 Total Daily Intakes

Mercury exposure total daily intakes calculated for insectivorous birds and mammals are presented in Table 2-20.

2.3.1.2.3 Toxicity Reference Values for Mercury

To evaluate the potential for toxicity to mammals and birds at the Study Area, inorganic mercury TRVs used in other Region 1 terrestrial evaluations were used (i.e., Elizabeth Mine and Ely Mine ERAs). Values used are presented below.

- Avian NOAEL- and LOAEL-based values of 0.45 and 0.91 milligrams per kilogram (mg/kg)-day, respectively. Derived from a Japanese quail study by Hill and Schaffer (1976).

- Mammalian NOAEL- and LOAEL-based values of 13.2 and 56 mg/kg-day, respectively. NOAEL value derived from a mouse study by Revis et al. (1989). LOAEL value derived from a rat study by Fitzhugh et al. (1950).

2.3.2 Risk from Chemicals of Potential Ecological Concern

2.3.2.1 Introduction

This section of the report provides the results of the screening-level risk assessments conducted for the CHP, SFSA, and EFSA. The general approaches for evaluating risks from the estimated HQs are presented in subsection below. The subsection immediately following describes the background analysis approach. The remainder of the section describes the risks and the uncertainties associated with the estimates.

For each of the areas, the narrative discusses the potential ecological risk of contaminant exposure to the plant, soil invertebrate, bird, and mammal communities that may inhabit the Study Area. In addition, the potential effects of sediment contamination of the wetland area in the EFSA on sediment invertebrates are also discussed.

2.3.2.2 Hazard Quotient Analyses

Potential risks were estimated by comparing single-point estimates of exposure with effects levels, i.e., the hazard quotient (HQ) approach. The HQ approach allows for a standard interpretation of the results (i.e., the HQ reflects the magnitude by which the sample concentration exceeds or is less than the benchmark value). In general, if an HQ exceeds one (1), the potential for risk exists. Although the HQ method does not measure risk in terms of likelihood or probability of effects at the individual or population level, it does provide a benchmark for judging potential risk (Sheehan and Loucks, 1994).

In general, NOAEL-based HQs between 1 and 10 are assumed to have no to minimal effects on a population. As the standard uncertainty factor between the NOAEL and LOAEL is a factor of 10, the LOAEL represents the best estimate of the concentration or dose at which an effect may be observed in individual organisms. Toxicity values such as the LOAEL are estimated for individuals and not reflective of what will be seen across the population due to such factors as recruitment from nearby areas, compensatory growth and reproduction of surviving organisms, and adaptation. Therefore, it is likely that population effects will not be seen until some undetermined multiple of the LOAEL occurs. Since the uncertainty factor associated with extrapolating from individual effects to population effects is at least ten-fold, it is assumed for this assessment that NOAEL-based HQs less than 10 are unlikely to indicate population-level effects. Therefore, this risk analysis will identify NOAEL-based HQs >1 as having potential effects on individual organisms and NOAEL-based HQs >10 as having potential effects on local populations.

For the most part, the avian and mammalian dietary exposure and consequent risk were evaluated by comparing soil concentrations of contaminants with avian or mammalian benchmarks that incorporated chemical-specific assumptions of bioaccumulation, trophic transfer, dose-response measures as well as representative-receptor species, area use factors, etc. As mercury appears to be a primary contributor to ecological risk, site-specific tissue data (earthworm) were collected to more realistically assess, among other things, the potential risk of mercury exposure to birds and mammals that may feed on soil invertebrates on-site. Table 2-20 presents the results of the food-chain modeling of mercury.

2.3.2.3 Background Analyses/Risk Refinement

All of the media evaluated in each of the areas contain ambient or background levels of chemicals that were derived from numerous historical and current anthropogenic sources. The former chemical plant resides in an area that is well noted for its industrial legacy over the last century. It is the objective of this assessment to define the risk associated with contaminant levels in potential exposure media that can be attributed solely to the operations and processes of the former chemical plant.

To account for background levels of chemicals, principally metals, in soils and sediments, a nonparametric statistical comparison (Wilcoxon-Mann-Whitney) was conducted between the metals concentrations in soils for the CHP, SFSA and EFSA and the concentrations detected in background soils collected from a suitable background location (see Section 4.2 of the RI Report, Vol. 1). Note that even though a number of organic chemicals are distributed widely from many anthropogenic sources, e.g., PAH from automobiles and wood burning stoves, organic chemicals are generally not screened against background in a conservative assessment like a SLERA.

A summary of the statistical comparisons between concentrations from the three locations within the Study Area and background are presented in Table 2-21. Supporting documentation is found in Appendix D. For each of the areas, those metals in area soils at concentrations that were determined to be significantly different (with a greater mean) than the concentrations of those metals in the background soils are discussed in the area narrative that follows. Moreover, although risks (e.g., HQs) are presented in the results tables for all of the COPECs at a site, metals in area soils at concentrations similar to those found in background soils ($\alpha = 0.05$) are not discussed in the narrative as those risks are assumed not to be attributable to the former site activity.

2.3.2.4 Cell House Property

The results of the SLERA for the CHP are presented for each of the ecological communities evaluated including the plant, soil invertebrate, bird and mammal communities.

Metals that were detected in CHP soils at levels that were statistically greater ($\alpha = 0.05$) than background levels are barium, copper, lead, manganese, mercury, nickel and zinc (see Subsection 2.3.2.3 and Table 2-21).

Table 2-22 presents the community-specific HQs, also known as EEQs, for all organic and inorganic chemicals detected in the surface soils of the CHP.

Because the plant community as well as the soil invertebrate community (for all practicality) are fixed in place (i.e., non-mobile), the potential risk to these communities is evaluated for each of the locations from which samples were collected. Table 2-23 presents an analysis of the potential location-specific phytotoxicity by describing the frequency of exceedance (FOE) for each chemical, i.e., the number of samples for which there were exceedances of the chemical specific NOAEL-based phytotoxicity benchmark relative to the total number of samples collected in that area. Individual NOAEL-based HQs are presented in Appendix E. For example, the FOE for the phytotoxicity of arsenic at the CHP is 2/12, which indicates that 2 of a total of 12 samples exceeded the phytotoxicity threshold for arsenic. To provide a sense of the magnitude of phytotoxic risk for each chemical, Table 2-23 also provides the extent to which the NOAEL-based exceedances fall into one of three categories, i.e., HQ ≥ 1 and <10; HQ ≥ 10 and < 100; and HQ ≥ 100. Table 2-24 provides a similar summary for the invertebrate community and Appendix F provides the individual sample-by-sample results.

Lastly, Table 2-25 presents the percent of detected concentrations exceeding soil screening benchmarks per receptor. Note avian and mammalian wildlife are not sessile and would be exposed to COPEC concentrations in various locations across the Study Area; therefore, the percent values do not carry the same weight as the comparisons to the average concentrations presented in Table 2-22.

The results of the individual community assessments are discussed below. Note that the plant and invertebrate communities are assessed using what are essentially NOAEL-based values; whereas, the avian and mammalian communities are assessed using both NOAEL- and LOAEL-values.

2.3.2.4.1 Plant Community

Table 2-23 presents the NOAEL-based phytotoxicity HQs for COPECs in CHP soils. Chemicals detected in soils at levels greater than background and at concentrations shown to potentially exhibit phytotoxicity include barium (100% of locations), copper (33% of locations), lead (25% of locations), manganese (17% of locations), mercury (100% of locations), nickel (8% of locations), and zinc (33% of locations) as well as high molecular weight (HMW; i.e., benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, Benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene) PAH (100% of locations).

For this assessment, it was assumed that chemicals exhibiting soil concentrations that exceed phytotoxicity threshold concentrations by ten-fold or more (i.e., NOAEL-based HQ ≥10) can be more reasonably expected to exhibit phytotoxicity at the Study Area (Table 2-23). Metals exhibiting soil concentrations that exceeded phytotoxicity threshold concentrations (i.e., NOAEL-based HQ) by ten-fold or more include barium (83% or 10 of 12 samples ten-fold or higher) and mercury (33% or 4 of 12 samples). In addition to these two metals, 33% of soil samples (3 of 9 samples) exhibited concentrations of HMW PAH that exceeded the NOAEL-based phytotoxicity benchmark by a factor of ten or more.

Note however, that the conclusions of any HQ analysis must be tempered with an understanding of the uncertainty inherent in a screening assessment. For example, although barium is identified as the principal contributor to potential impact to the vegetative community, this finding can be attributed largely to the use of a very conservative ecological screening value. As a case in point, concentrations of barium in background soils range from 24.4 to 41.9 mg/kg. With a phytotoxicity benchmark for barium at 5.0 mg/kg, background soils exceeded this benchmark value by a factor of 7 on average. Therefore, risks to the vegetative community of the CHP would be limited to isolated hot spots of mercury (in the vicinity of MW-DUP02-0811-0920A, MW-25O1-0805-1415, MW-29O1-0811-0915, and SB-0201-0807-0830) and HMW PAH (in the vicinity of MW-25O1-0805-1415, MW-29O1-0811-0915, and MW-31O1-0811-1535).

The uncertainty associated with the available toxicity benchmarks for the COPECs is discussed in Section 2.3.3.

2.3.2.4.2 Soil Fauna Community

Table 2-22 presents the NOAEL-based soil invertebrate HQs for COPECs in CHP soils. Those chemicals that were detected at levels greater than background and concentrations shown to exhibit toxicity to soil invertebrates (i.e., NOAEL-based benchmark) include copper (33% of locations), mercury (58% of locations), and zinc (42% of locations). A single soil sample (1 of 9 or 11%) contained HMW PAH above the soil invertebrate toxicity threshold (i.e., NOAEL-based benchmark) for that class of chemicals. As with the evaluation of phytotoxicity, Table 2-24 presents an analysis of the potential location-specific invertebrate toxicity by describing the frequency of exceedance for each chemical, i.e., the number of samples for which there were exceedances of the chemical specific invertebrate benchmark relative to the total number of samples collected in that area, as well as the relative magnitude of exceedance. Metals exhibiting soil concentrations that exceeded invertebrate NOAEL-based benchmarks by ten-fold or more were limited to mercury for which 3 of 12 samples (25%) exceeded the benchmark by ten-fold or more. These results indicate that there may be a few isolated locations on the CHP where mercury levels in soil may pose a risk to the soil invertebrate community (MW-25O01-0805-1415, MW29O1-0811-0915, and M-DUP02-0811-0920A).

2.3.2.4.3 Avian and Mammalian Communities

Table 2-22 presents the avian and mammal HQs for COPECs in CHP soil. Organic chemicals that were detected in CHP soils at concentrations shown to be potentially toxic to birds (maximum and EPC case, NOAEL-and LOAEL-based benchmarks) include the organic chemicals: dioxin/furans (as 2,3,7,8-TCDD toxic equivalency quotient [TEQ]), total PCBs (tPCBs), and dioxin-like congeners of PCBs. Metals at levels above background and exhibiting potential toxicity to birds based on NOAEL-based benchmarks include barium, copper, lead, and zinc. Of these, barium, copper, and lead concentrations were less than their respective LOAEL-based toxicity benchmarks, with the ratios of the maximum and EPCs to the LOAEL-based benchmark for zinc HQs being 2.0 or lower. Only lead exhibited a NOAEL-based HQ greater than 10. Food chain modeling of mercury exposures from earthworm and incidental soil ingestion compared with toxicity reference values indicated marginal toxicity to ground foraging invertivorous birds, such as the American robin (NOAEL/LOAEL-based hazard quotients of 2.4/1.2).

Organic COPECs in CHP soils with NOAEL-based HQs for mammals greater than 1.0 include the organic chemicals: butylbenzylphthalate (maximum HQ only), dioxin/furans (as 2,3,7,8-TCDD TEQ), tPCBs, dioxin-like congeners of PCBs, and HMW PAHs. HMW PAH maximum and EPC values did not exceed the LOAEL-based toxicity value. Metals at levels above background and exhibiting potential toxicity to mammals include copper, lead, and zinc, which were all marginally above their respective NOAEL-based toxicity thresholds. Maximum and EPC values did not exceed LOAEL-based toxicity values for these COPECs. Food chain modeling of mercury exposures from earthworm and incidental soil ingestion compared with toxicity reference values indicated no toxicity to ground foraging invertivorous mammals, such as the short-tailed shrew (NOAEL-based hazard quotients <1.0).

The conclusions of any HQ analysis must be tempered with an understanding of the uncertainty inherent in a screening assessment, as well as background. As a case in point, all calculated background concentrations of 2,3,7,8-TCDD TEQ (avian and mammalian), and dioxin-like PCB congener TEQs (mammalian) exceeded their respective benchmark. Dioxin-like PCB congener TEQs (avian) and tPCB concentrations in background exceeded their respective NOAEL-based benchmark in 3 of 6 samples and 2 of 6 samples, respectively.

2.3.2.5 Southern Facility Study Area

The results of the SLERA for the SFSA are presented for each of the ecological communities evaluated including the plant, soil invertebrate, bird and mammal communities.

The following metals were detected in SFSA soils at levels that were statistically greater (α = 0.05) than background levels: arsenic, barium, copper, lead, manganese, nickel, and zinc (see Subsection 2.3.2.3 and Table 2-21).

Table 2-26 presents the community-specific HQs for all organic and inorganic chemicals detected in the surface soils of the SFSA.

Table 2-23 presents an analysis of the potential location-specific phytotoxicity by describing the FOE for each chemical, i.e., the number of samples for which there were exceedances of the chemical specific NOAEL-based phytotoxicity benchmark relative to the total number of samples collected in that area. Individual NOAEL-based HQs are presented in Appendix E. To provide a sense of the magnitude of phytotoxic risk for each chemical, Table 2-23 also provides the extent to which the NOAEL-based exceedances fall into one of three categories, i.e., HQ ≥ 1 and <10; HQ ≥ 10 and < 100; and HQ ≥ 100. Table 2-24 provides a similar summary for the invertebrate community and Appendix F provides the individual sample-by-sample results.

Lastly, Table 2-27 presents the percent of detected concentrations exceeding soil screening benchmarks per receptor. Note avian and mammalian wildlife are not sessile and would be exposed to COPEC concentrations in various locations across the Study Area; therefore, the percent values do not carry the same weight as the comparisons to the average concentrations presented in Table 2-26.

The results of the individual community assessments are discussed below. Note that the plant and invertebrate communities are assessed using what are essentially NOAEL-based values; whereas, the avian and mammalian communities are assessed using both NOAEL- and LOAEL-values.

2.3.2.5.1 Plant Community

Table 2-23 presents the NOAEL-based phytotoxicity HQs for COPECs in SFSA soils. Chemicals detected in soils at levels greater than background and at concentrations shown to exhibit potential phytotoxicity include the metals arsenic (26% of locations), barium (100% of locations), copper (50% of locations), lead (38% of locations), manganese (60% of locations), nickel (10% of locations), and zinc (25% of locations) as well as the organic HMW PAHs (100% of locations).

Metals exhibiting soil concentrations that exceeded phytotoxicity threshold concentrations by ten-fold or more (i.e., NOAEL-based HQ ≥10) include arsenic (2% or 1 of 47 samples ten-fold or higher), barium (81% or 39 of 48 samples), copper (8% or 4 of 48 of samples), and lead (15% or 7 of 48 of samples). In addition to these three metals, 23% (7 of 30) soil samples had concentrations of HMW PAH that exceeded the NOAEL-based phytotoxicity benchmark by a factor of ten or more.

As noted previously for the CHP, the wide distribution of barium exceedances of the phytotoxicity threshold throughout the SFSA is most likely a reflection of the conservative phytotoxicity benchmark for this metal. In addition, the arsenic exceeds the NOAEL value in only one sample with an HQ of 1.6; indicating risks from arsenic are likely not of concern. The results of this analysis suggest that a very few isolated locations throughout the SFSA at which elevated soil concentrations of copper, lead, and HMW PAH may pose a risk to vegetation. The locations where copper and lead have NOAEL-based HQs >10 are FSA-106, FSA-151 (lead only), FSA-168, FSA-171, FSA-SB-21O1, FSA-SB-26O1 (lead only), and FSA-SB11O1 (lead only). These locations, with the exception of FSA-SB-26O1 are concentrated in the southernmost portion of the SFSA. Locations with high PAH concentrations are FSA-MW-34O1, FSA-SB-17O1, FSA-SB-20O1, FSA-SB-26O1, FSA-SB-27O1, FSA-SB30O1, and FSA-SB-31O1 and are mostly on the western side of the SFSA and directly adjacent to rail lines.

The uncertainty associated with the available toxicity benchmarks for the COPECs is discussed in Section 2.3.3.

2.3.2.5.2 Soil Fauna Community

Table 2-24 presents the NOAEL-based soil invertebrate HQs for COPECs in SFSA soils. Chemicals detected at levels greater than background and at concentrations shown to exhibit potential toxicity to soil invertebrates (i.e., NOAEL-based benchmark) include arsenic (100% of locations), barium (10% of locations), copper (40% of locations), lead (13% of locations), manganese (13% of locations), nickel (2% of locations), and zinc (35% of locations);) as well as the HMW PAH (10% of locations).

Of these, metals exhibiting soil concentrations that exceeded invertebrate threshold concentrations by ten-fold or more (i.e., NOAEL-based HQ ≥10) include arsenic (98% or 46 of 47 samples ten-fold or higher) and lead (2% or 1 of 48 samples). Analogous to the previous discussions, the widespread distribution of arsenic exceedances of the invertebrate toxicity threshold most likely results from a conservative benchmark for arsenic or a regionally elevated level of arsenic. Note that in background soils, arsenic ranged in concentration from 1.3 to 4.9 mg/kg, which is 5 to 20-fold higher than the 0.25 mg/kg screening level benchmark for soil invertebrates.

The results of this analysis suggest COPECs in SFSA soils do not pose a risk to the invertebrate community.

2.3.2.5.3 Avian and Mammalian Communities

Table 2-26 presents the avian and mammal HQs for COPECs in SFSA soils. Chemicals that were detected in SFSA soils concentrations shown to be potentially toxic to birds include the organic chemicals: bis(2-ethylhexyl)phthalate, endrin aldehyde, and endrin ketone under the maximum case NOAEL-based benchmarks only and dioxin/furans (as 2,3,7,8-TCDD TEQ), tPCBs, and dioxin-like congeners of PCBs under both maximum and EPC case with both NOAEL- and LOAEL-based benchmarks. Metals at levels above background and exhibiting potential toxicity to birds based on NOAEL-based benchmarks include arsenic, barium, copper, lead, and zinc. With the exception of lead, exceedance of avian toxicity LOAEL-based benchmarks for all the other metals is below 1.0 or marginally above 1.0.

Food chain modeling of mercury exposure from earthworm and incidental soil ingestion compared with toxicity reference values indicated marginal toxicity to the invertivorous birds like the American robin (NOAEL/LOAEL-based hazard quotients of 2.0/<1.0).

COPECs in SFSA soils concentrations shown to be potentially toxic to mammals based on NOAEL-based benchmarks include the organic chemicals: DDT and metabolites (maximum case only), dieldrin, HMW PAHs, dioxin/furans (as 2,3,7,8-TCDD TEQ), tPCBs, and dioxin-like congeners of PCBs. LOAEL-based benchmarks were exceeded by maximum and EPC concentrations for dioxins/furans, tPCBs, and dioxin-like congeners of PCBs. Metals at levels above background and exhibiting potential toxicity to mammals based on NOAEL-based benchmarks include arsenic, copper, lead and zinc. With the exception of lead, exceedance of mammalian toxicity LOAEL-based benchmarks for all the other metals is below 1.0. With an HQ of 63 and 1.6 (NOAEL- and LOAEL-based, respectively),) lead may pose a potential risk to small mammals that forage on earthworms and other invertebrates in the SFSA. Food chain modeling of mercury exposures from earthworm and incidental soil ingestion compared with toxicity reference values indicated no toxicity to ground foraging invertivorous mammals, such as the short-tailed shrew (NOAEL-based hazard quotients <1.0).

The conclusions of any HQ analysis must be tempered with an understanding of the uncertainty inherent in a screening assessment, as well as background. As a case in point, all calculated background concentrations of 2,3,7,8-TCDD TEQ (avian and mammalian), dioxin-like PCB congener TEQs (mammalian) exceeded their respective benchmark. Dioxin-like PCB congener TEQs (avian) and tPCB concentrations in background exceeded their respective benchmark in 3 of 6 samples and 2 of 6 samples, respectively. As a case in point, all calculated background concentrations of 2,3,7,8-TCDD TEQ (avian and mammalian), dioxin-like PCB congener TEQs (mammalian) exceed their respective benchmark. Dioxin-like PCB congener TEQs (avian) and tPCB concentrations in background exceed their respective NOAEL-based benchmark in 3 of 6 samples and 2 of 6 samples, respectively.

2.3.2.6 Eastern Facility Study Area

The results of the SLERA for the EFSA are presented for each of the ecological communities evaluated including the plant, soil invertebrate, bird and mammal communities.

The following metals were detected in EFSA soils at levels that were statistically greater (α = 0.05) than background levels: barium, copper, manganese, nickel, and zinc (see Subsection 2.3.2.3 and Table 2-21).

Table 2-28 presents the community-specific HQs for all organic and inorganic chemicals detected in the surface soils of the EFSA.

Table 2-23 presents an analysis of the potential location-specific phytotoxicity by describing the FOE for each chemical, i.e., the number of samples for which there were exceedances of the chemical specific NOAEL-based phytotoxicity benchmark relative to the total number of samples collected in that area. Individual NOAEL-based HQs are presented in Appendix E. To provide a sense of the magnitude of phytotoxic risk for each chemical, Table 2-23 also provides the extent to which the NOAEL-based exceedances fall into one of three categories, i.e., HQ ≥ 1 and <10; HQ ≥ 10 and < 100; and HQ ≥ 100. Tables 2-24 and 2-29 provide similar summaries for the soil and benthic invertebrate communities, respectively, and Appendices F and G respectively provide the individual sample-by-sample results.

Lastly, Tables 2-30 and 2-31 present the percent of detected concentrations exceeding soil and sediment screening benchmarks, respectively. Note avian and mammalian wildlife are not sessile and would be exposed to COPEC concentrations in various locations across the Study Area; therefore, the percent values do not carry the same weight as the comparisons to the average concentrations presented in Table 2-28.

The results of the individual community assessments are discussed below. Note that the plant and invertebrate communities are assessed using what are essentially NOAEL-based values; whereas, the avian and mammalian communities are assessed using both NOAEL- and LOAEL-values.

2.3.2.6.1 Plant Community

Table 2-23 presents the phytotoxicity NOAEL-based HQs for COPECs in EFSA soils. Chemicals detected at levels greater than background and at concentrations shown to exhibit potential phytotoxicity include the metals barium (100% of locations), copper (29% of locations), manganese (86% of locations), and zinc (21% of locations) as well as the organic HMW PAHs (89% of locations). Metals exhibiting soil concentrations that exceeded threshold phytotoxicity concentrations (i.e., NOAEL-based HQ) by ten-fold or more were limited to barium (79% or 11 of 14 samples ten-fold or higher). Please note previous discussions regarding the barium phytotoxicity value. Four of 9 samples (44%) had soil concentrations of HMW PAH that exceeded the NOAEL-based phytotoxicity benchmark by a factor of ten or more.

The results of this analysis suggest that a very few isolated locations throughout the EFSA (FSA-SB-34O1, FSA-SB038O1, FSA-SS-22, and FSA-SS-25) at which elevated soil concentrations of HMW PAH may pose a risk to vegetation.

2.3.2.6.2 Soil Fauna Community

Table 2-24 presents the soil invertebrate NOAEL-based HQs for COPECs in EFSA soils. Chemicals detected in soils at levels greater than background and at concentrations shown to exhibit potential invertebrate toxicity (i.e., NOAEL-based benchmark) include the metals barium (7% of locations), copper (21% of locations), manganese (7% of locations), and zinc (21% of locations); as well as low molecular weight (LMW; i.e., 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, carbazole, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene) PAHs (10% of locations) and HMW PAHs (33% of locations). None of the concentrations resulted in NOAEL-based HQs >10. The results of this analysis suggest COPECs in EFSA soils do not pose a risk to the invertebrate community.

2.3.2.6.3 Avian and Mammalian Communities

Table 2-28 presents the avian and mammal HQs for COPECs in EFSA soils. Chemicals that were detected in EFSA soils concentrations shown to be potentially toxic to birds based on NOAEL-based benchmarks include the organic chemicals: endrin aldehyde, endrin ketone, and tPCBs under the maximum case only; and dioxin/furans (as 2,3,7,8-TCDD TEQ) and dioxin-like congeners of PCBs. LOAEL-based benchmarks were exceeded by only dioxins/furans and dioxin-like congeners of PCBs. Metals at levels above background and exhibiting potential toxicity to birds based on NOAEL-based benchmarks include barium, copper, and zinc. Comparisons to LOAEL-based benchmarks for these metals were at or below 1.0. Food chain modeling of mercury exposure from earthworm and incidental soil ingestion compared with TRVs indicated marginal toxicity to the invertivorous birds like the American robin (NOAEL/LOAEL-based hazard quotients of 2.0/<1.0).

COPECs in EFSA soils concentrations shown to be potentially toxic to mammals based on NOAEL-based benchmarks include the organic chemicals: LMW PAHs and DDT and metabolites under the maximum case only; and HMW PAHs, dioxin/furans (as 2,3,7,8-TCDD TEQ), tPCBs, and dioxin-like congeners of PCBs. LOAEL-based benchmarks were exceeded by only HMW PAHs, dioxins/furans, and dioxin-like congeners of PCBs. Metals at levels above background and exhibiting potential toxicity to mammals based on NOAEL-based benchmarks include copper and zinc. Comparisons to LOAEL-based benchmarks for these metals were below 1.0 with the exception of the zinc maximum concentration (HQ = 1.6). These metals are not expected to result in population level effects to invertivorous mammals inhabiting the EFSA. Food chain modeling of mercury exposures from earthworm and incidental soil ingestion compared with toxicity reference values indicated no toxicity to ground foraging invertivorous mammals, such as the short-tailed shrew (NOAEL-based hazard quotients <1.0).

The conclusions of any HQ analysis must be tempered with an understanding of the uncertainty inherent in a screening assessment, as well as background. As a case in point, all calculated background concentrations of 2,3,7,8-TCDD TEQ (avian and mammalian), dioxin-like PCB congener TEQs (mammalian) exceeded their respective benchmark. Dioxin-like PCB congener TEQs (avian) and tPCB concentrations in background exceeded their respective NOAEL-based benchmark in 3 of 6 samples and 2 of 6 samples, respectively.

2.3.2.6.4 Wetland Community

The EFSA has a fairly extensive wetland complex that not only includes saturated soils in the northern sector of the EFSA, but also a surface water complex that runs along the western boundary of the EFSA. As previously mentioned, there were no data available for sediments in the EFSA wetlands. In this assessment, it was assumed that contaminant concentrations in EFSA soils would serve as surrogate concentrations for those sediments to evaluate potential effects to a benthic invertebrate community. Note that the use of soils data as a surrogate for the sediment concentrations in the wetland complex represents a speculative data gap. Moreover, this wetland is a manmade conveyance located in the middle of a highly disturbed, previously industrialized setting. The extent to which it functions as a viable wetland habitat is not known.

Table 2-10 presents screening NOAEL-based HQs for sediment. Applying sediment screening values to the EFSA soils that were at concentrations above background levels indicated potential effects to benthic invertebrates from acetone (100% of locations), PAHs (55-100% of locations), pesticides (100% of locations), and the metals copper (64% of locations), manganese (7% of locations), nickel (7% of locations), and zinc (21% of locations).

Of these, COPECs exhibiting soil concentrations that exceeded benthic invertebrate threshold concentrations (i.e., NOAEL-based benchmark) by ten-fold or more include acetone (100% or 3 of 3 samples ten-fold or more higher), PAHs (in approximately 50% of the locations), and endrin aldehyde and endrin ketone (both in 100% or 1 of 1 location).

Locations where acetone had NOAEL-based HQs >10 were FSA-SB-35O1, FSA-SB-38O1, and FSA-SS-18. PAHs were elevated in five of the 11 sampled locations (FSA-SB-34O1, FSA-SB-35O1, FSA-SB-38O1, FSA-SS-22, and FSA-SS-25). Endrin aldehyde and endrin ketone were detected in only one sample, FSA-SS-25O1 and are qualified as estimated values (i.e., J-flagged). Uncertainties surrounding the acetone and endrin benchmarks used herein indicate that risks are overestimated for these COPECs and likely not a risk to benthic invertebrates in the EFSA (see Subsection 2.3.3.2). PAHs could cause adverse effects in the benthic invertebrate community assuming wetland soils contain the same or higher concentrations than the soil samples evaluated in this SLERA.

2.3.3 Uncertainty Analysis

It is important to evaluate the results of this SLERA within the context of the uncertainties inherent within the ecological risk assessment process. Uncertainties in ecological risk assessments (ERAs) may be identified as belonging to one or more of the four following categories: conceptual model formulation uncertainty, data and information uncertainty, natural variability (stochasticity), and modeling error. These are not discrete categories, and overlap does exist among them. EPA's Framework for Ecological Risk Assessment (EPA, 1992) document provides a more detailed discussion of these generic uncertainty categories.

For this SLERA, uncertainties are classified as either "general" or "specific." General uncertainties refer to broad concerns that may affect the ERA process overall, whereas specific uncertainties refer to the uncertainty surrounding one or more specific measurement endpoints used in this risk analysis.

2.3.3.1 General Uncertainties

Media sampling variability relates to the uncertainty inherent in the nature of the sampling process and the heterogeneity of the environment. Media sampling uncertainty is affected by the following factors:

- Soil and earthworm samples collected reflect the conditions at that exact point in space and time. Spatial and temporal variations in soil conditions (both physical and chemical conditions) are often observed on very small scales. Given the heterogeneity of the environment, sample size and location greatly affect the certainty associated with the estimation of exposure and the consequent effects.

- Detected concentrations of contaminants may not be indicative of bioavailable concentrations. Organic chemicals may bind to other substances in the soil and sediments, e.g., humic acids, making them less available for uptake. Metals in soil and sediments may be associated with various mineral complexes that regulate potential variability. These interactions, along with the interactions of the contaminant with other chemicals in the environment, may make the contaminant either more or less toxic to organisms than expected.

2.3.3.2 Specific Uncertainties

Because of the diversity of soil/sediment types, test species, chemical forms, and test procedures, it is not possible to estimate benchmarks that would constitute thresholds for toxic effects on all organisms under all environmental conditions.

The use of these values for evaluating the potential impacts of reported contaminant concentrations in soil and sediments has the following associated uncertainties:

- Benchmarks do not address possible synergistic, antagonistic, or additive effects of contaminant mixtures. The risk may be over- or underestimated, depending on the interactions among the various chemicals present at the Study Area.

- The test conditions used in the toxicological studies used to develop chemical-specific benchmarks may not match the conditions at the Study Area; therefore, the benchmarks may over- or under-estimate risk there. Testing conditions may have differed from the Study Area in the following ways:

  - The form in which a chemical was added to the medium in deriving the benchmark may not be representative of the form the chemical is found in at the Study Area.

This is particularly true where the metallic salts added for toxicity testing purposes enhance the bioavailability of the metal relative to the metal species present under equilibrium conditions (i.e., complexed or strongly bound forms present).

  - The soil conditions (soil type, pH, temperature, and percent TOC) in the studies from which the benchmarks were derived may not mimic those conditions found at the Study Area.

  - Studies from which chemical-specific benchmarks were derived reflect the complex physicochemical processes and mineral complexes of the soil and sediments in which the study was conducted. It is unlikely that the specific nutrient and mineral composition of these mixtures match the conditions at the Study Area.

- Benchmarks and guidelines do not exist for all contaminants detected at the Study Area. For contaminants that do not have benchmarks, risk cannot be estimated.

- The benchmarks used do not consider factors that influence chemical bioavailability (e.g., site-specific organic carbon concentrations, redox potential [Eh], pH). Particularly for metals, the use of total concentration, rather than an estimate of the bioavailable fraction, represents a conservative estimate of exposure, and may over-estimate risk. In addition, most toxicological benchmarks developed for metals in soils are based on soluble salts. However, it is expected that soluble salts would most likely be quickly leached from soils through either rainfall infiltration to groundwater or surface runoff to surface waters. Consequently, it is unlikely that the form of the metal used in the toxicity study would occur to a significant degree in weathered soils.

- Different species of plants and animals exhibit varying degrees of sensitivity to chemical stressors. The species used to derive the screening benchmarks do not necessarily have the same sensitivities as those found at the Study Area. Consequently, the risk to ecological receptors at the Study Area may be under- or overestimated.

- In general, Eco SSLs developed for plants and soil invertebrates are conservative in nature as tests in which the COPEC would be highly bioavailable were favored as study used to derive those SSLs. This means NOAEL-based HQs calculated for phytotoxicity of arsenic, soil invertebrate toxicity of barium, and phytotoxicity and soil invertebrate toxicity of copper, lead, manganese, nickel, and zinc are likely overestimated.

- Target receptors were selected to represent a variety of organisms with similar feeding and behavioral strategies to those expected to occur at the Study Area for avian and mammalian wildlife benchmarks. However, species-specific exposure within similar feeding groups may vary and may result in differing risk potential. Target receptors were selected with the intent of optimizing exposure and assuming that a significant portion of their life cycles was restricted to that area of contamination.

    - It is assumed that 100% of the target receptor's diet derives from the affected area. Foraging territory is inversely related to prey abundance. Based on the poor habitat at the majority of the Study Area and the availability of good habitat in the vicinity of the Study Area that would support an abundance of support prey species, the assumption most likely overestimates risk to the target species.

    - Potential exposure is limited to the consumption of food and the incidental ingestion of soil. No current methodology is adequate to describe exposure through dermal exposure or inhalation. Dermal absorption and inhalation may be of particular concern for species that burrow, forage, or build nests on the ground surface. These pathways were not assessed; this may tend to underestimate the risk. However, potential COPECs at the Study Area tend to have lower bioavailability through the inhalation and dermal pathways due to molecule size (e.g., dioxins/furans and PCBs) and lack of lipophilicity (e.g., metals).

    Overall, food chain modeling tends to overestimate risks.

- When sufficient data are available to quantify exposure and effects estimates, the simplest approach for comparing estimates is the ratio approach (EPA, 1998). The HQ is being used throughout this SLERA to evaluate risk to target receptors and communities. The advantages to using this approach are: 1) it is quick and simple to use; 2) risk managers are familiar with its application; and 3) it provides an efficient means to identify high- or low- risk situations. There are however, a number of limitations associated with this approach that have been discussed by several authors (Smith and Cairns, 1993;

Suter II, 1993; Suter II et al., 2000) and include: 1) inability to provide incremental quantification of risk (e.g., an HQ of 10, does not necessarily mean 10X more risk than an HQ of 1; 2) not appropriate for evaluating secondary effects; and 3) the quotient approach does not explicitly consider uncertainty.

2.3.3.2.1 Guideline and Benchmarks Comparison – Soils

In addition to the overall uncertainties associated with screening benchmark comparisons discussed in the previous subsection, there are also uncertainties associated with specific soil benchmarks used in this SLERA. In order to place the final recommendations of this SLERA into a larger context, this discussion is limited to the organic chemicals with a detected concentration greater than its benchmarks and the inorganic analytes with detected concentrations that exceeded screening level benchmarks and were present in concentrations higher than expected levels of natural variability in background soils.

Acetone

- The sediment benchmark used to evaluate the potential for EFSA soils to be of concern to organisms in wetland areas was derived using the EqP method (Jones et al,. 1997). Acetone is a polar nonionic organic compound, for which the EqP method is likely to provide a conservative estimate of exposure. In addition, the TOC in the EFSA was greater than the 1% used to derive the benchmark, making the value even more conservative and likely to overestimate potential risk.

Polycyclic Aromatic Hydrocarbons (PAHs)

- The NOAEL-based wildlife benchmarks were the Eco SSLs for total high molecular weight PAHs (1.1 mg/kg) and total low molecular weight PAHs (100 mg/kg) are based on mammalian dietary exposure models. LOAEL-based values were calculated by EPA (2008) and were 70 mg/kg and 555 mg/kg for total HMW and total LMW PAHs, respectively. Refer to the discussion presented earlier in this subsection that describes the uncertainty associated with exposure model assumptions. In addition, given that the value for total high molecular weight PAHs is based on benzo(a)pyrene, which is one of the most toxic PAHs, the potential risk associated with other high molecular weight

PAHs using the benzo(a)pyrene benchmark as a surrogate may be overestimated. Avian-based Eco SSLs are not available for PAHs.

TEQs

- The wildlife benchmarks were the Efroymson et al. (1997a) NOAEL-based PRGs. Refer to the discussion presented earlier in this subsection that describes the uncertainty associated with exposure model assumptions.

PCBs

- The Efroymson et al. (1997a) mammal (0.037 mg/kg) NOAEL-based PRG for PCBs is based on a mammalian dietary exposure model. Refer to the discussion presented earlier in this subsection that describes the uncertainty associated with exposure model assumptions. The NOAEL-based PRG for birds (0.066 mg/kg) is almost twice that for mammals. Concentrations in the CHP and SFSA are such that risks would still be indicated if the avian value were used. However, no risk would be indicated in the EFSA.

Arsenic

- The EPA (1999) TRV for earthworms used in this SLERA is 0.25 mg/kg based on a chronic study in which reduced cocoon production in *E. foetida* was noted at the single dose tested of 25 mg/kg (an uncertainty factor of 100 was applied). Concentrations in the CHP and EFSA were similar to background. For the SFSA, even though the benchmark is conservative, 12 of 44 detected concentrations exceeded the testing dose, indicating that although the HQ may be an overestimate, toxicity from arsenic exposure is possible.

- The NOAEL-based wildlife benchmark was the Eco SSL for arsenic (43 mg/kg) and is based on avian dietary exposure models. Refer to the discussion presented earlier in this subsection that describes the uncertainty associated with exposure model assumptions. The Eco SSL value for birds is only slightly lower than that for mammals (46 mg/kg); therefore, uncertainties associated with the risks to mammals are expected to be similar. LOAEL-based values were calculated by EPA (2008) and were 94 mg/kg and 201 mg/kg for birds and mammals, respectively.

Barium

- The EPA (1999) TRV for plants used in this SLERA is 5 mg/kg based on a chronic study changes in barley shoot growth were noted at the lowest dose tested of 500 mg/kg (an uncertainty factor of 100 was applied). Even though the benchmark is conservative, concentrations in the SFSA and EFSA slightly exceeded the testing dose, indicating that the HQ may be an overestimate. The concentrations in the CHP are less than the tested dose; therefore, there is less certainty in ascribing risk to plants from barium concentrations in the CHP.

- The NOAEL-based wildlife benchmark was the Eco SSL for barium (2,000 mg/kg) based on mammalian dietary exposure models. A LOAEL-based value of 3,268 mg/kg was calculated by EPA (2008). Refer to the discussion presented earlier in this subsection that describes the uncertainty associated with exposure model assumptions. An avian-based Eco SSL is not available for barium.

Copper

- The NOAEL-based wildlife benchmarks were the Eco SSLs for copper (28 mg/kg and 49 mg/kg for birds and mammals, respectively) based on dietary exposure models. LOAEL-based values of 292 mg/kg and 726 mg/kg for birds and mammals, respectively, were calculated by EPA (2008). Refer to the discussion presented earlier in this subsection that describes the uncertainty associated with exposure model assumptions.

Lead

- The NOAEL-based wildlife benchmarks were the Eco SSLs for lead (11 mg/kg and 56 mg/kg for birds and mammals, respectively) based on dietary exposure models. LOAEL-based values of 366 mg/kg and 2,221 mg/kg for birds and mammals, respectively, were calculated by EPA (2008). Refer to the discussion presented earlier in this subsection that describes the uncertainty associated with exposure model assumptions.

Manganese

- The NOAEL-based wildlife benchmarks were the Eco SSLs (4,300 mg/kg and 4,000 mg/kg for birds and mammals, respectively) based on exposure models. LOAEL-based values of 9,091 mg/kg and 11,315 mg/kg for birds and mammals, respectively, were calculated by EPA (2008). Refer to the discussion presented earlier in this subsection that describes the uncertainty associated with exposure model assumptions.

Mercury

- The EPA (1999) TRV for plants used in this SLERA is 0.349 mg/kg based on an acute study NOEC for barley. The TRV was derived by applying an uncertainty factor of 100 to the calculated NOEC of 34.9 mg/kg. Concentrations of mercury in the CHP are greater than the NOEC; however, it is not known at what concentration acute effects would occur. In addition, chronic toxicity data were not available, which would show effects at concentrations lower than at the acute duration. The uncertainties surrounding the mercury phytotoxicity TRV are too great to determine whether risks are being under- or overestimated.

- The EPA (1999) TRV for soil invertebrates used in this SLERA is 2.5 mg/kg based on a chronic NOAEL for segment regeneration in *E. foetida*. An uncertainty factor of 10 was used to derive this NOAEL, as it is not known if segment regeneration is a sensitive endpoint. However, the study was conducted using methylmercury, which is expected to be more highly bioavailable/bioaccumulative than an inorganic or total form. The use of this benchmark likely overestimates risk to some degree.

Zinc

- The NOAEL-based wildlife benchmarks were the Eco SSLs (46 mg/kg and 79 mg/kg for birds and mammals, respectively) based on dietary exposure models. LOAEL-based values of 155 mg/kg and 312 mg/kg for birds and mammals, respectively, were calculated by EPA (2008). Refer to the discussion presented earlier in this subsection that describes the uncertainty associated with exposure model assumptions.

2.3.3.2.2 Guideline and Benchmarks Comparison – Sediments

In general, sediment benchmarks do not address possible synergistic, antagonistic, or additive effects of contaminant mixtures; do not consider unmeasured chemicals; and are not useful for chemicals for which little or no toxicological information is available (Geisy and Hoke, 1990).

The sediment benchmarks used in this evaluation were developed using the co-occurrence-based approach which involves compiling sets of sediment data that contain some information on sediment biological characteristics, such as laboratory measured toxicity or benthic organism assemblages and the total concentration of potential contaminants in the sediment. Several authors have provided detailed discussions of the limitations associated with the approach to assessing potential ecological effects associated with sediment contamination (Lee and Jones-Lee, 2002; O'Connor, 1999; O'Connor et al., 1998). The following list highlights the primary uncertainties identified with the sediment co-occurrence approach.

- Approach assumes there is always a causal relationship between the concentration of each contaminant in sediment and the ecological impact of that sediment.
- Presumes that the effect reported for each sediment evaluated was caused independently by each of the measured contaminants in the sediment.
- Assumes no other chemical or condition not included in the database has any influence on the effect(s) observed.
- Presumes that all effects information used to develop the benchmark is directly related to ecologically significant impacts to the benthic community.
- Does not consider bioaccumulation and food chain effects.

Specific uncertainties with each of the sediment benchmark values used in this SLERA are not discussed as the uncertainties with using one line of evidence, and assuming that the soil concentrations are indicative of wetland sediment concentrations likely outweigh the toxicity associated with the benchmarks. However, noteworthy information for COPECs for which potential community risk based solely on the HQs is indicated (i.e., for the purposes of this SLERA, NOAEL-based HQ >10) are discussed below.

The acetone benchmark is a value from Jones et al. (1997) that was derived using the EqP method based on a secondary chronic value. Sufficient data were not available to develop criteria; therefore, the water toxicity value upon which this is based has uncertainty surrounding it. In addition, Jones et al. note that acetone is a polar nonionic organic compound, for which the EqP model likely provides a conservative estimate of exposure. Therefore, potential risks from acetone are likely overestimated.

The endrin aldehyde and endrin ketone benchmarks used in this SLERA were the endrin TEC of 2.22E-03 mg/kg (MacDonald et al., 2000). The probable effect concentration (PEC) value for endrin is 0.207 mg/kg. Using the PEC value for the screening would indicate no risks to the benthic invertebrate population in the EFSA.

2.3.4 Overall Summary

The risk to the plant, soil invertebrate, bird, and mammal communities from exposure to contaminants in soil and sediment were evaluated using area-specific contaminant data from the CHP, the SFSA, and the EFSA.

As noted previously, this assessment is a screening-level ecological effects/risk characterization that evaluates if current levels of contamination in each of the principal habitats indicate:

1. little or no potential for adverse effects to ecological resources;
2. the potential for adverse effects to ecological resources; or
3. available data are inadequate to make a determination.

Risk summaries for each community evaluated per area are presented below, followed by a risk matrix summarizing the results from the Study Area. Note that metals only detected in soils at levels that were statistically greater ($\alpha = 0.05$) than background levels are discussed below (see Subsection 2.3.2 and Table 2-21.)

CELL HOUSE PROPERTY

The results of the SLERA for the CHP are presented for each of the ecological communities.

Plant Community

- The plant community of the CHP reflects a heavily disturbed habitat of poor soil conditions and poor habitat quality;

- Sample-specific evaluation indicates approximately 33% of mercury and HMW PAH sample locations have detected soil concentrations associated with potential toxicity (i.e., NOAEL-based HQ >10). The locations that could pose a risk to vegetation from mercury if the cap and overlying soils were removed are in the vicinity of MW-DUP02-0811-0920A, MW-25O1-0805-1415, MW-29O1-0811-0915, and SB-0201-0807-0830 and HMW PAH are in the vicinity of MW-25O1-0805-1415, MW-29O1-0811-0915, and MW-31O1-0811-15351535 (see Figure 2-8);

- The CHP soil samples were taken from below the cap. Due to the previous capping of the CHP, the exposure pathway is incomplete and purely hypothetical. There is little or no potential for adverse effects from CHP-related chemical exposure to the plant community of the CHP.

Soil Invertebrate Community

- The soil invertebrate community of the CHP reflects a heavily disturbed habitat of poor soil conditions and poor habitat quality;

- Sample-specific evaluation indicates approximately 25% of mercury sample locations have detected soil concentrations associated with potential toxicity (i.e., NOAEL-based HQ >10). The locations that may pose a risk to soil invertebrates from mercury if the cap and overlying soils were removed are in the vicinity of MW-25O01-0805-1415, MW29O1-0811-0915, and MW-DUP02-0811-0920A (see Figure 2-8);

- The CHP soil samples were taken from below the cap. Due to this previous capping of the CHP, the exposure pathway is incomplete and purely hypothetical. There is little or no potential for adverse effects from CHP-related chemical exposure to the soil invertebrate community of the CHP.

Wildlife Community

- Because of the poor habitat quality of the CHP, bird and mammal use of this area is expected to be limited in both frequency and duration. In addition, the condition of the habitat is expected to limit the variety of species of wildlife foraging on the CHP;

- Based on the average concentrations of CHP-related chemicals across the Study Area, birds and mammals preying on soil invertebrates and small mammals and birds, could be at significant ecological risk from exposure to dioxins/furans (as 2,3,7,8-TCDD TEQ), tPCBs, and dioxin-like congeners of PCBs if the cap and overlying soils were removed;

- In addition, birds foraging on invertebrates in the CHP could also be at risk from exposure to lead if the cap and overlying soils were removed; and

- The CHP soil samples were taken from below the cap. Due to this previous capping of the CHP, the exposure pathway is incomplete and purely hypothetical. In addition, previous remediation of the CHP has resulted in very poor habitat for wildlife use. Moreover, the limited size of the CHP also would be expected to limit the ecological significance of any actual chemical exposure to the wildlife community in and around the CHP. Therefore, little or no potential for adverse effects to bird and mammal populations from CHP-related toxicity are expected in the CHP.

SOUTHERN FACILITY STUDY AREA

The results of the SLERA for the SFSA are presented for each of the ecological communities.

Plant Community

- The plant community of the SFSA reflects a heavily disturbed habitat that is in the process of early successional recovery but which is still of marginal quality;

- Sample-specific evaluation indicates a few soil sample locations of copper (8%), lead (15%), and HMW PAH (23%) have detected concentrations associated with potential community effects (i.e., NOAEL-based HQ >10). Areas of higher concentrations of PAHs do not coincide with the areas of higher concentrations of metals. The locations where copper and lead exceeded the threshold are FSA-106, FSA-151 (lead only), FSA-168, FSA-171, FSA-SB-21O1, FSA-SB-26O1 (lead only), and FSA-SB11O1 (lead only). These locations, with the exception of FSA-SB-26O1, are concentrated in the southernmost portion of the SFSA. Locations with high PAH concentrations are FSA-MW-34O1, FSA-SB-17O1, FSA-SB-20O1, FSA-SB-26O1, FSA-SB-27O1, FSA-SB30O1, and FSA-SB-31O1 and are mostly on the western side of the SFSA and directly adjacent to rail lines;

- Due to the spatially limited (i.e., <25% of samples) and spatially isolated locations indicating potential phytotoxicity, as well as the low confidence in the available phytotoxicity benchmarks, it is suggested there is little or no potential for adverse effects to the plant community of the SFSA.

Soil Invertebrate Community

- The soil invertebrate community of the SFSA reflects a heavily disturbed habitat of poor soil conditions and marginal habitat quality;

- Although arsenic exceeds soil invertebrate toxicity thresholds (i.e., NOAEL-based HQ >10) in approximately 98% of the 45 soil sample locations in the SFSA, there is limited confidence in the invertebrate toxicity benchmark used in this analysis as it is 5 to 20 times lower than the arsenic levels found in regional background soils. In addition lead exceeded the toxicity threshold in only one of 48 (2%) of the samples;

- Based on the poor habitat quality, limited COPECs exceeding the toxicity threshold, and the uncertainties associated with the arsenic benchmark, there appears to be little or no potential for adverse effects to the soil invertebrate community of the SFSA.

Wildlife Community

- The habitat quality for bird and mammal use of the SFSA is fair and reflects the characteristics of early successional recovery of the SFSA;

- Chemicals that were detected in soils at concentrations shown to be potentially toxic to birds and mammals foraging on the SFSA include dioxin/furans (as 2,3,7,8-TCDD TEQ), tPCBs, and dioxin-like congeners of PCBs;

- Of the metals detected above background and exceeding avian and mammalian toxicity thresholds, only lead is present in soils of the SFSA at levels sufficiently high to pose ecologically significant risks to both avian and mammalian wildlife.

- There appears to be the potential for adverse effects to bird and mammal populations from SFSA-related COPECs in the SFSA.

EASTERN FACILITY STUDY AREA

Plant Community

- The plant community of the EFSA reflects a previously disturbed habitat that is in the process of early to later stage I recovery and is of fair to good habitat quality;

- Sample-specific evaluation indicates approximately 44% (4 of 9) of HMW PAH sample locations have detected soil concentrations associated with potential community effects (i.e., NOAEL-based HQ >10). The locations that may pose a risk to plants from HMW PAH are in the vicinity of FSA-SB-34O1, FSA-SB-38O1, FSA-SS-22, and FSA-SS-25 (see Figure 2-8);

- Based on the observations of the improving plant community, limited number of COPECs with concentrations exceeding the toxicity threshold (i.e., NOAEL-based HQ >10), it is suggested there is little or no potential for adverse effects to the plant community of the EFSA.

Soil Invertebrate Community

- The soil invertebrate community of the EFSA reflects a previously disturbed habitat of marginal soil conditions and fair to good habitat quality;

- Based on the limited soil invertebrate toxicity of site-related chemicals (i.e., no NOAEL-based HQs >10), there is little or no potential for adverse effects to the soil invertebrate community of the EFSA;

Wildlife Community

- The habitat quality for bird and mammal use of the EFSA is fair to good and reflects the characteristics of early to later-stage successional recovery of the EFSA;

- Chemicals that were detected in soils at levels greater than background and at concentrations shown to be potentially toxic to birds and mammals foraging on the EFSA include dioxin/furans (as 2,3,7,8-TCDD TEQ), dioxin-like congeners of PCBs, and HMW PAH;

- Exposure to dioxin/furans (as 2,3,7,8-TCDD) through dietary exposure represents the greatest risk to birds and mammals inhabiting the EFSA;

- There appears to be the potential for adverse effects to bird and mammal populations from EFSA-related toxicity in the EFSA.

Wetland Community

- As previously mentioned, there were no data available for sediments in the EFSA wetlands. In this assessment, it was assumed that contaminant concentrations in EFSA soils would serve as surrogate concentrations for those sediments. The use of soils data as a surrogate for the sediment concentrations in the wetland complex represents a speculative data gap. Moreover, this wetland is a manmade conveyance located in the middle of a highly disturbed, previously industrialized setting. The extent to which it functions as a viable wetland habitat is not known.

- Sample-specific evaluation indicates approximately one-half the soil samples had PAH concentrations 10-fold higher than the sediment benchmarks (i.e., locations FSA-SB-34O1, FSA-SB-35O1, FSA-SB-38O1, FAA-SS-22, and FSA-SS-25; see Figure 2-8);

- Sediment benchmarks for PAHs are exceeded in the soil samples that do not appear to be within the wetland boundaries. However, because of the uncertainties associated with extrapolating soil data to the wetlands areas, the available data are inadequate to make a determination of risk to benthic invertebrates in the EFSA.

FINAL RISK PRESENTATION

The CHP results indicated little or no potential for adverse effects based on soil exposures; whereas, potential for adverse effects to avian and mammalian receptors based on soil exposures were indicated for the SFSA and EFSA and the available data are inadequate to determine risk to benthic invertebrates in the EFSA. Results are summarized in the matrix below.

Area/Receptor Community	Risk Category/COPEC(s)		
	Little or No	Potential*	Undetermined
CHP			
Plant	X		
Soil Invertebrate	X		
Avian	X		
Mammalian	X		
SFSA			
Plant	X		
Soil Invertebrate	X		
Avian		2,3,7,8-TCDD TEQ, tPCB, dioxin-like PCB TEQ, lead	
Mammalian		2,3,7,8-TCDD TEQ, tPCB, dioxin-like PCB TEQ, lead	
EFSA			
Plant	X		
Soil Invertebrate	X		
Avian		2,3,7,8-TCDD TEQ, dioxin-like PCB TEQ, HMW PAHs	
Mammalian		2,3,7,8-TCDD TEQ, dioxin-like PCB TEQ, HMW PAHs	
Benthic Invertebrate			PAHs

Note:
*As noted previously, although TEQs and PCBs are identified as the principal contributors to potential impact to the wildlife community, this finding can be attributed largely to the high toxicity of these compounds, which yields a very low ecological screening value. As a case in point, all calculated background concentrations of 2,3,7,8-TCDD TEQ (avian and mammalian), dioxin-like PCB congener TEQs (mammalian) exceeded their respective benchmark. Dioxin-like PCB congener TEQs (avian) and tPCB concentrations in background exceeded their respective benchmark in 3 of 6 samples and 2 of 6 samples, respectively.

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TABLES

Table 2-1
List of Principal Plant Species during Habitat Survey
Chlor-Alkali (Former) Superfund Site
Berlin, New Hampshire

Cell House Property[a]	Southern Facility Study Area[b]	Eastern Facility Study Area[c]
Trees		
White Birch, *Betula papyrifera*	Black willow, *Salix nigricans*	Black willow, *Salix nigricans*
Red maple, *Acer rubrum*	Chokecherry, *Prunus virginiana*	Chokecherry, *Prunus virginiana*
Chokecherry, *Prunus virginiana*	Quaking aspen, *Populus tremuloides*	Quaking aspen, *Populus tremuloides*
	Red cedar, *Juniperis virginiana*	Red cedar, *Juniperis virginiana*
	Red maple, *Acer rubrum*	Red maple, *Acer rubrum*
	White birch, *Betula papyrifera*	White birch, *Betula papyrifera*
		Yellow birch, *Betula lutea*
Shrubs		
	Autumn olive, *Elaeagnus umbellata*	Autumn olive, *Elaeagnus umbellata*
	Blackberry, *Rubus fruticosus*	Blackberry, *Rubus fruticosus*
	Mapleleaf viburnum, *Viburnum acerifolium*	Mapleleaf viburnum, *Viburnum acerifolium*
	Poison ivy, *Toxicodendron radicans*	Poison ivy, *Toxicodendron radicans*
	Speckled alder, *Alnus rugosa*	Speckled alder, *Alnus rugosa*
	Staghorn sumac, *Rhus typhina*	Smooth sumac, *Rhus glabra*
	Red-osier dogwood, *Cornus stolonifera*	Staghorn sumac, *Rhus typhina*
		Nannyberry, *Viburnum lentago*
		Red-osier dogwood, *Cornus stolonifera*
Herbaceous Plants		
Rough stemmed goldenrod, *Solidago rugosa*	Aster spp., *Aster spp.*	Aster spp., *Aster spp.*
Canada goldenrod, *Solidago canadensis*	Black-eyed susan, *Rudbeckia hirta*	Black-eyed susan, *Rudbeckia hirta*
Common tansy, *Tanacetum vulgare*	Bull thistle, *Cirsium vulgare*	Bull thistle, *Cirsium vulgare*
Bull thistle, *Cirsium vulgare*	Butter and eggs, *Linaria vulgaris*	Butter and eggs, *Linaria vulgaris*
Poison ivy, *Toxicodendron radicans*	Canada goldenrod, *Solidago Canadensis*	Canada goldenrod, *Solidago Canadensis*
Mullein, *Verbascum thapsus*	Common tansy, *Tanacetum vulgare*	Common tansy, *Tanacetum vulgare*
Grasses (spp.), *Poacea*	Daisy fleabane, *Erigeron annuus*	Daisy fleabane, *Erigeron annuus*
	Mullein, *Verbascum thapsus*	Mullein, *Verbascum thapsus*
	Oxeye daisy, *Chrysanthemum leucanthemum*	Oxeye daisy, *Chrysanthemum leucanthemum*
	Red-top grass, *Agrostis alba*	Red-top grass, *Agrostis alba*
	Rough stemmed goldenrod, *Solidago rugosa*	Rough stemmed goldenrod, *Solidago rugosa*
	Soft rush, *Juncus effuses*	Soft rush, *Juncus effuses*

Notes:

[a] Habitat Survey conducted in September 2010
[b] Habitat Survey conducted in August 2010
[c] Habitat Survey conducted in August 2010 and November 2012

Table 2-2
List of Bird Species Observed during Habitat Survey (August 2010)
Chlor-Alkali (Former) Superfund Site
Berlin, New Hampshire

Cell House Property	Southern Facility Study Area	Eastern Facility Study Area
American crow, *Corvus brachyrhynchos*	American crow, *Corvus brachyrhynchos*	American black duck, *Anas rubripe*
American goldfinch, *Carduelis tristis*	American goldfinch, *Carduelis tristis*	American crow, *Corvus brachyrhynchos*
Black-capped chickadee, *Poecile atricapillus*	American robin, *Turdus migratorius*	American goldfinch, *Carduelis tristis*
Chipping sparrow, *Spizella passerine*	Black-capped chickadee, *Poecile atricapillus*	American robin, *Turdus migratorius*
Field sparrow, *Spizella pusilla*	Cedar waxwing, *Bombycilla cedrorum*	American woodcock, *Scolopax minor*
Mourning dove, *Zenaida macroura*	Field sparrow, *Spizella pusilla*	Black-capped chickadee, *Poecile atricapillus*
Turkey vulture, *Cathartes aura*	Northern flicker, *Colaptes auratus*	Blue jay, *Cyanocitta cristata*
	Red-winged blackbird, *Agelaius phoeniceus*	Brown headed cowbird, *Molothrus ater*
	Song sparrow, *Melospiza melodia*	Cedar waxwing, *Bombycilla cedrorum*
	Swamp sparrow, *Melospiza georgiana*	Chipping sparrow, *Spizella passerine*
	Tree swallow, *Tachycineta bicolor*	Downy woodpecker, *Picoides pubescens*
	Turkey vulture, *Cathartes aura*	Field sparrow, *Spizella pusilla*
	Yellow warbler, *Setophaga petechia*	Gray catbird, *Dumetella carolinensis*
		Mallard, *Anas platyrhynchos*
		Mourning dove, *Zenaida macroura*
		Northern flicker, *Colaptes·auratus*
		Song sparrow, *Melospiza melodia*
		Swamp sparrow, *Melospiza georgiana*
		Turkey vulture, *Cathartes aura*
		White-breasted nuthatch, *Sitta carolinensis*
		Yellow warbler, *Setophaga petechial*

Table 2-3
List of Mammal Species Observed[1] during Habitat Survey (August 2010)
Chlor-Alkali (Former) Superfund Site
Berlin, New Hampshire

Cell House Property	Southern Facility Study Area	Eastern Facility Study Area
Domestic dog, *Canis lupus familiaris*	Bat spp., *Vespertilionidae* spp.	Bat spp., *Vespertilionidae* spp.
Field Mouse spp., *Peromyscus spp.*	Deer mouse, *Peromyscus maniculatus*	Deer mouse, *Peromyscus maniculatus*
White-tailed deer, *Odocoileus virginianus*	Domestic dog, *Canis lupus familiaris*	Domestic dog, *Canis lupus familiaris*
Woodchuck, *Marmota monax*	Red fox, *Vulpes vulpes*	Grey squirrel, *Sciurus carolinensis*
	White-footed Mouse, *Peromyscus leucopus*	Red fox, *Vulpes vulpes*
	White-tailed deer, *Odocoileus virginianus*	White-footed Mouse, *Peromyscus leucopus*
	Woodchuck, *Marmota monax*	White-tailed deer, *Odocoileus virginianus*
		Woodchuck, *Marmota monax*

Note:

[1] includes mammal spoor (scat, tracks, burrows, trails)

Table 2-4
List of Observed Plant Species during Wetland Survey (November 2012)
Chlor-Alkali (Former) Superfund Site
Berlin, New Hampshire

Common Name	Species	Wetland Status
Wetlands		
Woolgrass sallow	*Scirpus cyperinus*	OBL
Sallow sedge	*Carex lurida*	OBL
Sedge, common	*Carex spp.*	FACW
Common rush	*Juncus effuses*	OBL
Knotty leaf rush	*Juncus acuminatus*	OBL
Path rush	*Juncus tenuis*	FAC
Broad leaf cattail	*Typha latifolia*	OBL
Common Reed	*Phragmites australis*	FACW
Canary grass meadow	*Phalaris arundinaceae*	FACW
Horsetail, common	*Equisetum pretense*	FACW
Tansy	*Tanacetum vulgare*	FACU
Red top grass	*Agrostis gigantea*	FACW
Rough stemmed goldenrod	*Solidago rugosa*	FAC
Associated Uplands		
Quaking Aspen	*Populus tremuloides*	FACU
White Birch	*Betula papyrifera*	FACU
Chokecherry	*Prunus virginiana*	FACU
Staghorn sumac	*Rhus typhina*	NL
Russian olive	*Elaeagnus angustifolia*	FACU
Poison ivy	*Toxicodendron radicans*	FAC
Japanese Honeysuckle	*Lonicera japonica*	FACU
Honeysuckle (tartarian)	*Lonicera tartarian*	FACU
Bull thistle	*Cirsium vulgare*	FACU
Blackberry	*Rubus allegheniensis*	FACU
Mullein	*Verbasca blattaria*	FACU

Table 2-5
List of Amphibians and Reptiles of the Upper Androscoggin River Valley
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

- Blue-spotted salamander (*Ambystoma laterale*)
- Northern dusky salamander (*Desmognathus fuscus*)
- Red-spotted newt (*Notophthalmus viridescens*)
- Northern redback salamander (*Plethodon cinereus*)
- Spotted salamander (*Ambystoma maculatum*)
- Northern spring salamander (*Gyrinophilus porphyriticus*)
- Northern two-lined salamander (*Eurycea bislineata*)
- Bullfrog (*Rana catesbeiana*)
- Green frog (*Rana clamitans*)
- Northern leopard frog (*Rana pipiens*)
- Pickerel frog (*Rana palustris*)
- Wood frog (*Rana sylvatica*)
- Spring peeper (*Pseudacris crucifer*)
- Gray treefrog (*Hyla versicolor*)
- American toad (*Bufo americanus*)
- Eastern painted turtle (*Chrysemys picta*)
- Common snapping turtle (*Chelydra serpentina*)
- Wood turtle (*Glyptemys insculpta*)
- Common garter snake (*Thamnophis sirtalis*)
- Ribbon snake (*Thamnophis sauritus*)
- Northern red-belly snake (*Storeria o. occipitomaculata*)
- Northern ringneck snake (*Diadophis p. edwardsii*)
- Eastern smooth green snake (*Opheodrys vernalis*)
- Eastern milk snake (*Lampropeltis t. triangulum*)

Source:

Degraff, R.F. and M. Yamasaki. *New England Wildlife: Habitat, Natural History, and Distribution* (2001).

Table 2-6
List of Endangered Species, Threatened Species,
Species of Special Concern and Natural Habitats, Coos County
Chlor-Alkali (Former) Superfund Site
Berlin, New Hampshire

Species	Status [1]	Notes
Invertebrate Species		
Taiga Bluet, *Coenagrion resolutum*	State Federal NA	Contact w/ the NH Fish & Game Dept requested
Natural Community		
Montane - subalpine Circumneutral cliff *	State - ENC Federal NA	The primary threat is from rock-climbing that disturbs or removes the vegetation on the cliff face
Sugar maple - silver maple - white ash floodplain forest	State - ENC Federal NA	Threats are primarily changes to the hydrology of the river, land conversion and fragmentation, introduction of invasive species, and increased input of nutrients and pollutants.
Plant species		
Fragrant wood fern, *Dryopteris fragrans**	State – threatened Federal NA	This species occurs on cliffs and ledges. Threats would primarily be recreational activities that could trample the plants or disturb their habitat.
Pink shinleaf, *Pyrola asarifolia*	State – Endangered Federal	Threats are primarily damage to its floodplain or riverbank habitat, including changes to local hydrology, land conversion and fragmentation, introduction of invasive
Purple virgin's-bower, *Clematis occidentalis**	State – Endangered Federal	The largest threat to this species is habitat loss.
Smooth cliff fern, *Woodsia glabella**	State – Endangered Federal	This species occurs on cliffs and ledges. Threats would primarily be recreational activities that could trample the plants or disturb their habitat
Vertebrate species		
Bald Eagle, *Haliaeetus leucocephalus*	State - Threatened	Contact w/ the NH Fish & Game Dept requested
Common Nighthawk, *Chordeiles minor**	State - Endangered	Contact w/ the NH Fish & Game Dept requested
Northern Harrier, *Circus cyaneus*	State - Endangered	Contact w/ the NH Fish & Game Dept requested
Osprey, *Pandion haliaetus*	State - SC	Contact w/ the NH Fish & Game Dept requested

Note:

[1] Codes: "ENC" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list; “SC” Special concern species; an asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Table 2-7
Summary of Chemicals Detected in Soil
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Area/Analyte	Units	FOD	Range of Detects	Maximum Detect Sample ID	Range of SQLs	Average	Standard Deviation
Cell House Property							
Volatile Organic Compounds							
1,1'-Biphenyl	mg/kg dw	1/9	1.00E-02 - 1.00E-02	MW-31O1-0811-1535	1.80E-01 - 2.20E-01	1.77E-01	6.35E-02
1,2,3-Trichlorobenzene	mg/kg dw	1/10	4.30E-03 - 4.30E-03	SB-01O1-0812-1215	4.30E-03 - 7.60E-03	5.64E-03	1.01E-03
1,2,4-Trichlorobenzene	mg/kg dw	1/10	3.70E-03 - 3.70E-03	SB-01O1-0812-1215	4.30E-03 - 7.60E-03	5.58E-03	1.11E-03
Acetone	mg/kg dw	8/10	3.90E-03 - 1.20E-01	SB-03O1-0813-0835	1.00E-02 - 1.40E-02	4.36E-02	4.43E-02
Benzaldehyde	mg/kg dw	1/9	1.50E-01 - 1.50E-01	SB-01O1-0812-1215	1.80E-01 - 2.20E-01	1.92E-01	1.94E-02
Chloroform	mg/kg dw	2/10	1.60E-02 - 2.60E-02	MW-31O1-0811-1535	4.30E-03 - 6.80E-03	8.67E-03	6.94E-03
Chloromethane	mg/kg dw	1/10	9.10E-03 - 9.10E-03	SB-06O1-0810-1520	4.30E-03 - 7.60E-03	6.04E-03	1.37E-03
Methyl Acetate	mg/kg dw	2/10	6.10E-03 - 1.00E-02	MW-29O1-0811-0915	4.30E-03 - 7.60E-03	6.06E-03	1.30E-03
Semivolatile Organic Compounds							
Butylbenzylphthalate	mg/kg dw	1/9	1.50E+00 - 1.50E+00	SB-01O1-0812-1215	1.80E-01 - 2.20E-01	3.42E-01	4.34E-01
Dibenzofuran	mg/kg dw	3/9	2.80E-02 - 1.10E-01	MW-24O1-0805-1300	1.90E-01 - 2.20E-01	1.55E-01	7.31E-02
Di-N-Butyl Phthalate	mg/kg dw	1/9	5.50E-01 - 5.50E-01	MW-31O1-0811-1535	1.80E-01 - 2.20E-01	2.37E-01	1.18E-01
Polycyclic Aromatic Hydrocarbons							
2-Methylnaphthalene	mg/kg dw	2/9	1.20E-02 - 4.60E-02	MW-31O1-0811-1535	1.90E-01 - 2.20E-01	1.62E-01	7.58E-02
Acenaphthene	mg/kg dw	5/9	3.90E-02 - 1.80E-01	MW-24O1-0805-1300	1.90E-01 - 2.20E-01	1.36E-01	7.74E-02
Acenaphthylene	mg/kg dw	4/9	3.10E-02 - 3.60E-01	MW-31O1-0811-1535	1.90E-01 - 2.20E-01	1.91E-01	9.75E-02
Anthracene	mg/kg dw	8/9	6.30E-02 - 4.10E-01	MW-24O1-0805-1300	1.90E-01 - 2.00E-01	2.35E-01	1.24E-01
Benzo(A)Anthracene	mg/kg dw	8/9	2.50E-01 - 2.40E+00	MW-29O1-0811-0915	1.90E-01 - 2.00E-01	1.16E+00	8.10E-01
Benzo(A)Pyrene	mg/kg dw	8/9	3.10E-01 - 2.30E+00	MW-29O1-0811-0915	1.90E-01 - 2.00E-01	1.07E+00	7.20E-01
Benzo(B)Fluoranthene	mg/kg dw	7/9	2.50E-01 - 2.50E+00	MW-31O1-0811-1535	1.90E-01 - 2.00E-01	1.04E+00	9.53E-01
Benzo(G,H,I)Perylene	mg/kg dw	8/9	4.30E-02 - 1.20E+00	MW-25O1-0805-1415 and MW-29O1-0811-0915	1.90E-01 - 1.90E-01	5.64E-01	4.37E-01
Benzo(K)Fluoranthene	mg/kg dw	7/9	2.60E-01 - 2.70E+00	MW-29O1-0811-0915	1.90E-01 - 2.00E-01	9.94E-01	8.39E-01
Carbazole	mg/kg dw	8/9	3.40E-02 - 1.70E-01	MW-24O1-0805-1300	1.90E-01 - 2.00E-01	1.01E-01	5.75E-02
Chrysene	mg/kg dw	8/9	3.30E-01 - 2.90E+00	MW-29O1-0811-0915 andMW-31O1-0811-1535	1.90E-01 - 2.00E-01	1.39E+00	1.03E+00
Dibenz(A,H)Anthracene	mg/kg dw	9/9	5.60E-02 - 5.80E-01	MW-31O1-0811-1535	1.90E-01 - 1.90E-01	2.81E-01	2.14E-01
Fluoranthene	mg/kg dw	8/9	3.20E-01 - 4.70E+00	MW-31O1-0811-1535	1.90E-01 - 1.90E-01	2.22E+00	1.84E+00
Fluorene	mg/kg dw	6/9	4.20E-02 - 1.60E-01	MW-24O1-0805-1300	1.90E-01 - 2.20E-01	1.31E-01	6.97E-02
Indeno(1,2,3-Cd)Pyrene	mg/kg dw	8/9	2.00E-01 - 1.20E+00	MW-25O1-0805-1415 and MW-29O1-0811-0915	1.90E-01 - 2.00E-01	6.19E-01	3.90E-01
Naphthalene	mg/kg dw	5/9	2.30E-02 - 1.00E-01	MW-24O1-0805-1300	1.90E-01 - 2.20E-01	1.17E-01	8.59E-02
Phenanthrene	mg/kg dw	9/9	3.30E-02 - 1.70E+00	MW-24O1-0805-1300	NA	8.08E-01	5.41E-01
Pyrene	mg/kg dw	8/9	2.50E-01 - 3.70E+00	MW-31O1-0811-1535	1.90E-01 - 1.90E-01	1.58E+00	1.29E+00

Area/Analyte	Units	FOD	Range of Detects	Maximum Detect Sample ID	Range of SQLs	Average	Standard Deviation
Polycyclic Aromatic Hydrocarbons (cont.)							
Dichloronaphthalene, Total	mg/kg dw	2/9	3.50E-02 - 4.10E-01	MW-25O1-0805-1415	8.50E-02 - 9.60E-01	3.79E-01	2.85E-01
Pentachloronaphthalene, Total	mg/kg dw	3/9	2.30E-01 - 9.30E-01	MW-25O1-0805-1415	8.50E-02 - 9.60E-01	4.08E-01	3.41E-01
Tetrachloronaphthalene, Total	mg/kg dw	3/9	2.90E-01 - 2.50E+00	MW-25O1-0805-1415	8.50E-02 - 9.60E-01	6.32E-01	7.54E-01
Trichloronaphthalene, Total	mg/kg dw	3/9	1.50E-01 - 7.60E-01	MW-25O1-0805-1415	8.50E-02 - 9.60E-01	3.66E-01	3.25E-01
Dioxin Congeners							
2,3,7,8-TCDD TEQ (bird)	mg/kg dw	9/9	3.89E-04 - 3.83E-01	MW-25O1-0805-1415	NA	4.59E-02	1.27E-01
2,3,7,8-TCDD TEQ (mammal)	mg/kg dw	9/9	8.46E-05 - 6.06E-02	MW-25O1-0805-1415	NA	7.38E-03	2.00E-02
PCB Homologues							
Total PCB Homologues	mg/kg dw	9/9	3.82E-02 - 1.84E+00	MW-31O1-0811-1535	NA	6.95E-01	5.83E-01
PCB Congeners							
PCB Dioxin-like Congener TEQ (bird)	mg/kg dw	9/9	3.97E-06 - 7.65E-05	MW-25O1-0805-1415	NA	3.85E-05	2.62E-05
PCB Dioxin-like Congener TEQ (mammal)	mg/kg dw	9/9	1.54E-06 - 2.82E-05	MW-31O1-0811-1535	NA	1.38E-05	8.40E-06
PEP Compounds							
Perchlorate (organic)	mg/kg dw	3/9	2.90E-04 - 1.00E-03	SB-04O1-0813-1120	5.30E-04 - 6.10E-04	5.79E-04	1.93E-04
Inorganics							
Aluminum	mg/kg dw	10/10	3.23E+03 - 6.47E+03	SB-06O1-0810-1520	NA	4.72E+03	1.08E+03
Antimony	mg/kg dw	6/10	1.40E+00 - 3.30E+00	MW-31O1-0811-1535	5.10E+00 - 6.30E+00	3.78E+00	1.94E+00
Arsenic	mg/kg dw	10/10	1.50E+00 - 8.28E+02	SB-02O1-0807-0830	NA	9.06E+01	2.59E+02
Barium	mg/kg dw	10/10	2.73E+01 - 2.54E+02	MW-25O1-0805-1415	NA	1.46E+02	8.42E+01
Beryllium	mg/kg dw	10/10	1.90E-01 - 4.80E-01	MW-25O1-0805-1415	NA	2.91E-01	7.94E-02
Cadmium	mg/kg dw	7/10	1.30E-01 - 1.30E+00	MW-31O1-0811-1535	4.90E-01 - 5.80E-01	6.68E-01	3.82E-01
Calcium	mg/kg dw	10/10	1.10E+03 - 2.67E+04	SB-02O1-0807-0830	NA	7.55E+03	8.80E+03
Chromium	mg/kg dw	10/10	5.90E+00 - 2.97E+01	MW-31O1-0811-1535	NA	1.10E+01	7.02E+00
Cobalt	mg/kg dw	10/10	4.30E+00 - 1.85E+01	MW-24O1-0805-1300	NA	8.60E+00	5.00E+00
Copper	mg/kg dw	10/10	1.55E+01 - 1.30E+02	MW-31O1-0811-1535	NA	6.85E+01	4.52E+01
Iron	mg/kg dw	10/10	8.46E+03 - 3.91E+04	MW-31O1-0811-1535	NA	1.63E+04	8.58E+03
Lead	mg/kg dw	10/10	2.13E+01 - 3.82E+02	MW-31O1-0811-1535	NA	1.16E+02	1.11E+02
Magnesium	mg/kg dw	10/10	1.13E+03 - 2.83E+03	SB-06O1-0810-1520	NA	1.79E+03	4.92E+02
Manganese	mg/kg dw	10/10	1.20E+02 - 2.71E+02	SB-03O1-0813-0835	NA	1.90E+02	5.07E+01
Mercury	mg/kg dw	10/10	7.10E-01 - 1.47E+02	MW-DUP02-0811-0920A	NA	3.05E+01	5.79E+01
Nickel	mg/kg dw	10/10	5.20E+00 - 7.59E+01	SB-05O1-0812-1105	NA	1.77E+01	2.10E+01
Potassium	mg/kg dw	10/10	6.10E+02 - 1.62E+03	SB-06O1-0810-1520	NA	9.27E+02	3.62E+02
Selenium	mg/kg dw	5/10	5.20E-01 - 2.10E+00	MW-24O1-0805-1300	3.00E+00 - 4.00E+00	2.33E+00	1.19E+00
Silver	mg/kg dw	4/10	1.10E-01 - 2.40E+00	MW-29O1-0811-0915	9.80E-01 - 1.20E+00	1.03E+00	5.89E-01
Sodium	mg/kg dw	8/8	1.37E+02 - 9.64E+02	MW-25O1-0805-1415	NA	3.93E+02	2.77E+02

Table 2-7
Summary of Chemicals Detected in Soil
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Area/Analyte	Units	FOD	Range of Detects	Maximum Detect Sample ID	Range of SQLs	Average	Standard Deviation
Inorganics (cont.)							
Vanadium	mg/kg dw	10/10	1.15E+01 - 2.09E+01	MW-DUP02-0811-0920A	NA	1.66E+01	2.98E+00
Zinc	mg/kg dw	10/10	3.08E+01 - 3.15E+02	SB-06O1-0810-1520	NA	1.49E+02	1.01E+02
Southern Facility Study Area							
Volatile Organic Compounds							
1,2-Dichlorobenzene	mg/kg dw	1/30	5.20E-03 - 5.20E-03	FSA-SB-10O1-0001-092110	4.70E-03 - 1.40E-02	7.06E-03	2.19E-03
1,4-Dichlorobenzene	mg/kg dw	1/30	4.90E-03 - 4.90E-03	FSA-SB-10O1-0001-092110	4.70E-03 - 1.40E-02	7.05E-03	2.20E-03
2-Butanone	mg/kg dw	2/31	1.50E-02 - 1.00E-01	FSA-SB-27O1-0001-091410	9.40E-03 - 2.90E-02	1.71E-02	1.60E-02
Acetone	mg/kg dw	8/31	6.00E-03 - 2.40E-01	FSA-SB-DUP03-0001-092210	9.40E-03 - 3.70E-02	3.86E-02	6.03E-02
Carbon Tetrachloride	mg/kg dw	1/31	4.70E-02 - 4.70E-02	FSA-SB-25O1-0001-091310	4.70E-03 - 1.40E-02	8.50E-03	7.46E-03
Chlorobenzene	mg/kg dw	1/31	1.30E-02 - 1.30E-02	FSA-SB-10O1-0001-092110	4.70E-03 - 1.40E-02	7.37E-03	2.39E-03
Chloroform	mg/kg dw	8/31	5.40E-03 - 2.80E-01	FSA-SB-25O1-0001-091310	4.70E-03 - 1.40E-02	1.82E-02	4.92E-02
m,p-Xylene	mg/kg dw	1/31	4.80E-03 - 4.80E-03	FSA-SB-40O1-0001-092110	4.70E-03 - 1.40E-02	7.06E-03	2.19E-03
Methyl Acetate	mg/kg dw	3/31	4.00E-03 - 2.80E-02	FSA-SB-18O1-0001-091610	4.70E-03 - 1.20E-02	7.50E-03	4.22E-03
Methylene Chloride	mg/kg dw	2/31	3.00E-03 - 5.90E-02	FSA-SB-31O1-0001-091510	4.70E-03 - 2.00E-02	1.01E-02	9.94E-03
Tetrachloroethene	mg/kg dw	2/31	4.60E-03 - 6.80E-03	FSA-SB-16O1-0001-092210	4.70E-03 - 1.40E-02	7.09E-03	2.20E-03
Toluene	mg/kg dw	8/31	2.40E-03 - 1.40E-02	FSA-MW-37O1-0001-092210	4.70E-03 - 2.60E-02	8.23E-03	4.54E-03
Semivolatile Organic Compounds							
2,4-Dimethylphenol	mg/kg dw	1/31	8.50E-02 - 8.50E-02	FSA-SB-20O1-0001-091510	1.80E-01 - 2.70E-01	2.01E-01	3.12E-02
Bis(2-Ethylhexyl)Phthalate	mg/kg dw	7/31	5.20E-02 - 2.60E+00	FSA-SB-27O1-0001-091410	1.80E-01 - 2.60E-01	3.56E-01	5.62E-01
Dibenzofuran	mg/kg dw	5/31	5.00E-02 - 6.00E-01	FSA-SB-26O1-0001-091410	1.80E-01 - 2.60E-01	2.12E-01	8.50E-02
Di-N-Butyl Phthalate	mg/kg dw	14/31	7.20E-02 - 3.90E-01	FSA-SB-17O1-0001-091710	1.80E-01 - 2.70E-01	1.74E-01	6.86E-02
Polycyclic Aromatic Hydrocarbons							
2-Methylnaphthalene	mg/kg dw	7/31	4.30E-02 - 4.40E-01	FSA-SB-26O1-0001-091410	1.80E-01 - 2.60E-01	2.00E-01	7.05E-02
Acenaphthene	mg/kg dw	6/31	4.90E-02 - 1.10E+00	FSA-SB-26O1-0001-091410	1.80E-01 - 2.60E-01	2.33E-01	1.80E-01
Acenaphthylene	mg/kg dw	10/31	9.50E-02 - 4.90E-01	FSA-SB-31O1-0001-091510	1.80E-01 - 2.60E-01	2.07E-01	7.68E-02
Anthracene	mg/kg dw	20/31	7.50E-02 - 2.20E+00	FSA-SB-26O1-0001-091410	1.80E-01 - 2.20E-01	3.01E-01	4.44E-01
Benzo(A)Anthracene	mg/kg dw	29/31	8.90E-02 - 5.00E+00	FSA-SB-26O1-0001-091410	1.90E-01 - 2.00E-01	1.00E+00	1.17E+00
Benzo(A)Pyrene	mg/kg dw	29/31	9.80E-02 - 4.30E+00	FSA-SB-26O1-0001-091410	1.90E-01 - 2.00E-01	9.86E-01	1.06E+00
Benzo(B)Fluoranthene	mg/kg dw	28/31	1.00E-01 - 4.50E+00	FSA-SB-26O1-0001-091410	1.90E-01 - 2.10E-01	1.01E+00	1.08E+00
Benzo(G,H,I)Perylene	mg/kg dw	29/31	8.30E-02 - 3.70E+00	FSA-SB-26O1-0001-091410	1.90E-01 - 2.10E-01	7.38E-01	9.19E-01

Table 2-7
Summary of Chemicals Detected in Soil
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Area/Analyte	Units	FOD	Range of Detects	Maximum Detect Sample ID	Range of SQLs	Average	Standard Deviation
Polycyclic Aromatic Hydrocarbons (cont.)							
Benzo(K)Fluoranthene	mg/kg dw	29/31	9.90E-02 - 3.50E+00	FSA-SB-26O1-0001-091410	1.90E-01 - 2.00E-01	8.64E-01	8.70E-01
Carbazole	mg/kg dw	11/31	5.40E-02 - 1.20E+00	FSA-SB-26O1-0001-091410	1.80E-01 - 2.60E-01	2.21E-01	2.05E-01
Chrysene	mg/kg dw	28/31	1.10E-01 - 4.50E+00	FSA-SB-17O1-0001-091710 and FSA-SB-26O1-0001-091410	1.90E-01 - 3.70E-01	1.07E+00	1.13E+00
Dibenz(A,H)Anthracene	mg/kg dw	19/31	1.00E-01 - 1.60E+00	FSA-SB-26O1-0001-091410	1.80E-01 - 2.60E-01	3.48E-01	3.51E-01
Fluoranthene	mg/kg dw	29/31	1.30E-01 - 9.90E+00	FSA-SB-26O1-0001-091410	1.90E-01 - 2.00E-01	1.68E+00	2.17E+00
Fluorene	mg/kg dw	5/31	8.60E-02 - 1.10E+00	FSA-SB-26O1-0001-091410	1.80E-01 - 2.60E-01	2.35E-01	1.75E-01
Indeno(1,2,3-Cd)Pyrene	mg/kg dw	28/31	8.70E-02 - 3.50E+00	FSA-SB-26O1-0001-091410	1.90E-01 - 2.10E-01	7.51E-01	8.66E-01
Naphthalene	mg/kg dw	6/31	5.60E-02 - 8.80E-01	FSA-SB-26O1-0001-091410	1.80E-01 - 2.60E-01	2.24E-01	1.32E-01
Phenanthrene	mg/kg dw	26/31	8.90E-02 - 7.70E+00	FSA-SB-26O1-0001-091410	1.90E-01 - 2.10E-01	8.58E-01	1.60E+00
Pyrene	mg/kg dw	29/31	1.30E-01 - 7.40E+00	FSA-SB-26O1-0001-091410	1.90E-01 - 2.00E-01	1.50E+00	1.80E+00
Dioxin Congeners							
2,3,7,8-TCDD TEQ (bird)	mg/kg dw	31/31	1.18E-06 - 1.80E-03	FSA-SB-31O1-0001-091510	NA	2.42E-04	4.52E-04
2,3,7,8-TCDD TEQ (mammal)	mg/kg dw	31/31	8.10E-07 - 4.69E-04	FSA-SB-31O1-0001-091510	NA	5.66E-05	1.05E-04
Pesticides							
4,4'-DDD	mg/kg dw	1/31	3.40E-02 - 3.40E-02	FSA-SS-03-091510	3.50E-03 - 5.20E-03	4.91E-03	5.41E-03
4,4'-DDT	mg/kg dw	8/31	3.60E-03 - 5.40E-02	FSA-SS-06-091510	3.50E-03 - 5.10E-03	7.77E-03	1.05E-02
Beta-BHC	mg/kg dw	1/31	3.00E-03 - 3.00E-03	FSA-SB-21O1-0001-092010	1.80E-03 - 2.70E-03	2.08E-03	2.82E-04
Dieldrin	mg/kg dw	4/31	7.10E-03 - 1.40E-02	FSA-SS-03-091510	3.60E-03 - 5.20E-03	4.67E-03	2.14E-03
Endosulfan II	mg/kg dw	2/31	1.50E-02 - 3.00E-02	FSA-SS-03-091510	3.50E-03 - 5.20E-03	5.13E-03	5.04E-03
Endrin	mg/kg dw	1/31	7.40E-03 - 7.40E-03	FSA-SB-13O1-0001-092210	3.50E-03 - 5.20E-03	4.08E-03	7.57E-04
Endrin Aldehyde	mg/kg dw	3/31	9.90E-03 - 5.00E-02	FSA-SS-03-091510	3.60E-03 - 5.20E-03	5.94E-03	8.41E-03
Endrin Ketone	mg/kg dw	1/31	5.30E-02 - 5.30E-02	FSA-SS-03-091510	3.50E-03 - 5.20E-03	5.53E-03	8.82E-03
Heptachlor Epoxide	mg/kg dw	1/31	4.50E-03 - 4.50E-03	FSA-SS-06-091510	1.80E-03 - 2.70E-03	2.12E-03	4.94E-04
PCB Homologues							
Total PCB Homologues	mg/kg dw	31/31	6.72E-04 - 4.80E+00	FSA-MW-35O1-0001-091710	NA	9.20E-01	1.34E+00
PCB Congeners							
PCB Dioxin-like Congener TEQ (bird)	mg/kg dw	31/31	3.19E-07 - 4.04E-04	FSA-SS-06-091510	NA	4.34E-05	7.88E-05
PCB Dioxin-like Congener TEQ (mammal)	mg/kg dw	31/31	1.87E-07 - 1.83E-04	FSA-SS-06-091510	NA	2.52E-05	4.21E-05
Inorganics							
Aluminum	mg/kg dw	45/45	8.43E+02 - 7.82E+03	FSA-MW-34O1-0001-091310	NA	4.54E+03	1.55E+03
Antimony	mg/kg dw	29/45	4.60E-01 - 5.80E+02	FSA-151-0001-0-081910	6.00E+00 - 7.80E+00	3.14E+01	1.02E+02
Arsenic	mg/kg dw	44/45	2.20E+00 - 2.81E+02	FSA-102-0001-0-081810	1.20E+00 - 1.20E+00	2.88E+01	5.08E+01
Barium	mg/kg dw	45/45	3.28E+01 - 1.44E+03	FSA-106-0001-0-081810	NA	1.81E+02	2.86E+02

Area/Analyte	Units	FOD	Range of Detects			Maximum Detect Sample ID	Range of SQLs			Average	Standard Deviation
Inorganics (cont.)											
Beryllium	mg/kg dw	36/45	7.80E-02	-	7.30E-01	FSA-SB-21O1-0001-092010	5.30E-01	-	6.70E-01	3.78E-01	1.76E-01
Cadmium	mg/kg dw	23/45	7.40E-02	-	4.20E+00	FSA-106-0001-0-081810	5.00E-01	-	2.40E+00	6.60E-01	6.82E-01
Calcium	mg/kg dw	45/45	3.38E+02	-	4.53E+03	FSA-SS-03-091510		NA		2.10E+03	8.67E+02
Chromium	mg/kg dw	45/45	3.90E+00	-	5.43E+01	FSA-106-0001-0-081810		NA		1.48E+01	1.18E+01
Cobalt	mg/kg dw	45/45	3.60E+00	-	2.97E+01	FSA-SB-21O1-0001-092010		NA		6.74E+00	4.15E+00
Copper	mg/kg dw	45/45	1.35E+01	-	1.89E+03	FSA-168-0001-0-082310		NA		1.92E+02	3.84E+02
Iron	mg/kg dw	45/45	4.33E+03	-	2.35E+05	FSA-171-0001-0-082310		NA		2.83E+04	4.15E+04
Lead	mg/kg dw	45/45	7.40E+00	-	2.44E+04	FSA-168-0001-0-082310		NA		1.07E+03	3.74E+03
Magnesium	mg/kg dw	45/45	1.88E+02	-	3.65E+03	FSA-151-0001-0-081910		NA		1.56E+03	9.05E+02
Manganese	mg/kg dw	45/45	5.98E+01	-	7.80E+02	FSA-SB-21O1-0001-092010		NA		2.86E+02	1.65E+02
Mercury	mg/kg dw	44/45	5.50E-02	-	1.25E+02	FSA-SB-DUP02-0001-092110	3.30E+00	-	3.30E+00	1.07E+01	2.61E+01
Nickel	mg/kg dw	45/45	4.10E+00	-	3.42E+02	FSA-075-0001-0-082510		NA		2.63E+01	5.15E+01
Potassium	mg/kg dw	45/45	2.60E+02	-	3.05E+03	FSA-151-0001-0-081910		NA		8.26E+02	5.27E+02
Selenium	mg/kg dw	41/45	1.80E-01	-	5.90E+00	FSA-SB-22O1-0001-091710	4.10E+00	-	4.70E+00	1.79E+00	1.58E+00
Silver	mg/kg dw	7/45	1.40E-01	-	5.50E+00	FSA-SB-DUP02-0001-092110	1.00E+00	-	1.40E+00	1.26E+00	6.90E-01
Sodium	mg/kg dw	33/43	3.37E+01	-	2.18E+02	FSA-SB-28O1-0001-091510	5.00E+02	-	5.97E+02	1.96E+02	1.85E+02
Vanadium	mg/kg dw	45/45	1.16E+01	-	7.27E+01	FSA-171-0001-0-082310		NA		2.28E+01	1.04E+01
Zinc	mg/kg dw	45/45	3.14E+01	-	8.39E+02	FSA-171-0001-0-082310		NA		1.52E+02	1.61E+02
Conventionals											
Total Organic Carbon	mg/kg dw	29/30	6.10E+03	-	5.50E+04	FSA-SB-26O1-0001-091410	5.00E+03	-	5.00E+03	2.50E+04	1.35E+04
Eastern Facility Study Area											
Volatile Organic Compounds											
2-Butanone	mg/kg dw	1/11	4.60E-02	-	4.60E-02	FSA-SS-18-091510	8.40E-03	-	2.20E-02	1.54E-02	1.10E-02
Acetone	mg/kg dw	3/11	1.10E-01	-	2.60E-01	FSA-SB-35O1-0001-091610	8.40E-03	-	2.20E-02	5.32E-02	8.01E-02
Bromomethane	mg/kg dw	1/11	3.70E-03	-	3.70E-03	FSA-SB-34O1-0001-091610	4.20E-03	-	1.50E-02	6.65E-03	3.56E-03
Chloromethane	mg/kg dw	1/11	1.30E-02	-	1.30E-02	FSA-SS-18-091510	4.20E-03	-	1.10E-02	6.81E-03	2.98E-03
Methyl Acetate	mg/kg dw	3/11	7.10E-03	-	4.80E-02	FSA-SB-38O1-0001-091610	4.20E-03	-	1.50E-02	1.07E-02	1.28E-02
Methylene Chloride	mg/kg dw	2/11	7.60E-03	-	1.40E-02	FSA-SS-18-091510	4.20E-03	-	1.30E-02	7.33E-03	3.56E-03
Toluene	mg/kg dw	1/11	2.90E-02	-	2.90E-02	FSA-SS-18-091510	4.20E-03	-	1.10E-02	8.56E-03	7.10E-03
Semivolatile Organic Compounds											
Bis(2-Ethylhexyl)Phthalate	mg/kg dw	2/11	9.90E-02	-	1.40E-01	FSA-SS-18-091510	1.80E-01	-	6.50E+00	9.50E-01	1.93E+00
Dibenzofuran	mg/kg dw	1/11	3.10E-01	-	3.10E-01	FSA-SB-38O1-0001-091610	1.80E-01	-	6.50E+00	9.95E-01	1.91E+00
Di-N-Butyl Phthalate	mg/kg dw	3/11	7.70E-02	-	9.90E-02	FSA-SB-36O1-0001-091610	1.80E-01	-	6.50E+00	9.56E-01	1.93E+00
N-Nitrosodiphenylamine	mg/kg dw	1/11	7.60E-02	-	7.60E-02	FSA-SB-38O1-0001-091610	1.80E-01	-	6.50E+00	9.74E-01	1.92E+00

Table 2-7
Summary of Chemicals Detected in Soil
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Area/Analyte	Units	FOD	Range of Detects	Maximum Detect Sample ID	Range of SQLs	Average	Standard Deviation
Polycyclic Aromatic Hydrocarbons							
2-Methylnaphthalene	mg/kg dw	1/11	4.90E-01 - 4.90E-01	FSA-SB-38O1-0001-091610	1.80E-01 - 6.50E+00	1.01E+00	1.91E+00
Acenaphthene	mg/kg dw	2/11	2.50E-01 - 3.00E+00	FSA-SS-DUP01-091510	1.80E-01 - 2.30E+00	6.53E-01	9.34E-01
Acenaphthylene	mg/kg dw	3/11	3.70E-01 - 1.50E+00	FSA-SB-38O1-0001-091610	1.80E-01 - 6.50E+00	1.15E+00	1.88E+00
Anthracene	mg/kg dw	5/11	2.20E-01 - 8.90E+00	FSA-SS-25-091510	1.80E-01 - 4.00E-01	1.08E+00	2.43E+00
Benzo(A)Anthracene	mg/kg dw	8/11	3.70E-02 - 3.70E+01	FSA-SS-25-091510	1.80E-01 - 1.90E-01	3.89E+00	1.02E+01
Benzo(A)Pyrene	mg/kg dw	8/11	4.80E-02 - 2.70E+01	FSA-SS-25-091510	1.80E-01 - 1.90E-01	3.03E+00	7.34E+00
Benzo(B)Fluoranthene	mg/kg dw	8/11	5.60E-02 - 2.30E+01	FSA-SS-25-091510	1.80E-01 - 1.90E-01	2.79E+00	6.59E+00
Benzo(G,H,I)Perylene	mg/kg dw	8/11	1.20E-01 - 1.60E+01	FSA-SS-25-091510	1.80E-01 - 1.90E-01	1.92E+00	4.39E+00
Benzo(K)Fluoranthene	mg/kg dw	8/11	4.00E-02 - 2.50E+01	FSA-SS-25-091510	1.80E-01 - 1.90E-01	2.88E+00	7.37E+00
Carbazole	mg/kg dw	2/11	4.90E-01 - 1.70E+00	FSA-SS-25-091510	1.80E-01 - 6.50E+00	5.80E-01	7.23E-01
Chrysene	mg/kg dw	8/11	4.80E-02 - 3.60E+01	FSA-SS-25-091510	1.80E-01 - 1.90E-01	3.93E+00	9.86E+00
Dibenz(A,H)Anthracene	mg/kg dw	3/11	2.00E-01 - 4.90E+00	FSA-SS-DUP01-091510	1.80E-01 - 4.00E-01	6.62E-01	1.39E+00
Fluoranthene	mg/kg dw	10/11	7.50E-02 - 4.70E+01	FSA-SS-25-091510	1.80E-01 - 1.90E-01	4.90E+00	1.21E+01
Fluorene	mg/kg dw	3/11	1.10E-01 - 2.20E+00	FSA-SS-25-091510	1.80E-01 - 4.00E-01	4.63E-01	5.79E-01
Indeno(1,2,3-Cd)Pyrene	mg/kg dw	8/11	7.00E-02 - 2.50E+01	FSA-SS-25-091510	1.80E-01 - 1.90E-01	2.67E+00	6.62E+00
Naphthalene	mg/kg dw	1/11	4.20E-01 - 4.20E-01	FSA-SB-38O1-0001-091610	1.80E-01 - 6.50E+00	1.01E+00	1.91E+00
Phenanthrene	mg/kg dw	7/11	4.20E-02 - 3.50E+01	FSA-SS-25-091510	1.80E-01 - 4.00E-01	3.71E+00	9.94E+00
Pyrene	mg/kg dw	9/11	8.30E-02 - 5.80E+01	FSA-SS-DUP01-091510	1.80E-01 - 1.90E-01	6.50E+00	1.70E+01
Dioxin Congeners							
2,3,7,8-TCDD TEQ (bird)	mg/kg dw	11/11	1.17E-06 - 1.29E-02	FSA-SB-34O1-0001-091610	NA	1.77E-03	4.05E-03
2,3,7,8-TCDD TEQ (mammal)	mg/kg dw	11/11	4.86E-07 - 2.72E-03	FSA-SB-34O1-0001-091610	NA	3.87E-04	8.60E-04
Pesticides							
4,4'-DDD	mg/kg dw	1/11	3.70E-02 - 4.80E-02	FSA-SS-DUP01-091510	3.40E-03 - 7.70E-03	7.88E-03	1.16E-02
4,4'-DDT	mg/kg dw	1/11	5.60E-03 - 5.60E-03	FSA-SB-37O1-0001-091510	3.40E-03 - 7.70E-03	4.59E-03	1.41E-03
Alpha-BHC	mg/kg dw	1/11	4.10E-03 - 5.90E-03	FSA-SS-DUP01-091510	1.80E-03 - 4.00E-03	2.55E-03	1.09E-03
Beta-BHC	mg/kg dw	1/11	4.70E-03 - 4.70E-03	FSA-SB-34O1-0001-091610	1.80E-03 - 4.00E-03	2.53E-03	1.02E-03
Endrin Aldehyde	mg/kg dw	1/11	4.90E-02 - 4.90E-02	FSA-SS-DUP01-091510	3.40E-03 - 7.70E-03	8.47E-03	1.35E-02
Endrin Ketone	mg/kg dw	1/11	5.50E-02 - 5.50E-02	FSA-SS-DUP01-091510	3.40E-03 - 7.70E-03	9.02E-03	1.53E-02
Heptachlor	mg/kg dw	1/11	1.80E-02 - 1.90E-02	FSA-SS-DUP01-091510	1.80E-03 - 4.00E-03	3.78E-03	4.94E-03
PCB Homologues							
Total PCB Homologues	mg/kg dw	11/11	9.97E-05 - 8.87E-02	FSA-SS-25-091510	NA	3.14E-02	2.99E-02
PCB Congeners							
PCB Dioxin-like Congener TEQ (bird)	mg/kg dw	11/11	2.70E-07 - 3.71E-05	FSA-SB-35O1-0001-091610	NA	5.78E-06	1.10E-05
PCB Dioxin-like Congener TEQ (mammal)	mg/kg dw	11/11	1.45E-07 - 2.02E-05	FSA-SB-35O1-0001-091610	NA	2.74E-06	5.84E-06

Table 2-7
Summary of Chemicals Detected in Soil
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Area/Analyte	Units	FOD	Range of Detects	Maximum Detect Sample ID	Range of SQLs	Average	Standard Deviation
Inorganics							
Aluminum	mg/kg dw	12/12	1.31E+03 - 1.08E+04	FSA-SB-36O1-0001-091610	NA	5.49E+03	2.86E+03
Antimony	mg/kg dw	7/12	4.50E-01 - 1.65E+01	FSA-SS-25-091510	6.00E+00 - 1.33E+01	5.23E+00	5.34E+00
Arsenic	mg/kg dw	12/12	1.80E+00 - 3.87E+01	FSA-SB-35O1-0001-091610	NA	1.00E+01	1.16E+01
Barium	mg/kg dw	12/12	4.04E+01 - 7.24E+02	FSA-SB-34O1-0001-091610	NA	1.52E+02	1.94E+02
Beryllium	mg/kg dw	8/12	2.00E-01 - 4.20E-01	FSA-SB-36O1-0001-091610	5.00E-01 - 5.70E-01	3.65E-01	1.27E-01
Cadmium	mg/kg dw	8/12	1.50E-01 - 1.10E+00	FSA-SS-25-091510	5.00E-01 - 5.00E-01	4.71E-01	2.19E-01
Calcium	mg/kg dw	12/12	1.28E+03 - 8.63E+03	FSA-SS-18-091510	NA	3.12E+03	2.07E+03
Chromium	mg/kg dw	12/12	6.70E+00 - 2.02E+01	FSA-SB-35O1-0001-091610	NA	1.03E+01	3.70E+00
Cobalt	mg/kg dw	12/12	3.70E+00 - 8.50E+00	FSA-SB-36O1-0001-091610	NA	5.86E+00	1.56E+00
Copper	mg/kg dw	12/12	1.46E+01 - 1.94E+02	FSA-SS-25-091510	NA	5.37E+01	4.69E+01
Iron	mg/kg dw	12/12	7.05E+03 - 1.86E+04	FSA-SB-35O1-0001-091610	NA	1.16E+04	3.66E+03
Lead	mg/kg dw	12/12	1.01E+01 - 1.18E+03	FSA-SS-25-091510	NA	1.37E+02	3.31E+02
Magnesium	mg/kg dw	12/12	1.81E+02 - 4.30E+03	FSA-SB-36O1-0001-091610	NA	2.11E+03	1.26E+03
Manganese	mg/kg dw	12/12	1.07E+02 - 7.16E+02	FSA-SS-18-091510	NA	2.94E+02	1.51E+02
Mercury	mg/kg dw	10/12	7.50E-02 - 3.44E+01	FSA-137-0001-0-082610	1.10E-01 - 1.20E-01	6.76E+00	1.14E+01
Nickel	mg/kg dw	12/12	4.80E+00 - 2.85E+01	FSA-SB-37O1-0001-091510	NA	1.29E+01	6.89E+00
Potassium	mg/kg dw	12/12	2.87E+02 - 2.30E+03	FSA-SB-36O1-0001-091610	NA	1.02E+03	6.08E+02
Selenium	mg/kg dw	8/12	4.90E-01 - 2.10E+00	FSA-SB-23O1-0001-091610	3.80E+00 - 4.30E+00	2.06E+00	1.52E+00
Silver	mg/kg dw	1/12	1.20E+00 - 1.20E+00	FSA-137-0001-0-082610	1.10E+00 - 2.20E+00	1.31E+00	3.18E-01
Inorganics (cont.)							
Sodium	mg/kg dw	12/12	1.83E+01 - 1.27E+02	FSA-SB-36O1-0001-091610	NA	6.37E+01	3.32E+01
Vanadium	mg/kg dw	12/12	1.28E+01 - 3.08E+01	FSA-SB-36O1-0001-091610	NA	2.00E+01	5.59E+00
Zinc	mg/kg dw	12/12	2.89E+01 - 4.87E+02	FSA-SS-25-091510	NA	1.02E+02	1.06E+02
Conventionals							
Total Organic Carbon	mg/kg dw	11/11	1.20E+03 - 6.50E+04	FSA-SB-35O1-0001-091610	NA	2.90E+04	2.13E+04
Background							
Volatile Organic Compounds							
1,2,4-Trichlorobenzene	mg/kg dw	1/5	1.10E-02 - 1.10E-02	SS-BS-DUP01-0006-100611	6.40E-03 - 9.10E-03	8.32E-03	1.90E-03
Acetone	mg/kg dw	3/6	1.90E-02 - 4.00E-02	SS-BS-HF02A-0006-100611	1.30E-02 - 1.80E-02	2.24E-02	9.08E-03
Benzaldehyde	mg/kg dw	2/6	4.30E-02 - 2.50E-01	SS-BS-DUP01-0006-100611	2.00E-01 - 3.50E-01	2.36E-01	1.06E-01
Bromomethane	mg/kg dw	1/6	3.60E-03 - 3.60E-03	SS-BS-HF02A-0006-100611	6.40E-03 - 1.10E-02	7.53E-03	2.57E-03
Chloromethane	mg/kg dw	1/6	3.60E-03 - 3.60E-03	SS-BS-HF02A-0006-100611	6.40E-03 - 1.10E-02	7.53E-03	2.57E-03
Methylene Chloride	mg/kg dw	1/6	1.90E-03 - 1.90E-03	SS-BS-DUP01-0006-100611	6.40E-03 - 1.10E-02	7.25E-03	3.12E-03
Trichloroethene	mg/kg dw	1/6	1.60E-03 - 1.60E-03	SS-BS-DUP01-0006-100611	6.40E-03 - 1.10E-02	7.20E-03	3.23E-03

Area/Analyte	Units	FOD	Range of Detects	Maximum Detect Sample ID	Range of SQLs	Average	Standard Deviation
Semivolatile Organic Compounds							
Bis(2-Ethylhexyl)Phthalate	mg/kg dw	5/6	2.70E-02 - 5.60E-02	SS-BS-HF01A-0006-100611	2.50E-01 - 3.50E-01	9.42E-02	1.26E-01
Di-N-Butyl Phthalate	mg/kg dw	4/6	3.70E-02 - 5.30E-02	SS-BS-DUP01-0006-100611	2.00E-01 - 3.50E-01	1.21E-01	1.28E-01
Phenol	mg/kg dw	1/6	2.60E-01 - 2.60E-01	SS-BS-HF02A-0006-100611	2.00E-01 - 3.50E-01	2.65E-01	5.54E-02
Polycyclic Aromatic Hydrocarbons							
Acenaphthylene	mg/kg dw	1/6	4.90E-02 - 6.10E-02	SS-BS-DUP01-0006-100611	2.00E-01 - 3.50E-01	2.31E-01	1.02E-01
Anthracene	mg/kg dw	1/6	5.10E-02 - 9.30E-02	SS-BS-DUP01-0006-100611	2.00E-01 - 3.50E-01	2.37E-01	8.97E-02
Benzo(A)Anthracene	mg/kg dw	6/6	1.10E-01 - 9.00E-01	SS-BS-DUP01-0006-100611	NA	3.31E-01	2.65E-01
Benzo(A)Pyrene	mg/kg dw	6/6	9.30E-02 - 7.00E-01	SS-BS-DUP01-0006-100611	NA	2.68E-01	1.99E-01
Benzo(B)Fluoranthene	mg/kg dw	6/6	9.10E-02 - 8.30E-01	SS-BS-DUP01-0006-100611	NA	3.24E-01	2.45E-01
Benzo(G,H,I)Perylene	mg/kg dw	6/6	6.40E-02 - 5.00E-01	SS-BS-DUP01-0006-100611	NA	1.91E-01	1.39E-01
Benzo(K)Fluoranthene	mg/kg dw	6/6	9.80E-02 - 6.10E-01	SS-BS-DUP01-0006-100611	NA	2.35E-01	1.67E-01
Carbazole	mg/kg dw	1/6	6.60E-02 - 8.10E-02	SS-BS-DUP01-0006-100611	2.00E-01 - 3.50E-01	2.34E-01	9.61E-02
Chrysene	mg/kg dw	6/6	1.40E-01 - 8.60E-01	SS-BS-DUP01-0006-100611	NA	3.49E-01	2.51E-01
Dibenz(A,H)Anthracene	mg/kg dw	3/6	7.40E-02 - 1.50E-01	SS-BS-DUP01-0006-100611	2.00E-01 - 2.90E-01	1.74E-01	7.61E-02
Fluoranthene	mg/kg dw	6/6	2.00E-01 - 1.80E+00	SS-BS-DUP01-0006-100611	NA	6.15E-01	5.34E-01
Indeno(1,2,3-Cd)Pyrene	mg/kg dw	6/6	9.20E-02 - 8.10E-01	SS-BS-DUP01-0006-100611	NA	3.04E-01	2.34E-01
Phenanthrene	mg/kg dw	6/6	7.90E-02 - 6.20E-01	SS-BS-DUP01-0006-100611	NA	2.49E-01	2.07E-01
Pyrene	mg/kg dw	6/6	2.00E-01 - 1.60E+00	SS-BS-DUP01-0006-100611	NA	5.47E-01	4.60E-01
Dioxin Congeners							
2,3,7,8-TCDD TEQ (bird)	mg/kg dw	6/6	2.95E-06 - 7.55E-06	SS-BS-HP03A-0006-100611	NA	4.66E-06	1.65E-06
2,3,7,8-TCDD TEQ (mammal)	mg/kg dw	6/6	7.32E-07 - 2.02E-06	SS-BS-HF03A-0006-100611	NA	1.29E-06	4.72E-07
Pesticides							
Gamma-Chlordane	mg/kg dw	3/6	2.40E-03 - 3.60E-03	SS-BS-HF02A-0006-100611	2.00E-03 - 2.90E-03	2.53E-03	5.12E-04
PCB Homologues							
Total PCB Homologues	mg/kg dw	6/6	5.22E-03 - 1.68E-02	SS-BS-HP03A-0006-100611	NA	9.84E-03	3.92E-03
PCB Congeners							
PCB Dioxin-like Congener TEQ (bird)	mg/kg dw	6/6	7.36E-07 - 2.24E-06	SS-BS-HP03A-0006-100611	NA	1.56E-06	5.72E-07
PCB Dioxin-like Congener TEQ (mammal)	mg/kg dw	6/6	3.20E-07 - 8.23E-07	SS-BS-HP03A-0006-100611	NA	5.71E-07	1.73E-07
Inorganics							
Aluminum	mg/kg dw	6/6	4.22E+03 - 1.63E+04	SS-BS-HF02A-0006-100611	NA	8.45E+03	4.22E+03
Arsenic	mg/kg dw	6/6	1.30E+00 - 4.90E+00	SS-BS-HP02A-0006-100611	NA	3.34E+00	1.47E+00
Barium	mg/kg dw	6/6	2.44E+01 - 4.19E+01	SS-BS-HP02A-0006-100611	NA	3.17E+01	5.91E+00
Beryllium	mg/kg dw	5/6	2.00E-01 - 6.80E-01	SS-BS-HP02A-0006-100611	6.60E-01 - 6.60E-01	4.28E-01	2.17E-01
Cadmium	mg/kg dw	1/6	4.90E-01 - 4.90E-01	SS-BS-HP01A-0006-100611	5.90E-01 - 9.50E-01	6.77E-01	1.62E-01
Calcium	mg/kg dw	6/6	2.72E+02 - 1.83E+03	SS-BS-HP01A-0006-100611	NA	8.72E+02	5.18E+02

Area/Analyte	Units	FOD	Range of Detects	Maximum Detect Sample ID	Range of SQLs	Average	Standard Deviation
Chromium	mg/kg dw	6/6	7.20E+00 - 1.77E+01	SS-BS-DUP01-0006-100611	NA	1.15E+01	3.74E+00
Inorganics (cont.)							
Cobalt	mg/kg dw	5/6	2.50E+00 - 3.60E+00	SS-BS-HF01A-0006-100611	6.60E+00 - 6.60E+00	3.63E+00	1.52E+00
Copper	mg/kg dw	6/6	9.00E+00 - 2.34E+01	SS-BS-HF02A-0006-100611	NA	1.31E+01	5.71E+00
Iron	mg/kg dw	6/6	5.21E+03 - 1.99E+04	SS-BS-HF02A-0006-100611	NA	1.14E+04	4.09E+03
Lead	mg/kg dw	6/6	2.00E+01 - 8.22E+01	SS-BS-HP02A-0006-100611	NA	3.57E+01	2.38E+01
Magnesium	mg/kg dw	6/6	4.57E+02 - 1.38E+03	SS-BS-HP02A-0006-100611	NA	9.23E+02	3.46E+02
Manganese	mg/kg dw	6/6	4.76E+01 - 1.44E+02	SS-BS-HP01A-0006-100611	NA	1.06E+02	4.06E+01
Mercury	mg/kg dw	6/6	6.80E-02 - 3.70E-01	SS-BS-HF02A-0006-100611	NA	1.61E-01	1.10E-01
Nickel	mg/kg dw	6/6	4.50E+00 - 1.07E+01	SS-BS-HP02A-0006-100611	NA	6.64E+00	2.08E+00
Potassium	mg/kg dw	6/6	2.79E+02 - 7.41E+02	SS-BS-HP02A-0006-100611	7.75E+02 - 7.75E+02	3.88E+02	1.83E+02
Vanadium	mg/kg dw	6/6	2.01E+01 - 5.27E+01	SS-BS-HP02A-0006-100611	NA	3.51E+01	1.26E+01
Zinc	mg/kg dw	6/6	2.33E+01 - 5.14E+01	SS-BS-HP02A-0006-100611	NA	3.44E+01	1.14E+01
Conventionals							
Total Organic Carbon	mg/kg dw	6/6	2.40E+04 - 5.50E+04	SS-BS-HP02A-0006-100611	NA	3.92E+04	1.50E+04

Notes:

FOD = Frequency of detection. Number of sampling locations at which chemical was deteted compared with total number of sampling locations; duplicates at a location were considered one sample.
mg/kg dw = Milligrams per kilogram dry weight.
NA = Not applicable.
SQL = Sample quantitation limit. Range from samples with non-detects.

Table 2-8
Summary of Mercury Detected in Earthworms
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Area	Units	FOD	Range of Detects			Maximum Detect Sample ID	Range of SQLs	Average	Standard Deviation
Cell House Property	µg/kg ww	2/2	2.29E+01	-	3.33E+01	CHSI-13-080310	NA	2.81E+01	7.34E+00
Southern Facility Study Area	µg/kg ww	4/4	1.33E+02	-	5.79E+02	FSASI-06-080410	NA	2.75E+02	2.09E+02
Eastern Facility Study Area	µg/kg ww	16/16	2.89E+01	-	1.33E+03	FSASI-25-080510	NA	2.50E+02	3.95E+02

Notes:

FOD = Frequency of detection. Number of sampling locations at which chemical was deteted compared with total number of sampling locations; duplicates at a location were considered one sample.
µg/kg ww = Milligrams per kilogram wet weight.
NA = Not applicable.
SQL = Sample quantitation limit. Range from samples with non-detects.

Table 2-9
COPEC Screening - Soil
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Analyte	FOD	Range of Detects (mg/kg dw)	Range of SQLs (mg/kg dw)	Range of Detects - Background (mg/kg dw)	Benchmark (mg/kg dw)	Basis	Source	Ratio	Soil COPEC?	Comment
Volatile Organic Compounds										
1,1'-Biphenyl	1/51	1.00E-02 - 1.00E-02	1.80E-01 - 6.50E+00	NA	60	Plant	Efroymson et al., 1997b	1.67E-04	No	LTB
1,2,3-Trichlorobenzene	1/51	4.30E-03 - 4.30E-03	4.20E-03 - 1.50E-02	NA	20	Earthworm or Microbial	Efroymson et al., 1997c	2.15E-04	No	LTB
1,2,4-Trichlorobenzene	1/51	3.70E-03 - 3.70E-03	4.20E-03 - 1.50E-02	1.10E-02 - 1.10E-02	20	Earthworm or Microbial	Efroymson et al., 1997c	1.85E-04	No	LTB
1,2-Dichlorobenzene	1/51	5.20E-03 - 5.20E-03	4.20E-03 - 1.50E-02	NA	2.96	Masked shrew value	EPA Region V, 2003	1.76E-03	No	LTB
1,4-Dichlorobenzene	1/51	4.90E-03 - 4.90E-03	4.20E-03 - 1.50E-02	NA	20	Earthworm or Microbial	Efroymson et al., 1997c	2.45E-04	No	LTB
2-Butanone	3/52	1.50E-02 - 1.00E-01	8.40E-03 - 2.90E-02	NA	89.6	Vole value	EPA Region V, 2003	1.12E-03	No	LTB
Acetone	19/52	3.90E-03 - 2.60E-01	8.40E-03 - 3.70E-02	1.90E-02 - 4.00E-02	2.5	Vole value	EPA Region V, 2003	1.04E-01	No	LTB
Benzaldehyde	1/51	1.50E-01 - 1.50E-01	1.80E-01 - 6.50E+00	4.30E-02 - 2.50E-01					Yes	NBA, NCM
Bromomethane	1/52	3.70E-03 - 3.70E-03	4.20E-03 - 1.50E-02	3.60E-03 - 3.60E-03	0.235	Vole value	EPA Region V, 2003	1.57E-02	No	LTB
Carbon Tetrachloride	1/52	4.70E-02 - 4.70E-02	4.20E-03 - 1.50E-02	NA	1000	Masked shrew value	Efroymson et al., 1997c	4.70E-05	No	LTB
Chlorobenzene	1/52	1.30E-02 - 1.30E-02	4.20E-03 - 1.50E-02	NA	40	Earthworm or Microbial	Efroymson et al., 1997c	3.25E-04	No	LTB
Chloroform	10/52	5.40E-03 - 2.80E-01	4.20E-03 - 1.50E-02	NA	1.19	Masked shrew value	EPA Region V, 2003	2.35E-01	No	LTB
Chloromethane	2/52	9.10E-03 - 1.30E-02	4.20E-03 - 1.40E-02	3.60E-03 - 3.60E-03	10.4	Vole value	EPA Region V, 2003	1.25E-03	No	LTB
m,p-Xylene	1/52	4.80E-03 - 4.80E-03	4.20E-03 - 1.50E-02	NA	10	Total xylenes; Plant value	EPA Region V, 2003	4.80E-04	No	LTB
Methyl Acetate	8/52	4.00E-03 - 4.80E-02	4.20E-03 - 1.50E-02	NA					Yes	NBA, NCM
Methylene Chloride	4/52	3.00E-03 - 5.90E-02	4.20E-03 - 2.00E-02	1.90E-03 - 1.90E-03	4.05	Vole value	EPA Region V, 2003	1.46E-02	No	LTB
Tetrachloroethene	2/52	4.60E-03 - 6.80E-03	4.20E-03 - 1.50E-02	NA	9.92	Masked shrew value	EPA Region V, 2003	6.85E-04	No	LTB
Toluene	9/52	2.40E-03 - 2.90E-02	4.20E-03 - 2.60E-02	NA	200		Efroymson et al., 1997b	1.45E-04	No	LTB
Semivolatile Organic Compounds										
2,4-Dimethylphenol	1/51	8.50E-02 - 8.50E-02	1.80E-01 - 6.50E+00	NA	0.01	Plant value	EPA Region V, 2003	8.50E+00	Yes	GTB
Bis(2-Ethylhexyl)Phthalate	9/51	5.20E-02 - 2.60E+00	1.80E-01 - 6.50E+00	2.70E-02 - 5.60E-02	0.925	Masked shrew value	EPA Region V, 2003	2.81E+00	Yes	GTB
Butylbenzylphthalate	1/51	1.50E+00 - 1.50E+00	1.80E-01 - 6.50E+00	NA	0.239	Masked shrew value	EPA Region V, 2003	6.28E+00	Yes	GTB
Dibenzofuran	9/51	2.80E-02 - 6.00E-01	1.80E-01 - 6.50E+00	NA					Yes	NBA
Di-N-Butyl Phthalate	18/51	7.20E-02 - 5.50E-01	1.80E-01 - 6.50E+00	3.70E-02 - 5.30E-02	200	Plant	Efroymson et al., 1997b	2.75E-03	No	LTB
N-Nitrosodiphenylamine	1/51	7.60E-02 - 7.60E-02	1.80E-01 - 6.50E+00	NA	20	Earthworm or Microbial	Efroymson et al., 1997c	3.80E-03	No	LTB
Polycyclic Aromatic Hydrocarbons										
High Molecular Weight PAHs	48/51	7.02E-01 - 2.40E+02	1.67E+00 - 1.71E+00	1.10E+00 - 6.14E+00	1.1	Mammal	Eco-SSL	2.19E+02	Yes	GTB
Low Molecular Weight PAHs	48/51	1.53E+00 - 1.09E+02	1.71E+00 - 1.80E+00	3.50E-01 - 2.44E+00	29	Soil Invertebrate	Eco-SSL	3.75E+00	Yes	GTB
Chlorinated Naphthalenes										
Dichloronaphthalene, Total	2/9	3.50E-02 - 4.10E-01	8.50E-02 - 9.60E-01	NA					Yes	NBA
Pentachloronaphthalene, Total	3/9	2.30E-01 - 9.30E-01	8.50E-02 - 9.60E-01	NA					Yes	NBA
Tetrachloronaphthalene, Total	3/9	2.90E-01 - 2.50E+00	8.50E-02 - 9.60E-01	NA					Yes	NBA
Trichloronaphthalene, Total	3/9	1.50E-01 - 7.60E-01	8.50E-02 - 9.60E-01	NA					Yes	NBA
Dioxin Congeners										
2,3,7,8-TCDD TEQ (bird)	51/51	1.17E-06 - 3.83E-01	NA	2.95E-06 - 7.55E-06	0.00000158	American Woodcock	Efroymson et al., 1997a	2.42E+05	Yes	GTB
2,3,7,8-TCDD TEQ (mammal)	51/51	4.86E-07 - 6.06E-02	NA	7.32E-07 - 2.02E-06	0.000000315	Short-tailed Shrew	Efroymson et al., 1997a	1.92E+05	Yes	GTB
Pesticides										
Alpha-BHC	1/42	4.10E-03 - 5.90E-03	1.80E-03 - 4.00E-03	NA	0.0994	Masked shrew value	EPA Region V, 2003	5.94E-02	No	LTB
Beta-BHC	2/42	3.00E-03 - 4.70E-03	1.80E-03 - 4.00E-03	NA	0.00398	Plant value	EPA Region V, 2003	1.18E+00	Yes	GTB
DDT and Metabolites	10/42	7.50E-03 - 5.90E-02	6.80E-03 - 1.54E-02	NA	0.021	Mammal	Eco-SSL	2.81E+00	Yes	GTB
Dieldrin	4/42	7.10E-03 - 1.40E-02	3.40E-03 - 7.70E-03	NA	0.0049	Mammal	Eco-SSL	2.86E+00	Yes	GTB
Endosulfan II	2/42	1.50E-02 - 3.00E-02	3.40E-03 - 7.70E-03	NA	0.119	Masked shrew value	EPA Region V, 2003	2.52E-01	No	LTB
Endrin	1/42	7.40E-03 - 7.40E-03	3.40E-03 - 7.70E-03	NA	0.0101	Masked shrew value	EPA Region V, 2003	7.33E-01	No	LTB
Endrin Aldehyde	4/42	9.90E-03 - 5.00E-02	3.40E-03 - 7.70E-03	NA	0.0105	Masked shrew value	EPA Region V, 2003	4.76E+00	Yes	GTB
Endrin Ketone	2/42	5.30E-02 - 5.50E-02	3.40E-03 - 7.70E-03	NA					Yes	NBA
Heptachlor	1/42	1.80E-02 - 1.90E-02	1.80E-03 - 4.00E-03	NA	0.00598	Masked shrew value	EPA Region V, 2003	3.18E+00	Yes	GTB
Heptachlor Epoxide	1/42	4.50E-03 - 4.50E-03	1.80E-03 - 4.00E-03	NA	0.152	Masked shrew value	EPA Region V, 2003	2.96E-02	No	LTB
PCB Homologues										
Total PCB Homologues	51/51	9.97E-05 - 4.80E+00	NA	5.22E-03 - 1.68E-02	0.0371	Short-tailed Shrew	Efroymson et al., 1997a	1.29E+02	Yes	GTB

Analyte	FOD	Range of Detects (mg/kg dw)	Range of SQLs (mg/kg dw)	Range of Detects - Background (mg/kg dw)	Benchmark (mg/kg dw)	Basis	Source	Ratio	Soil COPEC?	Comment
PCB Congeners										
PCB Dioxin-like Congener TEQ (bird)	51/51	2.70E-07 - 4.04E-04	NA	7.36E-07 - 2.24E-06	0.00000158	American Woodcock	Efroymson et al., 1997a	2.55E+02	Yes	GTB
PCB Dioxin-like Congener TEQ (mammal)	51/51	1.45E-07 - 1.83E-04	NA	3.20E-07 - 8.23E-07	0.000000315	Short-tailed Shrew	Efroymson et al., 1997a	5.79E+02	Yes	GTB
PEP Compounds										
Perchlorate (organic)	3/9	2.90E-04 - 1.00E-03	5.30E-04 - 6.10E-04	NA					Yes	NBA
Inorganics										
Aluminum	67/67	8.43E+02 - 1.08E+04	NA	4.22E+03 - 1.63E+04	600	Earthworm or Microbial	Efroymson et al., 1997c	1.80E+01	Yes	GTB
Antimony	42/67	4.50E-01 - 5.80E+02	5.10E+00 - 1.33E+01	NA	0.27	Mammal	Eco-SSL	2.15E+03	Yes	GTB
Arsenic	66/67	1.50E+00 - 8.28E+02	1.20E+00 - 1.20E+00	1.30E+00 - 4.90E+00	18	Plant	Eco-SSL	4.60E+01	Yes	GTB
Barium	67/67	2.73E+01 - 1.44E+03	NA	2.44E+01 - 4.19E+01	330	Soil Invertebrate	Eco-SSL	4.37E+00	Yes	GTB
Beryllium	54/67	7.80E-02 - 7.30E-01	5.00E-01 - 6.70E-01	2.00E-01 - 6.80E-01	21	Mammal	Eco-SSL	3.48E-02	No	LTB
Cadmium	38/67	7.40E-02 - 4.20E+00	4.90E-01 - 2.40E+00	4.90E-01 - 4.90E-01	0.36	Mammal	Eco-SSL	1.17E+01	Yes	GTB
Calcium	67/67	3.38E+02 - 2.67E+04	NA	2.72E+02 - 1.83E+03					No	Nut
Chromium	67/67	3.90E+00 - 5.43E+01	NA	7.20E+00 - 1.77E+01	26	Bird	Eco-SSL	2.09E+00	Yes	GTB
Cobalt	67/67	3.60E+00 - 2.97E+01	NA	2.50E+00 - 3.60E+00	13	Plant	Eco-SSL	2.28E+00	Yes	GTB
Copper	67/67	1.35E+01 - 1.89E+03	NA	9.00E+00 - 2.34E+01	28	Bird	Eco-SSL	6.75E+01	Yes	GTB
Iron	67/67	4.33E+03 - 2.35E+05	NA	5.21E+03 - 1.99E+04	200	Earthworm or Microbial	Efroymson et al., 1997c	1.18E+03	Yes	GTB
Lead	67/67	7.40E+00 - 2.44E+04	NA	2.00E+01 - 8.22E+01	11	Bird	Eco-SSL	2.22E+03	Yes	GTB
Magnesium	67/67	1.81E+02 - 4.30E+03	NA	4.57E+02 - 1.38E+03					No	Nut
Manganese	67/67	5.98E+01 - 7.80E+02	NA	4.76E+01 - 1.44E+02	220	Plant	Eco-SSL	3.55E+00	Yes	GTB
Mercury	64/67	5.50E-02 - 1.47E+02	1.10E-01 - 3.30E+00	6.80E-02 - 3.70E-01	0.000051	American Woodcock	Efroymson et al., 1997a	2.88E+06	Yes	GTB
Nickel	67/67	4.10E+00 - 3.42E+02	NA	4.50E+00 - 1.07E+01	38	Plant	Eco-SSL	9.00E+00	Yes	GTB
Potassium	67/67	2.60E+02 - 3.05E+03	NA	2.79E+02 - 7.41E+02					No	Nut
Selenium	54/67	1.80E-01 - 5.90E+00	3.00E+00 - 4.70E+00	NA	0.52	Plant	Eco-SSL	1.13E+01	Yes	GTB
Silver	12/67	1.10E-01 - 5.50E+00	9.80E-01 - 2.20E+00	NA	4.2	Bird	Eco-SSL	1.31E+00	Yes	GTB
Sodium	53/63	1.83E+01 - 9.64E+02	5.00E+02 - 5.97E+02	NA					No	Nut
Vanadium	67/67	1.15E+01 - 7.27E+01	NA	2.01E+01 - 5.27E+01	7.8	Bird	Eco-SSL	9.32E+00	Yes	GTB
Zinc	67/67	2.89E+01 - 8.39E+02	NA	2.33E+01 - 5.14E+01	46	Bird	Eco-SSL	1.82E+01	Yes	GTB

Notes:

COPEC = Chemical of potential ecological concern.
FOD = Frequency of detection. Number of sampling locations at which chemical was detected compared with total number of sampling locations; duplicates at a location were considered one sample.
GTB = Greater than benchmark.
LTB = Less than benchmark.
mg/kg dw = Milligrams per kilogram, dry weight.
NA = Not applicable.
NBA = No benchmark available.
NCM = Not considered for food chain modeling. Volatiles do not bioaccumulate substantially.
Nut = nutrient
SQL = Sample quantitation limit. Range from samples with non-detects.

Table 2-10
Screening Hazard Quotients for Sediment - EFSA
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

COPEC	Screening Concentration (mg/kg dw) Maximum	Screening Values (mg/kg dw)	Source	Hazard Quotients
Volatile Organic Compounds				
2-Butanone	4.60E-02	2.70E-01	Jones et al., 1997	1.7E-01
Acetone	2.60E-01	8.70E-03	Jones et al., 1997	3.0E+01
Bromomethane	3.70E-03	NBA		---
Chloromethane	1.30E-02	NBA		---
Methyl Acetate	4.80E-02	NBA		---
Methylene Chloride	1.40E-02	3.70E-01	Jones et al., 1997	3.8E-02
Toluene	2.90E-02	6.70E-01	EPA, 1996	4.3E-02
Semivolatile Organic Compounds				
Bis(2-Ethylhexyl)Phthalate	1.40E-01	8.90E+02	Jones et al., 1997	1.6E-04
Dibenzofuran	3.10E-01	2.00E+00	EPA, 1996	1.6E-01
Di-N-Butyl Phthalate	9.90E-02	1.10E+01	EPA, 1996	9.0E-03
N-Nitrosodiphenylamine	7.60E-02	NBA		---
Polycyclic Aromatic Hydrocarbons				
2-Methylnaphthalene	4.90E-01	1.76E-01	MacDonald et al., 2000	2.8E+00
Acenaphthene	3.00E+00	6.20E-01	EPA, 1996	4.8E+00
Acenaphthylene	1.50E+00	5.72E-02	MacDonald et al., 2000	2.6E+01
Anthracene	8.90E+00	5.72E-02	MacDonald et al., 2000	1.6E+02
Benzo(A)Anthracene	3.70E+01	1.08E-01	MacDonald et al., 2000	3.4E+02
Benzo(A)Pyrene	2.70E+01	1.50E-01	MacDonald et al., 2000	1.8E+02
Benzo(B)Fluoranthene	2.30E+01	2.40E-01	Fletcher et al., 2008	9.6E+01
Benzo(G,H,I)Perylene	1.60E+01	1.70E-01	Fletcher et al., 2008	9.4E+01
Benzo(K)Fluoranthene	2.50E+01	2.40E-01	Fletcher et al., 2008	1.0E+02
Carbazole	1.70E+00	5.72E-02	MacDonald et al., 2000	3.0E+01
Chrysene	3.60E+01	1.66E-01	MacDonald et al., 2000	2.2E+02
Dibenz(A,H)Anthracene	4.90E+00	3.30E-02	MacDonald et al., 2000	1.5E+02
Fluoranthene	4.70E+01	4.23E-01	MacDonald et al., 2000	1.1E+02
Fluorene	2.20E+00	7.74E-02	MacDonald et al., 2000	2.8E+01
Indeno(1,2,3-Cd)Pyrene	2.50E+01	2.00E-01	Fletcher et al., 2008	1.3E+02
Naphthalene	4.20E-01	1.76E-01	MacDonald et al., 2000	2.4E+00
Phenanthrene	3.50E+01	2.04E-01	MacDonald et al., 2000	1.7E+02
Pyrene	5.80E+01	1.95E-01	MacDonald et al., 2000	3.0E+02
Dioxin Congeners				
2,3,7,8-TCDD TEQ (bird)	1.29E-02	NBA		---
2,3,7,8-TCDD TEQ (mammal)	2.72E-03	NBA		---

Table 2-10
Screening Hazard Quotients for Sediment - EFSA
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

COPEC	Screening Concentration (mg/kg dw)	Screening Values (mg/kg dw)	Source	Hazard Quotients
	Maximum			
Pesticides				
4,4'-DDD	4.80E-02	4.88E-03	MacDonald et al., 2000	9.8E+00
4,4'-DDT	5.60E-03	4.16E-03	MacDonald et al., 2000	1.3E+00
Alpha-BHC	5.90E-03	2.37E-03	MacDonald et al., 2000	2.5E+00
Beta-BHC	4.70E-03	2.37E-03	MacDonald et al., 2000	2.0E+00
Endrin Aldehyde	4.90E-02	2.22E-03	MacDonald et al., 2000	2.2E+01
Endrin Ketone	5.50E-02	2.22E-03	MacDonald et al., 2000	2.5E+01
Heptachlor	1.90E-02	2.47E-03	MacDonald et al., 2000	7.7E+00
PCB Homologues				
Total PCB Homologues	8.87E-02	NBA		---
PCB Congeners				
PCB Dioxin-like Congener TEQ (bird)	3.71E-05	NBA		---
PCB Dioxin-like Congener TEQ (mammal)	2.02E-05	NBA		---
Inorganics				
Aluminum	1.08E+04	NBA		---
Antimony	1.65E+01	NBA		---
Arsenic	3.87E+01	9.79E+00	MacDonald et al., 2000	4.0E+00
Barium	7.24E+02	NBA		---
Beryllium	4.20E-01	NBA		---
Cadmium	1.10E+00	9.90E-01	MacDonald et al., 2000	1.1E+00
Calcium	8.63E+03	NBA		---
Chromium	2.02E+01	4.34E+01	MacDonald et al., 2000	4.7E-01
Cobalt	8.50E+00	5.00E+01	OMEE, 1996	1.7E-01
Copper	1.94E+02	3.16E+01	MacDonald et al., 2000	6.1E+00
Iron	1.86E+04	2.00E+04	Fletcher et al., 2008	9.3E-01
Lead	1.18E+03	3.58E+01	MacDonald et al., 2000	3.3E+01
Magnesium	4.30E+03	NBA		---
Manganese	7.16E+02	4.60E+02	Fletcher et al., 2008	1.6E+00
Mercury	3.44E+01	1.80E-01	MacDonald et al., 2000	1.9E+02
Nickel	2.85E+01	2.27E+01	MacDonald et al., 2000	1.3E+00
Potassium	2.30E+03	NBA		---
Selenium	2.10E+00	NBA		---
Silver	1.20E+00	5.00E-01	OMEE, 1996	2.4E+00
Sodium	1.27E+02	NBA		---
Vanadium	3.08E+01	NBA		---
Zinc	4.87E+02	1.21E+02	MacDonald et al., 2000	4.0E+00

Note:
Shading indicates NOAEL-based HQ > 1.0.

Table 2-11
Soil Benchmarks - Phytotoxicity and Soil Invertebrates
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Analyte	NOAEL-based Screening Values (mg/kg dw)			
	Plant	**Source**	**Soil Invertebrate**	**Source**
Volatile Organic Compounds				
Benzaldehyde	NBA		NBA	
Methyl Acetate	NBA		NBA	
Semivolatile Organic Compounds				
2,4-Dimethylphenol	NBA		NBA	
Bis(2-Ethylhexyl)Phthalate	NBA		NBA	
Butylbenzylphthalate	NBA		NBA	
Dibenzofuran	NBA		NBA	
Polycyclic Aromatic Hydrocarbons				
High Molecular Weight PAHs	1.20E+00	EPA, 1999	1.80E+01	SSL
Low Molecular Weight PAHs	NBA		2.90E+01	SSL
Chlorinated Naphthalenes				
Dichloronaphthalene, Total	NBA		NBA	
Pentachloronaphthalene, Total	NBA		NBA	
Tetrachloronaphthalene, Total	NBA		NBA	
Trichloronaphthalene, Total	NBA		NBA	
Dioxin Congeners				
2,3,7,8-TCDD TEQ (bird)	NBA		NBA	
2,3,7,8-TCDD TEQ (mammal)	NBA		NBA	
Pesticides				
Beta-BHC	NBA		NBA	
DDT and Metabolites	NBA		NBA	
Dieldrin	NBA		NBA	
Endrin Aldehyde	NBA		NBA	
Endrin Ketone	NBA		NBA	
Heptachlor	1.00E+00	EPA, 1999	NBA	
PCB Homologues				
Total PCB Homologues	NBA		NBA	
PCB Congeners				
PCB Dioxin-like Congener TEQ (bird)	NBA		NBA	
PCB Dioxin-like Congener TEQ (mammal)	NBA		NBA	
PEP Compounds				
Perchlorate (organic)	NBA		NBA	
Inorganics				
Aluminum	5.00E+00	EPA, 1999	6.00E+02	Efroymson et al., 1997
Antimony	5.00E-01	EPA, 1999	7.80E+01	SSL
Arsenic	1.80E+01	Eco SSL	2.50E-01	EPA, 1999
Barium	5.00E+00	EPA, 1999	3.30E+02	SSL
Cadmium	3.20E+01	Eco SSL	1.40E+02	SSL
Chromium	1.80E-02	EPA, 1999	2.00E-01	EPA, 1999
Cobalt	1.30E+01	Eco SSL	1.00E+03	Efroymson et al., 1997
Copper	7.00E+01	Eco SSL	8.00E+01	SSL
Iron	NBA		2.00E+02	Efroymson et al., 1997
Lead	1.20E+02	Eco SSL	1.70E+03	SSL
Manganese	2.20E+02	Eco SSL	4.50E+02	SSL
Mercury	3.49E-01	EPA, 1999	2.50E+00	EPA, 1999
Nickel	3.80E+01	Eco SSL	2.80E+02	SSL
Selenium	5.20E-01	Eco SSL	4.10E+00	SSL
Silver	5.60E+02	Eco SSL	5.00E+01	Efroymson et al., 1997
Vanadium	2.00E+00	Efroymson et al., 1997	2.00E+01	Efroymson et al., 1997
Zinc	1.60E+02	Eco SSL	1.20E+02	SSL

Table 2-12
Soil Benchmarks - Avian and Mammalian Wildlife
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Analyte	Screening Values (mg/kg dw soil)					
	Avian			Mammalian		
	NOAEL-based	LOAEL-based	Source	NOAEL-based	LOAEL-based	Source
Volatile Organic Compounds						
Benzaldehyde	NBA	NBA		NBA	NBA	
Methyl Acetate	NBA	NBA		NBA	NBA	
Semivolatile Organic Compounds						
2,4-Dimethylphenol	NBA	NBA		NBA	NBA	
Bis(2-Ethylhexyl)Phthalate	9.10E-01	NBA	American robin; Sample et al., 1996	3.60E+01	3.63E+02	Short-tailed shrew; Sample et al., 1996
Butylbenzylphthalate	NBA	NBA		2.39E-01	NBA	Masked shrew value; Region V ESL
Dibenzofuran	NBA	NBA		NBA	NBA	
Polycyclic Aromatic Hydrocarbons						
High Molecular Weight PAHs	NBA	NBA		1.10E+00	7.00E+01	Mammal; SSL
Low Molecular Weight PAHs	NBA	NBA		1.00E+02	5.55E+02	Mammal; SSL
Chlorinated Naphthalenes						
Dichloronaphthalene, Total	NBA	NBA		NBA	NBA	
Pentachloronaphthalene, Total	NBA	NBA		NBA	NBA	
Tetrachloronaphthalene, Total	NBA	NBA		NBA	NBA	
Trichloronaphthalene, Total	NBA	NBA		NBA	NBA	
Dioxin Congeners						
2,3,7,8-TCDD TEQ (bird)	1.58E-06	1.58E-05	American Woodcock; Efroymson et al., 1997	NBA	NBA	
2,3,7,8-TCDD TEQ (mammal)	NBA	NBA		3.15E-07	3.15E-06	Short-tailed Shrew; Efroymson et al., 1997
Pesticides						
Beta-BHC	1.66E+00	1.66E+01	American robin; Sample et al., 1996	1.47E+00	7.33E+00	Short-tailed shrew; Sample et al., 1996
DDT and Metabolites	9.30E-02	1.40E+00	Avian; SSL	2.10E-02	7.90E-01	Mammalian; SSL
Dieldrin	2.20E-02	3.30E-01	Avian; SSL	4.90E-03	4.10E-01	Mammalian; SSL
Endrin Aldehyde	8.00E-03	8.30E-02	American robin; Sample et al., 1996	1.82E-01	1.82E+00	Short-tailed shrew; Sample et al., 1996
Endrin Ketone	8.00E-03	8.30E-02	American robin; Sample et al., 1996	1.82E-01	1.82E+00	Short-tailed shrew; Sample et al., 1996
Heptachlor	NBA	NBA		4.76E-01	4.76E+00	Short-tailed shrew; Sample et al., 1996
PCB Homologues						
Total PCB Homologues	6.55E-02	6.55E-01	American Woodcock; Efroymson et al., 1997	3.71E-02	3.71E-01	Short-tailed Shrew; Efroymson et al., 1997
PCB Congeners						
PCB Dioxin-like Congener TEQ (bird)	1.58E-06	1.58E-05	American Woodcock; Efroymson et al., 1997	NBA	NBA	
PCB Dioxin-like Congener TEQ (mammal)	NBA	NBA		3.15E-07	3.15E-06	Short-tailed Shrew; Efroymson et al., 1997
PEP Compounds						
Perchlorate (organic)	NBA	NBA		NBA	NBA	
Inorganics						
Aluminum	9.08E+01	NBA	American robin; Sample et al., 1996	3.83E+00	3.83E+01	Short-tailed shrew; Sample et al., 1996
Antimony	NBA	NBA		2.70E-01	1.30E+01	
Arsenic	4.30E+01	9.40E+01	Avian; SSL	4.60E+01	2.01E+02	Mammalian; SSL

Table 2-12
Soil Benchmarks - Avian and Mammalian Wildlife
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Analyte	Screening Values (mg/kg dw soil)					
	Avian			Mammalian		
	NOAEL-based	LOAEL-based	Source	NOAEL-based	LOAEL-based	Source
Barium	2.83E+01	2.83E+02	American Woodcock; Efroymson et al., 1997	2.00E+03	3.27E+03	Mammalian; SSL
Cadmium	7.70E-01	4.29E+00	Avian; SSL	3.60E-01	3.20E+00	Mammalian; SSL
Chromium	2.60E+01	1.83E+02	Avian; SSL	3.40E+01	8.28E+02	Mammalian; SSL
Cobalt	1.20E+02	3.66E+02	Avian; SSL	2.30E+02	5.95E+02	Mammalian; SSL
Copper	2.80E+01	2.92E+02	Avian; SSL	4.90E+01	7.26E+02	Mammalian; SSL
Iron	NBA	NBA		NBA	NBA	
Lead	1.10E+01	3.66E+02	Avian; SSL	5.60E+01	2.22E+03	Mammalian; SSL
Manganese	4.30E+03	9.09E+03	Avian; SSL	4.00E+03	1.13E+04	Mammalian; SSL
Mercury	5.10E-05	5.10E-04	American Woodcock; Efroymson et al., 1997	1.46E-02	1.46E-01	Short-tailed Shrew; Efroymson et al., 1997
Nickel	2.10E+02	5.81E+02	Avian; SSL	1.30E+02	1.13E+03	Mammalian; SSL
Selenium	1.20E+00	4.20E+00	Avian; SSL	6.30E-01	2.91E+00	Mammalian; SSL
Silver	4.20E+00	1.63E+02	Avian; SSL	1.40E+01	2.74E+02	Mammalian; SSL
Vanadium	7.80E+00	4.00E+01	Avian; SSL	2.80E+02	6.27E+02	Mammalian; SSL
Zinc	4.60E+01	1.55E+02	Avian; SSL	7.90E+01	3.12E+02	Mammalian; SSL

Note: LOAEL-based SSL values from TechLaw, 2008.

Table 2-13
Summary of Exposure Point Concentrations for COPECs - Soil – CHP
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

COPEC	Maximum Detected Concentration (mg/kg dw)	Data Distribution[a]	95% UCL[a] (mg/kg dw)	Exposure Point Concentration (mg/kg dw)	Calculation Method[a]
Semivolatile Organic Compounds					
Butylbenzylphthalate	1.50E+00	Not determined	1.95E-01	1.95E-01	Median
Dibenzofuran	1.10E-01	Not determined	1.90E-01	1.10E-01	Maximum
Polycyclic Aromatic Hydrocarbons					
High Molecular Weight PAHs	1.81E+01	Normal	1.25E+01	1.25E+01	95% Student's-t UCL
Low Molecular Weight PAHs	7.70E+00	Normal	5.54E+00	5.54E+00	95% Student's-t UCL
Chlorinated Naphthalenes					
Dichloronaphthalene, Total	4.10E-01	Not determined	4.20E-01	4.10E-01	Maximum
Pentachloronaphthalene, Total	9.30E-01	Not determined	3.00E-01	3.00E-01	Median
Tetrachloronaphthalene, Total	2.50E+00	Not determined	4.70E-01	4.70E-01	Median
Trichloronaphthalene, Total	7.60E-01	Not determined	1.70E-01	1.70E-01	Median
Dioxin Congeners					
2,3,7,8-TCDD TEQ (bird)	3.83E-01	Not discernable	3.09E-01	3.09E-01	97.5% Chebyshev (Mean, Sd) UCL
2,3,7,8-TCDD TEQ (mammal)	6.06E-02	Not discernable	4.91E-02	4.91E-02	97.5% Chebyshev (Mean, Sd) UCL
PCB Homologues					
Total PCB Homologues	1.84E+00	Normal	1.06E+00	1.06E+00	95% Student's-t UCL
PCB Congeners					
PCB Dioxin-like Congener TEQ (bird)	7.65E-05	Normal	5.47E-05	5.47E-05	95% Student's-t UCL
PCB Dioxin-like Congener TEQ (mammal)	2.82E-05	Normal	1.90E-05	1.90E-05	95% Student's-t UCL
PEP Compounds					
Perchlorate (organic)	1.00E-03	Not determined	5.90E-04	5.90E-04	Median
Inorganics					
Aluminum	6.47E+03	Normal	5.35E+03	5.35E+03	95% Student's-t UCL
Antimony	3.30E+00	Normal	2.95E+00	2.95E+00	95% KM (t) UCL
Arsenic	8.28E+02	Not discernable	6.03E+02	6.03E+02	97.5% Chebyshev (Mean, Sd) UCL
Barium	2.54E+02	Normal	1.95E+02	1.95E+02	95% Student's-t UCL
Cadmium	1.30E+00	Normal	8.43E-01	8.43E-01	95% KM (t) UCL
Chromium	2.97E+01	Not discernable	1.53E+01	1.53E+01	95% Modified-t UCL
Cobalt	1.85E+01	Gamma	1.20E+01	1.20E+01	95% Approximate Gamma UCL
Copper	1.30E+02	Normal	9.46E+01	9.46E+01	95% Student's-t UCL
Iron	3.91E+04	Gamma	2.15E+04	2.15E+04	95% Approximate Gamma UCL
Lead	3.82E+02	Gamma	1.99E+02	1.99E+02	95% Approximate Gamma UCL
Manganese	2.71E+02	Normal	2.19E+02	2.19E+02	95% Student's-t UCL
Mercury	1.47E+02	Not discernable	1.45E+02	1.45E+02	97.5% Chebyshev (Mean, Sd) UCL
Nickel	7.59E+01	Not discernable	4.65E+01	4.65E+01	95% Chebyshev (Mean, Sd) UCL

COPEC	Maximum Detected Concentration (mg/kg dw)	Data Distribution[a]	95% UCL[a] (mg/kg dw)	Exposure Point Concentration (mg/kg dw)	Calculation Method[a]
Inorganics (cont.)					
Selenium	2.10E+00	Normal	1.79E+00	1.79E+00	95% KM (t) UCL
Silver	2.40E+00	Normal	9.42E-01	9.42E-01	95% KM (t) UCL
Vanadium	2.09E+01	Normal	1.84E+01	1.84E+01	95% Student's-t UCL
Zinc	3.15E+02	Normal	2.08E+02	2.08E+02	95% Student's-t UCL

Notes:

[a]Based on ProUCL recommendation unless there is an insufficient sample size.
[b]The EPC is based on the lower of the maximum detected concentration and the 95% UCL.
mg/kg dw = Milligrams per kilogram dry weight.
NA = Not applicable.

Table 2-14
Summary of Exposure Point Concentrations for COPECs - Soil – SFSA
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

COPEC	Maximum Detected Concentration (mg/kg dw)	Data Distribution[a]	95% UCL[a] (mg/kg dw)	Exposure Point Concentration (mg/kg dw)	Calculation Method[a]
Semivolatile Organic Compounds					
2,4-Dimethylphenol	8.50E-02	NA	8.50E-02	8.50E-02	Maximum
Bis(2-Ethylhexyl)Phthalate	2.60E+00	Gamma	4.74E-01	4.74E-01	95% KM (t) UCL
Dibenzofuran	6.00E-01	Normal	1.71E-01	1.71E-01	95% KM (t) UCL
Polycyclic Aromatic Hydrocarbons					
High Molecular Weight PAHs	3.80E+01	Gamma	1.54E+01	1.54E+01	95% KM (Chebyshev) UCL
Low Molecular Weight PAHs	2.47E+01	Not discernable	7.93E+00	7.93E+00	95% KM (Chebyshev) UCL
Dioxin Congeners					
2,3,7,8-TCDD TEQ (bird)	1.80E-03	Lognormal	5.75E-04	5.75E-04	95% Chebyshev (Mean, Sd) UCL
2,3,7,8-TCDD TEQ (mammal)	4.69E-04	Gamma	8.84E-05	8.84E-05	95% Approximate Gamma UCL
Pesticides					
Beta-BHC	3.00E-03	NA	2.00E-03	2.00E-03	Median
DDT and Metabolites	5.90E-02	Lognormal	1.67E-02	1.67E-02	95% KM (t) UCL
Dieldrin	1.40E-02	Lognormal	7.84E-03	7.84E-03	95% KM (t) UCL
Endrin Aldehyde	5.00E-02	NA	3.90E-03	3.90E-03	Median
Endrin Ketone	5.30E-02	NA	3.80E-03	3.80E-03	Median
PCB Homologues					
Total PCB Homologues	4.80E+00	Gamma	1.59E+00	1.59E+00	95% Adjusted Gamma UCL
PCB Congeners					
PCB Dioxin-like Congener TEQ (bird)	4.04E-04	Gamma	6.95E-05	6.95E-05	95% Approximate Gamma UCL
PCB Dioxin-like Congener TEQ (mammal)	1.83E-04	Gamma	4.10E-05	4.10E-05	95% Approximate Gamma UCL
Inorganics					
Aluminum	7.82E+03	Normal	4.93E+03	4.93E+03	95% Student's-t UCL
Antimony	5.80E+02	Not discernable	1.26E+02	1.26E+02	97.5% KM (Chebyshev) UCL
Arsenic	2.81E+02	Not discernable	6.19E+01	6.19E+01	95% KM (Chebyshev) UCL
Barium	1.44E+03	Not discernable	3.67E+02	3.67E+02	95% Chebyshev (Mean, Sd) UCL
Cadmium	4.20E+00	Lognormal	6.46E-01	6.46E-01	95% KM (t) UCL
Chromium	5.43E+01	Not discernable	2.25E+01	2.25E+01	95% Chebyshev (Mean, Sd) UCL
Cobalt	2.97E+01	Not discernable	7.78E+00	7.78E+00	95% Student's-t UCL
Copper	1.89E+03	Not discernable	4.42E+02	4.42E+02	95% Chebyshev (Mean, Sd) UCL
Iron	2.35E+05	Not discernable	5.52E+04	5.52E+04	95% Chebyshev (Mean, Sd) UCL
Lead	2.44E+04	Not discernable	3.50E+03	3.50E+03	95% Chebyshev (Mean, Sd) UCL
Manganese	7.80E+02	Gamma	3.29E+02	3.29E+02	95% Approximate Gamma UCL

Table 2-14
Summary of Exposure Point Concentrations for COPECs - Soil – SFSA
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire
Page 2 of 2

COPEC	Maximum Detected Concentration (mg/kg dw)	Data Distribution[a]	95% UCL[a] (mg/kg dw)	Exposure Point Concentration (mg/kg dw)	Calculation Method[a]
Inorganics (cont.)					
Mercury	1.25E+02	Lognormal	3.50E+01	3.50E+01	97.5% KM (Chebyshev) UCL
Nickel	3.42E+02	Not discernable	5.98E+01	5.98E+01	95% Chebyshev (Mean, Sd) UCL
Selenium	5.90E+00	Lognormal	2.42E+00	2.42E+00	95% KM (Chebyshev) UCL
Silver	5.50E+00	Gamma	9.54E-01	9.54E-01	95% KM (t) UCL
Vanadium	7.27E+01	Gamma	2.52E+01	2.52E+01	95% Approximate Gamma UCL
Zinc	8.39E+02	Lognormal	1.90E+02	1.90E+02	95% H-UCL

Table 2-15
Summary of Exposure Point Concentrations for COPECs - Soil – EFSA
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

COPEC	Maximum Detected Concentration (mg/kg dw)	Data Distribution[a]	95% UCL[a] (mg/kg dw)	Exposure Point Concentration (mg/kg dw)	Calculation Method[a]
Semivolatile Organic Compounds					
Bis(2-Ethylhexyl)Phthalate	1.40E-01	NA	1.40E-01	1.40E-01	Maximum
Dibenzofuran	3.10E-01	NA	2.10E-01	2.10E-01	Median
Polycyclic Aromatic Hydrocarbons					
High Molecular Weight PAHs	2.40E+02	Lognormal	1.63E+02	1.63E+02	97.5% KM (Chebyshev) UCL
Low Molecular Weight PAHs	1.09E+02	Lognormal	7.45E+01	7.45E+01	97.5% KM (Chebyshev) UCL
Dioxin Congeners					
2,3,7,8-TCDD TEQ (bird)	1.29E-02	Lognormal	9.40E-03	9.40E-03	97.5% Chebyshev (Mean, SD) UCL
2,3,7,8-TCDD TEQ (mammal)	2.72E-03	Lognormal	2.01E-03	2.01E-03	97.5% Chebyshev (Mean, SD) UCL
Pesticides					
Beta-BHC	4.70E-03	NA	2.00E-03	2.00E-03	Median
DDT and Metabolites	4.68E-02	NA	8.00E-03	8.00E-03	Median
Endrin Aldehyde	4.90E-02	NA	3.90E-03	3.90E-03	Median
Endrin Ketone	5.50E-02	NA	3.90E-03	3.90E-03	Median
Heptachlor	1.90E-02	NA	2.00E-03	2.00E-03	Median
PCB Homologues					
Total PCB Homologues	8.87E-02	Normal	4.78E-02	4.78E-02	95% Student's-t UCL
PCB Congeners					
PCB Dioxin-like Congener TEQ (bird)	3.71E-05	Lognormal	2.02E-05	2.02E-05	95% Chebyshev (Mean, SD) UCL
PCB Dioxin-like Congener TEQ (mammal)	2.02E-05	Gamma	6.67E-06	6.67E-06	95% Approximate Gamma UCL
Inorganics					
Aluminum	1.08E+04	Normal	6.98E+03	6.98E+03	95% Student's-t UCL
Antimony	1.65E+01	Not Discernable	1.07E+01	1.07E+01	97.5% KM (Chebyshev) UCL
Arsenic	3.87E+01	Gamma	1.83E+01	1.83E+01	95% Approximate Gamma UCL
Barium	7.24E+02	Gamma	2.61E+02	2.61E+02	95% Approximate Gamma UCL
Cadmium	1.10E+00	Lognormal	5.30E-01	5.30E-01	95% KM (t) UCL
Chromium	2.02E+01	Gamma	1.23E+01	1.23E+01	95% Approximate Gamma UCL
Cobalt	8.50E+00	Normal	6.67E+00	6.67E+00	95% Student's-t UCL
Copper	1.94E+02	Gamma	8.37E+01	8.37E+01	95% Approximate Gamma UCL
Iron	1.86E+04	Normal	1.35E+04	1.35E+04	95% Student's-t UCL
Lead	1.18E+03	Not Discernable	5.53E+02	5.53E+02	95% Chebyshev (Mean, SD) UCL
Manganese	7.16E+02	Gamma	3.79E+02	3.79E+02	95% Approximate Gamma UCL
Mercury	3.44E+01	Gamma	2.12E+01	2.12E+01	95% KM (Chebyshev) UCL

Table 2-15
Summary of Exposure Point Concentrations for COPECs - Soil – EFSA
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

COPEC	Maximum Detected Concentration (mg/kg dw)	Data Distribution[a]	95% UCL[a] (mg/kg dw)	Exposure Point Concentration (mg/kg dw)	Calculation Method[a]
Inorganics (cont.)					
Nickel	2.85E+01	Normal	1.65E+01	1.65E+01	95% Student's-t UCL
Selenium	2.10E+00	Normal	1.42E+00	1.42E+00	95% KM (t) UCL
Silver	1.20E+00	NA	1.20E+00	1.20E+00	Maximum
Vanadium	3.08E+01	Normal	2.29E+01	2.29E+01	95% Student's-t UCL
Zinc	4.87E+02	Gamma	1.61E+02	1.61E+02	95% Approximate Gamma UCL

Notes:

[a]Based on ProUCL recommendation unless there is an insufficient sample size.
[b]The EPC is based on the lower of the maximum detected concentration and the 95% UCL.
mg/kg dw = Milligrams per kilogram dry weight.
NA = Not applicable.

Table 2-16
Calculation of Field Metabolic Rates*
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

$$\mathrm{FMR\ (kcal/g\ BW\text{-}day)} = \mathrm{a} \times \mathrm{BW}^{\mathrm{b}} \times \frac{1\,\mathrm{kcal}}{4.18\,76\,\mathrm{kJ}} \div \mathrm{BW}$$

Target Receptor	Allometric Equation Basis	a	b	Body Weight in Grams	FMR (kcal/g BW-day)
American Robin	Birds – Passerines	10.4	0.68	77 (Sample and Suter, 1994)	0.62
Short-Tailed Shrew	Mammals – Insectivores	6.98	0.622	15 (EPA, 1993b)	0.60

Note:

*From Nagy et al., 1999 unless otherwise indicated.

Table 2-17
Assimilation Efficiency (AE) and Gross Energy (GE) of Anticipated Prey Items
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Predator/Prey Item	Assimilation Efficiency (unitless)	Basis of Value	Gross Energy (kcal/g ww)	Basis of Value
Birds				
Soil Invertebrates	0.72	Birds – Terrestrial insects	0.805	Midpoint of earthworms
Mammals				
Soil Invertebrates	0.87	Small Mammals – Insects	0.805	Midpoint of earthworms

Source: EPA, 1993b.

Table 2-18
COPEC Dose Ingested Terms in Invertivorous Birds (American Robin)
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

$$D_{IB} = (C_{INV} \times IR_{IB} \times P_{INV} \times F_{INV}) + (C_S \times IR_{S-IB} \times P_S)$$

Parameter	Definition	Value	Reference
D_{IB}	Dose ingested for invertivorous birds (American robin) (mg COPEC/kg BW-day).		
C_{INV}	COPEC concentration in soil invertebrates (mg COPEC/kg WW).	Area-specific	Table 2-20
IR_{IB}	Food ingestion rate of invertivorous birds (kg WW/kg BW-day).	1.1	Calculated
P_{INV}	Proportion of soil invertebrates diet that is contaminated (unitless).	1	Professional judgment
F_{INV}	Fraction of diet comprised of soil invertebrates (unitless).	1	EPA, 1993b and 1999a
C_S	COPEC concentration in soil (mg COPEC/kg DW soil).	Area-specific	Tables 2-13 through 2-15
IR_{S-IB}	Soil ingestion rate for invertivorous birds (kg DW/kg BW-day).	0.0072	DW ingestion rate calculated by converting the WW ingestion rate, assuming 84% water content in the diet (EPA, 2007), and assuming an American robin ingests 4.2% of the dry food intake (Beyer et al., 1994)
P_S	Proportion of ingested soil that is contaminated (unitless).	1	Professional judgment

Table 2-19
COPEC Dose Ingested Terms in Invertivorous Small Mammals (Short-Tailed Shrew)
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

$$D_{ISM} = \left(C_{INV} \times IR_{ISM} \times P_{INV} \times F_{INV}\right) + \left(C_S \times IR_{S-ISM} \times P_S\right)$$

Parameter	Definition	Value	Reference
D_{ISM}	Dose ingested for invertivorous small mammals (short-tailed shrew) (mg COPEC/kg BW-day).		
C_{INV}	COPEC concentration in soil invertebrates (mg COPEC/kg WW).	Area-specific	Table 2-20
IR_{ISM}	Food ingestion rate of invertivorous small mammals (kg WW/kg BW-day).	0.86	Calculated
P_{INV}	Proportion of soil invertebrates diet that is contaminated (unitless).	1	Professional judgment
F_{INV}	Fraction of diet comprised of soil invertebrates (unitless).	1	Merritt, 1987
C_S	COPEC concentration in soil (mg COPEC/kg DW soil).	Area-specific	Tables 2-13 through 2-15
$IR_{S\text{-}ISM}$	Soil ingestion rate for invertivorous small mammals (kg DW/kg BW-day).	0.0041	DW ingestion rate calculated by converting the WW ingestion rate, assuming 84% water content in the diet (EPA, 2007), and that a short-tailed shrew ingests 3% of the dry food intake (EPA, 2007g)
P_S	Proportion of ingested soil that is contaminated (unitless).	1	Professional judgment

Table 2-20
Food Chain Modeling
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire
Page 1 of 1

Receptor/Area	Mercury EPC (mg/kg)		Daily Intake (mg/kg-day)			HQ		Contribution from	
	Worm	Soil	Worm	Soil	Total	NOAEL-based	LOALEL-based	Worm	Soil
American Robin									
CHP	3.33E-02	1.45E+02	3.66E-02	1.04E+00	1.08E+00	2.4E+00	1.2E+00	3%	97%
SFSA	5.79E-01	3.50E+01	6.37E-01	2.52E-01	8.89E-01	2.0E+00	9.8E-01	72%	28%
EFSA	6.81E-01	2.12E+01	7.49E-01	1.53E-01	9.02E-01	2.0E+00	9.9E-01	83%	17%
Short-tailed Shrew									
CHP	3.33E-02	1.45E+02	2.86E-02	5.94E-01	6.23E-01	4.7E-02	1.1E-02	5%	95%
SFSA	5.79E-01	3.50E+01	4.98E-01	1.44E-01	6.42E-01	4.9E-02	1.1E-02	78%	22%
EFSA	6.81E-01	2.12E+01	5.86E-01	8.69E-02	6.73E-01	5.1E-02	1.2E-02	87%	13%

Notes:

Shading indicates HQ > 1.0.

Table 2-21
Background Comparison Summary - Soils
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

COPEC	CHP versus Background		SFSA versus Background		EFSA versus Background	
	P-Value	Conclusion at α=0.05	P-Value	Conclusion at α=0.05	P-Value	Conclusion at α=0.05
Aluminum	0.971	NS	0.995	NS	0.897	NS
Antimony	0.522	NS	0.219	NS	0.407	NS
Arsenic	0.127	NS	0.00208	S	0.241	NS
Barium	0.00284	S	8.12E-05	S	0.0004423	S
Cadmium	0.178	NS	0.471	NS	0.407	NS
Chromium	0.849	NS	0.477	NS	0.813	NS
Cobalt	0.0579	NS	0.0699	NS	0.213	NS
Copper	0.00202	S	0.0001528	S	0.00286	S
Iron	0.139	NS	0.087	NS	0.556	NS
Lead	0.0131	S	0.00675	S	0.697	NS
Manganese	0.0054	S	0.0002383	S	0.00117	S
Mercury	0.0006878	S	0.0589	NS	0.163	NS
Nickel	0.0131	S	0.0006179	S	0.0139	S
Selenium	0.522	NS	0.506	NS	0.519	NS
Silver	0.393	NS	0.471	NS	0.519	NS
Vanadium	1	NS	0.994	NS	0.996	NS
Zinc	0.00143	S	0.0003297	S	0.0038	S

Notes:

Results from Wilcoxon-Mann-Whitney Test run in ProUCL (See Appendix D.)
NS = Not statistically significantly different from background.
S = Statistically significantly different from background.

Table 2-22
Screening Hazard Quotients for Soil COPECs – CHP
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

COPEC	Screening Concentration (mg/kg dw)		Hazard Quotients									
			based on Maximum Concentration						based on EPC			
	Maximum	EPC	Plant	Soil Invertebrate	Avian		Mammalian		Avian		Mammalian	
					NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Volatile Organic Compounds												
Benzaldehyde	1.50E-01	NA	---	---	---	---	---	---	---	---	---	---
Methyl Acetate	1.00E-02	NA	---	---	---	---	---	---	---	---	---	---
Semivolatile Organic Compounds												
Butylbenzylphthalate	1.50E+00	1.95E-01	---	---	---	---	6.3E+00	---	---	---	8.2E-01	---
Dibenzofuran	1.10E-01	1.10E-01	---	---	---	---	---	---	---	---	---	---
Polycyclic Aromatic Hydrocarbons												
High Molecular Weight PAHs	1.81E+01	1.25E+01	1.5E+01	1.0E+00	---	---	1.6E+01	2.6E-01	---	---	1.1E+01	1.8E-01
Low Molecular Weight PAHs	7.70E+00	5.54E+00	---	2.7E-01	---	---	7.7E-02	1.4E-02	---	---	5.5E-02	1.0E-02
Chlorinated Naphthalenes												
Dichloronaphthalene, Total	4.10E-01	4.10E-01	---	---	---	---	---	---	---	---	---	---
Pentachloronaphthalene, Total	9.30E-01	3.00E-01	---	---	---	---	---	---	---	---	---	---
Tetrachloronaphthalene, Total	2.50E+00	4.70E-01	---	---	---	---	---	---	---	---	---	---
Trichloronaphthalene, Total	7.60E-01	1.70E-01	---	---	---	---	---	---	---	---	---	---
Dioxin Congeners												
2,3,7,8-TCDD TEQ (bird)	3.83E-01	3.09E-01	---	---	2.4E+05	2.4E+04	---	---	2.0E+05	2.0E+04	---	---
2,3,7,8-TCDD TEQ (mammal)	6.06E-02	4.91E-02	---	---	---	---	1.9E+05	1.9E+04	---	---	1.6E+05	1.6E+04
PCB Homologues												
Total PCB Homologues	1.84E+00	1.06E+00	---	---	2.8E+01	2.8E+00	5.0E+01	5.0E+00	1.6E+01	1.6E+00	2.8E+01	2.8E+00
PCB Congeners												
PCB Dioxin-like Congener TEQ (bird)	7.65E-05	5.47E-05	---	---	4.8E+01	4.8E+00	---	---	3.5E+01	3.5E+00	---	---
PCB Dioxin-like Congener TEQ (mammal)	2.82E-05	1.90E-05	---	---	---	---	9.0E+01	9.0E+00	---	---	6.0E+01	6.0E+00
PEP Compounds												
Perchlorate (organic)	1.00E-03	5.90E-04	---	---	---	---	---	---	---	---	---	---
Inorganics												
Aluminum	6.47E+03	5.35E+03	1.3E+03	1.1E+01	7.1E+01	---	1.7E+03	1.7E+02	5.9E+01	---	1.4E+03	1.4E+02
Antimony	3.30E+00	2.95E+00	6.6E+00	4.2E-02	---	---	1.2E+01	2.5E-01	---	---	1.1E+01	2.3E-01
Arsenic	8.28E+02	6.03E+02	4.6E+01	3.3E+03	1.9E+01	8.8E+00	1.8E+01	4.1E+00	1.4E+01	6.4E+00	1.3E+01	3.0E+00
Barium	2.54E+02	1.95E+02	5.1E+01	7.7E-01	9.0E+00	9.0E-01	1.3E-01	7.8E-02	6.9E+00	6.9E-01	9.7E-02	6.0E-02
Cadmium	1.30E+00	8.43E-01	4.1E-02	9.3E-03	1.7E+00	3.0E-01	3.6E+00	4.1E-01	1.1E+00	2.0E-01	2.3E+00	2.6E-01
Chromium	2.97E+01	1.53E+01	1.7E+03	1.5E+02	1.1E+00	1.6E-01	8.7E-01	3.6E-02	5.9E-01	8.4E-02	4.5E-01	1.8E-02
Cobalt	1.85E+01	1.20E+01	1.4E+00	1.9E-02	1.5E-01	5.1E-02	8.0E-02	3.1E-02	1.0E-01	3.3E-02	5.2E-02	2.0E-02
Copper	1.30E+02	9.46E+01	1.9E+00	1.6E+00	4.6E+00	4.5E-01	2.7E+00	1.8E-01	3.4E+00	3.2E-01	1.9E+00	1.3E-01
Iron	3.91E+04	2.15E+04	---	2.0E+02	---	---	---	---	---	---	---	---
Lead	3.82E+02	1.99E+02	3.2E+00	2.2E-01	3.5E+01	1.0E+00	6.8E+00	1.7E-01	1.8E+01	5.4E-01	3.6E+00	9.0E-02
Manganese	2.71E+02	2.19E+02	1.2E+00	6.0E-01	6.3E-02	3.0E-02	6.8E-02	2.4E-02	5.1E-02	2.4E-02	5.5E-02	1.9E-02
Mercury	1.47E+02	1.45E+02	4.2E+02	5.9E+01	See note.	See note.	See note.	See note.	See note.	See note.	See note.	See note.
Nickel	7.59E+01	4.65E+01	2.0E+00	2.7E-01	3.6E-01	1.3E-01	5.8E-01	6.7E-02	2.2E-01	8.0E-02	3.6E-01	4.1E-02
Selenium	2.10E+00	1.79E+00	4.0E+00	5.1E-01	1.8E+00	5.0E-01	3.3E+00	7.2E-01	1.5E+00	4.3E-01	2.8E+00	6.1E-01
Silver	2.40E+00	9.42E-01	4.3E-03	4.8E-02	5.7E-01	1.5E-02	1.7E-01	8.8E-03	2.2E-01	5.8E-03	6.7E-02	3.4E-03
Vanadium	2.09E+01	1.84E+01	1.0E+01	1.0E+00	2.7E+00	5.2E-01	7.5E-02	3.3E-02	2.4E+00	4.6E-01	6.6E-02	2.9E-02
Zinc	3.15E+02	2.08E+02	2.0E+00	2.6E+00	6.8E+00	2.0E+00	4.0E+00	1.0E+00	4.5E+00	1.3E+00	2.6E+00	6.7E-01

Notes:
Plant and soil invertebrate benchmarks considered NOAEL-based.
Shading indicates HQ > 1.0.
Mercury was evaluated through the use of dietary exposure models for which results are presented in Table 2-20.

Table 2-23
Phytotoxicity Screening Summary
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Analyte	FOE	NOAEL-based Hazard Quotients		
		≥ 1 and <10	≥ 10 and <100	≥ 100
Cell House Property				
Semivolatile Organic Compounds				
Polycyclic Aromatic Hydrocarbons				
High Molecular Weight PAHs	9/9	6	3	---
Inorganics				
Aluminum	12/12	---	---	12
Antimony	6/6	6	---	---
Arsenic	2/12	1	1	---
Barium	12/12	2	10	---
Chromium	12/12	---	---	12
Cobalt	2/12	2	---	---
Copper	4/12	4	---	---
Lead	3/12	3	---	---
Manganese	2/12	2	---	---
Mercury	12/12	8	1	3
Nickel	1/12	1	---	---
Selenium	6/6	6	---	---
Vanadium	12/12	11	1	---
Zinc	4/12	4	---	---
Southern Facility Study Area				
Semivolatile Organic Compounds				
Polycyclic Aromatic Hydrocarbons				
High Molecular Weight PAHs	30/30	23	7	---
Inorganics				
Aluminum	48/48	---	---	48
Antimony	29/30	19	5	5
Arsenic	12/47	11	1	---
Barium	48/48	9	36	3
Chromium	48/48	---	---	48
Cobalt	2/48	2	---	---
Copper	24/48	20	4	---
Lead	18/48	11	6	1
Manganese	29/48	29	---	---
Mercury	38/47	19	14	5
Nickel	5/48	5	---	---
Selenium	38/44	36	2	---
Vanadium	48/48	24	24	---
Zinc	12/48	12	---	---
Eastern Facility Study Area				
Semivolatile Organic Compounds				
Polycyclic Aromatic Hydrocarbons				
High Molecular Weight PAHs	8/9	4	3	1
Inorganics				
Aluminum	14/14	---	---	14
Antimony	7/8	6	1	---
Arsenic	3/14	3	---	---
Barium	14/14	3	10	1
Chromium	14/14	---	---	14
Copper	4/14	4	---	---
Lead	3/14	3	---	---
Manganese	12/14	12	---	---
Mercury	6/11	1	5	---
Selenium	8/9	8	---	---
Vanadium	14/14	9	5	---
Zinc	3/14	3	---	---

Notes:
FOE = Frequency of exceeding. Number of detects exceeding benchmark to number of detects.

Table 2-24
Soil Invertebrate Screening Summary
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire
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Analyte	FOE	NOAEL-based Hazard Quotients		
		≥ 1 and <10	≥ 10 and <100	≥ 100
Cell House Property				
Semivolatile Organic Compounds				
Polycyclic Aromatic Hydrocarbons				
High Molecular Weight PAHs	1/9	1	---	---
Inorganics				
Aluminum	12/12	11	1	---
Arsenic	12/12	3	7	2
Chromium	12/12	---	11	1
Copper	4/12	4	---	---
Iron	12/12	---	11	1
Mercury	7/12	4	3	---
Vanadium	1/12	1	---	---
Zinc	5/12	5	---	---
Southern Facility Study Area				
Semivolatile Organic Compounds				
Polycyclic Aromatic Hydrocarbons				
High Molecular Weight PAHs	3/30	3	---	---
Inorganics				
Aluminum	48/48	39	9	---
Antimony	3/30	3	---	---
Arsenic	47/47	1	34	12
Barium	5/48	5	---	---
Chromium	48/48	---	41	7
Copper	19/48	15	4	---
Iron	48/48	---	34	14
Lead	6/48	5	1	---
Manganese	6/48	6	---	---
Mercury	20/47	15	5	---
Nickel	1/48	1	---	---
Selenium	4/44	4	---	---
Vanadium	24/48	24	---	---
Zinc	17/48	17	---	---
Eastern Facility Study Area				
Semivolatile Organic Compounds				
Polycyclic Aromatic Hydrocarbons				
High Molecular Weight PAHs	3/9	2	1	---
Low Molecular Weight PAHs	1/10	1	---	---
Inorganics				
Aluminum	14/14	9	5	---
Arsenic	14/14	4	8	2
Barium	1/14	1	---	---
Chromium	14/14	---	13	1
Copper	3/14	3	---	---
Iron	14/14	---	14	---
Manganese	1/14	1	---	---
Mercury	5/11	4	1	---
Vanadium	5/14	5	---	---
Zinc	3/14	3	---	---

Notes:

FOE = Frequency of exceeding. Number of detects exceeding benchmark to number of detects.

Table 2-25
% of Detected Concentrations Exceeding Soil Screening Benchmarks - CHP
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire
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COPEC	FOD*	% Concentrations Exceeding Benchmark					
		Plant	Soil Invertebrates	Avian		Mammalian	
				NOAEL	LOAEL	NOAEL	LOAEL
Volatile Organic Compounds							
Benzaldehyde	1/9	---	---	---	---	---	---
Methyl Acetate	2/10	---	---	---	---	---	---
Semivolatile Organic Compounds							
Butylbenzylphthalate	1/9	---	---	---	---	100	---
Dibenzofuran	3/9	---	---	---	---	---	---
Polycyclic Aromatic Hydrocarbons							
High Molecular Weight PAHs	9/9	100	11	---	---	100	0
Low Molecular Weight PAHs	9/9	---	0	---	---	0	0
Chlorinated Naphthalenes							
Dichloronaphthalene, Total	2/9	---	---	---	---	---	---
Pentachloronaphthalene, Total	3/9	---	---	---	---	---	---
Tetrachloronaphthalene, Total	3/9	---	---	---	---	---	---
Trichloronaphthalene, Total	3/9	---	---	---	---	---	---
Dioxin Congeners							
2,3,7,8-TCDD TEQ (bird)	9/9	---	---	100	100	---	---
2,3,7,8-TCDD TEQ (mammal)	9/9	---	---	---	---	100	100
PCB Homologues							
Total PCB Homologues	9/9	---	---	91	36	100	64
PCB Congeners							
PCB Dioxin-like Congener TEQ (bird)	9/9	---	---	100	67	---	---
PCB Dioxin-like Congener TEQ (mammal)	9/9	---	---	---	---	100	89
PEP Compounds							
Perchlorate (organic)	3/9	---	---	---	---	---	---
Inorganics							
Aluminum	10/10	100	100	100	---	100	100
Antimony	6/10	100	0	---	---	100	0
Arsenic	10/10	17	100	8	8	8	8
Barium	10/10	100	0	92	0	0	0
Cadmium	7/10	0	0	50	0	63	0
Chromium	10/10	100	100	8	0	0	0
Cobalt	10/10	17	0	0	0	0	0
Copper	10/10	33	33	67	0	50	0
Iron	10/10	---	100	---	---	---	---
Lead	10/10	25	0	100	8	67	0
Manganese	10/10	17	0	0	0	0	0
Mercury	10/10	100	58	100	100	100	100
Nickel	10/10	8	0	0	0	0	0
Selenium	5/10	100	0	50	0	67	0
Silver	4/10	0	0	0	0	0	0
Vanadium	10/10	100	8	100	0	0	0
Zinc	10/10	33	42	83	33	58	8

Note: FOD calculated on a location-specific basis and does not consider primary and field duplicates separately.
--- = No benchmark available; therefore no frequency of exceeding calculated.
Plant and soil invertebrate benchmarks considered NOAEL-based.

Table 2-26
Screening Hazard Quotients for Soil COPECs – SFSA
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

COPEC	Screening Concentration (mg/kg dw)		Hazard Quotients									
			based on Maximum Concentration						based on EPC			
	Maximum	EPC	Plant	Soil Invertebrate	Avian		Mammalian		Avian		Mammalian	
					NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Volatile Organic Compounds												
Methyl Acetate	2.80E-02	NA	---	---	---	---	---	---	---	---	---	---
Semivolatile Organic Compounds												
2,4-Dimethylphenol	8.50E-02	8.50E-02	---	---	---	---	---	---	---	---	---	---
Bis(2-Ethylhexyl)Phthalate	2.60E+00	4.74E-01	---	---	2.9E+00	---	7.2E-02	7.2E-03	5.2E-01	---	1.3E-02	1.3E-03
Dibenzofuran	6.00E-01	1.71E-01	---	---	---	---	---	---	---	---	---	---
Polycyclic Aromatic Hydrocarbons												
High Molecular Weight PAHs	3.80E+01	1.54E+01	3.2E+01	2.1E+00	---	---	3.5E+01	5.4E-01	---	---	1.4E+01	2.2E-01
Low Molecular Weight PAHs	2.47E+01	7.93E+00	---	8.5E-01	---	---	2.5E-01	4.4E-02	---	---	7.9E-02	1.4E-02
Dioxin Congeners												
2,3,7,8-TCDD TEQ (bird)	1.80E-03	5.75E-04	---	---	1.1E+03	1.1E+02	---	---	3.6E+02	3.6E+01	---	---
2,3,7,8-TCDD TEQ (mammal)	4.69E-04	8.84E-05	---	---	---	---	1.5E+03	1.5E+02	---	---	2.8E+02	2.8E+01
Pesticides												
Beta-BHC	3.00E-03	2.00E-03	---	---	1.8E-03	1.8E-04	2.0E-03	4.1E-04	1.2E-03	1.2E-04	1.4E-03	2.7E-04
DDT and Metabolites	5.90E-02	1.67E-02	---	---	6.3E-01	4.2E-02	2.8E+00	7.5E-02	1.8E-01	1.2E-02	8.0E-01	2.1E-02
Dieldrin	1.40E-02	7.84E-03	---	---	6.4E-01	4.2E-02	2.9E+00	3.4E-02	3.6E-01	2.4E-02	1.6E+00	1.9E-02
Endrin Aldehyde	5.00E-02	3.90E-03	---	---	6.3E+00	6.0E-01	2.7E-01	2.7E-02	4.9E-01	4.7E-02	2.1E-02	2.1E-03
Endrin Ketone	5.30E-02	3.80E-03	---	---	6.6E+00	6.4E-01	2.9E-01	2.9E-02	4.8E-01	4.6E-02	2.1E-02	2.1E-03
PCB Homologues												
Total PCB Homologues	4.80E+00	1.59E+00	---	---	7.3E+01	7.3E+00	1.3E+02	1.3E+01	2.4E+01	2.4E+00	4.3E+01	4.3E+00
PCB Congeners												
PCB Dioxin-like Congener TEQ (bird)	4.04E-04	6.95E-05	---	---	2.6E+02	2.6E+01	---	---	4.4E+01	4.4E+00	---	---
PCB Dioxin-like Congener TEQ (mammal)	1.83E-04	4.10E-05	---	---	---	---	5.8E+02	5.8E+01	---	---	1.3E+02	1.3E+01
Inorganics												
Aluminum	7.82E+03	4.93E+03	1.6E+03	1.3E+01	8.6E+01	---	2.0E+03	2.0E+02	5.4E+01	---	1.3E+03	1.3E+02
Antimony	5.80E+02	1.26E+02	1.2E+03	7.4E+00	---	---	2.1E+03	4.5E+01	---	---	4.7E+02	9.7E+00
Arsenic	2.81E+02	6.19E+01	1.6E+01	1.1E+03	6.5E+00	3.0E+00	6.1E+00	1.4E+00	1.4E+00	6.6E-01	1.3E+00	3.1E-01
Barium	1.44E+03	3.67E+02	2.9E+02	4.4E+00	5.1E+01	5.1E+00	7.2E-01	4.4E-01	1.3E+01	1.3E+00	1.8E-01	1.1E-01
Cadmium	4.20E+00	6.46E-01	1.3E-01	3.0E-02	5.5E+00	9.8E-01	1.2E+01	1.3E+00	8.4E-01	1.5E-01	1.8E+00	2.0E-01
Chromium	5.43E+01	2.25E+01	3.0E+03	2.7E+02	2.1E+00	3.0E-01	1.6E+00	6.6E-02	8.7E-01	1.2E-01	6.6E-01	2.7E-02
Cobalt	2.97E+01	7.78E+00	2.3E+00	3.0E-02	2.5E-01	8.1E-02	1.3E-01	5.0E-02	6.5E-02	2.1E-02	3.4E-02	1.3E-02
Copper	1.89E+03	4.42E+02	2.7E+01	2.4E+01	6.8E+01	6.5E+00	3.9E+01	2.6E+00	1.6E+01	1.5E+00	9.0E+00	6.1E-01
Iron	2.35E+05	5.52E+04	---	1.2E+03	---	---	---	---	---	---	---	---
Lead	2.44E+04	3.50E+03	2.0E+02	1.4E+01	2.2E+03	6.7E+01	4.4E+02	1.1E+01	3.2E+02	9.6E+00	6.3E+01	1.6E+00
Manganese	7.80E+02	3.29E+02	3.5E+00	1.7E+00	1.8E-01	8.6E-02	2.0E-01	6.9E-02	7.6E-02	3.6E-02	8.2E-02	2.9E-02
Mercury	1.25E+02	3.50E+01	3.6E+02	5.0E+01	See note.	See note.	See note.	See note.	See note.	See note.	See note.	See note.
Nickel	3.42E+02	5.98E+01	9.0E+00	1.2E+00	1.6E+00	5.9E-01	2.6E+00	3.0E-01	2.8E-01	1.0E-01	4.6E-01	5.3E-02
Selenium	5.90E+00	2.42E+00	1.1E+01	1.4E+00	4.9E+00	1.4E+00	9.4E+00	2.0E+00	2.0E+00	5.8E-01	3.8E+00	8.3E-01
Silver	5.50E+00	9.54E-01	9.8E-03	1.1E-01	1.3E+00	3.4E-02	3.9E-01	2.0E-02	2.3E-01	5.9E-03	6.8E-02	3.5E-03
Vanadium	7.27E+01	2.52E+01	3.6E+01	3.6E+00	9.3E+00	1.8E+00	2.6E-01	1.2E-01	3.2E+00	6.3E-01	9.0E-02	4.0E-02
Zinc	8.39E+02	1.90E+02	5.2E+00	7.0E+00	1.8E+01	5.4E+00	1.1E+01	2.7E+00	4.1E+00	1.2E+00	2.4E+00	6.1E-01

Notes:
Plant and soil invertebrate benchmarks considered NOAEL-based.
Shading indicates HQ > 1.0.
Mercury was evaluated through the use of dietary exposure models for which results are presented in Table 2-20.

Table 2-27
% of Detected Concentrations Exceeding Soil Screening Benchmarks - SFSA
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire
Page 1 of 1

COPEC	FOD*	% Concentrations Exceeding Benchmark					
		Plant	Soil Invertebrates	Avian		Mammalian	
				NOAEL	LOAEL	NOAEL	LOAEL
Volatile Organic Compounds							
Methyl Acetate	3/31	---	---	---	---	---	---
Semivolatile Organic Compounds							
2,4-Dimethylphenol	1/31	---	---	---	---	---	---
Bis(2-Ethylhexyl)Phthalate	7/31	---	---	43	---	0	0
Dibenzofuran	5/31	---	---	---	---	---	---
Polycyclic Aromatic Hydrocarbons							
High Molecular Weight PAHs	30/31	100	10	---	---	100	0
Low Molecular Weight PAHs	29/31	---	0	---	---	0	0
Dioxin Congeners							
2,3,7,8-TCDD TEQ (bird)	31/31	---	---	97	84	---	---
2,3,7,8-TCDD TEQ (mammal)	31/31	---	---	---	---	100	90
Pesticides							
Beta-BHC	1/31	---	---	0	0	0	0
DDT and Metabolites	8/31	---	---	0	0	50	0
Dieldrin	4/31	---	---	0	0	100	0
Endrin Aldehyde	3/31	---	---	100	0	0	0
Endrin Ketone	1/31	---	---	100	0	0	0
PCB Homologues							
Total PCB Homologues	31/31	---	---	76	41	76	44
PCB Congeners							
PCB Dioxin-like Congener TEQ (bird)	31/31	---	---	90	45	---	---
PCB Dioxin-like Congener TEQ (mammal)	31/31	---	---	---	---	97	68
Inorganics							
Aluminum	45/45	100	100	100	---	100	100
Antimony	29/45	97	10	---	---	100	20
Arsenic	44/45	26	100	17	6	17	2
Barium	45/45	100	10	100	10	0	0
Cadmium	23/45	0	0	20	0	40	4
Chromium	45/45	100	100	13	0	6	0
Cobalt	45/45	4	0	0	0	0	0
Copper	45/45	50	40	83	10	58	8
Iron	45/45	---	100	---	---	---	---
Lead	45/45	38	13	96	23	65	10
Manganese	45/45	60	13	0	0	0	0
Mercury	44/45	81	43	100	100	100	94
Nickel	45/45	10	2	2	0	2	0
Selenium	41/45	86	9	36	9	80	11
Silver	7/45	0	0	13	0	0	0
Vanadium	45/45	100	50	100	2	0	0
Zinc	45/45	25	35	81	27	56	10

Note: FOD calculated on a location-specific basis and does not consider primary and field duplicates separately.
--- = No benchmark available; therefore no frequency of exceeding calculated.
Plant and soil invertebrate benchmarks considered NOAEL-based.

Table 2-28
Screening Hazard Quotients for Soil COPECs – EFSA
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

COPEC	Screening Concentration (mg/kg dw)		Hazard Quotients									
			based on Maximum Concentration						based on EPC			
	Maximum	EPC	Plant	Soil Invertebrate	Avian		Mammalian		Avian		Mammalian	
					NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Volatile Organic Compounds												
Methyl Acetate	4.80E-02	NA	---	---	---	---	---	---	---	---	---	---
Semivolatile Organic Compounds												
Bis(2-Ethylhexyl)Phthalate	1.40E-01	1.40E-01	---	---	1.5E-01	---	3.9E-03	3.9E-04	1.5E-01	---	3.9E-03	3.9E-04
Dibenzofuran	3.10E-01	2.10E-01	---	---	---	---	---	---	---	---	---	---
Polycyclic Aromatic Hydrocarbons												
High Molecular Weight PAHs	2.40E+02	1.63E+02	2.0E+02	1.3E+01	---	---	2.2E+02	3.4E+00	---	---	1.5E+02	2.3E+00
Low Molecular Weight PAHs	1.09E+02	7.45E+01	---	3.7E+00	---	---	1.1E+00	2.0E-01	---	---	7.4E-01	1.3E-01
Dioxin Congeners												
2,3,7,8-TCDD TEQ (bird)	1.29E-02	9.40E-03	---	---	8.2E+03	8.2E+02	---	---	5.9E+03	5.9E+02	---	---
2,3,7,8-TCDD TEQ (mammal)	2.72E-03	2.01E-03	---	---	---	---	8.6E+03	8.6E+02	---	---	6.4E+03	6.4E+02
Pesticides												
Beta-BHC	4.70E-03	2.00E-03	---	---	2.8E-03	2.8E-04	3.2E-03	6.4E-04	1.2E-03	1.2E-04	1.4E-03	2.7E-04
DDT and Metabolites	4.68E-02	8.00E-03	---	---	5.0E-01	3.3E-02	2.2E+00	5.9E-02	8.6E-02	5.7E-03	3.8E-01	1.0E-02
Endrin Aldehyde	4.90E-02	3.90E-03	---	---	6.1E+00	5.9E-01	2.7E-01	2.7E-02	4.9E-01	4.7E-02	2.1E-02	2.1E-03
Endrin Ketone	5.50E-02	3.90E-03	---	---	6.9E+00	6.6E-01	3.0E-01	3.0E-02	4.9E-01	4.7E-02	2.1E-02	2.1E-03
Heptachlor	1.90E-02	2.00E-03	1.9E-02	---	---	---	4.0E-02	4.0E-03	---	---	4.2E-03	4.2E-04
PCB Homologues												
Total PCB Homologues	8.87E-02	4.78E-02	---	---	1.4E+00	1.4E-01	2.4E+00	2.4E-01	7.3E-01	7.3E-02	1.3E+00	1.3E-01
PCB Congeners												
PCB Dioxin-like Congener TEQ (bird)	3.71E-05	2.02E-05	---	---	2.4E+01	2.4E+00	---	---	1.3E+01	1.3E+00	---	---
PCB Dioxin-like Congener TEQ (mammal)	2.02E-05	6.67E-06	---	---	---	---	6.4E+01	6.4E+00	---	---	2.1E+01	2.1E+00
Inorganics												
Aluminum	1.08E+04	6.98E+03	2.2E+03	1.8E+01	1.2E+02	---	2.8E+03	2.8E+02	7.7E+01	---	1.8E+03	1.8E+02
Antimony	1.65E+01	1.07E+01	3.3E+01	2.1E-01	---	---	6.1E+01	1.3E+00	---	---	4.0E+01	8.2E-01
Arsenic	3.87E+01	1.83E+01	2.2E+00	1.5E+02	9.0E-01	4.1E-01	8.4E-01	1.9E-01	4.3E-01	1.9E-01	4.0E-01	9.1E-02
Barium	7.24E+02	2.61E+02	1.4E+02	2.2E+00	2.6E+01	2.6E+00	3.6E-01	2.2E-01	9.2E+00	9.2E-01	1.3E-01	8.0E-02
Cadmium	1.10E+00	5.30E-01	3.4E-02	7.9E-03	1.4E+00	2.6E-01	3.1E+00	3.4E-01	6.9E-01	1.2E-01	1.5E+00	1.7E-01
Chromium	2.02E+01	1.23E+01	1.1E+03	1.0E+02	7.8E-01	1.1E-01	5.9E-01	2.4E-02	4.7E-01	6.7E-02	3.6E-01	1.5E-02
Cobalt	8.50E+00	6.67E+00	6.5E-01	8.5E-03	7.1E-02	2.3E-02	3.7E-02	1.4E-02	5.6E-02	1.8E-02	2.9E-02	1.1E-02
Copper	1.94E+02	8.37E+01	2.8E+00	2.4E+00	6.9E+00	6.6E-01	4.0E+00	2.7E-01	3.0E+00	2.9E-01	1.7E+00	1.2E-01
Iron	1.86E+04	1.35E+04	---	9.3E+01	---	---	---	---	---	---	---	---
Lead	1.18E+03	5.53E+02	9.8E+00	6.9E-01	1.1E+02	3.2E+00	2.1E+01	5.3E-01	5.0E+01	1.5E+00	9.9E+00	2.5E-01
Manganese	7.16E+02	3.79E+02	3.3E+00	1.6E+00	1.7E-01	7.9E-02	1.8E-01	6.3E-02	8.8E-02	4.2E-02	9.5E-02	3.4E-02
Mercury	3.44E+01	2.12E+01	9.9E+01	1.4E+01	See note.	See note.	See note.	See note.	See note.	See note.	See note.	See note.
Nickel	2.85E+01	1.65E+01	7.5E-01	1.0E-01	1.4E-01	4.9E-02	2.2E-01	2.5E-02	7.8E-02	2.8E-02	1.3E-01	1.5E-02
Selenium	2.10E+00	1.42E+00	4.0E+00	5.1E-01	1.8E+00	5.0E-01	3.3E+00	7.2E-01	1.2E+00	3.4E-01	2.3E+00	4.9E-01
Silver	1.20E+00	1.20E+00	2.1E-03	2.4E-02	2.9E-01	7.4E-03	8.6E-02	4.4E-03	2.9E-01	7.4E-03	8.6E-02	4.4E-03
Vanadium	3.08E+01	2.29E+01	1.5E+01	1.5E+00	3.9E+00	7.7E-01	1.1E-01	4.9E-02	2.9E+00	5.7E-01	8.2E-02	3.6E-02
Zinc	4.87E+02	1.61E+02	3.0E+00	4.1E+00	1.1E+01	3.1E+00	6.2E+00	1.6E+00	3.5E+00	1.0E+00	2.0E+00	5.2E-01

Notes:
Plant and soil invertebrate benchmarks considered NOAEL-based.
Shading indicates HQ > 1.0.
Mercury was evaluated through the use of dietary exposure models for which results are presented in Table 2-20.

Table 2-29
Sediment Toxicity Screening Summary
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Analyte	FOE	NOAEL-based Hazard Quotients		
		≥ 1 and <10	≥ 10 and <100	≥ 100
Eastern Facility Study Area				
Volatile Organic Compounds				
Acetone	3/3	---	3	---
Semivolatile Organic Compounds				
Polycyclic Aromatic Hydrocarbons				
2-Methylnaphthalene	1/1	1	---	---
Acenaphthene	2/3	2	---	---
Acenaphthylene	3/3	1	2	---
Anthracene	6/6	3	1	2
Benzo(A)Anthracene	8/9	2	4	2
Benzo(A)Pyrene	8/9	3	3	2
Benzo(B)Fluoranthene	7/9	4	3	---
Benzo(G,H,I)Perylene	7/9	4	3	---
Benzo(K)Fluoranthene	6/9	4	1	1
Carbazole	2/2	1	1	---
Chrysene	7/9	2	3	2
Dibenz(A,H)Anthracene	4/4	1	1	2
Fluoranthene	6/11	3	2	1
Fluorene	4/4	1	3	---
Indeno(1,2,3-Cd)Pyrene	6/9	3	1	2
Naphthalene	1/1	1	---	---
Phenanthrene	6/8	3	1	2
Pyrene	8/10	3	3	2
Pesticides				
4,4'-DDD	2/2	2	---	---
4,4'-DDT	1/1	1	---	---
Alpha-BHC	2/2	2	---	---
Beta-BHC	1/1	1	---	---
Endrin Aldehyde	1/1	---	1	---
Endrin Ketone	1/1	---	1	---
Heptachlor	2/2	2	---	---
Inorganics				
Arsenic	5/14	5	---	---
Cadmium	1/9	1	---	---
Copper	9/14	9	---	---
Lead	6/14	5	1	---
Manganese	1/14	1	---	---
Mercury	7/11	2	3	2
Nickel	1/14	1	---	---
Silver	1/1	1	---	---
Zinc	3/14	3	---	---

Notes:

FOE = Frequency of exceeding. Number of detects exceeding benchmark to number of detects.

Table 2-30
% of Detected Concentrations Exceeding Soil Screening Benchmarks - EFSA
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire
Page 1 of 1

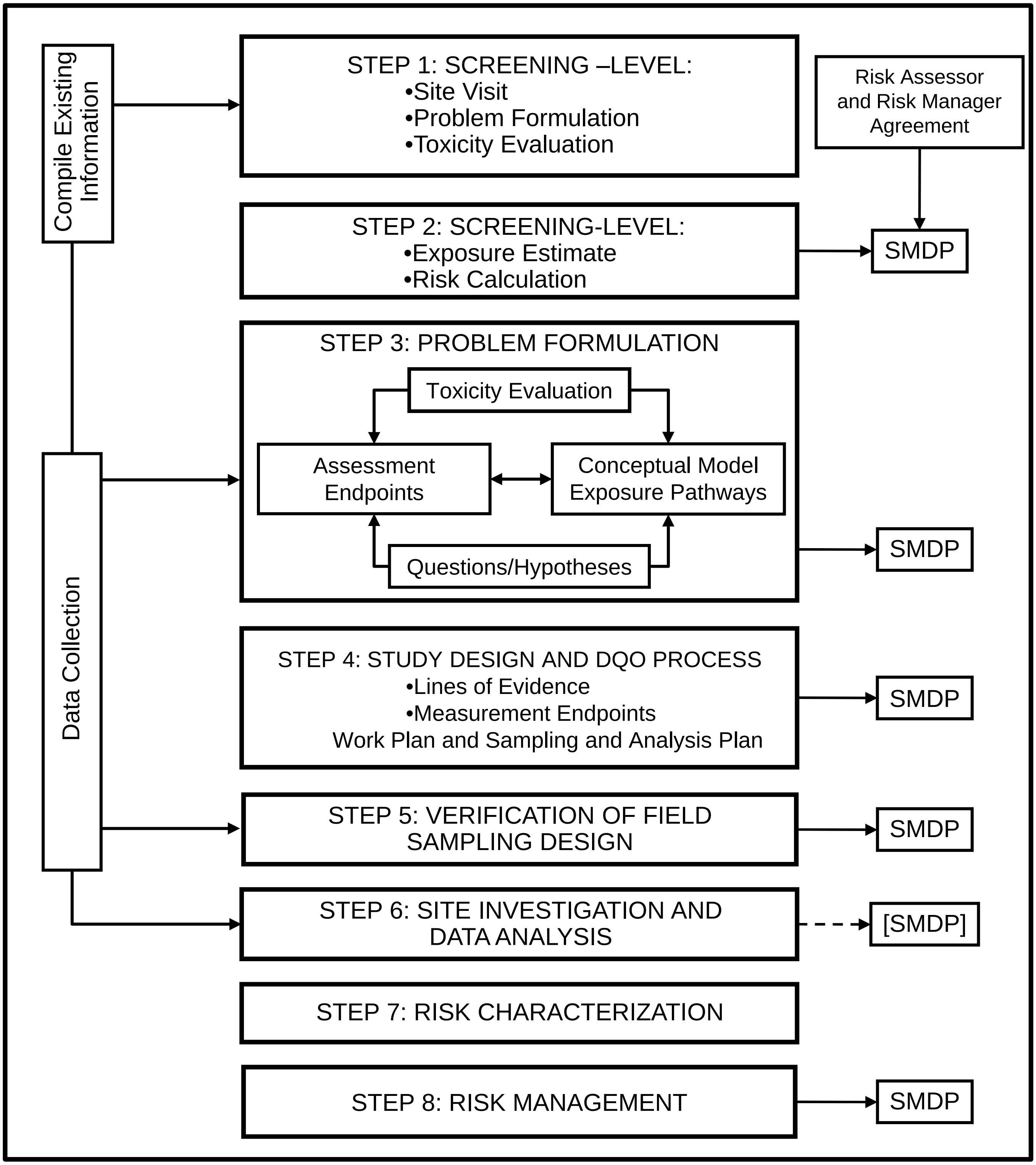
COPEC	FOD*	% Concentrations Exceeding Benchmark					
		Plant	Soil Invertebrates	Avian		Mammalian	
				NOAEL	LOAEL	NOAEL	LOAEL
Volatile Organic Compounds							
Methyl Acetate	3/11	---	---	---	---	---	---
Semivolatile Organic Compounds							
Bis(2-Ethylhexyl)Phthalate	2/11	---	---	0	---	0	0
Dibenzofuran	1/11	---	---	---	---	---	---
Polycyclic Aromatic Hydrocarbons							
High Molecular Weight PAHs	9/11	89	33	---	---	89	11
Low Molecular Weight PAHs	10/11	---	10	---	---	10	0
Dioxin Congeners							
2,3,7,8-TCDD TEQ (bird)	11/11	---	---	91	45	---	---
2,3,7,8-TCDD TEQ (mammal)	11/11	---	---	---	---	100	64
Pesticides							
Beta-BHC	1/11	---	---	0	0	0	0
DDT and Metabolites	2/11	---	---	0	0	50	0
Endrin Aldehyde	1/11	---	---	100	0	0	0
Endrin Ketone	1/11	---	---	100	0	0	0
Heptachlor	1/11	0	---	---	---	0	0
PCB Homologues							
Total PCB Homologues	11/11	---	---	23	0	38	0
PCB Congeners							
PCB Dioxin-like Congener TEQ (bird)	11/11	---	---	55	9	---	---
PCB Dioxin-like Congener TEQ (mammal)	11/11	---	---	---	---	73	9
Inorganics							
Aluminum	12/12	100	100	100	---	100	100
Antimony	7/12	88	0	---	---	100	13
Arsenic	12/12	21	100	0	0	0	0
Barium	12/12	100	7	100	7	0	0
Cadmium	8/12	0	0	22	0	56	0
Chromium	12/12	100	100	0	0	0	0
Cobalt	12/12	0	0	0	0	0	0
Copper	12/12	29	21	64	0	43	0
Iron	12/12	---	100	---	---	---	---
Lead	12/12	21	0	93	7	36	0
Manganese	12/12	86	7	0	0	0	0
Mercury	10/12	55	45	100	100	100	64
Nickel	12/12	0	0	0	0	0	0
Selenium	8/12	89	0	44	0	78	0
Silver	1/12	0	0	0	0	0	0
Vanadium	12/12	100	36	100	0	0	0
Zinc	12/12	21	21	71	21	43	14

Note: FOD calculated on a location-specific basis and does not consider primary and field duplicates separately.
--- = No benchmark available; therefore no frequency of exceeding calculated.
Plant and soil invertebrate benchmarks considered NOAEL-based.

Table 2-31
% of Detected Concentrations Exceeding Sediment
Screening Benchmarks - EFSA
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

COPEC	% Detected Concentrations Exceeding Sediment NOAEL-based Benchmark
Volatile Organic Compounds	
Acetone	100
Semivolatile Organic Compounds	
Polycyclic Aromatic Hydrocarbons	
2-Methylnaphthalene	100
Acenaphthene	67
Acenaphthylene	100
Anthracene	100
Benzo(A)Anthracene	89
Benzo(A)Pyrene	89
Benzo(B)Fluoranthene	78
Benzo(G,H,I)Perylene	78
Benzo(K)Fluoranthene	67
Carbazole	100
Chrysene	78
Dibenz(A,H)Anthracene	100
Fluoranthene	55
Fluorene	100
Indeno(1,2,3-Cd)Pyrene	67
Naphthalene	100
Phenanthrene	75
Pyrene	80
Pesticides	
4,4'-DDD	100
4,4'-DDT	100
Alpha-BHC	100
Beta-BHC	100
Endrin Aldehyde	100
Endrin Ketone	100
Heptachlor	100
Inorganics	
Arsenic	36
Cadmium	11
Copper	64
Lead	43
Manganese	7
Mercury	64
Nickel	7
Silver	100
Zinc	21

FIGURES



Legend:
SMDP - Scientific/management decision point
[SMDP] - only if change to the sampling and analysis plan is necessary

Source: EPA (U.S. Environmental Protection Agency), Environmental Response Team. 1997. *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments.* Interim Final. EPA 540-R-97-006.

FIGURE 1-1

GENERIC EIGHT-STEP ECOLOGICAL RISK ASSESSMENT PROCESS FOR SUPERFUND

CHLOR-ALKALI FACILITY (FORMER) SUPERFUND SITE BERLIN, NH

NOTES:

1. Aerial ortho-photo flown in October 2009 and was provided by York Land Services under contract to Nobis Engineering, Inc.
2. Approximate limit of cap provided by Weston Solutions, February 2005. Final Site Investigation Report; Former Chlor Alkali Facility.
3. Limit of Facility Study Area was provided by the Enlarged Investigation Area Plan; Prepared for North American Dismantling Corp., by York Land Services, September 2008.

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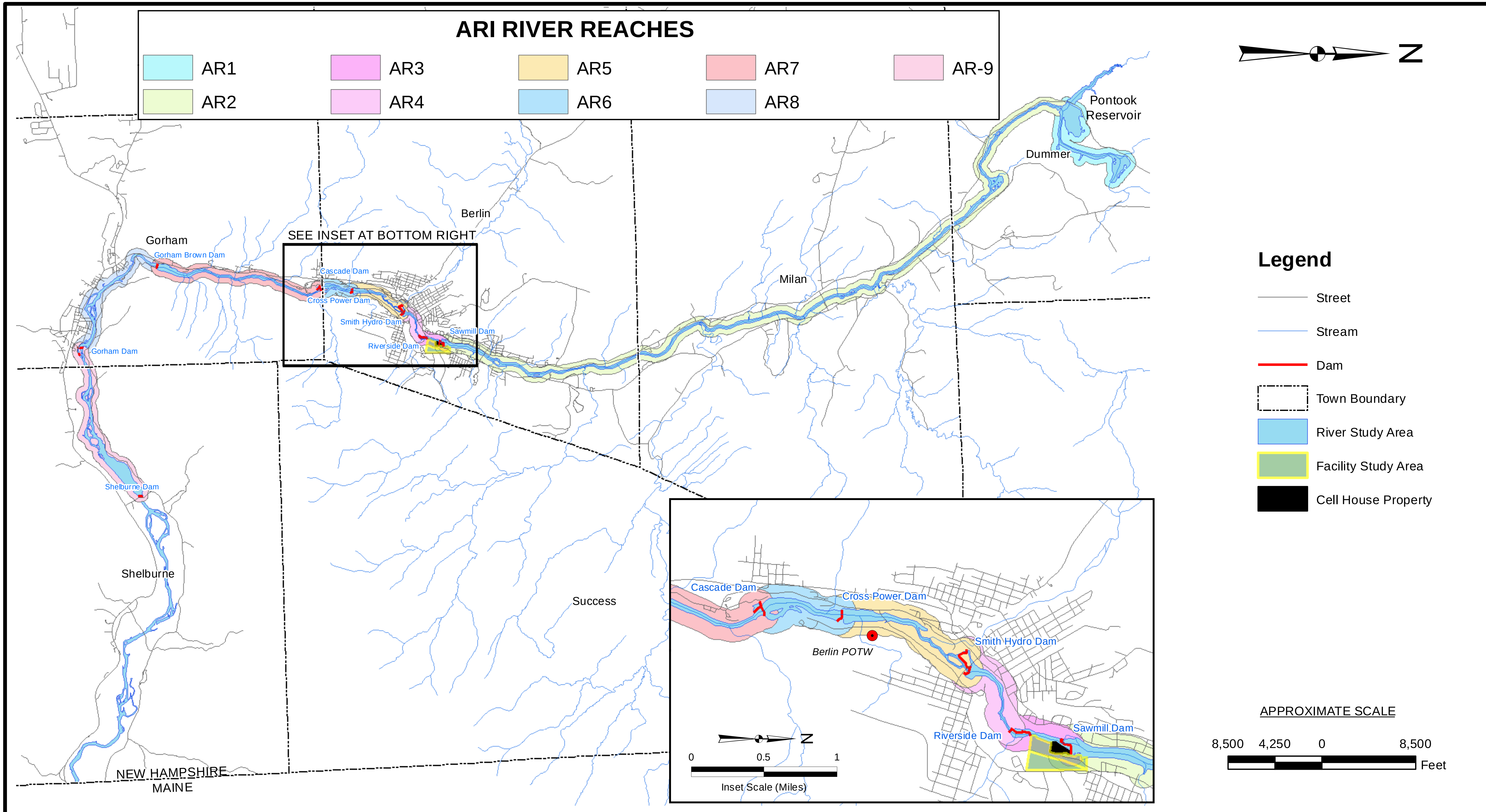
FIGURE 2-1

STUDY AREA (CELL HOUSE PROPERTY, FACILITY STUDY AREA)
CHLOR-ALKALI FACILITY (FORMER)
BERLIN, NH

PREPARED BY: JH	CHECKED BY: LC
PROJECT NO. 80013	DATE: FEBRUARY 2013

Path: R:\80000 Task Orders\80013 Chlor-Alkali\Technical Data (TD)\GIS Data\Maps and Figures\BERA\2-1_Study_Area.mxd Date Printed: 2/5/2013



NOTES:

1. Stream/river location and transportation data provided by NH Granit (accessed in 2007).
2. Approximate limit of Cell House Property provided by Weston Solutions, February 2005, Final Site Investigation Report; Former Chlor Alkali Facility.
3. Limit of Facility Study Area was provided by the Enlarged Investigation Area Plan; Prepared for North American Dismantling Corp., by York Land Services, September 2008.

AR1-Above Pontook Dam
AR2-Between Pontook Dam and Sawmill Dam
AR3-Between Sawmill Dam and Riverside Dam
AR4-Between Riverside Dam and Smith Hydro Dam
AR5-Between Smith Hydro Dam and Cross Power Dam
AR6-Between Cross Power Dam and Cascade Dam
AR7-Between Cascade Dam and Gorham Brown Dam
AR8-Between Gorham Brown Dam and Gorham Dam
AR9-Between Gorham Dam and Shelburne Dam

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FIGURE 2-2

RIVER STUDY AREA PLAN
CHLOR-ALKALI FACILITY (FORMER)
BERLIN, NH

PREPARED BY: DFM	CHECKED BY: LC
PROJECT NO. 80013	DATE: FEBRUARY 2013

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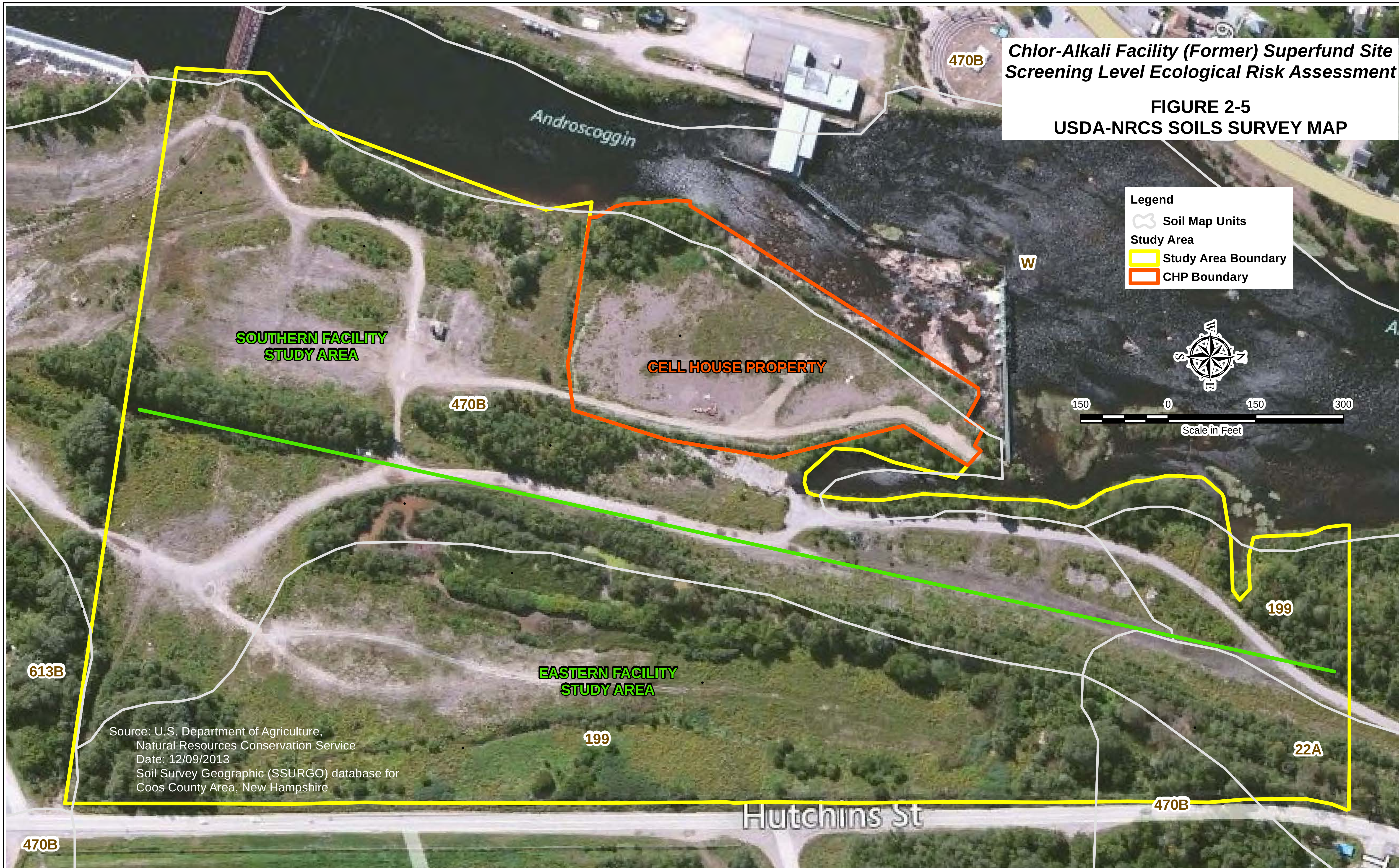
Chlor-Alkali Facility (Former) Superfund Site
Screening Level Ecological Risk Assessment
FIGURE 2-3
HABITAT MAP
Legend
2009 Wetland Boundary
Study Area
Study Area Boundary
CHP Boundary
75 0 75 150 225
Scale in Feet
Androscoggin
Hutchins St
Birch-Aspen Woodland Fringe
Disturbed - Early Field
Scrub Shrub
Scrub Shrub
SOUTHERN FACILITY STUDY AREA
Disturbed - Early Field
CELL HOUSE PROPERTY
Birch-Aspen Woodlot
Scrub Shrub
Pond - Wetland Complex
Western Drainage
Eastern Drainage
Stream
Disturbed - Early Field
EASTERN FACILITY STUDY AREA
Wetlands
Deciduous woodlands
Deciduous Woodlot
Stream & Wetland
Drainage Stream & Wetland
Wetland
Wetland
Deciduous woodlands
Map prepared by: AVATAR Environmental, LLC

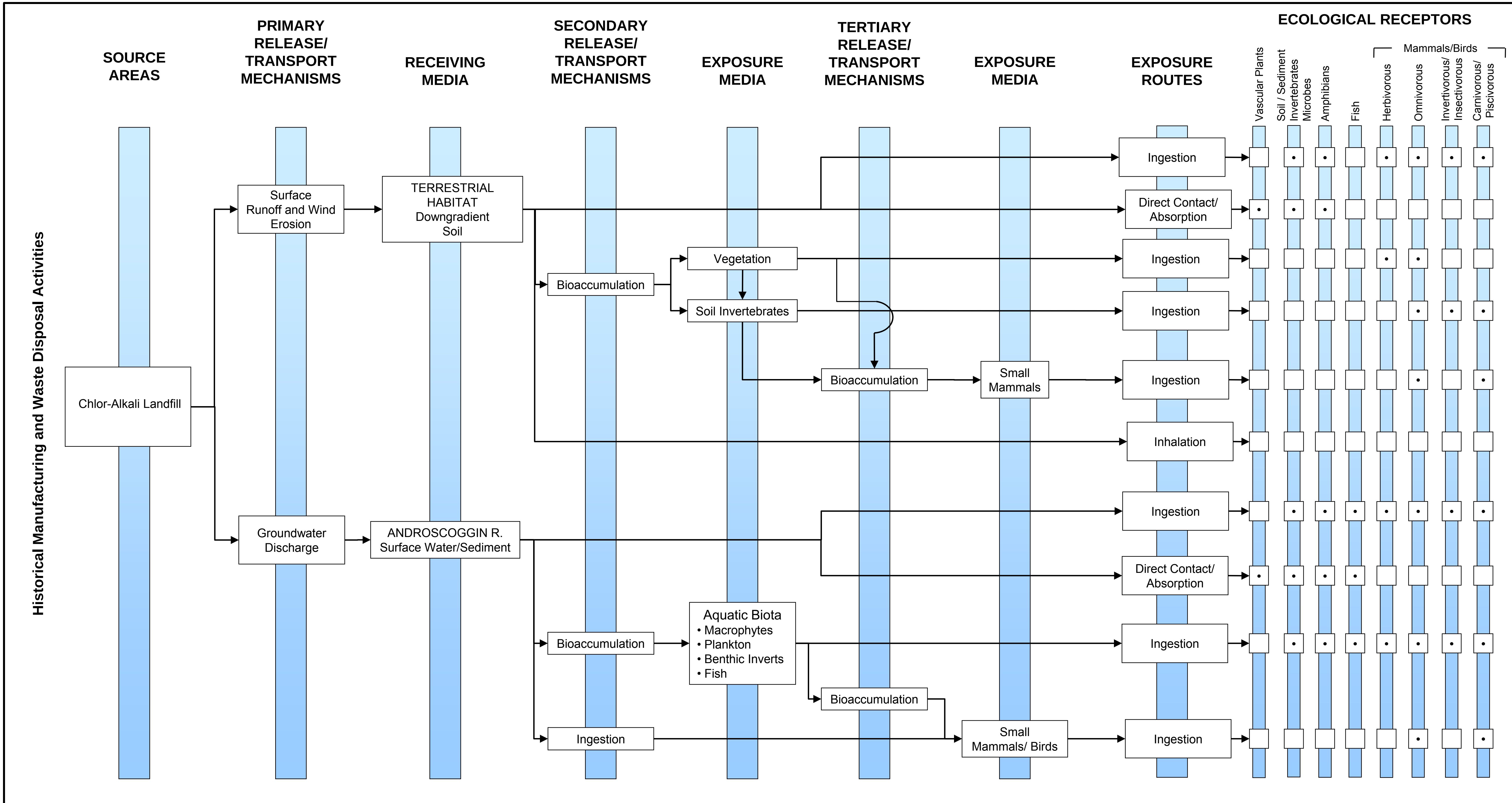

Chlor-Alkali Facility (Former) Superfund Site
Screening Level Ecological Risk Assessment
FIGURE 2-4
USFWS NATIONAL WETLAND INVENTORY MAP
Legend
Study Area
Study Area Boundary
CHP Boundary
NWI Wetlands
Freshwater Forested/Shrub Wetland
Lake
150
0
150
300
Scale in Feet
L1UBHh
Androscoggin
PSS1/FO1C
SOUTHERN FACILITY
STUDY AREA
CELL HOUSE PROPERTY
EASTERN FACILITY
STUDY AREA
Hutchins St
Source: NWI Wetlands are from the U.S. Fish and
Wildlife Service, National Wetlands Inventory
Map prepared by: AVATAR Environmental, LLC



Chlor-Alkali Facility (Former) Superfund Site
Screening Level Ecological Risk Assessment
FIGURE 2-5
USDA-NRCS SOILS SURVEY MAP
Legend
Soil Map Units
Study Area
Study Area Boundary
CHP Boundary
150
0
150
300
Scale in Feet
Androscoggin
SOUTHERN FACILITY STUDY AREA
CELL HOUSE PROPERTY
EASTERN FACILITY STUDY AREA
470B
470B
470B
470B
W
199
199
613B
22A
Hutchins St
Source: U.S. Department of Agriculture,
Natural Resources Conservation Service
Date: 12/09/2013
Soil Survey Geographic (SSURGO) database for
Coos County Area, New Hampshire
Map prepared by: AVATAR Environmental, LLC

Chlor-Alkali Facility (Former) Superfund Site
Screening Level Ecological Risk Assessment
FIGURE 2-6
WETLAND BOUNDARY REVIEW MAP
Legend
2009 Wetland Boundary
Preliminary Changes
Isolated Wet Areas
Review Segment
Study Area
Study Area Boundary
CHP Boundary
Photo Locations 1-8
150
0
150
300
Scale in Feet
Note: Wetland boundary review performed Nov.2012.
Androscoggin
SOUTHERN FACILITY STUDY AREA
CELL HOUSE PROPERTY
EASTERN FACILITY STUDY AREA
Hutchins St
1
2
3
4
5
6
7
8
Map prepared by: AVATAR Environmental, LLC

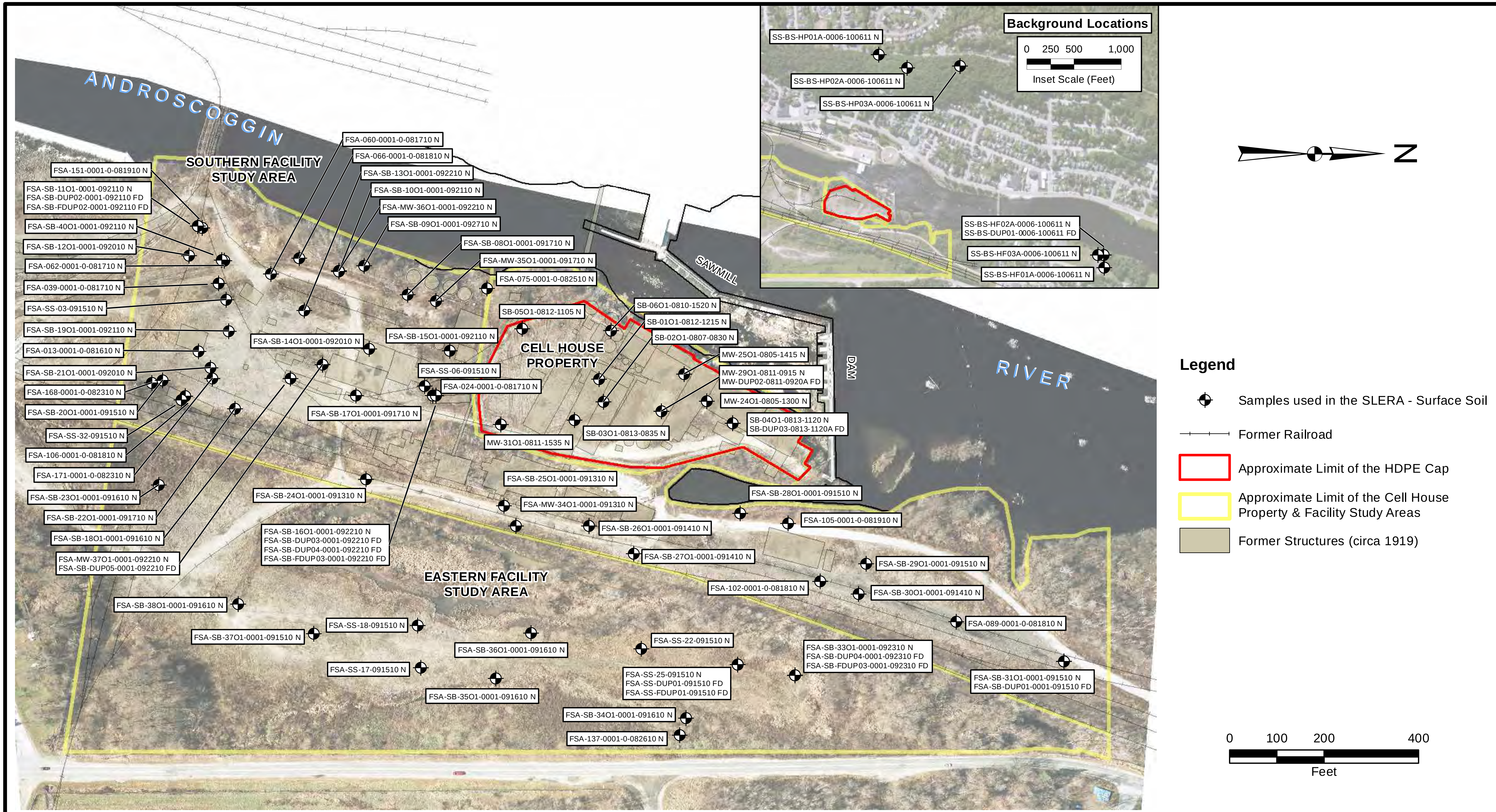
Figure 2-7
Conceptual Site Model



• = Complete exposure pathway.

☐ = Incomplete or insignificant exposure pathway.

Potential receptors include the following:
- Herbivores – Muskrat, Deer Mouse, Canada Goose, Mourning Dove
- Omnivores – Raccoon, White-footed Mouse, Eastern Kingbird
- Invertivores – Short-tailed Shrew, American Robin
- Carnivores/Piscivores – Mink, Red Fox, Kingfisher, Great Blue Heron



NOTES:

1. Aerial orthophoto flown in October 2009 by York Land Services of Berlin, NH.
2. Former building locations are approximate, and were derived from multiple sources, primarily the Sanborn Map Co. Fire Insurance Map, Berlin, New Hampshire, 1928.

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FIGURE 2-8

SOIL SAMPLE LOCATIONS
CHLOR-ALKALI FACILITY (FORMER) SITE
BERLIN, NEW HAMPSHIRE

PREPARED BY: JH	CHECKED BY: JL
PROJECT NO. 80013	DATE: JAN 2014

APPENDIX A

APPENDIX A
SAMPLE LISTS

Table A-1
Samples Used in the SLERA - Surface Soil
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Area	Sample ID	Date	Type
CHP	MW-24O1-0805-1300	8/5/2009	N
CHP	MW-25O1-0805-1415	8/5/2009	N
CHP	MW-29O1-0811-0915	8/11/2009	N
CHP	MW-31O1-0811-1535	8/11/2009	N
CHP	MW-DUP02-0811-0920A	8/11/2009	FD
CHP	SB-01O1-0812-1215	8/12/2009	N
CHP	SB-02O1-0807-0830	8/7/2009	N
CHP	SB-03O1-0813-0835	8/13/2009	N
CHP	SB-04O1-0813-1120	8/13/2009	N
CHP	SB-05O1-0812-1105	8/12/2009	N
CHP	SB-06O1-0810-1520	8/10/2009	N
CHP	SB-DUP03-0813-1120A	8/13/2009	FD
SFSA	FSA-013-0001-0-081610	8/16/2010	N
SFSA	FSA-024-0001-0-081710	8/17/2010	N
SFSA	FSA-039-0001-0-081710	8/17/2010	N
SFSA	FSA-060-0001-0-081710	8/17/2010	N
SFSA	FSA-062-0001-0-081710	8/17/2010	N
SFSA	FSA-066-0001-0-081810	8/18/2010	N
SFSA	FSA-075-0001-0-082510	8/25/2010	N
SFSA	FSA-089-0001-0-081810	8/18/2010	N
SFSA	FSA-102-0001-0-081810	8/18/2010	N
SFSA	FSA-105-0001-0-081910	8/19/2010	N
SFSA	FSA-106-0001-0-081810	8/18/2010	N
SFSA	FSA-151-0001-0-081910	8/19/2010	N
SFSA	FSA-168-0001-0-082310	8/16/2010	N
SFSA	FSA-171-0001-0-082310	8/23/2010	N
SFSA	FSA-MW-34O1-0001-091310	9/13/2010	N
SFSA	FSA-MW-35O1-0001-091710	9/17/2010	N
SFSA	FSA-MW-36O1-0001-092210	9/22/2010	N
SFSA	FSA-MW-37O1-0001-092210	9/22/2010	N
SFSA	FSA-SB-08O1-0001-091710	9/17/2010	N
SFSA	FSA-SB-09O1-0001-092710	9/27/2010	N
SFSA	FSA-SB-10O1-0001-092110	9/21/2010	N
SFSA	FSA-SB-11O1-0001-092110	9/21/2010	N
SFSA	FSA-SB-12O1-0001-092010	9/20/2010	N
SFSA	FSA-SB-13O1-0001-092210	9/22/2010	N
SFSA	FSA-SB-14O1-0001-092010	9/20/2010	N
SFSA	FSA-SB-15O1-0001-092110	9/21/2010	N
SFSA	FSA-SB-16O1-0001-092210	9/22/2010	N
SFSA	FSA-SB-17O1-0001-091710	9/17/2010	N
SFSA	FSA-SB-18O1-0001-091610	9/16/2010	N
SFSA	FSA-SB-19O1-0001-092110	9/21/2010	N
SFSA	FSA-SB-20O1-0001-091510	9/15/2010	N
SFSA	FSA-SB-21O1-0001-092010	9/20/2010	N
SFSA	FSA-SB-22O1-0001-091710	9/17/2010	N
SFSA	FSA-SB-24O1-0001-091310	9/13/2010	N
SFSA	FSA-SB-25O1-0001-091310	9/13/2010	N
SFSA	FSA-SB-26O1-0001-091410	9/14/2010	N
SFSA	FSA-SB-27O1-0001-091410	9/14/2010	N
SFSA	FSA-SB-28O1-0001-091510	9/15/2010	N
SFSA	FSA-SB-29O1-0001-091510	9/15/2010	N
SFSA	FSA-SB-30O1-0001-091410	9/14/2010	N
SFSA	FSA-SB-31O1-0001-091510	9/15/2010	N
SFSA	FSA-SB-40O1-0001-092110	9/21/2010	N
SFSA	FSA-SB-DUP01-0001-091510	9/15/2010	FD
SFSA	FSA-SB-DUP02-0001-092110	9/21/2010	FD
SFSA	FSA-SB-DUP03-0001-092210	9/22/2010	FD
SFSA	FSA-SB-DUP04-0001-092210	9/22/2010	FD
SFSA	FSA-SB-DUP05-0001-092210	9/22/2010	FD

Table A-1
Samples Used in the SLERA - Surface Soil
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Area	Sample ID	Date	Type
SFSA	FSA-SB-FDUP02-0001-092110	9/21/2010	FD
SFSA	FSA-SB-FDUP03-0001-092210	9/22/2010	FD
SFSA	FSA-SS-03-091510	9/15/2010	N
SFSA	FSA-SS-06-091510	9/15/2010	N
SFSA	FSA-SS-32-091510	9/15/2010	N
EFSA	FSA-137-0001-0-082610	8/26/2010	N
EFSA	FSA-SB-23O1-0001-091610	9/16/2010	N
EFSA	FSA-SB-33O1-0001-092310	9/23/2010	N
EFSA	FSA-SB-34O1-0001-091610	9/16/2010	N
EFSA	FSA-SB-35O1-0001-091610	9/16/2010	N
EFSA	FSA-SB-36O1-0001-091610	9/16/2010	N
EFSA	FSA-SB-37O1-0001-091510	9/15/2010	N
EFSA	FSA-SB-38O1-0001-091610	9/16/2010	N
EFSA	FSA-SB-DUP04-0001-092310	9/23/2010	FD
EFSA	FSA-SB-FDUP03-0001-092310	9/23/2010	FD
EFSA	FSA-SS-17-091510	9/15/2010	N
EFSA	FSA-SS-18-091510	9/15/2010	N
EFSA	FSA-SS-22-091510	9/15/2010	N
EFSA	FSA-SS-25-091510	9/15/2010	N
EFSA	FSA-SS-DUP01-091510	9/15/2010	FD
EFSA	FSA-SS-FDUP01-091510	9/15/2010	FD
Bkgd	SS-BS-DUP01-0006-100611	10/6/2011	FD
Bkgd	SS-BS-HF01A-0006-100611	10/6/2011	N
Bkgd	SS-BS-HF02A-0006-100611	10/6/2011	N
Bkgd	SS-BS-HF03A-0006-100611	10/6/2011	N
Bkgd	SS-BS-HP01A-0006-100611	10/6/2011	N
Bkgd	SS-BS-HP02A-0006-100611	10/6/2011	N
Bkgd	SS-BS-HP03A-0006-100611	10/6/2011	N

FD = Field duplicate

N = Primary

Table A-2
Samples Used in the SLERA - Earthworms
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Area	Sample ID	Date	Type
CHP	CHSI-07-080310	8/3/2010	N
CHP	CHSI-13-080310	8/3/2010	N
SFSA	FSASI-01-080410	8/4/2010	N
SFSA	FSASI-06-080410	8/4/2010	N
SFSA	FSASI-30-080510	8/6/2010	N
SFSA	FSASI-32-080610	8/6/2010	N
EFSA	FSASI-08-080410	8/4/2010	N
EFSA	FSASI-09-080410	8/4/2010	N
EFSA	FSASI-10-080410	8/4/2010	N
EFSA	FSASI-11-080410	8/4/2010	N
EFSA	FSASI-12-080410	8/4/2010	N
EFSA	FSASI-13-080410	8/4/2010	N
EFSA	FSASI-14-080410	8/4/2010	N
EFSA	FSASI-17-080410	8/4/2010	N
EFSA	FSASI-18-080510	8/5/2010	N
EFSA	FSASI-20-080510	8/5/2010	N
EFSA	FSASI-21-080510	8/5/2010	N
EFSA	FSASI-22-080510	8/5/2010	N
EFSA	FSASI-25-080510	8/5/2010	N
EFSA	FSASI-26-080510	8/5/2010	N
EFSA	FSASI-27-080510	8/5/2010	N
EFSA	FSASI-28-080510	8/5/2010	N

N = Primary

APPENDIX B

APPENDIX B
RAW DATA

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	**CHP**	**CHP**	**CHP**	**CHP**	**CHP**	**CHP**	**CHP**	**CHP**
	Sample ID	**MW-24O1-0805-1300**	**MW-25O1-0805-1415**	**MW-29O1-0811-0915**	**MW-31O1-0811-1535**	**MW-DUP02-0811-0920A**	**SB-01O1-0812-1215**	**SB-02O1-0807-0830**	**SB-03O1-0813-0835**
	Type	**N**	**N**	**N**	**N**	**FD**	**N**	**N**	**N**
	Date	**8/5/2009**	**8/5/2009**	**8/11/2009**	**8/11/2009**	**8/11/2009**	**8/12/2009**	**8/7/2009**	**8/13/2009**
Analyte	**Units**								
1,1,1-Trichloroethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
1,1,2,2-Tetrachloroethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
1,1,2-Trichloroethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
1,1'-Biphenyl	mg/kg	0.19 U	0.19 U	0.19 U	0.01 J	0.18 U	0.19 U		0.2 U
1,1-Dichloroethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
1,1-Dichloroethene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
1,2,3-Trichlorobenzene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0043 J	0.0043 U	0.0059 U
1,2,4-Trichlorobenzene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0037 J	0.0043 U	0.0059 U
1,2-Dibromo-3-Chloropropane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
1,2-Dibromoethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
1,2-Dichlorobenzene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
1,2-Dichloroethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
1,2-Dichloropropane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
1,3-Dichlorobenzene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
1,4-Dichlorobenzene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
2,2'-Oxybis(1-Chloropropane)	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
2-Butanone	mg/kg	0.01 U	0.011 U	0.012 U	0.011 U	0.01 U	0.012 U	0.0086 U	0.012 U
2-Hexanone	mg/kg	0.01 U	0.011 U	0.012 U	0.011 U	0.01 U	0.012 U	0.0086 U	0.012 U
4-Methyl-2-Pentanone	mg/kg	0.01 U	0.011 U	0.012 U	0.011 U	0.01 U	0.012 U	0.0086 U	0.012 U
Acetone	mg/kg	0.01 U	0.011 U	0.034 J EB	0.016 J EB	0.019 J EB	0.11	0.03 EB	0.12
Acetophenone	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
Benzaldehyde	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.15 J		0.2 U
Benzene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Bis(2-Chloroethyl)Ether	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
Bromochloromethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Bromodichloromethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Bromoform	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Bromomethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Carbon Disulfide	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Carbon Tetrachloride	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Chlorobenzene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Chloroethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Chloroform	mg/kg	0.005 U	0.0053 U	0.0061 U	0.026 J TB	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Chloromethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
cis-1,2-Dichloroethene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U

	Area	CHP	CHP	CHP	CHP	CHP	CHP	CHP	CHP
	Sample ID	MW-24O1-0805-1300	MW-25O1-0805-1415	MW-29O1-0811-0915	MW-31O1-0811-1535	MW-DUP02-0811-0920A	SB-01O1-0812-1215	SB-02O1-0807-0830	SB-03O1-0813-0835
	Type	N	N	N	N	FD	N	N	N
	Date	8/5/2009	8/5/2009	8/11/2009	8/11/2009	8/11/2009	8/12/2009	8/7/2009	8/13/2009
Analyte	Units								
cis-1,3-Dichloropropene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Cyclohexane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Dibromochloromethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Dichlorodifluoromethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Ethylbenzene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Hexachlorobenzene	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
Hexachlorobutadiene	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
Hexachloroethane	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
Isopropylbenzene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
m,p-Xylene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Methyl Acetate	mg/kg	0.005 U	0.0053 U	0.01	0.0057 U	0.0077 J	0.0059 U	0.0043 U	0.0059 U
Methyl Tert-Butyl Ether	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Methylcyclohexane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Methylene Chloride	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
o-Xylene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Styrene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Tetrachloroethene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Toluene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
trans-1,2-Dichloroethene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
trans-1,3-Dichloropropene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Trichloroethene	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Trichlorofluoromethane	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
Vinyl Chloride	mg/kg	0.005 U	0.0053 U	0.0061 U	0.0057 U	0.0051 U	0.0059 U	0.0043 U	0.0059 U
1,2,4,5-Tetrachlorobenzene	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
1,4-Dioxane	mg/kg						0.12 U		0.12 U
2,3,4,6-Tetrachlorophenol	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
2,4,5-Trichlorophenol	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
2,4,6-Trichlorophenol	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
2,4-Dichlorophenol	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
2,4-Dimethylphenol	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
2,4-Dinitrophenol	mg/kg	0.37 U	0.36 U	0.36 U	0.37 U	0.36 U	0.37 U		0.38 U
2,4-Dinitrotoluene	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
2,6-Dinitrotoluene	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
2-Chlorophenol	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
2-Methylphenol	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
2-Nitroaniline	mg/kg	0.37 U	0.36 U	0.36 U	0.37 U	0.36 U	0.37 U		0.38 U

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	**CHP**	**CHP**	**CHP**	**CHP**	**CHP**	**CHP**	**CHP**	**CHP**
	Sample ID	**MW-24O1-0805-1300**	**MW-25O1-0805-1415**	**MW-29O1-0811-0915**	**MW-31O1-0811-1535**	**MW-DUP02-0811-0920A**	**SB-01O1-0812-1215**	**SB-02O1-0807-0830**	**SB-03O1-0813-0835**
	Type	**N**	**N**	**N**	**N**	**FD**	**N**	**N**	**N**
	Date	**8/5/2009**	**8/5/2009**	**8/11/2009**	**8/11/2009**	**8/11/2009**	**8/12/2009**	**8/7/2009**	**8/13/2009**
Analyte	**Units**								
2-Nitrophenol	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
3,3'-Dichlorobenzidine	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
3-Nitroaniline	mg/kg	0.37 U	0.36 U	0.36 U	0.37 U	0.36 U	0.37 U		0.38 U
4,6-Dinitro-2-Methylphenol	mg/kg	0.37 U	0.36 U	0.36 U	0.37 U	0.36 U	0.37 U		0.38 U
4-Bromophenyl-Phenylether	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
4-Chloro-3-Methylphenol	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
4-Chloroaniline	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
4-Chlorophenyl-Phenylether	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
4-Methylphenol	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
4-Nitroaniline	mg/kg	0.37 U	0.36 U	0.36 U	0.37 U	0.36 U	0.37 U		0.38 U
4-Nitrophenol	mg/kg	0.37 U	0.36 U	0.36 U	0.37 U	0.36 U	0.37 U		0.38 U
Atrazine	mg/kg	0.19 U	0.19 U				0.19 U		0.2 U
Bis(2-Chloroethoxy)Methane	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
Butylbenzylphthalate	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	1.5		0.2 U
Caprolactam	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
Dibenzofuran	mg/kg	0.11 J	0.19 U	0.029 J	0.048 J	0.028 J	0.19 U		0.2 U
Diethylphthalate	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
Dimethylphthalate	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
Di-N-Butyl Phthalate	mg/kg	0.19 U	0.19 U	0.19 U	0.55	0.18 U	0.19 U		0.2 U
Di-N-Octyl Phthalate	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
Hexachlorocyclopentadiene	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
Isophorone	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
Nitrobenzene	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
N-Nitroso-Di-N-Propylamine	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
N-Nitrosodiphenylamine	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
Pentachlorophenol	mg/kg	0.37 U	0.36 U	0.36 U	0.37 U	0.36 U	0.37 U		0.38 U
Phenol	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
2-Chloronaphthalene	mg/kg	0.19 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U		0.2 U
2-Methylnaphthalene	mg/kg	0.19 U	0.19 U	0.012 J	0.046 J	0.016 J	0.19 U		0.2 U
Acenaphthene	mg/kg	0.18 J	0.19 U	0.046 J	0.094 J	0.056 J	0.039 J		0.043 J
Acenaphthylene	mg/kg	0.19 U	0.27	0.031 J	0.36	0.054 J	0.19 U		0.2 U
Anthracene	mg/kg	0.41	0.23	0.29	0.39	0.24	0.32 J		0.16 J
Benzo(A)Anthracene	mg/kg	1.2 J	1.1 J	2.4 J	2.1 J	1.8 J	2.2		0.94 J
Benzo(A)Pyrene	mg/kg	1 J	1.2 J	2.3	2.1	1.7	1.6 J		0.94 J
Benzo(B)Fluoranthene	mg/kg	0.95 J	2.4	2.2	2.5	1.4	0.19 U		0.83 J

	Area	CHP	CHP	CHP	CHP	CHP	CHP	CHP	CHP
	Sample ID	MW-24O1-0805-1300	MW-25O1-0805-1415	MW-29O1-0811-0915	MW-31O1-0811-1535	MW-DUP02-0811-0920A	SB-01O1-0812-1215	SB-02O1-0807-0830	SB-03O1-0813-0835
	Type	N	N	N	N	FD	N	N	N
	Date	8/5/2009	8/5/2009	8/11/2009	8/11/2009	8/11/2009	8/12/2009	8/7/2009	8/13/2009
Analyte	Units								
Benzo(G,H,I)Perylene	mg/kg	0.6 J	1.2	1.2	1	0.97	0.19 U		0.55 J
Benzo(K)Fluoranthene	mg/kg	0.96 J	1.5	2.7	2.2	1.9	0.19 U		0.97 J
Carbazole	mg/kg	0.17 J	0.11 J	0.15 J	0.11 J	0.11 J	0.073 J		0.042 J
Chrysene	mg/kg	1.2 J	1.5 J	2.9 J	2.9 J	2.1 J	2.5 J		0.98 J
Dibenz(A,H)Anthracene	mg/kg	0.27 J	0.5	0.55	0.58	0.57	0.18 J		0.24 J
Fluoranthene	mg/kg	4.6	2.2 J	4.5	4.7	3.5	0.19 U		2.4 J
Fluorene	mg/kg	0.16 J	0.12 J	0.062 J	0.12 J	0.06 J	0.049 J		0.042 J
High Molecular Weight PAHs	mg/kg	8.98	12.9	16.47	18.08		7.76		7.41
Indeno(1,2,3-Cd)Pyrene	mg/kg	0.6 J	1.2	1.2	1	0.95	0.52 J		0.56 J
Low Molecular Weight PAHs	mg/kg	7.7	4.46	5.851	7.161		1.93		3.555
Naphthalene	mg/kg	0.1 J	0.19 U	0.023 J	0.041 J	0.029 J	0.039 J		0.028 J
Phenanthrene	mg/kg	1.7	0.96	1.4	1.3	1.1	0.84 J		0.44 J
Pyrene	mg/kg	2.2 J	2.3 J	3.5	3.7	2.6 J	0.19 U		1.4 J
Dichloronaphthalene, Total	mg/kg	0.96 U	0.41 J	0.44 U	0.42 U	0.42 U	0.5 U		0.47 U
Heptachloronaphthalene, Total	mg/kg	0.96 U	0.96 U	0.44 U	0.42 U	0.42 U	0.5 U		0.47 U
Hexachloronaphthalene, Total	mg/kg	0.96 U	0.96 U	0.44 U	0.42 U	0.42 U	0.5 U		0.47 U
Monochloronaphthalene, Total	mg/kg	0.96 U	0.96 U	0.44 U	0.42 U	0.42 U	0.5 U		0.47 U
Octachloronaphthalene, Total	mg/kg	0.96 U	0.96 U	0.44 U	0.42 U	0.42 U	0.5 U		0.47 U
Pentachloronaphthalene, Total	mg/kg	0.96 U	0.93 J	0.44 U	0.3 J	0.23 J	0.5 U		0.47 U
Tetrachloronaphthalene, Total	mg/kg	0.96 U	2.5 J	0.29 J	0.47	0.51	0.5 U		0.47 U
Trichloronaphthalene, Total	mg/kg	0.96 U	0.76 J	0.18 J	0.16 J	0.15 J	0.5 U		0.47 U
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	mg/kg	0.000234 J	0.0279 J	0.00303	0.000373	0.00249	0.000128		0.000196
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	mg/kg	0.0000633 J	0.000102 J	0.0001	0.000319	0.0000895	0.00406		0.000103
1,2,3,4,6,7,8-Heptachlorodibenzofuran	mg/kg	0.000201 J	0.0299 J	0.00302	0.0000902	0.00241	0.000106		0.000157
1,2,3,4,6,7,8-Heptachlorodibenzo-P-Dioxin	mg/kg	0.00000954 *	0.0000518 *	0.0000189	0.0000468	0.0000165	0.000609		0.0000165
1,2,3,4,7,8,9-Heptachlorodibenzofuran	mg/kg	0.0000601 J	0.00532 J	0.00113	0.0000314	0.000883	0.0000334		0.0000459
1,2,3,4,7,8-Hexachlorodibenzofuran	mg/kg	0.000579 J	0.0416	0.00814	0.000162	0.00646	0.000276		0.000371
1,2,3,4,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.000000423 U	0.00000733 U	0.000000911 U	0.00000102 J	0.000000877 U	0.000000662 J		0.00000034 *
1,2,3,6,7,8-Hexachlorodibenzofuran	mg/kg	0.000117 J	0.0107	0.00182	0.0000328	0.00143	0.000058		0.0000787
1,2,3,6,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.000000544 U	0.00000942 U	0.000000832 U	0.00000273 J	0.000000953 U	0.000017		0.00000133 J
1,2,3,7,8,9-Hexachlorodibenzofuran	mg/kg	0.00000682 *	0.000695 J	0.000128	0.00000313 *	0.0000871	0.0000198		0.0000249
1,2,3,7,8,9-Hexachlorodibenzo-P-Dioxin	mg/kg	0.000000454 U	0.00000787 U	0.000000825 U	0.00000165 J	0.000000867 U	0.00000186 J		0.000000219 U
1,2,3,7,8-Pentachlorodibenzofuran	mg/kg	0.000389	0.0917 J	0.00832	0.00014	0.00693	0.000278		0.000266
1,2,3,7,8-Pentachlorodibenzo-P-Dioxin	mg/kg	0.000000389 U	0.0000124 *	0.00000118	0.00000123 J	0.000000337 U	0.00000042 J		0.000000194 U
2,3,4,6,7,8-Hexachlorodibenzofuran	mg/kg	0.0000596 J	0.00567 J	0.000969	0.0000189	0.000689	0.00000333 J		0.00000361 J
2,3,4,7,8-Pentachlorodibenzofuran	mg/kg	0.000296	0.0743	0.00592	0.0000884	0.0052	0.000201		0.000198

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	CHP	CHP	CHP	CHP	CHP	CHP	CHP	CHP
	Sample ID	MW-24O1-0805-1300	MW-25O1-0805-1415	MW-29O1-0811-0915	MW-31O1-0811-1535	MW-DUP02-0811-0920A	SB-01O1-0812-1215	SB-02O1-0807-0830	SB-03O1-0813-0835
	Type	N	N	N	N	FD	N	N	N
	Date	8/5/2009	8/5/2009	8/11/2009	8/11/2009	8/11/2009	8/12/2009	8/7/2009	8/13/2009
Analyte	Units								
2,3,7,8-TCDD TEQ (Bird)	mg/kg	0.001025463	0.3827346	0.025350741	0.000389428		0.00085808		0.000927218
2,3,7,8-TCDD TEQ (mammal)	mg/kg	0.000241349	0.060612881	0.004725847	8.46046E-05		0.000174802		0.000183543
2,3,7,8-Tetrachlorodibenzofuran	mg/kg	0.000611	0.293	0.0198	0.00026 EB	0.0162	0.00059		0.000652
2,3,7,8-Tetrachlorodibenzo-P-Dioxin	mg/kg	0.00000021 U	0.0000294 *	0.0000036	0.00000254	0.0000029 *	0.000000336 J		0.000000475 J
Heptachlorodibenzofuran (total)	mg/kg	0.000357 J	0.054 J	0.00643 J	0.000199 J	0.00485 J	0.000211 J		0.000292 J
Heptachlorodibenzo-p-dioxin (total)	mg/kg	0.00000954 *	0.0000188 J	0.0000162 J	0.000109 J	0.0000315 J	0.00129 J		0.0000307 J
Hexachlorodibenzofuran (total)	mg/kg	0.00108 J	0.107 J	0.0172 J	0.00035 J	0.0126 J	0.000493 J		0.000719 J
Hexachlorodibenzo-p-dioxin (total)	mg/kg	0.000002 J	0.00000733 U	0.00000308 J	0.0000344 J	0.00000302 J	0.0000625 J		0.00000513 U
Pentachlorodibenzofuran (total)	mg/kg	0.00192 J	0.245 J	0.032 J	0.000539 J	0.0215 J	0.000867 J		0.00102 J
Pentachlorodibenzo-p-dioxin (total)	mg/kg	0.000000389 U	0.0000124 *	0.00000118 U	0.0000115 J	0.000000337 U	0.00000269 J		0.0000014 U
Tetrachlorodibenzo(p)dioxin (total)	mg/kg	0.00000107 J	0.0000254 J	0.00000917 J	0.0000153 J	0.00000674 J	0.00000159 J		0.0000024 J
Tetrachlorodibenzofuran (total)	mg/kg	0.00224 J	0.261 J	0.0544 J	0.000838 JEB	0.0397 J	0.00132 J		0.00157 J
4,4'-DDD	mg/kg								
4,4'-DDE	mg/kg								
4,4'-DDT	mg/kg								
Aldrin	mg/kg								
Alpha-BHC	mg/kg								
Alpha-Chlordane	mg/kg								
Beta-BHC	mg/kg								
DDT and Metabolites	mg/kg								
Delta-BHC	mg/kg								
Dieldrin	mg/kg								
Endosulfan I	mg/kg								
Endosulfan II	mg/kg								
Endosulfan Sulfate	mg/kg								
Endrin	mg/kg								
Endrin Aldehyde	mg/kg								
Endrin Ketone	mg/kg								
Gamma-BHC (Lindane)	mg/kg								
Gamma-Chlordane	mg/kg								
Heptachlor	mg/kg								
Heptachlor Epoxide	mg/kg								
Methoxychlor	mg/kg								
Toxaphene	mg/kg								
Decachlorobiphenyl	mg/kg	0.000245 J	0.00436 J	0.00253 JEB	0.0027 JEB	0.00132 JEB	0.000243 J		0.000383 J
Total DiCB	mg/kg	0.000777 U	0.0129 J	0.00704 J	0.0005 U	0.00331 J	0.000679 U		0.001 U

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	CHP	CHP	CHP	CHP	CHP	CHP	CHP	CHP
	Sample ID	MW-24O1-0805-1300	MW-25O1-0805-1415	MW-29O1-0811-0915	MW-31O1-0811-1535	MW-DUP02-0811-0920A	SB-01O1-0812-1215	SB-02O1-0807-0830	SB-03O1-0813-0835
	Type	N	N	N	N	FD	N	N	N
	Date	8/5/2009	8/5/2009	8/11/2009	8/11/2009	8/11/2009	8/12/2009	8/7/2009	8/13/2009
Analyte	**Units**								
Total HpCB	mg/kg	0.198 J	0.0234 J	0.0295 J	0.238 J	0.139 J	0.07 J		0.0552 J
Total HxCB	mg/kg	0.41 J	0.0504 J	0.237 JEB	0.738 JEB	0.203 JEB	0.128 J		0.0921 J
Total MoCB	mg/kg	0.000118 J	0.0018 J	0.000691 J	0.000142 J	0.000542 J	0.0000131 U		0.000152 J
Total PCB Homologues	mg/kg	1.37 J	0.179 J	0.506 JEB	1.84 JEB	0.515 JEB	0.391 J		0.214 J
Total PeCB	mg/kg	0.549 J	0.0482 J	0.15 JEB	0.648 JEB	0.112 JEB	0.139 J		0.0469 J
Total TeCB	mg/kg	0.145 J	0.0169 J	0.0329 JEB	0.176 JEB	0.0229 JEB	0.0291 J		0.00842 U
Total TrCB	mg/kg	0.0029 J	0.0111 J	0.00749 J	0.00284 J	0.00327 J	0.00655 J		0.000944 J
17-TrCB	mg/kg								
2,3,3',4,4',5,5'-Heptachlorobiphenyl	mg/kg	0.00114	0.00034	0.000739	0.00124	0.000682	0.000263 J		0.000278
2,3,3',4,4',5-Hexachlorobiphenyl	mg/kg	0.00799	0.00152	0.00482 EB	0.0384 EB	0.00388 EB	0.00222 J		0.00169 J
2,3,3',4,4'-Pentachlorobiphenyl	mg/kg	0.0241	0.00258	0.00821 EB	0.0588 EB	0.00624 EB	0.00661 J		0.0031 J
2,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.00309	0.000784	0.00216 EB	0.00667 EB	0.00183 EB	0.00118 J		0.000724 J
2',3,4,4',5-Pentachlorobiphenyl	mg/kg	0.00138	0.000262	0.000455 EB	0.00196 EB	0.000349 EB	0.000343 J		0.00012
2,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.059	0.00476	0.0202 JEB	0.123 JEB	0.015 JEB	0.0175 J		0.00698 J
2,3,4,4',5-Pentachlorobiphenyl	mg/kg	0.00206	0.00165	0.00163 J	0.00254	0.000764 J	0.00032 J		0.000148 J
3,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.0000217 U	0.0000435 U	0.000105	0.000139	0.0000883 J	0.0000371 U		0.0000399 J
3,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.0000791 U	0.000159	0.000167	0.00017	0.000165	0.0000375 U		0.0000446 J
3,3',4,4'-Tetrachlorobiphenyl	mg/kg	0.000195	0.000693	0.000411 JEB	0.000777 EB	0.000245 JEB	0.000179 J		0.0000938 J
3,4,4',5-Tetrachlorobiphenyl	mg/kg	0.0000147 U	0.000253	0.000172 J	0.00000933 U	0.0000654 J	0.0000187 U		0.00000564 J
PCB Dioxin-like Congener TEQ (Bird)	mg/kg	2.32128E-05	7.653E-05	5.59742E-05	6.82247E-05		1.5715E-05		1.03287E-05
PCB Dioxin-like Congener TEQ (mammal)	mg/kg	1.15477E-05	1.77071E-05	2.06096E-05	2.82288E-05		5.73959E-06		6.05927E-06
Total NoCB	mg/kg	0.00462 J	0.00313 J	0.00426 J	0.00578 J	0.00323 J	0.00111 J		0.00334 J
Total OcCB	mg/kg	0.057 J	0.00707 J	0.0341 J	0.0331 J	0.0268 J	0.0166 J		0.0147 J
Perchlorate (organic)	mg/kg	0.00059 U	0.0006 U	0.00061 U	0.00057 U	0.00053 U	0.00039 J		0.00059 U
Aluminum	mg/Kg	3530 J	5550 J	4820 J	4520 J	5190 J	3560	5370 J	5710
Antimony	mg/Kg	2.2 J	1.6 J	5.1 U	3.3 J	5.1 U	6.2 U	2.6 J	1.4 J
Arsenic	mg/Kg	2.6 J	10.4 J	3.2 J	13.7 J	2.6 J	1.5 J	828 J	4.7 J
Barium	mg/Kg	53.6 J	254 J	142 J	248 J	110 J	241	198 J	80.6
Beryllium	mg/Kg	0.27 J EB	0.48 J EB	0.31 J EB	0.29 J EB	0.3 J EB	0.19 J	0.3 J EB	0.34 J
Cadmium	mg/Kg	0.91 EB	0.37 J EB	0.17 J EB	1.3 EB	0.13 J EB	1.1	0.24 J EB	0.56 U
Calcium	mg/Kg	2720 J EB	8390 J EB	2560 J EB	1870 J EB	1600 J EB	3750 EB	26700 J EB	7130 EB
Chromium	mg/Kg	8.5 J	7.7 J	9.4 J	29.7 J	8.4 J	6.1 J	11.5 J	8.9 J
Cobalt	mg/Kg	18.5	6.4	5.4	7.2	5.5	16.3	4.5 J	9.6
Copper	mg/Kg	121 J	129 J	31.4 J	130 J	26.7 J	84.5 J	34.6 J	57.2 J
Iron	mg/Kg	17800 J EB	10700 J EB	10800 J EB	39100 J EB	10800 J EB	16000	17300 J EB	14100
Lead	mg/Kg	111 EB	125 EB	35.7 EB	382 EB	31.2 EB	67.1	61.8 EB	233

Analyte	Area	CHP	CHP	CHP	CHP	CHP	CHP	CHP	CHP
	Sample ID	MW-24O1-0805-1300	MW-25O1-0805-1415	MW-29O1-0811-0915	MW-31O1-0811-1535	MW-DUP02-0811-0920A	SB-01O1-0812-1215	SB-02O1-0807-0830	SB-03O1-0813-0835
	Type	N	N	N	N	FD	N	N	N
	Date	8/5/2009	8/5/2009	8/11/2009	8/11/2009	8/11/2009	8/12/2009	8/7/2009	8/13/2009
	Units								
Magnesium	mg/Kg	1280 J EB	1930 J EB	1720 J EB	1530 J EB	1970 J EB	1540	2040 J EB	2170
Manganese	mg/Kg	162	173	177	268	159	120 J	204	271 J
Mercury	mg/Kg	3 J	133 J	51.6 J	2.6 J	147 J	0.71	12.8 J	2.5
Nickel	mg/Kg	9.3	12.7	8	22.2	8	9	10.6	9.3
Potassium	mg/Kg	634	703	832	646	983	920	1500	1020
Selenium	mg/Kg	2.1 J	4 U	3 U	3 U	3 U	1 J	3.2 U	1.4 J
Silver	mg/Kg	1.1 U	1.3	2.4	0.21 J	2.1	1 U	0.11 J	1.1 U
Sodium	mg/Kg		964 J EB	272 J EB		274 J EB	241 J EB	468 J EB	596 J EB
Thallium	mg/Kg	2.7 U	2.8 U	2.1 U	2.1 U	2.1 U	2.6 U	2.3 U	2.8 U
Vanadium	mg/Kg	11.5	16.1	17	19.1	20.9	12.8	18.3	17.2
Zinc	mg/Kg	186 J	96 J	53.9 J	219 J	51.3 J	293 EB	140 J	103 EB
Total Organic Carbon	mg/Kg								

	Area	CHP	CHP	CHP	CHP	SFSA	SFSA	SFSA	SFSA
	Sample ID	SB-04O1-0813-1120	SB-05O1-0812-1105	SB-06O1-0810-1520	SB-DUP03-0813-1120A	FSA-013-0001-0-081610	FSA-024-0001-0-081710	FSA-039-0001-0-081710	FSA-060-0001-0-081710
	Type	N	N	N	FD	N	N	N	N
	Date	8/13/2009	8/12/2009	8/10/2009	8/13/2009	8/16/2010	8/17/2010	8/17/2010	8/17/2010
Analyte	Units								
1,1,1-Trichloroethane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,1,2,2-Tetrachloroethane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,1,2-Trichloroethane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,1'-Biphenyl	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
1,1-Dichloroethane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,1-Dichloroethene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,2,3-Trichlorobenzene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,2,4-Trichlorobenzene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,2-Dibromo-3-Chloropropane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,2-Dibromoethane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,2-Dichlorobenzene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,2-Dichloroethane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,2-Dichloropropane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,3-Dichlorobenzene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,4-Dichlorobenzene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
2,2'-Oxybis(1-Chloropropane)	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
2-Butanone	mg/kg	0.014 U	0.015 U	0.013 U	0.01 U				
2-Hexanone	mg/kg	0.014 U	0.015 U	0.013 U	0.01 U				
4-Methyl-2-Pentanone	mg/kg	0.014 U	0.015 U	0.013 U	0.01 U				
Acetone	mg/kg	0.014 U	0.086	0.015 EB	0.0039 J				
Acetophenone	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Benzaldehyde	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Benzene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Bis(2-Chloroethyl)Ether	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Bromochloromethane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Bromodichloromethane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Bromoform	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Bromomethane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Carbon Disulfide	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Carbon Tetrachloride	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Chlorobenzene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Chloroethane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Chloroform	mg/kg	0.0068 U	0.016 J TB	0.0067 U	0.0051 U				
Chloromethane	mg/kg	0.0068 U	0.0076 U	0.0091	0.0051 U				
cis-1,2-Dichloroethene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				

Analyte	Area	CHP	CHP	CHP	CHP	SFSA	SFSA	SFSA	SFSA
	Sample ID	SB-04O1-0813-1120	SB-05O1-0812-1105	SB-06O1-0810-1520	SB-DUP03-0813-1120A	FSA-013-0001-0-081610	FSA-024-0001-0-081710	FSA-039-0001-0-081710	FSA-060-0001-0-081710
	Type	N	N	N	FD	N	N	N	N
	Date	8/13/2009	8/12/2009	8/10/2009	8/13/2009	8/16/2010	8/17/2010	8/17/2010	8/17/2010
	Units								
cis-1,3-Dichloropropene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Cyclohexane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Dibromochloromethane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Dichlorodifluoromethane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Ethylbenzene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Hexachlorobenzene	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Hexachlorobutadiene	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Hexachloroethane	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Isopropylbenzene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
m,p-Xylene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Methyl Acetate	mg/kg	0.0068 U	0.0076 U	0.0061 J	0.0051 U				
Methyl Tert-Butyl Ether	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Methylcyclohexane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Methylene Chloride	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
o-Xylene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Styrene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Tetrachloroethene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Toluene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
trans-1,2-Dichloroethene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
trans-1,3-Dichloropropene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Trichloroethene	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Trichlorofluoromethane	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
Vinyl Chloride	mg/kg	0.0068 U	0.0076 U	0.0067 U	0.0051 U				
1,2,4,5-Tetrachlorobenzene	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
1,4-Dioxane	mg/kg		0.15 U						
2,3,4,6-Tetrachlorophenol	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
2,4,5-Trichlorophenol	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
2,4,6-Trichlorophenol	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
2,4-Dichlorophenol	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
2,4-Dimethylphenol	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
2,4-Dinitrophenol	mg/kg	0.4 U	0.4 U	0.43 U	0.37 U				
2,4-Dinitrotoluene	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
2,6-Dinitrotoluene	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
2-Chlorophenol	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
2-Methylphenol	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
2-Nitroaniline	mg/kg	0.4 U	0.4 U	0.43 U	0.37 U				

	Area	CHP	CHP	CHP	CHP	SFSA	SFSA	SFSA	SFSA
	Sample ID	SB-04O1-0813-1120	SB-05O1-0812-1105	SB-06O1-0810-1520	SB-DUP03-0813-1120A	FSA-013-0001-0-081610	FSA-024-0001-0-081710	FSA-039-0001-0-081710	FSA-060-0001-0-081710
	Type	N	N	N	FD	N	N	N	N
	Date	8/13/2009	8/12/2009	8/10/2009	8/13/2009	8/16/2010	8/17/2010	8/17/2010	8/17/2010
Analyte	Units								
2-Nitrophenol	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
3,3'-Dichlorobenzidine	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
3-Nitroaniline	mg/kg	0.4 U	0.4 U	0.43 U	0.37 U				
4,6-Dinitro-2-Methylphenol	mg/kg	0.4 U	0.4 U	0.43 U	0.37 U				
4-Bromophenyl-Phenylether	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
4-Chloro-3-Methylphenol	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
4-Chloroaniline	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
4-Chlorophenyl-Phenylether	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
4-Methylphenol	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
4-Nitroaniline	mg/kg	0.4 U	0.4 U	0.43 U	0.37 U				
4-Nitrophenol	mg/kg	0.4 U	0.4 U	0.43 U	0.37 U				
Atrazine	mg/kg	0.2 U	0.21 U		0.19 U				
Bis(2-Chloroethoxy)Methane	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Butylbenzylphthalate	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Caprolactam	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Dibenzofuran	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Diethylphthalate	mg/kg	0.2 U	0.21 UJ	0.22 U	0.19 U				
Dimethylphthalate	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Di-N-Butyl Phthalate	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Di-N-Octyl Phthalate	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Hexachlorocyclopentadiene	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Isophorone	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Nitrobenzene	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
N-Nitroso-Di-N-Propylamine	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
N-Nitrosodiphenylamine	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Pentachlorophenol	mg/kg	0.4 U	0.4 U	0.43 U	0.37 U				
Phenol	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
2-Chloronaphthalene	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
2-Methylnaphthalene	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Acenaphthene	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Acenaphthylene	mg/kg	0.2 U	0.044 J	0.22 U	0.19 U				
Anthracene	mg/kg	0.2 U	0.063 J	0.084 J	0.19 U				
Benzo(A)Anthracene	mg/kg	0.2 U	0.39 B	0.25 J	0.19 U				
Benzo(A)Pyrene	mg/kg	0.2 U	0.32 B	0.31 J	0.19 U				
Benzo(B)Fluoranthene	mg/kg	0.2 U	0.27 B	0.25 J	0.19 U				

	Area	CHP	CHP	CHP	CHP	SFSA	SFSA	SFSA	SFSA
	Sample ID	SB-04O1-0813-1120	SB-05O1-0812-1105	SB-06O1-0810-1520	SB-DUP03-0813-1120A	FSA-013-0001-0-081610	FSA-024-0001-0-081710	FSA-039-0001-0-081710	FSA-060-0001-0-081710
	Type	N	N	N	FD	N	N	N	N
	Date	8/13/2009	8/12/2009	8/10/2009	8/13/2009	8/16/2010	8/17/2010	8/17/2010	8/17/2010
Analyte	Units								
Benzo(G,H,I)Perylene	mg/kg	0.11 J	0.2 J	0.14 J	0.043 J				
Benzo(K)Fluoranthene	mg/kg	0.2 U	0.37 B	0.26 J	0.19 U				
Carbazole	mg/kg	0.2 U	0.034 J	0.045 J	0.19 U				
Chrysene	mg/kg	0.2 U	0.44 B	0.33 J	0.19 U				
Dibenz(A,H)Anthracene	mg/kg	0.056 J	0.078 J	0.067 J	0.19 U				
Fluoranthene	mg/kg	0.32 J	0.98 B	0.57 J	0.19 U				
Fluorene	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
High Molecular Weight PAHs	mg/kg	1.586	2.908	2.337					
Indeno(1,2,3-Cd)Pyrene	mg/kg	0.2 U	0.21 U	0.22 J	0.19 U				
Low Molecular Weight PAHs	mg/kg	1.773	2.271	2.179					
Naphthalene	mg/kg	0.2 U	0.21 U	0.22 U	0.19 U				
Phenanthrene	mg/kg	0.088 J	0.31	0.38	0.033 J				
Pyrene	mg/kg	0.25	0.64 B	0.51 J	0.19 U				
Dichloronaphthalene, Total	mg/kg	0.086 U	0.035 J	0.1 U	0.085 U				
Heptachloronaphthalene, Total	mg/kg	0.086 U	0.095 U	0.1 U	0.085 U				
Hexachloronaphthalene, Total	mg/kg	0.086 U	0.095 U	0.1 U	0.085 U				
Monochloronaphthalene, Total	mg/kg	0.086 U	0.095 U	0.1 U	0.085 U				
Octachloronaphthalene, Total	mg/kg	0.086 U	0.095 U	0.1 U	0.085 U				
Pentachloronaphthalene, Total	mg/kg	0.086 U	0.095 U	0.1 U	0.085 U				
Tetrachloronaphthalene, Total	mg/kg	0.086 U	0.095 U	0.1 U	0.085 U				
Trichloronaphthalene, Total	mg/kg	0.086 U	0.095 U	0.1 U	0.085 U				
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	mg/kg	0.000102 J	0.0000836	0.000133	0.000222 J				
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	mg/kg	0.0000309 J	0.000119	0.0000287	0.0000254 J				
1,2,3,4,6,7,8-Heptachlorodibenzofuran	mg/kg	0.000101	0.000035 J	0.0000977	0.000134				
1,2,3,4,6,7,8-Heptachlorodibenzo-P-Dioxin	mg/kg	0.00000446 J	0.0000147	0.00000483	0.00000344 J				
1,2,3,4,7,8,9-Heptachlorodibenzofuran	mg/kg	0.0000294	0.0000106	0.0000293	0.0000449				
1,2,3,4,7,8-Hexachlorodibenzofuran	mg/kg	0.00027	0.0000841	0.000165	0.000391				
1,2,3,4,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.00000016 U	0.000000279 U	0.000000155 U	0.000000423 U				
1,2,3,6,7,8-Hexachlorodibenzofuran	mg/kg	0.0000582	0.0000188	0.0000381	0.000072				
1,2,3,6,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.000000531 *	0.00000127 J	0.000000485 J	0.00000055 U				
1,2,3,7,8,9-Hexachlorodibenzofuran	mg/kg	0.0000263	0.0000118	0.00000191 J	0.0000301				
1,2,3,7,8,9-Hexachlorodibenzo-P-Dioxin	mg/kg	0.00000018 U	0.0000008 U	0.000000163 U	0.000000459 U				
1,2,3,7,8-Pentachlorodibenzofuran	mg/kg	0.000198 EB	0.000119	0.000139	0.000237 EB				
1,2,3,7,8-Pentachlorodibenzo-P-Dioxin	mg/kg	0.000000289 J	0.000000585 *	0.000000134 U	0.000000283 U				
2,3,4,6,7,8-Hexachlorodibenzofuran	mg/kg	0.00000246 J	0.0000017 J	0.0000174	0.00000529 J				
2,3,4,7,8-Pentachlorodibenzofuran	mg/kg	0.000161 EB	0.0000858	0.0000979	0.00017 EB				

	Area	CHP	CHP	CHP	CHP	SFSA	SFSA	SFSA	SFSA
	Sample ID	SB-04O1-0813-1120	SB-05O1-0812-1105	SB-06O1-0810-1520	SB-DUP03-0813-1120A	FSA-013-0001-0-081610	FSA-024-0001-0-081710	FSA-039-0001-0-081710	FSA-060-0001-0-081710
	Type	N	N	N	FD	N	N	N	N
	Date	8/13/2009	8/12/2009	8/10/2009	8/13/2009	8/16/2010	8/17/2010	8/17/2010	8/17/2010
Analyte	Units								
2,3,7,8-TCDD TEQ (Bird)	mg/kg	0.000700145	0.001015223	0.000478748					
2,3,7,8-TCDD TEQ (mammal)	mg/kg	0.000148474	0.000134434	9.19151E-05					
2,3,7,8-Tetrachlorodibenzofuran	mg/kg	0.000473 EB	0.000903	0.000343 EB	0.000462 EB				
2,3,7,8-Tetrachlorodibenzo-P-Dioxin	mg/kg	0.000000549 *	0.0000017 *	0.000000253 J	0.000000383 U				
Heptachlorodibenzofuran (total)	mg/kg	0.000167 J	0.0000726 J	0.000184 J	0.000252 J				
Heptachlorodibenzo-p-dioxin (total)	mg/kg	0.00000937 J	0.0000329 J	0.00001 J	0.00000694 J				
Hexachlorodibenzofuran (total)	mg/kg	0.00048 J	0.00019 J	0.000344 J	0.000697 J				
Hexachlorodibenzo-p-dioxin (total)	mg/kg	0.00000598 J	0.0000253 J	0.00000324 U	0.000000423 U				
Pentachlorodibenzofuran (total)	mg/kg	0.00083 JEB	0.000551 J	0.000534 J	0.000961 JEB				
Pentachlorodibenzo-p-dioxin (total)	mg/kg	0.00000257 J	0.00000746 J	0.000000134 U	0.000000283 U				
Tetrachlorodibenzo(p)dioxin (total)	mg/kg	0.000000993 J	0.0000054 J	0.000000797 J	0.000000383 U				
Tetrachlorodibenzofuran (total)	mg/kg	0.00111 JEB	0.00279 J	0.00108 JEB	0.0011 JEB				
4,4'-DDD	mg/kg								
4,4'-DDE	mg/kg								
4,4'-DDT	mg/kg								
Aldrin	mg/kg								
Alpha-BHC	mg/kg								
Alpha-Chlordane	mg/kg								
Beta-BHC	mg/kg								
DDT and Metabolites	mg/kg								
Delta-BHC	mg/kg								
Dieldrin	mg/kg								
Endosulfan I	mg/kg								
Endosulfan II	mg/kg								
Endosulfan Sulfate	mg/kg								
Endrin	mg/kg								
Endrin Aldehyde	mg/kg								
Endrin Ketone	mg/kg								
Gamma-BHC (Lindane)	mg/kg								
Gamma-Chlordane	mg/kg								
Heptachlor	mg/kg								
Heptachlor Epoxide	mg/kg								
Methoxychlor	mg/kg								
Toxaphene	mg/kg								
Decachlorobiphenyl	mg/kg	0.0000758 U	0.000401 J	0.000151 JEB	0.0000292 U				
Total DiCB	mg/kg	0.000154 U	0.00432 J	0.000273 U	0.000125 U				

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	CHP	CHP	CHP	CHP	SFSA	SFSA	SFSA	SFSA
	Sample ID	SB-04O1-0813-1120	SB-05O1-0812-1105	SB-06O1-0810-1520	SB-DUP03-0813-1120A	FSA-013-0001-0-081610	FSA-024-0001-0-081710	FSA-039-0001-0-081710	FSA-060-0001-0-081710
	Type	N	N	N	FD	N	N	N	N
	Date	8/13/2009	8/12/2009	8/10/2009	8/13/2009	8/16/2010	8/17/2010	8/17/2010	8/17/2010
Analyte	Units								
Total HpCB	mg/kg	0.0306 J	0.0447 J	0.0433 J	0.0142 J				
Total HxCB	mg/kg	0.0542 J	0.248 J	0.317 JEB	0.0196 J				
Total MoCB	mg/kg	0.0000272 J	0.000662 J	0.0000733 J	0.00000807 J				
Total PCB Homologues	mg/kg	0.163 J	0.681 J	0.909 JEB	0.0382 J				
Total PeCB	mg/kg	0.0552 J	0.304 J	0.433 JEB	0.0162 U				
Total TeCB	mg/kg	0.0141 J	0.0672 J	0.108 JEB	0.00427 U				
Total TrCB	mg/kg	0.000336 U	0.00241 J	0.00158 J	0.000309 U				
17-TrCB	mg/kg								
2,3,3',4,4',5,5'-Heptachlorobiphenyl	mg/kg	0.000191 J	0.000358	0.000411	0.0000819 J				
2,3,3',4,4',5-Hexachlorobiphenyl	mg/kg	0.00158 J	0.00705	0.0173 EB	0.000469 J				
2,3,3',4,4'-Pentachlorobiphenyl	mg/kg	0.00367 J	0.015 J	0.0389 EB	0.00111 J				
2,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.000491 J	0.00282	0.00376 EB	0.000169 J				
2',3,4,4',5-Pentachlorobiphenyl	mg/kg	0.000142 J	0.000793	0.00122 EB	0.0000394 J				
2,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.00932 J	0.034 J	0.0853 JEB	0.00242 J				
2,3,4,4',5-Pentachlorobiphenyl	mg/kg	0.000196 J	0.00103	0.00182	0.0000558 J				
3,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.0000148 J	0.0000287 *	0.0000192 J	0.00000853 J				
3,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.0000151 U	0.000142	0.000108	0.0000062 *				
3,3',4,4'-Tetrachlorobiphenyl	mg/kg	0.000044 J	0.000563	0.00053 EB	0.0000173 J				
3,4,4',5-Tetrachlorobiphenyl	mg/kg	0.0000049 J	0.0000228 J	0.00000752 U	0.00000227 U				
PCB Dioxin-like Congener TEQ (Bird)	mg/kg	3.97084E-06	4.73464E-05	4.47801E-05					
PCB Dioxin-like Congener TEQ (mammal)	mg/kg	1.53757E-06	1.69557E-05	1.58926E-05					
Total NoCB	mg/kg	0.000923 J	0.00161 J	0.00084 J	0.000421 J				
Total OcCB	mg/kg	0.00841 J	0.00745 J	0.00551 J	0.00393 J				
Perchlorate (organic)	mg/kg	0.001	0.00061 U	0.00029 J	0.00053 U				
Aluminum	mg/Kg	4320	3230	6470 J	4200	3973	6824	5820	6671
Antimony	mg/Kg	5.9 U	3.1 J	6.2 U	6.3 U	7.8 U	3.1 J	2.2 J	6.5 U
Arsenic	mg/Kg	1.7 J	12.6 J	27.5 J	2.4 J	3.2	14.2	36	3.9
Barium	mg/Kg	27.3	91	139 J	30.7	104	121 J	98.5 J	47.3 J
Beryllium	mg/Kg	0.22 J	0.25 J	0.26 J EB	0.22 J	0.26 J	0.35 J	0.4 J	0.37 J
Cadmium	mg/Kg	0.49 U	0.58 U	0.96 EB	0.52 U	0.33 J	0.59 U	0.6 U	0.54 U
Calcium	mg/Kg	1190 EB	1720 EB	20000 J EB	1100 EB	3481	1509	1860	1191
Chromium	mg/Kg	5.9 J	7.7 J	14.2 J	6.7 J	14.4	19.7	12.6	30.4
Cobalt	mg/Kg	4.5 J	8.9	4.7 J	4.3 J	4.1 J	6.5 J	6.6 J	3.9 J
Copper	mg/Kg	23.5 J	62.4 J	15.5 J	19.1 J	42.8 J	71.9	88	41.2
Iron	mg/Kg	8460	15900	12500 J EB	8860	11511 J	34915	18449	13869
Lead	mg/Kg	32.4	56.7	65.8 EB	21.3	57 J	166 J	50.9 J	105 J

	Area	CHP	CHP	CHP	CHP	SFSA	SFSA	SFSA	SFSA
	Sample ID	SB-04O1-0813-1120	SB-05O1-0812-1105	SB-06O1-0810-1520	SB-DUP03-0813-1120A	FSA-013-0001-0-081610	FSA-024-0001-0-081710	FSA-039-0001-0-081710	FSA-060-0001-0-081710
	Type	N	N	N	FD	N	N	N	N
	Date	8/13/2009	8/12/2009	8/10/2009	8/13/2009	8/16/2010	8/17/2010	8/17/2010	8/17/2010
Analyte	**Units**								
Magnesium	mg/Kg	1490	1130	2830 J EB	1690	1720	2670	2442	2705
Manganese	mg/Kg	126 J	184 J	216	143 J	210 J	286 J	364 J	236 J
Mercury	mg/Kg	1	1.8	0.74 J	0.77	0.43	3.3 U	19.6 J	0.83 J
Nickel	mg/Kg	5.2	75.9	13.9	6	8.6	24.4	13	8.7
Potassium	mg/Kg	706	610	1620	716	829 J	1878 J	517 J	1223 J
Selenium	mg/Kg	0.52 J	1.5 J	3.6 U	0.53 J	0.3 J	0.84 J	0.87 J	0.29 J
Silver	mg/Kg	0.98 U	1.2 U	1 U	1 U	1.3 U	1.2 U	1.2 U	1.1 U
Sodium	mg/Kg	172 J EB	137 J EB	301 J EB	150 J EB	59.4 J	105 J	77.2 J	103 J
Thallium	mg/Kg	2.4 U	2.9 U	2.6 U	2.6 U	3.2 U	2.9 U	3 U	2.7 U
Vanadium	mg/Kg	13.3	18.8	19.9	14	19.8 J	31.8	25	24.5
Zinc	mg/Kg	33.6 EB	55.7 EB	315 J	30.8 EB	123 J	95.2	68.9	62.5
Total Organic Carbon	mg/Kg								

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-062-0001-0-081710	FSA-066-0001-0-081810	FSA-075-0001-0-082510	FSA-089-0001-0-081810	FSA-102-0001-0-081810	FSA-105-0001-0-081910	FSA-106-0001-0-081810	FSA-151-0001-0-081910
	Type	N	N	N	N	N	N	N	N
	Date	8/17/2010	8/18/2010	8/25/2010	8/18/2010	8/18/2010	8/19/2010	8/18/2010	8/19/2010
Analyte	Units								
1,1,1-Trichloroethane	mg/kg								
1,1,2,2-Tetrachloroethane	mg/kg								
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg								
1,1,2-Trichloroethane	mg/kg								
1,1'-Biphenyl	mg/kg								
1,1-Dichloroethane	mg/kg								
1,1-Dichloroethene	mg/kg								
1,2,3-Trichlorobenzene	mg/kg								
1,2,4-Trichlorobenzene	mg/kg								
1,2-Dibromo-3-Chloropropane	mg/kg								
1,2-Dibromoethane	mg/kg								
1,2-Dichlorobenzene	mg/kg								
1,2-Dichloroethane	mg/kg								
1,2-Dichloropropane	mg/kg								
1,3-Dichlorobenzene	mg/kg								
1,4-Dichlorobenzene	mg/kg								
2,2'-Oxybis(1-Chloropropane)	mg/kg								
2-Butanone	mg/kg								
2-Hexanone	mg/kg								
4-Methyl-2-Pentanone	mg/kg								
Acetone	mg/kg								
Acetophenone	mg/kg								
Benzaldehyde	mg/kg								
Benzene	mg/kg								
Bis(2-Chloroethyl)Ether	mg/kg								
Bromochloromethane	mg/kg								
Bromodichloromethane	mg/kg								
Bromoform	mg/kg								
Bromomethane	mg/kg								
Carbon Disulfide	mg/kg								
Carbon Tetrachloride	mg/kg								
Chlorobenzene	mg/kg								
Chloroethane	mg/kg								
Chloroform	mg/kg								
Chloromethane	mg/kg								
cis-1,2-Dichloroethene	mg/kg								

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-062-0001-0-081710	FSA-066-0001-0-081810	FSA-075-0001-0-082510	FSA-089-0001-0-081810	FSA-102-0001-0-081810	FSA-105-0001-0-081910	FSA-106-0001-0-081810	FSA-151-0001-0-081910
	Type	N	N	N	N	N	N	N	N
	Date	8/17/2010	8/18/2010	8/25/2010	8/18/2010	8/18/2010	8/19/2010	8/18/2010	8/19/2010
Analyte	Units								
cis-1,3-Dichloropropene	mg/kg								
Cyclohexane	mg/kg								
Dibromochloromethane	mg/kg								
Dichlorodifluoromethane	mg/kg								
Ethylbenzene	mg/kg								
Hexachlorobenzene	mg/kg								
Hexachlorobutadiene	mg/kg								
Hexachloroethane	mg/kg								
Isopropylbenzene	mg/kg								
m,p-Xylene	mg/kg								
Methyl Acetate	mg/kg								
Methyl Tert-Butyl Ether	mg/kg								
Methylcyclohexane	mg/kg								
Methylene Chloride	mg/kg								
o-Xylene	mg/kg								
Styrene	mg/kg								
Tetrachloroethene	mg/kg								
Toluene	mg/kg								
trans-1,2-Dichloroethene	mg/kg								
trans-1,3-Dichloropropene	mg/kg								
Trichloroethene	mg/kg								
Trichlorofluoromethane	mg/kg								
Vinyl Chloride	mg/kg								
1,2,4,5-Tetrachlorobenzene	mg/kg								
1,4-Dioxane	mg/kg								
2,3,4,6-Tetrachlorophenol	mg/kg								
2,4,5-Trichlorophenol	mg/kg								
2,4,6-Trichlorophenol	mg/kg								
2,4-Dichlorophenol	mg/kg								
2,4-Dimethylphenol	mg/kg								
2,4-Dinitrophenol	mg/kg								
2,4-Dinitrotoluene	mg/kg								
2,6-Dinitrotoluene	mg/kg								
2-Chlorophenol	mg/kg								
2-Methylphenol	mg/kg								
2-Nitroaniline	mg/kg								

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-062-0001-0-081710	FSA-066-0001-0-081810	FSA-075-0001-0-082510	FSA-089-0001-0-081810	FSA-102-0001-0-081810	FSA-105-0001-0-081910	FSA-106-0001-0-081810	FSA-151-0001-0-081910
	Type	N	N	N	N	N	N	N	N
	Date	8/17/2010	8/18/2010	8/25/2010	8/18/2010	8/18/2010	8/19/2010	8/18/2010	8/19/2010
Analyte	Units								
2-Nitrophenol	mg/kg								
3,3'-Dichlorobenzidine	mg/kg								
3-Nitroaniline	mg/kg								
4,6-Dinitro-2-Methylphenol	mg/kg								
4-Bromophenyl-Phenylether	mg/kg								
4-Chloro-3-Methylphenol	mg/kg								
4-Chloroaniline	mg/kg								
4-Chlorophenyl-Phenylether	mg/kg								
4-Methylphenol	mg/kg								
4-Nitroaniline	mg/kg								
4-Nitrophenol	mg/kg								
Atrazine	mg/kg								
Bis(2-Chloroethoxy)Methane	mg/kg								
Bis(2-Ethylhexyl)Phthalate	mg/kg								
Butylbenzylphthalate	mg/kg								
Caprolactam	mg/kg								
Dibenzofuran	mg/kg								
Diethylphthalate	mg/kg								
Dimethylphthalate	mg/kg								
Di-N-Butyl Phthalate	mg/kg								
Di-N-Octyl Phthalate	mg/kg								
Hexachlorocyclopentadiene	mg/kg								
Isophorone	mg/kg								
Nitrobenzene	mg/kg								
N-Nitroso-Di-N-Propylamine	mg/kg								
N-Nitrosodiphenylamine	mg/kg								
Pentachlorophenol	mg/kg								
Phenol	mg/kg								
2-Chloronaphthalene	mg/kg								
2-Methylnaphthalene	mg/kg								
Acenaphthene	mg/kg								
Acenaphthylene	mg/kg								
Anthracene	mg/kg								
Benzo(A)Anthracene	mg/kg								
Benzo(A)Pyrene	mg/kg								
Benzo(B)Fluoranthene	mg/kg								

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-062-0001-0-081710	FSA-066-0001-0-081810	FSA-075-0001-0-082510	FSA-089-0001-0-081810	FSA-102-0001-0-081810	FSA-105-0001-0-081910	FSA-106-0001-0-081810	FSA-151-0001-0-081910
	Type	N	N	N	N	N	N	N	N
	Date	8/17/2010	8/18/2010	8/25/2010	8/18/2010	8/18/2010	8/19/2010	8/18/2010	8/19/2010
Analyte	Units								
Benzo(G,H,I)Perylene	mg/kg								
Benzo(K)Fluoranthene	mg/kg								
Carbazole	mg/kg								
Chrysene	mg/kg								
Dibenz(A,H)Anthracene	mg/kg								
Fluoranthene	mg/kg								
Fluorene	mg/kg								
High Molecular Weight PAHs	mg/kg								
Indeno(1,2,3-Cd)Pyrene	mg/kg								
Low Molecular Weight PAHs	mg/kg								
Naphthalene	mg/kg								
Phenanthrene	mg/kg								
Pyrene	mg/kg								
Dichloronaphthalene, Total	mg/kg								
Heptachloronaphthalene, Total	mg/kg								
Hexachloronaphthalene, Total	mg/kg								
Monochloronaphthalene, Total	mg/kg								
Octachloronaphthalene, Total	mg/kg								
Pentachloronaphthalene, Total	mg/kg								
Tetrachloronaphthalene, Total	mg/kg								
Trichloronaphthalene, Total	mg/kg								
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	mg/kg								
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	mg/kg								
1,2,3,4,6,7,8-Heptachlorodibenzofuran	mg/kg								
1,2,3,4,6,7,8-Heptachlorodibenzo-P-Dioxin	mg/kg								
1,2,3,4,7,8,9-Heptachlorodibenzofuran	mg/kg								
1,2,3,4,7,8-Hexachlorodibenzofuran	mg/kg								
1,2,3,4,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg								
1,2,3,6,7,8-Hexachlorodibenzofuran	mg/kg								
1,2,3,6,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg								
1,2,3,7,8,9-Hexachlorodibenzofuran	mg/kg								
1,2,3,7,8,9-Hexachlorodibenzo-P-Dioxin	mg/kg								
1,2,3,7,8-Pentachlorodibenzofuran	mg/kg								
1,2,3,7,8-Pentachlorodibenzo-P-Dioxin	mg/kg								
2,3,4,6,7,8-Hexachlorodibenzofuran	mg/kg								
2,3,4,7,8-Pentachlorodibenzofuran	mg/kg								

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-062-0001-0-081710	FSA-066-0001-0-081810	FSA-075-0001-0-082510	FSA-089-0001-0-081810	FSA-102-0001-0-081810	FSA-105-0001-0-081910	FSA-106-0001-0-081810	FSA-151-0001-0-081910
	Type	N	N	N	N	N	N	N	N
	Date	8/17/2010	8/18/2010	8/25/2010	8/18/2010	8/18/2010	8/19/2010	8/18/2010	8/19/2010
Analyte	Units								
2,3,7,8-TCDD TEQ (Bird)	mg/kg								
2,3,7,8-TCDD TEQ (mammal)	mg/kg								
2,3,7,8-Tetrachlorodibenzofuran	mg/kg								
2,3,7,8-Tetrachlorodibenzo-P-Dioxin	mg/kg								
Heptachlorodibenzofuran (total)	mg/kg								
Heptachlorodibenzo-p-dioxin (total)	mg/kg								
Hexachlorodibenzofuran (total)	mg/kg								
Hexachlorodibenzo-p-dioxin (total)	mg/kg								
Pentachlorodibenzofuran (total)	mg/kg								
Pentachlorodibenzo-p-dioxin (total)	mg/kg								
Tetrachlorodibenzo(p)dioxin (total)	mg/kg								
Tetrachlorodibenzofuran (total)	mg/kg								
4,4'-DDD	mg/kg								
4,4'-DDE	mg/kg								
4,4'-DDT	mg/kg								
Aldrin	mg/kg								
Alpha-BHC	mg/kg								
Alpha-Chlordane	mg/kg								
Beta-BHC	mg/kg								
DDT and Metabolites	mg/kg								
Delta-BHC	mg/kg								
Dieldrin	mg/kg								
Endosulfan I	mg/kg								
Endosulfan II	mg/kg								
Endosulfan Sulfate	mg/kg								
Endrin	mg/kg								
Endrin Aldehyde	mg/kg								
Endrin Ketone	mg/kg								
Gamma-BHC (Lindane)	mg/kg								
Gamma-Chlordane	mg/kg								
Heptachlor	mg/kg								
Heptachlor Epoxide	mg/kg								
Methoxychlor	mg/kg								
Toxaphene	mg/kg								
Decachlorobiphenyl	mg/kg								
Total DiCB	mg/kg								

Analyte	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-062-0001-0-081710	FSA-066-0001-0-081810	FSA-075-0001-0-082510	FSA-089-0001-0-081810	FSA-102-0001-0-081810	FSA-105-0001-0-081910	FSA-106-0001-0-081810	FSA-151-0001-0-081910
	Type	N	N	N	N	N	N	N	N
	Date	8/17/2010	8/18/2010	8/25/2010	8/18/2010	8/18/2010	8/19/2010	8/18/2010	8/19/2010
	Units								
Total HpCB	mg/kg								
Total HxCB	mg/kg								
Total MoCB	mg/kg								
Total PCB Homologues	mg/kg								
Total PeCB	mg/kg								
Total TeCB	mg/kg								
Total TrCB	mg/kg								
17-TrCB	mg/kg								
2,3,3',4,4',5,5'-Heptachlorobiphenyl	mg/kg								
2,3,3',4,4',5-Hexachlorobiphenyl	mg/kg								
2,3,3',4,4'-Pentachlorobiphenyl	mg/kg								
2,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg								
2',3,4,4',5-Pentachlorobiphenyl	mg/kg								
2,3',4,4',5-Pentachlorobiphenyl	mg/kg								
2,3,4,4',5-Pentachlorobiphenyl	mg/kg								
3,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg								
3,3',4,4',5-Pentachlorobiphenyl	mg/kg								
3,3',4,4'-Tetrachlorobiphenyl	mg/kg								
3,4,4',5-Tetrachlorobiphenyl	mg/kg								
PCB Dioxin-like Congener TEQ (Bird)	mg/kg								
PCB Dioxin-like Congener TEQ (mammal)	mg/kg								
Total NoCB	mg/kg								
Total OcCB	mg/kg								
Perchlorate (organic)	mg/kg								
Aluminum	mg/Kg	3074	3893	3379	3888	2469	4253	843	6481
Antimony	mg/Kg	3.1 J	2.4 J	6.7 U	1.5 J	9 J	0.79 J	56.8 J	580 J
Arsenic	mg/Kg	9.1	11.5	8.9	37.8	281	4.9	105	14.1
Barium	mg/Kg	135 J	179 J	205	88.9	108 J	69.5 J	1443	83.9 J
Beryllium	mg/Kg	0.63	0.42 J	0.29 J	0.23 J	0.39 J	0.39 J	0.67 U	0.13 J
Cadmium	mg/Kg	0.62 U	0.59 U	0.27 J	0.61 U	0.72 U	0.54 U	4.2	0.58 U
Calcium	mg/Kg	1673	2454	2487	1629	3224	1170	1624	895
Chromium	mg/Kg	7.3	15.7	8.8	5	15.6	8.1	54.3	3.9
Cobalt	mg/Kg	5.4 J	4.2 J	5.5 J	5.8 J	7.6 J	4.7 J	3.7 J	4.2 J
Copper	mg/Kg	108	347	42 J	209 J	117	26.5	1067 J	125
Iron	mg/Kg	26098	10971	9835 J	10019 J	27175	9179	140309 J	31226
Lead	mg/Kg	65.4 J	467 J	105	29.7 J	133 J	40.5 J	3825 J	5189 J

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-062-0001-0-081710	FSA-066-0001-0-081810	FSA-075-0001-0-082510	FSA-089-0001-0-081810	FSA-102-0001-0-081810	FSA-105-0001-0-081910	FSA-106-0001-0-081810	FSA-151-0001-0-081910
	Type	N	N	N	N	N	N	N	N
	Date	8/17/2010	8/18/2010	8/25/2010	8/18/2010	8/18/2010	8/19/2010	8/18/2010	8/19/2010
Analyte	Units								
Magnesium	mg/Kg	439 J	790	1185	1660	613 J	1487	217 J	3645
Manganese	mg/Kg	340 J	104 J	175 J	172 J	313 J	171 J	422 J	247 J
Mercury	mg/Kg	108 J	0.88 J	1.7	2.4	0.58 J	2.8 J	37.3	10.2 J
Nickel	mg/Kg	10.2	14	342	9	18.3	8.8	24.9	4.1 J
Potassium	mg/Kg	276 J	349 J	552 J	1917 J	297 J	679 J	357 J	3045 J
Selenium	mg/Kg	0.98 J	1.4 J	0.43 J	1.1 J	1.1 J	0.18 J	2.7 J	0.27 J
Silver	mg/Kg	1.2 U	1.1 U	1.1 U	0.14 J	1.4 U	1.1 U	1.3 J	0.72 J
Sodium	mg/Kg	147 J	145 J	58.3 J	45.8 J	60.1 J	74.6 J	158 J	97 J
Thallium	mg/Kg	3.1 U	2.8 U	2.8 U	3 U	3.6 U	2.7 U	3.4 U	2.9 U
Vanadium	mg/Kg	13	19.1	20 J	12 J	16.4	23.4	32.8 J	19.9
Zinc	mg/Kg	72.3	388	192 J	43.3 J	229	40.5	454 J	157
Total Organic Carbon	mg/Kg								

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-168-0001-0-082310	FSA-171-0001-0-082310	FSA-MW-34O1-0001-091310	FSA-MW-35O1-0001-091710	FSA-MW-36O1-0001-092210	FSA-MW-37O1-0001-092210	FSA-SB-08O1-0001-091710	FSA-SB-09O1-0001-092710
	Type	N	N	N	N	N	N	N	N
	Date	8/16/2010	8/23/2010	9/13/2010	9/17/2010	9/22/2010	9/22/2010	9/17/2010	9/27/2010
Analyte	**Units**								
1,1,1-Trichloroethane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,1,2,2-Tetrachloroethane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,1,2-Trichloroethane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,1'-Biphenyl	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
1,1-Dichloroethane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,1-Dichloroethene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,2,3-Trichlorobenzene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,2,4-Trichlorobenzene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,2-Dibromo-3-Chloropropane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,2-Dibromoethane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,2-Dichlorobenzene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,2-Dichloroethane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,2-Dichloropropane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,3-Dichlorobenzene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,4-Dichlorobenzene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
2,2'-Oxybis(1-Chloropropane)	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
2-Butanone	mg/kg			0.012 U	0.01 U	0.01 U	0.02 U	0.014 U	0.012 U
2-Hexanone	mg/kg			0.012 U	0.01 U	0.01 U	0.02 U	0.014 U	0.012 U
4-Methyl-2-Pentanone	mg/kg			0.012 U	0.01 U	0.01 U	0.02 U	0.014 U	0.012 U
Acetone	mg/kg			0.021 U	0.01 U	0.01 U	0.02 U	0.02 J	0.006 J
Acetophenone	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Benzaldehyde	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Benzene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Bis(2-Chloroethyl)Ether	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Bromochloromethane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Bromodichloromethane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Bromoform	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Bromomethane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Carbon Disulfide	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Carbon Tetrachloride	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Chlorobenzene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Chloroethane	mg/kg				0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Chloroform	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Chloromethane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
cis-1,2-Dichloroethene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-168-0001-0-082310	FSA-171-0001-0-082310	FSA-MW-34O1-0001-091310	FSA-MW-35O1-0001-091710	FSA-MW-36O1-0001-092210	FSA-MW-37O1-0001-092210	FSA-SB-08O1-0001-091710	FSA-SB-09O1-0001-092710
	Type	N	N	N	N	N	N	N	N
	Date	8/16/2010	8/23/2010	9/13/2010	9/17/2010	9/22/2010	9/22/2010	9/17/2010	9/27/2010
Analyte	Units								
cis-1,3-Dichloropropene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Cyclohexane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Dibromochloromethane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Dichlorodifluoromethane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Ethylbenzene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Hexachlorobenzene	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Hexachlorobutadiene	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Hexachloroethane	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Isopropylbenzene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
m,p-Xylene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Methyl Acetate	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Methyl Tert-Butyl Ether	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Methylcyclohexane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Methylene Chloride	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.016 U	0.0053 J	0.0059 U
o-Xylene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Styrene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Tetrachloroethene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Toluene	mg/kg			0.0057 U	0.0051 U	0.011 U	0.014 J	0.007 U	0.012 U
trans-1,2-Dichloroethene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
trans-1,3-Dichloropropene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Trichloroethene	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Trichlorofluoromethane	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
Vinyl Chloride	mg/kg			0.0061 U	0.0051 U	0.0051 U	0.01 U	0.007 U	0.0059 U
1,2,4,5-Tetrachlorobenzene	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
1,4-Dioxane	mg/kg			0.12 U	0.1 U	0.1 U	0.2 U	0.14 U	0.12 U
2,3,4,6-Tetrachlorophenol	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
2,4,5-Trichlorophenol	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
2,4,6-Trichlorophenol	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
2,4-Dichlorophenol	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
2,4-Dimethylphenol	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
2,4-Dinitrophenol	mg/kg			0.4 U	0.37 U	0.39 U	0.4 U	0.42 U	0.38 U
2,4-Dinitrotoluene	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
2,6-Dinitrotoluene	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
2-Chlorophenol	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
2-Methylphenol	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
2-Nitroaniline	mg/kg			0.4 U	0.37 U	0.39 U	0.4 U	0.42 U	0.38 U

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-168-0001-0-082310	FSA-171-0001-0-082310	FSA-MW-34O1-0001-091310	FSA-MW-35O1-0001-091710	FSA-MW-36O1-0001-092210	FSA-MW-37O1-0001-092210	FSA-SB-08O1-0001-091710	FSA-SB-09O1-0001-092710
	Type	N	N	N	N	N	N	N	N
	Date	8/16/2010	8/23/2010	9/13/2010	9/17/2010	9/22/2010	9/22/2010	9/17/2010	9/27/2010
Analyte	Units								
2-Nitrophenol	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
3,3'-Dichlorobenzidine	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
3-Nitroaniline	mg/kg			0.4 U	0.37 U	0.39 U	0.4 U	0.42 U	0.38 U
4,6-Dinitro-2-Methylphenol	mg/kg			0.4 U	0.37 U	0.39 U	0.4 U	0.42 U	0.38 U
4-Bromophenyl-Phenylether	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
4-Chloro-3-Methylphenol	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
4-Chloroaniline	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
4-Chlorophenyl-Phenylether	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
4-Methylphenol	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
4-Nitroaniline	mg/kg			0.4 U	0.37 U	0.39 U	0.4 U	0.42 U	0.38 U
4-Nitrophenol	mg/kg			0.4 U	0.37 U	0.39 U	0.4 U	0.42 U	0.38 U
Atrazine	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Bis(2-Chloroethoxy)Methane	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Bis(2-Ethylhexyl)Phthalate	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Butylbenzylphthalate	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Caprolactam	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Dibenzofuran	mg/kg			0.12 J	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Diethylphthalate	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Dimethylphthalate	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Di-N-Butyl Phthalate	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Di-N-Octyl Phthalate	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Hexachlorocyclopentadiene	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Isophorone	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Nitrobenzene	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
N-Nitroso-Di-N-Propylamine	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
N-Nitrosodiphenylamine	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Pentachlorophenol	mg/kg			0.4 U	0.37 U	0.39 U	0.4 U	0.42 U	0.38 U
Phenol	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
2-Chloronaphthalene	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
2-Methylnaphthalene	mg/kg			0.11 J	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Acenaphthene	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Acenaphthylene	mg/kg			0.3	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Anthracene	mg/kg			0.21	0.1 J	0.2 U	0.21 U	0.1 J	0.19 U
Benzo(A)Anthracene	mg/kg			1.5	0.33	0.4 J	0.089 J	0.48 J	0.12 J
Benzo(A)Pyrene	mg/kg			1.3	0.64	0.34 J	0.098 J	0.41 J	0.14 J
Benzo(B)Fluoranthene	mg/kg			1.9	0.63	0.26 J	0.21 U	0.35 J	0.1 J

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-168-0001-0-082310	FSA-171-0001-0-082310	FSA-MW-34O1-0001-091310	FSA-MW-35O1-0001-091710	FSA-MW-36O1-0001-092210	FSA-MW-37O1-0001-092210	FSA-SB-08O1-0001-091710	FSA-SB-09O1-0001-092710
	Type	N	N	N	N	N	N	N	N
	Date	8/16/2010	8/23/2010	9/13/2010	9/17/2010	9/22/2010	9/22/2010	9/17/2010	9/27/2010
Analyte	Units								
Benzo(G,H,I)Perylene	mg/kg			1.1	0.11 J	0.19 J	0.21 U	0.24 J	0.091 J
Benzo(K)Fluoranthene	mg/kg			1.3	0.45	0.33 J	0.099 J	0.37 J	0.14 J
Carbazole	mg/kg			0.14 J	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Chrysene	mg/kg			1.7	0.42	0.41 J	0.11 J	0.5 J	0.16 J
Dibenz(A,H)Anthracene	mg/kg			0.54	0.19 U	0.2 U	0.21 U	0.12 J	0.19 U
Fluoranthene	mg/kg			2.4	0.48	0.66 J	0.13 J	0.79 J	0.18 J
Fluorene	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
High Molecular Weight PAHs	mg/kg			12.34	3.51	2.87	1.366	3.35	1.218
Indeno(1,2,3-Cd)Pyrene	mg/kg			1.1	0.2	0.18 J	0.21 U	0.24 J	0.087 J
Low Molecular Weight PAHs	mg/kg			4.27	1.88	2.26	1.81	2.57	1.7
Naphthalene	mg/kg			0.16 J	0.19 U	0.2 U	0.21 U	0.22 U	0.19 U
Phenanthrene	mg/kg			0.55	0.16 J	0.2 U	0.21 U	0.36 J	0.19 U
Pyrene	mg/kg			1.9	0.54	0.56 J	0.13 J	0.64 J	0.19 J
Dichloronaphthalene, Total	mg/kg								
Heptachloronaphthalene, Total	mg/kg								
Hexachloronaphthalene, Total	mg/kg								
Monochloronaphthalene, Total	mg/kg								
Octachloronaphthalene, Total	mg/kg								
Pentachloronaphthalene, Total	mg/kg								
Tetrachloronaphthalene, Total	mg/kg								
Trichloronaphthalene, Total	mg/kg								
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	mg/kg			0.00016	0.000158	0.0000338 EB	0.00000767 J EB	0.0000416	0.0000167 EB
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	mg/kg			0.0012	0.000523	0.00307	0.000102	0.000408	0.0000507
1,2,3,4,6,7,8-Heptachlorodibenzofuran	mg/kg			0.0000598	0.0000448	0.0000114 EB	0.00000353 J EB	0.0000136	0.0000108 EB
1,2,3,4,6,7,8-Heptachlorodibenzo-P-Dioxin	mg/kg			0.000153	0.0000685	0.000136	0.0000115	0.000066	0.0000205
1,2,3,4,7,8,9-Heptachlorodibenzofuran	mg/kg			0.000017	0.0000135 J	0.00000104	0.000000541 U	0.00000207 U	0.0000031 J
1,2,3,4,7,8-Hexachlorodibenzofuran	mg/kg			0.000123	0.0000364	0.00000337 J	0.00000403 J	0.0000163	0.0000176
1,2,3,4,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg			0.00000161 J	0.000000944 U	0.0000041	0.000000265 U	0.00000154 U	0.000000657 J
1,2,3,6,7,8-Hexachlorodibenzofuran	mg/kg			0.0000371	0.00000786	0.00000124 J	0.000000872 J	0.00000424 J	0.00000609
1,2,3,6,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg			0.00000287 J	0.00000435 J	0.00000604	0.000000258 U	0.00000143 U	0.00000596
1,2,3,7,8,9-Hexachlorodibenzofuran	mg/kg			0.0000379	0.0000064	0.000000881 J	0.000000838 J	0.00000305	0.00000437 J
1,2,3,7,8,9-Hexachlorodibenzo-P-Dioxin	mg/kg			0.00000183 J	0.000000974 U	0.0000103	0.000000269 U	0.00000153 U	0.00000293
1,2,3,7,8-Pentachlorodibenzofuran	mg/kg			0.0000928	0.000044	0.00000115	0.0000046 J	0.0000183	0.0000181
1,2,3,7,8-Pentachlorodibenzo-P-Dioxin	mg/kg			0.000000928 J	0.00000188	0.00000395 J	0.000000305 U	0.000000995 U	0.00000113 J
2,3,4,6,7,8-Hexachlorodibenzofuran	mg/kg			0.0000164	0.00000596	0.00000103 J	0.000000536 J	0.0000031 J	0.00000745
2,3,4,7,8-Pentachlorodibenzofuran	mg/kg			0.000106	0.0000181	0.00000252 J	0.00000168 J	0.0000151	0.0000265

Analyte	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-168-0001-0-082310	FSA-171-0001-0-082310	FSA-MW-34O1-0001-091310	FSA-MW-35O1-0001-091710	FSA-MW-36O1-0001-092210	FSA-MW-37O1-0001-092210	FSA-SB-08O1-0001-091710	FSA-SB-09O1-0001-092710
	Type	N	N	N	N	N	N	N	N
	Date	8/16/2010	8/23/2010	9/13/2010	9/17/2010	9/22/2010	9/22/2010	9/17/2010	9/27/2010
	Units								
2,3,7,8-TCDD TEQ (Bird)	mg/kg			0.000307702	8.10077E-05	1.60863E-05	7.27351E-06	7.2491E-05	9.61827E-05
2,3,7,8-TCDD TEQ (mammal)	mg/kg			0.000077794	2.18991E-05	1.11111E-05	2.40941E-06	1.58096E-05	2.09729E-05
2,3,7,8-Tetrachlorodibenzofuran	mg/kg			0.000168	0.0000495	0.00000636	0.00000392	0.0000508	0.0000624
2,3,7,8-Tetrachlorodibenzo-P-Dioxin	mg/kg			0.000000705 J	0.000000558 U	0.000000623	0.000000175 U	0.000000585 U	0.00000024 U
Heptachlorodibenzofuran (total)	mg/kg			0.000156 J	0.000148 J	0.0000373 EB	0.0000098 J EB	0.0000346 J	0.0000259 J EB
Heptachlorodibenzo-p-dioxin (total)	mg/kg			0.000783 J	0.000157 J	0.000387 J	0.0000437 J	0.000141 J	0.000056 J
Hexachlorodibenzofuran (total)	mg/kg			0.000278	0.000107	0.0000156 J	0.00000961	0.0000478	0.0000879 J
Hexachlorodibenzo-p-dioxin (total)	mg/kg			0.0000586 J	0.0000323 J	0.0000562	0.00000479	0.0000151	0.0000486
Pentachlorodibenzofuran (total)	mg/kg			0.000453	0.000172	0.000018	0.0000156	0.00009	0.000206
Pentachlorodibenzo-p-dioxin (total)	mg/kg			0.00000969	0.0000201	0.0000172	0.000000305 U	0.00000547 J	0.0000231
Tetrachlorodibenzo(p)dioxin (total)	mg/kg			0.0000034	0.00000287 J	0.00000214	0.000000175 U	0.00000292 J	0.00000421 J
Tetrachlorodibenzofuran (total)	mg/kg			0.00043	0.000126	0.0000151	0.00000893	0.000119	0.000174
4,4'-DDD	mg/kg			0.004 U	0.0037 U	0.0039 U	0.004 U	0.0042 U	0.0038 U
4,4'-DDE	mg/kg			0.004 U	0.0037 U	0.0039 U	0.004 U	0.0042 U	0.0038 U
4,4'-DDT	mg/kg			0.004 U	0.0037 U	0.0039 U	0.004 U	0.0042 U	0.0038 U
Aldrin	mg/kg			0.002 U	0.0019 U	0.002 U	0.0021 U	0.0021 U	0.002 U
Alpha-BHC	mg/kg			0.002 U	0.0019 U	0.002 U	0.0021 U	0.0021 U	0.002 U
Alpha-Chlordane	mg/kg			0.002 U	0.0019 U	0.002 U	0.0021 U	0.0021 U	0.002 U
Beta-BHC	mg/kg			0.002 U	0.0019 U	0.002 U	0.0021 U	0.0021 U	0.002 U
DDT and Metabolites	mg/kg			0.008 U	0.0074 U	0.0078 U	0.008 U	0.0084 U	0.0076 U
Delta-BHC	mg/kg			0.002 U	0.0019 U	0.002 U	0.0021 U	0.0021 U	0.002 U
Dieldrin	mg/kg			0.004 U	0.0037 U	0.0039 U	0.004 U	0.0042 U	0.0038 U
Endosulfan I	mg/kg			0.002 U	0.0019 U	0.002 U	0.0021 U	0.0021 U	0.002 U
Endosulfan II	mg/kg			0.004 U	0.0037 U	0.0039 U	0.004 U	0.0042 U	0.0038 U
Endosulfan Sulfate	mg/kg			0.004 U	0.0037 U	0.0039 U	0.004 U	0.0042 U	0.0038 U
Endrin	mg/kg			0.004 U	0.0037 U	0.0039 U	0.004 U	0.0042 U	0.0038 U
Endrin Aldehyde	mg/kg			0.004 U	0.0037 U	0.0039 U	0.004 U	0.0042 U	0.0038 U
Endrin Ketone	mg/kg			0.004 U	0.0037 U	0.0039 U	0.004 U	0.0042 U	0.0038 U
Gamma-BHC (Lindane)	mg/kg			0.002 U	0.0019 U	0.002 U	0.0021 U	0.0021 U	0.002 U
Gamma-Chlordane	mg/kg			0.002 U	0.0019 U	0.002 U	0.0021 U	0.0021 U	0.002 U
Heptachlor	mg/kg			0.002 U	0.0019 U	0.002 U	0.0021 U	0.0021 U	0.002 U
Heptachlor Epoxide	mg/kg			0.002 U	0.0019 U	0.002 U	0.0021 U	0.0021 U	0.002 U
Methoxychlor	mg/kg			0.02 U	0.019 U	0.02 U	0.021 U	0.021 U	0.02 U
Toxaphene	mg/kg			0.2 U	0.19 U	0.2 U	0.21 U	0.21 U	0.2 U
Decachlorobiphenyl	mg/kg			0.0002 J	0.000983 J	0.0000324 U	0.0000319 U	0.000503 J	0.000281 U
Total DiCB	mg/kg			0.000231 U	0.000857 J	0.0000873 U	0.0000814 U	0.000262 U	0.000263 U

Analyte	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-168-0001-0-082310	FSA-171-0001-0-082310	FSA-MW-34O1-0001-091310	FSA-MW-35O1-0001-091710	FSA-MW-36O1-0001-092210	FSA-MW-37O1-0001-092210	FSA-SB-08O1-0001-091710	FSA-SB-09O1-0001-092710
	Type	N	N	N	N	N	N	N	N
	Date	8/16/2010	8/23/2010	9/13/2010	9/17/2010	9/22/2010	9/22/2010	9/17/2010	9/27/2010
	Units								
Total HpCB	mg/kg			0.0304 J	1.45 J	0.0301 JEB	0.0268 JEB	0.132 J	0.0571 JEB
Total HxCB	mg/kg			0.0376 J	2.43 J	0.0491 JEB	0.0343 JEB	0.302 J	0.0404 JEB
Total MoCB	mg/kg			0.0000508 U	0.000247 J EB	0.0000218 U	0.0000164 U	0.0000497 J EB	0.000132 J
Total PCB Homologues	mg/kg			0.0867 J	4.8 J	0.101 J	0.0755 J	0.68 J	0.128 J
Total PeCB	mg/kg								
Total TeCB	mg/kg			0.00131 J	0.0352 J	0.00146 JEB	0.000723 JEB	0.0218 J	0.0017 JEB
Total TrCB	mg/kg			0.000417 U	0.00336 J	0.000169 U	0.000141 U	0.000756 J	0.000255 U
17-TrCB	mg/kg			0.00892 J	0.571 J	0.0127 JEB	0.00721 JEB	0.192 J	0.0114 JEB
2,3,3',4,4',5,5'-Heptachlorobiphenyl	mg/kg			0.000111	0.00514	0.000115 EB	0.0000998 EB	0.000591	0.000228 EB
2,3,3',4,4',5-Hexachlorobiphenyl	mg/kg			0.00036	0.0269	0.000673 EB	0.000407 EB	0.00763	0.00103 EB
2,3,3',4,4'-Pentachlorobiphenyl	mg/kg			0.000345	0.0162	0.000652	0.000369	0.0112	0.000712
2,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg			0.000227	0.0116	0.000291 EB	0.000216 EB	0.00256	0.000414 EB
2',3,4,4',5-Pentachlorobiphenyl	mg/kg			0.0000568 U	0.000769	0.0000105	0.0000119	0.000585	0.0000384 U
2,3',4,4',5-Pentachlorobiphenyl	mg/kg			0.000918	0.0468	0.00165 EB	0.00101 EB	0.0288	0.002 EB
2,3,4,4',5-Pentachlorobiphenyl	mg/kg			0.0000523 U	0.000525	0.0000204	0.0000146	0.000591	0.0000474 U
3,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg			0.000062 U	0.000589	0.0000142 U	0.00000539 U	0.000064	0.000014 U
3,3',4,4',5-Pentachlorobiphenyl	mg/kg			0.0000747 U	0.000353 U	0.0000107 U	0.00000638 U	0.000123	0.0000367 U
3,3',4,4'-Tetrachlorobiphenyl	mg/kg			0.0000347	0.000775	0.0000407	0.00003	0.000333	0.0000758
3,4,4',5-Tetrachlorobiphenyl	mg/kg			0.0000219 U	0.0000426	0.00000663 U	0.00000163 U	0.0000143 U	0.0000145 U
PCB Dioxin-like Congener TEQ (Bird)	mg/kg			1.15459E-05	8.39046E-05	3.93741E-06	2.39883E-06	3.27115E-05	9.12974E-06
PCB Dioxin-like Congener TEQ (mammal)	mg/kg			9.40214E-06	5.62983E-05	1.60442E-06	8.67038E-07	1.58163E-05	4.23602E-06
Total NoCB	mg/kg			0.000728 J	0.0206 J	0.000531 JEB	0.000423 JEB	0.00244 J	0.00137 JEB
Total OcCB	mg/kg			0.00756 J	0.291 J	0.00758 JEB	0.00606 JEB	0.0284 J	0.0162 JEB
Perchlorate (organic)	mg/kg								
Aluminum	mg/Kg	5249	4007	7822	4307	2902	4630	4761	2524
Antimony	mg/Kg	363 J	168 J	6 U	1.3 J	7.2 U	7.3 U	0.46 J	7.1 U
Arsenic	mg/Kg	87.3	56.4	7.7	3.8	4.4	2.2	3.2	6.2
Barium	mg/Kg	1320	631 J	84.8	88.7	39.9	41.5	124	53.9
Beryllium	mg/Kg	0.36 J	0.54 J	0.58 U	0.34 J	0.6 U	0.15 J	0.4 J	0.59 U
Cadmium	mg/Kg	1.1	2.4 U	0.58 U	0.42 J	0.6 U	0.11 J	0.29 J	0.59 U
Calcium	mg/Kg	338 J	1940	2070	3887	2058 J	2184	3097	1248 J
Chromium	mg/Kg	53.8	45.3	11.4	12	7.1	7.5 J	11.2 J	7
Cobalt	mg/Kg	6.2 J	7.3 J	9 J	5.3 J	4.6 J	4.5 J	7.7 J	3.6 J
Copper	mg/Kg	1890 J	1240	46	65.7 J	22.3	13.5	31.2	26.2
Iron	mg/Kg	80884 J	235011	17683	15115	6707	8466	8832	4325
Lead	mg/Kg	24438 J	4096 J	52.6 J	147 J	17.8 J	7.4 J	86.8 J	46.6 J

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-168-0001-0-082310	FSA-171-0001-0-082310	FSA-MW-34O1-0001-091310	FSA-MW-35O1-0001-091710	FSA-MW-36O1-0001-092210	FSA-MW-37O1-0001-092210	FSA-SB-08O1-0001-091710	FSA-SB-09O1-0001-092710
	Type	N	N	N	N	N	N	N	N
	Date	8/16/2010	8/23/2010	9/13/2010	9/17/2010	9/22/2010	9/22/2010	9/17/2010	9/27/2010
Analyte	**Units**								
Magnesium	mg/Kg	1395	476 J	3500	2198	813 J	2497	1696	188 J
Manganese	mg/Kg	427 J	516 J	279 J	286	144	374	340	59.8
Mercury	mg/Kg	5.3	5.1 J	0.25 J	1.4	0.64	0.095 J	0.73	1.9
Nickel	mg/Kg	15	66.9	12	48.5 J	9.8	5.7	28.1	11.2
Potassium	mg/Kg	1113 J	541 J	1366 J	682 J	320 J	1243 J	670 J	342 J
Selenium	mg/Kg	5	3.4 J	0.9 J	4.1 U	2.4 J	0.67 J	0.84 J	1.9 J
Silver	mg/Kg	1.8	1.5	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Sodium	mg/Kg	192 J	66.5 J	126 J	89.9 J	597 U	500 U	500 U	588 U
Thallium	mg/Kg	3.2 U	3.5 U	2.9 U	3 U	3 U	3 U	2.9 U	2.9 U
Vanadium	mg/Kg	28.1 J	72.7	24	16.7	12.3	14	17.5	21.9
Zinc	mg/Kg	637 J	839	60.3 J	314	72.4	46.6	84.9	45.3
Total Organic Carbon	mg/Kg			22000	20000	26000	42000	24000	

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-10O1-0001-092110	FSA-SB-11O1-0001-092110	FSA-SB-12O1-0001-092010	FSA-SB-13O1-0001-092210	FSA-SB-14O1-0001-092010	FSA-SB-15O1-0001-092110	FSA-SB-16O1-0001-092210	FSA-SB-17O1-0001-091710
	Type	N	N	N	N	N	N	N	N
	Date	9/21/2010	9/21/2010	9/20/2010	9/22/2010	9/20/2010	9/21/2010	9/22/2010	9/17/2010
Analyte	**Units**								
1,1,1-Trichloroethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,1,2,2-Tetrachloroethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,1,2-Trichloroethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,1'-Biphenyl	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
1,1-Dichloroethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,1-Dichloroethene	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,2,3-Trichlorobenzene	mg/kg	0.0066 U	0.0077 U		0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,2,4-Trichlorobenzene	mg/kg	0.0066 U	0.0077 U		0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,2-Dibromo-3-Chloropropane	mg/kg	0.0066 U	0.0077 U		0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,2-Dibromoethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,2-Dichlorobenzene	mg/kg	0.0052 J	0.0077 U		0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,2-Dichloroethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,2-Dichloropropane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,3-Dichlorobenzene	mg/kg	0.0066 U	0.0077 U		0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,4-Dichlorobenzene	mg/kg	0.0049 J	0.0077 U		0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
2,2'-Oxybis(1-Chloropropane)	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
2-Butanone	mg/kg	0.013 U	0.015 U	0.018 U	0.011 U	0.01 U	0.011 U	0.015 U	0.012 U
2-Hexanone	mg/kg	0.013 U	0.015 U	0.018 U	0.011 U	0.01 U	0.011 U	0.015 U	0.012 U
4-Methyl-2-Pentanone	mg/kg	0.013 U	0.015 U	0.018 U	0.011 U	0.01 U	0.011 U	0.015 U	0.012 U
Acetone	mg/kg	0.17 J	0.015 U	0.02 J	0.011 U	0.01 U	0.017 J	0.015 U	0.012 U
Acetophenone	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Benzaldehyde	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Benzene	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Bis(2-Chloroethyl)Ether	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Bromochloromethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Bromodichloromethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Bromoform	mg/kg	0.0066 U	0.0077 U		0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Bromomethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Carbon Disulfide	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Carbon Tetrachloride	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Chlorobenzene	mg/kg	0.013	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Chloroethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Chloroform	mg/kg	0.0066 U	0.011 J	0.0088 U	0.009 J	0.009 J	0.0054 U	0.049 J	0.0058 U
Chloromethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
cis-1,2-Dichloroethene	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-10O1-0001-092110	FSA-SB-11O1-0001-092110	FSA-SB-12O1-0001-092010	FSA-SB-13O1-0001-092210	FSA-SB-14O1-0001-092010	FSA-SB-15O1-0001-092110	FSA-SB-16O1-0001-092210	FSA-SB-17O1-0001-091710
	Type	N	N	N	N	N	N	N	N
	Date	9/21/2010	9/21/2010	9/20/2010	9/22/2010	9/20/2010	9/21/2010	9/22/2010	9/17/2010
Analyte	Units								
cis-1,3-Dichloropropene	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Cyclohexane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Dibromochloromethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Dichlorodifluoromethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Ethylbenzene	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Hexachlorobenzene	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Hexachlorobutadiene	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Hexachloroethane	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Isopropylbenzene	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
m,p-Xylene	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Methyl Acetate	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.004 J	0.005 U	0.0054 U	0.0074 U	0.0058 U
Methyl Tert-Butyl Ether	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Methylcyclohexane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Methylene Chloride	mg/kg	0.0066 U	0.0077 U	0.011 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
o-Xylene	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Styrene	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Tetrachloroethene	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0068 J	0.0058 U
Toluene	mg/kg	0.0066 U	0.0077 U	0.026 U	0.0024 J	0.0035 J	0.0081 U	0.0055 J	0.0058 U
trans-1,2-Dichloroethene	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
trans-1,3-Dichloropropene	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Trichloroethene	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Trichlorofluoromethane	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
Vinyl Chloride	mg/kg	0.0066 U	0.0077 U	0.0088 U	0.0055 U	0.005 U	0.0054 U	0.0074 U	0.0058 U
1,2,4,5-Tetrachlorobenzene	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
1,4-Dioxane	mg/kg	0.13 U	0.15 U	0.18 U	0.11 U	0.1 U	0.11 U	0.15 U	0.12 U
2,3,4,6-Tetrachlorophenol	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
2,4,5-Trichlorophenol	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
2,4,6-Trichlorophenol	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
2,4-Dichlorophenol	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
2,4-Dimethylphenol	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
2,4-Dinitrophenol	mg/kg	0.36 U	0.43 U	0.38 U	0.39 U	0.36 U	0.35 U	0.36 U	0.38 U
2,4-Dinitrotoluene	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
2,6-Dinitrotoluene	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
2-Chlorophenol	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
2-Methylphenol	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
2-Nitroaniline	mg/kg	0.36 U	0.43 U	0.38 U	0.39 U	0.36 U	0.35 U	0.36 U	0.38 U

Analyte	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-10O1-0001-092110	FSA-SB-11O1-0001-092110	FSA-SB-12O1-0001-092010	FSA-SB-13O1-0001-092210	FSA-SB-14O1-0001-092010	FSA-SB-15O1-0001-092110	FSA-SB-16O1-0001-092210	FSA-SB-17O1-0001-091710
	Type	N	N	N	N	N	N	N	N
	Date	9/21/2010	9/21/2010	9/20/2010	9/22/2010	9/20/2010	9/21/2010	9/22/2010	9/17/2010
	Units								
2-Nitrophenol	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
3,3'-Dichlorobenzidine	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
3-Nitroaniline	mg/kg	0.36 U	0.43 U	0.38 U	0.39 U	0.36 U	0.35 U	0.36 U	0.38 U
4,6-Dinitro-2-Methylphenol	mg/kg	0.36 U	0.43 U	0.38 U	0.39 U	0.36 U	0.35 U	0.36 U	0.38 U
4-Bromophenyl-Phenylether	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
4-Chloro-3-Methylphenol	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
4-Chloroaniline	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
4-Chlorophenyl-Phenylether	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
4-Methylphenol	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
4-Nitroaniline	mg/kg	0.36 U	0.43 U	0.38 U	0.39 U	0.36 U	0.35 U	0.36 U	0.38 U
4-Nitrophenol	mg/kg	0.36 U	0.43 U	0.38 U	0.39 U	0.36 U	0.35 U	0.36 U	0.38 U
Atrazine	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Bis(2-Chloroethoxy)Methane	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Butylbenzylphthalate	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Caprolactam	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Dibenzofuran	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.34 J
Diethylphthalate	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Dimethylphthalate	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Di-N-Butyl Phthalate	mg/kg	0.18 U	0.14 J	0.14 J	0.11 J	0.072 J	0.18 U	0.16 J	0.39 J
Di-N-Octyl Phthalate	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Hexachlorocyclopentadiene	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Isophorone	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Nitrobenzene	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
N-Nitroso-Di-N-Propylamine	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
N-Nitrosodiphenylamine	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
Pentachlorophenol	mg/kg	0.36 U	0.43 U	0.38 U	0.39 U	0.36 U	0.35 U	0.36 U	0.38 U
Phenol	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
2-Chloronaphthalene	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.2 U
2-Methylnaphthalene	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.28 J
Acenaphthene	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.58 J
Acenaphthylene	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.15 J
Anthracene	mg/kg	0.18 U	0.22 U	0.16 J	0.17 J	0.16 J	0.18 U	0.19 U	1.6 J
Benzo(A)Anthracene	mg/kg	0.98	0.16 J	1 J	1.2 J	0.59 J	0.35 J	0.36 J	4.5 J
Benzo(A)Pyrene	mg/kg	0.53	0.17 J	1 J	1.1 J	0.53 J	0.46 J	0.39 J	3.8 J
Benzo(B)Fluoranthene	mg/kg	0.61	0.15 J	0.88 J	1 J	0.42 J	0.39 J	0.36 J	3.2 J

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-10O1-0001-092110	FSA-SB-11O1-0001-092110	FSA-SB-12O1-0001-092010	FSA-SB-13O1-0001-092210	FSA-SB-14O1-0001-092010	FSA-SB-15O1-0001-092110	FSA-SB-16O1-0001-092210	FSA-SB-17O1-0001-091710
	Type	N	N	N	N	N	N	N	N
	Date	9/21/2010	9/21/2010	9/20/2010	9/22/2010	9/20/2010	9/21/2010	9/22/2010	9/17/2010
Analyte	Units								
Benzo(G,H,I)Perylene	mg/kg	0.5	0.12 J	0.58 J	0.62 J	0.32 J	0.3 J	0.25 J	2.4 J
Benzo(K)Fluoranthene	mg/kg	0.98	0.2 J	1 J	1 J	0.51 J	0.43 J	0.36 J	3.4 J
Carbazole	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.074 J	0.18 U	0.19 U	0.64 J
Chrysene	mg/kg	1	0.2 J	1.2 J	1.3 J	0.58 J	0.37 U	0.42 J	4.5 J
Dibenz(A,H)Anthracene	mg/kg	0.18 U	0.22 U	0.23 J	0.26 J	0.13 J	0.1 J	0.1 J	1.3 J
Fluoranthene	mg/kg	1.4	0.23 J	1.5 J	1.8 J	1.3 J	0.51 J	0.53 J	8.1 J
Fluorene	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.54 J
High Molecular Weight PAHs	mg/kg	6.45	1.429	7.86	8.58	4.34	3.18	3.475	32.9
Indeno(1,2,3-Cd)Pyrene	mg/kg	0.47	0.11 J	0.57 J	0.6 J	0.31 J	0.27 J	0.24 J	2.5 J
Low Molecular Weight PAHs	mg/kg	2.85	1.813	3.37	3.69	3.084	1.859	2.294	17.56
Naphthalene	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.19 U	0.37 J
Phenanthrene	mg/kg	0.19	0.093 J	0.51 J	0.52 J	0.65 J	0.089 J	0.24 J	5.3 J
Pyrene	mg/kg	1.2	0.23 J	1.4 J	1.5 J	0.95 J	0.51 J	0.55 J	7.3 J
Dichloronaphthalene, Total	mg/kg								
Heptachloronaphthalene, Total	mg/kg								
Hexachloronaphthalene, Total	mg/kg								
Monochloronaphthalene, Total	mg/kg								
Octachloronaphthalene, Total	mg/kg								
Pentachloronaphthalene, Total	mg/kg								
Tetrachloronaphthalene, Total	mg/kg								
Trichloronaphthalene, Total	mg/kg								
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	mg/kg	0.000021	0.0000158	0.0000511 EB	0.0000444	0.00000413 J	0.0000219 EB	0.000376	0.0000683
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	mg/kg	0.001	0.000213 J	0.000561	0.000167	0.0000184	0.0000288	0.000465 J	0.000569
1,2,3,4,6,7,8-Heptachlorodibenzofuran	mg/kg	0.00000922 EB	0.00000561 EB	0.0000166 EB	0.0000239	0.00000271 EB	0.0000078 EB	0.000082	0.0000368
1,2,3,4,6,7,8-Heptachlorodibenzo-P-Dioxin	mg/kg	0.0000517	0.000024	0.0000547	0.0000176	0.00000259 J	0.00000472	0.0000381	0.0000636
1,2,3,4,7,8,9-Heptachlorodibenzofuran	mg/kg	0.0000012 J	0.000000833	0.00000268 J	0.00000489 J	0.000000922 U	0.00000253	0.0000287 J	0.00000976 J
1,2,3,4,7,8-Hexachlorodibenzofuran	mg/kg	0.00000578	0.00000367 J	0.0000156	0.000019	0.0000046 J	0.000016	0.000179	0.0000637
1,2,3,4,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.00000107	0.000000269 U	0.000000616	0.000000656	0.000000557 U	0.00000144 U	0.0000017 J	0.00000215 J
1,2,3,6,7,8-Hexachlorodibenzofuran	mg/kg	0.0000017 J	0.0000012 J	0.00000392 J	0.00000528	0.00000129 J	0.00000355 J	0.0000458	0.0000191
1,2,3,6,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.00000199 J	0.000000852	0.00000154 J	0.00000165 J	0.000000524 U	0.0000013 U	0.00000279	0.00000281 J
1,2,3,7,8,9-Hexachlorodibenzofuran	mg/kg	0.00000166 J	0.000000837	0.00000267	0.00000424 J	0.00000152	0.00000323 J	0.0000385	0.0000148 J
1,2,3,7,8,9-Hexachlorodibenzo-P-Dioxin	mg/kg	0.00000185 J	0.000000839	0.000000548 U	0.000000761 J	0.000000552 U	0.0000014 U	0.00000128	0.00000198 J
1,2,3,7,8-Pentachlorodibenzofuran	mg/kg	0.00000535	0.00000283 J	0.0000127	0.0000104	0.00000358 J	0.0000205	0.000155	0.0000735
1,2,3,7,8-Pentachlorodibenzo-P-Dioxin	mg/kg	0.000000758 J	0.000000376	0.000000732 J	0.000000539	0.000000355 U	0.000000662 U	0.00000289	0.00000151 J
2,3,4,6,7,8-Hexachlorodibenzofuran	mg/kg	0.00000141 J	0.000000852 J	0.00000236	0.00000293 J	0.000000437 U	0.0000017 J	0.0000216	0.0000108
2,3,4,7,8-Pentachlorodibenzofuran	mg/kg	0.00000584	0.00000324 J	0.0000104	0.0000124	0.00000292 J	0.0000107	0.000133	0.0000795

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-10O1-0001-092110	FSA-SB-11O1-0001-092110	FSA-SB-12O1-0001-092010	FSA-SB-13O1-0001-092210	FSA-SB-14O1-0001-092010	FSA-SB-15O1-0001-092110	FSA-SB-16O1-0001-092210	FSA-SB-17O1-0001-091710
	Type	N	N	N	N	N	N	N	N
	Date	9/21/2010	9/21/2010	9/20/2010	9/22/2010	9/20/2010	9/21/2010	9/22/2010	9/17/2010
Analyte	Units								
2,3,7,8-TCDD TEQ (Bird)	mg/kg	2.36704E-05	9.97079E-06	3.33897E-05	4.2528E-05	1.32202E-05	4.69981E-05	0.000403105	0.000427927
2,3,7,8-TCDD TEQ (mammal)	mg/kg	0.00000697	3.34412E-06	1.02548E-05	1.1362E-05	3.43238E-06	1.10447E-05	9.4193E-05	7.56918E-05
2,3,7,8-Tetrachlorodibenzofuran	mg/kg	0.0000146	0.00000608	0.0000175	0.0000246	0.00000844	0.0000303	0.000279	0.000325
2,3,7,8-Tetrachlorodibenzo-P-Dioxin	mg/kg	0.000000366	0.00000028 U	0.000000623 J	0.000000352	0.000000233 U	0.0000005 U	0.000000786 J	0.0000028
Heptachlorodibenzofuran (total)	mg/kg	0.000029 J	0.0000174	0.0000715 J EB	0.0000617 J	0.00000487	0.0000181 EB	0.000188	0.0000955 J
Heptachlorodibenzo-p-dioxin (total)	mg/kg	0.000118 J	0.0000997 J	0.000234 J	0.0000459 J	0.00000807	0.000014 J	0.000146 J	0.00018 J
Hexachlorodibenzofuran (total)	mg/kg	0.0000212 J	0.0000125	0.0000416	0.0000591	0.0000095	0.0000311	0.000368 J	0.000198
Hexachlorodibenzo-p-dioxin (total)	mg/kg	0.0000163	0.0000122	0.0000212	0.0000131	0.00000293	0.00000268 J	0.0000365	0.0000458 J
Pentachlorodibenzofuran (total)	mg/kg	0.0000294	0.0000171	0.0000593	0.0000718	0.0000136 J	0.0000545	0.000606	0.000335
Pentachlorodibenzo-p-dioxin (total)	mg/kg	0.00000516	0.00000562	0.0000103	0.00000603	0.00000135 J	0.000000662 U	0.0000135	0.0000255 J
Tetrachlorodibenzo(p)dioxin (total)	mg/kg	0.00000374	0.0000044 J	0.00000315 J	0.00000347	0.000000233 U	0.0000005 U	0.00000674	0.0000116
Tetrachlorodibenzofuran (total)	mg/kg	0.0000332	0.000021	0.0000426	0.0000564	0.0000187	0.0000585	0.000735	0.000561
4,4'-DDD	mg/kg	0.0036 U	0.0042 U	0.0038 U	0.0039 U	0.0036 U	0.0035 U	0.0036 U	0.0038 U
4,4'-DDE	mg/kg	0.0036 U	0.0042 U	0.0038 U	0.0039 U	0.0036 U	0.0035 U	0.0036 U	0.0038 U
4,4'-DDT	mg/kg	0.0036 U	0.0042 U	0.0038 U	0.026 J	0.0036 U	0.0035 U	0.02 J	0.01 J
Aldrin	mg/kg	0.0018 U	0.0022 U	0.002 U	0.002 U	0.0018 U	0.0018 U	0.0019 U	0.002 U
Alpha-BHC	mg/kg	0.0018 U	0.0022 U	0.002 U	0.002 U	0.0018 U	0.0018 U	0.0019 U	0.002 U
Alpha-Chlordane	mg/kg	0.0018 U	0.0022 U	0.002 U	0.002 U	0.0018 U	0.0018 U	0.0019 U	0.002 U
Beta-BHC	mg/kg	0.0018 U	0.0022 U	0.002 U	0.002 U	0.0018 U	0.0018 U	0.0019 U	0.002 U
DDT and Metabolites	mg/kg	0.0072 U	0.0084 U	0.0076 U	0.0299	0.0072 U	0.007 U	0.0236	0.0138
Delta-BHC	mg/kg	0.0018 U	0.0022 U	0.002 U	0.002 U	0.0018 U	0.0018 U	0.0019 U	0.002 U
Dieldrin	mg/kg	0.0036 U	0.0042 U	0.0038 U	0.009 J	0.0036 U	0.0075 J	0.0071 J	0.0038 U
Endosulfan I	mg/kg	0.0018 U	0.0022 U	0.002 U	0.002 U	0.0018 U	0.0018 U	0.0019 U	0.002 U
Endosulfan II	mg/kg	0.0036 U	0.0042 U	0.0038 U	0.0039 U	0.0036 U	0.0035 U	0.0036 U	0.0038 U
Endosulfan Sulfate	mg/kg	0.0036 U	0.0042 U	0.0038 U	0.0039 U	0.0036 U	0.0035 U	0.0036 U	0.0038 U
Endrin	mg/kg	0.0036 U	0.0042 U	0.0038 U	0.0074 J	0.0036 U	0.0035 U	0.0036 U	0.0038 U
Endrin Aldehyde	mg/kg	0.0036 U	0.0042 U	0.0038 U	0.0039 U	0.0036 U	0.013 J	0.0099 J	0.0038 U
Endrin Ketone	mg/kg	0.0036 U	0.0042 U	0.0038 U	0.0039 U	0.0036 U	0.0035 U	0.0036 U	0.0038 U
Gamma-BHC (Lindane)	mg/kg	0.0018 U	0.0022 U	0.002 U	0.002 U	0.0018 U	0.0018 U	0.0019 U	0.002 U
Gamma-Chlordane	mg/kg	0.0018 U	0.0022 U	0.002 U	0.002 U	0.0018 U	0.0018 U	0.0019 U	0.002 U
Heptachlor	mg/kg	0.0018 U	0.0022 U	0.002 U	0.002 U	0.0018 U	0.0018 U	0.0019 U	0.002 U
Heptachlor Epoxide	mg/kg	0.0018 U	0.0022 U	0.002 U	0.002 U	0.0018 U	0.0018 U	0.0019 U	0.002 U
Methoxychlor	mg/kg	0.018 U	0.022 U	0.02 U	0.02 U	0.018 U	0.018 U	0.018 U	0.02 U
Toxaphene	mg/kg	0.18 U	0.22 U	0.2 U	0.2 U	0.18 U	0.18 U	0.18 U	0.2 U
Decachlorobiphenyl	mg/kg	0.0000819 J	0.000114 J	0.000624 U	0.000888 J	0.000203 J	0.000109 U	0.000771 J	0.00194 J
Total DiCB	mg/kg	0.000107 U	0.000104 U	0.000144 U	0.000949 J	0.000136 U	0.000107 U	0.000378 U	0.000451 U

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-10O1-0001-092110	FSA-SB-11O1-0001-092110	FSA-SB-12O1-0001-092010	FSA-SB-13O1-0001-092210	FSA-SB-14O1-0001-092010	FSA-SB-15O1-0001-092110	FSA-SB-16O1-0001-092210	FSA-SB-17O1-0001-091710
	Type	N	N	N	N	N	N	N	N
	Date	9/21/2010	9/21/2010	9/20/2010	9/22/2010	9/20/2010	9/21/2010	9/22/2010	9/17/2010
Analyte	Units								
Total HpCB	mg/kg	0.0605 J	0.0122 J	0.0237 JEB	1.35 J	0.0144 J	0.112 JEB	1.21 J	0.11 J
Total HxCB	mg/kg	0.0926 J	0.0157 J	0.036 JEB	1.79 J	0.0309 J	0.134 JEB	1.32 J	0.299 J
Total MoCB	mg/kg	0.0000352 J EB	0.0000453 J EB	0.0000603 J	0.000116 J EB	0.0000384 J EB	0.0000122 U	0.0000465 U	0.000115 J EB
Total PCB Homologues	mg/kg	0.209 J	0.0365 J	0.0813 J	3.83 J	0.0691 J	0.299 J	3.038 J	0.71 J
Total PeCB	mg/kg								
Total TeCB	mg/kg	0.00485 J	0.000693 J	0.00151 JEB	0.0353 J	0.00169 J	0.0016 JEB	0.0134 J	0.0359 J
Total TrCB	mg/kg	0.000396 J	0.000178 U	0.000407 J	0.0058 J	0.000333 J	0.000264 U	0.00207 J	0.00086 U
17-TrCB	mg/kg	0.0354 J	0.00456 J	0.00976 JEB	0.269 J	0.018 J	0.0222 JEB	0.21 J	0.231 J
2,3,3',4,4',5,5'-Heptachlorobiphenyl	mg/kg	0.000243	0.0000498	0.0000903 EB	0.00474 J	0.000068	0.000375 EB	0.00381	0.000524
2,3,3',4,4',5-Hexachlorobiphenyl	mg/kg	0.00167	0.000251	0.000424 EB	0.0147 J	0.000581	0.00112 EB	0.0111 J	0.00675
2,3,3',4,4'-Pentachlorobiphenyl	mg/kg	0.00227	0.000261	0.000458	0.00889 J	0.000704	0.000616	0.00511 J	0.012
2,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.000671	0.000112	0.000185 EB	0.0074 J	0.000254	0.000922 EB	0.00893	0.00243
2',3,4,4',5-Pentachlorobiphenyl	mg/kg	0.0000888	0.0000106	0.0000162	0.000295	0.0000278	0.0000256	0.000204	0.000343
2,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.00555 J	0.000726	0.00128 EB	0.0228 J	0.00191	0.00184 EB	0.0174 J	0.0305
2,3,4,4',5-Pentachlorobiphenyl	mg/kg	0.000102	0.0000108	0.0000225	0.000478	0.0000232	0.0000265	0.000247 J	0.000535
3,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.0000263	0.00000631	0.0000101 U	0.000378	0.00000462 U	0.0000189	0.000579	0.000124 U
3,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.0000437 U	0.00000343 U	0.00000902 U	0.000146 U	0.0000157	0.000123	0.00127	0.000271 U
3,3',4,4'-Tetrachlorobiphenyl	mg/kg	0.0000867	0.0000173	0.0000349 J	0.000654	0.0000468	0.000127	0.00114	0.000214
3,4,4',5-Tetrachlorobiphenyl	mg/kg	0.00000506	0.00000207 U	0.00000262 U	0.0000791 U	0.0000259	0.00000237	0.0000266 U	0.000184 U
PCB Dioxin-like Congener TEQ (Bird)	mg/kg	9.70703E-06	1.58057E-06	3.02527E-06	5.83472E-05	6.65804E-06	1.91138E-05	0.000182276	5.85905E-05
PCB Dioxin-like Congener TEQ (mammal)	mg/kg	5.48703E-06	6.87251E-07	1.28356E-06	2.78082E-05	1.82809E-06	1.30282E-05	0.000131716	3.24891E-05
Total NoCB	mg/kg	0.00103 J	0.000291 J	0.00205 JEB	0.0254 J	0.000461 J	0.00163 JEB	0.0148 J	0.00377 J
Total OcCB	mg/kg	0.0144 J	0.00292 J	0.00777 JEB	0.357 J	0.00309 J	0.0277 JEB	0.267 J	0.0286 J
Perchlorate (organic)	mg/kg								
Aluminum	mg/Kg	3790	4295	3470	5140	5491	4479	5183	3822
Antimony	mg/Kg	0.52 J	8.1 J	2.1 J	1.3 J	6.4 U	6.3 U	1.4 J	2.8 J
Arsenic	mg/Kg	5	9.1	13.2	5.9	2.9	2.7	5.6	67.8
Barium	mg/Kg	78.6	76.4	189	92.3	49.7	33.1	55.2	223
Beryllium	mg/Kg	0.31 J	0.3 J	0.18 J	0.24 J	0.29 J	0.53 U	0.31 J	0.078 J
Cadmium	mg/Kg	0.51 J	0.22 J	1.3	0.63	0.16 J	0.53 U	0.26 J	1.7 J
Calcium	mg/Kg	2534	2245	1584 J	2370	1808	1887 J	1852	2469 J
Chromium	mg/Kg	11.5	12 J	12.6	10.8 J	5.8 J	5.5	10 J	13.1
Cobalt	mg/Kg	4.8 J	7.8 J	10.5	5.3 J	4.5 J	4.5 J	7.9 J	7.5 J
Copper	mg/Kg	67.2 J	85.4	97.6	88.3	14.7	13.6	31.2	165 J
Iron	mg/Kg	9905	18673	22553	13863	8641	8028	12444	24887
Lead	mg/Kg	68.8 J	223 J	122 J	169 J	26.2 J	16.7 J	46.9 J	401

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-10O1-0001-092110	FSA-SB-11O1-0001-092110	FSA-SB-12O1-0001-092010	FSA-SB-13O1-0001-092210	FSA-SB-14O1-0001-092010	FSA-SB-15O1-0001-092110	FSA-SB-16O1-0001-092210	FSA-SB-17O1-0001-091710
	Type	N	N	N	N	N	N	N	N
	Date	9/21/2010	9/21/2010	9/20/2010	9/22/2010	9/20/2010	9/21/2010	9/22/2010	9/17/2010
Analyte	Units								
Magnesium	mg/Kg	963	1450	945 J	1752	2185	1934 J	2050	849
Manganese	mg/Kg	226	382	164	250	158	168	252	238
Mercury	mg/Kg	4.8	62.5	13	4.7	0.055 J	0.15	0.95	4.4
Nickel	mg/Kg	17.5 J	14.5	13	12.3	6.6	13.5	22.1	22.7
Potassium	mg/Kg	711 J	646 J	512 J	959 J	1137 J	974	924 J	519 J
Selenium	mg/Kg	0.74 J	1.3 J	5.4 J	1.1 J	0.57 J	1.7 J	0.63 J	5 J
Silver	mg/Kg	1.2 U	0.72 J	1.4 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U
Sodium	mg/Kg	33.7 J	500 U		500 U	500 U		500 U	140 J
Thallium	mg/Kg	2.9 U	3.1 U	3.5 U	2.8 U	2.7 U	2.6 U	2.7 U	3 U
Vanadium	mg/Kg	23.2	16.3	23.4	17.7	15.4	11.6	20.3	17.9
Zinc	mg/Kg	104	105	133	130	75	50.3	98.9	260 J
Total Organic Carbon	mg/Kg	24000	24000	35000	25000	8500	13000	11000	30000

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-18O1-0001-091610	FSA-SB-19O1-0001-092110	FSA-SB-20O1-0001-091510	FSA-SB-21O1-0001-092010	FSA-SB-22O1-0001-091710	FSA-SB-24O1-0001-091310	FSA-SB-25O1-0001-091310	FSA-SB-26O1-0001-091410
	Type	N	N	N	N	N	N	N	N
	Date	9/16/2010	9/21/2010	9/15/2010	9/20/2010	9/17/2010	9/13/2010	9/13/2010	9/14/2010
Analyte	**Units**								
1,1,1-Trichloroethane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,1,2,2-Tetrachloroethane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,1,2-Trichloroethane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,1'-Biphenyl	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
1,1-Dichloroethane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,1-Dichloroethene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,2,3-Trichlorobenzene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,2,4-Trichlorobenzene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,2-Dibromo-3-Chloropropane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,2-Dibromoethane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,2-Dichlorobenzene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,2-Dichloroethane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,2-Dichloropropane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,3-Dichlorobenzene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,4-Dichlorobenzene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
2,2'-Oxybis(1-Chloropropane)	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
2-Butanone	mg/kg	0.029 U	0.014 U	0.014 U	0.011 U	0.015 J	0.017 U	0.011 U	0.024 U
2-Hexanone	mg/kg	0.029 U	0.014 U	0.014 U	0.011 U	0.012 U	0.017 U	0.011 U	0.024 U
4-Methyl-2-Pentanone	mg/kg	0.029 U	0.014 U	0.014 U	0.011 U	0.012 U	0.017 U	0.011 U	0.024 U
Acetone	mg/kg	0.029 U	0.014 U	0.014 U	0.011 U	0.074 J	0.017 U	0.03 U	0.024 U
Acetophenone	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Benzaldehyde	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Benzene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Bis(2-Chloroethyl)Ether	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Bromochloromethane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Bromodichloromethane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Bromoform	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Bromomethane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Carbon Disulfide	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Carbon Tetrachloride	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.047	0.012 U
Chlorobenzene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Chloroethane	mg/kg	0.014 U	0.0068 U		0.0053 U	0.0058 U			
Chloroform	mg/kg	0.014 U	0.018 J	0.0071 U	0.012 J	0.0058 U	0.0083 U	0.28 J	0.012 U
Chloromethane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
cis-1,2-Dichloroethene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-18O1-0001-091610	FSA-SB-19O1-0001-092110	FSA-SB-20O1-0001-091510	FSA-SB-21O1-0001-092010	FSA-SB-22O1-0001-091710	FSA-SB-24O1-0001-091310	FSA-SB-25O1-0001-091310	FSA-SB-26O1-0001-091410
	Type	N	N	N	N	N	N	N	N
	Date	9/16/2010	9/21/2010	9/15/2010	9/20/2010	9/17/2010	9/13/2010	9/13/2010	9/14/2010
Analyte	Units								
cis-1,3-Dichloropropene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Cyclohexane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Dibromochloromethane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Dichlorodifluoromethane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Ethylbenzene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Hexachlorobenzene	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Hexachlorobutadiene	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Hexachloroethane	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Isopropylbenzene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
m,p-Xylene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Methyl Acetate	mg/kg	0.028	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Methyl Tert-Butyl Ether	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Methylcyclohexane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Methylene Chloride	mg/kg	0.014 U	0.011 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0071 U	0.012 U
o-Xylene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Styrene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Tetrachloroethene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Toluene	mg/kg	0.014 U	0.012 J	0.0071 U	0.0025 J	0.0058 U	0.0083 U	0.0056 U	0.012 U
trans-1,2-Dichloroethene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
trans-1,3-Dichloropropene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Trichloroethene	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Trichlorofluoromethane	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
Vinyl Chloride	mg/kg	0.014 U	0.0068 U	0.0071 U	0.0053 U	0.0058 U	0.0083 U	0.0056 U	0.012 U
1,2,4,5-Tetrachlorobenzene	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
1,4-Dioxane	mg/kg	0.29 U	0.14 U	0.14 U	0.11 U	0.12 U	0.17 U	0.11 U	0.24 U
2,3,4,6-Tetrachlorophenol	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
2,4,5-Trichlorophenol	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
2,4,6-Trichlorophenol	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
2,4-Dichlorophenol	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
2,4-Dimethylphenol	mg/kg	0.26 U	0.2 U	0.085 J	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
2,4-Dinitrophenol	mg/kg	0.51 U	0.39 U	0.37 U	0.4 U	0.37 U	0.41 U	0.37 U	0.49 U
2,4-Dinitrotoluene	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
2-Chlorophenol	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
2-Methylphenol	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
2-Nitroaniline	mg/kg	0.51 U	0.39 U	0.37 U	0.4 U	0.37 U	0.41 U	0.37 U	0.49 U

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-18O1-0001-091610	FSA-SB-19O1-0001-092110	FSA-SB-20O1-0001-091510	FSA-SB-21O1-0001-092010	FSA-SB-22O1-0001-091710	FSA-SB-24O1-0001-091310	FSA-SB-25O1-0001-091310	FSA-SB-26O1-0001-091410
	Type	N	N	N	N	N	N	N	N
	Date	9/16/2010	9/21/2010	9/15/2010	9/20/2010	9/17/2010	9/13/2010	9/13/2010	9/14/2010
Analyte	Units								
2-Nitrophenol	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
3,3'-Dichlorobenzidine	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
3-Nitroaniline	mg/kg	0.51 U	0.39 U	0.37 U	0.4 U	0.37 U	0.41 U	0.37 U	0.49 U
4,6-Dinitro-2-Methylphenol	mg/kg	0.51 U	0.39 U	0.37 U	0.4 U	0.37 U	0.41 U	0.37 U	0.49 U
4-Bromophenyl-Phenylether	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
4-Chloro-3-Methylphenol	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
4-Chloroaniline	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
4-Chlorophenyl-Phenylether	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
4-Methylphenol	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
4-Nitroaniline	mg/kg	0.51 U	0.39 U	0.37 U	0.4 U	0.37 U	0.41 U	0.37 U	0.49 U
4-Nitrophenol	mg/kg	0.51 U	0.39 U	0.37 U	0.4 U	0.37 U	0.41 U	0.37 U	0.49 U
Atrazine	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Bis(2-Chloroethoxy)Methane	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.26 U	0.2 U	0.15 J	0.21 U	0.19 U	2.1	1.1	0.25 U
Butylbenzylphthalate	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Caprolactam	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Dibenzofuran	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.6
Diethylphthalate	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Dimethylphthalate	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Di-N-Butyl Phthalate	mg/kg	0.22 J	0.11 J	0.092 J	0.1 J	0.19 U	0.21 U	0.19 U	0.25 U
Di-N-Octyl Phthalate	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Hexachlorocyclopentadiene	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Isophorone	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Nitrobenzene	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
N-Nitroso-Di-N-Propylamine	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
N-Nitrosodiphenylamine	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Pentachlorophenol	mg/kg	0.51 U	0.39 U	0.37 U	0.4 U	0.37 U	0.41 U	0.37 U	0.49 U
Phenol	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
2-Chloronaphthalene	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
2-Methylnaphthalene	mg/kg	0.26 U	0.2 U	0.16 J	0.21 U	0.19 U	0.21 U	0.19 U	0.44
Acenaphthene	mg/kg	0.26 U	0.2 U	0.15 J	0.21 U	0.19 U	0.21 U	0.19 U	1.1
Acenaphthylene	mg/kg	0.26 U	0.2 U	0.11 J	0.21 U	0.19 U	0.21 U	0.19 U	0.17 J
Anthracene	mg/kg	0.13 J	0.2 U	0.34	0.12 J	0.12 J	0.21 U	0.19 U	2.2
Benzo(A)Anthracene	mg/kg	0.63	0.35 J	2.1	0.4 J	0.28 J	0.18 J	0.21	5 D
Benzo(A)Pyrene	mg/kg	0.51	0.36 J	1.8	0.34 J	0.23 J	0.16 J	0.18 J	4.3 D
Benzo(B)Fluoranthene	mg/kg	0.45	0.37 J	2.3	0.28 J	0.19 J	0.18 J	0.34	4.5 D

Analyte	Area / Sample ID / Type / Date / Units	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-18O1-0001-091610	FSA-SB-19O1-0001-092110	FSA-SB-20O1-0001-091510	FSA-SB-21O1-0001-092010	FSA-SB-22O1-0001-091710	FSA-SB-24O1-0001-091310	FSA-SB-25O1-0001-091310	FSA-SB-26O1-0001-091410
	Type	N	N	N	N	N	N	N	N
	Date	9/16/2010	9/21/2010	9/15/2010	9/20/2010	9/17/2010	9/13/2010	9/13/2010	9/14/2010
	Units								
Benzo(G,H,I)Perylene	mg/kg	0.11 J	0.23 J	1.4	0.24 J	0.13 J	0.11 J	0.19	3.7
Benzo(K)Fluoranthene	mg/kg	0.53	0.36 J	1.5	0.38 J	0.22 J	0.13 J	0.17 J	3.5
Carbazole	mg/kg	0.26 U	0.2 U	0.13 J	0.21 U	0.19 U	0.21 U	0.19 U	1.2
Chrysene	mg/kg	0.72	0.39 J	2.3	0.46 J	0.31 J	0.18 J	0.28	4.5 D
Dibenz(A,H)Anthracene	mg/kg	0.26 U	0.12 J	0.64	0.12 J	0.19 U	0.21 U	0.19 U	1.6
Fluoranthene	mg/kg	0.94	0.52 J	3.1 D	0.67 J	0.51 J	0.35	0.4	9.9 D
Fluorene	mg/kg	0.26 U	0.2 U	0.13 J	0.21 U	0.19 U	0.21 U	0.19 U	1.1
High Molecular Weight PAHs	mg/kg	4.29	2.82	16.44	3.06	2.15	1.53	2.04	38
Indeno(1,2,3-Cd)Pyrene	mg/kg	0.2 J	0.21 J	1.4	0.22 J	0.13 J	0.1 J	0.18 J	3.5
Low Molecular Weight PAHs	mg/kg	3.03	2.09	6.17	2.53	2.21	1.917	1.92	24.69
Naphthalene	mg/kg	0.26 U	0.2 U	0.15 J	0.21 U	0.19 U	0.21 U	0.19 U	0.88
Phenanthrene	mg/kg	0.4	0.17 J	1.9	0.48 J	0.44 J	0.097 J	0.19 J	7.7 D
Pyrene	mg/kg	0.88	0.43 J	3 D	0.62 J	0.47 J	0.28	0.3	7.4 D
Dichloronaphthalene, Total	mg/kg								
Heptachloronaphthalene, Total	mg/kg								
Hexachloronaphthalene, Total	mg/kg								
Monochloronaphthalene, Total	mg/kg								
Octachloronaphthalene, Total	mg/kg								
Pentachloronaphthalene, Total	mg/kg								
Tetrachloronaphthalene, Total	mg/kg								
Trichloronaphthalene, Total	mg/kg								
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	mg/kg	0.0000133	0.0000583	0.0000733	0.000209	0.0000221	0.0000215	0.000175	0.0000878
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	mg/kg	0.0000622	0.000316	0.000532	0.0000405	0.000181	0.0000488	0.0014	0.000148
1,2,3,4,6,7,8-Heptachlorodibenzofuran	mg/kg	0.00000774	0.0000311	0.00004	0.000161	0.00000884 EB	0.00000625	0.0000295	0.000058 J
1,2,3,4,6,7,8-Heptachlorodibenzo-P-Dioxin	mg/kg	0.00000874	0.0000361	0.0000906	0.0000115	0.000025	0.00000752	0.000579	0.0000216
1,2,3,4,7,8,9-Heptachlorodibenzofuran	mg/kg	0.00000171 J	0.0000085 J	0.0000113 J	0.000081 J	0.00000168 J	0.00000153 J	0.00000641	0.000021
1,2,3,4,7,8-Hexachlorodibenzofuran	mg/kg	0.00000809	0.0000689	0.0000625	0.000229	0.00000866	0.00000936	0.0000302	0.000119
1,2,3,4,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.000000928 U	0.00000107 J	0.000000923 U	0.000000907 J	0.000000488	0.00000027 J	0.00000756	0.00000089 U
1,2,3,6,7,8-Hexachlorodibenzofuran	mg/kg	0.00000308	0.0000161	0.0000173	0.0000824	0.00000238 J	0.0000029 J	0.00000855	0.0000421
1,2,3,6,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.000000954 U	0.00000261 J	0.00000351	0.00000189 J	0.00000118 J	0.000000442	0.0000179	0.00000116 J
1,2,3,7,8,9-Hexachlorodibenzofuran	mg/kg	0.00000165 J	0.0000127	0.0000119	0.0000418	0.00000195 J	0.00000211 J	0.00000657 J	0.000029 J
1,2,3,7,8,9-Hexachlorodibenzo-P-Dioxin	mg/kg	0.000000983 U	0.00000178	0.00000285 J	0.00000108	0.000000727 J	0.000000342 J	0.0000197	0.00000119
1,2,3,7,8-Pentachlorodibenzofuran	mg/kg	0.00000595	0.0000797	0.0000482	0.00041	0.00000675	0.00000908	0.0000215	0.000125
1,2,3,7,8-Pentachlorodibenzo-P-Dioxin	mg/kg	0.000000899	0.0000017	0.00000127 J	0.00000215 J	0.000000121 U	0.000000287	0.00000596	0.00000117 J
2,3,4,6,7,8-Hexachlorodibenzofuran	mg/kg	0.00000193 J	0.00000921	0.00000867	0.0000179	0.00000132 J	0.00000143 J	0.00000479	0.0000157
2,3,4,7,8-Pentachlorodibenzofuran	mg/kg	0.00000619	0.0000825	0.0000415	0.000316	0.00000606	0.00000843	0.0000212	0.000114

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-18O1-0001-091610	FSA-SB-19O1-0001-092110	FSA-SB-20O1-0001-091510	FSA-SB-21O1-0001-092010	FSA-SB-22O1-0001-091710	FSA-SB-24O1-0001-091310	FSA-SB-25O1-0001-091310	FSA-SB-26O1-0001-091410
	Type	N	N	N	N	N	N	N	N
	Date	9/16/2010	9/21/2010	9/15/2010	9/20/2010	9/17/2010	9/13/2010	9/13/2010	9/14/2010
Analyte	Units								
2,3,7,8-TCDD TEQ (Bird)	mg/kg	2.3126E-05	0.000285428	0.000143017	0.000953879	2.45704E-05	3.82535E-05	0.000100754	0.000475078
2,3,7,8-TCDD TEQ (mammal)	mg/kg	6.54255E-06	6.07873E-05	3.70119E-05	0.000207548	5.94213E-06	7.91189E-06	3.70236E-05	9.44187E-05
2,3,7,8-Tetrachlorodibenzofuran	mg/kg	0.0000134	0.00018 J	0.0000832	0.000552	0.0000159	0.0000266	0.000061	0.000325
2,3,7,8-Tetrachlorodibenzo-P-Dioxin	mg/kg	0.000000302 U	0.00000184	0.00000116	0.00000299	0.000000124 U	0.000000304	0.00000181	0.000000818 J
Heptachlorodibenzofuran (total)	mg/kg	0.0000154	0.0000791 J	0.0000902	0.000323	0.0000289	0.0000155 J	0.000115 J	0.000127 J
Heptachlorodibenzo-p-dioxin (total)	mg/kg	0.000057	0.000101 J	0.000456 J	0.0000265 J	0.0000637 J	0.0000231 J	0.00446 J	0.0000814 J
Hexachlorodibenzofuran (total)	mg/kg	0.0000237	0.000145	0.000144 J	0.000419	0.0000219 J	0.0000233	0.0000794 J	0.000332
Hexachlorodibenzo-p-dioxin (total)	mg/kg	0.0000475 J	0.0000372	0.0000725	0.000025	0.0000098	0.0000054	0.000486 J	0.0000146
Pentachlorodibenzofuran (total)	mg/kg	0.0000267 J	0.000304	0.000184	0.00123	0.0000281	0.0000432	0.000106	0.00045
Pentachlorodibenzo-p-dioxin (total)	mg/kg	0.0000221	0.0000259	0.0000243	0.0000346	0.00000447	0.00000499	0.0000466	0.0000154
Tetrachlorodibenzo(p)dioxin (total)	mg/kg	0.000000168 U	0.00000634	0.0000135	0.0000289	0.00000203 J	0.00000298	0.00000609	0.000017
Tetrachlorodibenzofuran (total)	mg/kg	0.0000287	0.000383	0.000193	0.00115	0.0000352	0.0000709	0.000125	0.00068
4,4'-DDD	mg/kg	0.0051 U	0.0039 U	0.0037 U	0.004 U	0.0037 U	0.004 U	0.0037 U	0.0049 U
4,4'-DDE	mg/kg	0.0051 U	0.0039 U	0.0037 U	0.004 U	0.0037 U	0.004 U	0.0037 U	0.0049 U
4,4'-DDT	mg/kg	0.0051 U	0.0039 U	0.0075	0.004 U	0.0037 U	0.004 U	0.0037 U	0.0049 U
Aldrin	mg/kg	0.0026 U	0.002 U	0.0019 U	0.0021 U	0.0019 U	0.0021 U	0.0019 U	0.0025 U
Alpha-BHC	mg/kg	0.0026 U	0.002 U	0.0019 U	0.0021 U	0.0019 U	0.0021 U	0.0019 U	0.0025 U
Alpha-Chlordane	mg/kg	0.0026 U	0.002 U	0.0019 U	0.0021 U	0.0019 U	0.0021 U	0.0019 U	0.0025 U
Beta-BHC	mg/kg	0.0026 U	0.002 U	0.0019 U	0.003 J	0.0019 U	0.0021 U	0.0019 U	0.0025 U
DDT and Metabolites	mg/kg	0.0102 U	0.0078 U	0.0112	0.008 U	0.0074 U	0.008 U	0.0074 U	0.0098 U
Delta-BHC	mg/kg	0.0026 U	0.002 U	0.0019 U	0.0021 U	0.0019 U	0.0021 U	0.0019 U	0.0025 U
Dieldrin	mg/kg	0.0051 U	0.0039 U	0.0037 U	0.004 U	0.0037 U	0.004 U	0.0037 U	0.0049 U
Endosulfan I	mg/kg	0.0026 U	0.002 U	0.0019 U	0.0021 U	0.0019 U	0.0021 U	0.0019 U	0.0025 U
Endosulfan II	mg/kg	0.0051 U	0.0039 U	0.0037 U	0.004 U	0.0037 U	0.004 U	0.0037 U	0.0049 U
Endosulfan Sulfate	mg/kg	0.0051 U	0.0039 U	0.0037 U	0.004 U	0.0037 U	0.004 U	0.0037 U	0.0049 U
Endrin	mg/kg	0.0051 U	0.0039 U	0.0037 U	0.004 U	0.0037 U	0.004 U	0.0037 U	0.0049 U
Endrin Aldehyde	mg/kg	0.0051 U	0.0039 U	0.0037 U	0.004 U	0.0037 U	0.004 U	0.0037 U	0.0049 U
Endrin Ketone	mg/kg	0.0051 U	0.0039 U	0.0037 U	0.004 U	0.0037 U	0.004 U	0.0037 U	0.0049 U
Gamma-BHC (Lindane)	mg/kg	0.0026 U	0.002 U	0.0019 U	0.0021 U	0.0019 U	0.0021 U	0.0019 U	0.0025 U
Gamma-Chlordane	mg/kg	0.0026 U	0.002 U	0.0019 U	0.0021 U	0.0019 U	0.0021 U	0.0019 U	0.0025 U
Heptachlor	mg/kg	0.0026 U	0.002 U	0.0019 U	0.0021 U	0.0019 U	0.0021 U	0.0019 U	0.0025 U
Heptachlor Epoxide	mg/kg	0.0026 U	0.002 U	0.0019 U	0.0021 U	0.0019 U	0.0021 U	0.0019 U	0.0025 U
Methoxychlor	mg/kg	0.026 U	0.02 U	0.019 U	0.021 U	0.019 U	0.021 U	0.019 U	0.025 U
Toxaphene	mg/kg	0.26 U	0.2 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U	0.25 U
Decachlorobiphenyl	mg/kg	0.000404 J	0.000754 J	0.00167 J	0.000346 J	0.0000892 J	0.0000442 J	0.000285 J	0.00137 J
Total DiCB	mg/kg	0.000128 U	0.000442 J	0.000467 J	0.000202 U	0.00014 U	0.0000731 U	0.000238 U	0.000186 U

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-18O1-0001-091610	FSA-SB-19O1-0001-092110	FSA-SB-20O1-0001-091510	FSA-SB-21O1-0001-092010	FSA-SB-22O1-0001-091710	FSA-SB-24O1-0001-091310	FSA-SB-25O1-0001-091310	FSA-SB-26O1-0001-091410
	Type	N	N	N	N	N	N	N	N
	Date	9/16/2010	9/21/2010	9/15/2010	9/20/2010	9/17/2010	9/13/2010	9/13/2010	9/14/2010
Analyte	Units								
Total HpCB	mg/kg	0.105 J	0.67 J	0.18 J	0.0113 J	0.00934 J	0.00251 J	0.0232 J	0.00581 J
Total HxCB	mg/kg	0.159 J	0.841 J	0.449 J	0.0153 J	0.0123 J	0.00335 J	0.0347 J	0.00673 J
Total MoCB	mg/kg	0.000025 U	0.0000628 J EB	0.0000938 J	0.0000662 J EB	0.0000273 J EB	0.0000541 J	0.0000539 U	0.000288 J
Total PCB Homologues	mg/kg	0.318 J	1.91 J	1.25 J	0.0343 J	0.0286 J	0.00857 J	0.0817 J	0.0207 J
Total PeCB	mg/kg								
Total TeCB	mg/kg	0.00202 J	0.026 J	0.109 J	0.000413 J	0.00062 J	0.000275 J	0.00241 J	0.000282 J
Total TrCB	mg/kg	0.000313 U	0.00294 J	0.00228 J	0.000179 U	0.000234 U	0.000116 U	0.000384 U	0.00015 U
17-TrCB	mg/kg	0.0245 J	0.201 J	0.465 J	0.00256 J	0.00351 J	0.00158 J	0.0146 J	0.00166 J
2,3,3',4,4',5,5'-Heptachlorobiphenyl	mg/kg	0.000386	0.00263	0.00083	0.0000459	0.0000368	0.0000109 J	0.0000967	0.0000191
2,3,3',4,4',5-Hexachlorobiphenyl	mg/kg	0.00125	0.00971	0.0128	0.000175	0.000176	0.000079 J	0.000465	0.0000839
2,3,3',4,4'-Pentachlorobiphenyl	mg/kg	0.000717	0.00815	0.0289	0.000127	0.000216	0.000117 J	0.000614	0.0000942
2,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.000624	0.0049	0.00412	0.0000937	0.0000852	0.000034 J	0.000209	0.0000474
2',3,4,4',5-Pentachlorobiphenyl	mg/kg	0.0000386 U	0.000311	0.00101	0.0000222 U	0.00000708	0.00000605	0.0000329 U	0.0000109 U
2,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.00225	0.0248	0.0681 J	0.00036	0.00059	0.00032 J	0.00167	0.00025
2,3,4,4',5-Pentachlorobiphenyl	mg/kg	0.0000394 U	0.000396	0.00178	0.000022 U	0.0000104	0.00000614 J	0.0000399	0.0000114 U
3,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.0000223 U	0.000262	0.0000946	0.0000586 U	0.00000608 U	0.00000272 U	0.0000275 U	0.0000133 U
3,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.0000458 U	0.000345	0.0000503 U	0.000034 U	0.0000102	0.00000436	0.0000334 U	0.000014 U
3,3',4,4'-Tetrachlorobiphenyl	mg/kg	0.000047	0.000722	0.000412	0.0000211	0.0000274	0.0000155 J	0.0000428	0.0000125
3,4,4',5-Tetrachlorobiphenyl	mg/kg	0.00000877 U	0.0000323 U	0.0000379 U	0.0000126 U	0.00000357 U	0.00000208 U	0.0000185 U	0.00000831 U
PCB Dioxin-like Congener TEQ (Bird)	mg/kg	8.06293E-06	7.6244E-05	3.46032E-05	5.81122E-06	2.80051E-06	1.44564E-06	7.48948E-06	2.89152E-06
PCB Dioxin-like Congener TEQ (mammal)	mg/kg	5.41548E-06	4.39688E-05	1.14468E-05	5.18926E-06	1.23986E-06	5.36967E-07	4.26866E-06	1.81825E-06
Total NoCB	mg/kg	0.00205 J	0.0129 J	0.00479 J	0.000611 J	0.000265 J	0.0000803 J	0.000624 J	0.00194 J
Total OcCB	mg/kg	0.0255 J	0.157 J	0.0376 J	0.00372 J	0.0024 J	0.000671 J	0.00589 J	0.00264 J
Perchlorate (organic)	mg/kg								
Aluminum	mg/Kg	4420	5591	2074	3824	4959	7598	6068	3706
Antimony	mg/Kg	1 J	1.6 J	4.8 J	55.9 J	6.9 U	6 U	6 U	9 J
Arsenic	mg/Kg	55.5	13.8	12.8	81.7	1.2 U	6.4	38.2	27.8
Barium	mg/Kg	111	104	235	470	41.6	76.7	57.6	146
Beryllium	mg/Kg	0.26 J	0.38 J	0.16 J	0.73	0.58 U	0.18 J	0.57 U	0.35 J
Cadmium	mg/Kg	0.22 J	0.35 J	0.11 J	1.3	0.074 J	0.6 U	0.57 U	0.35 J
Calcium	mg/Kg	1895	2333	1774	1586	1117 J	1562	1602	2011
Chromium	mg/Kg	10.4	15.9 J	7.7	32.7 J	9.4	12	12.4	10.9
Cobalt	mg/Kg	5.2 J	7 J	3.6 J	29.7 J	3.6 J	3.9 J	6.8 J	7.5 J
Copper	mg/Kg	71.9 J	175	140 J	1216	17.3 J	58.9	30.4	125
Iron	mg/Kg	13620	17395	19663	119649	10432	11341	18886	31890
Lead	mg/Kg	72.4 J	182 J	1096 J	2325 J	37.1	49.8 J	26 J	1321 J

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-18O1-0001-091610	FSA-SB-19O1-0001-092110	FSA-SB-20O1-0001-091510	FSA-SB-21O1-0001-092010	FSA-SB-22O1-0001-091710	FSA-SB-24O1-0001-091310	FSA-SB-25O1-0001-091310	FSA-SB-26O1-0001-091410
	Type	N	N	N	N	N	N	N	N
	Date	9/16/2010	9/21/2010	9/15/2010	9/20/2010	9/17/2010	9/13/2010	9/13/2010	9/14/2010
Analyte	**Units**								
Magnesium	mg/Kg	1655	1827	551 J	496 J	2133	1156	2846	489 J
Manganese	mg/Kg	164	254	166	780	150	180 J	252 J	759 J
Mercury	mg/Kg	1.8	8.9	5.3	10.2	0.61	0.21 J	0.27 J	2.3 J
Nickel	mg/Kg	9.1 J	18.8	10.1 J	69.3	8	6.2	10.7	20.6
Potassium	mg/Kg	1014 J	829 J	722 J	260 J	1095 J	828 J	1252 J	435 J
Selenium	mg/Kg	0.49 J	0.99 J	4.3 U	4.2 U	5.9 J	0.93 J	1.1 J	2.2 J
Silver	mg/Kg	1.2 U	1.1 U	1.2 U	0.51 J	1.2 U	1.2 U	1.1 U	1.3 U
Sodium	mg/Kg	71.3 J	500 U	182 J	500 U	77.8 J	107 J	88.7 J	90.2 J
Thallium	mg/Kg	3 U	2.9 U	3.1 U	3 U	2.9 U	3 U	2.8 U	3.1 U
Vanadium	mg/Kg	15.1	30.1	38.7	39.8	16.5	17.1	22.9	15.7
Zinc	mg/Kg	84.4 J	117	74.7 J	290	34 J	31.4 J	38.5 J	215
Total Organic Carbon	mg/Kg	38000	15000	22000	37000	6100	22000	9200	55000

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-27O1-0001-091410	FSA-SB-28O1-0001-091510	FSA-SB-29O1-0001-091510	FSA-SB-30O1-0001-091410	FSA-SB-31O1-0001-091510	FSA-SB-40O1-0001-092110	FSA-SB-DUP01-0001-091510	FSA-SB-DUP02-0001-092110
	Type	N	N	N	N	N	N	FD	FD
	Date	9/14/2010	9/15/2010	9/15/2010	9/14/2010	9/15/2010	9/21/2010	9/15/2010	9/21/2010
Analyte	Units								
1,1,1-Trichloroethane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,1,2,2-Tetrachloroethane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,1,2-Trichloroethane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,1'-Biphenyl	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
1,1-Dichloroethane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,1-Dichloroethene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,2,3-Trichlorobenzene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,2,4-Trichlorobenzene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,2-Dibromo-3-Chloropropane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,2-Dibromoethane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,2-Dichlorobenzene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,2-Dichloroethane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,2-Dichloropropane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,3-Dichlorobenzene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,4-Dichlorobenzene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
2,2'-Oxybis(1-Chloropropane)	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
2-Butanone	mg/kg	0.1	0.014 U	0.013 U	0.017 U	0.011 U	0.016 U	0.01 U	0.013 U
2-Hexanone	mg/kg	0.02 U	0.014 U	0.013 U	0.017 U	0.011 U	0.016 U	0.01 U	0.013 U
4-Methyl-2-Pentanone	mg/kg	0.02 U	0.014 U	0.013 U	0.017 U	0.011 U	0.016 U	0.01 U	0.013 U
Acetone	mg/kg	0.23	0.034 U	0.013 U	0.037 U	0.011 U	0.033 U	0.01 U	0.013 U
Acetophenone	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Benzaldehyde	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Benzene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Bis(2-Chloroethyl)Ether	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Bromochloromethane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Bromodichloromethane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Bromoform	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Bromomethane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Carbon Disulfide	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Carbon Tetrachloride	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Chlorobenzene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Chloroethane	mg/kg			0.0065 U		0.0057 U	0.0079 U	0.0052 U	0.0063 U
Chloroform	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0091 J
Chloromethane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
cis-1,2-Dichloroethene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-27O1-0001-091410	FSA-SB-28O1-0001-091510	FSA-SB-29O1-0001-091510	FSA-SB-30O1-0001-091410	FSA-SB-31O1-0001-091510	FSA-SB-40O1-0001-092110	FSA-SB-DUP01-0001-091510	FSA-SB-DUP02-0001-092110
	Type	N	N	N	N	N	N	FD	FD
	Date	9/14/2010	9/15/2010	9/15/2010	9/14/2010	9/15/2010	9/21/2010	9/15/2010	9/21/2010
Analyte	Units								
cis-1,3-Dichloropropene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Cyclohexane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Dibromochloromethane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Dichlorodifluoromethane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Ethylbenzene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Hexachlorobenzene	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Hexachlorobutadiene	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Hexachloroethane	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Isopropylbenzene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
m,p-Xylene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0048 J	0.0052 U	0.0063 U
Methyl Acetate	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Methyl Tert-Butyl Ether	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Methylcyclohexane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Methylene Chloride	mg/kg	0.0099 U	0.019 U	0.0065 U	0.0089 U	0.059 J	0.02 U	0.003 J	0.0063 U
o-Xylene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Styrene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Tetrachloroethene	mg/kg	0.0099 U	0.0046 J	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Toluene	mg/kg	0.012 J	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0072 J
trans-1,2-Dichloroethene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
trans-1,3-Dichloropropene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Trichloroethene	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Trichlorofluoromethane	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
Vinyl Chloride	mg/kg	0.0099 U	0.0068 U	0.0065 U	0.0085 U	0.0057 U	0.0079 U	0.0052 U	0.0063 U
1,2,4,5-Tetrachlorobenzene	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
1,4-Dioxane	mg/kg	0.2 U	0.14 U	0.13 U	0.17 U	0.11 U	0.16 U	0.1 U	0.13 U
2,3,4,6-Tetrachlorophenol	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
2,4,5-Trichlorophenol	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
2,4,6-Trichlorophenol	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
2,4-Dichlorophenol	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
2,4-Dimethylphenol	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
2,4-Dinitrophenol	mg/kg	0.52 U	0.37 U	0.37 U	0.39 U	0.38 U	0.37 U	0.37 U	0.41 U
2,4-Dinitrotoluene	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
2,6-Dinitrotoluene	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
2-Chlorophenol	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
2-Methylphenol	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
2-Nitroaniline	mg/kg	0.52 U	0.37 U	0.37 U	0.39 U	0.38 U	0.37 U	0.37 U	0.41 U

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-27O1-0001-091410	FSA-SB-28O1-0001-091510	FSA-SB-29O1-0001-091510	FSA-SB-30O1-0001-091410	FSA-SB-31O1-0001-091510	FSA-SB-40O1-0001-092110	FSA-SB-DUP01-0001-091510	FSA-SB-DUP02-0001-092110
	Type	N	N	N	N	N	N	FD	FD
	Date	9/14/2010	9/15/2010	9/15/2010	9/14/2010	9/15/2010	9/21/2010	9/15/2010	9/21/2010
Analyte	Units								
2-Nitrophenol	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
3,3'-Dichlorobenzidine	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
3-Nitroaniline	mg/kg	0.52 U	0.37 U	0.37 U	0.39 U	0.38 U	0.37 U	0.37 U	0.41 U
4,6-Dinitro-2-Methylphenol	mg/kg	0.52 U	0.37 U	0.37 U	0.39 U	0.38 U	0.37 U	0.37 U	0.41 U
4-Bromophenyl-Phenylether	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
4-Chloro-3-Methylphenol	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
4-Chloroaniline	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
4-Chlorophenyl-Phenylether	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
4-Methylphenol	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
4-Nitroaniline	mg/kg	0.52 U	0.37 U	0.37 U	0.39 U	0.38 U	0.37 U	0.37 U	0.41 U
4-Nitrophenol	mg/kg	0.52 U	0.37 U	0.37 U	0.39 U	0.38 U	0.37 U	0.37 U	0.41 U
Atrazine	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Bis(2-Chloroethoxy)Methane	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Bis(2-Ethylhexyl)Phthalate	mg/kg	2.6	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Butylbenzylphthalate	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Caprolactam	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Dibenzofuran	mg/kg	0.27	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Diethylphthalate	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Dimethylphthalate	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Di-N-Butyl Phthalate	mg/kg	0.27 U	0.089 J	0.092 J	0.09 J	0.19 U	0.087 J	0.19 U	0.13 J
Di-N-Octyl Phthalate	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Hexachlorocyclopentadiene	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Isophorone	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Nitrobenzene	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
N-Nitroso-Di-N-Propylamine	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
N-Nitrosodiphenylamine	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Pentachlorophenol	mg/kg	0.52 U	0.37 U	0.37 U	0.39 U	0.38 U	0.37 U	0.37 U	0.41 U
Phenol	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
2-Chloronaphthalene	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
2-Methylnaphthalene	mg/kg	0.35	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Acenaphthene	mg/kg	0.29	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Acenaphthylene	mg/kg	0.3	0.11 J	0.095 J	0.36	0.49 J	0.19 U	0.19 UJ	0.21 U
Anthracene	mg/kg	0.62	0.086 J	0.15 J	0.15 J	0.26 J	0.19 U	0.075 J	0.21 U
Benzo(A)Anthracene	mg/kg	2.5	0.53	1.2	1.5	1.3	0.19 U	0.84	0.13 J
Benzo(A)Pyrene	mg/kg	2.7	0.86	1.1	1.8	2.5 J	0.19 U	0.82 J	0.12 J
Benzo(B)Fluoranthene	mg/kg	3.1	0.82	1.3	1.8	1.7 J	0.19 U	0.94 J	0.13 J

Analyte	Area / Sample ID / Type / Date / Units	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-27O1-0001-091410	FSA-SB-28O1-0001-091510	FSA-SB-29O1-0001-091510	FSA-SB-30O1-0001-091410	FSA-SB-31O1-0001-091510	FSA-SB-40O1-0001-092110	FSA-SB-DUP01-0001-091510	FSA-SB-DUP02-0001-092110
	Type	N	N	N	N	N	N	FD	FD
	Date	9/14/2010	9/15/2010	9/15/2010	9/14/2010	9/15/2010	9/21/2010	9/15/2010	9/21/2010
	Units								
Benzo(G,H,I)Perylene	mg/kg	2.2	0.63	0.48	1.4	3 J	0.19 U	0.61 J	0.088 J
Benzo(K)Fluoranthene	mg/kg	2.1	0.53	1.3	1.5	1.7 J	0.19 U	0.8 J	0.14 J
Carbazole	mg/kg	0.18 J	0.085 J	0.19 U	0.13 J	0.12 J	0.19 U	0.19 U	0.21 U
Chrysene	mg/kg	2.6	0.72	1.3	1.8	1.5 J	0.19 U	0.87 J	0.17 J
Dibenz(A,H)Anthracene	mg/kg	0.84	0.22	0.23	0.47	0.8 J	0.19 U	0.28 J	0.21 U
Fluoranthene	mg/kg	3.5	1.2	1.8	3	1.7	0.19 U	1.4	0.2 J
Fluorene	mg/kg	0.21 J	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
High Molecular Weight PAHs	mg/kg	21.84	6.18	9.07	14.17	16.77	1.71 U		
Indeno(1,2,3-Cd)Pyrene	mg/kg	2.1	0.77	0.56	1.5	2.5 J	0.19 U	0.63 J	0.21 U
Low Molecular Weight PAHs	mg/kg	7.77	2.641	3.425	4.88	3.46	1.71 U		
Naphthalene	mg/kg	0.32	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Phenanthrene	mg/kg	2	0.4	0.43	0.44	0.31	0.19 U	0.25	0.21 U
Pyrene	mg/kg	3.7	1.1	1.6	2.4	2 J	0.19 U	1.1 J	0.2 J
Dichloronaphthalene, Total	mg/kg								
Heptachloronaphthalene, Total	mg/kg								
Hexachloronaphthalene, Total	mg/kg								
Monochloronaphthalene, Total	mg/kg								
Octachloronaphthalene, Total	mg/kg								
Pentachloronaphthalene, Total	mg/kg								
Tetrachloronaphthalene, Total	mg/kg								
Trichloronaphthalene, Total	mg/kg								
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	mg/kg	0.0000652	0.000227	0.0000488	0.000145	0.000293	0.000000813 U	0.0000506	0.0000101
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	mg/kg	0.000843	0.000117	0.000111	0.000756	0.000169	0.00000264	0.000168	0.000108 J
1,2,3,4,6,7,8-Heptachlorodibenzofuran	mg/kg	0.000027	0.00019	0.0000289	0.000073 J	0.000303	0.000000285 U	0.0000315	0.00000403 J EB
1,2,3,4,6,7,8-Heptachlorodibenzo-P-Dioxin	mg/kg	0.000142	0.000022	0.0000229	0.0000929	0.0000336	0.000000601 U	0.0000382	0.0000149
1,2,3,4,7,8,9-Heptachlorodibenzofuran	mg/kg	0.00000346	0.0000738	0.00000849	0.0000176	0.00011	0.000000508 U	0.00000927	0.000000202 U
1,2,3,4,7,8-Hexachlorodibenzofuran	mg/kg	0.0000204	0.000542	0.0000443	0.0000844	0.000849	0.000000208 U	0.000053	0.00000256 J
1,2,3,4,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.00000222	0.000000567 U	0.00000105	0.00000533	0.00000146	0.000000343 U	0.00000122	0.000000489
1,2,3,6,7,8-Hexachlorodibenzofuran	mg/kg	0.00000529	0.000134	0.0000119	0.0000304	0.000242	0.000000196 U	0.0000114	0.000000901 J
1,2,3,6,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.00000404	0.000000549 U	0.00000209 J	0.00000424 J	0.00000182 J	0.000000331 U	0.00000295	0.00000071 J
1,2,3,7,8,9-Hexachlorodibenzofuran	mg/kg	0.00000389 J	0.0000894	0.0000125	0.0000214 J	0.000189 J	0.000000335 U	0.0000147 J	0.00000073
1,2,3,7,8,9-Hexachlorodibenzo-P-Dioxin	mg/kg	0.00000262	0.000000574 U	0.000000745 U	0.00000375 J	0.00000124	0.000000345 U	0.00000113 J	0.000000391
1,2,3,7,8-Pentachlorodibenzofuran	mg/kg	0.000016	0.000381	0.0000274	0.0000514 J	0.000645	0.000000174 U	0.0000288	0.00000206 J
1,2,3,7,8-Pentachlorodibenzo-P-Dioxin	mg/kg	0.000000919	0.000000998	0.000000359 U	0.00000266 J	0.00000197 J	0.000000294 U	0.00000061	0.0000000939 U
2,3,4,6,7,8-Hexachlorodibenzofuran	mg/kg	0.00000466	0.0000432	0.00000528	0.0000145	0.0000992	0.000000209 U	0.00000645	0.000000721 J
2,3,4,7,8-Pentachlorodibenzofuran	mg/kg	0.0000186	0.000317	0.000026	0.0000572 J	0.000723 J	0.000000171 U	0.0000293	0.00000236 J

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-27O1-0001-091410	FSA-SB-28O1-0001-091510	FSA-SB-29O1-0001-091510	FSA-SB-30O1-0001-091410	FSA-SB-31O1-0001-091510	FSA-SB-40O1-0001-092110	FSA-SB-DUP01-0001-091510	FSA-SB-DUP02-0001-092110
	Type	N	N	N	N	N	N	FD	FD
	Date	9/14/2010	9/15/2010	9/15/2010	9/14/2010	9/15/2010	9/21/2010	9/15/2010	9/21/2010
Analyte	Units								
2,3,7,8-TCDD TEQ (Bird)	mg/kg	6.94268E-05	0.001500358	8.91917E-05	0.000153873	0.001795271	1.18404E-06		
2,3,7,8-TCDD TEQ (mammal)	mg/kg	1.84311E-05	0.000298132	2.30223E-05	4.88093E-05	0.000468918	8.09996E-07		
2,3,7,8-Tetrachlorodibenzofuran	mg/kg	0.0000431	0.00106	0.0000517	0.0000701	0.000862	0.000000328 U	0.0000562	0.00000461
2,3,7,8-Tetrachlorodibenzo-P-Dioxin	mg/kg	0.000000833 J	0.000000614	0.000000434 U	0.00000193 J	0.00000146	0.000000215 U	0.000000351	0.000000417
Heptachlorodibenzofuran (total)	mg/kg	0.0000842	0.000375	0.0000677 J	0.000225 J	0.000627 J	0.000000508 U	0.0000781 J	0.0000103 J
Heptachlorodibenzo-p-dioxin (total)	mg/kg	0.000595 J	0.0000624 J	0.0000659 J	0.000264 J	0.000128 J	0.00000469 J	0.000175 J	0.0000543 J
Hexachlorodibenzofuran (total)	mg/kg	0.0000698	0.000934	0.000101 J	0.00031	0.00212 J	0.000000335 U	0.000116	0.00000879
Hexachlorodibenzo-p-dioxin (total)	mg/kg	0.0000844	0.00000957 J	0.0000221	0.0000503 J	0.0000418	0.000000345 U	0.0000433	0.00000893
Pentachlorodibenzofuran (total)	mg/kg	0.0000909	0.00132	0.000117	0.00026	0.00285	0.000000174 U	0.000136	0.0000122
Pentachlorodibenzo-p-dioxin (total)	mg/kg	0.0000142	0.00000839	0.00000691	0.0000307	0.0000225	0.000000294 U	0.000011	0.00000475
Tetrachlorodibenzo(p)dioxin (total)	mg/kg	0.00000349 J	0.00000354	0.000000434 U	0.0000161	0.00000581	0.000000215 U	0.0000023	0.00000548
Tetrachlorodibenzofuran (total)	mg/kg	0.0000988	0.00202	0.000105	0.000196	0.00192	0.000000328 U	0.000112	0.0000148
4,4'-DDD	mg/kg	0.0052 U	0.0036 U	0.0036 U	0.0039 U	0.0037 U	0.0037 U	0.0037 U	0.0042 U
4,4'-DDE	mg/kg	0.0052 U	0.0036 U	0.0036 U	0.0039 U	0.0037 U	0.0037 U	0.0037 U	0.0042 U
4,4'-DDT	mg/kg	0.0049 J	0.0036 U	0.0036 U	0.0036 J	0.0037 U	0.0037 U	0.0037 U	0.0042 U
Aldrin	mg/kg	0.0027 U	0.0019 U	0.0019 U	0.002 U	0.0019 U	0.0019 U	0.0019 U	0.0021 U
Alpha-BHC	mg/kg	0.0027 U	0.0019 U	0.0019 U	0.002 U	0.0019 U	0.0019 U	0.0019 U	0.0021 U
Alpha-Chlordane	mg/kg	0.0027 U	0.0019 U	0.0019 U	0.002 U	0.0019 U	0.0019 U	0.0019 U	0.0021 U
Beta-BHC	mg/kg	0.0027 U	0.0019 U	0.0019 U	0.002 U	0.0019 U	0.0019 U	0.0019 U	0.0021 U
DDT and Metabolites	mg/kg	0.0101	0.0072 U	0.0072 U	0.0075	0.0074 U	0.0074 U		
Delta-BHC	mg/kg	0.0027 U	0.0019 U	0.0019 U	0.002 U	0.0019 U	0.0019 U	0.0019 U	0.0021 U
Dieldrin	mg/kg	0.0052 U	0.0036 U	0.0036 U	0.0039 U	0.0037 U	0.0037 U	0.0037 U	0.0042 U
Endosulfan I	mg/kg	0.0027 U	0.0019 U	0.0019 U	0.002 U	0.0019 U	0.0019 U	0.0019 U	0.0021 U
Endosulfan II	mg/kg	0.0052 U	0.0036 U	0.0036 U	0.0039 U	0.0037 U	0.0037 U	0.0037 U	0.0042 U
Endosulfan Sulfate	mg/kg	0.0052 U	0.0036 U	0.0036 U	0.0039 U	0.0037 U	0.0037 U	0.0037 U	0.0042 U
Endrin	mg/kg	0.0052 U	0.0036 U	0.0036 U	0.0039 U	0.0037 U	0.0037 U	0.0037 U	0.0042 U
Endrin Aldehyde	mg/kg	0.0052 U	0.0036 U	0.0036 U	0.0039 U	0.0037 U	0.0037 U	0.0037 U	0.0042 U
Endrin Ketone	mg/kg	0.0052 U	0.0036 U	0.0036 U	0.0039 U	0.0037 U	0.0037 U	0.0037 U	0.0042 U
Gamma-BHC (Lindane)	mg/kg	0.0027 U	0.0019 U	0.0019 U	0.002 U	0.0019 U	0.0019 U	0.0019 U	0.0021 U
Gamma-Chlordane	mg/kg	0.0027 U	0.0019 U	0.0019 U	0.002 U	0.0019 U	0.0019 U	0.0019 U	0.0021 U
Heptachlor	mg/kg	0.0027 U	0.0019 U	0.0019 U	0.002 U	0.0019 U	0.0019 U	0.0019 U	0.0021 U
Heptachlor Epoxide	mg/kg	0.0027 U	0.0019 U	0.0019 U	0.002 U	0.0019 U	0.0019 U	0.0019 U	0.0021 U
Methoxychlor	mg/kg	0.027 U	0.019 U	0.019 U	0.02 U	0.019 U	0.019 U	0.019 U	0.021 U
Toxaphene	mg/kg	0.27 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.21 U
Decachlorobiphenyl	mg/kg	0.000333 J	0.000402 J	0.00017 J	0.000727 J	0.000562 J	0.0000134 U	0.000219 J	0.0000318 J
Total DiCB	mg/kg	0.000851 U	0.000271 J	0.000141 U	0.000637 U	0.000534 U	0.0000431 U	0.000232 U	0.0000705 U

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-27O1-0001-091410	FSA-SB-28O1-0001-091510	FSA-SB-29O1-0001-091510	FSA-SB-30O1-0001-091410	FSA-SB-31O1-0001-091510	FSA-SB-40O1-0001-092110	FSA-SB-DUP01-0001-091510	FSA-SB-DUP02-0001-092110
	Type	N	N	N	N	N	N	FD	FD
	Date	9/14/2010	9/15/2010	9/15/2010	9/14/2010	9/15/2010	9/21/2010	9/15/2010	9/21/2010
Analyte	Units								
Total HpCB	mg/kg	0.0492 J	1.34 J	0.262 J	0.0956 J	0.3 J	0.000142 JEB	0.196 J	0.00667 J
Total HxCB	mg/kg	0.0714 J	1.44 J	0.335 J	0.159 J	0.352 J	0.000103 JEB	0.378 J	0.00811 J
Total MoCB	mg/kg	0.000184 J	0.0000377 J	0.0000185 U	0.0000873 U	0.0000696 U	0.00000539 U	0.0000197 U	0.0000291 J EB
Total PCB Homologues	mg/kg	0.168 J	3.28 J	0.793 J	0.476 J	0.786 J	0.000672 J	0.861 J	0.0189 J
Total PeCB	mg/kg								
Total TeCB	mg/kg	0.00685 J	0.0138 J	0.0174 J	0.0396 J	0.00376 J	0.0000375 JEB	0.0352 J	0.000317 J
Total TrCB	mg/kg	0.00297 J	0.00112 J	0.000825 J	0.002 J	0.000578 U	0.0000429 U	0.00158 J	0.0000943 U
17-TrCB	mg/kg	0.0243 J	0.182 J	0.112 J	0.146 J	0.0497 J	0.0000569 JEB	0.197 J	0.00196 J
2,3,3',4,4',5,5'-Heptachlorobiphenyl	mg/kg	0.000187	0.0043	0.000995	0.000368	0.000938	0.000000609 U	0.000731	0.0000267
2,3,3',4,4',5-Hexachlorobiphenyl	mg/kg	0.000831	0.0122	0.00343 J	0.00334	0.00225	0.0000023 EB	0.00573 J	0.00012
2,3,3',4,4'-Pentachlorobiphenyl	mg/kg	0.00122	0.00307	0.00514 J	0.00653 J	0.00134	0.0000028	0.0112 J	0.000108
2,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.000414	0.00861	0.00215	0.00116	0.00155	0.00000115 U	0.00252	0.0000601
2',3,4,4',5-Pentachlorobiphenyl	mg/kg	0.0000376	0.000134	0.000208	0.000276	0.0000665	0.00000174 U	0.000437 J	0.00000411
2,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.00309	0.012	0.0127 J	0.0169	0.00354	0.00000769 EB	0.0279 J	0.000327
2,3,4,4',5-Pentachlorobiphenyl	mg/kg	0.0000384 U	0.000163	0.000234 J	0.000341	0.0000543	0.00000201 U	0.000618 J	0.00000378
3,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.0000318 U	0.000667	0.000115	0.000155 U	0.000152	0.000000824 U	0.0000919	0.00000243 U
3,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.0000482 U	0.000802	0.000146	0.000166 U	0.000114	0.00000161 U	0.000146	0.00000453
3,3',4,4'-Tetrachlorobiphenyl	mg/kg	0.00016	0.000942	0.000281	0.000313	0.000106	0.00000109 U	0.000386	0.00000923
3,4,4',5-Tetrachlorobiphenyl	mg/kg	0.0000145 U	0.0000232	0.0000131	0.0000597 U	0.0000296 U	0.00000102 U	0.0000228	0.00000183 U
PCB Dioxin-like Congener TEQ (Bird)	mg/kg	1.4548E-05	0.000132081	3.11159E-05	3.95831E-05	3.67688E-05	3.19147E-07		
PCB Dioxin-like Congener TEQ (mammal)	mg/kg	5.96889E-06	0.000101525	1.88277E-05	2.21667E-05	1.81666E-05	1.86684E-07		
Total NoCB	mg/kg	0.00122 J	0.0206 J	0.00393 J	0.00525 J	0.00556 J	0.000118 JEB	0.00347 J	0.00018 J
Total OcCB	mg/kg	0.0116 J	0.281 J	0.0614 J	0.0274 J	0.074 J	0.000215 JEB	0.0496 J	0.0016 J
Perchlorate (organic)	mg/kg								
Aluminum	mg/Kg	5150	7224	2332	2112	4023	4964	2263	3924
Antimony	mg/Kg	14.7 J	6.2 U	6.9 U	3.1 J	6.8 U	2.5 J	6 U	11.9 J
Arsenic	mg/Kg	17.1	11.3	6	168	5.3	15.1	6.2	5.9
Barium	mg/Kg	74	119	41.9	78.6	91.7	398	42.2	81.5
Beryllium	mg/Kg	0.61 U	0.72 J	0.14 J	0.62 U	0.09 J	0.41 J	0.089 J	0.26 J
Cadmium	mg/Kg	0.61 U	0.52 U	0.58 U	0.62 U	0.57 U	0.25 J	0.57 U	0.22 J
Calcium	mg/Kg	2688	3849	946	3359	2061	1502	867	2151
Chromium	mg/Kg	31.4	9.8	6.7	11.8	8.2	12.4 J	6.6	9.2 J
Cobalt	mg/Kg	14.1 J	6.6 J	5 J	8.2 J	6 J	9.7 J	7.4 J	6.9 J
Copper	mg/Kg	177	37.2	35.5	59.3	47.3	111	38.5	75
Iron	mg/Kg	38453	9219	9079	17593	9501	28883	12308	13011
Lead	mg/Kg	516 J	67.5 J	21.5 J	108 J	71.2 J	116 J	22.3 J	1878 J

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-27O1-0001-091410	FSA-SB-28O1-0001-091510	FSA-SB-29O1-0001-091510	FSA-SB-30O1-0001-091410	FSA-SB-31O1-0001-091510	FSA-SB-40O1-0001-092110	FSA-SB-DUP01-0001-091510	FSA-SB-DUP02-0001-092110
	Type	N	N	N	N	N	N	FD	FD
	Date	9/14/2010	9/15/2010	9/15/2010	9/14/2010	9/15/2010	9/21/2010	9/15/2010	9/21/2010
Analyte	**Units**								
Magnesium	mg/Kg	2727	1047	396 J	337 J	1530	1205	397 J	1199
Manganese	mg/Kg	445 J	137 J	74.9 J	212 J	168 J	312	68.2 J	611
Mercury	mg/Kg	0.48 J	6.4 J	0.32 J	1.1 J	5.5 J	72.5	0.083 J	125
Nickel	mg/Kg	25.5	13.5	11.5	22.2	9.1	18.7	14.4	12.7
Potassium	mg/Kg	619 J	477 J	346 J	312 J	486 J	789 J	392 J	635 J
Selenium	mg/Kg	1.1 J	0.98 J	1.5 J	1.6 J	0.56 J	1.8 J	1.3 J	1.2 J
Silver	mg/Kg	1.2 U	1 U	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	5.5 J
Sodium	mg/Kg	84.2 J	218 J	47.9 J	58.8 J	53 J	194 J	70.9 J	500 U
Thallium	mg/Kg	3 U	2.6 U	2.9 U	3.1 U	2.8 U	2.9 U	2.9 U	3.2 U
Vanadium	mg/Kg	31.9	34	12.8	21.5	16.1	18.3	15.8	17.6
Zinc	mg/Kg	138 J	40.5 J	71 J	217	42.2 J	107	71.5 J	113
Total Organic Carbon	mg/Kg	39000	27000	14000	49000	23000	6100	15000	

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-DUP03-0001-092210	FSA-SB-DUP04-0001-092210	FSA-SB-DUP05-0001-092210	FSA-SB-FDUP02-0001-092110	FSA-SB-FDUP03-0001-092210	FSA-SS-03-091510	FSA-SS-06-091510	FSA-SS-32-091510
	Type	FD	FD	FD	FD	FD	N	N	N
	Date	9/22/2010	9/22/2010	9/22/2010	9/21/2010	9/22/2010	9/15/2010	9/15/2010	9/15/2010
Analyte	Units								
1,1,1-Trichloroethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,1,2,2-Tetrachloroethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,1,2-Trichloroethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,1'-Biphenyl	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
1,1-Dichloroethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,1-Dichloroethene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,2,3-Trichlorobenzene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,2,4-Trichlorobenzene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,2-Dibromo-3-Chloropropane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,2-Dibromoethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,2-Dichlorobenzene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,2-Dichloroethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,2-Dichloropropane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,3-Dichlorobenzene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,4-Dichlorobenzene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
2,2'-Oxybis(1-Chloropropane)	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
2-Butanone	mg/kg	0.013 U					0.019 U	0.016 U	0.0094 U
2-Hexanone	mg/kg	0.013 U					0.019 U	0.016 U	0.0094 U
4-Methyl-2-Pentanone	mg/kg	0.013 U					0.019 U	0.016 U	0.0094 U
Acetone	mg/kg	0.24 J					0.019 U	0.016 U	0.0094 U
Acetophenone	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Benzaldehyde	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Benzene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Bis(2-Chloroethyl)Ether	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Bromochloromethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Bromodichloromethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Bromoform	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Bromomethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Carbon Disulfide	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Carbon Tetrachloride	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Chlorobenzene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Chloroethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Chloroform	mg/kg	0.012 J					0.0093 U	0.0054 J	0.0047 U
Chloromethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
cis-1,2-Dichloroethene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-DUP03-0001-092210	FSA-SB-DUP04-0001-092210	FSA-SB-DUP05-0001-092210	FSA-SB-FDUP02-0001-092110	FSA-SB-FDUP03-0001-092210	FSA-SS-03-091510	FSA-SS-06-091510	FSA-SS-32-091510
	Type	FD	FD	FD	FD	FD	N	N	N
	Date	9/22/2010	9/22/2010	9/22/2010	9/21/2010	9/22/2010	9/15/2010	9/15/2010	9/15/2010
Analyte	Units								
cis-1,3-Dichloropropene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Cyclohexane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Dibromochloromethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Dichlorodifluoromethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Ethylbenzene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Hexachlorobenzene	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Hexachlorobutadiene	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Hexachloroethane	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Isopropylbenzene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
m,p-Xylene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Methyl Acetate	mg/kg	0.0048 J					0.0093 U	0.0078 U	0.0047 U
Methyl Tert-Butyl Ether	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Methylcyclohexane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Methylene Chloride	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
o-Xylene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Styrene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Tetrachloroethene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Toluene	mg/kg	0.0034 J					0.0093 U	0.0078 U	0.0047 U
trans-1,2-Dichloroethene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
trans-1,3-Dichloropropene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Trichloroethene	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Trichlorofluoromethane	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
Vinyl Chloride	mg/kg	0.0064 U					0.0093 U	0.0078 U	0.0047 U
1,2,4,5-Tetrachlorobenzene	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
1,4-Dioxane	mg/kg	0.13 U					0.19 U	0.16 U	0.094 U
2,3,4,6-Tetrachlorophenol	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
2,4,5-Trichlorophenol	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
2,4,6-Trichlorophenol	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
2,4-Dichlorophenol	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
2,4-Dimethylphenol	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
2,4-Dinitrophenol	mg/kg	0.36 U					0.47 U	0.42 U	0.38 U
2,4-Dinitrotoluene	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
2,6-Dinitrotoluene	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
2-Chlorophenol	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
2-Methylphenol	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
2-Nitroaniline	mg/kg	0.36 U					0.47 U	0.42 U	0.38 U

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-DUP03-0001-092210	FSA-SB-DUP04-0001-092210	FSA-SB-DUP05-0001-092210	FSA-SB-FDUP02-0001-092110	FSA-SB-FDUP03-0001-092210	FSA-SS-03-091510	FSA-SS-06-091510	FSA-SS-32-091510
	Type	FD	FD	FD	FD	FD	N	N	N
	Date	9/22/2010	9/22/2010	9/22/2010	9/21/2010	9/22/2010	9/15/2010	9/15/2010	9/15/2010
Analyte	Units								
2-Nitrophenol	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
3,3'-Dichlorobenzidine	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
3-Nitroaniline	mg/kg	0.36 U					0.47 U	0.42 U	0.38 U
4,6-Dinitro-2-Methylphenol	mg/kg	0.36 U					0.47 U	0.42 U	0.38 U
4-Bromophenyl-Phenylether	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
4-Chloro-3-Methylphenol	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
4-Chloroaniline	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
4-Chlorophenyl-Phenylether	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
4-Methylphenol	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
4-Nitroaniline	mg/kg	0.36 U					0.47 U	0.42 U	0.38 U
4-Nitrophenol	mg/kg	0.36 U					0.47 U	0.42 U	0.38 U
Atrazine	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Bis(2-Chloroethoxy)Methane	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.19 U					0.076 J	0.14 J	0.052 J
Butylbenzylphthalate	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Caprolactam	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Dibenzofuran	mg/kg	0.19 U					0.24 U	0.05 J	0.2 U
Diethylphthalate	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Dimethylphthalate	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Di-N-Butyl Phthalate	mg/kg	0.13 J					0.24 U	0.22 U	0.2 U
Di-N-Octyl Phthalate	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Hexachlorocyclopentadiene	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Isophorone	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Nitrobenzene	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
N-Nitroso-Di-N-Propylamine	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
N-Nitrosodiphenylamine	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Pentachlorophenol	mg/kg	0.36 U					0.47 U	0.42 U	0.38 U
Phenol	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
2-Chloronaphthalene	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
2-Methylnaphthalene	mg/kg	0.19 U					0.043 J	0.053 J	0.2 U
Acenaphthene	mg/kg	0.19 U					0.049 J	0.085 J	0.2 U
Acenaphthylene	mg/kg	0.19 U					0.24 U	0.099 J	0.2 U
Anthracene	mg/kg	0.099 J					0.13 J	0.26	0.2 U
Benzo(A)Anthracene	mg/kg	0.47 J					1.2	1.5	0.2 U
Benzo(A)Pyrene	mg/kg	0.48 J					1.1	1.3	0.2 U
Benzo(B)Fluoranthene	mg/kg	0.43 J					1.5	1.7	0.2 U

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-DUP03-0001-092210	FSA-SB-DUP04-0001-092210	FSA-SB-DUP05-0001-092210	FSA-SB-FDUP02-0001-092110	FSA-SB-FDUP03-0001-092210	FSA-SS-03-091510	FSA-SS-06-091510	FSA-SS-32-091510
	Type	FD	FD	FD	FD	FD	N	N	N
	Date	9/22/2010	9/22/2010	9/22/2010	9/21/2010	9/22/2010	9/15/2010	9/15/2010	9/15/2010
Analyte	Units								
Benzo(G,H,I)Perylene	mg/kg	0.32 J					0.8	0.95	0.083 J
Benzo(K)Fluoranthene	mg/kg	0.5 J					0.89	0.98	0.2 U
Carbazole	mg/kg	0.19 U					0.054 J	0.097 J	0.2 U
Chrysene	mg/kg	0.53 J					1.3	1.5	0.2 U
Dibenz(A,H)Anthracene	mg/kg	0.16 J					0.23 J	0.27	0.2 U
Fluoranthene	mg/kg	0.76 J					1.7	2.3	0.2 U
Fluorene	mg/kg	0.19 U					0.24 U	0.086 J	0.2 U
High Molecular Weight PAHs	mg/kg						9.92	11.9	1.683
Indeno(1,2,3-Cd)Pyrene	mg/kg	0.3 J					1.1	1.3	0.2 U
Low Molecular Weight PAHs	mg/kg						3.346	4.236	1.8 U
Naphthalene	mg/kg	0.19 U					0.24 U	0.056 J	0.2 U
Phenanthrene	mg/kg	0.41 J					0.65	1.2	0.2 U
Pyrene	mg/kg	0.73 J					1.8	2.4	0.2 U
Dichloronaphthalene, Total	mg/kg								
Heptachloronaphthalene, Total	mg/kg								
Hexachloronaphthalene, Total	mg/kg								
Monochloronaphthalene, Total	mg/kg								
Octachloronaphthalene, Total	mg/kg								
Pentachloronaphthalene, Total	mg/kg								
Tetrachloronaphthalene, Total	mg/kg								
Trichloronaphthalene, Total	mg/kg								
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	mg/kg					0.000257	0.0000858	0.00011	0.00000256 J
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	mg/kg					0.00016 J	0.000194	0.0007	0.0000234 J
1,2,3,4,6,7,8-Heptachlorodibenzofuran	mg/kg					0.0000627	0.000032	0.0000552	0.00000183 J
1,2,3,4,6,7,8-Heptachlorodibenzo-P-Dioxin	mg/kg					0.0000264	0.0000291	0.0000906	0.00000379 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran	mg/kg					0.0000222	0.0000132 J	0.0000173 J	0.000000301
1,2,3,4,7,8-Hexachlorodibenzofuran	mg/kg					0.000136	0.0000452	0.0000789	0.00000198 J
1,2,3,4,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg					0.00000226 U	0.00000105 J	0.00000261	0.000000213 U
1,2,3,6,7,8-Hexachlorodibenzofuran	mg/kg					0.0000351	0.0000114	0.0000225	0.000000592 J
1,2,3,6,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg					0.00000211 U	0.00000155 J	0.00000363 J	0.000000215 U
1,2,3,7,8,9-Hexachlorodibenzofuran	mg/kg					0.0000318	0.00000695	0.0000308	0.000000505 J
1,2,3,7,8,9-Hexachlorodibenzo-P-Dioxin	mg/kg					0.00000224 U	0.000000889 J	0.00000198	0.000000224 U
1,2,3,7,8-Pentachlorodibenzofuran	mg/kg					0.000103	0.0000364	0.000047	0.00000149
1,2,3,7,8-Pentachlorodibenzo-P-Dioxin	mg/kg					0.00000155 U	0.00000238	0.000002	0.0000000866 U
2,3,4,6,7,8-Hexachlorodibenzofuran	mg/kg					0.0000172	0.0000057	0.0000104	0.000000266 J
2,3,4,7,8-Pentachlorodibenzofuran	mg/kg					0.0000999	0.0000276	0.00004	0.0000013 J

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-DUP03-0001-092210	FSA-SB-DUP04-0001-092210	FSA-SB-DUP05-0001-092210	FSA-SB-FDUP02-0001-092110	FSA-SB-FDUP03-0001-092210	FSA-SS-03-091510	FSA-SS-06-091510	FSA-SS-32-091510
	Type	FD	FD	FD	FD	FD	N	N	N
	Date	9/22/2010	9/22/2010	9/22/2010	9/21/2010	9/22/2010	9/15/2010	9/15/2010	9/15/2010
Analyte	Units								
2,3,7,8-TCDD TEQ (Bird)	mg/kg						9.0301E-05	0.000160751	4.4036E-06
2,3,7,8-TCDD TEQ (mammal)	mg/kg						2.75428E-05	0.000043866	1.2896E-06
2,3,7,8-Tetrachlorodibenzofuran	mg/kg					0.000208	0.000046	0.0000967	0.00000241
2,3,7,8-Tetrachlorodibenzo-P-Dioxin	mg/kg					0.00000131 U	0.00000309	0.00000183 J	0.0000000608 U
Heptachlorodibenzofuran (total)	mg/kg					0.000141 J	0.0000892 J	0.00015 J	0.0000037
Heptachlorodibenzo-p-dioxin (total)	mg/kg					0.0000974 J	0.000103 J	0.000412 J	0.00000885 J
Hexachlorodibenzofuran (total)	mg/kg					0.000279	0.000105	0.000195	0.00000477 J
Hexachlorodibenzo-p-dioxin (total)	mg/kg					0.0000195 J	0.0000465	0.0000592	0.00000109
Pentachlorodibenzofuran (total)	mg/kg					0.000437	0.000147	0.000235	0.00000523
Pentachlorodibenzo-p-dioxin (total)	mg/kg					0.00000155 U	0.0000386	0.0000233	0.000000265 U
Tetrachlorodibenzo(p)dioxin (total)	mg/kg					0.00000131 U	0.0000109	0.00000402	0.000000135
Tetrachlorodibenzofuran (total)	mg/kg					0.000524	0.000125	0.000255	0.00000479
4,4'-DDD	mg/kg	0.0036 U					0.034 J	0.0042 U	0.0038 U
4,4'-DDE	mg/kg	0.0036 U					0.0047 U	0.0042 U	0.0038 U
4,4'-DDT	mg/kg	0.0036 U					0.025 J	0.054 J	0.0038 U
Aldrin	mg/kg	0.0019 U					0.0024 U	0.0022 U	0.002 U
Alpha-BHC	mg/kg	0.0019 U					0.0024 U	0.0022 U	0.002 U
Alpha-Chlordane	mg/kg	0.0019 U					0.0024 U	0.0022 U	0.002 U
Beta-BHC	mg/kg	0.0019 U					0.0024 U	0.0022 U	0.002 U
DDT and Metabolites	mg/kg						0.059	0.0582	0.0076 U
Delta-BHC	mg/kg	0.0019 U					0.0024 U	0.0022 U	0.002 U
Dieldrin	mg/kg	0.0036 U					0.014 J	0.0042 U	0.0038 U
Endosulfan I	mg/kg	0.0019 U					0.0024 U	0.0022 U	0.002 U
Endosulfan II	mg/kg	0.0036 U					0.03 J	0.015 J	0.0038 U
Endosulfan Sulfate	mg/kg	0.0036 U					0.0047 U	0.0042 U	0.0038 U
Endrin	mg/kg	0.0036 U					0.0047 U	0.0042 U	0.0038 U
Endrin Aldehyde	mg/kg	0.0036 U					0.05	0.0042 U	0.0038 U
Endrin Ketone	mg/kg	0.0036 U					0.053 J	0.0042 U	0.0038 U
Gamma-BHC (Lindane)	mg/kg	0.0019 U					0.0024 U	0.0022 U	0.002 U
Gamma-Chlordane	mg/kg	0.0019 U					0.0024 U	0.0022 U	0.002 U
Heptachlor	mg/kg	0.0019 U					0.0024 U	0.0022 U	0.002 U
Heptachlor Epoxide	mg/kg	0.0019 U					0.0024 U	0.0045 J	0.002 U
Methoxychlor	mg/kg	0.019 U					0.024 U	0.022 U	0.02 U
Toxaphene	mg/kg	0.19 U					0.24 U	0.22 U	0.2 U
Decachlorobiphenyl	mg/kg					0.00088 J	0.000855 J	0.000314 J	0.0000446 J
Total DiCB	mg/kg					0.000445 U	0.00037 J	0.000251 J	0.0000413 U

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-DUP03-0001-092210	FSA-SB-DUP04-0001-092210	FSA-SB-DUP05-0001-092210	FSA-SB-FDUP02-0001-092110	FSA-SB-FDUP03-0001-092210	FSA-SS-03-091510	FSA-SS-06-091510	FSA-SS-32-091510
	Type	FD	FD	FD	FD	FD	N	N	N
	Date	9/22/2010	9/22/2010	9/22/2010	9/21/2010	9/22/2010	9/15/2010	9/15/2010	9/15/2010
Analyte	Units								
Total HpCB	mg/kg					1.13 J	1.25 J	0.171 J	0.0145 J
Total HxCB	mg/kg					1.4 J	1.34 J	0.811 J	0.015 J
Total MoCB	mg/kg					0.0000534 J	0.0000606 J	0.0000493 J	0.00000448 U
Total PCB Homologues	mg/kg					3.607 J	3.08 J	1.79 J	0.0355 J
Total PeCB	mg/kg								
Total TeCB	mg/kg					0.141 J	0.0124 J	0.0695 J	0.000206 J
Total TrCB	mg/kg					0.00374 J	0.00188 J	0.00149 J	0.0000652 U
17-TrCB	mg/kg					0.683 J	0.19 J	0.71 J	0.00176 J
2,3,3',4,4',5,5'-Heptachlorobiphenyl	mg/kg					0.00377	0.00465	0.00124	0.0000493
2,3,3',4,4',5-Hexachlorobiphenyl	mg/kg					0.0201 J	0.0145	0.0275	0.000127
2,3,3',4,4'-Pentachlorobiphenyl	mg/kg					0.0372 J	0.00419 J	0.0433	0.0000622
2,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg					0.0104	0.00738	0.0101	0.0000997
2',3,4,4',5-Pentachlorobiphenyl	mg/kg					0.00124 J	0.000149 U	0.00232	0.00000879 U
2,3',4,4',5-Pentachlorobiphenyl	mg/kg					0.093 J	0.0164 J	0.117 J	0.0002
2,3,4,4',5-Pentachlorobiphenyl	mg/kg					0.00202 J	0.000157 U	0.00166	0.0000092 U
3,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg					0.000396	0.000559	0.000165	0.00000299 U
3,3',4,4',5-Pentachlorobiphenyl	mg/kg					0.000969	0.000363	0.00171	0.00000859 U
3,3',4,4'-Tetrachlorobiphenyl	mg/kg					0.00117	0.000496	0.00421 J	0.0000111
3,4,4',5-Tetrachlorobiphenyl	mg/kg					0.0000508 U	0.0000121 U	0.000134	0.00000135 U
PCB Dioxin-like Congener TEQ (Bird)	mg/kg						6.50395E-05	0.000403618	1.57541E-06
PCB Dioxin-like Congener TEQ (mammal)	mg/kg						5.4546E-05	0.000182505	9.66901E-07
Total NoCB	mg/kg					0.0143 J	0.0173 J	0.0023 J	0.000478 J
Total OcCB	mg/kg					0.234 J	0.269 J	0.0256 J	0.00356 J
Perchlorate (organic)	mg/kg								
Aluminum	mg/Kg	6075					4730	5141	6841
Antimony	mg/Kg	6.5 U					1.8 J	2.8 J	6.9 U
Arsenic	mg/Kg	6.9					12.8	8.3	3.3
Barium	mg/Kg	67.4					93.7	81.2	32.8
Beryllium	mg/Kg	0.36 J					0.26 J	0.26 J	0.36 J
Cadmium	mg/Kg	0.15 J					0.46 J	0.43 J	0.5 U
Calcium	mg/Kg	2378					4526	3347	1393
Chromium	mg/Kg	8.4 J					11.7	26	8.8
Cobalt	mg/Kg	7.9 J					5.4 J	11.5 J	6.1 J
Copper	mg/Kg	34.8					74	79.2	16.8
Iron	mg/Kg	13472					14766	51051	11589
Lead	mg/Kg	54.2 J					115 J	85.9 J	9.3 J

	Area	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA	SFSA
	Sample ID	FSA-SB-DUP03-0001-092210	FSA-SB-DUP04-0001-092210	FSA-SB-DUP05-0001-092210	FSA-SB-FDUP02-0001-092110	FSA-SB-FDUP03-0001-092210	FSA-SS-03-091510	FSA-SS-06-091510	FSA-SS-32-091510
	Type	FD	FD	FD	FD	FD	N	N	N
	Date	9/22/2010	9/22/2010	9/22/2010	9/21/2010	9/22/2010	9/15/2010	9/15/2010	9/15/2010
Analyte	**Units**								
Magnesium	mg/Kg	3101					2245	2175	2573
Manganese	mg/Kg	305					451	689	223
Mercury	mg/Kg	1.1					6.4	1.8	0.32
Nickel	mg/Kg	19.3					15.9	99.6	9.1
Potassium	mg/Kg	985 J					647 J	1021 J	1466 J
Selenium	mg/Kg	0.68 J					0.89 J	4.7 U	0.69 J
Silver	mg/Kg	1.1 U					1.4 U	1.3 U	1.2 U
Sodium	mg/Kg	500 U					40.5 J	93.3 J	62 J
Thallium	mg/Kg	2.7 U					3.5 U	3.4 U	2.9 U
Vanadium	mg/Kg	23.3					23.9	30.2	27.9
Zinc	mg/Kg	52.4					116	166	45.9
Total Organic Carbon	mg/Kg		12000	21000	29000		49000	29000	5000 U

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Analyte	Area	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA
	Sample ID	FSA-137-0001-0-082610	FSA-SB-23O1-0001-091610	FSA-SB-33O1-0001-092310	FSA-SB-34O1-0001-091610	FSA-SB-35O1-0001-091610	FSA-SB-36O1-0001-091610	FSA-SB-37O1-0001-091510	FSA-SB-38O1-0001-091610
	Type	N	N	N	N	N	N	N	N
	Date	8/26/2010	9/16/2010	9/23/2010	9/16/2010	9/16/2010	9/16/2010	9/15/2010	9/16/2010
	Units								
1,1,1-Trichloroethane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,1,2,2-Tetrachloroethane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,1,2-Trichloroethane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,1'-Biphenyl	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
1,1-Dichloroethane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,1-Dichloroethene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,2,3-Trichlorobenzene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,2,4-Trichlorobenzene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,2-Dibromo-3-Chloropropane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,2-Dibromoethane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,2-Dichlorobenzene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,2-Dichloroethane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,2-Dichloropropane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,3-Dichlorobenzene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,4-Dichlorobenzene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
2,2'-Oxybis(1-Chloropropane)	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
2-Butanone	mg/kg		0.0084 U	0.0089 U	0.015 U	0.018 U	0.0087 U	0.0089 U	0.0099 U
2-Hexanone	mg/kg		0.0084 U	0.0089 U	0.015 U	0.018 U	0.0087 U	0.0089 U	0.0099 U
4-Methyl-2-Pentanone	mg/kg		0.0084 U	0.0089 U	0.015 U	0.018 U	0.0087 U	0.0089 U	0.0099 U
Acetone	mg/kg		0.0084 U	0.0089 U	0.015 U	0.26	0.0087 U	0.0089 U	0.12
Acetophenone	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Benzaldehyde	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Benzene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Bis(2-Chloroethyl)Ether	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Bromochloromethane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Bromodichloromethane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Bromoform	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Bromomethane	mg/kg		0.0042 U	0.0045 U	0.0037 J	0.0091 U	0.0044 U	0.0044 U	0.005 U
Carbon Disulfide	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Carbon Tetrachloride	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Chlorobenzene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Chloroethane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U			0.005 U
Chloroform	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Chloromethane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
cis-1,2-Dichloroethene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U

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	Type	N	N	N	N	N	N	N	N
	Date	8/26/2010	9/16/2010	9/23/2010	9/16/2010	9/16/2010	9/16/2010	9/15/2010	9/16/2010
Analyte	**Units**								
cis-1,3-Dichloropropene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Cyclohexane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Dibromochloromethane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Dichlorodifluoromethane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Ethylbenzene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Hexachlorobenzene	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Hexachlorobutadiene	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Hexachloroethane	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Isopropylbenzene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
m,p-Xylene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Methyl Acetate	mg/kg		0.0042 U	0.0045 U	0.0075	0.0071 J	0.0044 U	0.0044 U	0.048
Methyl Tert-Butyl Ether	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Methylcyclohexane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Methylene Chloride	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.013 U	0.0044 U	0.0044 U	0.0068 U
o-Xylene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Styrene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Tetrachloroethene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Toluene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0077 U	0.0044 U	0.005 U
trans-1,2-Dichloroethene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
trans-1,3-Dichloropropene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Trichloroethene	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Trichlorofluoromethane	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
Vinyl Chloride	mg/kg		0.0042 U	0.0045 U	0.0074 U	0.0091 U	0.0044 U	0.0044 U	0.005 U
1,2,4,5-Tetrachlorobenzene	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
1,4-Dioxane	mg/kg		0.084 U	0.089 U	0.15 U	0.18 U	0.087 U	0.089 U	0.099 U
2,3,4,6-Tetrachlorophenol	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
2,4,5-Trichlorophenol	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
2,4,6-Trichlorophenol	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
2,4-Dichlorophenol	mg/kg		0.18 U		0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
2,4-Dimethylphenol	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
2,4-Dinitrophenol	mg/kg			0.35 U	0.4 U	0.66 U	0.36 U	0.36 U	0.34 U
2,4-Dinitrotoluene	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
2,6-Dinitrotoluene	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
2-Chlorophenol	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
2-Methylphenol	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
2-Nitroaniline	mg/kg		0.36 U	0.35 U	0.4 U	0.66 U	0.36 U	0.36 U	0.34 U

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	Type	N	N	N	N	N	N	N	N
	Date	8/26/2010	9/16/2010	9/23/2010	9/16/2010	9/16/2010	9/16/2010	9/15/2010	9/16/2010
Analyte	Units								
2-Nitrophenol	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
3,3'-Dichlorobenzidine	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
3-Nitroaniline	mg/kg		0.36 U	0.35 U	0.4 U	0.66 U	0.36 U	0.36 U	0.34 U
4,6-Dinitro-2-Methylphenol	mg/kg				0.4 U	0.66 U	0.36 U	0.36 U	0.34 U
4-Bromophenyl-Phenylether	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
4-Chloro-3-Methylphenol	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
4-Chloroaniline	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
4-Chlorophenyl-Phenylether	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
4-Methylphenol	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
4-Nitroaniline	mg/kg		0.36 U	0.35 U	0.4 U	0.66 U	0.36 U	0.36 U	0.34 U
4-Nitrophenol	mg/kg		0.36 U	0.35 U	0.4 U	0.66 U	0.36 U	0.36 U	0.34 U
Atrazine	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Bis(2-Chloroethoxy)Methane	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Bis(2-Ethylhexyl)Phthalate	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Butylbenzylphthalate	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Caprolactam	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Dibenzofuran	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.31
Diethylphthalate	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Dimethylphthalate	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Di-N-Butyl Phthalate	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.099 J	0.077 J	0.18 U
Di-N-Octyl Phthalate	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Hexachlorocyclopentadiene	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Isophorone	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
Nitrobenzene	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
N-Nitroso-Di-N-Propylamine	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
N-Nitrosodiphenylamine	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.076 J
Pentachlorophenol	mg/kg		0.36 U	0.35 U	0.4 U	0.66 U	0.36 U	0.36 U	0.34 U
Phenol	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
2-Chloronaphthalene	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.18 U
2-Methylnaphthalene	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.49
Acenaphthene	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.25
Acenaphthylene	mg/kg		0.18 U	0.18 U	0.72	0.37	0.19 U	0.18 U	1.5
Anthracene	mg/kg		0.18 U	0.18 U	0.22	0.28 J	0.19 U	0.18 U	1.3
Benzo(A)Anthracene	mg/kg		0.18 U	0.18 U	1.4	1.2	0.19 U	0.24 J	2.2 D
Benzo(A)Pyrene	mg/kg		0.18 U	0.18 U	1.8	1.1	0.19 U	0.32 J	2.5
Benzo(B)Fluoranthene	mg/kg		0.18 U	0.18 U	1.3	1.5	0.19 U	0.26 J	1.8

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	Type	N	N	N	N	N	N	N	N
	Date	8/26/2010	9/16/2010	9/23/2010	9/16/2010	9/16/2010	9/16/2010	9/15/2010	9/16/2010
Analyte	**Units**								
Benzo(G,H,I)Perylene	mg/kg		0.18 U	0.18 U	2.1	0.36	0.19 U	0.16 J	1.3
Benzo(K)Fluoranthene	mg/kg		0.18 U	0.18 U	1.7	1.1	0.19 U	0.16 J	2.1
Carbazole	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.49
Chrysene	mg/kg		0.18 U	0.18 U	1.7	1.5	0.19 U	0.23	2.8 D
Dibenz(A,H)Anthracene	mg/kg		0.18 U	0.18 U	0.21 U	0.2 J	0.19 U	0.18 U	0.18 U
Fluoranthene	mg/kg		0.089 J	0.18 U	1.7	2	0.19 U	0.34	5.4 D
Fluorene	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	1.1
High Molecular Weight PAHs	mg/kg		1.527	1.665 U	14.21	9.27	1.71 U	2.04	19.28
Indeno(1,2,3-Cd)Pyrene	mg/kg		0.18 U	0.18 U	2	0.51	0.19 U	0.18 J	1.7
Low Molecular Weight PAHs	mg/kg		1.529	1.555	4.17	4.82	1.71 U	1.695	14.75
Naphthalene	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.19 U	0.18 U	0.42
Phenanthrene	mg/kg		0.18 U	0.18 U	0.48	0.47	0.19 U	0.095 J	3.8 D
Pyrene	mg/kg		0.087 J	0.18 U	2	1.8	0.19 U	0.31	4.7 D
Dichloronaphthalene, Total	mg/kg								
Heptachloronaphthalene, Total	mg/kg								
Hexachloronaphthalene, Total	mg/kg								
Monochloronaphthalene, Total	mg/kg								
Octachloronaphthalene, Total	mg/kg								
Pentachloronaphthalene, Total	mg/kg								
Tetrachloronaphthalene, Total	mg/kg								
Trichloronaphthalene, Total	mg/kg								
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	mg/kg		0.00000121 J	0.0000148 EB	0.00134	0.000117	0.000000547	0.00000809 J	0.00000971 J
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	mg/kg		0.0000126	0.000331	0.000154	0.000835	0.00000584 J	0.000069	0.0000844
1,2,3,4,6,7,8-Heptachlorodibenzofuran	mg/kg		0.000000816 J	0.0000102 EB	0.002	0.0000563	0.000000392	0.00000514	0.00000535
1,2,3,4,6,7,8-Heptachlorodibenzo-P-Dioxin	mg/kg		0.0000019 J	0.0000431	0.0000141	0.000127	0.000000589 J	0.00000982	0.000011
1,2,3,4,7,8,9-Heptachlorodibenzofuran	mg/kg		0.000000394	0.000000989 J	0.000895	0.0000123	0.000000224 U	0.00000107 J	0.000000978 J
1,2,3,4,7,8-Hexachlorodibenzofuran	mg/kg		0.00000094 J	0.00000496	0.00361	0.0000613	0.000000481 J	0.00000665	0.00000635
1,2,3,4,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg		0.000000193 U	0.000000935 J	0.00000181 U	0.00000378	0.000000145 U	0.00000033 U	0.000000242
1,2,3,6,7,8-Hexachlorodibenzofuran	mg/kg		0.000000288 J	0.00000155 J	0.00083	0.0000192	0.000000113	0.00000146	0.00000196
1,2,3,6,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg		0.000000196 U	0.00000168 J	0.00000174 U	0.00000563	0.000000142 U	0.000000521 J	0.000000543
1,2,3,7,8,9-Hexachlorodibenzofuran	mg/kg		0.000000289	0.000000835 J	0.00167	0.0000141	0.000000162 U	0.00000105 J	0.00000114 J
1,2,3,7,8,9-Hexachlorodibenzo-P-Dioxin	mg/kg		0.000000203 U	0.00000172 J	0.00000185 U	0.00000348	0.00000015 U	0.000000468 J	0.000000505 J
1,2,3,7,8-Pentachlorodibenzofuran	mg/kg		0.000000594	0.00000324 J	0.00426	0.0000417	0.000000331 U	0.00000396 J	0.00000563
1,2,3,7,8-Pentachlorodibenzo-P-Dioxin	mg/kg		0.0000000837 U	0.000000314 U	0.00000155 U	0.00000202	0.000000138 U	0.000000242 U	0.000000246 J
2,3,4,6,7,8-Hexachlorodibenzofuran	mg/kg		0.000000219	0.000000949 J	0.000842	0.0000129	0.000000124 U	0.000000725 J	0.00000127 J
2,3,4,7,8-Pentachlorodibenzofuran	mg/kg		0.000000559 U	0.00000295 J	0.00342	0.0000413	0.000000232 U	0.0000034 J	0.00000568

	Area	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA
	Sample ID	FSA-137-0001-0-082610	FSA-SB-23O1-0001-091610	FSA-SB-33O1-0001-092310	FSA-SB-34O1-0001-091610	FSA-SB-35O1-0001-091610	FSA-SB-36O1-0001-091610	FSA-SB-37O1-0001-091510	FSA-SB-38O1-0001-091610
	Type	N	N	N	N	N	N	N	N
	Date	8/26/2010	9/16/2010	9/23/2010	9/16/2010	9/16/2010	9/16/2010	9/15/2010	9/16/2010
Analyte	Units								
2,3,7,8-TCDD TEQ (Bird)	mg/kg		2.33119E-06	1.20166E-05	0.012886666	0.000133602	1.17276E-06	1.19576E-05	1.69187E-05
2,3,7,8-TCDD TEQ (mammal)	mg/kg		7.30463E-07	5.18579E-06	0.002716139	3.97216E-05	4.86396E-07	3.51863E-06	4.56441E-06
2,3,7,8-Tetrachlorodibenzofuran	mg/kg		0.00000135	0.00000457	0.00831	0.0000712	0.000000586 J	0.00000661	0.00000907
2,3,7,8-Tetrachlorodibenzo-P-Dioxin	mg/kg		0.0000000582 U	0.000000205 U	0.00000451	0.00000266	0.0000000646 U	0.000000173	0.000000136 U
Heptachlorodibenzofuran (total)	mg/kg		0.00000192	0.0000268 J EB	0.00122 J	0.000151 J	0.000000641	0.0000113 J	0.0000117
Heptachlorodibenzo-p-dioxin (total)	mg/kg		0.00000428 J	0.0000834 J	0.0000368 J	0.00049 J	0.00000167 J	0.0000242 J	0.0000224 J
Hexachlorodibenzofuran (total)	mg/kg		0.00000229	0.0000178	0.00578 J	0.000182	0.000000692	0.0000137	0.0000196
Hexachlorodibenzo-p-dioxin (total)	mg/kg		0.000000371 J	0.0000107 J	0.0000081 J	0.000124	0.000000132	0.0000072	0.00000525
Pentachlorodibenzofuran (total)	mg/kg		0.00000218 U	0.000014	0.0119	0.000206	0.000000633 U	0.0000141	0.0000179
Pentachlorodibenzo-p-dioxin (total)	mg/kg		0.0000000837 U	0.000000314 U	0.0000063	0.0000407	0.000000138 U	0.00000653	0.00000255
Tetrachlorodibenzo(p)dioxin (total)	mg/kg		0.0000000582 U	0.000000205 U	0.0000816	0.0000099	0.0000000646 U	0.00000195	0.00000106 J
Tetrachlorodibenzofuran (total)	mg/kg		0.00000236	0.00000946	0.0136	0.00016	0.00000095 U	0.0000138	0.0000272
4,4'-DDD	mg/kg		0.0035 U	0.0035 U	0.004 U	0.0065 U	0.0036 U	0.0036 U	0.0034 U
4,4'-DDE	mg/kg		0.0035 U	0.0035 U	0.004 U	0.0065 U	0.0036 U	0.0036 U	0.0034 U
4,4'-DDT	mg/kg		0.0035 U	0.0035 U	0.004 U	0.0065 U	0.0036 U	0.0056	0.0034 U
Aldrin	mg/kg		0.0018 U	0.0018 U	0.0021 U	0.0034 U	0.0019 U	0.0019 U	0.0018 U
Alpha-BHC	mg/kg		0.0018 U	0.0018 U	0.0021 U	0.0034 U	0.0019 U	0.0019 U	0.0018 U
Alpha-Chlordane	mg/kg		0.0018 U	0.0018 U	0.0021 U	0.0034 U	0.0019 U	0.0019 U	0.0018 U
Beta-BHC	mg/kg		0.0018 U	0.0018 U	0.0047	0.0034 U	0.0019 U	0.0019 U	0.0018 U
DDT and Metabolites	mg/kg		0.007 U	0.0072 U	0.008 U	0.013 U	0.0072 U	0.0092	0.0068 U
Delta-BHC	mg/kg		0.0018 U	0.0018 U	0.0021 U	0.0034 U	0.0019 U	0.0019 U	0.0018 U
Dieldrin	mg/kg		0.0035 U	0.0035 U	0.004 U	0.0065 U	0.0036 U	0.0036 U	0.0034 U
Endosulfan I	mg/kg		0.0018 U	0.0018 U	0.0021 U	0.0034 U	0.0019 U	0.0019 U	0.0018 U
Endosulfan II	mg/kg		0.0035 U	0.0035 U	0.004 U	0.0065 U	0.0036 U	0.0036 U	0.0034 U
Endosulfan Sulfate	mg/kg		0.0035 U	0.0035 U	0.004 U	0.0065 U	0.0036 U	0.0036 U	0.0034 U
Endrin	mg/kg		0.0035 U	0.0035 U	0.004 U	0.0065 U	0.0036 U	0.0036 U	0.0034 U
Endrin Aldehyde	mg/kg		0.0035 U	0.0035 U	0.004 U	0.0065 U	0.0036 U	0.0036 U	0.0034 U
Endrin Ketone	mg/kg		0.0035 U	0.0035 U	0.004 U	0.0065 U	0.0036 U	0.0036 U	0.0034 U
Gamma-BHC (Lindane)	mg/kg		0.0018 U	0.0018 U	0.0021 U	0.0034 U	0.0019 U	0.0019 U	0.0018 U
Gamma-Chlordane	mg/kg		0.0018 U	0.0018 U	0.0021 U	0.0034 U	0.0019 U	0.0019 U	0.0018 U
Heptachlor	mg/kg		0.0018 U	0.0018 U	0.0021 U	0.0034 U	0.0019 U	0.0019 U	0.0018 U
Heptachlor Epoxide	mg/kg		0.0018 U	0.0018 U	0.0021 U	0.0034 U	0.0019 U	0.0019 U	0.0018 U
Methoxychlor	mg/kg		0.018 U	0.018 U	0.021 U	0.034 U	0.018 U	0.019 U	0.018 U
Toxaphene	mg/kg		0.18 U	0.18 U	0.21 U	0.34 U	0.18 U	0.19 U	0.18 U
Decachlorobiphenyl	mg/kg		0.0000433 J	0.000073 U	0.00107 J	0.0000931 J	0.00000116 J	0.0000821 J	0.000178 J
Total DiCB	mg/kg		0.0000296 U	0.0000429 U	0.00434 J	0.000316 U	0.0000371 U	0.0000624 U	0.000142 U

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA
	Sample ID	FSA-137-0001-0-082610	FSA-SB-23O1-0001-091610	FSA-SB-33O1-0001-092310	FSA-SB-34O1-0001-091610	FSA-SB-35O1-0001-091610	FSA-SB-36O1-0001-091610	FSA-SB-37O1-0001-091510	FSA-SB-38O1-0001-091610
	Type	N	N	N	N	N	N	N	N
	Date	8/26/2010	9/16/2010	9/23/2010	9/16/2010	9/16/2010	9/16/2010	9/15/2010	9/16/2010
Analyte	Units								
Total HpCB	mg/kg		0.00145 J	0.000468 JEB	0.0128 J	0.0196 J	0.0000392 J	0.00888 J	0.00506 J
Total HxCB	mg/kg		0.00166 J	0.00052 JEB	0.017 J	0.0267 J	0.000043 J	0.0156 J	0.00386 J
Total MoCB	mg/kg		0.00000371 U	0.00000972 U	0.000212 J	0.000052 U	0.0000045 U	0.0000156 U	0.0000395 U
Total PCB Homologues	mg/kg		0.00413 J	0.00152 J	0.0625 J	0.0789 J	0.0000997 J	0.0387 J	0.0126 J
Total PeCB	mg/kg								
Total TeCB	mg/kg		0.000128 U	0.0000564 JEB	0.00707 J	0.00374 J	0.0000507 U	0.00179 J	0.000512 J
Total TrCB	mg/kg		0.0000457 U	0.0000436 U	0.00657 J	0.000471 J	0.0000461 U	0.000153 U	0.000373 U
17-TrCB	mg/kg		0.000526 J	0.000204 JEB	0.00865 J	0.0222 J	0.0000417 U	0.0098 J	0.00105 J
2,3,3',4,4',5,5'-Heptachlorobiphenyl	mg/kg		0.00000498	0.00000194 EB	0.0000782	0.0000844	0.000000464 U	0.0000326	0.0000178
2,3,3',4,4',5-Hexachlorobiphenyl	mg/kg		0.0000206	0.0000117 EB	0.000414	0.000539	0.00000139 J	0.000259	0.0000456
2,3,3',4,4'-Pentachlorobiphenyl	mg/kg		0.0000287	0.0000145	0.000624	0.00119	0.00000247	0.000429	0.0000449
2,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg		0.00000955	0.00000457 EB	0.000225	0.000226	0.0000009 U	0.000101	0.0000199
2',3,4,4',5-Pentachlorobiphenyl	mg/kg		0.00000237 U	0.00000233 U	0.0000533	0.00017 U	0.00000122 U	0.0000205	0.00000582 U
2,3',4,4',5-Pentachlorobiphenyl	mg/kg		0.000076	0.0000319 EB	0.0016	0.00291	0.00000636 U	0.00123	0.000109
2,3,4,4',5-Pentachlorobiphenyl	mg/kg		0.00000248 U	0.0000026 U	0.000327	0.00019 U	0.00000141 U	0.000021	0.00000631 U
3,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg		0.00000151 U	0.000000717 U	0.0000128 U	0.000122 U	0.00000073 U	0.00000462 U	0.00000645 U
3,3',4,4',5-Pentachlorobiphenyl	mg/kg		0.00000239 U	0.00000219 U	0.0000156 U	0.000163 U	0.00000122 U	0.00000543 U	0.00000582 U
3,3',4,4'-Tetrachlorobiphenyl	mg/kg		0.00000257	0.000000887 U	0.000193	0.000134 U	0.00000119	0.0000139	0.0000101
3,4,4',5-Tetrachlorobiphenyl	mg/kg		0.00000208 U	0.000000902 U	0.0000123 U	0.000138 U	0.000000869 U	0.00000285 U	0.00000347 U
PCB Dioxin-like Congener TEQ (Bird)	mg/kg		5.83117E-07	3.94567E-07	1.26089E-05	3.71478E-05	2.69746E-07	1.61236E-06	1.45166E-06
PCB Dioxin-like Congener TEQ (mammal)	mg/kg		2.89521E-07	2.76252E-07	2.06664E-06	2.01741E-05	1.44706E-07	7.46638E-07	7.85031E-07
Total NoCB	mg/kg		0.0000699 J	0.0001 JEB	0.000926 J	0.000526 J	0.00000218 J	0.000273 J	0.000305 J
Total OcCB	mg/kg		0.000376 J	0.00017 JEB	0.0039 J	0.00553 J	0.0000142 J	0.00225 J	0.00164 J
Perchlorate (organic)	mg/kg								
Aluminum	mg/Kg	1307	5958	5537	5032	6128	10774	6841	6425
Antimony	mg/Kg	1.1 J	0.62 J	7.1 U	6.7 U	1.2 J	0.45 J	7.4 U	0.88 J
Arsenic	mg/Kg	14.5	3.4	1.8	8.5	38.7	4	3.2	2.2
Barium	mg/Kg	116	59.2	40.4	724	92.8	54.2	49.5	52.8
Beryllium	mg/Kg	0.29 J	0.57 U	0.22 J	0.2 J	0.27 J	0.42 J	0.31 J	0.24 J
Cadmium	mg/Kg	0.24 J	0.37 J	0.5 U	0.35 J	0.58 J	0.5 U	0.15 J	0.5 U
Calcium	mg/Kg	2790	2184 J	2246	4214	4318	1895	1904	1359
Chromium	mg/Kg	7.9	6.7	8.1	10.3	20.2	13.8	9.9	11.7
Cobalt	mg/Kg	4.2 J	4.4 J	4 J	6.3 J	8.2 J	8.5 J	6 J	4.9 J
Copper	mg/Kg	88.1 J	18.9 J	15.8 J	57.1 J	64.2 J	31.8 J	33.5 J	41.6 J
Iron	mg/Kg	7051 J	10662	8568	12272	18552	16473	10884	10892
Lead	mg/Kg	71.3 J	12.7	22.2 J	27.9 J	67.9 J	14.6 J	18.5 J	41.6 J

Analyte	Area	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA
	Sample ID	FSA-137-0001-0-082610	FSA-SB-23O1-0001-091610	FSA-SB-33O1-0001-092310	FSA-SB-34O1-0001-091610	FSA-SB-35O1-0001-091610	FSA-SB-36O1-0001-091610	FSA-SB-37O1-0001-091510	FSA-SB-38O1-0001-091610
	Type	N	N	N	N	N	N	N	N
	Date	8/26/2010	9/16/2010	9/23/2010	9/16/2010	9/16/2010	9/16/2010	9/15/2010	9/16/2010
	Units								
Magnesium	mg/Kg	181 J	2723	2336	1342	2477	4304	2559	3226
Manganese	mg/Kg	107 J	158	221	325	368	307	262	240
Mercury	mg/Kg	34.4	0.079 J	0.12 U	21.4	1.5	0.11 U	0.14	0.13
Nickel	mg/Kg	13.2	4.8	5.9 J	13.1 J	17.3 J	10.3 J	28.5 J	7.9 J
Potassium	mg/Kg	287 J	1154 J	770 J	598 J	1160 J	2297 J	1372 J	1603 J
Selenium	mg/Kg	0.86 J	2.1 J	4.1 U	0.68 J	0.54 J	3.9 U	4.3 U	3.8 U
Silver	mg/Kg	1.2	1.1 U	1.2 U	1.1 U	1.6 U	1.1 U	1.2 U	1.1 U
Sodium	mg/Kg	35.3 J	35 J	84.7 J	35.2 J	71.5 J	127 J	80.6 J	100 J
Thallium	mg/Kg	2.7 U	2.9 U	2.9 U	2.8 U	3.9 U	2.8 U	3.1 U	2.7 U
Vanadium	mg/Kg	15.2 J	18.6	16.2	21.5	29	30.8	19.8	21.2
Zinc	mg/Kg	56.3 J	30.8 J	28.9 J	86.2 J	193	49.9 J	63.6 J	53.8 J
Total Organic Carbon	mg/Kg		20000	6800	40000	65000	1200	20000	16000

	Area	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA
	Sample ID	FSA-SB-DUP04-0001-092310	FSA-SB-FDUP03-0001-092310	FSA-SS-17-091510	FSA-SS-18-091510	FSA-SS-22-091510	FSA-SS-25-091510	FSA-SS-DUP01-091510	FSA-SS-FDUP01-091510
	Type	FD	FD	N	N	N	N	FD	FD
	Date	9/23/2010	9/23/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010
Analyte	Units								
1,1,1-Trichloroethane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,1,2,2-Tetrachloroethane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,1,2-Trichloroethane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,1'-Biphenyl	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
1,1-Dichloroethane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,1-Dichloroethene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,2,3-Trichlorobenzene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,2,4-Trichlorobenzene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,2-Dibromo-3-Chloropropane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,2-Dibromoethane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,2-Dichlorobenzene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,2-Dichloroethane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,2-Dichloropropane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,3-Dichlorobenzene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,4-Dichlorobenzene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
2,2'-Oxybis(1-Chloropropane)	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
2-Butanone	mg/kg	0.0088 U		0.009 U	0.046 J	0.017 U	0.017 U	0.022 U	
2-Hexanone	mg/kg	0.0088 U		0.009 U	0.03 U	0.017 U	0.017 U	0.022 U	
4-Methyl-2-Pentanone	mg/kg	0.0088 U		0.009 U	0.03 U	0.017 U	0.017 U	0.022 U	
Acetone	mg/kg	0.0088 U		0.009 U	0.11 J	0.017 U	0.017 U	0.022 U	
Acetophenone	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Benzaldehyde	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Benzene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Bis(2-Chloroethyl)Ether	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Bromochloromethane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Bromodichloromethane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Bromoform	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Bromomethane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Carbon Disulfide	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Carbon Tetrachloride	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Chlorobenzene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Chloroethane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Chloroform	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Chloromethane	mg/kg	0.0044 U		0.0045 U	0.013 J	0.0086 U	0.0087 U	0.011 U	
cis-1,2-Dichloroethene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	

	Area	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA
	Sample ID	FSA-SB-DUP04-0001-092310	FSA-SB-FDUP03-0001-092310	FSA-SS-17-091510	FSA-SS-18-091510	FSA-SS-22-091510	FSA-SS-25-091510	FSA-SS-DUP01-091510	FSA-SS-FDUP01-091510
	Type	FD	FD	N	N	N	N	FD	FD
	Date	9/23/2010	9/23/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010
Analyte	Units								
cis-1,3-Dichloropropene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Cyclohexane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Dibromochloromethane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Dichlorodifluoromethane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Ethylbenzene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Hexachlorobenzene	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Hexachlorobutadiene	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Hexachloroethane	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Isopropylbenzene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
m,p-Xylene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Methyl Acetate	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Methyl Tert-Butyl Ether	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Methylcyclohexane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Methylene Chloride	mg/kg	0.0044 U		0.0045 U	0.014 J	0.0076 J	0.0087 U	0.011 U	
o-Xylene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Styrene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Tetrachloroethene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Toluene	mg/kg	0.0044 U		0.0045 U	0.029 J	0.0086 U	0.0087 U	0.011 U	
trans-1,2-Dichloroethene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
trans-1,3-Dichloropropene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Trichloroethene	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Trichlorofluoromethane	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
Vinyl Chloride	mg/kg	0.0044 U		0.0045 U	0.015 U	0.0086 U	0.0087 U	0.011 U	
1,2,4,5-Tetrachlorobenzene	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
1,4-Dioxane	mg/kg	0.088 U		0.09 U	0.3 U	0.17 U	0.17 U	0.22 U	
2,3,4,6-Tetrachlorophenol	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
2,4,5-Trichlorophenol	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
2,4,6-Trichlorophenol	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
2,4-Dichlorophenol	mg/kg			0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
2,4-Dimethylphenol	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
2,4-Dinitrophenol	mg/kg	0.37 U		0.39 U	0.77 U	4.5 U	13 U	13 U	
2,4-Dinitrotoluene	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
2,6-Dinitrotoluene	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
2-Chlorophenol	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
2-Methylphenol	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
2-Nitroaniline	mg/kg	0.37 U		0.39 U	0.77 U	4.5 U	13 U	13 U	

Analyte	Area	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA
	Sample ID	FSA-SB-DUP04-0001-092310	FSA-SB-FDUP03-0001-092310	FSA-SS-17-091510	FSA-SS-18-091510	FSA-SS-22-091510	FSA-SS-25-091510	FSA-SS-DUP01-091510	FSA-SS-FDUP01-091510
	Type	FD	FD	N	N	N	N	FD	FD
	Date	9/23/2010	9/23/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010
	Units								
2-Nitrophenol	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
3,3'-Dichlorobenzidine	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
3-Nitroaniline	mg/kg	0.37 U		0.39 U	0.77 U	4.5 U	13 U	13 U	
4,6-Dinitro-2-Methylphenol	mg/kg			0.39 U	0.77 U	4.5 U	13 U	13 U	
4-Bromophenyl-Phenylether	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
4-Chloro-3-Methylphenol	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
4-Chloroaniline	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
4-Chlorophenyl-Phenylether	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
4-Methylphenol	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
4-Nitroaniline	mg/kg	0.37 U		0.39 U	0.77 U	4.5 U	13 U	13 U	
4-Nitrophenol	mg/kg	0.37 U		0.39 U	0.77 U	4.5 U	13 U	13 U	
Atrazine	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Bis(2-Chloroethoxy)Methane	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.19 U		0.099 J	0.14 J	2.3 U	6.4 U	6.5 U	
Butylbenzylphthalate	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Caprolactam	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Dibenzofuran	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Diethylphthalate	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Dimethylphthalate	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Di-N-Butyl Phthalate	mg/kg	0.079 J		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Di-N-Octyl Phthalate	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Hexachlorocyclopentadiene	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Isophorone	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Nitrobenzene	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
N-Nitroso-Di-N-Propylamine	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
N-Nitrosodiphenylamine	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Pentachlorophenol	mg/kg	0.37 U		0.39 U	0.77 U	4.5 U	13 U	13 U	
Phenol	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
2-Chloronaphthalene	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
2-Methylnaphthalene	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Acenaphthene	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	2.5 J	3 J	
Acenaphthylene	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Anthracene	mg/kg	0.19 U		0.2 U	0.4 U	0.36 J	8.9	7.8	
Benzo(A)Anthracene	mg/kg	0.19 U		0.037 J	0.13 J	2.5	37	32	
Benzo(A)Pyrene	mg/kg	0.19 U		0.048 J	0.15 J	1.9 J	27	23	
Benzo(B)Fluoranthene	mg/kg	0.19 U		0.056 J	0.17 J	2.5	23	22	

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	Type	FD	FD	N	N	N	N	FD	FD
	Date	9/23/2010	9/23/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010
Analyte	Units								
Benzo(G,H,I)Perylene	mg/kg	0.19 U		0.12 J	0.2 J	1.3 J	16	14	
Benzo(K)Fluoranthene	mg/kg	0.19 U		0.04 J	0.11 J	0.88 J	25	15	
Carbazole	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	1.7 J	6.5 U	
Chrysene	mg/kg	0.19 U		0.048 J	0.15 J	2.7	36	31	
Dibenz(A,H)Anthracene	mg/kg	0.19 U		0.2 U	0.4 U	0.51 J	4.8 J	4.9 J	
Fluoranthene	mg/kg	0.075 J		0.085 J	0.19 J	2.8	47	35	
Fluorene	mg/kg	0.19 U		0.2 U	0.4 U	0.11 J	2.2 J	1.8 J	
High Molecular Weight PAHs	mg/kg			0.702	1.7	18.39	240.35		
Indeno(1,2,3-Cd)Pyrene	mg/kg	0.19 U		0.07 J	0.17 J	1.7 J	25	20	
Low Molecular Weight PAHs	mg/kg			1.527	3.39	16.27	108.65		
Naphthalene	mg/kg	0.19 U		0.2 U	0.4 U	2.3 U	6.4 U	6.5 U	
Phenanthrene	mg/kg	0.19 U		0.042 J	0.4 U	1.5 J	35	32	
Pyrene	mg/kg	0.19 U		0.083 J	0.22 J	4.4	57	58	
Dichloronaphthalene, Total	mg/kg								
Heptachloronaphthalene, Total	mg/kg								
Hexachloronaphthalene, Total	mg/kg								
Monochloronaphthalene, Total	mg/kg								
Octachloronaphthalene, Total	mg/kg								
Pentachloronaphthalene, Total	mg/kg								
Tetrachloronaphthalene, Total	mg/kg								
Trichloronaphthalene, Total	mg/kg								
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	mg/kg	0.0000212 EB		0.00000319 J	0.00000366 J	0.000164	0.000557		0.000638
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	mg/kg	0.000536		0.0000409 J	0.000033	0.0000135	0.0000598		0.0000801
1,2,3,4,6,7,8-Heptachlorodibenzofuran	mg/kg	0.0000131 EB		0.00000194 J	0.00000276 J	0.000175	0.000729		0.000782
1,2,3,4,6,7,8-Heptachlorodibenzo-P-Dioxin	mg/kg	0.0000671		0.00000626	0.00000572	0.00000323 J	0.000025 J		0.0000295 J
1,2,3,4,7,8,9-Heptachlorodibenzofuran	mg/kg	0.00000119 U		0.000000213	0.000000306 U	0.0000668 J	0.000311 J		0.000317 J
1,2,3,4,7,8-Hexachlorodibenzofuran	mg/kg	0.00000617		0.000000927 J	0.00000231 J	0.000457	0.00243		0.00237
1,2,3,4,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.0000011 U		0.00000018	0.000000219 U	0.000000463 U	0.00000247 J		0.0000063 J
1,2,3,6,7,8-Hexachlorodibenzofuran	mg/kg	0.00000204		0.00000038 J	0.000000702 J	0.00011	0.000583		0.000632
1,2,3,6,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.00000116 U		0.000000339	0.000000219 U	0.000000492 U	0.00000516 J		0.00000167 U
1,2,3,7,8,9-Hexachlorodibenzofuran	mg/kg	0.00000101 U		0.000000169 J	0.000000514 J	0.0000863 J	0.000405		0.000412
1,2,3,7,8,9-Hexachlorodibenzo-P-Dioxin	mg/kg	0.00000259 J		0.000000407 J	0.000000225 U	0.000000491 U	0.0000028		0.00000173 U
1,2,3,7,8-Pentachlorodibenzofuran	mg/kg	0.00000463		0.000000684 J	0.00000209 J	0.000343	0.00212		0.002
1,2,3,7,8-Pentachlorodibenzo-P-Dioxin	mg/kg	0.000000654 U		0.0000000656 U	0.000000187 U	0.00000202 U	0.00000461		0.00000349 J
2,3,4,6,7,8-Hexachlorodibenzofuran	mg/kg	0.000000699 U		0.000000261 J	0.000000473	0.0000416	0.000208		0.000204
2,3,4,7,8-Pentachlorodibenzofuran	mg/kg	0.0000038 J		0.000000695 U	0.00000195 J	0.000307	0.00167		0.00159

	Area	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA
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	Type	FD	FD	N	N	N	N	FD	FD
	Date	9/23/2010	9/23/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010
Analyte	Units								
2,3,7,8-TCDD TEQ (Bird)	mg/kg			3.07649E-06	1.03936E-05	0.00070256	0.005650776		
2,3,7,8-TCDD TEQ (mammal)	mg/kg			9.18777E-07	2.30276E-06	0.000205482	0.001275234		
2,3,7,8-Tetrachlorodibenzofuran	mg/kg	0.00000649		0.00000192	0.00000741	0.000287	0.00323		0.00364
2,3,7,8-Tetrachlorodibenzo-P-Dioxin	mg/kg	0.000000644 U		0.0000000685 U	0.000000162 U	0.000000234 U	0.00000209		0.00000106 U
Heptachlorodibenzofuran (total)	mg/kg	0.0000311 J EB		0.00000472	0.00000552 J	0.000349 J	0.0015 J		0.00158 J
Heptachlorodibenzo-p-dioxin (total)	mg/kg	0.000146 J		0.0000153 J	0.0000152 J	0.0000074 J	0.0000652 J		0.0000765 J
Hexachlorodibenzofuran (total)	mg/kg	0.0000185		0.00000347 J	0.00000628	0.000799	0.00408		0.0041 J
Hexachlorodibenzo-p-dioxin (total)	mg/kg	0.0000123		0.00000291	0.00000256	0.00000387	0.0000495		0.0000503
Pentachlorodibenzofuran (total)	mg/kg	0.0000173		0.00000377	0.000009	0.00123	0.00639		0.00611
Pentachlorodibenzo-p-dioxin (total)	mg/kg	0.000000654 U		0.0000000835 U	0.000000852 U	0.00000257 U	0.0000396		0.0000452
Tetrachlorodibenzo(p)dioxin (total)	mg/kg	0.000000644 U		0.000000206 J	0.000000162 U	0.00000358	0.0000212		0.0000206
Tetrachlorodibenzofuran (total)	mg/kg	0.00000876		0.00000404	0.0000139	0.00078	0.00584		0.00614
4,4'-DDD	mg/kg	0.0037 U		0.0039 U	0.0077 U	0.0044 U	0.037 J	0.048 J	
4,4'-DDE	mg/kg	0.0037 U		0.0039 U	0.0077 U	0.0044 U	0.0042 U	0.0043 U	
4,4'-DDT	mg/kg	0.0037 U		0.0039 U	0.0077 U	0.0044 U	0.0042 U	0.0043 U	
Aldrin	mg/kg	0.0019 U		0.002 U	0.004 U	0.0023 U	0.0022 U	0.0022 U	
Alpha-BHC	mg/kg	0.0019 U		0.002 U	0.004 U	0.0023 U	0.0041 J	0.0059 J	
Alpha-Chlordane	mg/kg	0.0019 U		0.002 U	0.004 U	0.0023 U	0.0022 U	0.0022 U	
Beta-BHC	mg/kg	0.0019 U		0.002 U	0.004 U	0.0023 U	0.0022 U	0.0022 U	
DDT and Metabolites	mg/kg			0.0078 U	0.0154 U	0.0088 U	0.04675		
Delta-BHC	mg/kg	0.0019 U		0.002 U	0.004 U	0.0023 U	0.0022 U	0.0022 U	
Dieldrin	mg/kg	0.0037 U		0.0039 U	0.0077 U	0.0044 U	0.0042 U	0.0043 U	
Endosulfan I	mg/kg	0.0019 U		0.002 U	0.004 U	0.0023 U	0.0022 U	0.0022 U	
Endosulfan II	mg/kg	0.0037 U		0.0039 U	0.0077 U	0.0044 U	0.0042 U	0.0043 U	
Endosulfan Sulfate	mg/kg	0.0037 U		0.0039 U	0.0077 U	0.0044 U	0.0042 U	0.0043 U	
Endrin	mg/kg	0.0037 U		0.0039 U	0.0077 U	0.0044 U	0.0042 U	0.0043 U	
Endrin Aldehyde	mg/kg	0.0037 U		0.0039 U	0.0077 U	0.0044 U	0.0042 UJ	0.049 J	
Endrin Ketone	mg/kg	0.0037 U		0.0039 U	0.0077 U	0.0044 U	0.0042 UJ	0.055 J	
Gamma-BHC (Lindane)	mg/kg	0.0019 U		0.002 U	0.004 U	0.0023 U	0.0022 U	0.0022 U	
Gamma-Chlordane	mg/kg	0.0019 U		0.002 U	0.004 U	0.0023 U	0.0022 U	0.0022 U	
Heptachlor	mg/kg	0.0019 U		0.002 U	0.004 U	0.0023 U	0.018 J	0.019 J	
Heptachlor Epoxide	mg/kg	0.0019 U		0.002 U	0.004 U	0.0023 U	0.0022 U	0.0022 U	
Methoxychlor	mg/kg	0.019 U		0.02 U	0.04 U	0.023 U	0.022 U	0.022 U	
Toxaphene	mg/kg	0.19 U		0.2 U	0.4 U	0.23 U	0.22 U	0.22 U	
Decachlorobiphenyl	mg/kg	0.000028 U		0.000022 J	0.0000752 J	0.00107 J	0.0282 J		0.0184 J
Total DiCB	mg/kg	0.0000459 U		0.0000406 U	0.0001 U	0.000133 U	0.000397 U		0.000529 U

	Area	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA
	Sample ID	FSA-SB-DUP04-0001-092310	FSA-SB-FDUP03-0001-092310	FSA-SS-17-091510	FSA-SS-18-091510	FSA-SS-22-091510	FSA-SS-25-091510	FSA-SS-DUP01-091510	FSA-SS-FDUP01-091510
	Type	FD	FD	N	N	N	N	FD	FD
	Date	9/23/2010	9/23/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010
Analyte	Units								
Total HpCB	mg/kg	0.000528 JEB		0.00441 J	0.0106 J	0.00883 J	0.00795 J		0.00979 J
Total HxCB	mg/kg	0.000522 JEB		0.00558 J	0.0125 J	0.0107 J	0.00821 J		0.0115 J
Total MoCB	mg/kg	0.0000109 U		0.00000481 U	0.0000107 U	0.000027 J	0.0000435 J		0.000143 J
Total PCB Homologues	mg/kg	0.00165 J		0.0118 J	0.0292 J	0.027 J	0.0887 J		0.0699 J
Total PeCB	mg/kg								
Total TeCB	mg/kg	0.000069 JEB		0.000101 U	0.000546 J	0.000454 J	0.000617 J		0.000734 J
Total TrCB	mg/kg	0.0000478 U		0.0000552 U	0.000188 U	0.000319 J	0.000606 J		0.00063 J
17-TrCB	mg/kg	0.00027 JEB		0.000603 J	0.0024 J	0.0015 J	0.00171 J		0.00214 J
2,3,3',4,4',5,5'-Heptachlorobiphenyl	mg/kg	0.00000191 EB		0.0000158	0.0000331	0.0000329	0.0000327		0.0000464
2,3,3',4,4',5-Hexachlorobiphenyl	mg/kg	0.000015 EB		0.0000394	0.0000899	0.0000959	0.000112		0.000131
2,3,3',4,4'-Pentachlorobiphenyl	mg/kg	0.0000191		0.0000177	0.00007	0.0000684	0.000079		0.0000934
2,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.00000581 EB		0.000032	0.0000645	0.0000667	0.0000665		0.0000844
2',3,4,4',5-Pentachlorobiphenyl	mg/kg	0.00000249 U		0.00000391 U	0.00000832 U	0.00000709	0.0000182 U		0.0000218 U
2,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.0000447 EB		0.0000583	0.000217	0.000207	0.000225		0.000242
2,3,4,4',5-Pentachlorobiphenyl	mg/kg	0.00000278 U		0.0000042 U	0.00000815 U	0.0000325	0.0000495		0.0000596
3,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.00000153 U		0.00000422 U	0.0000106 U	0.00000435 U	0.0000159 U		0.000023 U
3,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.00000236 U		0.00000424 U	0.000011 U	0.00000838	0.000017 U		0.0000237 U
3,3',4,4'-Tetrachlorobiphenyl	mg/kg	0.00000126 U		0.00000453	0.0000127	0.0000132	0.0000191 U		0.0000271
3,4,4',5-Tetrachlorobiphenyl	mg/kg	0.00000126 U		0.00000145 U	0.00000333 U	0.0000048	0.0000141 U		0.00000966 U
PCB Dioxin-like Congener TEQ (Bird)	mg/kg			8.0695E-07	2.09863E-06	2.00517E-06	4.62736E-06		
PCB Dioxin-like Congener TEQ (mammal)	mg/kg			5.56627E-07	1.435E-06	9.86575E-07	2.6437E-06		
Total NoCB	mg/kg	0.0000558 JEB		0.000192 J	0.000464 J	0.00145 J	0.033 J		0.0202 J
Total OcCB	mg/kg	0.000203 JEB		0.000979 J	0.00258 J	0.00261 J	0.00838 J		0.00641 J
Perchlorate (organic)	mg/kg								
Aluminum	mg/Kg	5694		9330	4664	1920	1878	2001	
Antimony	mg/Kg	7 U		6 U	13.3 U	1.5 J	16.5 J	2.1 J	
Arsenic	mg/Kg	1.9		3	1.9 J	13.3	27.5	24.2	
Barium	mg/Kg	53.8		42.7	110	196	279	274	
Beryllium	mg/Kg	0.25 J		0.34 J	0.5 U	0.5 U	0.5 U	0.5 U	
Cadmium	mg/Kg	0.5 U		0.5 U	0.66 J	0.31 J	1.1	0.88	
Calcium	mg/Kg	2299		1275	8630	4517	2149	1945	
Chromium	mg/Kg	8.2		9.9	8.5	7.1	8.9	9.8	
Cobalt	mg/Kg	5 J		6.6 J	3.7 J	6 J	7.2 J	6.8 J	
Copper	mg/Kg	16.3 J		19.3	14.6	79.5	194	165	
Iron	mg/Kg	8681		12612	8868	7135	16876	13990	
Lead	mg/Kg	19 J		10.1 J	11.9 J	169 J	1177 J	197 J	

	Area	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA	EFSA
	Sample ID	FSA-SB-DUP04-0001-092310	FSA-SB-FDUP03-0001-092310	FSA-SS-17-091510	FSA-SS-18-091510	FSA-SS-22-091510	FSA-SS-25-091510	FSA-SS-DUP01-091510	FSA-SS-FDUP01-091510
	Type	FD	FD	N	N	N	N	FD	FD
	Date	9/23/2010	9/23/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010	9/15/2010
Analyte	Units								
Magnesium	mg/Kg	2350		3066	2162	369 J	574 J	579 J	
Manganese	mg/Kg	241		242	716	254	333	291	
Mercury	mg/Kg	0.075 J		0.12 U	0.28	17.2	5.8	5.5	
Nickel	mg/Kg	6.3 J		8.5	8.3 J	15.3	21.6	20.9	
Potassium	mg/Kg	874 J		1514 J	699 J	354 J	362 J	435 J	
Selenium	mg/Kg	4.1 U		0.49 J	1.3 J	1.2 J	1.4 J	1.5 J	
Silver	mg/Kg	1.2 U		1.2 U	2.2 U	1.4 U	1.3 U	1.3 U	
Sodium	mg/Kg	97.2 J		49.4 J	84 J	33.1 J	18.3 J	25.4 J	
Thallium	mg/Kg	2.9 U		3 U	5.6 U	3.4 U	3.3 U	3.2 U	
Vanadium	mg/Kg	15.4		23.8	15.3	14.2	12.8	16.3	
Zinc	mg/Kg	39.7 J		42	113	91.6	487	324	
Total Organic Carbon	mg/Kg		8000	8300	56000	45000	38000		43000

	Area	BKGD	BKGD	BKGD	BKGD	BKGD	BKGD
	Sample ID	SS-BS-DUP01-0006-100611	SS-BS-HF01A-0006-100611	SS-BS-HF02A-0006-100611	SS-BS-HF03A-0006-100611	SS-BS-HP01A-0006-100611	SS-BS-HP02A-0006-100611
	Type	FD	N	N	N	N	N
	Date	10/6/2011	10/6/2011	10/6/2011	10/6/2011	10/6/2011	10/6/2011
Analyte	Units						
1,1,1-Trichloroethane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
1,1,2,2-Tetrachloroethane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
1,1,2-Trichloroethane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
1,1'-Biphenyl	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
1,1-Dichloroethane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
1,1-Dichloroethene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
1,2,3-Trichlorobenzene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	
1,2,4-Trichlorobenzene	mg/kg	0.011 J	0.0066 U	0.0085 U	0.0064 U	0.0091 U	
1,2-Dibromo-3-Chloropropane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	
1,2-Dibromoethane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
1,2-Dichlorobenzene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	
1,2-Dichloroethane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
1,2-Dichloropropane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
1,3-Dichlorobenzene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	
1,4-Dichlorobenzene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	
2,2'-Oxybis(1-Chloropropane)	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
2-Butanone	mg/kg	0.016 U	0.013 U	0.017 U	0.013 U	0.018 U	0.023 U
2-Hexanone	mg/kg	0.016 U	0.013 U	0.017 U	0.013 U	0.018 U	0.023 U
4-Methyl-2-Pentanone	mg/kg	0.016 U	0.013 U	0.017 U	0.013 U	0.018 U	0.023 U
Acetone	mg/kg	0.031 TB	0.013 U	0.04 TB	0.032 TB	0.018 U	0.019 TB
Acetophenone	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Benzaldehyde	mg/kg	0.25 J	0.043 J	0.12 J	0.2 U	0.29 U	0.35 U
Benzene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Bis(2-Chloroethyl)Ether	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Bromochloromethane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Bromodichloromethane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Bromoform	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	
Bromomethane	mg/kg	0.0081 U	0.0066 U	0.0036 J	0.0064 U	0.0091 U	0.011 U
Carbon Disulfide	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Carbon Tetrachloride	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Chlorobenzene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Chloroethane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Chloroform	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Chloromethane	mg/kg	0.0081 U	0.0066 U	0.0036 J	0.0064 U	0.0091 U	0.011 U
cis-1,2-Dichloroethene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U

Analyte	Area	BKGD	BKGD	BKGD	BKGD	BKGD	BKGD
	Sample ID	SS-BS-DUP01-0006-100611	SS-BS-HF01A-0006-100611	SS-BS-HF02A-0006-100611	SS-BS-HF03A-0006-100611	SS-BS-HP01A-0006-100611	SS-BS-HP02A-0006-100611
	Type	FD	N	N	N	N	N
	Date	10/6/2011	10/6/2011	10/6/2011	10/6/2011	10/6/2011	10/6/2011
	Units						
cis-1,3-Dichloropropene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Cyclohexane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Dibromochloromethane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Dichlorodifluoromethane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Ethylbenzene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Hexachlorobenzene	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Hexachlorobutadiene	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Hexachloroethane	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Isopropylbenzene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
m,p-Xylene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Methyl Acetate	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Methyl Tert-Butyl Ether	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Methylcyclohexane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Methylene Chloride	mg/kg	0.0019 JEB	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
o-Xylene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Styrene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Tetrachloroethene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Toluene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
trans-1,2-Dichloroethene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
trans-1,3-Dichloropropene	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Trichloroethene	mg/kg	0.0016 J	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Trichlorofluoromethane	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
Vinyl Chloride	mg/kg	0.0081 U	0.0066 U	0.0085 U	0.0064 U	0.0091 U	0.011 U
1,2,4,5-Tetrachlorobenzene	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
1,4-Dioxane	mg/kg	0.16 U	0.13 U	0.17 U	0.13 U	0.18 U	0.23 U
2,3,4,6-Tetrachlorophenol	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
2,4,5-Trichlorophenol	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
2,4,6-Trichlorophenol	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
2,4-Dichlorophenol	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
2,4-Dimethylphenol	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
2,4-Dinitrophenol	mg/kg	0.49 U	0.41 U	0.52 U	0.4 U	0.56 U	0.68 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
2-Chlorophenol	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
2-Methylphenol	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
2-Nitroaniline	mg/kg	0.49 U	0.41 U	0.52 U	0.4 U	0.56 U	0.68 U

	Area	BKGD	BKGD	BKGD	BKGD	BKGD	BKGD
	Sample ID	SS-BS-DUP01-0006-100611	SS-BS-HF01A-0006-100611	SS-BS-HF02A-0006-100611	SS-BS-HF03A-0006-100611	SS-BS-HP01A-0006-100611	SS-BS-HP02A-0006-100611
	Type	FD	N	N	N	N	N
	Date	10/6/2011	10/6/2011	10/6/2011	10/6/2011	10/6/2011	10/6/2011
Analyte	Units						
2-Nitrophenol	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
3,3'-Dichlorobenzidine	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
3-Nitroaniline	mg/kg	0.49 U	0.41 U	0.52 U	0.4 U	0.56 U	0.68 U
4,6-Dinitro-2-Methylphenol	mg/kg	0.49 U	0.41 U	0.52 U	0.4 U	0.56 U	0.68 U
4-Bromophenyl-Phenylether	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
4-Chloro-3-Methylphenol	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
4-Chloroaniline	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
4-Chlorophenyl-Phenylether	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
4-Methylphenol	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
4-Nitroaniline	mg/kg	0.49 U	0.41 U	0.52 U	0.4 U	0.56 U	0.68 U
4-Nitrophenol	mg/kg	0.49 U	0.41 U	0.52 U	0.4 U	0.56 U	0.68 U
Atrazine	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Bis(2-Chloroethoxy)Methane	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.25 U	0.056 J	0.05 J	0.039 J	0.027 J	0.35 U
Butylbenzylphthalate	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Caprolactam	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Dibenzofuran	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Diethylphthalate	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Dimethylphthalate	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Di-N-Butyl Phthalate	mg/kg	0.053 JEB	0.037 JEB	0.038 JEB	0.2 U	0.048 JEB	0.35 U
Di-N-Octyl Phthalate	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Hexachlorocyclopentadiene	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Isophorone	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Nitrobenzene	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
N-Nitroso-Di-N-Propylamine	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
N-Nitrosodiphenylamine	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Pentachlorophenol	mg/kg	0.49 U	0.41 U	0.52 U	0.4 U	0.56 U	0.68 U
Phenol	mg/kg	0.25 U	0.21 U	0.26 J	0.2 U	0.29 U	0.35 U
2-Chloronaphthalene	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
2-Methylnaphthalene	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Acenaphthene	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Acenaphthylene	mg/kg	0.061 J	0.21 U	0.049 J	0.2 U	0.29 U	0.35 U
Anthracene	mg/kg	0.093 J	0.21 U	0.051 J	0.2 U	0.29 U	0.35 U
Benzo(A)Anthracene	mg/kg	0.9	0.11 J	0.71	0.14 J	0.15 J	0.4
Benzo(A)Pyrene	mg/kg	0.7	0.093 J	0.51	0.13 J	0.11 J	0.32 J
Benzo(B)Fluoranthene	mg/kg	0.83 J	0.091 J	0.66	0.19 J	0.13 J	0.36 J

	Area	BKGD	BKGD	BKGD	BKGD	BKGD	BKGD
	Sample ID	SS-BS-DUP01-0006-100611	SS-BS-HF01A-0006-100611	SS-BS-HF02A-0006-100611	SS-BS-HF03A-0006-100611	SS-BS-HP01A-0006-100611	SS-BS-HP02A-0006-100611
	Type	FD	N	N	N	N	N
	Date	10/6/2011	10/6/2011	10/6/2011	10/6/2011	10/6/2011	10/6/2011
Analyte	**Units**						
Benzo(G,H,I)Perylene	mg/kg	0.5	0.064 J	0.35	0.1 J	0.078 J	0.23 J
Benzo(K)Fluoranthene	mg/kg	0.61	0.098 J	0.43	0.1 J	0.11 J	0.3 J
Carbazole	mg/kg	0.081 J	0.21 U	0.066 J	0.2 U	0.29 U	0.35 U
Chrysene	mg/kg	0.86	0.14 J	0.69	0.16 J	0.15 J	0.42
Dibenz(A,H)Anthracene	mg/kg	0.15 J	0.21 U	0.27 U	0.2 U	0.29 U	0.12 J
Fluoranthene	mg/kg	1.8	0.2 J	1.4	0.26	0.24 J	0.72
Fluorene	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
High Molecular Weight PAHs	mg/kg		1.098	6.135	1.42	1.358	3.16
Indeno(1,2,3-Cd)Pyrene	mg/kg	0.81	0.092 J	0.61	0.16 J	0.12 J	0.37
Low Molecular Weight PAHs	mg/kg		0.909	2.4415	0.952	0.35	1.03
Naphthalene	mg/kg	0.25 U	0.21 U	0.27 U	0.2 U	0.29 U	0.35 U
Phenanthrene	mg/kg	0.62 J	0.079 J	0.37 J	0.092 J	0.11 J	0.31 J
Pyrene	mg/kg	1.6	0.2 J	1.2	0.24	0.22 J	0.64
Dichloronaphthalene, Total	mg/kg						
Heptachloronaphthalene, Total	mg/kg						
Hexachloronaphthalene, Total	mg/kg						
Monochloronaphthalene, Total	mg/kg						
Octachloronaphthalene, Total	mg/kg						
Pentachloronaphthalene, Total	mg/kg						
Tetrachloronaphthalene, Total	mg/kg						
Trichloronaphthalene, Total	mg/kg						
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	mg/kg	0.00000323 J	0.00000211 U	0.00000338 J	0.000004 J	0.000002 U	0.00000569 J
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	mg/kg	0.0000417	0.0000304	0.0000367	0.0000516	0.0000323	0.000149
1,2,3,4,6,7,8-Heptachlorodibenzofuran	mg/kg	0.00000223 J	0.0000013 J	0.00000224 J	0.00000211 J	0.00000121 J	0.0000025 J
1,2,3,4,6,7,8-Heptachlorodibenzo-P-Dioxin	mg/kg	0.00000527	0.00000409 J	0.00000456 J	0.00000708	0.00000532	0.0000141
1,2,3,4,7,8,9-Heptachlorodibenzofuran	mg/kg	0.000000259 UEMC	0.000000243 UEMC	0.000000272 U	0.000000262 UEMC	0.000000197 UEMC	0.000000188 U
1,2,3,4,7,8-Hexachlorodibenzofuran	mg/kg	0.00000224 J	0.00000116 J	0.00000251 J	0.00000148 EMPC	0.000000914 EMPC	0.00000124 J
1,2,3,4,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.000000259 UEMC	0.000000246 U	0.000000188 U	0.000000314 UEMC	0.000000225 UEMC	0.00000031 U
1,2,3,6,7,8-Hexachlorodibenzofuran	mg/kg	0.000000747 J	0.000000361 U	0.000000728 J	0.000000566 J	0.000000387 U	0.000000467 U
1,2,3,6,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.000000327 UEMC	0.000000304 UEMC	0.000000289 UEMC	0.000000528 U	0.000000392 U	0.000000657 U
1,2,3,7,8,9-Hexachlorodibenzofuran	mg/kg	0.000000171 U	0.000000128 UEMC	0.000000107 U	0.000000081 U	0.0000000851 U	0.000000108 U
1,2,3,7,8,9-Hexachlorodibenzo-P-Dioxin	mg/kg	0.000000574 UEMC	0.00000039 U	0.000000397 UEMC	0.000000636 J	0.000000478 U	0.000000998 EMPC
1,2,3,7,8-Pentachlorodibenzofuran	mg/kg	0.00000136 J	0.000000613 U	0.00000143 J	0.000000841 J	0.000000698 J	0.000000683 J
1,2,3,7,8-Pentachlorodibenzo-P-Dioxin	mg/kg	0.000000208 U	0.000000217 U	0.000000122 U	0.000000258 U	0.000000124 U	0.000000257 U
2,3,4,6,7,8-Hexachlorodibenzofuran	mg/kg	0.000000492 U	0.000000388 U	0.000000487 U	0.000000576 U	0.000000317 U	0.00000037 U
2,3,4,7,8-Pentachlorodibenzofuran	mg/kg	0.00000105 J	0.000000708 U	0.00000128 J	0.000000948 J	0.000000665 U	0.00000084 U

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	BKGD	BKGD	BKGD	BKGD	BKGD	BKGD
	Sample ID	SS-BS-DUP01-0006-100611	SS-BS-HF01A-0006-100611	SS-BS-HF02A-0006-100611	SS-BS-HF03A-0006-100611	SS-BS-HP01A-0006-100611	SS-BS-HP02A-0006-100611
	Type	FD	N	N	N	N	N
	Date	10/6/2011	10/6/2011	10/6/2011	10/6/2011	10/6/2011	10/6/2011
Analyte	Units						
2,3,7,8-TCDD TEQ (Bird)	mg/kg		2.94874E-06	5.34982E-06	4.68404E-06	3.51355E-06	3.90337E-06
2,3,7,8-TCDD TEQ (mammal)	mg/kg		9.86543E-07	1.3529E-06	2.02041E-06	7.3193E-07	1.0224E-06
2,3,7,8-Tetrachlorodibenzofuran	mg/kg	0.00000333	0.00000163	0.00000364	0.00000224	0.00000258	0.00000267
2,3,7,8-Tetrachlorodibenzo-P-Dioxin	mg/kg	0.000000169 U	0.000000338 UEMC	0.0000000722 U	0.00000111	0.000000134 UEMC	0.000000149 U
Heptachlorodibenzofuran (total)	mg/kg	0.00000383 J	0.00000242 J	0.00000388 J	0.00000361 J	0.00000196 J	0.0000049 J
Heptachlorodibenzo-p-dioxin (total)	mg/kg	0.0000129 J	0.00000882 J	0.0000103 J	0.0000142 J	0.0000102 J	0.0000305 J
Hexachlorodibenzofuran (total)	mg/kg	0.00000644 J	0.00000434 J	0.00000727 J	0.00000473 J	0.00000286 J	0.00000506 J
Hexachlorodibenzo-p-dioxin (total)	mg/kg	0.00000411 J	0.00000229 J	0.00000284 J	0.00000489 J	0.00000281 J	0.00000562 J
Pentachlorodibenzofuran (total)	mg/kg	0.0000104 J	0.00000545 J	0.0000112 J	0.00000868 J	0.00000639 J	0.00000884 J
Pentachlorodibenzo-p-dioxin (total)	mg/kg	0.000000208 UJ	0.000000217 UJ	0.000000122 UJ	0.00000146 J	0.0000016 J	0.00000111 J
Tetrachlorodibenzo(p)dioxin (total)	mg/kg	0.00000199 UJ	0.000000216 UJ	0.000000779 UJ	0.00000203 UJ	0.00000112 UJ	0.00000145 UJ
Tetrachlorodibenzofuran (total)	mg/kg	0.0000118 J	0.00000293 J	0.0000136 J	0.00000861 J	0.0000117 J	0.000013 J
4,4'-DDD	mg/kg	0.0049 U	0.0041 U	0.0051 U	0.0039 U	0.0057 U	0.0069 U
4,4'-DDE	mg/kg	0.0049 U	0.0041 U	0.0051 U	0.0039 U	0.0057 U	0.0069 U
4,4'-DDT	mg/kg	0.0049 U	0.0041 U	0.0051 U	0.0039 U	0.0057 U	0.0069 U
Aldrin	mg/kg	0.0025 U	0.0021 U	0.0026 U	0.002 U	0.0029 U	0.0035 U
Alpha-BHC	mg/kg	0.0025 U	0.0021 U	0.0026 U	0.002 U	0.0029 U	0.0035 U
Alpha-Chlordane	mg/kg	0.0025 U	0.0021 U	0.0026 U	0.002 U	0.0029 U	0.0035 U
Beta-BHC	mg/kg	0.0025 U	0.0021 U	0.0026 U	0.002 U	0.0029 U	0.0035 U
DDT and Metabolites	mg/kg						
Delta-BHC	mg/kg	0.0025 U	0.0021 U	0.0026 U	0.002 U	0.0029 U	0.0035 U
Dieldrin	mg/kg	0.0049 U	0.0041 U	0.0051 U	0.0039 U	0.0057 U	0.0069 U
Endosulfan I	mg/kg	0.0025 U	0.0021 U	0.0026 U	0.002 U	0.0029 U	0.0035 U
Endosulfan II	mg/kg	0.0049 U	0.0041 U	0.0051 U	0.0039 U	0.0057 U	0.0069 U
Endosulfan Sulfate	mg/kg	0.0049 U	0.0041 U	0.0051 U	0.0039 U	0.0057 U	0.0069 U
Endrin	mg/kg	0.0049 U	0.0041 U	0.0051 U	0.0039 U	0.0057 U	0.0069 U
Endrin Aldehyde	mg/kg	0.0049 U	0.0041 U	0.0051 U	0.0039 U	0.0057 U	0.0069 U
Endrin Ketone	mg/kg	0.0049 U	0.0041 U	0.0051 U	0.0039 U	0.0057 U	0.0069 U
Gamma-BHC (Lindane)	mg/kg	0.0025 U	0.0021 U	0.0026 U	0.002 U	0.0029 U	0.0035 U
Gamma-Chlordane	mg/kg	0.0031 J	0.0021 U	0.0036 J	0.002 U	0.0029 U	0.0024 J
Heptachlor	mg/kg	0.0025 U	0.0021 U	0.0026 U	0.002 U	0.0029 U	0.0035 U
Heptachlor Epoxide	mg/kg	0.0025 U	0.0021 U	0.0026 U	0.002 U	0.0029 U	0.0035 U
Methoxychlor	mg/kg	0.025 U	0.021 U	0.026 U	0.02 U	0.029 U	0.035 U
Toxaphene	mg/kg	0.25 U	0.21 U	0.26 U	0.2 U	0.29 U	0.35 U
Decachlorobiphenyl	mg/kg	0.000105	0.0000665	0.000126	0.000176	0.000126	0.000143
Total DiCB	mg/kg	0.0000247 UJ	0.0000216 UJ	0.0000212 UJ	0.0000315 UJ	0.0000425 UJ	0.0000453 UJ

Analyte	Area	BKGD	BKGD	BKGD	BKGD	BKGD	BKGD
	Sample ID	SS-BS-DUP01-0006-100611	SS-BS-HF01A-0006-100611	SS-BS-HF02A-0006-100611	SS-BS-HF03A-0006-100611	SS-BS-HP01A-0006-100611	SS-BS-HP02A-0006-100611
	Type	FD	N	N	N	N	N
	Date	10/6/2011	10/6/2011	10/6/2011	10/6/2011	10/6/2011	10/6/2011
	Units						
Total HpCB	mg/kg	0.00148	0.00107	0.00179	0.00237	0.00143	0.00182
Total HxCB	mg/kg	0.00187 J	0.00193	0.0038 J	0.00398	0.00413	0.00375
Total MoCB	mg/kg	0.0000063 EB	0.000004 EB	0.0000061 EB	0.0000052 EB	0.0000122 EB	0.0000116 EB
Total PCB Homologues	mg/kg	0.0057 J	0.00522 J	0.0089 J	0.00945 J	0.0104 J	0.00985 J
Total PeCB	mg/kg	0.00128	0.00151	0.00187	0.00138	0.00302	0.00262
Total TeCB	mg/kg	0.000154 J	0.000217 J	0.000258 J	0.000185 J	0.000715 J	0.00039 J
Total TrCB	mg/kg	0.0000549 EB	0.0000472 EB	0.0000592 EB	0.0000869 EB	0.000126 EB	0.000157 EB
17-TrCB	mg/kg						
2,3,3',4,4',5,5'-Heptachlorobiphenyl	mg/kg	0.0000076	0.000006	0.0000106	0.0000144	0.0000082	0.0000105
2,3,3',4,4',5-Hexachlorobiphenyl	mg/kg	0.0000608	0.0000629	0.0000887	0.000102	0.000112	0.000111
2,3,3',4,4'-Pentachlorobiphenyl	mg/kg	0.0000972	0.0000818	0.000132 J	0.000138 J	0.00024 J	0.000218 J
2,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.0000238	0.0000243	0.0000299	0.0000371	0.000032	0.0000414
2',3,4,4',5-Pentachlorobiphenyl	mg/kg	0.0000041 J	0.0000031	0.000007 J	0.0000092 J	0.0000087 J	0.0000073 J
2,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.000287	0.000216	0.000388 J	0.000233 J	0.00063 J	0.000581 J
2,3,4,4',5-Pentachlorobiphenyl	mg/kg	0.0000043	0.0000043	0.0000047 J	0.0000052 J	0.0000118 J	0.0000112 J
3,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.0000013 J	0.00000089 J	0.00000198 U	0.00000196 U	0.00000199 U	0.00000081 J
3,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.0000039 J	0.0000028 J	0.0000045 J	0.0000056 J	0.0000042 J	0.000006 J
3,3',4,4'-Tetrachlorobiphenyl	mg/kg	0.0000134 EB	0.0000049 EB	0.0000178 EB	0.0000145 EB	0.0000228 EB	0.0000305
3,4,4',5-Tetrachlorobiphenyl	mg/kg	0.00000198 U	0.00000193 U	0.00000025 J	0.00000058 J	0.00000199 U	0.00000193 U
PCB Dioxin-like Congener TEQ (Bird)	mg/kg		7.36284E-07	1.24949E-06	1.37242E-06	1.60516E-06	2.16623E-06
PCB Dioxin-like Congener TEQ (mammal)	mg/kg		3.19721E-07	4.77864E-07	6.36591E-07	5.13261E-07	6.56762E-07
Total NoCB	mg/kg	0.00017	0.000117	0.000225	0.000302	0.000232	0.000261
Total OcCB	mg/kg	0.000576	0.000253	0.000769	0.000966	0.000566	0.000699
Perchlorate (organic)	mg/kg						
Aluminum	mg/Kg	15100	8790	16300	9550	4220	8130
Antimony	mg/Kg	1.5 UD	1.2 U	1.6 U	1.2 U	1.5 U	1.9 U
Arsenic	mg/Kg	1.8 D	4.8 D	2.1 D	3.5 D	1.3 D	4.9 D
Barium	mg/Kg	33.4	27.6	31	24.4	32.3	41.9
Beryllium	mg/Kg	0.27 J	0.2 J	0.3 J	0.23 J	0.51 J	0.68 J
Cadmium	mg/Kg	0.76 U	0.6 U	0.78 U	0.59 U	0.49 J	0.95 U
Calcium	mg/Kg	402 J	685	272 J	680	1830	1030
Chromium	mg/Kg	17.7	8.4	15.7	9.9	11.8	15
Cobalt	mg/Kg	2.5 J	3.6 J	2.8 J	3 J	2.5 J	3.4 J
Copper	mg/Kg	21.7	9.3	23.4	9.3	9	17.8
Iron	mg/Kg	16200	10900	19900	12100	5210	10700
Lead	mg/Kg	37.5	20.9	40.8	23.7	20	82.2

	Area	BKGD	BKGD	BKGD	BKGD	BKGD	BKGD
	Sample ID	SS-BS-DUP01-0006-100611	SS-BS-HF01A-0006-100611	SS-BS-HF02A-0006-100611	SS-BS-HF03A-0006-100611	SS-BS-HP01A-0006-100611	SS-BS-HP02A-0006-100611
	Type	FD	N	N	N	N	N
	Date	10/6/2011	10/6/2011	10/6/2011	10/6/2011	10/6/2011	10/6/2011
Analyte	Units						
Magnesium	mg/Kg	860	674	719 J	1210	1030	1380
Manganese	mg/Kg	50.4	137	47.6	139	144	98.3
Mercury	mg/Kg	0.34	0.086 J	0.37	0.088 J	0.068 J	0.22
Nickel	mg/Kg	6 J	5.4	4.5 J	7	5.8	10.7
Potassium	mg/Kg	294 J	292 J	775 U	279 J	437 J	741 J
Selenium	mg/Kg	5.3 U	4.2 U	5.4 U	4.1 U	5.1 U	6.7 U
Silver	mg/Kg	1.5 U	1.2 U	1.6 U	1.2 U	1.5 U	1.9 U
Sodium	mg/Kg	762 U	601 U	775 U	588 U	726 U	954 U
Thallium	mg/Kg	0.75 UD	0.6 U	0.78 U	0.59 U	0.73 U	0.94 U
Vanadium	mg/Kg	43.9	22.9	39.3	31.1	20.1	52.7
Zinc	mg/Kg	29.1	29.4	25.3	29	46.1	51.4
Total Organic Carbon	mg/Kg	48000	24000	50000	27000	26000	55000

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	BKGD
	Sample ID	SS-BS-HP03A-0006-100611
	Type	N
	Date	10/6/2011
Analyte	Units	
1,1,1-Trichloroethane	mg/kg	0.0085 U
1,1,2,2-Tetrachloroethane	mg/kg	0.0085 U
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	0.0085 U
1,1,2-Trichloroethane	mg/kg	0.0085 U
1,1'-Biphenyl	mg/kg	0.28 U
1,1-Dichloroethane	mg/kg	0.0085 U
1,1-Dichloroethene	mg/kg	0.0085 U
1,2,3-Trichlorobenzene	mg/kg	0.0085 U
1,2,4-Trichlorobenzene	mg/kg	0.0085 U
1,2-Dibromo-3-Chloropropane	mg/kg	0.0085 U
1,2-Dibromoethane	mg/kg	0.0085 U
1,2-Dichlorobenzene	mg/kg	0.0085 U
1,2-Dichloroethane	mg/kg	0.0085 U
1,2-Dichloropropane	mg/kg	0.0085 U
1,3-Dichlorobenzene	mg/kg	0.0085 U
1,4-Dichlorobenzene	mg/kg	0.0085 U
2,2'-Oxybis(1-Chloropropane)	mg/kg	0.28 U
2-Butanone	mg/kg	0.017 U
2-Hexanone	mg/kg	0.017 U
4-Methyl-2-Pentanone	mg/kg	0.017 U
Acetone	mg/kg	0.017 U
Acetophenone	mg/kg	0.28 U
Benzaldehyde	mg/kg	0.28 U
Benzene	mg/kg	0.0085 U
Bis(2-Chloroethyl)Ether	mg/kg	0.28 U
Bromochloromethane	mg/kg	0.0085 U
Bromodichloromethane	mg/kg	0.0085 U
Bromoform	mg/kg	0.0085 U
Bromomethane	mg/kg	0.0085 U
Carbon Disulfide	mg/kg	0.0085 U
Carbon Tetrachloride	mg/kg	0.0085 U
Chlorobenzene	mg/kg	0.0085 U
Chloroethane	mg/kg	0.0085 U
Chloroform	mg/kg	0.0085 U
Chloromethane	mg/kg	0.0085 U
cis-1,2-Dichloroethene	mg/kg	0.0085 U

	Area	BKGD
	Sample ID	SS-BS-HP03A-0006-100611
	Type	N
	Date	10/6/2011
Analyte	Units	
cis-1,3-Dichloropropene	mg/kg	0.0085 U
Cyclohexane	mg/kg	0.0085 U
Dibromochloromethane	mg/kg	0.0085 U
Dichlorodifluoromethane	mg/kg	0.0085 U
Ethylbenzene	mg/kg	0.0085 U
Hexachlorobenzene	mg/kg	0.28 U
Hexachlorobutadiene	mg/kg	0.28 U
Hexachloroethane	mg/kg	0.28 U
Isopropylbenzene	mg/kg	0.0085 U
m,p-Xylene	mg/kg	0.0085 U
Methyl Acetate	mg/kg	0.0085 U
Methyl Tert-Butyl Ether	mg/kg	0.0085 U
Methylcyclohexane	mg/kg	0.0085 U
Methylene Chloride	mg/kg	0.0085 U
o-Xylene	mg/kg	0.0085 U
Styrene	mg/kg	0.0085 U
Tetrachloroethene	mg/kg	0.0085 U
Toluene	mg/kg	0.0085 U
trans-1,2-Dichloroethene	mg/kg	0.0085 U
trans-1,3-Dichloropropene	mg/kg	0.0085 U
Trichloroethene	mg/kg	0.0085 U
Trichlorofluoromethane	mg/kg	0.0085 U
Vinyl Chloride	mg/kg	0.0085 U
1,2,4,5-Tetrachlorobenzene	mg/kg	0.28 U
1,4-Dioxane	mg/kg	0.17 U
2,3,4,6-Tetrachlorophenol	mg/kg	0.28 U
2,4,5-Trichlorophenol	mg/kg	0.28 U
2,4,6-Trichlorophenol	mg/kg	0.28 U
2,4-Dichlorophenol	mg/kg	0.28 U
2,4-Dimethylphenol	mg/kg	0.28 U
2,4-Dinitrophenol	mg/kg	0.55 U
2,4-Dinitrotoluene	mg/kg	0.28 U
2,6-Dinitrotoluene	mg/kg	0.28 U
2-Chlorophenol	mg/kg	0.28 U
2-Methylphenol	mg/kg	0.28 U
2-Nitroaniline	mg/kg	0.55 U

	Area	BKGD
	Sample ID	SS-BS-HP03A-0006-100611
	Type	N
	Date	10/6/2011
Analyte	Units	
2-Nitrophenol	mg/kg	0.28 U
3,3'-Dichlorobenzidine	mg/kg	0.28 U
3-Nitroaniline	mg/kg	0.55 U
4,6-Dinitro-2-Methylphenol	mg/kg	0.55 U
4-Bromophenyl-Phenylether	mg/kg	0.28 U
4-Chloro-3-Methylphenol	mg/kg	0.28 U
4-Chloroaniline	mg/kg	0.28 U
4-Chlorophenyl-Phenylether	mg/kg	0.28 U
4-Methylphenol	mg/kg	0.28 U
4-Nitroaniline	mg/kg	0.55 U
4-Nitrophenol	mg/kg	0.55 U
Atrazine	mg/kg	0.28 U
Bis(2-Chloroethoxy)Methane	mg/kg	0.28 U
Bis(2-Ethylhexyl)Phthalate	mg/kg	0.043 J
Butylbenzylphthalate	mg/kg	0.28 U
Caprolactam	mg/kg	0.28 U
Dibenzofuran	mg/kg	0.28 U
Diethylphthalate	mg/kg	0.28 U
Dimethylphthalate	mg/kg	0.28 U
Di-N-Butyl Phthalate	mg/kg	0.047 JEB
Di-N-Octyl Phthalate	mg/kg	0.28 U
Hexachlorocyclopentadiene	mg/kg	0.28 U
Isophorone	mg/kg	0.28 U
Nitrobenzene	mg/kg	0.28 U
N-Nitroso-Di-N-Propylamine	mg/kg	0.28 U
N-Nitrosodiphenylamine	mg/kg	0.28 U
Pentachlorophenol	mg/kg	0.55 U
Phenol	mg/kg	0.28 U
2-Chloronaphthalene	mg/kg	0.28 U
2-Methylnaphthalene	mg/kg	0.28 U
Acenaphthene	mg/kg	0.28 U
Acenaphthylene	mg/kg	0.28 U
Anthracene	mg/kg	0.28 U
Benzo(A)Anthracene	mg/kg	0.38
Benzo(A)Pyrene	mg/kg	0.35
Benzo(B)Fluoranthene	mg/kg	0.43 J

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	BKGD
	Sample ID	SS-BS-HP03A-0006-100611
	Type	N
	Date	10/6/2011
Analyte	Units	
Benzo(G,H,I)Perylene	mg/kg	0.25 J
Benzo(K)Fluoranthene	mg/kg	0.28 J
Carbazole	mg/kg	0.28 U
Chrysene	mg/kg	0.45
Dibenz(A,H)Anthracene	mg/kg	0.074 J
Fluoranthene	mg/kg	0.67
Fluorene	mg/kg	0.28 U
High Molecular Weight PAHs	mg/kg	3.164
Indeno(1,2,3-Cd)Pyrene	mg/kg	0.37
Low Molecular Weight PAHs	mg/kg	0.95
Naphthalene	mg/kg	0.28 U
Phenanthrene	mg/kg	0.28 J
Pyrene	mg/kg	0.58
Dichloronaphthalene, Total	mg/kg	
Heptachloronaphthalene, Total	mg/kg	
Hexachloronaphthalene, Total	mg/kg	
Monochloronaphthalene, Total	mg/kg	
Octachloronaphthalene, Total	mg/kg	
Pentachloronaphthalene, Total	mg/kg	
Tetrachloronaphthalene, Total	mg/kg	
Trichloronaphthalene, Total	mg/kg	
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	mg/kg	0.00000446 J
1,2,3,4,6,7,8,9-Octachlorodibenzo-P-Dioxin	mg/kg	0.0000968
1,2,3,4,6,7,8-Heptachlorodibenzofuran	mg/kg	0.00000287 J
1,2,3,4,6,7,8-Heptachlorodibenzo-P-Dioxin	mg/kg	0.0000128
1,2,3,4,7,8,9-Heptachlorodibenzofuran	mg/kg	0.000000334 U
1,2,3,4,7,8-Hexachlorodibenzofuran	mg/kg	0.0000022 J
1,2,3,4,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.000000376 U
1,2,3,6,7,8-Hexachlorodibenzofuran	mg/kg	0.000000748 J
1,2,3,6,7,8-Hexachlorodibenzo-P-Dioxin	mg/kg	0.000000593 U
1,2,3,7,8,9-Hexachlorodibenzofuran	mg/kg	0.0000000734 U
1,2,3,7,8,9-Hexachlorodibenzo-P-Dioxin	mg/kg	0.00000134 J
1,2,3,7,8-Pentachlorodibenzofuran	mg/kg	0.00000124 J
1,2,3,7,8-Pentachlorodibenzo-P-Dioxin	mg/kg	0.000000449 UEMC
2,3,4,6,7,8-Hexachlorodibenzofuran	mg/kg	0.000000557 U
2,3,4,7,8-Pentachlorodibenzofuran	mg/kg	0.00000131 J

	Area	BKGD
	Sample ID	SS-BS-HP03A-0006-100611
	Type	N
	Date	10/6/2011
Analyte	Units	
2,3,7,8-TCDD TEQ (Bird)	mg/kg	7.55443E-06
2,3,7,8-TCDD TEQ (mammal)	mg/kg	1.61008E-06
2,3,7,8-Tetrachlorodibenzofuran	mg/kg	0.00000564
2,3,7,8-Tetrachlorodibenzo-P-Dioxin	mg/kg	0.00000013 UEMC
Heptachlorodibenzofuran (total)	mg/kg	0.00000528 J
Heptachlorodibenzo-p-dioxin (total)	mg/kg	0.0000266 J
Hexachlorodibenzofuran (total)	mg/kg	0.00000835 J
Hexachlorodibenzo-p-dioxin (total)	mg/kg	0.00000823 J
Pentachlorodibenzofuran (total)	mg/kg	0.0000172 J
Pentachlorodibenzo-p-dioxin (total)	mg/kg	0.00000382 J
Tetrachlorodibenzo(p)dioxin (total)	mg/kg	0.00000455 UJ
Tetrachlorodibenzofuran (total)	mg/kg	0.0000308 J
4,4'-DDD	mg/kg	0.0055 U
4,4'-DDE	mg/kg	0.0055 U
4,4'-DDT	mg/kg	0.0055 U
Aldrin	mg/kg	0.0028 U
Alpha-BHC	mg/kg	0.0028 U
Alpha-Chlordane	mg/kg	0.0028 U
Beta-BHC	mg/kg	0.0028 U
DDT and Metabolites	mg/kg	
Delta-BHC	mg/kg	0.0028 U
Dieldrin	mg/kg	0.0055 U
Endosulfan I	mg/kg	0.0028 U
Endosulfan II	mg/kg	0.0055 U
Endosulfan Sulfate	mg/kg	0.0055 U
Endrin	mg/kg	0.0055 U
Endrin Aldehyde	mg/kg	0.0055 U
Endrin Ketone	mg/kg	0.0055 U
Gamma-BHC (Lindane)	mg/kg	0.0028 U
Gamma-Chlordane	mg/kg	0.0024 J
Heptachlor	mg/kg	0.0028 U
Heptachlor Epoxide	mg/kg	0.0028 U
Methoxychlor	mg/kg	0.028 U
Toxaphene	mg/kg	0.28 U
Decachlorobiphenyl	mg/kg	0.000179
Total DiCB	mg/kg	0.000033 UJ

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	BKGD
	Sample ID	SS-BS-HP03A-0006-100611
	Type	N
	Date	10/6/2011
Analyte	Units	
Total HpCB	mg/kg	0.00219
Total HxCB	mg/kg	0.00641
Total MoCB	mg/kg	0.0000096 EB
Total PCB Homologues	mg/kg	0.0168 J
Total PeCB	mg/kg	0.00595
Total TeCB	mg/kg	0.00083 J
Total TrCB	mg/kg	0.00013 EB
17-TrCB	mg/kg	
2,3,3',4,4',5,5'-Heptachlorobiphenyl	mg/kg	0.0000114
2,3,3',4,4',5-Hexachlorobiphenyl	mg/kg	0.000239
2,3,3',4,4'-Pentachlorobiphenyl	mg/kg	0.000421 J
2,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.0000702
2',3,4,4',5-Pentachlorobiphenyl	mg/kg	0.0000076 J
2,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.00119 J
2,3,4,4',5-Pentachlorobiphenyl	mg/kg	0.0000189 J
3,3',4,4',5,5'-Hexachlorobiphenyl	mg/kg	0.0000017 J
3,3',4,4',5-Pentachlorobiphenyl	mg/kg	0.0000071 J
3,3',4,4'-Tetrachlorobiphenyl	mg/kg	0.0000289
3,4,4',5-Tetrachlorobiphenyl	mg/kg	0.00000196 U
PCB Dioxin-like Congener TEQ (Bird)	mg/kg	2.23738E-06
PCB Dioxin-like Congener TEQ (mammal)	mg/kg	8.22633E-07
Total NoCB	mg/kg	0.000321
Total OcCB	mg/kg	0.000762
Perchlorate (organic)	mg/kg	
Aluminum	mg/Kg	4310
Antimony	mg/Kg	1.3 U
Arsenic	mg/Kg	3.6 D
Barium	mg/Kg	31.9
Beryllium	mg/Kg	0.66 U
Cadmium	mg/Kg	0.66 U
Calcium	mg/Kg	667
Chromium	mg/Kg	7.2
Cobalt	mg/Kg	6.6 U
Copper	mg/Kg	10.7
Iron	mg/Kg	11300
Lead	mg/Kg	28.1

TABLE B-1
ANALYTICAL RESULTS - SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

	Area	BKGD
	Sample ID	SS-BS-HP03A-0006-100611
	Type	N
	Date	10/6/2011
Analyte	Units	
Magnesium	mg/Kg	457 J
Manganese	mg/Kg	68.3
Mercury	mg/Kg	0.15
Nickel	mg/Kg	5.7
Potassium	mg/Kg	286 J
Selenium	mg/Kg	4.6 U
Silver	mg/Kg	1.3 U
Sodium	mg/Kg	660 U
Thallium	mg/Kg	0.66 U
Vanadium	mg/Kg	42
Zinc	mg/Kg	23.3
Total Organic Carbon	mg/Kg	54000

TABLE B-2
ANALYTICAL RESULTS - EARTHWORMS
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Area	Sample ID	Type	Date	Mercury (µg/kg ww)
CHP	CHSI-07-080310	Primary	8/3/2010	22.8939
	CHSI-13-080310	Primary	8/3/2010	33.2774
SFSA	FSASI-01-080410	Primary	8/4/2010	247.2545
	FSASI-06-080410	Primary	8/4/2010	579.1226 J
	FSASI-30-080510	Primary	8/6/2010	140.7405
	FSASI-32-080610	Primary	8/6/2010	133.3353
EFSA	FSASI-08-080410	Primary	8/4/2010	90.5324
	FSASI-09-080410	Primary	8/4/2010	93.6395
	FSASI-10-080410	Primary	8/4/2010	164.8165
	FSASI-11-080410	Primary	8/4/2010	36.1514
	FSASI-12-080410	Primary	8/4/2010	58.8815
	FSASI-13-080410	Primary	8/4/2010	85.7097
	FSASI-14-080410	Primary	8/4/2010	28.9171
	FSASI-17-080410	Primary	8/4/2010	146.0905
	FSASI-18-080510	Primary	8/5/2010	94.9272
	FSASI-20-080510	Primary	8/5/2010	281.8851
	FSASI-21-080510	Primary	8/5/2010	138.4699
	FSASI-22-080510	Primary	8/5/2010	1165.2056
	FSASI-25-080510	Primary	8/5/2010	1331.2708
	FSASI-26-080510	Primary	8/5/2010	138.8683
	FSASI-27-080510	Primary	8/5/2010	62.47
	FSASI-28-080510	Primary	8/5/2010	84.1938

APPENDIX C

APPENDIX C

ProUCL OUTPUTS

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	Area A.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

2,3,7,8-TCDD TEQ (bird)

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	9

Raw Statistics		Log-transformed Statistics	
Minimum	0.0003894	Minimum of Log Data	-7.851
Maximum	0.383	Maximum of Log Data	-0.96
Mean	0.0459	Mean of log Data	-6.135
Geometric Mean	0.00217	SD of log Data	2.292
Median	0.0009272		
SD	0.127		
Std. Error of Mean	0.0422		
Coefficient of Variation	2.755		
Skewness	2.977		

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	
Shapiro Wilk Test Statistic	0.425	Shapiro Wilk Test Statistic	0.703
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.124	95% H-UCL	5.687
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0649
95% Adjusted-CLT UCL (Chen-1995)	0.16	97.5% Chebyshev (MVUE) UCL	0.0864
95% Modified-t UCL (Johnson-1978)	0.131	99% Chebyshev (MVUE) UCL	0.128
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.231	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.199		
MLE of Mean	0.0459		
MLE of Standard Deviation	0.0957		
nu star	4.152		
Approximate Chi Square Value (.05)	0.783	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.115
Adjusted Chi Square Value	0.527	95% Jackknife UCL	0.124
		95% Standard Bootstrap UCL	0.11
Anderson-Darling Test Statistic	1.841	95% Bootstrap-t UCL	24.62
Anderson-Darling 5% Critical Value	0.832	95% Hall's Bootstrap UCL	8.607
Kolmogorov-Smirnov Test Statistic	0.458	95% Percentile Bootstrap UCL	0.128
Kolmogorov-Smirnov 5% Critical Value	0.305	95% BCA Bootstrap UCL	0.171

Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.23
		97.5% Chebyshev(Mean, Sd) UCL	0.309
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.466
95% Approximate Gamma UCL (Use when n >= 40)	0.244		
95% Adjusted Gamma UCL (Use when n < 40)	0.362		
Potential UCL to Use		Use 95% Hall's Bootstrap UCL	8.607

Recommended UCL exceeds the maximum observation

In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL

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.

2,3,7,8-TCDD TEQ (mammal)

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	9

Raw Statistics		Log-transformed Statistics	
Minimum	8.461E-05	Minimum of Log Data	-9.378
Maximum	0.0606	Maximum of Log Data	-2.803
Mean	0.00738	Mean of log Data	-7.794
Geometric Mean	0.0004123	SD of log Data	2.225
Median	0.0001748		
SD	0.02		
Std. Error of Mean	0.00667		
Coefficient of Variation	2.714		
Skewness	2.968		

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	
Shapiro Wilk Test Statistic	0.431	Shapiro Wilk Test Statistic	0.705
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0198	95% H-UCL	0.692
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.011
95% Adjusted-CLT UCL (Chen-1995)	0.0254	97.5% Chebyshev (MVUE) UCL	0.0146
95% Modified-t UCL (Johnson-1978)	0.0209	99% Chebyshev (MVUE) UCL	0.0217
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.239	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0309		
MLE of Mean	0.00738		
MLE of Standard Deviation	0.0151		
nu star	4.295		
Approximate Chi Square Value (.05)	0.841	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0184
Adjusted Chi Square Value	0.572	95% Jackknife UCL	0.0198
		95% Standard Bootstrap UCL	0.0178
Anderson-Darling Test Statistic	1.801	95% Bootstrap-t UCL	2.952
Anderson-Darling 5% Critical Value	0.827	95% Hall's Bootstrap UCL	0.713
Kolmogorov-Smirnov Test Statistic	0.443	95% Percentile Bootstrap UCL	0.0203
Kolmogorov-Smirnov 5% Critical Value	0.305	95% BCA Bootstrap UCL	0.0275
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0365
		97.5% Chebyshev(Mean, Sd) UCL	0.0491
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0738
95% Approximate Gamma UCL (Use when n >= 40)	0.0377		
95% Adjusted Gamma UCL (Use when n < 40)	0.0554		
Potential UCL to Use		Use 95% Hall's Bootstrap UCL	0.713

Recommended UCL exceeds the maximum observation

In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL

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.

Aluminum

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		Log-transformed Statistics	
Minimum	3230	Minimum of Log Data	8.08
Maximum	6470	Maximum of Log Data	8.775
Mean	4721	Mean of log Data	8.435
Geometric Mean	4607	SD of log Data	0.235
Median	4763		
SD	1079		
Std. Error of Mean	341.1		
Coefficient of Variation	0.228		
Skewness	0.058		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.953	Shapiro Wilk Test Statistic	0.944
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	5346	95% H-UCL	5501
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	6258
95% Adjusted-CLT UCL (Chen-1995)	5288	97.5% Chebyshev (MVUE) UCL	6922
95% Modified-t UCL (Johnson-1978)	5347	99% Chebyshev (MVUE) UCL	8227

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	14.56	Data appear Normal at 5% Significance Level	
Theta Star	324.1		
MLE of Mean	4721		
MLE of Standard Deviation	1237		
nu star	291.3		
Approximate Chi Square Value (.05)	252.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	5281
Adjusted Chi Square Value	246.5	95% Jackknife UCL	5346
		95% Standard Bootstrap UCL	5252
Anderson-Darling Test Statistic	0.298	95% Bootstrap-t UCL	5390
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	5265
Kolmogorov-Smirnov Test Statistic	0.175	95% Percentile Bootstrap UCL	5225
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	5257
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	6207
		97.5% Chebyshev(Mean, Sd) UCL	6850
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	8114
95% Approximate Gamma UCL (Use when n >= 40)	5440		
95% Adjusted Gamma UCL (Use when n < 40)	5578		

Potential UCL to Use		Use 95% Student's-t UCL	5346

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.

Antimony

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	1.4	Minimum Detected	0.336
Maximum Detected	3.3	Maximum Detected	1.194
Mean of Detected	2.367	Mean of Detected	0.813
SD of Detected	0.776	SD of Detected	0.35
Minimum Non-Detect	5.1	Minimum Non-Detect	1.629
Maximum Non-Detect	6.2	Maximum Non-Detect	1.825

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	0.934	Shapiro Wilk Test Statistic	0.923
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	2.6	Mean	0.919
SD	0.67	SD	0.3
95% DL/2 (t) UCL	2.989	95% H-Stat (DL/2) UCL	3.195
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.813
		SD in Log Scale	0.276
		Mean in Original Scale	2.33
		SD in Original Scale	0.615
		95% t UCL	2.686
		95% Percentile Bootstrap UCL	2.639
		95% BCA Bootstrap UCL	2.658
		95% H-UCL	2.801
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	5.31	Data appear Normal at 5% Significance Level	
Theta Star	0.446		
nu star	63.72		
A-D Test Statistic	0.294	Nonparametric Statistics	
5% A-D Critical Value	0.698	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.698	Mean	2.367
5% K-S Critical Value	0.332	SD	0.709

Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.317
		95% KM (t) UCL	2.948
Assuming Gamma Distribution		95% KM (z) UCL	2.888
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.97
Minimum	1.4	95% KM (bootstrap t) UCL	2.959
Maximum	3.3	95% KM (BCA) UCL	2.867
Mean	2.403	95% KM (Percentile Bootstrap) UCL	2.85
Median	2.479	95% KM (Chebyshev) UCL	3.748
SD	0.616	97.5% KM (Chebyshev) UCL	4.346
k star	10.87	99% KM (Chebyshev) UCL	5.52
Theta star	0.221		
Nu star	217.4	**Potential UCLs to Use**	
AppChi2	184.3	95% KM (t) UCL	2.948
95% Gamma Approximate UCL (Use when n >= 40)	2.835	95% KM (Percentile Bootstrap) UCL	2.85
95% Adjusted Gamma UCL (Use when n < 40)	2.919		

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.

Arsenic

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		Log-transformed Statistics	
Minimum	1.5	Minimum of Log Data	0.405
Maximum	828	Maximum of Log Data	6.719
Mean	90.6	Mean of log Data	2.222
Geometric Mean	9.223	SD of log Data	1.845
Median	7.55		
SD	259.2		
Std. Error of Mean	81.97		
Coefficient of Variation	2.861		
Skewness	3.157		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.391	Shapiro Wilk Test Statistic	0.831
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	240.9	95% H-UCL	1111
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	132
95% Adjusted-CLT UCL (Chen-1995)	312.9	97.5% Chebyshev (MVUE) UCL	173.4
95% Modified-t UCL (Johnson-1978)	254.5	99% Chebyshev (MVUE) UCL	254.8

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.278	Data do not follow a Discernable Distribution (0.05)	
Theta Star	326.2		
MLE of Mean	90.6		
MLE of Standard Deviation	171.9		
nu star	5.555		
Approximate Chi Square Value (.05)	1.417	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	225.4
Adjusted Chi Square Value	1.088	95% Jackknife UCL	240.9
		95% Standard Bootstrap UCL	215.1
Anderson-Darling Test Statistic	1.735	95% Bootstrap-t UCL	4786
Anderson-Darling 5% Critical Value	0.813	95% Hall's Bootstrap UCL	2106
Kolmogorov-Smirnov Test Statistic	0.369	95% Percentile Bootstrap UCL	253.7
Kolmogorov-Smirnov 5% Critical Value	0.288	95% BCA Bootstrap UCL	335.8
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	447.9
		97.5% Chebyshev(Mean, Sd) UCL	602.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	906.2
95% Approximate Gamma UCL (Use when n >= 40)	355.2		
95% Adjusted Gamma UCL (Use when n < 40)	462.6		

Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	906.2

Recommended UCL exceeds the maximum observation

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.

Barium

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10
Raw Statistics		**Log-transformed Statistics**	
Minimum	29	Minimum of Log Data	3.367
Maximum	254	Maximum of Log Data	5.537
Mean	146	Mean of log Data	4.784
Geometric Mean	119.6	SD of log Data	0.727
Median	132.5		
SD	84.18		
Std. Error of Mean	26.62		
Coefficient of Variation	0.576		
Skewness	0.109		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.911	Shapiro Wilk Test Statistic	0.913
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	194.8	95% H-UCL	290.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	307.1
95% Adjusted-CLT UCL (Chen-1995)	190.8	97.5% Chebyshev (MVUE) UCL	374.7
95% Modified-t UCL (Johnson-1978)	195	99% Chebyshev (MVUE) UCL	507.4
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.931	**Data appear Normal at 5% Significance Level**	
Theta Star	75.63		
MLE of Mean	146		
MLE of Standard Deviation	105.1		
nu star	38.61		
Approximate Chi Square Value (.05)	25.38	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	189.8
Adjusted Chi Square Value	23.53	95% Jackknife UCL	194.8
		95% Standard Bootstrap UCL	187.6
Anderson-Darling Test Statistic	0.324	95% Bootstrap-t UCL	196.1
Anderson-Darling 5% Critical Value	0.733	95% Hall's Bootstrap UCL	186.4
Kolmogorov-Smirnov Test Statistic	0.165	95% Percentile Bootstrap UCL	186.7
Kolmogorov-Smirnov 5% Critical Value	0.269	95% BCA Bootstrap UCL	188.5
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	262.1
		97.5% Chebyshev(Mean, Sd) UCL	312.3
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	410.9
95% Approximate Gamma UCL (Use when n >= 40)	222.1		
95% Adjusted Gamma UCL (Use when n < 40)	239.6		
Potential UCL to Use		Use 95% Student's-t UCL	194.8

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.

Butylbenzylphthalate

General Statistics

Number of Valid Data	9	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	8
		Percent Non-Detects	88.89%

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

The data set for variable Butylbenzylphthalate was not processed!

Cadmium

General Statistics

Number of Valid Data	10	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	3
		Percent Non-Detects	30.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.15	Minimum Detected	-1.897
Maximum Detected	1.3	Maximum Detected	0.262
Mean of Detected	0.719	Mean of Detected	-0.585
SD of Detected	0.457	SD of Detected	0.848
Minimum Non-Detect	0.505	Minimum Non-Detect	-0.683
Maximum Non-Detect	0.58	Maximum Non-Detect	-0.545

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	4
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	60.00%

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	0.897	Shapiro Wilk Test Statistic	0.873
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	0.585	Mean	-0.798
SD	0.43	SD	0.774
95% DL/2 (t) UCL	0.835	95% H-Stat (DL/2) UCL	1.206
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.49	Mean in Log Scale	-0.813
SD	0.552	SD in Log Scale	0.783
95% MLE (t) UCL	0.81	Mean in Original Scale	0.581
95% MLE (Tiku) UCL	0.936	SD in Original Scale	0.434
		95% t UCL	0.833
		95% Percentile Bootstrap UCL	0.8
		95% BCA Bootstrap UCL	0.832
		95% H UCL	1.214
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.304	Data appear Normal at 5% Significance Level	
Theta Star	0.551		
nu star	18.25		
A-D Test Statistic	0.492	**Nonparametric Statistics**	
5% A-D Critical Value	0.715	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.715	Mean	0.579
5% K-S Critical Value	0.315	SD	0.416

Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.144
		95% KM (t) UCL	0.843
Assuming Gamma Distribution		95% KM (z) UCL	0.816
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.841
Minimum	0.15	95% KM (bootstrap t) UCL	0.871
Maximum	1.3	95% KM (BCA) UCL	0.874
Mean	0.59	95% KM (Percentile Bootstrap) UCL	0.849
Median	0.329	95% KM (Chebyshev) UCL	1.207
SD	0.427	97.5% KM (Chebyshev) UCL	1.479
k star	1.55	99% KM (Chebyshev) UCL	2.013
Theta star	0.38		
Nu star	31.01	**Potential UCLs to Use**	
AppChi2	19.28	95% KM (t) UCL	0.843
95% Gamma Approximate UCL (Use when n >= 40)	0.948	95% KM (Percentile Bootstrap) UCL	0.849
95% Adjusted Gamma UCL (Use when n < 40)	1.033		

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.

Chromium

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	8

Raw Statistics		Log-transformed Statistics	
Minimum	6.1	Minimum of Log Data	1.808
Maximum	29.7	Maximum of Log Data	3.391
Mean	10.95	Mean of log Data	2.273
Geometric Mean	9.709	SD of log Data	0.467
Median	8.7		
SD	7.017		
Std. Error of Mean	2.219		
Coefficient of Variation	0.641		
Skewness	2.537		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.661	Shapiro Wilk Test Statistic	0.835
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	15.02	95% H-UCL	15.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17.71
95% Adjusted-CLT UCL (Chen-1995)	16.5	97.5% Chebyshev (MVUE) UCL	20.74
95% Modified-t UCL (Johnson-1978)	15.31	99% Chebyshev (MVUE) UCL	26.7

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.087	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	3.547		
MLE of Mean	10.95		
MLE of Standard Deviation	6.232		
nu star	61.75		
Approximate Chi Square Value (.05)	44.67	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	14.6
Adjusted Chi Square Value	42.16	95% Jackknife UCL	15.02
		95% Standard Bootstrap UCL	14.41
Anderson-Darling Test Statistic	0.92	95% Bootstrap-t UCL	23.59
Anderson-Darling 5% Critical Value	0.729	95% Hall's Bootstrap UCL	29.22
Kolmogorov-Smirnov Test Statistic	0.3	95% Percentile Bootstrap UCL	14.94
Kolmogorov-Smirnov 5% Critical Value	0.268	95% BCA Bootstrap UCL	17.06
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	20.62
		97.5% Chebyshev(Mean, Sd) UCL	24.81
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	33.03
95% Approximate Gamma UCL (Use when n >= 40)	15.13		
95% Adjusted Gamma UCL (Use when n < 40)	16.04		

Potential UCL to Use			
		Use 95% Student's-t UCL	15.02
		or 95% Modified-t UCL	15.31

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.

Cobalt

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		Log-transformed Statistics	
Minimum	4.4	Minimum of Log Data	1.482
Maximum	18.5	Maximum of Log Data	2.918
Mean	8.595	Mean of log Data	2.022
Geometric Mean	7.55	SD of log Data	0.516
Median	6.8		
SD	4.997		
Std. Error of Mean	1.58		
Coefficient of Variation	0.581		
Skewness	1.318		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.808	Shapiro Wilk Test Statistic	0.895
Shapiro Wilk Critical Value	0.842	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	
95% Student's-t UCL	11.49	95% H-UCL	12.69
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.67
95% Adjusted-CLT UCL (Chen-1995)	11.9	97.5% Chebyshev (MVUE) UCL	17.34
95% Modified-t UCL (Johnson-1978)	11.6	99% Chebyshev (MVUE) UCL	22.58

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.879	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.985		
MLE of Mean	8.595		
MLE of Standard Deviation	5.065		
nu star	57.58		
Approximate Chi Square Value (.05)	41.14	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	11.19
Adjusted Chi Square Value	38.73	95% Jackknife UCL	11.49
		95% Standard Bootstrap UCL	11.03
Anderson-Darling Test Statistic	0.557	95% Bootstrap-t UCL	14.72
Anderson-Darling 5% Critical Value	0.729	95% Hall's Bootstrap UCL	24.65
Kolmogorov-Smirnov Test Statistic	0.17	95% Percentile Bootstrap UCL	11.18
Kolmogorov-Smirnov 5% Critical Value	0.268	95% BCA Bootstrap UCL	11.73
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15.48
		97.5% Chebyshev(Mean, Sd) UCL	18.46
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	24.32
95% Approximate Gamma UCL (Use when n >= 40)	12.03		
95% Adjusted Gamma UCL (Use when n < 40)	12.78		

Potential UCL to Use		Use 95% Approximate Gamma UCL	12.03

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.

Copper

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		**Log-transformed Statistics**	
Minimum	15.5	Minimum of Log Data	2.741
Maximum	130	Maximum of Log Data	4.868
Mean	68.46	Mean of log Data	3.985
Geometric Mean	53.8	SD of log Data	0.775
Median	59.8		
SD	45.17		
Std. Error of Mean	14.28		
Coefficient of Variation	0.66		
Skewness	0.376		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.881	Shapiro Wilk Test Statistic	0.92
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	94.64	95% H-UCL	144.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	147.7
95% Adjusted-CLT UCL (Chen-1995)	93.76	97.5% Chebyshev (MVUE) UCL	181.2
95% Modified-t UCL (Johnson-1978)	94.92	99% Chebyshev (MVUE) UCL	247.2
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.626	**Data appear Normal at 5% Significance Level**	
Theta Star	42.1		
MLE of Mean	68.46		
MLE of Standard Deviation	53.68		
nu star	32.52		
Approximate Chi Square Value (.05)	20.49	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	91.95
Adjusted Chi Square Value	18.84	95% Jackknife UCL	94.64
		95% Standard Bootstrap UCL	91
Anderson-Darling Test Statistic	0.361	95% Bootstrap-t UCL	96.59
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	88.37
Kolmogorov-Smirnov Test Statistic	0.176	95% Percentile Bootstrap UCL	90.75
Kolmogorov-Smirnov 5% Critical Value	0.27	95% BCA Bootstrap UCL	94
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	130.7
		97.5% Chebyshev(Mean, Sd) UCL	157.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	210.6
95% Approximate Gamma UCL (Use when n >= 40)	108.7		
95% Adjusted Gamma UCL (Use when n < 40)	118.2		
Potential UCL to Use		Use 95% Student's-t UCL	94.64

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.

Dibenzofuran

General Statistics

Number of Valid Data	9	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	6
		Percent Non-Detects	66.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0285	Minimum Detected	-3.558
Maximum Detected	0.11	Maximum Detected	-2.207
Mean of Detected	0.0622	Mean of Detected	-2.934
SD of Detected	0.0426	SD of Detected	0.681
Minimum Non-Detect	0.19	Minimum Non-Detect	-1.661
Maximum Non-Detect	0.22	Maximum Non-Detect	-1.514

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	9
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.917	Shapiro Wilk Test Statistic	0.983
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0877	Mean	-2.511
SD	0.029	SD	0.468
95% DL/2 (t) UCL	0.106	95% H-Stat (DL/2) UCL	0.13
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.934
		SD in Log Scale	0.403
		Mean in Original Scale	0.0573
		SD in Original Scale	0.0247
		95% t UCL	0.0726
		95% Percentile Bootstrap UCL	0.071
		95% BCA Bootstrap UCL	0.073
		95% H-UCL	0.0782

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level
Theta Star	N/A	
nu star	N/A	

A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.0622
5% K-S Critical Value	N/A	SD	0.0347
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0246
		95% KM (t) UCL	0.108
Assuming Gamma Distribution		95% KM (z) UCL	0.103
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.115
Minimum	N/A	95% KM (bootstrap t) UCL	0.207
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	0.169
SD	N/A	97.5% KM (Chebyshev) UCL	0.216
k star	N/A	99% KM (Chebyshev) UCL	0.307
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	95% KM (t) UCL	0.108
95% Gamma Approximate UCL (Use when n >= 40)	N/A	95% KM (Percentile Bootstrap) UCL	N/A
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

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.

Dichloronaphthalene, Total

General Statistics

Number of Valid Data	9	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	7
		Percent Non-Detects	77.78%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.035	Minimum Detected	-3.352
Maximum Detected	0.41	Maximum Detected	-0.892
Mean of Detected	0.223	Mean of Detected	-2.122
SD of Detected	0.265	SD of Detected	1.74
Minimum Non-Detect	0.0855	Minimum Non-Detect	-2.459
Maximum Non-Detect	0.96	Maximum Non-Detect	-0.0408

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	9
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.214	Mean	-1.895
SD	0.158	SD	0.998
95% DL/2 (t) UCL	0.312	95% H-Stat (DL/2) UCL	0.774
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
		95% H-UCL	N/A

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)

Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.129
5% K-S Critical Value	N/A	SD	0.162
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.115
		95% KM (t) UCL	0.342
Assuming Gamma Distribution		95% KM (z) UCL	0.318
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.411
Minimum	N/A	95% KM (bootstrap t) UCL	N/A
Maximum	N/A	95% KM (BCA) UCL	0.41
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.41
Median	N/A	95% KM (Chebyshev) UCL	0.629
SD	N/A	97.5% KM (Chebyshev) UCL	0.846
k star	N/A	99% KM (Chebyshev) UCL	1.271
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	97.5% KM (Chebyshev) UCL	0.846
95% Gamma Approximate UCL (Use when n >= 40)	N/A		
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Warning: Recommended UCL exceeds the maximum observation

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.

High Molecular Weight PAHs

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	9

Raw Statistics		Log-transformed Statistics	
Minimum	1.725	Minimum of Log Data	0.545
Maximum	18.08	Maximum of Log Data	2.895
Mean	8.741	Mean of log Data	1.889
Geometric Mean	6.614	SD of log Data	0.86
Median	7.77		
SD	6.019		
Std. Error of Mean	2.006		
Coefficient of Variation	0.689		
Skewness	0.406		

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	
Shapiro Wilk Test Statistic	0.918	Shapiro Wilk Test Statistic	0.911
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
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	12.47	95% H-UCL	23.36
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	20.81
95% Adjusted-CLT UCL (Chen-1995)	12.33	97.5% Chebyshev (MVUE) UCL	25.88
95% Modified-t UCL (Johnson-1978)	12.52	99% Chebyshev (MVUE) UCL	35.84
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.369	Data appear Normal at 5% Significance Level	
Theta Star	6.384		
MLE of Mean	8.741		
MLE of Standard Deviation	7.47		
nu star	24.65		
Approximate Chi Square Value (.05)	14.34	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	12.04
Adjusted Chi Square Value	12.71	95% Jackknife UCL	12.47
		95% Standard Bootstrap UCL	11.89
Anderson-Darling Test Statistic	0.332	95% Bootstrap-t UCL	12.99
Anderson-Darling 5% Critical Value	0.73	95% Hall's Bootstrap UCL	12.66
Kolmogorov-Smirnov Test Statistic	0.174	95% Percentile Bootstrap UCL	12.02
Kolmogorov-Smirnov 5% Critical Value	0.283	95% BCA Bootstrap UCL	12.04
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	17.49
		97.5% Chebyshev(Mean, Sd) UCL	21.27
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	28.71
95% Approximate Gamma UCL (Use when n >= 40)	15.02		
95% Adjusted Gamma UCL (Use when n < 40)	16.95		
Potential UCL to Use		Use 95% Student's-t UCL	12.47

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.

Iron

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		Log-transformed Statistics	
Minimum	8660	Minimum of Log Data	9.066
Maximum	39100	Maximum of Log Data	10.57
Mean	16286	Mean of log Data	9.609
Geometric Mean	14903	SD of log Data	0.413
Median	15000		
SD	8580		
Std. Error of Mean	2713		
Coefficient of Variation	0.527		
Skewness	2.425		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.711	Shapiro Wilk Test Statistic	0.889
Shapiro Wilk Critical Value	0.842	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**	
95% Student's-t UCL	21260	95% H-UCL	21686
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	25357
95% Adjusted-CLT UCL (Chen-1995)	22973	97.5% Chebyshev (MVUE) UCL	29370
95% Modified-t UCL (Johnson-1978)	21607	99% Chebyshev (MVUE) UCL	37253
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.122	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3951		
MLE of Mean	16286		
MLE of Standard Deviation	8021		
nu star	82.45		
Approximate Chi Square Value (.05)	62.52	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	20749
Adjusted Chi Square Value	59.52	95% Jackknife UCL	21260
		95% Standard Bootstrap UCL	20540
Anderson-Darling Test Statistic	0.665	95% Bootstrap-t UCL	26676
Anderson-Darling 5% Critical Value	0.729	95% Hall's Bootstrap UCL	39489
Kolmogorov-Smirnov Test Statistic	0.261	95% Percentile Bootstrap UCL	21156
Kolmogorov-Smirnov 5% Critical Value	0.267	95% BCA Bootstrap UCL	22756
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	28113
		97.5% Chebyshev(Mean, Sd) UCL	33231
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	43283
95% Approximate Gamma UCL (Use when n >= 40)	21476		
95% Adjusted Gamma UCL (Use when n < 40)	22561		
Potential UCL to Use		Use 95% Approximate Gamma UCL	21476

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.

Lead

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		Log-transformed Statistics	
Minimum	26.85	Minimum of Log Data	3.29
Maximum	382	Maximum of Log Data	5.945
Mean	116.3	Mean of log Data	4.429
Geometric Mean	83.84	SD of log Data	0.822
Median	66.45		
SD	110.9		
Std. Error of Mean	35.07		
Coefficient of Variation	0.954		
Skewness	1.879		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.761	Shapiro Wilk Test Statistic	0.951
Shapiro Wilk Critical Value	0.842	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**	
95% Student's-t UCL	180.6	95% H-UCL	249.6
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	245.4
95% Adjusted-CLT UCL (Chen-1995)	196.2	97.5% Chebyshev (MVUE) UCL	302.7
95% Modified-t UCL (Johnson-1978)	184	99% Chebyshev (MVUE) UCL	415.5

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.24	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	93.76		
MLE of Mean	116.3		
MLE of Standard Deviation	104.4		
nu star	24.8		
Approximate Chi Square Value (.05)	14.46	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	174
Adjusted Chi Square Value	13.11	95% Jackknife UCL	180.6
		95% Standard Bootstrap UCL	170.7
Anderson-Darling Test Statistic	0.488	95% Bootstrap-t UCL	291
Anderson-Darling 5% Critical Value	0.738	95% Hall's Bootstrap UCL	464.9
Kolmogorov-Smirnov Test Statistic	0.249	95% Percentile Bootstrap UCL	174
Kolmogorov-Smirnov 5% Critical Value	0.271	95% BCA Bootstrap UCL	192.6
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	269.1
		97.5% Chebyshev(Mean, Sd) UCL	335.3
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	465.2
95% Approximate Gamma UCL (Use when n >= 40)	199.4		
95% Adjusted Gamma UCL (Use when n < 40)	220		

Potential UCL to Use		Use 95% Approximate Gamma UCL	199.4

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.

Low Molecular Weight PAHs

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	9
Raw Statistics		**Log-transformed Statistics**	
Minimum	1.773	Minimum of Log Data	0.573
Maximum	7.7	Maximum of Log Data	2.041
Mean	4.134	Mean of log Data	1.277
Geometric Mean	3.585	SD of log Data	0.57
Median	3.727		
SD	2.296		
Std. Error of Mean	0.765		
Coefficient of Variation	0.555		
Skewness	0.563		

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**	
Shapiro Wilk Test Statistic	0.874	Shapiro Wilk Test Statistic	0.894
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
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	5.557	95% H-UCL	6.792
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.62
95% Adjusted-CLT UCL (Chen-1995)	5.546	97.5% Chebyshev (MVUE) UCL	9.128
95% Modified-t UCL (Johnson-1978)	5.581	99% Chebyshev (MVUE) UCL	12.09
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.522	Data appear Normal at 5% Significance Level	
Theta Star	1.639		
MLE of Mean	4.134		
MLE of Standard Deviation	2.603		
nu star	45.4		
Approximate Chi Square Value (.05)	30.94	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	5.393
Adjusted Chi Square Value	28.45	95% Jackknife UCL	5.557
		95% Standard Bootstrap UCL	5.287
Anderson-Darling Test Statistic	0.483	95% Bootstrap-t UCL	5.7
Anderson-Darling 5% Critical Value	0.726	95% Hall's Bootstrap UCL	5.407
Kolmogorov-Smirnov Test Statistic	0.25	95% Percentile Bootstrap UCL	5.355
Kolmogorov-Smirnov 5% Critical Value	0.281	95% BCA Bootstrap UCL	5.546
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7.47
		97.5% Chebyshev(Mean, Sd) UCL	8.914
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	11.75
95% Approximate Gamma UCL (Use when n >= 40)	6.065		
95% Adjusted Gamma UCL (Use when n < 40)	6.597		
Potential UCL to Use		Use 95% Student's-t UCL	5.557

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.

Manganese

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10
Raw Statistics		**Log-transformed Statistics**	
Minimum	120	Minimum of Log Data	4.787
Maximum	271	Maximum of Log Data	5.602
Mean	190.1	Mean of log Data	5.216
Geometric Mean	184.1	SD of log Data	0.266
Median	178.5		
SD	50.65		
Std. Error of Mean	16.02		
Coefficient of Variation	0.267		
Skewness	0.504		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.936	Shapiro Wilk Test Statistic	0.961
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	219.4	95% H-UCL	226.6
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	260.1
95% Adjusted-CLT UCL (Chen-1995)	219.1	97.5% Chebyshev (MVUE) UCL	290.4
95% Modified-t UCL (Johnson-1978)	219.8	99% Chebyshev (MVUE) UCL	350
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	11.2	**Data appear Normal at 5% Significance Level**	
Theta Star	16.96		
MLE of Mean	190.1		
MLE of Standard Deviation	56.78		
nu star	224.1		
Approximate Chi Square Value (.05)	190.4	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	216.4
Adjusted Chi Square Value	185.1	95% Jackknife UCL	219.4
		95% Standard Bootstrap UCL	215.2
Anderson-Darling Test Statistic	0.235	95% Bootstrap-t UCL	221.6
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	232.5
Kolmogorov-Smirnov Test Statistic	0.138	95% Percentile Bootstrap UCL	215
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	216
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	259.9
		97.5% Chebyshev(Mean, Sd) UCL	290.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	349.4
95% Approximate Gamma UCL (Use when n >= 40)	223.6		
95% Adjusted Gamma UCL (Use when n < 40)	230.1		
Potential UCL to Use		Use 95% Student's-t UCL	219.4

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.

Mercury

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		Log-transformed Statistics	
Minimum	0.71	Minimum of Log Data	-0.342
Maximum	147	Maximum of Log Data	4.99
Mean	30.5	Mean of log Data	1.522
Geometric Mean	4.583	SD of log Data	1.991
Median	2.55		
SD	57.91		
Std. Error of Mean	18.31		
Coefficient of Variation	1.899		
Skewness	1.777		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.561	Shapiro Wilk Test Statistic	0.819
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	64.07	95% H-UCL	1177
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	84.01
95% Adjusted-CLT UCL (Chen-1995)	71.62	97.5% Chebyshev (MVUE) UCL	110.9
95% Modified-t UCL (Johnson-1978)	65.79	99% Chebyshev (MVUE) UCL	163.6
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.315	Data do not follow a Discernable Distribution (0.05)	
Theta Star	96.99		
MLE of Mean	30.5		
MLE of Standard Deviation	54.39		
nu star	6.29		
Approximate Chi Square Value (.05)	1.79	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	60.63
Adjusted Chi Square Value	1.405	95% Jackknife UCL	64.07
		95% Standard Bootstrap UCL	58.84
Anderson-Darling Test Statistic	1.334	95% Bootstrap-t UCL	475.5
Anderson-Darling 5% Critical Value	0.804	95% Hall's Bootstrap UCL	639.2
Kolmogorov-Smirnov Test Statistic	0.361	95% Percentile Bootstrap UCL	59.44
Kolmogorov-Smirnov 5% Critical Value	0.286	95% BCA Bootstrap UCL	72.45
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	110.3
		97.5% Chebyshev(Mean, Sd) UCL	144.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	212.7
95% Approximate Gamma UCL (Use when n >= 40)	107.2		
95% Adjusted Gamma UCL (Use when n < 40)	136.5		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	212.7

Recommended UCL exceeds the maximum observation

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.

Nickel

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	9
Raw Statistics		**Log-transformed Statistics**	
Minimum	5.6	Minimum of Log Data	1.723
Maximum	75.9	Maximum of Log Data	4.329
Mean	17.65	Mean of log Data	2.542
Geometric Mean	12.71	SD of log Data	0.726
Median	9.95		
SD	20.96		
Std. Error of Mean	6.629		
Coefficient of Variation	1.188		
Skewness	2.907		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.548	Shapiro Wilk Test Statistic	0.816
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	29.8	95% H-UCL	30.87
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	32.61
95% Adjusted-CLT UCL (Chen-1995)	35.06	97.5% Chebyshev (MVUE) UCL	39.78
95% Modified-t UCL (Johnson-1978)	30.82	99% Chebyshev (MVUE) UCL	53.87
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.235	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	14.29		
MLE of Mean	17.65		
MLE of Standard Deviation	15.88		
nu star	24.71		
Approximate Chi Square Value (.05)	14.39	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	28.55
Adjusted Chi Square Value	13.04	95% Jackknife UCL	29.8
		95% Standard Bootstrap UCL	27.77
Anderson-Darling Test Statistic	1.25	95% Bootstrap-t UCL	86.93
Anderson-Darling 5% Critical Value	0.738	95% Hall's Bootstrap UCL	80.66
Kolmogorov-Smirnov Test Statistic	0.313	95% Percentile Bootstrap UCL	30.06
Kolmogorov-Smirnov 5% Critical Value	0.271	95% BCA Bootstrap UCL	38.11
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	46.54
		97.5% Chebyshev(Mean, Sd) UCL	59.05
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	83.61
95% Approximate Gamma UCL (Use when n >= 40)	30.31		
95% Adjusted Gamma UCL (Use when n < 40)	33.45		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	46.54

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 Dioxin-like Congener TEQ (bird)

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	9

Raw Statistics		Log-transformed Statistics	
Minimum	3.971E-06	Minimum of Log Data	-12.44
Maximum	7.653E-05	Maximum of Log Data	-9.478
Mean	3.845E-05	Mean of log Data	-10.5
Geometric Mean	2.759E-05	SD of log Data	0.997
Median	4.478E-05		
SD	0.0000262		
Std. Error of Mean	8.733E-06		
Coefficient of Variation	N/A		
Skewness	0.0838		

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	
Shapiro Wilk Test Statistic	0.937	Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
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	5.469E-05	95% H-UCL	0.0001419
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0001055
95% Adjusted-CLT UCL (Chen-1995)	5.308E-05	97.5% Chebyshev (MVUE) UCL	0.0001329
95% Modified-t UCL (Johnson-1978)	5.473E-05	99% Chebyshev (MVUE) UCL	0.0001867
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.176	Data appear Normal at 5% Significance Level	
Theta Star	3.269E-05		
MLE of Mean	3.845E-05		
MLE of Standard Deviation	3.545E-05		
nu star	21.17		
Approximate Chi Square Value (.05)	11.72	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	5.282E-05
Adjusted Chi Square Value	10.27	95% Jackknife UCL	5.469E-05
		95% Standard Bootstrap UCL	5.221E-05
Anderson-Darling Test Statistic	0.345	95% Bootstrap-t UCL	5.519E-05
Anderson-Darling 5% Critical Value	0.733	95% Hall's Bootstrap UCL	5.14E-05
Kolmogorov-Smirnov Test Statistic	0.233	95% Percentile Bootstrap UCL	5.148E-05
Kolmogorov-Smirnov 5% Critical Value	0.284	95% BCA Bootstrap UCL	5.269E-05
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7.652E-05
		97.5% Chebyshev(Mean, Sd) UCL	9.299E-05
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0001254
95% Approximate Gamma UCL (Use when n >= 40)	6.947E-05		
95% Adjusted Gamma UCL (Use when n < 40)	7.929E-05		

Potential UCL to Use	Use 95% Student's-t UCL 5.469E-05

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 Dioxin-like Congener TEQ (mammal)

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	9

Raw Statistics		**Log-transformed Statistics**	
Minimum	1.538E-06	Minimum of Log Data	-13.39
Maximum	2.823E-05	Maximum of Log Data	-10.48
Mean	1.381E-05	Mean of log Data	-11.45
Geometric Mean	1.062E-05	SD of log Data	0.9
Median	1.589E-05		
SD	8.4E-06		
Std. Error of Mean	0.0000028		
Coefficient of Variation	N/A		
Skewness	0.153		

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**	
Shapiro Wilk Test Statistic	0.966	Shapiro Wilk Test Statistic	0.872
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
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	1.902E-05	95% H-UCL	4.158E-05
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.532E-05
95% Adjusted-CLT UCL (Chen-1995)	1.857E-05	97.5% Chebyshev (MVUE) UCL	4.41E-05
95% Modified-t UCL (Johnson-1978)	1.904E-05	99% Chebyshev (MVUE) UCL	6.134E-05
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.443	Data appear Normal at 5% Significance Level	
Theta Star	9.569E-06		
MLE of Mean	1.381E-05		
MLE of Standard Deviation	1.15E-05		
nu star	25.97		
Approximate Chi Square Value (.05)	15.36	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	1.841E-05
Adjusted Chi Square Value	13.67	95% Jackknife UCL	1.902E-05
		95% Standard Bootstrap UCL	1.815E-05
Anderson-Darling Test Statistic	0.382	95% Bootstrap-t UCL	1.916E-05
Anderson-Darling 5% Critical Value	0.73	95% Hall's Bootstrap UCL	1.863E-05
Kolmogorov-Smirnov Test Statistic	0.225	95% Percentile Bootstrap UCL	1.827E-05
Kolmogorov-Smirnov 5% Critical Value	0.282	95% BCA Bootstrap UCL	1.835E-05
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.601E-05
		97.5% Chebyshev(Mean, Sd) UCL	3.13E-05
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.167E-05
95% Approximate Gamma UCL (Use when n >= 40)	2.335E-05		
95% Adjusted Gamma UCL (Use when n < 40)	2.624E-05		
Potential UCL to Use		Use 95% Student's-t UCL	1.902E-05

Appendix C-1

ProUCL Outputs for UCLs - CHP Soil

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.

Pentachloronaphthalene, Total

General Statistics

Number of Valid Data	9	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	6
		Percent Non-Detects	66.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.23	Minimum Detected	-1.47
Maximum Detected	0.93	Maximum Detected	-0.0726
Mean of Detected	0.487	Mean of Detected	-0.915
SD of Detected	0.386	SD of Detected	0.742
Minimum Non-Detect	0.0855	Minimum Non-Detect	-2.459
Maximum Non-Detect	0.96	Maximum Non-Detect	-0.0408

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	9
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.824	Shapiro Wilk Test Statistic	0.887
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.285	Mean	-1.723
SD	0.281	SD	1.098
95% DL/2 (t) UCL	0.459	95% H-Stat (DL/2) UCL	1.249
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.924
		SD in Log Scale	0.89
		Mean in Original Scale	0.224
		SD in Original Scale	0.277
		95% t UCL	0.396
		95% Percentile Bootstrap UCL	0.396
		95% BCA Bootstrap UCL	0.463
		95% H-UCL	0.558

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	

K-S Test Statistic	N/A	Mean	0.33
5% K-S Critical Value	N/A	SD	0.228
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0992
		95% KM (t) UCL	0.514
Assuming Gamma Distribution		95% KM (z) UCL	0.493
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.48
Minimum	N/A	95% KM (bootstrap t) UCL	0.989
Maximum	N/A	95% KM (BCA) UCL	0.93
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.93
Median	N/A	95% KM (Chebyshev) UCL	0.762
SD	N/A	97.5% KM (Chebyshev) UCL	0.949
k star	N/A	99% KM (Chebyshev) UCL	1.316
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	95% KM (t) UCL	0.514
95% Gamma Approximate UCL (Use when n >= 40)	N/A	95% KM (Percentile Bootstrap) UCL	0.93
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

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.

Perchlorate (organic)

General Statistics

Number of Valid Data	9	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	6
		Percent Non-Detects	66.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.00029	Minimum Detected	-8.146
Maximum Detected	0.001	Maximum Detected	-6.908
Mean of Detected	0.00056	Mean of Detected	-7.634
SD of Detected	0.0003843	SD of Detected	0.646
Minimum Non-Detect	0.00057	Minimum Non-Detect	-7.47
Maximum Non-Detect	0.00061	Maximum Non-Detect	-7.402

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs

Number treated as Non-Detect	8
Number treated as Detected	1
Single DL Non-Detect Percentage	88.89%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.853	Shapiro Wilk Test Statistic	0.917
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0003828	Mean	-7.966
SD	0.0002337	SD	0.408
95% DL/2 (t) UCL	0.0005277	95% H-Stat (DL/2) UCL	0.0005141
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-7.863
		SD in Log Scale	0.4
		Mean in Original Scale	0.0004194
		SD in Original Scale	0.0002262
		95% t UCL	0.0005596
		95% Percentile Bootstrap UCL	0.000551
		95% BCA Bootstrap UCL	0.0005906
		95% H-UCL	0.0005636

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	N/A	**Data appear Normal at 5% Significance Level**
Theta Star	N/A	
nu star	N/A	
A-D Test Statistic	N/A	**Nonparametric Statistics**
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method

K-S Test Statistic	N/A	Mean	0.0004133
5% K-S Critical Value	N/A	SD	0.0002127
Data not Gamma Distributed at 5% Significance Level		SE of Mean	9.302E-05
		95% KM (t) UCL	0.0005863
Assuming Gamma Distribution		95% KM (z) UCL	0.0005663
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0005876
Minimum	N/A	95% KM (bootstrap t) UCL	0.0007792
Maximum	N/A	95% KM (BCA) UCL	0.001
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	0.0008188
SD	N/A	97.5% KM (Chebyshev) UCL	0.0009942
k star	N/A	99% KM (Chebyshev) UCL	0.00134
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	95% KM (t) UCL	0.0005863
95% Gamma Approximate UCL (Use when n >= 40)	N/A	95% KM (Percentile Bootstrap) UCL	N/A
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

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.

Selenium

General Statistics

Number of Valid Data	10	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	5
		Percent Non-Detects	50.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.525	Minimum Detected	-0.644
Maximum Detected	2.1	Maximum Detected	0.742
Mean of Detected	1.305	Mean of Detected	0.168
SD of Detected	0.587	SD of Detected	0.525
Minimum Non-Detect	3	Minimum Non-Detect	1.099
Maximum Non-Detect	4	Maximum Non-Detect	1.386

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 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	0.987	Shapiro Wilk Test Statistic	0.942
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.493	Mean	0.34
SD	0.462	SD	0.403
95% DL/2 (t) UCL	1.76	95% H-Stat (DL/2) UCL	2.019
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.168
		SD in Log Scale	0.376
		Mean in Original Scale	1.254
		SD in Original Scale	0.429
		95% t UCL	1.502
		95% Percentile Bootstrap UCL	1.46
		95% BCA Bootstrap UCL	1.481
		95% H-UCL	1.643

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.232	**Data appear Normal at 5% Significance Level**	
Theta Star	0.585		
nu star	22.32		
A-D Test Statistic	0.241	**Nonparametric Statistics**	
5% A-D Critical Value	0.681	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.681	Mean	1.305
5% K-S Critical Value	0.358	SD	0.525

Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.263
		95% KM (t) UCL	1.787
Assuming Gamma Distribution		95% KM (z) UCL	1.737
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.816
Minimum	0.525	95% KM (bootstrap t) UCL	1.847
Maximum	2.1	95% KM (BCA) UCL	1.683
Mean	1.327	95% KM (Percentile Bootstrap) UCL	1.72
Median	1.359	95% KM (Chebyshev) UCL	2.45
SD	0.426	97.5% KM (Chebyshev) UCL	2.946
k star	6.386	99% KM (Chebyshev) UCL	3.919
Theta star	0.208		
Nu star	127.7	**Potential UCLs to Use**	
AppChi2	102.6	95% KM (t) UCL	1.787
95% Gamma Approximate UCL (Use when n >= 40)	1.652	95% KM (Percentile Bootstrap) UCL	1.72
95% Adjusted Gamma UCL (Use when n < 40)	1.718		

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.

Appendix C-1
ProUCL Outputs for UCLs - CHP Soil

Silver

General Statistics

Number of Valid Data	10	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	6
		Percent Non-Detects	60.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.11	Minimum Detected	-2.207
Maximum Detected	2.25	Maximum Detected	0.811
Mean of Detected	0.968	Mean of Detected	-0.674
SD of Detected	1.011	SD of Detected	1.44
Minimum Non-Detect	0.99	Minimum Non-Detect	-0.0101
Maximum Non-Detect	1.2	Maximum Non-Detect	0.182

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	2
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	80.00%

Warning: There are only 4 Distinct 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	0.892	Shapiro Wilk Test Statistic	0.911
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.707	Mean	-0.649
SD	0.626	SD	0.833
95% DL/2 (t) UCL	1.069	95% H-Stat (DL/2) UCL	1.598
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.367
		SD in Log Scale	1.081
		Mean in Original Scale	0.492
		SD in Original Scale	0.715
		95% t UCL	0.907
		95% Percentile Bootstrap UCL	0.908
		95% BCA Bootstrap UCL	1.025
		95% H-UCL	1.486
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.394	Data appear Normal at 5% Significance Level	
Theta Star	2.453		
nu star	3.156		
A-D Test Statistic	0.353	**Nonparametric Statistics**	
5% A-D Critical Value	0.668	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.668	Mean	0.483
5% K-S Critical Value	0.403	SD	0.681

Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.25
		95% KM (t) UCL	0.942
Assuming Gamma Distribution		95% KM (z) UCL	0.895
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.909
Minimum	0.000001	95% KM (bootstrap t) UCL	0.971
Maximum	2.25	95% KM (BCA) UCL	1.68
Mean	0.478	95% KM (Percentile Bootstrap) UCL	1.395
Median	0.16	95% KM (Chebyshev) UCL	1.575
SD	0.73	97.5% KM (Chebyshev) UCL	2.047
k star	0.235	99% KM (Chebyshev) UCL	2.975
Theta star	2.033		
Nu star	4.703	**Potential UCLs to Use**	
AppChi2	1.017	95% KM (t) UCL	0.942
95% Gamma Approximate UCL (Use when n >= 40)	2.21	95% KM (Percentile Bootstrap) UCL	1.395
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

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.

Tetrachloronaphthalene, Total

General Statistics

Number of Valid Data	9	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	6
		Percent Non-Detects	66.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.47	Minimum Detected	-0.755
Maximum Detected	2.5	Maximum Detected	0.916
Mean of Detected	1.16	Mean of Detected	-0.171
SD of Detected	1.161	SD of Detected	0.942
Minimum Non-Detect	0.0855	Minimum Non-Detect	-2.459
Maximum Non-Detect	0.96	Maximum Non-Detect	-0.0408

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	1
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	88.89%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.765	Shapiro Wilk Test Statistic	0.787
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.509	Mean	-1.475
SD	0.771	SD	1.371
95% DL/2 (t) UCL	0.987	95% H-Stat (DL/2) UCL	4.304
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.658
		SD in Log Scale	1.226
		Mean in Original Scale	0.449
		SD in Original Scale	0.788
		95% t UCL	0.938
		95% Percentile Bootstrap UCL	0.94
		95% BCA Bootstrap UCL	1.202
		95% H-UCL	2.067
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	N/A	**Data appear Lognormal at 5% Significance Level**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	

K-S Test Statistic	N/A	Mean	0.701
5% K-S Critical Value	N/A	SD	0.636
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.26
		95% KM (t) UCL	1.184
Assuming Gamma Distribution		95% KM (z) UCL	1.128
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.102
Minimum	N/A	95% KM (bootstrap t) UCL	9.996
Maximum	N/A	95% KM (BCA) UCL	2.5
Mean	N/A	95% KM (Percentile Bootstrap) UCL	2.5
Median	N/A	95% KM (Chebyshev) UCL	1.833
SD	N/A	97.5% KM (Chebyshev) UCL	2.323
k star	N/A	99% KM (Chebyshev) UCL	3.285
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	95% KM (t) UCL	1.184
95% Gamma Approximate UCL (Use when n >= 40)	N/A	95% KM (% Bootstrap) UCL	2.5
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

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.

Total PCB Homologues

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	9

Raw Statistics		Log-transformed Statistics	
Minimum	0.163	Minimum of Log Data	-1.814
Maximum	1.84	Maximum of Log Data	0.61
Mean	0.695	Mean of log Data	-0.694
Geometric Mean	0.5	SD of log Data	0.885
Median	0.511		
SD	0.583		
Std. Error of Mean	0.194		
Coefficient of Variation	0.839		
Skewness	1.121		

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	
Shapiro Wilk Test Statistic	0.87	Shapiro Wilk Test Statistic	0.94
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
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	1.057	95% H-UCL	1.881
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.628
95% Adjusted-CLT UCL (Chen-1995)	1.093	97.5% Chebyshev (MVUE) UCL	2.029
95% Modified-t UCL (Johnson-1978)	1.069	99% Chebyshev (MVUE) UCL	2.818
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.182	Data appear Normal at 5% Significance Level	
Theta Star	0.588		
MLE of Mean	0.695		
MLE of Standard Deviation	0.64		
nu star	21.27		
Approximate Chi Square Value (.05)	11.79	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	1.015
Adjusted Chi Square Value	10.34	95% Jackknife UCL	1.057
		95% Standard Bootstrap UCL	1.004
Anderson-Darling Test Statistic	0.274	95% Bootstrap-t UCL	1.229
Anderson-Darling 5% Critical Value	0.733	95% Hall's Bootstrap UCL	1.41
Kolmogorov-Smirnov Test Statistic	0.173	95% Percentile Bootstrap UCL	1.009
Kolmogorov-Smirnov 5% Critical Value	0.283	95% BCA Bootstrap UCL	1.036
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.542
		97.5% Chebyshev(Mean, Sd) UCL	1.909
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.629
95% Approximate Gamma UCL (Use when n >= 40)	1.254		
95% Adjusted Gamma UCL (Use when n < 40)	1.431		
Potential UCL to Use		Use 95% Student's-t UCL	1.057

Appendix C-1
ProUCL Outputs for UCLs - CHP Soil

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.

Trichloronaphthalene, Total

General Statistics

Number of Valid Data	9	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	6
		Percent Non-Detects	66.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.16	Minimum Detected	-1.833
Maximum Detected	0.76	Maximum Detected	-0.274
Mean of Detected	0.362	Mean of Detected	-1.303
SD of Detected	0.345	SD of Detected	0.891
Minimum Non-Detect	0.0855	Minimum Non-Detect	-2.459
Maximum Non-Detect	0.96	Maximum Non-Detect	-0.0408

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	9
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.756	Shapiro Wilk Test Statistic	0.765
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.243	Mean	-1.852
SD	0.238	SD	1.034
95% DL/2 (t) UCL	0.391	95% H-Stat (DL/2) UCL	0.899
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.478
		SD in Log Scale	1.042
		Mean in Original Scale	0.154
		SD in Original Scale	0.233
		95% t UCL	0.298
		95% Percentile Bootstrap UCL	0.299
		95% BCA Bootstrap UCL	0.366
		95% H-UCL	0.494

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	

K-S Test Statistic	N/A	Mean	0.236
5% K-S Critical Value	N/A	SD	0.198
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0858
		95% KM (t) UCL	0.395
Assuming Gamma Distribution		95% KM (z) UCL	0.377
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.374
Minimum	N/A	95% KM (bootstrap t) UCL	7.564
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.76
Median	N/A	95% KM (Chebyshev) UCL	0.61
SD	N/A	97.5% KM (Chebyshev) UCL	0.772
k star	N/A	99% KM (Chebyshev) UCL	1.089
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	95% KM (t) UCL	0.395
95% Gamma Approximate UCL (Use when n >= 40)	N/A	95% KM (% Bootstrap) UCL	0.76
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

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.

Vanadium

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		Log-transformed Statistics	
Minimum	11.5	Minimum of Log Data	2.442
Maximum	19.9	Maximum of Log Data	2.991
Mean	16.63	Mean of log Data	2.795
Geometric Mean	16.37	SD of log Data	0.193
Median	17.75		
SD	2.984		
Std. Error of Mean	0.944		
Coefficient of Variation	0.179		
Skewness	-0.733		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.881	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	18.36	95% H-UCL	18.81
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	21.09
95% Adjusted-CLT UCL (Chen-1995)	17.95	97.5% Chebyshev (MVUE) UCL	23.01
95% Modified-t UCL (Johnson-1978)	18.32	99% Chebyshev (MVUE) UCL	26.79
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	22.08	**Data appear Normal at 5% Significance Level**	
Theta Star	0.753		
MLE of Mean	16.63		
MLE of Standard Deviation	3.539		
nu star	441.6		
Approximate Chi Square Value (.05)	393.8	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	18.18
Adjusted Chi Square Value	386	95% Jackknife UCL	18.36
		95% Standard Bootstrap UCL	18.1
Anderson-Darling Test Statistic	0.65	95% Bootstrap-t UCL	18.14
Anderson-Darling 5% Critical Value	0.724	95% Hall's Bootstrap UCL	17.86
Kolmogorov-Smirnov Test Statistic	0.227	95% Percentile Bootstrap UCL	18.01
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	17.92
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	20.74
		97.5% Chebyshev(Mean, Sd) UCL	22.52
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	26.02
95% Approximate Gamma UCL (Use when n >= 40)	18.64		
95% Adjusted Gamma UCL (Use when n < 40)	19.02		
Potential UCL to Use		Use 95% Student's-t UCL	18.36

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.

Zinc

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10
Raw Statistics		**Log-transformed Statistics**	
Minimum	32.2	Minimum of Log Data	3.472
Maximum	315	Maximum of Log Data	5.753
Mean	149.3	Mean of log Data	4.764
Geometric Mean	117.2	SD of log Data	0.773
Median	121.5		
SD	100.7		
Std. Error of Mean	31.83		
Coefficient of Variation	0.674		
Skewness	0.59		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.915	Shapiro Wilk Test Statistic	0.951
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	207.6	95% H-UCL	313.6
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	320.6
95% Adjusted-CLT UCL (Chen-1995)	208	97.5% Chebyshev (MVUE) UCL	393.4
95% Modified-t UCL (Johnson-1978)	208.6	99% Chebyshev (MVUE) UCL	536.3
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.624	Data appear Normal at 5% Significance Level	
Theta Star	91.92		
MLE of Mean	149.3		
MLE of Standard Deviation	117.1		
nu star	32.47		
Approximate Chi Square Value (.05)	20.45	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	201.6
Adjusted Chi Square Value	18.8	95% Jackknife UCL	207.6
		95% Standard Bootstrap UCL	199.5
Anderson-Darling Test Statistic	0.235	95% Bootstrap-t UCL	218.1
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	215.9
Kolmogorov-Smirnov Test Statistic	0.147	95% Percentile Bootstrap UCL	202.9
Kolmogorov-Smirnov 5% Critical Value	0.27	95% BCA Bootstrap UCL	207.4
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	288
		97.5% Chebyshev(Mean, Sd) UCL	348.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	466
95% Approximate Gamma UCL (Use when n >= 40)	237		
95% Adjusted Gamma UCL (Use when n < 40)	257.7		
Potential UCL to Use		Use 95% Student's-t UCL	207.6

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.

High Molecular Weight PAHs

Appendix C-1
ProUCL Outputs for UCLs - CHP Soil

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	9

Raw Statistics		**Log-transformed Statistics**	
Minimum	1.586	Minimum of Log Data	0.461
Maximum	18.08	Maximum of Log Data	2.895
Mean	8.715	Mean of log Data	1.875
Geometric Mean	6.523	SD of log Data	0.882
Median	7.76		
SD	6.055		
Std. Error of Mean	2.018		
Coefficient of Variation	0.695		
Skewness	0.392		

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**	
Shapiro Wilk Test Statistic	0.919	Shapiro Wilk Test Statistic	0.91
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
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	12.47	95% H-UCL	24.36
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	21.16
95% Adjusted-CLT UCL (Chen-1995)	12.32	97.5% Chebyshev (MVUE) UCL	26.37
95% Modified-t UCL (Johnson-1978)	12.51	99% Chebyshev (MVUE) UCL	36.61
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.324	Data appear Normal at 5% Significance Level	
Theta Star	6.58		
MLE of Mean	8.715		
MLE of Standard Deviation	7.572		
nu star	23.84		
Approximate Chi Square Value (.05)	13.73	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	12.03
Adjusted Chi Square Value	12.14	95% Jackknife UCL	12.47
		95% Standard Bootstrap UCL	11.8
Anderson-Darling Test Statistic	0.338	95% Bootstrap-t UCL	13.25
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	12.76
Kolmogorov-Smirnov Test Statistic	0.18	95% Percentile Bootstrap UCL	11.98
Kolmogorov-Smirnov 5% Critical Value	0.283	95% BCA Bootstrap UCL	12.1
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	17.51
		97.5% Chebyshev(Mean, Sd) UCL	21.32
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	28.8
95% Approximate Gamma UCL (Use when n >= 40)	15.13		
95% Adjusted Gamma UCL (Use when n < 40)	17.12		
Potential UCL to Use		Use 95% Student's-t UCL	12.47

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.

Low Molecular Weight PAHs

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	9

Raw Statistics		Log-transformed Statistics	
Minimum	1.773	Minimum of Log Data	0.573
Maximum	7.7	Maximum of Log Data	2.041
Mean	4.098	Mean of log Data	1.263
Geometric Mean	3.537	SD of log Data	0.579
Median	3.555		
SD	2.318		
Std. Error of Mean	0.773		
Coefficient of Variation	0.566		
Skewness	0.579		

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	
Shapiro Wilk Test Statistic	0.871	Shapiro Wilk Test Statistic	0.894
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
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	5.535	95% H-UCL	6.818
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.608
95% Adjusted-CLT UCL (Chen-1995)	5.528	97.5% Chebyshev (MVUE) UCL	9.127
95% Modified-t UCL (Johnson-1978)	5.559	99% Chebyshev (MVUE) UCL	12.11
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.444	Data appear Normal at 5% Significance Level	
Theta Star	1.677		
MLE of Mean	4.098		
MLE of Standard Deviation	2.621		
nu star	43.99		
Approximate Chi Square Value (.05)	29.78	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	5.369
Adjusted Chi Square Value	27.34	95% Jackknife UCL	5.535
		95% Standard Bootstrap UCL	5.323
Anderson-Darling Test Statistic	0.471	95% Bootstrap-t UCL	5.831
Anderson-Darling 5% Critical Value	0.726	95% Hall's Bootstrap UCL	5.392
Kolmogorov-Smirnov Test Statistic	0.241	95% Percentile Bootstrap UCL	5.335
Kolmogorov-Smirnov 5% Critical Value	0.281	95% BCA Bootstrap UCL	5.422
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7.466
		97.5% Chebyshev(Mean, Sd) UCL	8.923
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	11.79
95% Approximate Gamma UCL (Use when n >= 40)	6.053		
95% Adjusted Gamma UCL (Use when n < 40)	6.594		

Potential UCL to Use	Use 95% Student's-t UCL 5.535

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.

	General UCL Statistics for Data Sets with Non-Detects			
User Selected Options				
From File	Area_B.wst			
Full Precision	OFF			
Confidence Coefficient	95%			
Number of Bootstrap Operations	2000			
2,3,7,8-TCDD TEQ (bird)				
General Statistics				
Number of Valid Observations	31		Number of Distinct Observations	31
Raw Statistics			Log-transformed Statistics	
Minimum	1.184E-06		Minimum of Log Data	-13.65
Maximum	0.0018		Maximum of Log Data	-6.323
Mean	0.0002416		Mean of log Data	-9.525
Geometric Mean	7.298E-05		SD of log Data	1.694
Median	8.101E-05			
SD	0.0004263			
Std. Error of Mean	7.657E-05			
Coefficient of Variation	1.764			
Skewness	2.741			
Relevant UCL Statistics				
Normal Distribution Test			Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.582		Shapiro Wilk Test Statistic	0.987
Shapiro Wilk Critical Value	0.929		Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level			Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution			Assuming Lognormal Distribution	
95% Student's-t UCL	0.0003716		95% H-UCL	0.0008638
95% UCLs (Adjusted for Skewness)			95% Chebyshev (MVUE) UCL	0.0007559
95% Adjusted-CLT UCL (Chen-1995)	0.0004079		97.5% Chebyshev (MVUE) UCL	0.0009631
95% Modified-t UCL (Johnson-1978)	0.0003779		99% Chebyshev (MVUE) UCL	0.00137
Gamma Distribution Test			Data Distribution	
k star (bias corrected)	0.497		Data appear Lognormal at 5% Significance Level	
Theta Star	0.0004862			
MLE of Mean	0.0002416			
MLE of Standard Deviation	0.0003428			
nu star	30.81			
Approximate Chi Square Value (.05)	19.13		Nonparametric Statistics	
Adjusted Level of Significance	0.0413		95% CLT UCL	0.0003676
Adjusted Chi Square Value	18.62		95% Jackknife UCL	0.0003716
			95% Standard Bootstrap UCL	0.0003644
Anderson-Darling Test Statistic	0.869		95% Bootstrap-t UCL	0.0004757
Anderson-Darling 5% Critical Value	0.807		95% Hall's Bootstrap UCL	0.0004749
Kolmogorov-Smirnov Test Statistic	0.174		95% Percentile Bootstrap UCL	0.0003717
Kolmogorov-Smirnov 5% Critical Value	0.166		95% BCA Bootstrap UCL	0.0004111
Data not Gamma Distributed at 5% Significance Level			95% Chebyshev(Mean, Sd) UCL	0.0005754
			97.5% Chebyshev(Mean, Sd) UCL	0.0007198
Assuming Gamma Distribution			99% Chebyshev(Mean, Sd) UCL	0.001

95% Approximate Gamma UCL (Use when n >= 40)	0.0003891						
95% Adjusted Gamma UCL (Use when n < 40)	0.0003999						
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL					0.0005754
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.							

2,3,7,8-TCDD TEQ (mammal)			
General Statistics			
Number of Valid Observations	31	Number of Distinct Observations	31
Raw Statistics		Log-transformed Statistics	
Minimum	8.1E-07	Minimum of Log Data	-14.03
Maximum	0.0004689	Maximum of Log Data	-7.665
Mean	5.659E-05	Mean of log Data	-10.82
Geometric Mean	1.997E-05	SD of log Data	1.522
Median	2.097E-05		
SD	9.939E-05		
Std. Error of Mean	1.785E-05		
Coefficient of Variation	N/A		
Skewness	3.113		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.572	Shapiro Wilk Test Statistic	0.99
Shapiro Wilk Critical Value	0.929	Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	8.689E-05	95% H-UCL	0.0001508
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0001485
95% Adjusted-CLT UCL (Chen-1995)	9.662E-05	97.5% Chebyshev (MVUE) UCL	0.0001873
95% Modified-t UCL (Johnson-1978)	8.855E-05	99% Chebyshev (MVUE) UCL	0.0002633
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.558	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	0.0001014		
MLE of Mean	5.659E-05		
MLE of Standard Deviation	7.576E-05		
nu star	34.6		
Approximate Chi Square Value (.05)	22.14	Nonparametric Statistics	
Adjusted Level of Significance	0.0413	95% CLT UCL	8.595E-05
Adjusted Chi Square Value	21.59	95% Jackknife UCL	8.689E-05
		95% Standard Bootstrap UCL	8.619E-05
Anderson-Darling Test Statistic	0.83	95% Bootstrap-t UCL	0.0001261
Anderson-Darling 5% Critical Value	0.801	95% Hall's Bootstrap UCL	0.0002329
Kolmogorov-Smirnov Test Statistic	0.139	95% Percentile Bootstrap UCL	8.812E-05
Kolmogorov-Smirnov 5% Critical Value	0.166	95% BCA Bootstrap UCL	0.0001004
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0001344
		97.5% Chebyshev(Mean, Sd) UCL	0.0001681
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0002342
95% Approximate Gamma UCL (Use when n >= 40)	8.842E-05		
95% Adjusted Gamma UCL (Use when n < 40)	9.07E-05		
Potential UCL to Use		Use 95% Approximate Gamma UCL	8.842E-05
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.			

2,4-Dimeth1lphenol			
General Statistics			
Number of Valid Data	31	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	30
		Percent Non-Detects	96.77%
Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!			
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).			
The data set for variable 2,4-Dimeth1lphenol was not processed!			

Aluminum			
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	45
Raw Statistics		Log-transformed Statistics	
Minimum	843	Minimum of Log Data	6.737
Maximum	7822	Maximum of Log Data	8.965
Mean	4544	Mean of log Data	8.351
Geometric Mean	4235	SD of log Data	0.412
Median	4420		
SD	1551		
Std. Error of Mean	231.3		
Coefficient of Variation	0.341		
Skewness	0.0798		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.983	Shapiro Wilk Test Statistic	0.907
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
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	4932	95% H-UCL	5171
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5876
95% Adjusted-CLT UCL (Chen-1995)	4927	97.5% Chebyshev (MVUE) UCL	6427
95% Modified-t UCL (Johnson-1978)	4933	99% Chebyshev (MVUE) UCL	7511
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	6.801	Data appear Normal at 5% Significance Level	
Theta Star	668.1		
MLE of Mean	4544		
MLE of Standard Deviation	1742		
nu star	612.1		
Approximate Chi Square Value (.05)	555.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	4924
Adjusted Chi Square Value	553.9	95% Jackknife UCL	4932
		95% Standard Bootstrap UCL	4926
Anderson-Darling Test Statistic	0.455	95% Bootstrap-t UCL	4934
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL	4938
Kolmogorov-Smirnov Test Statistic	0.12	95% Percentile Bootstrap UCL	4928
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL	4902
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5552
		97.5% Chebyshev(Mean, Sd) UCL	5988
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6845
95% Approximate Gamma UCL (Use when n >= 40)	5005		
95% Adjusted Gamma UCL (Use when n < 40)	5021		
Potential UCL to Use		Use 95% Student's-t UCL	4932
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.			

Antimon1			
General Statistics			
Number of Valid Data	45	Number of Detected Data	29
Number of Distinct Detected Data	24	Number of Non-Detect Data	16
		Percent Non-Detects	35.56%
Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.46	Minimum Detected	-0.777
Maximum Detected	580	Maximum Detected	6.363
Mean of Detected	45.07	Mean of Detected	1.58
SD of Detected	126	SD of Detected	1.861
Minimum Non-Detect	6	Minimum Non-Detect	1.792
Maximum Non-Detect	7.8	Maximum Non-Detect	2.054
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	36
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	80.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.408	Shapiro Wilk Test Statistic	0.854
5% Shapiro Wilk Critical Value	0.926	5% Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	30.23	Mean	1.445
SD	102.5	SD	1.497
95% DL/2 (t) UCL	55.9	95% H-Stat (DL/2) UCL	25.51
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.301
		SD in Log Scale	1.564
		Mean in Original Scale	29.94
		SD in Original Scale	102.6
		95% t UCL	55.63
		95% Percentile Bootstrap UCL	57.9
		95% BCA Bootstrap UCL	70.12
		95% H-UCL	25.74
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.299	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	150.6		
nu star	17.36		
A-D Test Statistic	4.058	**Nonparametric Statistics**	
5% A-D Critical Value	0.854	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.854	Mean	29.77
5% K-S Critical Value	0.177	SD	101.5
Data not Gamma Distributed at 5% Significance Level		SE of Mean	15.4
		95% KM (t) UCL	55.64
Assuming Gamma Distribution		95% KM (z) UCL	55.09

Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	55.47
Minimum	0.000001	95% KM (bootstrap t) UCL	118.3
Maximum	580	95% KM (BCA) UCL	60.01
Mean	29.76	95% KM (Percentile Bootstrap) UCL	57.1
Median	1.6	95% KM (Chebyshev) UCL	96.88
SD	102.7	97.5% KM (Chebyshev) UCL	125.9
k star	0.132	99% KM (Chebyshev) UCL	183
Theta star	225.1		
Nu star	11.9	**Potential UCLs to Use**	
AppChi2	5.159	97.5% KM (Chebyshev) UCL	125.9
95% Gamma Approximate UCL (Use when n >= 40)	68.62		
95% Adjusted Gamma UCL (Use when n < 40)	70.64		
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.

Arsenic			
General Statistics			
Number of Valid Data	45	Number of Detected Data	44
Number of Distinct Detected Data	42	Number of Non-Detect Data	1
		Percent Non-Detects	2.22%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.2	Minimum Detected	0.788
Maximum Detected	281	Maximum Detected	5.638
Mean of Detected	29.45	Mean of Detected	2.543
SD of Detected	51.21	SD of Detected	1.207
Minimum Non-Detect	1.2	Minimum Non-Detect	0.182
Maximum Non-Detect	1.2	Maximum Non-Detect	0.182
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.559	Shapiro Wilk Test Statistic	0.927
5% Shapiro Wilk Critical Value	0.944	5% Shapiro Wilk Critical Value	0.944
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	28.81	Mean	2.475
SD	50.8	SD	1.277
95% DL/2 (t) UCL	41.54	95% H-Stat (DL/2) UCL	45.17
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	28.11	Mean in Log Scale	2.475
SD	50.99	SD in Log Scale	1.278
95% MLE (t) UCL	40.88	Mean in Original Scale	28.81
95% MLE (Tiku) UCL	39.64	SD in Original Scale	50.8
		95% t UCL	41.54
		95% Percentile Bootstrap UCL	42.48
		95% BCA Bootstrap UCL	46.77
		95% H UCL	45.23
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.684	Data do not follow a Discernable Distribution (0.05)	
Theta Star	43.08		
nu star	60.16		
A-D Test Statistic	2.667	Nonparametric Statistics	
5% A-D Critical Value	0.793	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.793	Mean	28.85
5% K-S Critical Value	0.139	SD	50.22
Data not Gamma Distributed at 5% Significance Level		SE of Mean	7.572
		95% KM (t) UCL	41.57
Assuming Gamma Distribution		95% KM (z) UCL	41.3
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	41.56
Minimum	0.000001	95% KM (bootstrap t) UCL	52.59
Maximum	281	95% KM (BCA) UCL	43.71

Mean	28.8	95% KM (Percentile Bootstrap) UCL					42.29
Median	9.1	95% KM (Chebyshev) UCL					61.85
SD	50.81	97.5% KM (Chebyshev) UCL					76.14
k star	0.512	99% KM (Chebyshev) UCL					104.2
Theta star	56.24						
Nu star	46.09	**Potential UCLs to Use**					
AppChi2	31.51	95% KM (Chebyshev) UCL					61.85
95% Gamma Approximate UCL (Use when n >= 40)	42.12						
95% Adjusted Gamma UCL (Use when n < 40)	42.66						
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.							

Barium			
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	43
Raw Statistics		Log-transformed Statistics	
Minimum	32.8	Minimum of Log Data	3.49
Maximum	1443	Maximum of Log Data	7.274
Mean	180.6	Mean of log Data	4.685
Geometric Mean	108.3	SD of log Data	0.858
Median	91.7		
SD	286.4		
Std. Error of Mean	42.7		
Coefficient of Variation	1.586		
Skewness	3.618		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.483	Shapiro Wilk Test Statistic	0.881
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	252.3	95% H-UCL	208.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	252.4
95% Adjusted-CLT UCL (Chen-1995)	275.4	97.5% Chebyshev (MVUE) UCL	294.7
95% Modified-t UCL (Johnson-1978)	256.1	99% Chebyshev (MVUE) UCL	377.7
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.055	Data do not follow a Discernable Distribution (0.05)	
Theta Star	171.1		
MLE of Mean	180.6		
MLE of Standard Deviation	175.8		
nu star	94.97		
Approximate Chi Square Value (.05)	73.5	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	250.8
Adjusted Chi Square Value	72.87	95% Jackknife UCL	252.3
		95% Standard Bootstrap UCL	247.6
Anderson-Darling Test Statistic	3.934	95% Bootstrap-t UCL	357.2
Anderson-Darling 5% Critical Value	0.775	95% Hall's Bootstrap UCL	513.4
Kolmogorov-Smirnov Test Statistic	0.252	95% Percentile Bootstrap UCL	254.4
Kolmogorov-Smirnov 5% Critical Value	0.135	95% BCA Bootstrap UCL	275.9
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	366.7
		97.5% Chebyshev(Mean, Sd) UCL	447.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	605.4
95% Approximate Gamma UCL (Use when n >= 40)	233.3		
95% Adjusted Gamma UCL (Use when n < 40)	235.3		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	366.7
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.			

Beta-BHC			
General Statistics			
Number of Valid Data	31	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	30
		Percent Non-Detects	96.77%
Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!			
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).			
The data set for variable Beta-BHC was not processed!			

Bis(2-Eth1lhex1l)Phthalate			
General Statistics			
Number of Valid Data	31	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	24
		Percent Non-Detects	77.42%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.052	Minimum Detected	-2.957
Maximum Detected	2.6	Maximum Detected	0.956
Mean of Detected	0.888	Mean of Detected	-1.086
SD of Detected	1.073	SD of Detected	1.636
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.26	Maximum Non-Detect	-1.347
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	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	90.32%
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	0.79	Shapiro Wilk Test Statistic	0.868
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.278	Mean	-2.027
SD	0.585	SD	0.899
95% DL/2 (t) UCL	0.457	95% H-Stat (DL/2) UCL	0.288
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.977
		SD in Log Scale	1.144
		Mean in Original Scale	0.313
		SD in Original Scale	0.584
		95% t UCL	0.491
		95% Percentile Bootstrap UCL	0.5
		95% BCA Bootstrap UCL	0.579
		95% H-UCL	0.458
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.457	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.943		
nu star	6.4		

A-D Test Statistic	0.584	Nonparametric Statistics	
5% A-D Critical Value	0.743	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.743	Mean	0.281
5% K-S Critical Value	0.325	SD	0.576
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.113
		95% KM (t) UCL	0.474
Assuming Gamma Distribution		95% KM (z) UCL	0.468
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.464
Minimum	0.000001	95% KM (bootstrap t) UCL	0.7
Maximum	2.6	95% KM (BCA) UCL	0.467
Mean	0.402	95% KM (Percentile Bootstrap) UCL	0.497
Median	0.0744	95% KM (Chebyshev) UCL	0.775
SD	0.634	97.5% KM (Chebyshev) UCL	0.989
k star	0.189	99% KM (Chebyshev) UCL	1.408
Theta star	2.128		
Nu star	11.72	Potential UCLs to Use	
AppChi2	5.042	95% KM (t) UCL	0.474
95% Gamma Approximate UCL (Use when n >= 40)	0.935		
95% Adjusted Gamma UCL (Use when n < 40)	0.982		
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.			

But1lbenz1lphthalate			
General Statistics			
Number of Valid Data	31	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	31
		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 But1lbenz1lphthalate was not processed!			

Cadmium			
General Statistics			
Number of Valid Data	45	Number of Detected Data	23
Number of Distinct Detected Data	19	Number of Non-Detect Data	22
		Percent Non-Detects	48.89%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.074	Minimum Detected	-2.604
Maximum Detected	4.2	Maximum Detected	1.435
Mean of Detected	0.654	Mean of Detected	-0.931
SD of Detected	0.887	SD of Detected	0.958
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	2.4	Maximum Non-Detect	0.875
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	44
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	97.78%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.594	Shapiro Wilk Test Statistic	0.961
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.497	Mean	-1.048
SD	0.662	SD	0.721
95% DL/2 (t) UCL	0.663	95% H-Stat (DL/2) UCL	0.571
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.118
		SD in Log Scale	0.744
		Mean in Original Scale	0.473
		SD in Original Scale	0.658
		95% t UCL	0.638
		95% Percentile Bootstrap UCL	0.66
		95% BCA Bootstrap UCL	0.739
		95% H-UCL	0.547
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.007	Data appear Lognormal at 5% Significance Level	
Theta Star	0.649		
nu star	46.34		
A-D Test Statistic	1.084	Nonparametric Statistics	
5% A-D Critical Value	0.767	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.767	Mean	0.475
5% K-S Critical Value	0.186	SD	0.654
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.102
		95% KM (t) UCL	0.646
Assuming Gamma Distribution		95% KM (z) UCL	0.642

Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.645
Minimum	0.00571	95% KM (bootstrap t) UCL	0.812
Maximum	4.2	95% KM (BCA) UCL	0.668
Mean	0.536	95% KM (Percentile Bootstrap) UCL	0.657
Median	0.408	95% KM (Chebyshev) UCL	0.919
SD	0.666	97.5% KM (Chebyshev) UCL	1.111
k star	0.951	99% KM (Chebyshev) UCL	1.489
Theta star	0.563		
Nu star	85.61	**Potential UCLs to Use**	
AppChi2	65.28	95% KM (t) UCL	0.646
95% Gamma Approximate UCL (Use when n >= 40)	0.702	95% KM (% Bootstrap) UCL	0.657
95% Adjusted Gamma UCL (Use when n < 40)	0.709		

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.

Chromium			
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	41
Raw Statistics		Log-transformed Statistics	
Minimum	3.9	Minimum of Log Data	1.361
Maximum	54.3	Maximum of Log Data	3.995
Mean	14.84	Mean of log Data	2.492
Geometric Mean	12.08	SD of log Data	0.598
Median	11.4		
SD	11.82		
Std. Error of Mean	1.762		
Coefficient of Variation	0.797		
Skewness	2.241		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.691	Shapiro Wilk Test Statistic	0.919
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	17.8	95% H-UCL	17.28
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	20.36
95% Adjusted-CLT UCL (Chen-1995)	18.36	97.5% Chebyshev (MVUE) UCL	22.95
95% Modified-t UCL (Johnson-1978)	17.9	99% Chebyshev (MVUE) UCL	28.03
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.43	Data do not follow a Discernable Distribution (0.05)	
Theta Star	6.104		
MLE of Mean	14.84		
MLE of Standard Deviation	9.516		
nu star	218.7		
Approximate Chi Square Value (.05)	185.5	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	17.73
Adjusted Chi Square Value	184.5	95% Jackknife UCL	17.8
		95% Standard Bootstrap UCL	17.65
Anderson-Darling Test Statistic	2.475	95% Bootstrap-t UCL	18.62
Anderson-Darling 5% Critical Value	0.758	95% Hall's Bootstrap UCL	18.36
Kolmogorov-Smirnov Test Statistic	0.229	95% Percentile Bootstrap UCL	17.87
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	18.66
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	22.52
		97.5% Chebyshev(Mean, Sd) UCL	25.84
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	32.37
95% Approximate Gamma UCL (Use when n >= 40)	17.49		
95% Adjusted Gamma UCL (Use when n < 40)	17.59		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	22.52
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.			

Cobalt			
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	35
Raw Statistics		Log-transformed Statistics	
Minimum	3.6	Minimum of Log Data	1.281
Maximum	29.7	Maximum of Log Data	3.391
Mean	6.741	Mean of log Data	1.807
Geometric Mean	6.095	SD of log Data	0.407
Median	5.8		
SD	4.15		
Std. Error of Mean	0.619		
Coefficient of Variation	0.616		
Skewness	4.128		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.609	Shapiro Wilk Test Statistic	0.901
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7.781	95% H-UCL	7.413
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.413
95% Adjusted-CLT UCL (Chen-1995)	8.165	97.5% Chebyshev (MVUE) UCL	9.194
95% Modified-t UCL (Johnson-1978)	7.844	99% Chebyshev (MVUE) UCL	10.73
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.795	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.406		
MLE of Mean	6.741		
MLE of Standard Deviation	3.079		
nu star	431.5		
Approximate Chi Square Value (.05)	384.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	7.759
Adjusted Chi Square Value	382.9	95% Jackknife UCL	7.781
		95% Standard Bootstrap UCL	7.748
Anderson-Darling Test Statistic	1.578	95% Bootstrap-t UCL	8.697
Anderson-Darling 5% Critical Value	0.753	95% Hall's Bootstrap UCL	12.31
Kolmogorov-Smirnov Test Statistic	0.148	95% Percentile Bootstrap UCL	7.831
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL	8.291
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	9.438
		97.5% Chebyshev(Mean, Sd) UCL	10.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	12.9
95% Approximate Gamma UCL (Use when n >= 40)	7.568		
95% Adjusted Gamma UCL (Use when n < 40)	7.597		

Potential UCL to Use	Use 95% Student's-t UCL	7.781
	or 95% Modified-t UCL	7.844
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.		

Copper			
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	43
Raw Statistics		Log-transformed Statistics	
Minimum	13.5	Minimum of Log Data	2.603
Maximum	1890	Maximum of Log Data	7.544
Mean	192.2	Mean of log Data	4.342
Geometric Mean	76.87	SD of log Data	1.184
Median	71.9		
SD	384.2		
Std. Error of Mean	57.27		
Coefficient of Variation	1.999		
Skewness	3.226		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.473	Shapiro Wilk Test Statistic	0.913
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	288.4	95% H-UCL	245.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	293.2
95% Adjusted-CLT UCL (Chen-1995)	315.8	97.5% Chebyshev (MVUE) UCL	354.7
95% Modified-t UCL (Johnson-1978)	293	99% Chebyshev (MVUE) UCL	475.5
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.635	Data do not follow a Discernable Distribution (0.05)	
Theta Star	302.6		
MLE of Mean	192.2		
MLE of Standard Deviation	241.2		
nu star	57.15		
Approximate Chi Square Value (.05)	40.77	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	286.4
Adjusted Chi Square Value	40.31	95% Jackknife UCL	288.4
		95% Standard Bootstrap UCL	286.2
Anderson-Darling Test Statistic	3.969	95% Bootstrap-t UCL	378.1
Anderson-Darling 5% Critical Value	0.798	95% Hall's Bootstrap UCL	285.9
Kolmogorov-Smirnov Test Statistic	0.239	95% Percentile Bootstrap UCL	297
Kolmogorov-Smirnov 5% Critical Value	0.138	95% BCA Bootstrap UCL	331.8
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	441.8
		97.5% Chebyshev(Mean, Sd) UCL	549.8
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	762
95% Approximate Gamma UCL (Use when n >= 40)	269.4		
95% Adjusted Gamma UCL (Use when n < 40)	272.4		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	441.8
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.			

DDT and Metabolites			
General Statistics			
Number of Valid Data	31	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	23
		Percent Non-Detects	74.19%
Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.0075	Minimum Detected	-4.893
Maximum Detected	0.059	Maximum Detected	-2.83
Mean of Detected	0.0267	Mean of Detected	-3.899
SD of Detected	0.0211	SD of Detected	0.793
Minimum Non-Detect	0.007	Minimum Non-Detect	-4.962
Maximum Non-Detect	0.0102	Maximum Non-Detect	-4.585
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	25
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	80.65%
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	0.811	Shapiro Wilk Test Statistic	0.912
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00978	Mean	-5.122
SD	0.0144	SD	0.831
95% DL/2 (t) UCL	0.0142	95% H-Stat (DL/2) UCL	0.0118
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-6.017
		SD in Log Scale	1.49
		Mean in Original Scale	0.00801
		SD in Original Scale	0.0151
		95% t UCL	0.0126
		95% Percentile Bootstrap UCL	0.0129
		95% BCA Bootstrap UCL	0.0143
		95% H-UCL	0.017
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.315	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	0.0203		
nu star	21.04		

A-D Test Statistic	0.455	**Nonparametric Statistics**	
5% A-D Critical Value	0.724	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.724	Mean	0.0124
5% K-S Critical Value	0.298	SD	0.0131
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.00251
		95% KM (t) UCL	0.0167
Assuming Gamma Distribution		95% KM (z) UCL	0.0166
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0159
Minimum	0.000001	95% KM (bootstrap t) UCL	0.0211
Maximum	0.059	95% KM (BCA) UCL	0.0247
Mean	0.00688	95% KM (Percentile Bootstrap) UCL	0.0181
Median	0.000001	95% KM (Chebyshev) UCL	0.0234
SD	0.0156	97.5% KM (Chebyshev) UCL	0.0281
k star	0.135	99% KM (Chebyshev) UCL	0.0374
Theta star	0.051		
Nu star	8.364	**Potential UCLs to Use**	
AppChi2	2.948	95% KM (t) UCL	0.0167
95% Gamma Approximate UCL (Use when n >= 40)	0.0195		
95% Adjusted Gamma UCL (Use when n < 40)	0.0208		
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.			

Dibenzofuran			
General Statistics			
Number of Valid Data	31	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	26
		Percent Non-Detects	83.87%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.05	Minimum Detected	-2.996
Maximum Detected	0.6	Maximum Detected	-0.511
Mean of Detected	0.276	Mean of Detected	-1.603
SD of Detected	0.215	SD of Detected	0.97
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.26	Maximum Non-Detect	-1.347
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	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	90.32%
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	0.95	Shapiro Wilk Test Statistic	0.963
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.128	Mean	-2.192
SD	0.103	SD	0.448
95% DL/2 (t) UCL	0.16	95% H-Stat (DL/2) UCL	0.144
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-2.451
		SD in Log Scale	0.712
		Mean in Original Scale	0.115
		SD in Original Scale	0.114
		95% t UCL	0.149
		95% Percentile Bootstrap UCL	0.151
		95% BCA Bootstrap UCL	0.162
		95% H-UCL	0.146
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.826	Data appear Normal at 5% Significance Level	
Theta Star	0.334		
nu star	8.262		

A-D Test Statistic	0.198	**Nonparametric Statistics**	
5% A-D Critical Value	0.685	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.685	Mean	0.116
5% K-S Critical Value	0.361	SD	0.109
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0326
		95% KM (t) UCL	0.171
Assuming Gamma Distribution		95% KM (z) UCL	0.169
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.197
Minimum	0.000001	95% KM (bootstrap t) UCL	0.187
Maximum	0.6	95% KM (BCA) UCL	0.348
Mean	0.134	95% KM (Percentile Bootstrap) UCL	0.34
Median	0.0879	95% KM (Chebyshev) UCL	0.258
SD	0.135	97.5% KM (Chebyshev) UCL	0.319
k star	0.26	99% KM (Chebyshev) UCL	0.44
Theta star	0.515		
Nu star	16.12	**Potential UCLs to Use**	
AppChi2	8.048	95% KM (t) UCL	0.171
95% Gamma Approximate UCL (Use when n >= 40)	0.268	95% KM (Percentile Bootstrap) UCL	0.34
95% Adjusted Gamma UCL (Use when n < 40)	0.279		
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.

Dieldrin			
General Statistics			
Number of Valid Data	31	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	27
		Percent Non-Detects	87.10%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0071	Minimum Detected	-4.948
Maximum Detected	0.014	Maximum Detected	-4.269
Mean of Detected	0.0094	Mean of Detected	-4.705
SD of Detected	0.00317	SD of Detected	0.308
Minimum Non-Detect	0.0036	Minimum Non-Detect	-5.627
Maximum Non-Detect	0.0052	Maximum Non-Detect	-5.259
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	27
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	87.10%
Warning: There are only 4 Distinct 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	0.825	Shapiro Wilk Test Statistic	0.869
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00294	Mean	-6.03
SD	0.00273	SD	0.536
95% DL/2 (t) UCL	0.00377	95% H-Stat (DL/2) UCL	0.00336
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-6.261
		SD in Log Scale	0.79
		Mean in Original Scale	0.00272
		SD in Original Scale	0.00292
		95% t UCL	0.00361
		95% Percentile Bootstrap UCL	0.00366
		95% BCA Bootstrap UCL	0.0038
		95% H-UCL	0.00358
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	3.507	Data appear Normal at 5% Significance Level	
Theta Star	0.00268		
nu star	28.05		

A-D Test Statistic	0.449	**Nonparametric Statistics**	
5% A-D Critical Value	0.657	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.657	Mean	0.0074
5% K-S Critical Value	0.395	SD	0.00125
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0002598
		95% KM (t) UCL	0.00784
Assuming Gamma Distribution		95% KM (z) UCL	0.00782
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00777
Minimum	0.000001	95% KM (bootstrap t) UCL	0.00824
Maximum	0.014	95% KM (BCA) UCL	N/A
Mean	0.00121	95% KM (Percentile Bootstrap) UCL	0.00948
Median	0.000001	95% KM (Chebyshev) UCL	0.00853
SD	0.00336	97.5% KM (Chebyshev) UCL	0.00902
k star	0.141	99% KM (Chebyshev) UCL	0.00998
Theta star	0.00862		
Nu star	8.729	**Potential UCLs to Use**	
AppChi2	3.164	95% KM (t) UCL	0.00784
95% Gamma Approximate UCL (Use when n >= 40)	0.00335	95% KM (Percentile Bootstrap) UCL	0.00948
95% Adjusted Gamma UCL (Use when n < 40)	N/A		
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.

Endrin Aldeh1de			
General Statistics			
Number of Valid Data	31	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	28
		Percent Non-Detects	90.32%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0099	Minimum Detected	-4.615
Maximum Detected	0.05	Maximum Detected	-2.996
Mean of Detected	0.0243	Mean of Detected	-3.985
SD of Detected	0.0223	SD of Detected	0.867
Minimum Non-Detect	0.0036	Minimum Non-Detect	-5.627
Maximum Non-Detect	0.0052	Maximum Non-Detect	-5.259
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	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	90.32%
Warning: There are only 3 Distinct Detected Values in this data set			
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.			
Those methods will return a 'N/A' value on your output display!			
It is necessary to have 4 or more Distinct Values for bootstrap methods.			
However, results obtained using 4 to 9 distinct values may not be reliable.			
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.			
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.808	Shapiro Wilk Test Statistic	0.872
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00415	Mean	-6.01
SD	0.00884	SD	0.716
95% DL/2 (t) UCL	0.00684	95% H-Stat (DL/2) UCL	0.00418
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.0319	Mean in Log Scale	-9.35
SD	0.0182	SD in Log Scale	2.456
95% MLE (t) UCL	0.0375	Mean in Original Scale	0.0025
95% MLE (Tiku) UCL	0.0492	SD in Original Scale	0.00927
		95% t UCL	0.00532
		95% Percentile Bootstrap UCL	0.0057
		95% BCA Bootstrap UCL	0.00763
		95% H UCL	0.0135
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		

nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.0113
5% K-S Critical Value	N/A	SD	0.00709
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.00156
		95% KM (t) UCL	0.0139
Assuming Gamma Distribution		95% KM (z) UCL	0.0139
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0138
Minimum	N/A	95% KM (bootstrap t) UCL	0.0235
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.05
Median	N/A	95% KM (Chebyshev) UCL	0.0181
SD	N/A	97.5% KM (Chebyshev) UCL	0.021
k star	N/A	99% KM (Chebyshev) UCL	0.0268
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	95% KM (t) UCL	0.0139
95% Gamma Approximate UCL (Use when n >= 40)	N/A	95% KM (Percentile Bootstrap) UCL	0.05
95% Adjusted Gamma UCL (Use when n < 40)	N/A		
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.			

Endrin Ketone			
General Statistics			
Number of Valid Data	31	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	30
		Percent Non-Detects	96.77%
Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!			
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).			
The data set for variable Endrin Ketone was not processed!			

Heptachlor			
General Statistics			
Number of Valid Data	31	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	31
		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 Heptachlor was not processed!			

High Molecular Weight PAHs			
General Statistics			
Number of Valid Data	31	Number of Detected Data	30
Number of Distinct Detected Data	30	Number of Non-Detect Data	1
		Percent Non-Detects	3.23%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.218	Minimum Detected	0.197
Maximum Detected	38	Maximum Detected	3.638
Mean of Detected	8.491	Mean of Detected	1.672
SD of Detected	9.117	SD of Detected	0.975
Minimum Non-Detect	1.71	Minimum Non-Detect	0.536
Maximum Non-Detect	1.71	Maximum Non-Detect	0.536
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.753	Shapiro Wilk Test Statistic	0.955
5% Shapiro Wilk Critical Value	0.927	5% Shapiro Wilk Critical Value	0.927
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	8.245	Mean	1.613
SD	9.068	SD	1.013
95% DL/2 (t) UCL	11.01	95% H-Stat (DL/2) UCL	13.17
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	7.032	Mean in Log Scale	1.627
SD	10.39	SD in Log Scale	0.991
95% MLE (t) UCL	10.2	Mean in Original Scale	8.259
95% MLE (Tiku) UCL	10.18	SD in Original Scale	9.056
		95% t UCL	11.02
		95% Percentile Bootstrap UCL	10.93
		95% BCA Bootstrap UCL	11.58
		95% H UCL	12.87
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.111	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	7.64		
nu star	66.69		
A-D Test Statistic	0.756	Nonparametric Statistics	
5% A-D Critical Value	0.77	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.77	Mean	8.264
5% K-S Critical Value	0.164	SD	8.905
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	1.627
		95% KM (t) UCL	11.02
Assuming Gamma Distribution		95% KM (z) UCL	10.94
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	11.02
Minimum	0.000001	95% KM (bootstrap t) UCL	12.36
Maximum	38	95% KM (BCA) UCL	11.12

Mean	8.217	95% KM (Percentile Bootstrap) UCL					10.89
Median	4.29	95% KM (Chebyshev) UCL					15.35
SD	9.092	97.5% KM (Chebyshev) UCL					18.42
k star	0.612	99% KM (Chebyshev) UCL					24.45
Theta star	13.43						
Nu star	37.93	Potential UCLs to Use					
AppChi2	24.83	95% KM (Chebyshev) UCL					15.35
95% Gamma Approximate UCL (Use when n >= 40)	12.55						
95% Adjusted Gamma UCL (Use when n < 40)	12.86						
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.							

Iron			
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	45
Raw Statistics		**Log-transformed Statistics**	
Minimum	4325	Minimum of Log Data	8.372
Maximum	235011	Maximum of Log Data	12.37
Mean	28259	Mean of log Data	9.792
Geometric Mean	17897	SD of log Data	0.82
Median	14766		
SD	41452		
Std. Error of Mean	6179		
Coefficient of Variation	1.467		
Skewness	3.679		
Relevant UCL Statistics			
Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.516	Shapiro Wilk Test Statistic	0.892
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	38642	95% H-UCL	32815
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	39658
95% Adjusted-CLT UCL (Chen-1995)	42044	97.5% Chebyshev (MVUE) UCL	46081
95% Modified-t UCL (Johnson-1978)	39207	99% Chebyshev (MVUE) UCL	58698
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.167	Data do not follow a Discernable Distribution (0.05)	
Theta Star	24212		
MLE of Mean	28259		
MLE of Standard Deviation	26158		
nu star	105		
Approximate Chi Square Value (.05)	82.39	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0447	95% CLT UCL	38423
Adjusted Chi Square Value	81.73	95% Jackknife UCL	38642
		95% Standard Bootstrap UCL	38156
Anderson-Darling Test Statistic	3.623	95% Bootstrap-t UCL	47277
Anderson-Darling 5% Critical Value	0.773	95% Hall's Bootstrap UCL	76128
Kolmogorov-Smirnov Test Statistic	0.216	95% Percentile Bootstrap UCL	39434
Kolmogorov-Smirnov 5% Critical Value	0.135	95% BCA Bootstrap UCL	42506
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	55194
		97.5% Chebyshev(Mean, Sd) UCL	66849
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	89742
95% Approximate Gamma UCL (Use when n >= 40)	36028		
95% Adjusted Gamma UCL (Use when n < 40)	36321		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	55194
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.			

Lead			
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	44
Raw Statistics		Log-transformed Statistics	
Minimum	7.4	Minimum of Log Data	2.001
Maximum	24438	Maximum of Log Data	10.1
Mean	1068	Mean of log Data	4.903
Geometric Mean	134.7	SD of log Data	1.779
Median	86.8		
SD	3745		
Std. Error of Mean	558.2		
Coefficient of Variation	3.505		
Skewness	5.821		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.309	Shapiro Wilk Test Statistic	0.912
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2006	95% H-UCL	1621
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1572
95% Adjusted-CLT UCL (Chen-1995)	2504	97.5% Chebyshev (MVUE) UCL	1992
95% Modified-t UCL (Johnson-1978)	2087	99% Chebyshev (MVUE) UCL	2815
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.321	Data do not follow a Discernable Distribution (0.05)	
Theta Star	3328		
MLE of Mean	1068		
MLE of Standard Deviation	1886		
nu star	28.89		
Approximate Chi Square Value (.05)	17.63	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	1987
Adjusted Chi Square Value	17.33	95% Jackknife UCL	2006
		95% Standard Bootstrap UCL	1971
Anderson-Darling Test Statistic	5.219	95% Bootstrap-t UCL	4381
Anderson-Darling 5% Critical Value	0.855	95% Hall's Bootstrap UCL	4877
Kolmogorov-Smirnov Test Statistic	0.327	95% Percentile Bootstrap UCL	2089
Kolmogorov-Smirnov 5% Critical Value	0.143	95% BCA Bootstrap UCL	2877
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3502
		97.5% Chebyshev(Mean, Sd) UCL	4554
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6623
95% Approximate Gamma UCL (Use when n >= 40)	1751		
95% Adjusted Gamma UCL (Use when n < 40)	1781		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	3502
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.			

Low Molecular Weight PAHs			
General Statistics			
Number of Valid Data	31	Number of Detected Data	29
Number of Distinct Detected Data	29	Number of Non-Detect Data	2
		Percent Non-Detects	6.45%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.7	Minimum Detected	0.531
Maximum Detected	24.69	Maximum Detected	3.206
Mean of Detected	4.322	Mean of Detected	1.179
SD of Detected	4.946	SD of Detected	0.641
Minimum Non-Detect	1.71	Minimum Non-Detect	0.536
Maximum Non-Detect	1.8	Maximum Non-Detect	0.588
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	28
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	9.68%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.514	Shapiro Wilk Test Statistic	0.81
5% Shapiro Wilk Critical Value	0.926	5% Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.099	Mean	1.095
SD	4.855	SD	0.701
95% DL/2 (t) UCL	5.579	95% H-Stat (DL/2) UCL	4.999
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3.834	Mean in Log Scale	1.101
SD	5.072	SD in Log Scale	0.689
95% MLE (t) UCL	5.38	Mean in Original Scale	4.105
95% MLE (Tiku) UCL	5.27	SD in Original Scale	4.851
		95% t UCL	5.584
		95% Percentile Bootstrap UCL	5.564
		95% BCA Bootstrap UCL	6.306
		95% H UCL	4.963
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.734	Data do not follow a Discernable Distribution (0.05)	
Theta Star	2.493		
nu star	100.5		
A-D Test Statistic	2.849	Nonparametric Statistics	
5% A-D Critical Value	0.758	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.758	Mean	4.152
5% K-S Critical Value	0.165	SD	4.744
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.867
		95% KM (t) UCL	5.624
Assuming Gamma Distribution		95% KM (z) UCL	5.579

Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.617
Minimum	0.000001	95% KM (bootstrap t) UCL	9.151
Maximum	24.69	95% KM (BCA) UCL	5.793
Mean	4.043	95% KM (Percentile Bootstrap) UCL	5.665
Median	2.641	95% KM (Chebyshev) UCL	7.932
SD	4.898	97.5% KM (Chebyshev) UCL	9.568
k star	0.501	99% KM (Chebyshev) UCL	12.78
Theta star	8.067		
Nu star	31.07	**Potential UCLs to Use**	
AppChi2	19.34	95% KM (Chebyshev) UCL	7.932
95% Gamma Approximate UCL (Use when n >= 40)	6.496		
95% Adjusted Gamma UCL (Use when n < 40)	6.674		
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.			

Manganese			
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	41
Raw Statistics		Log-transformed Statistics	
Minimum	59.8	Minimum of Log Data	4.091
Maximum	780	Maximum of Log Data	6.659
Mean	285.8	Mean of log Data	5.509
Geometric Mean	247	SD of log Data	0.55
Median	247		
SD	164.9		
Std. Error of Mean	24.58		
Coefficient of Variation	0.577		
Skewness	1.463		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.862	Shapiro Wilk Test Statistic	0.976
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	327.1	95% H-UCL	337.4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	394.3
95% Adjusted-CLT UCL (Chen-1995)	332	97.5% Chebyshev (MVUE) UCL	441.2
95% Modified-t UCL (Johnson-1978)	328	99% Chebyshev (MVUE) UCL	533.1
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.358	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	85.12		
MLE of Mean	285.8		
MLE of Standard Deviation	156		
nu star	302.2		
Approximate Chi Square Value (.05)	262.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	326.2
Adjusted Chi Square Value	261.7	95% Jackknife UCL	327.1
		95% Standard Bootstrap UCL	326.1
Anderson-Darling Test Statistic	0.557	95% Bootstrap-t UCL	334.5
Anderson-Darling 5% Critical Value	0.754	95% Hall's Bootstrap UCL	338.3
Kolmogorov-Smirnov Test Statistic	0.0959	95% Percentile Bootstrap UCL	327.9
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL	330.7
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	392.9
		97.5% Chebyshev(Mean, Sd) UCL	439.3
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	530.4
95% Approximate Gamma UCL (Use when n >= 40)	328.5		
95% Adjusted Gamma UCL (Use when n < 40)	330		
Potential UCL to Use		Use 95% Approximate Gamma UCL	328.5
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, Singh, and Iaci (2002)			
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.			

Mercur1			
General Statistics			
Number of Valid Data	45	Number of Detected Data	44
Number of Distinct Detected Data	39	Number of Non-Detect Data	1
		Percent Non-Detects	2.22%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.055	Minimum Detected	-2.9
Maximum Detected	125	Maximum Detected	4.828
Mean of Detected	10.86	Mean of Detected	0.748
SD of Detected	26.37	SD of Detected	1.808
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	3.3	Maximum Non-Detect	1.194
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.441	Shapiro Wilk Test Statistic	0.976
5% Shapiro Wilk Critical Value	0.944	5% Shapiro Wilk Critical Value	0.944
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	10.65	Mean	0.743
SD	26.1	SD	1.787
95% DL/2 (t) UCL	17.19	95% H-Stat (DL/2) UCL	25.84
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.726
		SD in Log Scale	1.793
		Mean in Original Scale	10.63
		SD in Original Scale	26.11
		95% t UCL	17.17
		95% Percentile Bootstrap UCL	17.55
		95% BCA Bootstrap UCL	20.18
		95% H-UCL	25.82
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.39	Data appear Lognormal at 5% Significance Level	
Theta Star	27.87		
nu star	34.28		
A-D Test Statistic	2.501	Nonparametric Statistics	
5% A-D Critical Value	0.837	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.837	Mean	10.64
5% K-S Critical Value	0.143	SD	25.81
Data not Gamma Distributed at 5% Significance Level		SE of Mean	3.893
		95% KM (t) UCL	17.18
Assuming Gamma Distribution		95% KM (z) UCL	17.04
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	17.18
Minimum	0.000001	95% KM (bootstrap t) UCL	24.62
Maximum	125	95% KM (BCA) UCL	17.38

Mean	10.62	95% KM (Percentile Bootstrap) UCL	17.55
Median	1.8	95% KM (Chebyshev) UCL	27.6
SD	26.11	97.5% KM (Chebyshev) UCL	34.95
k star	0.339	99% KM (Chebyshev) UCL	49.37
Theta star	31.3		
Nu star	30.52	**Potential UCLs to Use**	
AppChi2	18.9	97.5% KM (Chebyshev) UCL	34.95
95% Gamma Approximate UCL (Use when n >= 40)	17.14		
95% Adjusted Gamma UCL (Use when n < 40)	17.42		
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.

Nickel			
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	42
Raw Statistics		Log-transformed Statistics	
Minimum	4.1	Minimum of Log Data	1.411
Maximum	342	Maximum of Log Data	5.835
Mean	26.3	Mean of log Data	2.764
Geometric Mean	15.86	SD of log Data	0.8
Median	13.5		
SD	51.47		
Std. Error of Mean	7.673		
Coefficient of Variation	1.957		
Skewness	5.562		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.367	Shapiro Wilk Test Statistic	0.877
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	39.2	95% H-UCL	28.33
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	34.19
95% Adjusted-CLT UCL (Chen-1995)	45.72	97.5% Chebyshev (MVUE) UCL	39.62
95% Modified-t UCL (Johnson-1978)	40.26	99% Chebyshev (MVUE) UCL	50.3
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.065	Data do not follow a Discernable Distribution (0.05)	
Theta Star	24.69		
MLE of Mean	26.3		
MLE of Standard Deviation	25.49		
nu star	95.86		
Approximate Chi Square Value (.05)	74.28	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	38.92
Adjusted Chi Square Value	73.65	95% Jackknife UCL	39.2
		95% Standard Bootstrap UCL	39.33
Anderson-Darling Test Statistic	4.374	95% Bootstrap-t UCL	67.95
Anderson-Darling 5% Critical Value	0.775	95% Hall's Bootstrap UCL	81.28
Kolmogorov-Smirnov Test Statistic	0.254	95% Percentile Bootstrap UCL	40.05
Kolmogorov-Smirnov 5% Critical Value	0.135	95% BCA Bootstrap UCL	50.51
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	59.75
		97.5% Chebyshev(Mean, Sd) UCL	74.22
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	102.7
95% Approximate Gamma UCL (Use when n >= 40)	33.95		
95% Adjusted Gamma UCL (Use when n < 40)	34.24		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	59.75
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 Dioxin-like Congener TEQ (bird)			
General Statistics			
Number of Valid Observations	31	Number of Distinct Observations	31
Raw Statistics		Log-transformed Statistics	
Minimum	3.192E-07	Minimum of Log Data	-14.96
Maximum	0.0004036	Maximum of Log Data	-7.815
Mean	4.345E-05	Mean of log Data	-11.21
Geometric Mean	1.356E-05	SD of log Data	1.665
Median	1.155E-05		
SD	7.88E-05		
Std. Error of Mean	1.415E-05		
Coefficient of Variation	N/A		
Skewness	3.586		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.561	Shapiro Wilk Test Statistic	0.983
Shapiro Wilk Critical Value	0.929	Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	6.747E-05	95% H-UCL	0.0001486
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0001328
95% Adjusted-CLT UCL (Chen-1995)	7.647E-05	97.5% Chebyshev (MVUE) UCL	0.000169
95% Modified-t UCL (Johnson-1978)	6.899E-05	99% Chebyshev (MVUE) UCL	0.00024
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.508	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	8.546E-05		
MLE of Mean	4.345E-05		
MLE of Standard Deviation	6.093E-05		
nu star	31.52		
Approximate Chi Square Value (.05)	19.69	Nonparametric Statistics	
Adjusted Level of Significance	0.0413	95% CLT UCL	6.673E-05
Adjusted Chi Square Value	19.17	95% Jackknife UCL	6.747E-05
		95% Standard Bootstrap UCL	6.645E-05
Anderson-Darling Test Statistic	0.698	95% Bootstrap-t UCL	9.418E-05
Anderson-Darling 5% Critical Value	0.806	95% Hall's Bootstrap UCL	0.000161
Kolmogorov-Smirnov Test Statistic	0.14	95% Percentile Bootstrap UCL	6.871E-05
Kolmogorov-Smirnov 5% Critical Value	0.166	95% BCA Bootstrap UCL	8.155E-05
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0001051
		97.5% Chebyshev(Mean, Sd) UCL	0.0001318
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0001843
95% Approximate Gamma UCL (Use when n >= 40)	6.955E-05		
95% Adjusted Gamma UCL (Use when n < 40)	7.143E-05		

Potential UCL to Use		Use 95% Approximate Gamma UCL					6.955E-05
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 Dioxin-like Congener TEQ (mammal)			
General Statistics			
Number of Valid Observations	31	Number of Distinct Observations	31
Raw Statistics		Log-transformed Statistics	
Minimum	1.867E-07	Minimum of Log Data	-15.49
Maximum	0.0001825	Maximum of Log Data	-8.609
Mean	2.52E-05	Mean of log Data	-11.84
Geometric Mean	7.218E-06	SD of log Data	1.76
Median	5.969E-06		
SD	4.21E-05		
Std. Error of Mean	7.561E-06		
Coefficient of Variation	N/A		
Skewness	2.583		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.629	Shapiro Wilk Test Statistic	0.978
Shapiro Wilk Critical Value	0.929	Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3.804E-05	95% H-UCL	0.0001031
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.541E-05
95% Adjusted-CLT UCL (Chen-1995)	4.139E-05	97.5% Chebyshev (MVUE) UCL	0.0001092
95% Modified-t UCL (Johnson-1978)	3.862E-05	99% Chebyshev (MVUE) UCL	0.000156
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.479	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	5.258E-05		
MLE of Mean	2.52E-05		
MLE of Standard Deviation	3.64E-05		
nu star	29.72		
Approximate Chi Square Value (.05)	18.27	Nonparametric Statistics	
Adjusted Level of Significance	0.0413	95% CLT UCL	3.764E-05
Adjusted Chi Square Value	17.77	95% Jackknife UCL	3.804E-05
		95% Standard Bootstrap UCL	3.736E-05
Anderson-Darling Test Statistic	0.689	95% Bootstrap-t UCL	4.768E-05
Anderson-Darling 5% Critical Value	0.809	95% Hall's Bootstrap UCL	4.642E-05
Kolmogorov-Smirnov Test Statistic	0.146	95% Percentile Bootstrap UCL	3.776E-05
Kolmogorov-Smirnov 5% Critical Value	0.167	95% BCA Bootstrap UCL	4.285E-05
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.816E-05
		97.5% Chebyshev(Mean, Sd) UCL	7.242E-05
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0001004
95% Approximate Gamma UCL (Use when n >= 40)	4.099E-05		
95% Adjusted Gamma UCL (Use when n < 40)	4.214E-05		
Potential UCL to Use		Use 95% Approximate Gamma UCL	4.099E-05
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.			

Selenium			
General Statistics			
Number of Valid Data	45	Number of Detected Data	41
Number of Distinct Detected Data	34	Number of Non-Detect Data	4
		Percent Non-Detects	8.89%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.18	Minimum Detected	-1.715
Maximum Detected	5.9	Maximum Detected	1.775
Mean of Detected	1.548	Mean of Detected	0.112
SD of Detected	1.427	SD of Detected	0.808
Minimum Non-Detect	4.1	Minimum Non-Detect	1.411
Maximum Non-Detect	4.7	Maximum Non-Detect	1.548
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	41
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.11%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.737	Shapiro Wilk Test Statistic	0.966
5% Shapiro Wilk Critical Value	0.941	5% Shapiro Wilk Critical Value	0.941
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.602	Mean	0.17
SD	1.373	SD	0.793
95% DL/2 (t) UCL	1.946	95% H-Stat (DL/2) UCL	2.101
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3.019	Mean in Log Scale	0.102
SD	1.256	SD in Log Scale	0.771
95% MLE (t) UCL	3.333	Mean in Original Scale	1.499
95% MLE (Tiku) UCL	4.468	SD in Original Scale	1.37
		95% t UCL	1.842
		95% Percentile Bootstrap UCL	1.854
		95% BCA Bootstrap UCL	1.895
		95% H UCL	1.91
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.579	Data appear Lognormal at 5% Significance Level	
Theta Star	0.98		
nu star	129.5		
A-D Test Statistic	1.166	Nonparametric Statistics	
5% A-D Critical Value	0.764	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.764	Mean	1.511
5% K-S Critical Value	0.14	SD	1.366
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.209
		95% KM (t) UCL	1.862
Assuming Gamma Distribution		95% KM (z) UCL	1.855

Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.862
Minimum	0.18	95% KM (bootstrap t) UCL	1.965
Maximum	5.9	95% KM (BCA) UCL	1.868
Mean	1.543	95% KM (Percentile Bootstrap) UCL	1.873
Median	1.1	95% KM (Chebyshev) UCL	2.422
SD	1.361	97.5% KM (Chebyshev) UCL	2.815
k star	1.73	99% KM (Chebyshev) UCL	3.589
Theta star	0.892		
Nu star	155.7	**Potential UCLs to Use**	
AppChi2	127.8	95% KM (Chebyshev) UCL	2.422
95% Gamma Approximate UCL (Use when n >= 40)	1.879		
95% Adjusted Gamma UCL (Use when n < 40)	1.891		
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.			

Silver			
General Statistics			
Number of Valid Data	45	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	38
		Percent Non-Detects	84.44%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.14	Minimum Detected	-1.966
Maximum Detected	5.5	Maximum Detected	1.705
Mean of Detected	1.639	Mean of Detected	-0.00109
SD of Detected	1.8	SD of Detected	1.148
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	1.4	Maximum Non-Detect	0.336
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	42
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	93.33%
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	0.759	Shapiro Wilk Test Statistic	0.972
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.757	Mean	-0.441
SD	0.768	SD	0.47
95% DL/2 (t) UCL	0.949	95% H-Stat (DL/2) UCL	0.821
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.931
		SD in Log Scale	0.878
		Mean in Original Scale	0.607
		SD in Original Scale	0.841
		95% t UCL	0.818
		95% Percentile Bootstrap UCL	0.829
		95% BCA Bootstrap UCL	0.957
		95% H-UCL	0.779
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.751	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.181		
nu star	10.52		

A-D Test Statistic	0.248	Nonparametric Statistics	
5% A-D Critical Value	0.726	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.726	Mean	0.642
5% K-S Critical Value	0.319	SD	0.815
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.185
		95% KM (t) UCL	0.954
Assuming Gamma Distribution		95% KM (z) UCL	0.947
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.013
Minimum	0.000001	95% KM (bootstrap t) UCL	1.09
Maximum	5.5	95% KM (BCA) UCL	1.316
Mean	0.812	95% KM (Percentile Bootstrap) UCL	1.015
Median	0.51	95% KM (Chebyshev) UCL	1.45
SD	0.98	97.5% KM (Chebyshev) UCL	1.8
k star	0.192	99% KM (Chebyshev) UCL	2.487
Theta star	4.236		
Nu star	17.26	Potential UCLs to Use	
AppChi2	8.856	95% KM (t) UCL	0.954
95% Gamma Approximate UCL (Use when n >= 40)	1.583		
95% Adjusted Gamma UCL (Use when n < 40)	1.619		
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.

Total PCB Homologues			
General Statistics			
Number of Valid Observations	31	Number of Distinct Observations	31
Raw Statistics		Log-transformed Statistics	
Minimum	0.000672	Minimum of Log Data	-7.305
Maximum	4.8	Maximum of Log Data	1.569
Mean	0.92	Mean of log Data	-1.494
Geometric Mean	0.225	SD of log Data	2.068
Median	0.209		
SD	1.341		
Std. Error of Mean	0.241		
Coefficient of Variation	1.458		
Skewness	1.644		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.708	Shapiro Wilk Test Statistic	0.953
Shapiro Wilk Critical Value	0.929	Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.329	95% H-UCL	8.369
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.075
95% Adjusted-CLT UCL (Chen-1995)	1.393	97.5% Chebyshev (MVUE) UCL	6.585
95% Modified-t UCL (Johnson-1978)	1.341	99% Chebyshev (MVUE) UCL	9.551
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.434	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.12		
MLE of Mean	0.92		
MLE of Standard Deviation	1.397		
nu star	26.91		
Approximate Chi Square Value (.05)	16.08	Nonparametric Statistics	
Adjusted Level of Significance	0.0413	95% CLT UCL	1.317
Adjusted Chi Square Value	15.62	95% Jackknife UCL	1.329
		95% Standard Bootstrap UCL	1.332
Anderson-Darling Test Statistic	0.705	95% Bootstrap-t UCL	1.473
Anderson-Darling 5% Critical Value	0.819	95% Hall's Bootstrap UCL	1.353
Kolmogorov-Smirnov Test Statistic	0.137	95% Percentile Bootstrap UCL	1.352
Kolmogorov-Smirnov 5% Critical Value	0.168	95% BCA Bootstrap UCL	1.354
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.97
		97.5% Chebyshev(Mean, Sd) UCL	2.425
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	3.317
95% Approximate Gamma UCL (Use when n >= 40)	1.54		
95% Adjusted Gamma UCL (Use when n < 40)	1.586		
Potential UCL to Use		Use 95% Adjusted Gamma UCL	1.586
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.			

Vanadium			
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	44
Raw Statistics		Log-transformed Statistics	
Minimum	11.6	Minimum of Log Data	2.451
Maximum	72.7	Maximum of Log Data	4.286
Mean	22.78	Mean of log Data	3.052
Geometric Mean	21.15	SD of log Data	0.369
Median	20		
SD	10.4		
Std. Error of Mean	1.55		
Coefficient of Variation	0.456		
Skewness	2.723		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.779	Shapiro Wilk Test Statistic	0.957
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	25.39	95% H-UCL	25.07
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	28.19
95% Adjusted-CLT UCL (Chen-1995)	26	97.5% Chebyshev (MVUE) UCL	30.6
95% Modified-t UCL (Johnson-1978)	25.49	99% Chebyshev (MVUE) UCL	35.34
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	6.463	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.525		
MLE of Mean	22.78		
MLE of Standard Deviation	8.961		
nu star	581.7		
Approximate Chi Square Value (.05)	526.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	25.33
Adjusted Chi Square Value	525	95% Jackknife UCL	25.39
		95% Standard Bootstrap UCL	25.22
Anderson-Darling Test Statistic	0.721	95% Bootstrap-t UCL	26.47
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL	28.15
Kolmogorov-Smirnov Test Statistic	0.11	95% Percentile Bootstrap UCL	25.37
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL	26.14
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	29.54
		97.5% Chebyshev(Mean, Sd) UCL	32.46
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	38.2
95% Approximate Gamma UCL (Use when n >= 40)	25.16		
95% Adjusted Gamma UCL (Use when n < 40)	25.24		
Potential UCL to Use		Use 95% Approximate Gamma UCL	25.16
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.			

Zinc			
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	44
Raw Statistics		Log-transformed Statistics	
Minimum	31.4	Minimum of Log Data	3.447
Maximum	839	Maximum of Log Data	6.732
Mean	152.1	Mean of log Data	4.673
Geometric Mean	107	SD of log Data	0.793
Median	98.9		
SD	160.7		
Std. Error of Mean	23.95		
Coefficient of Variation	1.056		
Skewness	2.684		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.686	Shapiro Wilk Test Statistic	0.952
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	192.3	95% H-UCL	189.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	228.7
95% Adjusted-CLT UCL (Chen-1995)	201.7	97.5% Chebyshev (MVUE) UCL	264.8
95% Modified-t UCL (Johnson-1978)	193.9	99% Chebyshev (MVUE) UCL	335.8
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.48	Data appear Lognormal at 5% Significance Level	
Theta Star	102.8		
MLE of Mean	152.1		
MLE of Standard Deviation	125		
nu star	133.2		
Approximate Chi Square Value (.05)	107.5	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	191.5
Adjusted Chi Square Value	106.8	95% Jackknife UCL	192.3
		95% Standard Bootstrap UCL	191.4
Anderson-Darling Test Statistic	1.452	95% Bootstrap-t UCL	211.6
Anderson-Darling 5% Critical Value	0.767	95% Hall's Bootstrap UCL	221.4
Kolmogorov-Smirnov Test Statistic	0.151	95% Percentile Bootstrap UCL	193.1
Kolmogorov-Smirnov 5% Critical Value	0.134	95% BCA Bootstrap UCL	208.5
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	256.5
		97.5% Chebyshev(Mean, Sd) UCL	301.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	390.4
95% Approximate Gamma UCL (Use when n >= 40)	188.4		
95% Adjusted Gamma UCL (Use when n < 40)	189.7		
Potential UCL to Use		Use 95% H-UCL	189.7
ProUCL computes and outputs H-statistic based UCLs for historical reasons only.			
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.			
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.			

Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.						
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.						

	General UCL Statistics for Data Sets with Non-Detects		
User Selected Options			
From File	Area_C.wst		
Full Precision	OFF		
Confidence Coefficient	95%		
Number of Bootstrap Operations	2000		
2,3,7,8-TCDD TEQ (bird)			
General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		Log-transformed Statistics	
Minimum	1.173E-06	Minimum of Log Data	-13.66
Maximum	0.0129	Maximum of Log Data	-4.352
Mean	0.00177	Mean of log Data	-10.01
Geometric Mean	4.478E-05	SD of log Data	3.162
Median	1.202E-05		
SD	0.00405		
Std. Error of Mean	0.00122		
Coefficient of Variation	2.294		
Skewness	2.554		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.523	Shapiro Wilk Test Statistic	0.886
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.00398	95% H-UCL	17.34
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.00753
95% Adjusted-CLT UCL (Chen-1995)	0.00478	97.5% Chebyshev (MVUE) UCL	0.0101
95% Modified-t UCL (Johnson-1978)	0.00414	99% Chebyshev (MVUE) UCL	0.0152
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.206	Data appear Lognormal at 5% Significance Level	
Theta Star	0.00857		
MLE of Mean	0.00177		
MLE of Standard Deviation	0.00389		
nu star	4.537		
Approximate Chi Square Value (.05)	0.945	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	0.00378
Adjusted Chi Square Value	0.71	95% Jackknife UCL	0.00398
		95% Standard Bootstrap UCL	0.00368
Anderson-Darling Test Statistic	1.158	95% Bootstrap-t UCL	0.0345
Anderson-Darling 5% Critical Value	0.86	95% Hall's Bootstrap UCL	0.0394
Kolmogorov-Smirnov Test Statistic	0.325	95% Percentile Bootstrap UCL	0.0039
Kolmogorov-Smirnov 5% Critical Value	0.282	95% BCA Bootstrap UCL	0.00521
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.00709
		97.5% Chebyshev(Mean, Sd) UCL	0.0094
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0139
95% Approximate Gamma UCL (Use when n >= 40)	0.00848		
95% Adjusted Gamma UCL (Use when n < 40)	0.0113		

Potential UCL to Use	Use 95% Hall's Bootstrap UCL 0.0394
Recommended UCL exceeds the maximum observation	
In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL	
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.	

2,3,7,8-TCDD TEQ (mammal)			
General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		Log-transformed Statistics	
Minimum	4.864E-07	Minimum of Log Data	-14.54
Maximum	0.00272	Maximum of Log Data	-5.909
Mean	0.0003868	Mean of log Data	-11.25
Geometric Mean	1.299E-05	SD of log Data	3.02
Median	4.564E-06		
SD	0.0008604		
Std. Error of Mean	0.0002594		
Coefficient of Variation	2.225		
Skewness	2.475		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.538	Shapiro Wilk Test Statistic	0.881
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0008569	95% H-UCL	1.654
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.00165
95% Adjusted-CLT UCL (Chen-1995)	0.00102	97.5% Chebyshev (MVUE) UCL	0.00221
95% Modified-t UCL (Johnson-1978)	0.0008892	99% Chebyshev (MVUE) UCL	0.00331
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.217	Data appear Lognormal at 5% Significance Level	
Theta Star	0.00179		
MLE of Mean	0.0003868		
MLE of Standard Deviation	0.000831		
nu star	4.765		
Approximate Chi Square Value (.05)	1.045	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	0.0008134
Adjusted Chi Square Value	0.794	95% Jackknife UCL	0.0008569
		95% Standard Bootstrap UCL	0.0008059
Anderson-Darling Test Statistic	1.111	95% Bootstrap-t UCL	0.00547
Anderson-Darling 5% Critical Value	0.854	95% Hall's Bootstrap UCL	0.00643
Kolmogorov-Smirnov Test Statistic	0.325	95% Percentile Bootstrap UCL	0.0008616
Kolmogorov-Smirnov 5% Critical Value	0.281	95% BCA Bootstrap UCL	0.00101
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.00152
		97.5% Chebyshev(Mean, Sd) UCL	0.00201
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.00297
95% Approximate Gamma UCL (Use when n >= 40)	0.00176		
95% Adjusted Gamma UCL (Use when n < 40)	0.00232		
Potential UCL to Use		Use 95% Hall's Bootstrap UCL	0.00643
Recommended UCL exceeds the maximum observation			
In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL			
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.			

2,4-Dimethylphenol			
General Statistics			
Number of Valid Data	11	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	11
		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 2,4-Dimethylphenol was not processed!			

Aluminum			
General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	1307	Minimum of Log Data	7.175
Maximum	10774	Maximum of Log Data	9.285
Mean	5495	Mean of log Data	8.446
Geometric Mean	4655	SD of log Data	0.659
Median	5787		
SD	2856		
Std. Error of Mean	824.6		
Coefficient of Variation	0.52		
Skewness	0.199		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.941	Shapiro Wilk Test Statistic	0.876
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	6975	95% H-UCL	9237
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	10543
95% Adjusted-CLT UCL (Chen-1995)	6901	97.5% Chebyshev (MVUE) UCL	12653
95% Modified-t UCL (Johnson-1978)	6983	99% Chebyshev (MVUE) UCL	16800
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.434	Data appear Normal at 5% Significance Level	
Theta Star	2257		
MLE of Mean	5495		
MLE of Standard Deviation	3522		
nu star	58.42		
Approximate Chi Square Value (.05)	41.85	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	6851
Adjusted Chi Square Value	39.72	95% Jackknife UCL	6975
		95% Standard Bootstrap UCL	6799
Anderson-Darling Test Statistic	0.585	95% Bootstrap-t UCL	6997
Anderson-Darling 5% Critical Value	0.738	95% Hall's Bootstrap UCL	7120
Kolmogorov-Smirnov Test Statistic	0.213	95% Percentile Bootstrap UCL	6840
Kolmogorov-Smirnov 5% Critical Value	0.247	95% BCA Bootstrap UCL	6805
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	9089
		97.5% Chebyshev(Mean, Sd) UCL	10644
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	13699
95% Approximate Gamma UCL (Use when n >= 40)	7670		
95% Adjusted Gamma UCL (Use when n < 40)	8082		
Potential UCL to Use		Use 95% Student's-t UCL	6975
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.			

Antimony			
General Statistics			
Number of Valid Data	12	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	5
		Percent Non-Detects	41.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.45	Minimum Detected	-0.799
Maximum Detected	16.5	Maximum Detected	2.803
Mean of Detected	3.179	Mean of Detected	0.297
SD of Detected	5.885	SD of Detected	1.178
Minimum Non-Detect	6	Minimum Non-Detect	1.792
Maximum Non-Detect	13.3	Maximum Non-Detect	2.588
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.67%
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	0.512	Shapiro Wilk Test Statistic	0.785
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	3.54	Mean	0.738
SD	4.459	SD	1.043
95% DL/2 (t) UCL	5.851	95% H-Stat (DL/2) UCL	9.243
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.182
		SD in Log Scale	0.882
		Mean in Original Scale	2.28
		SD in Original Scale	4.486
		95% t UCL	4.605
		95% Percentile Bootstrap UCL	4.851
		95% BCA Bootstrap UCL	6.167
		95% H-UCL	3.634
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.497	Data do not follow a Discernable Distribution (0.05)	
Theta Star	6.395		
nu star	6.958		
A-D Test Statistic	1.214	Nonparametric Statistics	
5% A-D Critical Value	0.739	Kaplan-Meier (KM) Method	

K-S Test Statistic	0.739	Mean	2.253
5% K-S Critical Value	0.324	SD	4.309
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.347
		95% KM (t) UCL	4.672
Assuming Gamma Distribution		95% KM (z) UCL	4.469
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.595
Minimum	0.45	95% KM (bootstrap t) UCL	20.62
Maximum	16.5	95% KM (BCA) UCL	4.958
Mean	2.302	95% KM (Percentile Bootstrap) UCL	4.781
Median	1.075	95% KM (Chebyshev) UCL	8.125
SD	4.479	97.5% KM (Chebyshev) UCL	10.67
k star	0.749	99% KM (Chebyshev) UCL	15.66
Theta star	3.073		
Nu star	17.98	**Potential UCLs to Use**	
AppChi2	9.375	97.5% KM (Chebyshev) UCL	10.67
95% Gamma Approximate UCL (Use when n >= 40)	4.415		
95% Adjusted Gamma UCL (Use when n < 40)	4.903		
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.

Arsenic			
General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	1.85	Minimum of Log Data	0.615
Maximum	38.7	Maximum of Log Data	3.656
Mean	10.03	Mean of log Data	1.769
Geometric Mean	5.865	SD of log Data	1.054
Median	3.7		
SD	11.58		
Std. Error of Mean	3.344		
Coefficient of Variation	1.155		
Skewness	1.747		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.745	Shapiro Wilk Test Statistic	0.895
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
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	16.04	95% H-UCL	26.61
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	23.21
95% Adjusted-CLT UCL (Chen-1995)	17.34	97.5% Chebyshev (MVUE) UCL	29.11
95% Modified-t UCL (Johnson-1978)	16.32	99% Chebyshev (MVUE) UCL	40.7
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.856	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	11.72		
MLE of Mean	10.03		
MLE of Standard Deviation	10.85		
nu star	20.54		
Approximate Chi Square Value (.05)	11.25	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	15.53
Adjusted Chi Square Value	10.21	95% Jackknife UCL	16.04
		95% Standard Bootstrap UCL	15.27
Anderson-Darling Test Statistic	0.739	95% Bootstrap-t UCL	22.1
Anderson-Darling 5% Critical Value	0.755	95% Hall's Bootstrap UCL	37.13
Kolmogorov-Smirnov Test Statistic	0.268	95% Percentile Bootstrap UCL	15.85
Kolmogorov-Smirnov 5% Critical Value	0.252	95% BCA Bootstrap UCL	17.61
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	24.61
		97.5% Chebyshev(Mean, Sd) UCL	30.92
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	43.3
95% Approximate Gamma UCL (Use when n >= 40)	18.32		
95% Adjusted Gamma UCL (Use when n < 40)	20.17		
Potential UCL to Use		Use 95% Approximate Gamma UCL	18.32
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.			

Barium			
General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	42.7	Minimum of Log Data	3.754
Maximum	724	Maximum of Log Data	6.585
Mean	151.7	Mean of log Data	4.585
Geometric Mean	97.99	SD of log Data	0.868
Median	76		
SD	193.7		
Std. Error of Mean	55.91		
Coefficient of Variation	1.276		
Skewness	2.746		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.605	Shapiro Wilk Test Statistic	0.858
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	252.1	95% H-UCL	288
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	295.6
95% Adjusted-CLT UCL (Chen-1995)	291.1	97.5% Chebyshev (MVUE) UCL	364.1
95% Modified-t UCL (Johnson-1978)	259.5	99% Chebyshev (MVUE) UCL	498.8
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.019	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	148.9		
MLE of Mean	151.7		
MLE of Standard Deviation	150.3		
nu star	24.45		
Approximate Chi Square Value (.05)	14.2	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	243.7
Adjusted Chi Square Value	13.02	95% Jackknife UCL	252.1
		95% Standard Bootstrap UCL	237.4
Anderson-Darling Test Statistic	1.034	95% Bootstrap-t UCL	455.1
Anderson-Darling 5% Critical Value	0.75	95% Hall's Bootstrap UCL	574.7
Kolmogorov-Smirnov Test Statistic	0.245	95% Percentile Bootstrap UCL	247.6
Kolmogorov-Smirnov 5% Critical Value	0.251	95% BCA Bootstrap UCL	299.1
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	395.4
		97.5% Chebyshev(Mean, Sd) UCL	500.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	708.1
95% Approximate Gamma UCL (Use when n >= 40)	261.4		
95% Adjusted Gamma UCL (Use when n < 40)	285.1		
Potential UCL to Use		Use 95% Approximate Gamma UCL	261.4
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.			

Beta-BHC			
General Statistics			
Number of Valid Data	11	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	10
		Percent Non-Detects	90.91%
Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!			
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).			
The data set for variable Beta-BHC was not processed!			

Bis(2-Ethylhexyl)Phthalate			
General Statistics			
Number of Valid Data	11	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	9
		Percent Non-Detects	81.82%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.099	Minimum Detected	-2.313
Maximum Detected	0.14	Maximum Detected	-1.966
Mean of Detected	0.12	Mean of Detected	-2.139
SD of Detected	0.029	SD of Detected	0.245
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	6.45	Maximum Non-Detect	1.864
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
Warning: Data set has only 2 Distinct Detected Values.			
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.			
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).			
Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.			
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.			
Those methods will return a 'N/A' value on your output display!			
It is necessary to have 4 or more Distinct Values for bootstrap methods.			
However, results obtained using 4 to 9 distinct values may not be reliable.			
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.			
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.486	Mean	-1.723
SD	0.961	SD	1.215
95% DL/2 (t) UCL	1.011	95% H-Stat (DL/2) UCL	1.396
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
		95% H-UCL	N/A

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.12
5% K-S Critical Value	N/A	SD	0.0205
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0205
		95% KM (t) UCL	0.157
Assuming Gamma Distribution		95% KM (z) UCL	0.153
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.17
Minimum	N/A	95% KM (bootstrap t) UCL	0.161
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.14
Median	N/A	95% KM (Chebyshev) UCL	0.209
SD	N/A	97.5% KM (Chebyshev) UCL	0.248
k star	N/A	99% KM (Chebyshev) UCL	0.323
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	0.157
95% Gamma Approximate UCL (Use when n >= 40)	N/A	95% KM (% Bootstrap) UCL	0.14
95% Adjusted Gamma UCL (Use when n < 40)	N/A		
Warning: Recommended UCL exceeds the maximum observation			
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.			

Butylbenzylphthalate			
General Statistics			
Number of Valid Data	11	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	11
		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 Butylbenzylphthalate was not processed!			

Cadmium			
General Statistics			
Number of Valid Data	12	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	4
		Percent Non-Detects	33.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.15	Minimum Detected	-1.897
Maximum Detected	0.99	Maximum Detected	-0.0101
Mean of Detected	0.456	Mean of Detected	-0.939
SD of Detected	0.273	SD of Detected	0.6
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	0.5	Maximum Non-Detect	-0.693
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	0.91	Shapiro Wilk Test Statistic	0.984
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	0.388	Mean	-1.088
SD	0.24	SD	0.527
95% DL/2 (t) UCL	0.512	95% H-Stat (DL/2) UCL	0.547
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.778	Mean in Log Scale	-1.061
SD	0.177	SD in Log Scale	0.544
95% MLE (t) UCL	0.87	Mean in Original Scale	0.399
95% MLE (Tiku) UCL	0.958	SD in Original Scale	0.239
		95% t UCL	0.523
		95% Percentile Bootstrap UCL	0.516
		95% BCA Bootstrap UCL	0.551
		95% H UCL	0.575
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.211	Data appear Normal at 5% Significance Level	
Theta Star	0.206		
nu star	35.38		
A-D Test Statistic	0.208	Nonparametric Statistics	
5% A-D Critical Value	0.72	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.72	Mean	0.399
5% K-S Critical Value	0.296	SD	0.229
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0731

		95% KM (t) UCL	0.53
Assuming Gamma Distribution		95% KM (z) UCL	0.519
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.529
Minimum	0.0957	95% KM (bootstrap t) UCL	0.58
Maximum	0.99	95% KM (BCA) UCL	0.522
Mean	0.41	95% KM (Percentile Bootstrap) UCL	0.516
Median	0.36	95% KM (Chebyshev) UCL	0.718
SD	0.247	97.5% KM (Chebyshev) UCL	0.856
k star	2.338	99% KM (Chebyshev) UCL	1.126
Theta star	0.175		
Nu star	56.11	Potential UCLs to Use	
AppChi2	39.89	95% KM (t) UCL	0.53
95% Gamma Approximate UCL (Use when n >= 40)	0.576	95% KM (Percentile Bootstrap) UCL	0.516
95% Adjusted Gamma UCL (Use when n < 40)	0.608		
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.			

Chromium			
General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Raw Statistics		Log-transformed Statistics	
Minimum	6.7	Minimum of Log Data	1.902
Maximum	20.2	Maximum of Log Data	3.006
Mean	10.29	Mean of log Data	2.284
Geometric Mean	9.817	SD of log Data	0.305
Median	9.625		
SD	3.696		
Std. Error of Mean	1.067		
Coefficient of Variation	0.359		
Skewness	1.966		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.805	Shapiro Wilk Test Statistic	0.918
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
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	12.21	95% H-UCL	12.29
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.22
95% Adjusted-CLT UCL (Chen-1995)	12.69	97.5% Chebyshev (MVUE) UCL	15.94
95% Modified-t UCL (Johnson-1978)	12.31	99% Chebyshev (MVUE) UCL	19.32
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	8.124	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.267		
MLE of Mean	10.29		
MLE of Standard Deviation	3.611		
nu star	195		
Approximate Chi Square Value (.05)	163.7	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	12.05
Adjusted Chi Square Value	159.3	95% Jackknife UCL	12.21
		95% Standard Bootstrap UCL	11.97
Anderson-Darling Test Statistic	0.521	95% Bootstrap-t UCL	13.78
Anderson-Darling 5% Critical Value	0.73	95% Hall's Bootstrap UCL	20.95
Kolmogorov-Smirnov Test Statistic	0.208	95% Percentile Bootstrap UCL	12.08
Kolmogorov-Smirnov 5% Critical Value	0.245	95% BCA Bootstrap UCL	12.69
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.94
		97.5% Chebyshev(Mean, Sd) UCL	16.95
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	20.91
95% Approximate Gamma UCL (Use when n >= 40)	12.26		
95% Adjusted Gamma UCL (Use when n < 40)	12.6		
Potential UCL to Use		Use 95% Approximate Gamma UCL	12.26
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.			

Cobalt			
General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Raw Statistics		Log-transformed Statistics	
Minimum	3.7	Minimum of Log Data	1.308
Maximum	8.5	Maximum of Log Data	2.14
Mean	5.858	Mean of log Data	1.735
Geometric Mean	5.669	SD of log Data	0.269
Median	6		
SD	1.562		
Std. Error of Mean	0.451		
Coefficient of Variation	0.267		
Skewness	0.348		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.942	Shapiro Wilk Test Statistic	0.952
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	6.668	95% H-UCL	6.857
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.858
95% Adjusted-CLT UCL (Chen-1995)	6.649	97.5% Chebyshev (MVUE) UCL	8.723
95% Modified-t UCL (Johnson-1978)	6.676	99% Chebyshev (MVUE) UCL	10.42
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	11.58	Data appear Normal at 5% Significance Level	
Theta Star	0.506		
MLE of Mean	5.858		
MLE of Standard Deviation	1.722		
nu star	277.9		
Approximate Chi Square Value (.05)	240.3	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	6.6
Adjusted Chi Square Value	234.9	95% Jackknife UCL	6.668
		95% Standard Bootstrap UCL	6.556
Anderson-Darling Test Statistic	0.298	95% Bootstrap-t UCL	6.741
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	6.641
Kolmogorov-Smirnov Test Statistic	0.154	95% Percentile Bootstrap UCL	6.592
Kolmogorov-Smirnov 5% Critical Value	0.245	95% BCA Bootstrap UCL	6.55
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7.824
		97.5% Chebyshev(Mean, Sd) UCL	8.675
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	10.35
95% Approximate Gamma UCL (Use when n >= 40)	6.775		
95% Adjusted Gamma UCL (Use when n < 40)	6.929		
Potential UCL to Use		Use 95% Student's-t UCL	6.668
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.			

Copper			
General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	14.6	Minimum of Log Data	2.681
Maximum	179.5	Maximum of Log Data	5.19
Mean	53.68	Mean of log Data	3.692
Geometric Mean	40.13	SD of log Data	0.782
Median	37.55		
SD	46.88		
Std. Error of Mean	13.53		
Coefficient of Variation	0.873		
Skewness	1.943		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.79	Shapiro Wilk Test Statistic	0.95
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
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	77.98	95% H-UCL	99.21
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	107.4
95% Adjusted-CLT UCL (Chen-1995)	84.05	97.5% Chebyshev (MVUE) UCL	131
95% Modified-t UCL (Johnson-1978)	79.25	99% Chebyshev (MVUE) UCL	177.4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.457	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	36.84		
MLE of Mean	53.68		
MLE of Standard Deviation	44.47		
nu star	34.97		
Approximate Chi Square Value (.05)	22.44	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	75.94
Adjusted Chi Square Value	20.92	95% Jackknife UCL	77.98
		95% Standard Bootstrap UCL	74.8
Anderson-Darling Test Statistic	0.353	95% Bootstrap-t UCL	93.17
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	165.9
Kolmogorov-Smirnov Test Statistic	0.158	95% Percentile Bootstrap UCL	76.17
Kolmogorov-Smirnov 5% Critical Value	0.249	95% BCA Bootstrap UCL	84.25
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	112.7
		97.5% Chebyshev(Mean, Sd) UCL	138.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	188.3
95% Approximate Gamma UCL (Use when n >= 40)	83.65		
95% Adjusted Gamma UCL (Use when n < 40)	89.73		
Potential UCL to Use		Use 95% Approximate Gamma UCL	83.65
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.			

DDT and Metabolites			
General Statistics			
Number of Valid Data	11	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	9
		Percent Non-Detects	81.82%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0092	Minimum Detected	-4.689
Maximum Detected	0.0468	Maximum Detected	-3.063
Mean of Detected	0.028	Mean of Detected	-3.876
SD of Detected	0.0266	SD of Detected	1.149
Minimum Non-Detect	0.0068	Minimum Non-Detect	-4.991
Maximum Non-Detect	0.0154	Maximum Non-Detect	-4.173
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	10
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	90.91%
Warning: Data set has only 2 Distinct Detected Values.			
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.			
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).			
Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.			
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.			
Those methods will return a 'N/A' value on your output display!			
It is necessary to have 4 or more Distinct Values for bootstrap methods.			
However, results obtained using 4 to 9 distinct values may not be reliable.			
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.			
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00878	Mean	-5.158
SD	0.0127	SD	0.776
95% DL/2 (t) UCL	0.0157	95% H-Stat (DL/2) UCL	0.0147
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
		95% H-UCL	N/A

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.0126
5% K-S Critical Value	N/A	SD	0.0108
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0046
		95% KM (t) UCL	0.021
Assuming Gamma Distribution		95% KM (z) UCL	0.0202
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0385
Minimum	N/A	95% KM (bootstrap t) UCL	N/A
Maximum	N/A	95% KM (BCA) UCL	0.0468
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.0468
Median	N/A	95% KM (Chebyshev) UCL	0.0327
SD	N/A	97.5% KM (Chebyshev) UCL	0.0414
k star	N/A	99% KM (Chebyshev) UCL	0.0584
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (BCA) UCL	0.0468
95% Gamma Approximate UCL (Use when n >= 40)	N/A		
95% Adjusted Gamma UCL (Use when n < 40)	N/A		
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.			

Dibenzofuran			
General Statistics			
Number of Valid Data	11	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	10
		Percent Non-Detects	90.91%
Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!			
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).			
The data set for variable Dibenzofuran was not processed!			

Dieldrin			
General Statistics			
Number of Valid Data	11	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	11
		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 Dieldrin was not processed!			

Endrin Aldehyde			
General Statistics			
Number of Valid Data	11	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	10
		Percent Non-Detects	90.91%
Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!			
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).			
The data set for variable Endrin Aldehyde was not processed!			

Endrin Ketone			
General Statistics			
Number of Valid Data	11	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	10
		Percent Non-Detects	90.91%
Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!			
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).			
The data set for variable Endrin Ketone was not processed!			

Heptachlor			
General Statistics			
Number of Valid Data	11	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	10
		Percent Non-Detects	90.91%

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

The data set for variable Heptachlor was not processed!

High Molecular Weight PAHs			
General Statistics			
Number of Valid Data	11	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	2
		Percent Non-Detects	18.18%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.702	Minimum Detected	-0.354
Maximum Detected	240.4	Maximum Detected	5.482
Mean of Detected	34.16	Mean of Detected	1.95
SD of Detected	77.68	SD of Detected	1.809
Minimum Non-Detect	1.665	Minimum Non-Detect	0.51
Maximum Non-Detect	1.71	Maximum Non-Detect	0.536
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	45.45%
Warning: There are only 9 Detected Values in this data			
Note: It should be noted that even though bootstrap may be performed on this data set			
the resulting calculations may not be reliable enough 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	0.474	Shapiro Wilk Test Statistic	0.922
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	28.11	Mean	1.564
SD	70.77	SD	1.831
95% DL/2 (t) UCL	66.78	95% H-Stat (DL/2) UCL	404.3
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.564
		SD in Log Scale	1.833
		Mean in Original Scale	28.11
		SD in Original Scale	70.77
		95% t UCL	66.78
		95% Percentile Bootstrap UCL	70.38
		95% BCA Bootstrap UCL	91.48
		95% H-UCL	408.8
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.35	Data appear Lognormal at 5% Significance Level	
Theta Star	97.62		
nu star	6.299		
A-D Test Statistic	0.853	Nonparametric Statistics	
5% A-D Critical Value	0.786	Kaplan-Meier (KM) Method	

K-S Test Statistic	0.786	Mean	28.17
5% K-S Critical Value	0.297	SD	67.45
Data not Gamma Distributed at 5% Significance Level		SE of Mean	21.57
		95% KM (t) UCL	67.27
Assuming Gamma Distribution		95% KM (z) UCL	63.65
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	66.83
Minimum	0.000001	95% KM (bootstrap t) UCL	297.3
Maximum	240.4	95% KM (BCA) UCL	70.54
Mean	27.95	95% KM (Percentile Bootstrap) UCL	70.08
Median	2.04	95% KM (Chebyshev) UCL	122.2
SD	70.84	97.5% KM (Chebyshev) UCL	162.9
k star	0.189	99% KM (Chebyshev) UCL	242.8
Theta star	147.8		
Nu star	4.159	**Potential UCLs to Use**	
AppChi2	0.786	99% KM (Chebyshev) UCL	242.8
95% Gamma Approximate UCL (Use when n >= 40)	148		
95% Adjusted Gamma UCL (Use when n < 40)	200.1		
Warning: Recommended UCL exceeds the maximum observation			
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.			

Iron			
General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	7051	Minimum of Log Data	8.861
Maximum	18552	Maximum of Log Data	9.828
Mean	11622	Mean of log Data	9.316
Geometric Mean	11114	SD of log Data	0.312
Median	10888		
SD	3657		
Std. Error of Mean	1056		
Coefficient of Variation	0.315		
Skewness	0.599		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.937	Shapiro Wilk Test Statistic	0.958
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	13517	95% H-UCL	14004
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	16230
95% Adjusted-CLT UCL (Chen-1995)	13553	97.5% Chebyshev (MVUE) UCL	18224
95% Modified-t UCL (Johnson-1978)	13548	99% Chebyshev (MVUE) UCL	22143
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	8.569	Data appear Normal at 5% Significance Level	
Theta Star	1356		
MLE of Mean	11622		
MLE of Standard Deviation	3970		
nu star	205.7		
Approximate Chi Square Value (.05)	173.5	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	13358
Adjusted Chi Square Value	169	95% Jackknife UCL	13517
		95% Standard Bootstrap UCL	13297
Anderson-Darling Test Statistic	0.252	95% Bootstrap-t UCL	13682
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	13542
Kolmogorov-Smirnov Test Statistic	0.13	95% Percentile Bootstrap UCL	13406
Kolmogorov-Smirnov 5% Critical Value	0.245	95% BCA Bootstrap UCL	13349
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	16223
		97.5% Chebyshev(Mean, Sd) UCL	18214
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	22124
95% Approximate Gamma UCL (Use when n >= 40)	13778		
95% Adjusted Gamma UCL (Use when n < 40)	14145		
Potential UCL to Use		Use 95% Student's-t UCL	13517
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.			

Lead			
General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	10.1	Minimum of Log Data	2.313
Maximum	1177	Maximum of Log Data	7.071
Mean	136.9	Mean of log Data	3.641
Geometric Mean	38.15	SD of log Data	1.38
Median	24.25		
SD	330.6		
Std. Error of Mean	95.45		
Coefficient of Variation	2.415		
Skewness	3.354		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.426	Shapiro Wilk Test Statistic	0.85
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	308.3	95% H-UCL	451.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	251.6
95% Adjusted-CLT UCL (Chen-1995)	392.7	97.5% Chebyshev (MVUE) UCL	322.8
95% Modified-t UCL (Johnson-1978)	323.7	99% Chebyshev (MVUE) UCL	462.9
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.429	Data do not follow a Discernable Distribution (0.05)	
Theta Star	319.5		
MLE of Mean	136.9		
MLE of Standard Deviation	209.1		
nu star	10.29		
Approximate Chi Square Value (.05)	4.122	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	293.9
Adjusted Chi Square Value	3.546	95% Jackknife UCL	308.3
		95% Standard Bootstrap UCL	286.4
Anderson-Darling Test Statistic	1.56	95% Bootstrap-t UCL	1788
Anderson-Darling 5% Critical Value	0.785	95% Hall's Bootstrap UCL	1063
Kolmogorov-Smirnov Test Statistic	0.303	95% Percentile Bootstrap UCL	317.8
Kolmogorov-Smirnov 5% Critical Value	0.259	95% BCA Bootstrap UCL	426.3
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	553
		97.5% Chebyshev(Mean, Sd) UCL	733
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1087
95% Approximate Gamma UCL (Use when n >= 40)	341.7		
95% Adjusted Gamma UCL (Use when n < 40)	397.2		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	553
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.			

Low Molecular Weight PAHs			
General Statistics			
Number of Valid Data	11	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	1
		Percent Non-Detects	9.09%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.527	Minimum Detected	0.423
Maximum Detected	108.7	Maximum Detected	4.688
Mean of Detected	15.84	Mean of Detected	1.621
SD of Detected	33.07	SD of Detected	1.397
Minimum Non-Detect	1.71	Minimum Non-Detect	0.536
Maximum Non-Detect	1.71	Maximum Non-Detect	0.536
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.492	Shapiro Wilk Test Statistic	0.841
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	14.47	Mean	1.459
SD	31.69	SD	1.43
95% DL/2 (t) UCL	31.79	95% H-Stat (DL/2) UCL	69.1
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.512
		SD in Log Scale	1.374
		Mean in Original Scale	14.54
		SD in Original Scale	31.67
		95% t UCL	31.84
		95% Percentile Bootstrap UCL	32.96
		95% BCA Bootstrap UCL	43.64
		95% H-UCL	59.67
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.451	Data do not follow a Discernable Distribution (0.05)	
Theta Star	35.14		
nu star	9.013		
A-D Test Statistic	1.159	Nonparametric Statistics	
5% A-D Critical Value	0.773	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.773	Mean	14.54
5% K-S Critical Value	0.28	SD	30.19
Data not Gamma Distributed at 5% Significance Level		SE of Mean	9.595
		95% KM (t) UCL	31.93
Assuming Gamma Distribution		95% KM (z) UCL	30.32
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	31.84
Minimum	0.000001	95% KM (bootstrap t) UCL	103.6
Maximum	108.7	95% KM (BCA) UCL	32.93
Mean	14.4	95% KM (Percentile Bootstrap) UCL	32.62
Median	3.39	95% KM (Chebyshev) UCL	56.36

SD	31.73	97.5% KM (Chebyshev) UCL	74.46
k star	0.267	99% KM (Chebyshev) UCL	110
Theta star	53.88		
Nu star	5.878	**Potential UCLs to Use**	
AppChi2	1.578	97.5% KM (Chebyshev) UCL	74.46
95% Gamma Approximate UCL (Use when n >= 40)	53.63		
95% Adjusted Gamma UCL (Use when n < 40)	68.01		
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.

Manganese			
General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	107	Minimum of Log Data	4.673
Maximum	716	Maximum of Log Data	6.574
Mean	293.5	Mean of log Data	5.582
Geometric Mean	265.7	SD of log Data	0.459
Median	258		
SD	151		
Std. Error of Mean	43.58		
Coefficient of Variation	0.514		
Skewness	2.101		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.783	Shapiro Wilk Test Statistic	0.929
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
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	371.8	95% H-UCL	394.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	464.6
95% Adjusted-CLT UCL (Chen-1995)	393.4	97.5% Chebyshev (MVUE) UCL	539.1
95% Modified-t UCL (Johnson-1978)	376.2	99% Chebyshev (MVUE) UCL	685.4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.945	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	74.4		
MLE of Mean	293.5		
MLE of Standard Deviation	147.8		
nu star	94.68		
Approximate Chi Square Value (.05)	73.24	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	365.2
Adjusted Chi Square Value	70.37	95% Jackknife UCL	371.8
		95% Standard Bootstrap UCL	365.2
Anderson-Darling Test Statistic	0.566	95% Bootstrap-t UCL	420.5
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	733.7
Kolmogorov-Smirnov Test Statistic	0.187	95% Percentile Bootstrap UCL	369.3
Kolmogorov-Smirnov 5% Critical Value	0.246	95% BCA Bootstrap UCL	387.5
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	483.5
		97.5% Chebyshev(Mean, Sd) UCL	565.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	727.1
95% Approximate Gamma UCL (Use when n >= 40)	379.4		
95% Adjusted Gamma UCL (Use when n < 40)	394.9		
Potential UCL to Use		Use 95% Approximate Gamma UCL	379.4
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.			

Mercury			
General Statistics			
Number of Valid Data	12	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	2
		Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.075	Minimum Detected	-2.59
Maximum Detected	34.4	Maximum Detected	3.538
Mean of Detected	8.085	Mean of Detected	0.118
SD of Detected	12.1	SD of Detected	2.49
Minimum Non-Detect	0.11	Minimum Non-Detect	-2.207
Maximum Non-Detect	0.12	Maximum Non-Detect	-2.12
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	8
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	33.33%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.734	Shapiro Wilk Test Statistic	0.859
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	6.747	Mean	-0.378
SD	11.38	SD	2.533
95% DL/2 (t) UCL	12.65	95% H-Stat (DL/2) UCL	1843
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3.238	Mean in Log Scale	-0.435
SD	14.59	SD in Log Scale	2.596
95% MLE (t) UCL	10.8	Mean in Original Scale	6.745
95% MLE (Tiku) UCL	11.32	SD in Original Scale	11.38
		95% t UCL	12.65
		95% Percentile Bootstrap UCL	12.12
		95% BCA Bootstrap UCL	14.75
		95% H UCL	2573
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.306	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	26.41		
nu star	6.124		
A-D Test Statistic	0.687	Nonparametric Statistics	
5% A-D Critical Value	0.806	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.806	Mean	6.751
5% K-S Critical Value	0.286	SD	10.9
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	3.315
		95% KM (t) UCL	12.7
Assuming Gamma Distribution		95% KM (z) UCL	12.2
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	12.65
Minimum	0.000001	95% KM (bootstrap t) UCL	17.09

Maximum	34.4	95% KM (BCA) UCL	12.45
Mean	6.738	95% KM (Percentile Bootstrap) UCL	12.33
Median	0.21	95% KM (Chebyshev) UCL	21.2
SD	11.39	97.5% KM (Chebyshev) UCL	27.46
k star	0.192	99% KM (Chebyshev) UCL	39.74
Theta star	35.13		
Nu star	4.603	**Potential UCLs to Use**	
AppChi2	0.973	95% KM (Chebyshev) UCL	21.2
95% Gamma Approximate UCL (Use when n >= 40)	31.86		
95% Adjusted Gamma UCL (Use when n < 40)	41.46		
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.			

Nickel			
General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	4.8	Minimum of Log Data	1.569
Maximum	28.5	Maximum of Log Data	3.35
Mean	12.88	Mean of log Data	2.431
Geometric Mean	11.37	SD of log Data	0.522
Median	11.7		
SD	6.892		
Std. Error of Mean	1.989		
Coefficient of Variation	0.535		
Skewness	1.113		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.914	Shapiro Wilk Test Statistic	0.985
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	16.45	95% H-UCL	18.33
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	21.54
95% Adjusted-CLT UCL (Chen-1995)	16.83	97.5% Chebyshev (MVUE) UCL	25.29
95% Modified-t UCL (Johnson-1978)	16.56	99% Chebyshev (MVUE) UCL	32.66
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.18	Data appear Normal at 5% Significance Level	
Theta Star	4.05		
MLE of Mean	12.88		
MLE of Standard Deviation	7.222		
nu star	76.32		
Approximate Chi Square Value (.05)	57.2	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	16.15
Adjusted Chi Square Value	54.68	95% Jackknife UCL	16.45
		95% Standard Bootstrap UCL	16.05
Anderson-Darling Test Statistic	0.19	95% Bootstrap-t UCL	17.59
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	18.28
Kolmogorov-Smirnov Test Statistic	0.15	95% Percentile Bootstrap UCL	16.06
Kolmogorov-Smirnov 5% Critical Value	0.246	95% BCA Bootstrap UCL	16.65
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	21.55
		97.5% Chebyshev(Mean, Sd) UCL	25.3
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	32.67
95% Approximate Gamma UCL (Use when n >= 40)	17.18		
95% Adjusted Gamma UCL (Use when n < 40)	17.98		
Potential UCL to Use		Use 95% Student's-t UCL	16.45
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 Dioxin-like Congener TEQ (bird)			
General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		Log-transformed Statistics	
Minimum	2.698E-07	Minimum of Log Data	-15.13
Maximum	3.715E-05	Maximum of Log Data	-10.2
Mean	5.782E-06	Mean of log Data	-13.18
Geometric Mean	1.885E-06	SD of log Data	1.474
Median	1.612E-06		
SD	1.099E-05		
Std. Error of Mean	3.312E-06		
Coefficient of Variation	N/A		
Skewness	2.796		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.553	Shapiro Wilk Test Statistic	0.946
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.179E-05	95% H-UCL	3.569E-05
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.459E-05
95% Adjusted-CLT UCL (Chen-1995)	1.421E-05	97.5% Chebyshev (MVUE) UCL	1.885E-05
95% Modified-t UCL (Johnson-1978)	1.225E-05	99% Chebyshev (MVUE) UCL	2.723E-05
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.466	Data appear Lognormal at 5% Significance Level	
Theta Star	1.241E-05		
MLE of Mean	5.782E-06		
MLE of Standard Deviation	8.471E-06		
nu star	10.25		
Approximate Chi Square Value (.05)	4.1	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	1.123E-05
Adjusted Chi Square Value	3.489	95% Jackknife UCL	1.179E-05
		95% Standard Bootstrap UCL	1.085E-05
Anderson-Darling Test Statistic	0.841	95% Bootstrap-t UCL	4.458E-05
Anderson-Darling 5% Critical Value	0.777	95% Hall's Bootstrap UCL	3.469E-05
Kolmogorov-Smirnov Test Statistic	0.297	95% Percentile Bootstrap UCL	1.161E-05
Kolmogorov-Smirnov 5% Critical Value	0.268	95% BCA Bootstrap UCL	1.541E-05
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.022E-05
		97.5% Chebyshev(Mean, Sd) UCL	2.647E-05
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	3.874E-05
95% Approximate Gamma UCL (Use when n >= 40)	1.446E-05		
95% Adjusted Gamma UCL (Use when n < 40)	1.699E-05		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	2.022E-05
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 Dioxin-like Congener TEQ (mammal)			
General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		Log-transformed Statistics	
Minimum	1.447E-07	Minimum of Log Data	-15.75
Maximum	2.017E-05	Maximum of Log Data	-10.81
Mean	2.737E-06	Mean of log Data	-13.86
Geometric Mean	9.531E-07	SD of log Data	1.342
Median	7.85E-07		
SD	5.836E-06		
Std. Error of Mean	1.76E-06		
Coefficient of Variation	N/A		
Skewness	3.211		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.462	Shapiro Wilk Test Statistic	0.939
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	5.926E-06	95% H-UCL	1.125E-05
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.965E-06
95% Adjusted-CLT UCL (Chen-1995)	7.451E-06	97.5% Chebyshev (MVUE) UCL	7.656E-06
95% Modified-t UCL (Johnson-1978)	6.21E-06	99% Chebyshev (MVUE) UCL	1.098E-05
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.488	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	5.609E-06		
MLE of Mean	2.737E-06		
MLE of Standard Deviation	3.918E-06		
nu star	10.73		
Approximate Chi Square Value (.05)	4.406	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	5.631E-06
Adjusted Chi Square Value	3.767	95% Jackknife UCL	5.926E-06
		95% Standard Bootstrap UCL	5.474E-06
Anderson-Darling Test Statistic	1.031	95% Bootstrap-t UCL	2.353E-05
Anderson-Darling 5% Critical Value	0.775	95% Hall's Bootstrap UCL	1.717E-05
Kolmogorov-Smirnov Test Statistic	0.249	95% Percentile Bootstrap UCL	6.207E-06
Kolmogorov-Smirnov 5% Critical Value	0.268	95% BCA Bootstrap UCL	7.982E-06
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.041E-05
		97.5% Chebyshev(Mean, Sd) UCL	1.373E-05
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.024E-05
95% Approximate Gamma UCL (Use when n >= 40)	6.668E-06		
95% Adjusted Gamma UCL (Use when n < 40)	7.798E-06		
Potential UCL to Use		Use 95% Approximate Gamma UCL	6.668E-06
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.			

Selenium			
General Statistics			
Number of Valid Data	12	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	4
		Percent Non-Detects	33.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.49	Minimum Detected	-0.713
Maximum Detected	2.1	Maximum Detected	0.742
Mean of Detected	1.078	Mean of Detected	-0.0385
SD of Detected	0.546	SD of Detected	0.513
Minimum Non-Detect	3.8	Minimum Non-Detect	1.335
Maximum Non-Detect	4.3	Maximum Non-Detect	1.459
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
Warning: There are only 8 Detected Values in this data			
Note: It should be noted that even though bootstrap may be performed on this data set			
the resulting calculations may not be reliable enough 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	0.925	Shapiro Wilk Test Statistic	0.955
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	1.389	Mean	0.207
SD	0.636	SD	0.547
95% DL/2 (t) UCL	1.719	95% H-Stat (DL/2) UCL	2.055
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.0385
		SD in Log Scale	0.409
		Mean in Original Scale	1.039
		SD in Original Scale	0.439
		95% t UCL	1.267
		95% Percentile Bootstrap UCL	1.252
		95% BCA Bootstrap UCL	1.277
		95% H-UCL	1.345
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.946	Data appear Normal at 5% Significance Level	
Theta Star	0.366		
nu star	47.13		
A-D Test Statistic	0.242	Nonparametric Statistics	
5% A-D Critical Value	0.719	Kaplan-Meier (KM) Method	

K-S Test Statistic	0.719	Mean	1.078
5% K-S Critical Value	0.295	SD	0.511
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.193
		95% KM (t) UCL	1.424
Assuming Gamma Distribution		95% KM (z) UCL	1.395
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.432
Minimum	0.49	95% KM (bootstrap t) UCL	1.534
Maximum	2.1	95% KM (BCA) UCL	1.41
Mean	1.1	95% KM (Percentile Bootstrap) UCL	1.374
Median	1.146	95% KM (Chebyshev) UCL	1.919
SD	0.437	97.5% KM (Chebyshev) UCL	2.283
k star	5.122	99% KM (Chebyshev) UCL	2.999
Theta star	0.215		
Nu star	122.9	**Potential UCLs to Use**	
AppChi2	98.32	95% KM (t) UCL	1.424
95% Gamma Approximate UCL (Use when n >= 40)	1.376	95% KM (Percentile Bootstrap) UCL	1.374
95% Adjusted Gamma UCL (Use when n < 40)	1.424		
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.			

Silver			
General Statistics			
Number of Valid Data	12	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	11
		Percent Non-Detects	91.67%
Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!			
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).			
The data set for variable Silver was not processed!			

Total PCB Homologues			
General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		Log-transformed Statistics	
Minimum	0.0000997	Minimum of Log Data	-9.213
Maximum	0.0793	Maximum of Log Data	-2.535
Mean	0.0314	Mean of log Data	-4.383
Geometric Mean	0.0125	SD of log Data	2.021
Median	0.027		
SD	0.0299		
Std. Error of Mean	0.00902		
Coefficient of Variation	0.951		
Skewness	0.707		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.869	Shapiro Wilk Test Statistic	0.846
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
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	0.0478	95% H-UCL	2.669
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.245
95% Adjusted-CLT UCL (Chen-1995)	0.0483	97.5% Chebyshev (MVUE) UCL	0.323
95% Modified-t UCL (Johnson-1978)	0.0481	99% Chebyshev (MVUE) UCL	0.476
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.541	Data appear Normal at 5% Significance Level	
Theta Star	0.0581		
MLE of Mean	0.0314		
MLE of Standard Deviation	0.0427		
nu star	11.9		
Approximate Chi Square Value (.05)	5.16	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	0.0463
Adjusted Chi Square Value	4.459	95% Jackknife UCL	0.0478
		95% Standard Bootstrap UCL	0.0453
Anderson-Darling Test Statistic	0.299	95% Bootstrap-t UCL	0.0518
Anderson-Darling 5% Critical Value	0.769	95% Hall's Bootstrap UCL	0.0467
Kolmogorov-Smirnov Test Statistic	0.163	95% Percentile Bootstrap UCL	0.0461
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	0.0471
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0707
		97.5% Chebyshev(Mean, Sd) UCL	0.0878
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.121
95% Approximate Gamma UCL (Use when n >= 40)	0.0725		
95% Adjusted Gamma UCL (Use when n < 40)	0.0839		
Potential UCL to Use		Use 95% Student's-t UCL	0.0478
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.			

Vanadium			
General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	14.2	Minimum of Log Data	2.653
Maximum	30.8	Maximum of Log Data	3.428
Mean	19.98	Mean of log Data	2.961
Geometric Mean	19.32	SD of log Data	0.266
Median	19.2		
SD	5.591		
Std. Error of Mean	1.614		
Coefficient of Variation	0.28		
Skewness	0.887		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.883	Shapiro Wilk Test Statistic	0.913
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	22.88	95% H-UCL	23.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	26.67
95% Adjusted-CLT UCL (Chen-1995)	23.08	97.5% Chebyshev (MVUE) UCL	29.58
95% Modified-t UCL (Johnson-1978)	22.95	99% Chebyshev (MVUE) UCL	35.29
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	11.4	Data appear Normal at 5% Significance Level	
Theta Star	1.752		
MLE of Mean	19.98		
MLE of Standard Deviation	5.916		
nu star	273.7		
Approximate Chi Square Value (.05)	236.4	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	22.63
Adjusted Chi Square Value	231.1	95% Jackknife UCL	22.88
		95% Standard Bootstrap UCL	22.52
Anderson-Darling Test Statistic	0.465	95% Bootstrap-t UCL	23.82
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	23.69
Kolmogorov-Smirnov Test Statistic	0.202	95% Percentile Bootstrap UCL	22.63
Kolmogorov-Smirnov 5% Critical Value	0.245	95% BCA Bootstrap UCL	22.77
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	27.01
		97.5% Chebyshev(Mean, Sd) UCL	30.06
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	36.04
95% Approximate Gamma UCL (Use when n >= 40)	23.13		
95% Adjusted Gamma UCL (Use when n < 40)	23.66		
Potential UCL to Use		Use 95% Student's-t UCL	22.88
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.			

Zinc			
General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	30.8	Minimum of Log Data	3.428
Maximum	405.5	Maximum of Log Data	6.005
Mean	101.7	Mean of log Data	4.312
Geometric Mean	74.62	SD of log Data	0.744
Median	59.95		
SD	105.6		
Std. Error of Mean	30.49		
Coefficient of Variation	1.039		
Skewness	2.549		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.659	Shapiro Wilk Test Statistic	0.915
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
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	156.4	95% H-UCL	171.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	189.5
95% Adjusted-CLT UCL (Chen-1995)	175.8	97.5% Chebyshev (MVUE) UCL	230.1
95% Modified-t UCL (Johnson-1978)	160.2	99% Chebyshev (MVUE) UCL	309.9
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.379	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	73.72		
MLE of Mean	101.7		
MLE of Standard Deviation	86.57		
nu star	33.1		
Approximate Chi Square Value (.05)	20.94	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	151.8
Adjusted Chi Square Value	19.48	95% Jackknife UCL	156.4
		95% Standard Bootstrap UCL	150.1
Anderson-Darling Test Statistic	0.767	95% Bootstrap-t UCL	272.7
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	373.7
Kolmogorov-Smirnov Test Statistic	0.208	95% Percentile Bootstrap UCL	156
Kolmogorov-Smirnov 5% Critical Value	0.249	95% BCA Bootstrap UCL	177.3
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	234.6
		97.5% Chebyshev(Mean, Sd) UCL	292.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	405.1
95% Approximate Gamma UCL (Use when n >= 40)	160.7		
95% Adjusted Gamma UCL (Use when n < 40)	172.7		
Potential UCL to Use		Use 95% Approximate Gamma UCL	160.7
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.			

General UCL Statistics for Full Data Sets

User Selected Options

From File	Sheet1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Mercury

General Statistics

Number of Valid Observations	16	Number of Distinct Observations	16
Raw Statistics		**Log-transformed Statistics**	
Minimum	28.92	Minimum of Log Data	3.364
Maximum	1331	Maximum of Log Data	7.194
Mean	250.1	Mean of log Data	4.843
Geometric Mean	126.9	SD of log Data	1.054
Median	94.28		
SD	395.4		
Std. Error of Mean	98.85		
Coefficient of Variation	1.581		
Skewness	2.428		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.538	Shapiro Wilk Test Statistic	0.874
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	423.4	95% H-UCL	471.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	477.5
95% Adjusted-CLT UCL (Chen-1995)	476.9	97.5% Chebyshev (MVUE) UCL	593.1
95% Modified-t UCL (Johnson-1978)	433.4	99% Chebyshev (MVUE) UCL	820.2
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.745	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	335.7		
MLE of Mean	250.1		
MLE of Standard Deviation	289.8		
nu star	23.84		
Approximate Chi Square Value (.05)	13.73	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0335	95% CLT UCL	412.7
Adjusted Chi Square Value	12.86	95% Jackknife UCL	423.4
		95% Standard Bootstrap UCL	409.7
Anderson-Darling Test Statistic	1.757	95% Bootstrap-t UCL	1293
Anderson-Darling 5% Critical Value	0.769	95% Hall's Bootstrap UCL	1254
Kolmogorov-Smirnov Test Statistic	0.309	95% Percentile Bootstrap UCL	422.2
Kolmogorov-Smirnov 5% Critical Value	0.222	95% BCA Bootstrap UCL	474.5
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	681
		97.5% Chebyshev(Mean, Sd) UCL	867.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1234
95% Approximate Gamma UCL (Use when n >= 40)	434.4		
95% Adjusted Gamma UCL (Use when n < 40)	463.7		

Potential UCL to Use	Use 95% Chebyshev (Mean, Sd) UCL 681

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

APPENDIX D
STATISTICAL COMPARISONS

Table D-1

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Aluminum

Background Data: Aluminum_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	0	0
Number of Detect Data	10	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	3230	4220
Maximum Detected	6470	15700
Mean of Detected Data	4721	8450
Median of Detected Data	4763	8460
SD of Detected Data	1079	4220

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	68
WMW Test U-Stat	13
WMW Critical Value (0.050)	45
Approximate P-Value	0.971

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-2

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Antimony

Background Data: Antimony_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	4	6
Number of Detect Data	6	0
Minimum Non-Detect	5.1	1.2
Maximum Non-Detect	6.2	1.9
Percent Non detects	40.00%	100.00%
Minimum Detected	1.4	N/A
Maximum Detected	3.3	N/A
Mean of Detected Data	2.367	N/A
Median of Detected Data	2.4	N/A
SD of Detected Data	0.776	N/A

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 6.2 (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	85
WMW Test U-Stat	30
WMW Critical Value (0.050)	45
Approximate P-Value	0.522

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-3

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Arsenic

Background Data: Arsenic_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	0	0
Number of Detect Data	10	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	1.5	1.3
Maximum Detected	828	4.9
Mean of Detected Data	90.6	3.342
Median of Detected Data	7.55	3.55
SD of Detected Data	259.2	1.466

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	96
WMW Test U-Stat	41
WMW Critical Value (0.050)	45
Approximate P-Value	0.127

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-4

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Barium

Background Data: Barium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	0	0
Number of Detect Data	10	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	29	24.4
Maximum Detected	254	41.9
Mean of Detected Data	146	31.72
Median of Detected Data	132.5	32.05
SD of Detected Data	84.18	5.913

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	111
WMW Test U-Stat	56
WMW Critical Value (0.050)	45
Approximate P-Value	0.00284

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

Table D-5

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Cadmium

Background Data: Cadmium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	3	5
Number of Detect Data	7	1
Minimum Non-Detect	0.505	0.59
Maximum Non-Detect	0.58	0.95
Percent Non detects	30.00%	83.33%
Minimum Detected	0.15	0.49
Maximum Detected	1.3	0.49
Mean of Detected Data	0.719	0.49
Median of Detected Data	0.91	0.49
SD of Detected Data	0.457	N/A

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 0.95 (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	94
WMW Test U-Stat	39
WMW Critical Value (0.050)	45
Approximate P-Value	0.178

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-6

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Chromium

Background Data: Chromium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	0	0
Number of Detect Data	10	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	6.1	7.2
Maximum Detected	29.7	16.7
Mean of Detected Data	10.95	11.5
Median of Detected Data	8.7	10.85
SD of Detected Data	7.017	3.743

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	76
WMW Test U-Stat	21
WMW Critical Value (0.050)	45
Approximate P-Value	0.849

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-7

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Cobalt

Background Data: Cobalt_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	0	1
Number of Detect Data	10	5
Minimum Non-Detect	N/A	6.6
Maximum Non-Detect	N/A	6.6
Percent Non detects	0.00%	16.67%
Minimum Detected	4.4	2.5
Maximum Detected	18.5	3.6
Mean of Detected Data	8.595	3.03
Median of Detected Data	6.8	3
SD of Detected Data	4.997	0.471

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 6.6 (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	100
WMW Test U-Stat	45
WMW Critical Value (0.050)	45
Approximate P-Value	0.0579

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-8

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Copper

Background Data: Copper_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	0	0
Number of Detect Data	10	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	15.5	9
Maximum Detected	130	22.55
Mean of Detected Data	68.46	13.11
Median of Detected Data	59.8	10
SD of Detected Data	45.17	5.707

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	112
WMW Test U-Stat	57
WMW Critical Value (0.050)	45
Approximate P-Value	0.00202

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

Table D-9

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Iron

Background Data: Iron_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	0	0
Number of Detect Data	10	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	8660	5210
Maximum Detected	39100	18050
Mean of Detected Data	16286	11377
Median of Detected Data	15000	11100
SD of Detected Data	8580	4093

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	95.5
WMW Test U-Stat	40.5
WMW Critical Value (0.050)	45
Approximate P-Value	0.139

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-10

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Lead

Background Data: Lead_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	0	0
Number of Detect Data	10	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	26.85	20
Maximum Detected	382	82.2
Mean of Detected Data	116.3	35.68
Median of Detected Data	66.45	25.9
SD of Detected Data	110.9	23.84

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	106
WMW Test U-Stat	51
WMW Critical Value (0.050)	45
Approximate P-Value	0.0131

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

Table D-11

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Manganese

Background Data: Manganese_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	0	0
Number of Detect Data	10	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	120	49
Maximum Detected	271	144
Mean of Detected Data	190.1	105.9
Median of Detected Data	178.5	117.7
SD of Detected Data	50.65	40.56

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	109
WMW Test U-Stat	54
WMW Critical Value (0.050)	45
Approximate P-Value	0.0054

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

Table D-12

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Mercury

Background Data: Mercury_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	0	0
Number of Detect Data	10	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	0.71	0.068
Maximum Detected	147	0.355
Mean of Detected Data	30.5	0.161
Median of Detected Data	2.55	0.119
SD of Detected Data	57.91	0.11

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	115
WMW Test U-Stat	60
WMW Critical Value (0.050)	45
Approximate P-Value	0.0006878

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

Table D-13

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Nickel

Background Data: Nickel_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	0	0
Number of Detect Data	10	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	5.6	5.25
Maximum Detected	75.9	10.7
Mean of Detected Data	17.65	6.642
Median of Detected Data	9.95	5.75
SD of Detected Data	20.96	2.082

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	106
WMW Test U-Stat	51
WMW Critical Value (0.050)	45
Approximate P-Value	0.0131

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

Table D-14

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Selenium

Background Data: Selenium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	5	6
Number of Detect Data	5	0
Minimum Non-Detect	3	4.1
Maximum Non-Detect	4	6.7
Percent Non detects	50.00%	100.00%
Minimum Detected	0.525	N/A
Maximum Detected	2.1	N/A
Mean of Detected Data	1.305	N/A
Median of Detected Data	1.4	N/A
SD of Detected Data	0.587	N/A

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 6.7 (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	85
WMW Test U-Stat	30
WMW Critical Value (0.050)	45
Approximate P-Value	0.522

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-15

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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

Background Data: Silver_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	6	6
Number of Detect Data	4	0
Minimum Non-Detect	0.99	1.2
Maximum Non-Detect	1.2	1.9
Percent Non detects	60.00%	100.00%
Minimum Detected	0.11	N/A
Maximum Detected	2.25	N/A
Mean of Detected Data	0.968	N/A
Median of Detected Data	0.755	N/A
SD of Detected Data	1.011	N/A

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 1.9 (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	88
WMW Test U-Stat	33
WMW Critical Value (0.050)	45
Approximate P-Value	0.393

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-16

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Vanadium

Background Data: Vanadium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	0	0
Number of Detect Data	10	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	11.5	20.1
Maximum Detected	19.9	52.7
Mean of Detected Data	16.63	35.07
Median of Detected Data	17.75	36.35
SD of Detected Data	2.984	12.57

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	55
WMW Test U-Stat	0
WMW Critical Value (0.050)	45
Approximate P-Value	1

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-17

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Sheet1.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: Zinc

Background Data: Zinc_BKG

Raw Statistics

	Site	Background
Number of Valid Data	10	6
Number of Non-Detect Data	0	0
Number of Detect Data	10	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	32.2	23.3
Maximum Detected	315	51.4
Mean of Detected Data	149.3	34.4
Median of Detected Data	121.5	29.2
SD of Detected Data	100.7	11.45

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	113
WMW Test U-Stat	58
WMW Critical Value (0.050)	45
Approximate P-Value	0.00143

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

Table D-18

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Aluminum_SFSA

Background Data: Aluminum_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	0	0
Number of Detect Data	45	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	843	4220
Maximum Detected	7822	15700
Mean of Detected Data	4544	8450
Median of Detected Data	4420	8460
SD of Detected Data	1551	4220

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1083
WMW Test U-Stat	-2.558
WMW Critical Value (0.050)	1.645
P-Value	0.995

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Table D-19

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Antimon1_SFSA

Background Data: Antimony_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	16	6
Number of Detect Data	29	0
Minimum Non-Detect	6	1.2
Maximum Non-Detect	7.8	1.9
Percent Non detects	35.56%	100.00%
Minimum Detected	0.46	N/A
Maximum Detected	580	N/A
Mean of Detected Data	45.07	N/A
Median of Detected Data	2.8	N/A
SD of Detected Data	126	N/A

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 7.8 (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	1197
WMW Test U-Stat	0.775
WMW Critical Value (0.050)	1.645
P-Value	0.219

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Table D-20

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Arsenic_SFSA

Background Data: Arsenic_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	1	0
Number of Detect Data	44	6
Minimum Non-Detect	1.2	N/A
Maximum Non-Detect	1.2	N/A
Percent Non detects	2.22%	0.00%
Minimum Detected	2.2	1.3
Maximum Detected	281	4.9
Mean of Detected Data	29.45	3.342
Median of Detected Data	10.2	3.55
SD of Detected Data	51.21	1.466

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1269
WMW Test U-Stat	2.865
WMW Critical Value (0.050)	1.645
P-Value	0.00208

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

P-Value < alpha (0.05)

Table D-21

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Barium_SFSA

Background Data: Barium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	0	0
Number of Detect Data	45	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	32.8	24.4
Maximum Detected	1443	41.9
Mean of Detected Data	180.6	31.72
Median of Detected Data	91.7	32.05
SD of Detected Data	286.4	5.913

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1300
WMW Test U-Stat	3.771
WMW Critical Value (0.050)	1.645
P-Value	8.118E-05

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

P-Value < alpha (0.05)

Table D-22

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Cadmium_SFSA

Background Data: Cadmium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	22	5
Number of Detect Data	23	1
Minimum Non-Detect	0.5	0.59
Maximum Non-Detect	2.4	0.95
Percent Non detects	48.89%	83.33%
Minimum Detected	0.074	0.49
Maximum Detected	4.2	0.49
Mean of Detected Data	0.654	0.49
Median of Detected Data	0.35	0.49
SD of Detected Data	0.887	N/A

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 2.4 (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	1173
WMW Test U-Stat	0.0731
WMW Critical Value (0.050)	1.645
P-Value	0.471

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Table D-23

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Chromium_SFSA

Background Data: Chromium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	0	0
Number of Detect Data	45	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	3.9	7.2
Maximum Detected	54.3	16.7
Mean of Detected Data	14.84	11.5
Median of Detected Data	11.4	10.85
SD of Detected Data	11.82	3.743

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1173
WMW Test U-Stat	0.0585
WMW Critical Value (0.050)	1.645
P-Value	0.477

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Table D-24

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Cobalt_SFSA

Background Data: Cobalt_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	0	1
Number of Detect Data	45	5
Minimum Non-Detect	N/A	6.6
Maximum Non-Detect	N/A	6.6
Percent Non detects	0.00%	16.67%
Minimum Detected	3.6	2.5
Maximum Detected	29.7	3.6
Mean of Detected Data	6.741	3.03
Median of Detected Data	5.8	3
SD of Detected Data	4.15	0.471

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 6.6 (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	1221
WMW Test U-Stat	1.476
WMW Critical Value (0.050)	1.645
P-Value	0.0699

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Table D-25

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Copper_SFSA

Background Data: Copper_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	0	0
Number of Detect Data	45	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	13.5	9
Maximum Detected	1890	22.55
Mean of Detected Data	192.2	13.11
Median of Detected Data	71.9	10
SD of Detected Data	384.2	5.707

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1294
WMW Test U-Stat	3.611
WMW Critical Value (0.050)	1.645
P-Value	0.0001528

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

P-Value < alpha (0.05)

Table D-26

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Iron_SFSA

Background Data: Iron_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	0	0
Number of Detect Data	45	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	4325	5210
Maximum Detected	235011	18050
Mean of Detected Data	28259	11377
Median of Detected Data	14766	11100
SD of Detected Data	41452	4093

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1217
WMW Test U-Stat	1.359
WMW Critical Value (0.050)	1.645
P-Value	0.087

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Table D-27

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Lead_SFSA

Background Data: Lead_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	0	0
Number of Detect Data	45	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	7.4	20
Maximum Detected	24438	82.2
Mean of Detected Data	1068	35.68
Median of Detected Data	86.8	25.9
SD of Detected Data	3745	23.84

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1255
WMW Test U-Stat	2.47
WMW Critical Value (0.050)	1.645
P-Value	0.00675

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

P-Value < alpha (0.05)

Table D-28

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	J:\Projects\Nobis RAC Region 1\Chlor-Alkali Berlin NH\Reports\SLERA\Revised Draft February 2013\ProUCL\Pı
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: Manganese_SFSA

Background Data: Manganese_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	0	0
Number of Detect Data	45	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	59.8	49
Maximum Detected	780	144
Mean of Detected Data	285.8	105.9
Median of Detected Data	247	117.7
SD of Detected Data	164.9	40.56

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1290
WMW Test U-Stat	3.494
WMW Critical Value (0.050)	1.645
P-Value	0.0002383

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

P-Value < alpha (0.05)

Table D-29

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Mercur1_SFSA

Background Data: Mercury_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	1	0
Number of Detect Data	44	6
Minimum Non-Detect	3.3	N/A
Maximum Non-Detect	3.3	N/A
Percent Non detects	2.22%	0.00%
Minimum Detected	0.055	0.068
Maximum Detected	125	0.355
Mean of Detected Data	10.86	0.161
Median of Detected Data	1.85	0.119
SD of Detected Data	26.37	0.11

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1224
WMW Test U-Stat	1.564
WMW Critical Value (0.050)	1.645
P-Value	0.0589

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Table D-30

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Nickel_SFSA

Background Data: Nickel_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	0	0
Number of Detect Data	45	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	4.1	5.25
Maximum Detected	342	10.7
Mean of Detected Data	26.3	6.642
Median of Detected Data	13.5	5.75
SD of Detected Data	51.47	2.082

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1281
WMW Test U-Stat	3.23
WMW Critical Value (0.050)	1.645
P-Value	0.0006179

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

P-Value < alpha (0.05)

Table D-31

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Selenium_SFSA

Background Data: Selenium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	4	6
Number of Detect Data	41	0
Minimum Non-Detect	4.1	4.1
Maximum Non-Detect	4.7	6.7
Percent Non detects	8.89%	100.00%
Minimum Detected	0.18	N/A
Maximum Detected	5.9	N/A
Mean of Detected Data	1.548	N/A
Median of Detected Data	1.1	N/A
SD of Detected Data	1.427	N/A

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 6.7 (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	1170
WMW Test U-Stat	-0.0146
WMW Critical Value (0.050)	1.645
P-Value	0.506

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Table D-32

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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_SFSA

Background Data: Silver_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	38	6
Number of Detect Data	7	0
Minimum Non-Detect	1	1.2
Maximum Non-Detect	1.4	1.9
Percent Non detects	84.44%	100.00%
Minimum Detected	0.14	N/A
Maximum Detected	5.5	N/A
Mean of Detected Data	1.639	N/A
Median of Detected Data	1.3	N/A
SD of Detected Data	1.8	N/A

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 1.9 (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	1173
WMW Test U-Stat	0.0731
WMW Critical Value (0.050)	1.645
P-Value	0.471

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Table D-33

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Vanadium_SFSA

Background Data: Vanadium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	0	0
Number of Detect Data	45	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	11.6	20.1
Maximum Detected	72.7	52.7
Mean of Detected Data	22.78	35.07
Median of Detected Data	20	36.35
SD of Detected Data	10.4	12.57

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1086
WMW Test U-Stat	-2.485
WMW Critical Value (0.050)	1.645
P-Value	0.994

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Table D-34

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_B.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: Zinc_SFSA

Background Data: Zinc_BKG

Raw Statistics

	Site	Background
Number of Valid Data	45	6
Number of Non-Detect Data	0	0
Number of Detect Data	45	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	31.4	23.3
Maximum Detected	839	51.4
Mean of Detected Data	152.1	34.4
Median of Detected Data	98.9	29.2
SD of Detected Data	160.7	11.45

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1287
WMW Test U-Stat	3.406
WMW Critical Value (0.050)	1.645
P-Value	0.0003297

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

P-Value < alpha (0.05)

Table D-35

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Aluminum_EFSA

Background Data: Aluminum_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	0	0
Number of Detect Data	12	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	1307	4220
Maximum Detected	10774	15700
Mean of Detected Data	5495	8450
Median of Detected Data	5787	8460
SD of Detected Data	2856	4220

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	101
WMW Test U-Stat	23
WMW Critical Value (0.050)	54
Approximate P-Value	0.897

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-36

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Antimony_EFSA

Background Data: Antimony_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	5	6
Number of Detect Data	7	0
Minimum Non-Detect	6	1.2
Maximum Non-Detect	13.3	1.9
Percent Non detects	41.67%	100.00%
Minimum Detected	0.45	N/A
Maximum Detected	16.5	N/A
Mean of Detected Data	3.179	N/A
Median of Detected Data	1.1	N/A
SD of Detected Data	5.885	N/A

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 13.3 (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	117
WMW Test U-Stat	39
WMW Critical Value (0.050)	54
Approximate P-Value	0.407

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-37

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Arsenic_EFSA

Background Data: Arsenic_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	0	0
Number of Detect Data	12	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	1.85	1.3
Maximum Detected	38.7	4.9
Mean of Detected Data	10.03	3.342
Median of Detected Data	3.7	3.55
SD of Detected Data	11.58	1.466

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	122
WMW Test U-Stat	44
WMW Critical Value (0.050)	54
Approximate P-Value	0.241

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-38

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Barium_EFSA

Background Data: Barium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	0	0
Number of Detect Data	12	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	42.7	24.4
Maximum Detected	724	41.9
Mean of Detected Data	151.7	31.72
Median of Detected Data	76	32.05
SD of Detected Data	193.7	5.913

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	150
WMW Test U-Stat	72
WMW Critical Value (0.050)	54
Approximate P-Value	0.0004423

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

Table D-39

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Cadmium_EFSA

Background Data: Cadmium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	4	5
Number of Detect Data	8	1
Minimum Non-Detect	0.5	0.59
Maximum Non-Detect	0.5	0.95
Percent Non detects	33.33%	83.33%
Minimum Detected	0.15	0.49
Maximum Detected	0.99	0.49
Mean of Detected Data	0.456	0.49
Median of Detected Data	0.36	0.49
SD of Detected Data	0.273	N/A

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 0.95 (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	117
WMW Test U-Stat	39
WMW Critical Value (0.050)	54
Approximate P-Value	0.407

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-40

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Chromium_EFSA

Background Data: Chromium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	0	0
Number of Detect Data	12	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	6.7	7.2
Maximum Detected	20.2	16.7
Mean of Detected Data	10.29	11.5
Median of Detected Data	9.625	10.85
SD of Detected Data	3.696	3.743

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	105
WMW Test U-Stat	27
WMW Critical Value (0.050)	54
Approximate P-Value	0.813

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-41

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Cobalt_EFSA

Background Data: Cobalt_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	0	1
Number of Detect Data	12	5
Minimum Non-Detect	N/A	6.6
Maximum Non-Detect	N/A	6.6
Percent Non detects	0.00%	16.67%
Minimum Detected	3.7	2.5
Maximum Detected	8.5	3.6
Mean of Detected Data	5.858	3.03
Median of Detected Data	6	3
SD of Detected Data	1.562	0.471

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 6.6 (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	123
WMW Test U-Stat	45
WMW Critical Value (0.050)	54
Approximate P-Value	0.213

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-42

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Copper_EFSA

Background Data: Copper_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	0	0
Number of Detect Data	12	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	14.6	9
Maximum Detected	179.5	22.55
Mean of Detected Data	53.68	13.11
Median of Detected Data	37.55	10
SD of Detected Data	46.88	5.707

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	144
WMW Test U-Stat	66
WMW Critical Value (0.050)	54
Approximate P-Value	0.00286

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

Table D-43

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Iron_EFSA

Background Data: Iron_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	0	0
Number of Detect Data	12	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	7051	5210
Maximum Detected	18552	18050
Mean of Detected Data	11622	11377
Median of Detected Data	10888	11100
SD of Detected Data	3657	4093

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	113
WMW Test U-Stat	35
WMW Critical Value (0.050)	54
Approximate P-Value	0.556

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-44

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Lead_EFSA

Background Data: Lead_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	0	0
Number of Detect Data	12	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	10.1	20
Maximum Detected	1177	82.2
Mean of Detected Data	136.9	35.68
Median of Detected Data	24.25	25.9
SD of Detected Data	330.6	23.84

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	109
WMW Test U-Stat	31
WMW Critical Value (0.050)	54
Approximate P-Value	0.697

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-45

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Manganese_EFSA

Background Data: Manganese_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	0	0
Number of Detect Data	12	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	107	49
Maximum Detected	716	144
Mean of Detected Data	293.5	105.9
Median of Detected Data	258	117.7
SD of Detected Data	151	40.56

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	147
WMW Test U-Stat	69
WMW Critical Value (0.050)	54
Approximate P-Value	0.00117

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

Table D-46

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Mercury_EFSA

Background Data: Mercury_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	2	0
Number of Detect Data	10	6
Minimum Non-Detect	0.11	N/A
Maximum Non-Detect	0.12	N/A
Percent Non detects	16.67%	0.00%
Minimum Detected	0.075	0.068
Maximum Detected	34.4	0.355
Mean of Detected Data	8.085	0.161
Median of Detected Data	0.89	0.119
SD of Detected Data	12.1	0.11

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	125
WMW Test U-Stat	47
WMW Critical Value (0.050)	54
Approximate P-Value	0.163

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-47

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Nickel_EFSA

Background Data: Nickel_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	0	0
Number of Detect Data	12	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	4.8	5.25
Maximum Detected	28.5	10.7
Mean of Detected Data	12.88	6.642
Median of Detected Data	11.7	5.75
SD of Detected Data	6.892	2.082

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	138
WMW Test U-Stat	60
WMW Critical Value (0.050)	54
Approximate P-Value	0.0139

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

Table D-48

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Selenium_EFSA

Background Data: Selenium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	4	6
Number of Detect Data	8	0
Minimum Non-Detect	3.8	4.1
Maximum Non-Detect	4.3	6.7
Percent Non detects	33.33%	100.00%
Minimum Detected	0.49	N/A
Maximum Detected	2.1	N/A
Mean of Detected Data	1.078	N/A
Median of Detected Data	1.03	N/A
SD of Detected Data	0.546	N/A

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 6.7 (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	114
WMW Test U-Stat	36
WMW Critical Value (0.050)	54
Approximate P-Value	0.519

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-49

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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_EFSA

Background Data: Silver_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	11	6
Number of Detect Data	1	0
Minimum Non-Detect	1.1	1.2
Maximum Non-Detect	2.2	1.9
Percent Non detects	91.67%	100.00%
Minimum Detected	1.2	N/A
Maximum Detected	1.2	N/A
Mean of Detected Data	1.2	N/A
Median of Detected Data	1.2	N/A
SD of Detected Data	N/A	N/A

Wilcoxon-Mann-Whitney Site vs Background Test

All observations <= 2.2 (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	114
WMW Test U-Stat	36
WMW Critical Value (0.050)	54
Approximate P-Value	0.519

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-50

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Vanadium_EFSA

Background Data: Vanadium_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	0	0
Number of Detect Data	12	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	14.2	20.1
Maximum Detected	30.8	52.7
Mean of Detected Data	19.98	35.07
Median of Detected Data	19.2	36.35
SD of Detected Data	5.591	12.57

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	86
WMW Test U-Stat	8
WMW Critical Value (0.050)	54
Approximate P-Value	0.996

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Table D-51

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Data Sets with Non-Detects

User Selected Options

From File	Area_C.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: Zinc_EFSA

Background Data: Zinc_BKG

Raw Statistics

	Site	Background
Number of Valid Data	12	6
Number of Non-Detect Data	0	0
Number of Detect Data	12	6
Minimum Non-Detect	N/A	N/A
Maximum Non-Detect	N/A	N/A
Percent Non detects	0.00%	0.00%
Minimum Detected	30.8	23.3
Maximum Detected	405.5	51.4
Mean of Detected Data	101.7	34.4
Median of Detected Data	59.95	29.2
SD of Detected Data	105.6	11.45

Wilcoxon-Mann-Whitney Site vs Background Test

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	143
WMW Test U-Stat	65
WMW Critical Value (0.050)	54
Approximate P-Value	0.0038

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

APPENDIX E

APPENDIX E

SAMPLE BY SAMPLE COMPARISON OF DETECTED SOIL CONCENTRATIONS WITH PHYTOTOXICITY BENCHMARKS

Table E-1
Sample by Sample Comparison of Detected Soil Concentrations with Phytotoxicity Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
CHP	Aluminum	MW-24O1-0805-1300	3530	5	706
CHP	Aluminum	MW-25O1-0805-1415	5550	5	1110
CHP	Aluminum	MW-29O1-0811-0915	4820	5	964
CHP	Aluminum	MW-31O1-0811-1535	4520	5	904
CHP	Aluminum	MW-DUP02-0811-0920A	5190	5	1038
CHP	Aluminum	SB-01O1-0812-1215	3560	5	712
CHP	Aluminum	SB-02O1-0807-0830	5370	5	1074
CHP	Aluminum	SB-03O1-0813-0835	5710	5	1142
CHP	Aluminum	SB-04O1-0813-1120	4320	5	864
CHP	Aluminum	SB-05O1-0812-1105	3230	5	646
CHP	Aluminum	SB-06O1-0810-1520	6470	5	1294
CHP	Aluminum	SB-DUP03-0813-1120A	4200	5	840
CHP	Antimony	MW-24O1-0805-1300	2.2	0.5	4.4
CHP	Antimony	MW-25O1-0805-1415	1.6	0.5	3.2
CHP	Antimony	MW-31O1-0811-1535	3.3	0.5	6.6
CHP	Antimony	SB-02O1-0807-0830	2.6	0.5	5.2
CHP	Antimony	SB-03O1-0813-0835	1.4	0.5	2.8
CHP	Antimony	SB-05O1-0812-1105	3.1	0.5	6.2
CHP	Arsenic	MW-24O1-0805-1300	2.6	18	0.144444444
CHP	Arsenic	MW-25O1-0805-1415	10.4	18	0.577777778
CHP	Arsenic	MW-29O1-0811-0915	3.2	18	0.177777778
CHP	Arsenic	MW-31O1-0811-1535	13.7	18	0.761111111
CHP	Arsenic	MW-DUP02-0811-0920A	2.6	18	0.144444444
CHP	Arsenic	SB-01O1-0812-1215	1.5	18	0.083333333
CHP	Arsenic	SB-02O1-0807-0830	828	18	46
CHP	Arsenic	SB-03O1-0813-0835	4.7	18	0.261111111
CHP	Arsenic	SB-04O1-0813-1120	1.7	18	0.094444444
CHP	Arsenic	SB-05O1-0812-1105	12.6	18	0.7
CHP	Arsenic	SB-06O1-0810-1520	27.5	18	1.527777778
CHP	Arsenic	SB-DUP03-0813-1120A	2.4	18	0.133333333
CHP	Barium	MW-24O1-0805-1300	53.6	5	10.72
CHP	Barium	MW-25O1-0805-1415	254	5	50.8
CHP	Barium	MW-29O1-0811-0915	142	5	28.4
CHP	Barium	MW-31O1-0811-1535	248	5	49.6
CHP	Barium	MW-DUP02-0811-0920A	110	5	22
CHP	Barium	SB-01O1-0812-1215	241	5	48.2
CHP	Barium	SB-02O1-0807-0830	198	5	39.6
CHP	Barium	SB-03O1-0813-0835	80.6	5	16.12
CHP	Barium	SB-04O1-0813-1120	27.3	5	5.46
CHP	Barium	SB-05O1-0812-1105	91	5	18.2
CHP	Barium	SB-06O1-0810-1520	139	5	27.8
CHP	Barium	SB-DUP03-0813-1120A	30.7	5	6.14
CHP	Cadmium	MW-24O1-0805-1300	0.91	32	0.0284375
CHP	Cadmium	MW-25O1-0805-1415	0.37	32	0.0115625
CHP	Cadmium	MW-29O1-0811-0915	0.17	32	0.0053125
CHP	Cadmium	MW-31O1-0811-1535	1.3	32	0.040625
CHP	Cadmium	MW-DUP02-0811-0920A	0.13	32	0.0040625
CHP	Cadmium	SB-01O1-0812-1215	1.1	32	0.034375
CHP	Cadmium	SB-02O1-0807-0830	0.24	32	0.0075
CHP	Cadmium	SB-06O1-0810-1520	0.96	32	0.03

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
CHP	Chromium	MW-24O1-0805-1300	8.5	0.018	472.2222222
CHP	Chromium	MW-25O1-0805-1415	7.7	0.018	427.7777778
CHP	Chromium	MW-29O1-0811-0915	9.4	0.018	522.2222222
CHP	Chromium	MW-31O1-0811-1535	29.7	0.018	1650
CHP	Chromium	MW-DUP02-0811-0920A	8.4	0.018	466.6666667
CHP	Chromium	SB-01O1-0812-1215	6.1	0.018	338.8888889
CHP	Chromium	SB-02O1-0807-0830	11.5	0.018	638.8888889
CHP	Chromium	SB-03O1-0813-0835	8.9	0.018	494.4444444
CHP	Chromium	SB-04O1-0813-1120	5.9	0.018	327.7777778
CHP	Chromium	SB-05O1-0812-1105	7.7	0.018	427.7777778
CHP	Chromium	SB-06O1-0810-1520	14.2	0.018	788.8888889
CHP	Chromium	SB-DUP03-0813-1120A	6.7	0.018	372.2222222
CHP	Cobalt	MW-24O1-0805-1300	18.5	13	1.423076923
CHP	Cobalt	MW-25O1-0805-1415	6.4	13	0.492307692
CHP	Cobalt	MW-29O1-0811-0915	5.4	13	0.415384615
CHP	Cobalt	MW-31O1-0811-1535	7.2	13	0.553846154
CHP	Cobalt	MW-DUP02-0811-0920A	5.5	13	0.423076923
CHP	Cobalt	SB-01O1-0812-1215	16.3	13	1.253846154
CHP	Cobalt	SB-02O1-0807-0830	4.5	13	0.346153846
CHP	Cobalt	SB-03O1-0813-0835	9.6	13	0.738461538
CHP	Cobalt	SB-04O1-0813-1120	4.5	13	0.346153846
CHP	Cobalt	SB-05O1-0812-1105	8.9	13	0.684615385
CHP	Cobalt	SB-06O1-0810-1520	4.7	13	0.361538462
CHP	Cobalt	SB-DUP03-0813-1120A	4.3	13	0.330769231
CHP	Copper	MW-24O1-0805-1300	121	70	1.728571429
CHP	Copper	MW-25O1-0805-1415	129	70	1.842857143
CHP	Copper	MW-29O1-0811-0915	31.4	70	0.448571429
CHP	Copper	MW-31O1-0811-1535	130	70	1.857142857
CHP	Copper	MW-DUP02-0811-0920A	26.7	70	0.381428571
CHP	Copper	SB-01O1-0812-1215	84.5	70	1.207142857
CHP	Copper	SB-02O1-0807-0830	34.6	70	0.494285714
CHP	Copper	SB-03O1-0813-0835	57.2	70	0.817142857
CHP	Copper	SB-04O1-0813-1120	23.5	70	0.335714286
CHP	Copper	SB-05O1-0812-1105	62.4	70	0.891428571
CHP	Copper	SB-06O1-0810-1520	15.5	70	0.221428571
CHP	Copper	SB-DUP03-0813-1120A	19.1	70	0.272857143
CHP	High Molecular Weight PAHs	MW-24O1-0805-1300	8.98	1.2	7.483333333
CHP	High Molecular Weight PAHs	MW-25O1-0805-1415	12.9	1.2	10.75
CHP	High Molecular Weight PAHs	MW-29O1-0811-0915	16.47	1.2	13.725
CHP	High Molecular Weight PAHs	MW-31O1-0811-1535	18.08	1.2	15.06666667
CHP	High Molecular Weight PAHs	SB-01O1-0812-1215	7.76	1.2	6.466666667
CHP	High Molecular Weight PAHs	SB-03O1-0813-0835	7.41	1.2	6.175
CHP	High Molecular Weight PAHs	SB-04O1-0813-1120	1.586	1.2	1.321666667
CHP	High Molecular Weight PAHs	SB-05O1-0812-1105	2.908	1.2	2.423333333
CHP	High Molecular Weight PAHs	SB-06O1-0810-1520	2.337	1.2	1.9475
CHP	Lead	MW-24O1-0805-1300	111	120	0.925
CHP	Lead	MW-25O1-0805-1415	125	120	1.041666667
CHP	Lead	MW-29O1-0811-0915	35.7	120	0.2975
CHP	Lead	MW-31O1-0811-1535	382	120	3.183333333
CHP	Lead	MW-DUP02-0811-0920A	31.2	120	0.26

Table E-1
Sample by Sample Comparison of Detected Soil Concentrations with Phytotoxicity Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
CHP	Lead	SB-01O1-0812-1215	67.1	120	0.559166667
CHP	Lead	SB-02O1-0807-0830	61.8	120	0.515
CHP	Lead	SB-03O1-0813-0835	233	120	1.941666667
CHP	Lead	SB-04O1-0813-1120	32.4	120	0.27
CHP	Lead	SB-05O1-0812-1105	56.7	120	0.4725
CHP	Lead	SB-06O1-0810-1520	65.8	120	0.548333333
CHP	Lead	SB-DUP03-0813-1120A	21.3	120	0.1775
CHP	Manganese	MW-24O1-0805-1300	162	220	0.736363636
CHP	Manganese	MW-25O1-0805-1415	173	220	0.786363636
CHP	Manganese	MW-29O1-0811-0915	177	220	0.804545455
CHP	Manganese	MW-31O1-0811-1535	268	220	1.218181818
CHP	Manganese	MW-DUP02-0811-0920A	159	220	0.722727273
CHP	Manganese	SB-01O1-0812-1215	120	220	0.545454545
CHP	Manganese	SB-02O1-0807-0830	204	220	0.927272727
CHP	Manganese	SB-03O1-0813-0835	271	220	1.231818182
CHP	Manganese	SB-04O1-0813-1120	126	220	0.572727273
CHP	Manganese	SB-05O1-0812-1105	184	220	0.836363636
CHP	Manganese	SB-06O1-0810-1520	216	220	0.981818182
CHP	Manganese	SB-DUP03-0813-1120A	143	220	0.65
CHP	Mercury	MW-24O1-0805-1300	3	0.349	8.595988539
CHP	Mercury	MW-25O1-0805-1415	133	0.349	381.0888252
CHP	Mercury	MW-29O1-0811-0915	51.6	0.349	147.8510029
CHP	Mercury	MW-31O1-0811-1535	2.6	0.349	7.449856734
CHP	Mercury	MW-DUP02-0811-0920A	147	0.349	421.2034384
CHP	Mercury	SB-01O1-0812-1215	0.71	0.349	2.034383954
CHP	Mercury	SB-02O1-0807-0830	12.8	0.349	36.67621777
CHP	Mercury	SB-03O1-0813-0835	2.5	0.349	7.163323782
CHP	Mercury	SB-04O1-0813-1120	1	0.349	2.865329513
CHP	Mercury	SB-05O1-0812-1105	1.8	0.349	5.157593123
CHP	Mercury	SB-06O1-0810-1520	0.74	0.349	2.12034384
CHP	Mercury	SB-DUP03-0813-1120A	0.77	0.349	2.206303725
CHP	Nickel	MW-24O1-0805-1300	9.3	38	0.244736842
CHP	Nickel	MW-25O1-0805-1415	12.7	38	0.334210526
CHP	Nickel	MW-29O1-0811-0915	8	38	0.210526316
CHP	Nickel	MW-31O1-0811-1535	22.2	38	0.584210526
CHP	Nickel	MW-DUP02-0811-0920A	8	38	0.210526316
CHP	Nickel	SB-01O1-0812-1215	9	38	0.236842105
CHP	Nickel	SB-02O1-0807-0830	10.6	38	0.278947368
CHP	Nickel	SB-03O1-0813-0835	9.3	38	0.244736842
CHP	Nickel	SB-04O1-0813-1120	5.2	38	0.136842105
CHP	Nickel	SB-05O1-0812-1105	75.9	38	1.997368421
CHP	Nickel	SB-06O1-0810-1520	13.9	38	0.365789474
CHP	Nickel	SB-DUP03-0813-1120A	6	38	0.157894737
CHP	Selenium	MW-24O1-0805-1300	2.1	0.52	4.038461538
CHP	Selenium	SB-01O1-0812-1215	1	0.52	1.923076923
CHP	Selenium	SB-03O1-0813-0835	1.4	0.52	2.692307692
CHP	Selenium	SB-04O1-0813-1120	0.52	0.52	1
CHP	Selenium	SB-05O1-0812-1105	1.5	0.52	2.884615385
CHP	Selenium	SB-DUP03-0813-1120A	0.53	0.52	1.019230769
CHP	Silver	MW-25O1-0805-1415	1.3	560	0.002321429

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
CHP	Silver	MW-29O1-0811-0915	2.4	560	0.004285714
CHP	Silver	MW-31O1-0811-1535	0.21	560	0.000375
CHP	Silver	MW-DUP02-0811-0920A	2.1	560	0.00375
CHP	Silver	SB-02O1-0807-0830	0.11	560	0.000196429
CHP	Vanadium	MW-24O1-0805-1300	11.5	2	5.75
CHP	Vanadium	MW-25O1-0805-1415	16.1	2	8.05
CHP	Vanadium	MW-29O1-0811-0915	17	2	8.5
CHP	Vanadium	MW-31O1-0811-1535	19.1	2	9.55
CHP	Vanadium	MW-DUP02-0811-0920A	20.9	2	10.45
CHP	Vanadium	SB-01O1-0812-1215	12.8	2	6.4
CHP	Vanadium	SB-02O1-0807-0830	18.3	2	9.15
CHP	Vanadium	SB-03O1-0813-0835	17.2	2	8.6
CHP	Vanadium	SB-04O1-0813-1120	13.3	2	6.65
CHP	Vanadium	SB-05O1-0812-1105	18.8	2	9.4
CHP	Vanadium	SB-06O1-0810-1520	19.9	2	9.95
CHP	Vanadium	SB-DUP03-0813-1120A	14	2	7
CHP	Zinc	MW-24O1-0805-1300	186	160	1.1625
CHP	Zinc	MW-25O1-0805-1415	96	160	0.6
CHP	Zinc	MW-29O1-0811-0915	53.9	160	0.336875
CHP	Zinc	MW-31O1-0811-1535	219	160	1.36875
CHP	Zinc	MW-DUP02-0811-0920A	51.3	160	0.320625
CHP	Zinc	SB-01O1-0812-1215	293	160	1.83125
CHP	Zinc	SB-02O1-0807-0830	140	160	0.875
CHP	Zinc	SB-03O1-0813-0835	103	160	0.64375
CHP	Zinc	SB-04O1-0813-1120	33.6	160	0.21
CHP	Zinc	SB-05O1-0812-1105	55.7	160	0.348125
CHP	Zinc	SB-06O1-0810-1520	315	160	1.96875
CHP	Zinc	SB-DUP03-0813-1120A	30.8	160	0.1925
SFSA	Aluminum	FSA-013-0001-0-081610	3973	5	794.6
SFSA	Aluminum	FSA-024-0001-0-081710	6824	5	1364.8
SFSA	Aluminum	FSA-039-0001-0-081710	5820	5	1164
SFSA	Aluminum	FSA-060-0001-0-081710	6671	5	1334.2
SFSA	Aluminum	FSA-062-0001-0-081710	3074	5	614.8
SFSA	Aluminum	FSA-066-0001-0-081810	3893	5	778.6
SFSA	Aluminum	FSA-075-0001-0-082510	3379	5	675.8
SFSA	Aluminum	FSA-089-0001-0-081810	3888	5	777.6
SFSA	Aluminum	FSA-102-0001-0-081810	2469	5	493.8
SFSA	Aluminum	FSA-105-0001-0-081910	4253	5	850.6
SFSA	Aluminum	FSA-106-0001-0-081810	843	5	168.6
SFSA	Aluminum	FSA-151-0001-0-081910	6481	5	1296.2
SFSA	Aluminum	FSA-168-0001-0-082310	5249	5	1049.8
SFSA	Aluminum	FSA-171-0001-0-082310	4007	5	801.4
SFSA	Aluminum	FSA-MW-34O1-0001-091310	7822	5	1564.4
SFSA	Aluminum	FSA-MW-35O1-0001-091710	4307	5	861.4
SFSA	Aluminum	FSA-MW-36O1-0001-092210	2902	5	580.4
SFSA	Aluminum	FSA-MW-37O1-0001-092210	4630	5	926
SFSA	Aluminum	FSA-SB-08O1-0001-091710	4761	5	952.2
SFSA	Aluminum	FSA-SB-09O1-0001-092710	2524	5	504.8
SFSA	Aluminum	FSA-SB-10O1-0001-092110	3790	5	758
SFSA	Aluminum	FSA-SB-11O1-0001-092110	4295	5	859

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
SFSA	Aluminum	FSA-SB-12O1-0001-092010	3470	5	694
SFSA	Aluminum	FSA-SB-13O1-0001-092210	5140	5	1028
SFSA	Aluminum	FSA-SB-14O1-0001-092010	5491	5	1098.2
SFSA	Aluminum	FSA-SB-15O1-0001-092110	4479	5	895.8
SFSA	Aluminum	FSA-SB-16O1-0001-092210	5183	5	1036.6
SFSA	Aluminum	FSA-SB-17O1-0001-091710	3822	5	764.4
SFSA	Aluminum	FSA-SB-18O1-0001-091610	4420	5	884
SFSA	Aluminum	FSA-SB-19O1-0001-092110	5591	5	1118.2
SFSA	Aluminum	FSA-SB-20O1-0001-091510	2074	5	414.8
SFSA	Aluminum	FSA-SB-21O1-0001-092010	3824	5	764.8
SFSA	Aluminum	FSA-SB-22O1-0001-091710	4959	5	991.8
SFSA	Aluminum	FSA-SB-24O1-0001-091310	7598	5	1519.6
SFSA	Aluminum	FSA-SB-25O1-0001-091310	6068	5	1213.6
SFSA	Aluminum	FSA-SB-26O1-0001-091410	3706	5	741.2
SFSA	Aluminum	FSA-SB-27O1-0001-091410	5150	5	1030
SFSA	Aluminum	FSA-SB-28O1-0001-091510	7224	5	1444.8
SFSA	Aluminum	FSA-SB-29O1-0001-091510	2332	5	466.4
SFSA	Aluminum	FSA-SB-30O1-0001-091410	2112	5	422.4
SFSA	Aluminum	FSA-SB-31O1-0001-091510	4023	5	804.6
SFSA	Aluminum	FSA-SB-40O1-0001-092110	4964	5	992.8
SFSA	Aluminum	FSA-SB-DUP01-0001-091510	2263	5	452.6
SFSA	Aluminum	FSA-SB-DUP02-0001-092110	3924	5	784.8
SFSA	Aluminum	FSA-SB-DUP03-0001-092210	6075	5	1215
SFSA	Aluminum	FSA-SS-03-091510	4730	5	946
SFSA	Aluminum	FSA-SS-06-091510	5141	5	1028.2
SFSA	Aluminum	FSA-SS-32-091510	6841	5	1368.2
SFSA	Antimony	FSA-024-0001-0-081710	3.1	0.5	6.2
SFSA	Antimony	FSA-039-0001-0-081710	2.2	0.5	4.4
SFSA	Antimony	FSA-062-0001-0-081710	3.1	0.5	6.2
SFSA	Antimony	FSA-066-0001-0-081810	2.4	0.5	4.8
SFSA	Antimony	FSA-089-0001-0-081810	1.5	0.5	3
SFSA	Antimony	FSA-102-0001-0-081810	9	0.5	18
SFSA	Antimony	FSA-105-0001-0-081910	0.79	0.5	1.58
SFSA	Antimony	FSA-106-0001-0-081810	56.8	0.5	113.6
SFSA	Antimony	FSA-151-0001-0-081910	580	0.5	1160
SFSA	Antimony	FSA-168-0001-0-082310	363	0.5	726
SFSA	Antimony	FSA-171-0001-0-082310	168	0.5	336
SFSA	Antimony	FSA-MW-35O1-0001-091710	1.3	0.5	2.6
SFSA	Antimony	FSA-SB-08O1-0001-091710	0.46	0.5	0.92
SFSA	Antimony	FSA-SB-10O1-0001-092110	0.52	0.5	1.04
SFSA	Antimony	FSA-SB-11O1-0001-092110	8.1	0.5	16.2
SFSA	Antimony	FSA-SB-12O1-0001-092010	2.1	0.5	4.2
SFSA	Antimony	FSA-SB-13O1-0001-092210	1.3	0.5	2.6
SFSA	Antimony	FSA-SB-16O1-0001-092210	1.4	0.5	2.8
SFSA	Antimony	FSA-SB-17O1-0001-091710	2.8	0.5	5.6
SFSA	Antimony	FSA-SB-18O1-0001-091610	1	0.5	2
SFSA	Antimony	FSA-SB-19O1-0001-092110	1.6	0.5	3.2
SFSA	Antimony	FSA-SB-20O1-0001-091510	4.8	0.5	9.6
SFSA	Antimony	FSA-SB-21O1-0001-092010	55.9	0.5	111.8
SFSA	Antimony	FSA-SB-26O1-0001-091410	9	0.5	18

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
SFSA	Antimony	FSA-SB-27O1-0001-091410	14.7	0.5	29.4
SFSA	Antimony	FSA-SB-30O1-0001-091410	3.1	0.5	6.2
SFSA	Antimony	FSA-SB-40O1-0001-092110	2.5	0.5	5
SFSA	Antimony	FSA-SB-DUP02-0001-092110	11.9	0.5	23.8
SFSA	Antimony	FSA-SS-03-091510	1.8	0.5	3.6
SFSA	Antimony	FSA-SS-06-091510	2.8	0.5	5.6
SFSA	Arsenic	FSA-013-0001-0-081610	3.2	18	0.177777778
SFSA	Arsenic	FSA-024-0001-0-081710	14.2	18	0.788888889
SFSA	Arsenic	FSA-039-0001-0-081710	36	18	2
SFSA	Arsenic	FSA-060-0001-0-081710	3.9	18	0.216666667
SFSA	Arsenic	FSA-062-0001-0-081710	9.1	18	0.505555556
SFSA	Arsenic	FSA-066-0001-0-081810	11.5	18	0.638888889
SFSA	Arsenic	FSA-075-0001-0-082510	8.9	18	0.494444444
SFSA	Arsenic	FSA-089-0001-0-081810	37.8	18	2.1
SFSA	Arsenic	FSA-102-0001-0-081810	281	18	15.61111111
SFSA	Arsenic	FSA-105-0001-0-081910	4.9	18	0.272222222
SFSA	Arsenic	FSA-106-0001-0-081810	105	18	5.833333333
SFSA	Arsenic	FSA-151-0001-0-081910	14.1	18	0.783333333
SFSA	Arsenic	FSA-168-0001-0-082310	87.3	18	4.85
SFSA	Arsenic	FSA-171-0001-0-082310	56.4	18	3.133333333
SFSA	Arsenic	FSA-MW-34O1-0001-091310	7.7	18	0.427777778
SFSA	Arsenic	FSA-MW-35O1-0001-091710	3.8	18	0.211111111
SFSA	Arsenic	FSA-MW-36O1-0001-092210	4.4	18	0.244444444
SFSA	Arsenic	FSA-MW-37O1-0001-092210	2.2	18	0.122222222
SFSA	Arsenic	FSA-SB-08O1-0001-091710	3.2	18	0.177777778
SFSA	Arsenic	FSA-SB-09O1-0001-092710	6.2	18	0.344444444
SFSA	Arsenic	FSA-SB-10O1-0001-092110	5	18	0.277777778
SFSA	Arsenic	FSA-SB-11O1-0001-092110	9.1	18	0.505555556
SFSA	Arsenic	FSA-SB-12O1-0001-092010	13.2	18	0.733333333
SFSA	Arsenic	FSA-SB-13O1-0001-092210	5.9	18	0.327777778
SFSA	Arsenic	FSA-SB-14O1-0001-092010	2.9	18	0.161111111
SFSA	Arsenic	FSA-SB-15O1-0001-092110	2.7	18	0.15
SFSA	Arsenic	FSA-SB-16O1-0001-092210	5.6	18	0.311111111
SFSA	Arsenic	FSA-SB-17O1-0001-091710	67.8	18	3.766666667
SFSA	Arsenic	FSA-SB-18O1-0001-091610	55.5	18	3.083333333
SFSA	Arsenic	FSA-SB-19O1-0001-092110	13.8	18	0.766666667
SFSA	Arsenic	FSA-SB-20O1-0001-091510	12.8	18	0.711111111
SFSA	Arsenic	FSA-SB-21O1-0001-092010	81.7	18	4.538888889
SFSA	Arsenic	FSA-SB-24O1-0001-091310	6.4	18	0.355555556
SFSA	Arsenic	FSA-SB-25O1-0001-091310	38.2	18	2.122222222
SFSA	Arsenic	FSA-SB-26O1-0001-091410	27.8	18	1.544444444
SFSA	Arsenic	FSA-SB-27O1-0001-091410	17.1	18	0.95
SFSA	Arsenic	FSA-SB-28O1-0001-091510	11.3	18	0.627777778
SFSA	Arsenic	FSA-SB-29O1-0001-091510	6	18	0.333333333
SFSA	Arsenic	FSA-SB-30O1-0001-091410	168	18	9.333333333
SFSA	Arsenic	FSA-SB-31O1-0001-091510	5.3	18	0.294444444
SFSA	Arsenic	FSA-SB-40O1-0001-092110	15.1	18	0.838888889
SFSA	Arsenic	FSA-SB-DUP01-0001-091510	6.2	18	0.344444444
SFSA	Arsenic	FSA-SB-DUP02-0001-092110	5.9	18	0.327777778
SFSA	Arsenic	FSA-SB-DUP03-0001-092210	6.9	18	0.383333333

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
SFSA	Arsenic	FSA-SS-03-091510	12.8	18	0.711111111
SFSA	Arsenic	FSA-SS-06-091510	8.3	18	0.461111111
SFSA	Arsenic	FSA-SS-32-091510	3.3	18	0.183333333
SFSA	Barium	FSA-013-0001-0-081610	104	5	20.8
SFSA	Barium	FSA-024-0001-0-081710	121	5	24.2
SFSA	Barium	FSA-039-0001-0-081710	98.5	5	19.7
SFSA	Barium	FSA-060-0001-0-081710	47.3	5	9.46
SFSA	Barium	FSA-062-0001-0-081710	135	5	27
SFSA	Barium	FSA-066-0001-0-081810	179	5	35.8
SFSA	Barium	FSA-075-0001-0-082510	205	5	41
SFSA	Barium	FSA-089-0001-0-081810	88.9	5	17.78
SFSA	Barium	FSA-102-0001-0-081810	108	5	21.6
SFSA	Barium	FSA-105-0001-0-081910	69.5	5	13.9
SFSA	Barium	FSA-106-0001-0-081810	1443	5	288.6
SFSA	Barium	FSA-151-0001-0-081910	83.9	5	16.78
SFSA	Barium	FSA-168-0001-0-082310	1320	5	264
SFSA	Barium	FSA-171-0001-0-082310	631	5	126.2
SFSA	Barium	FSA-MW-34O1-0001-091310	84.8	5	16.96
SFSA	Barium	FSA-MW-35O1-0001-091710	88.7	5	17.74
SFSA	Barium	FSA-MW-36O1-0001-092210	39.9	5	7.98
SFSA	Barium	FSA-MW-37O1-0001-092210	41.5	5	8.3
SFSA	Barium	FSA-SB-08O1-0001-091710	124	5	24.8
SFSA	Barium	FSA-SB-09O1-0001-092710	53.9	5	10.78
SFSA	Barium	FSA-SB-10O1-0001-092110	78.6	5	15.72
SFSA	Barium	FSA-SB-11O1-0001-092110	76.4	5	15.28
SFSA	Barium	FSA-SB-12O1-0001-092010	189	5	37.8
SFSA	Barium	FSA-SB-13O1-0001-092210	92.3	5	18.46
SFSA	Barium	FSA-SB-14O1-0001-092010	49.7	5	9.94
SFSA	Barium	FSA-SB-15O1-0001-092110	33.1	5	6.62
SFSA	Barium	FSA-SB-16O1-0001-092210	55.2	5	11.04
SFSA	Barium	FSA-SB-17O1-0001-091710	223	5	44.6
SFSA	Barium	FSA-SB-18O1-0001-091610	111	5	22.2
SFSA	Barium	FSA-SB-19O1-0001-092110	104	5	20.8
SFSA	Barium	FSA-SB-20O1-0001-091510	235	5	47
SFSA	Barium	FSA-SB-21O1-0001-092010	470	5	94
SFSA	Barium	FSA-SB-22O1-0001-091710	41.6	5	8.32
SFSA	Barium	FSA-SB-24O1-0001-091310	76.7	5	15.34
SFSA	Barium	FSA-SB-25O1-0001-091310	57.6	5	11.52
SFSA	Barium	FSA-SB-26O1-0001-091410	146	5	29.2
SFSA	Barium	FSA-SB-27O1-0001-091410	74	5	14.8
SFSA	Barium	FSA-SB-28O1-0001-091510	119	5	23.8
SFSA	Barium	FSA-SB-29O1-0001-091510	41.9	5	8.38
SFSA	Barium	FSA-SB-30O1-0001-091410	78.6	5	15.72
SFSA	Barium	FSA-SB-31O1-0001-091510	91.7	5	18.34
SFSA	Barium	FSA-SB-40O1-0001-092110	398	5	79.6
SFSA	Barium	FSA-SB-DUP01-0001-091510	42.2	5	8.44
SFSA	Barium	FSA-SB-DUP02-0001-092110	81.5	5	16.3
SFSA	Barium	FSA-SB-DUP03-0001-092210	67.4	5	13.48
SFSA	Barium	FSA-SS-03-091510	93.7	5	18.74
SFSA	Barium	FSA-SS-06-091510	81.2	5	16.24

Table E-1
Sample by Sample Comparison of Detected Soil Concentrations with Phytotoxicity Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
SFSA	Barium	FSA-SS-32-091510	32.8	5	6.56
SFSA	Cadmium	FSA-013-0001-0-081610	0.33	32	0.0103125
SFSA	Cadmium	FSA-075-0001-0-082510	0.27	32	0.0084375
SFSA	Cadmium	FSA-106-0001-0-081810	4.2	32	0.13125
SFSA	Cadmium	FSA-168-0001-0-082310	1.1	32	0.034375
SFSA	Cadmium	FSA-MW-35O1-0001-091710	0.42	32	0.013125
SFSA	Cadmium	FSA-MW-37O1-0001-092210	0.11	32	0.0034375
SFSA	Cadmium	FSA-SB-08O1-0001-091710	0.29	32	0.0090625
SFSA	Cadmium	FSA-SB-10O1-0001-092110	0.51	32	0.0159375
SFSA	Cadmium	FSA-SB-11O1-0001-092110	0.22	32	0.006875
SFSA	Cadmium	FSA-SB-12O1-0001-092010	1.3	32	0.040625
SFSA	Cadmium	FSA-SB-13O1-0001-092210	0.63	32	0.0196875
SFSA	Cadmium	FSA-SB-14O1-0001-092010	0.16	32	0.005
SFSA	Cadmium	FSA-SB-16O1-0001-092210	0.26	32	0.008125
SFSA	Cadmium	FSA-SB-17O1-0001-091710	1.7	32	0.053125
SFSA	Cadmium	FSA-SB-18O1-0001-091610	0.22	32	0.006875
SFSA	Cadmium	FSA-SB-19O1-0001-092110	0.35	32	0.0109375
SFSA	Cadmium	FSA-SB-20O1-0001-091510	0.11	32	0.0034375
SFSA	Cadmium	FSA-SB-21O1-0001-092010	1.3	32	0.040625
SFSA	Cadmium	FSA-SB-22O1-0001-091710	0.074	32	0.0023125
SFSA	Cadmium	FSA-SB-26O1-0001-091410	0.35	32	0.0109375
SFSA	Cadmium	FSA-SB-40O1-0001-092110	0.25	32	0.0078125
SFSA	Cadmium	FSA-SB-DUP02-0001-092110	0.22	32	0.006875
SFSA	Cadmium	FSA-SB-DUP03-0001-092210	0.15	32	0.0046875
SFSA	Cadmium	FSA-SS-03-091510	0.46	32	0.014375
SFSA	Cadmium	FSA-SS-06-091510	0.43	32	0.0134375
SFSA	Chromium	FSA-013-0001-0-081610	14.4	0.018	800
SFSA	Chromium	FSA-024-0001-0-081710	19.7	0.018	1094.444444
SFSA	Chromium	FSA-039-0001-0-081710	12.6	0.018	700
SFSA	Chromium	FSA-060-0001-0-081710	30.4	0.018	1688.888889
SFSA	Chromium	FSA-062-0001-0-081710	7.3	0.018	405.5555556
SFSA	Chromium	FSA-066-0001-0-081810	15.7	0.018	872.2222222
SFSA	Chromium	FSA-075-0001-0-082510	8.8	0.018	488.8888889
SFSA	Chromium	FSA-089-0001-0-081810	5	0.018	277.7777778
SFSA	Chromium	FSA-102-0001-0-081810	15.6	0.018	866.6666667
SFSA	Chromium	FSA-105-0001-0-081910	8.1	0.018	450
SFSA	Chromium	FSA-106-0001-0-081810	54.3	0.018	3016.666667
SFSA	Chromium	FSA-151-0001-0-081910	3.9	0.018	216.6666667
SFSA	Chromium	FSA-168-0001-0-082310	53.8	0.018	2988.888889
SFSA	Chromium	FSA-171-0001-0-082310	45.3	0.018	2516.666667
SFSA	Chromium	FSA-MW-34O1-0001-091310	11.4	0.018	633.3333333
SFSA	Chromium	FSA-MW-35O1-0001-091710	12	0.018	666.6666667
SFSA	Chromium	FSA-MW-36O1-0001-092210	7.1	0.018	394.4444444
SFSA	Chromium	FSA-MW-37O1-0001-092210	7.5	0.018	416.6666667
SFSA	Chromium	FSA-SB-08O1-0001-091710	11.2	0.018	622.2222222
SFSA	Chromium	FSA-SB-09O1-0001-092710	7	0.018	388.8888889
SFSA	Chromium	FSA-SB-10O1-0001-092110	11.5	0.018	638.8888889
SFSA	Chromium	FSA-SB-11O1-0001-092110	12	0.018	666.6666667
SFSA	Chromium	FSA-SB-12O1-0001-092010	12.6	0.018	700
SFSA	Chromium	FSA-SB-13O1-0001-092210	10.8	0.018	600

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
SFSA	Chromium	FSA-SB-14O1-0001-092010	5.8	0.018	322.2222222
SFSA	Chromium	FSA-SB-15O1-0001-092110	5.5	0.018	305.5555556
SFSA	Chromium	FSA-SB-16O1-0001-092210	10	0.018	555.5555556
SFSA	Chromium	FSA-SB-17O1-0001-091710	13.1	0.018	727.7777778
SFSA	Chromium	FSA-SB-18O1-0001-091610	10.4	0.018	577.7777778
SFSA	Chromium	FSA-SB-19O1-0001-092110	15.9	0.018	883.3333333
SFSA	Chromium	FSA-SB-20O1-0001-091510	7.7	0.018	427.7777778
SFSA	Chromium	FSA-SB-21O1-0001-092010	32.7	0.018	1816.666667
SFSA	Chromium	FSA-SB-22O1-0001-091710	9.4	0.018	522.2222222
SFSA	Chromium	FSA-SB-24O1-0001-091310	12	0.018	666.6666667
SFSA	Chromium	FSA-SB-25O1-0001-091310	12.4	0.018	688.8888889
SFSA	Chromium	FSA-SB-26O1-0001-091410	10.9	0.018	605.5555556
SFSA	Chromium	FSA-SB-27O1-0001-091410	31.4	0.018	1744.444444
SFSA	Chromium	FSA-SB-28O1-0001-091510	9.8	0.018	544.4444444
SFSA	Chromium	FSA-SB-29O1-0001-091510	6.7	0.018	372.2222222
SFSA	Chromium	FSA-SB-30O1-0001-091410	11.8	0.018	655.5555556
SFSA	Chromium	FSA-SB-31O1-0001-091510	8.2	0.018	455.5555556
SFSA	Chromium	FSA-SB-40O1-0001-092110	12.4	0.018	688.8888889
SFSA	Chromium	FSA-SB-DUP01-0001-091510	6.6	0.018	366.6666667
SFSA	Chromium	FSA-SB-DUP02-0001-092110	9.2	0.018	511.1111111
SFSA	Chromium	FSA-SB-DUP03-0001-092210	8.4	0.018	466.6666667
SFSA	Chromium	FSA-SS-03-091510	11.7	0.018	650
SFSA	Chromium	FSA-SS-06-091510	26	0.018	1444.444444
SFSA	Chromium	FSA-SS-32-091510	8.8	0.018	488.8888889
SFSA	Cobalt	FSA-013-0001-0-081610	4.1	13	0.315384615
SFSA	Cobalt	FSA-024-0001-0-081710	6.5	13	0.5
SFSA	Cobalt	FSA-039-0001-0-081710	6.6	13	0.507692308
SFSA	Cobalt	FSA-060-0001-0-081710	3.9	13	0.3
SFSA	Cobalt	FSA-062-0001-0-081710	5.4	13	0.415384615
SFSA	Cobalt	FSA-066-0001-0-081810	4.2	13	0.323076923
SFSA	Cobalt	FSA-075-0001-0-082510	5.5	13	0.423076923
SFSA	Cobalt	FSA-089-0001-0-081810	5.8	13	0.446153846
SFSA	Cobalt	FSA-102-0001-0-081810	7.6	13	0.584615385
SFSA	Cobalt	FSA-105-0001-0-081910	4.7	13	0.361538462
SFSA	Cobalt	FSA-106-0001-0-081810	3.7	13	0.284615385
SFSA	Cobalt	FSA-151-0001-0-081910	4.2	13	0.323076923
SFSA	Cobalt	FSA-168-0001-0-082310	6.2	13	0.476923077
SFSA	Cobalt	FSA-171-0001-0-082310	7.3	13	0.561538462
SFSA	Cobalt	FSA-MW-34O1-0001-091310	9	13	0.692307692
SFSA	Cobalt	FSA-MW-35O1-0001-091710	5.3	13	0.407692308
SFSA	Cobalt	FSA-MW-36O1-0001-092210	4.6	13	0.353846154
SFSA	Cobalt	FSA-MW-37O1-0001-092210	4.5	13	0.346153846
SFSA	Cobalt	FSA-SB-08O1-0001-091710	7.7	13	0.592307692
SFSA	Cobalt	FSA-SB-09O1-0001-092710	3.6	13	0.276923077
SFSA	Cobalt	FSA-SB-10O1-0001-092110	4.8	13	0.369230769
SFSA	Cobalt	FSA-SB-11O1-0001-092110	7.8	13	0.6
SFSA	Cobalt	FSA-SB-12O1-0001-092010	10.5	13	0.807692308
SFSA	Cobalt	FSA-SB-13O1-0001-092210	5.3	13	0.407692308
SFSA	Cobalt	FSA-SB-14O1-0001-092010	4.5	13	0.346153846
SFSA	Cobalt	FSA-SB-15O1-0001-092110	4.5	13	0.346153846

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
SFSA	Cobalt	FSA-SB-16O1-0001-092210	7.9	13	0.607692308
SFSA	Cobalt	FSA-SB-17O1-0001-091710	7.5	13	0.576923077
SFSA	Cobalt	FSA-SB-18O1-0001-091610	5.2	13	0.4
SFSA	Cobalt	FSA-SB-19O1-0001-092110	7	13	0.538461538
SFSA	Cobalt	FSA-SB-20O1-0001-091510	3.6	13	0.276923077
SFSA	Cobalt	FSA-SB-21O1-0001-092010	29.7	13	2.284615385
SFSA	Cobalt	FSA-SB-22O1-0001-091710	3.6	13	0.276923077
SFSA	Cobalt	FSA-SB-24O1-0001-091310	3.9	13	0.3
SFSA	Cobalt	FSA-SB-25O1-0001-091310	6.8	13	0.523076923
SFSA	Cobalt	FSA-SB-26O1-0001-091410	7.5	13	0.576923077
SFSA	Cobalt	FSA-SB-27O1-0001-091410	14.1	13	1.084615385
SFSA	Cobalt	FSA-SB-28O1-0001-091510	6.6	13	0.507692308
SFSA	Cobalt	FSA-SB-29O1-0001-091510	5	13	0.384615385
SFSA	Cobalt	FSA-SB-30O1-0001-091410	8.2	13	0.630769231
SFSA	Cobalt	FSA-SB-31O1-0001-091510	6	13	0.461538462
SFSA	Cobalt	FSA-SB-40O1-0001-092110	9.7	13	0.746153846
SFSA	Cobalt	FSA-SB-DUP01-0001-091510	7.4	13	0.569230769
SFSA	Cobalt	FSA-SB-DUP02-0001-092110	6.9	13	0.530769231
SFSA	Cobalt	FSA-SB-DUP03-0001-092210	7.9	13	0.607692308
SFSA	Cobalt	FSA-SS-03-091510	5.4	13	0.415384615
SFSA	Cobalt	FSA-SS-06-091510	11.5	13	0.884615385
SFSA	Cobalt	FSA-SS-32-091510	6.1	13	0.469230769
SFSA	Copper	FSA-013-0001-0-081610	42.8	70	0.611428571
SFSA	Copper	FSA-024-0001-0-081710	71.9	70	1.027142857
SFSA	Copper	FSA-039-0001-0-081710	88	70	1.257142857
SFSA	Copper	FSA-060-0001-0-081710	41.2	70	0.588571429
SFSA	Copper	FSA-062-0001-0-081710	108	70	1.542857143
SFSA	Copper	FSA-066-0001-0-081810	347	70	4.957142857
SFSA	Copper	FSA-075-0001-0-082510	42	70	0.6
SFSA	Copper	FSA-089-0001-0-081810	209	70	2.985714286
SFSA	Copper	FSA-102-0001-0-081810	117	70	1.671428571
SFSA	Copper	FSA-105-0001-0-081910	26.5	70	0.378571429
SFSA	Copper	FSA-106-0001-0-081810	1067	70	15.24285714
SFSA	Copper	FSA-151-0001-0-081910	125	70	1.785714286
SFSA	Copper	FSA-168-0001-0-082310	1890	70	27
SFSA	Copper	FSA-171-0001-0-082310	1240	70	17.71428571
SFSA	Copper	FSA-MW-34O1-0001-091310	46	70	0.657142857
SFSA	Copper	FSA-MW-35O1-0001-091710	65.7	70	0.938571429
SFSA	Copper	FSA-MW-36O1-0001-092210	22.3	70	0.318571429
SFSA	Copper	FSA-MW-37O1-0001-092210	13.5	70	0.192857143
SFSA	Copper	FSA-SB-08O1-0001-091710	31.2	70	0.445714286
SFSA	Copper	FSA-SB-09O1-0001-092710	26.2	70	0.374285714
SFSA	Copper	FSA-SB-10O1-0001-092110	67.2	70	0.96
SFSA	Copper	FSA-SB-11O1-0001-092110	85.4	70	1.22
SFSA	Copper	FSA-SB-12O1-0001-092010	97.6	70	1.394285714
SFSA	Copper	FSA-SB-13O1-0001-092210	88.3	70	1.261428571
SFSA	Copper	FSA-SB-14O1-0001-092010	14.7	70	0.21
SFSA	Copper	FSA-SB-15O1-0001-092110	13.6	70	0.194285714
SFSA	Copper	FSA-SB-16O1-0001-092210	31.2	70	0.445714286
SFSA	Copper	FSA-SB-17O1-0001-091710	165	70	2.357142857

Table E-1
Sample by Sample Comparison of Detected Soil Concentrations with Phytotoxicity Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
SFSA	Copper	FSA-SB-18O1-0001-091610	71.9	70	1.027142857
SFSA	Copper	FSA-SB-19O1-0001-092110	175	70	2.5
SFSA	Copper	FSA-SB-20O1-0001-091510	140	70	2
SFSA	Copper	FSA-SB-21O1-0001-092010	1216	70	17.37142857
SFSA	Copper	FSA-SB-22O1-0001-091710	17.3	70	0.247142857
SFSA	Copper	FSA-SB-24O1-0001-091310	58.9	70	0.841428571
SFSA	Copper	FSA-SB-25O1-0001-091310	30.4	70	0.434285714
SFSA	Copper	FSA-SB-26O1-0001-091410	125	70	1.785714286
SFSA	Copper	FSA-SB-27O1-0001-091410	177	70	2.528571429
SFSA	Copper	FSA-SB-28O1-0001-091510	37.2	70	0.531428571
SFSA	Copper	FSA-SB-29O1-0001-091510	35.5	70	0.507142857
SFSA	Copper	FSA-SB-30O1-0001-091410	59.3	70	0.847142857
SFSA	Copper	FSA-SB-31O1-0001-091510	47.3	70	0.675714286
SFSA	Copper	FSA-SB-40O1-0001-092110	111	70	1.585714286
SFSA	Copper	FSA-SB-DUP01-0001-091510	38.5	70	0.55
SFSA	Copper	FSA-SB-DUP02-0001-092110	75	70	1.071428571
SFSA	Copper	FSA-SB-DUP03-0001-092210	34.8	70	0.497142857
SFSA	Copper	FSA-SS-03-091510	74	70	1.057142857
SFSA	Copper	FSA-SS-06-091510	79.2	70	1.131428571
SFSA	Copper	FSA-SS-32-091510	16.8	70	0.24
SFSA	High Molecular Weight PAHs	FSA-MW-34O1-0001-091310	12.34	1.2	10.28333333
SFSA	High Molecular Weight PAHs	FSA-MW-35O1-0001-091710	3.51	1.2	2.925
SFSA	High Molecular Weight PAHs	FSA-MW-36O1-0001-092210	2.87	1.2	2.391666667
SFSA	High Molecular Weight PAHs	FSA-MW-37O1-0001-092210	1.366	1.2	1.138333333
SFSA	High Molecular Weight PAHs	FSA-SB-08O1-0001-091710	3.35	1.2	2.791666667
SFSA	High Molecular Weight PAHs	FSA-SB-09O1-0001-092710	1.218	1.2	1.015
SFSA	High Molecular Weight PAHs	FSA-SB-10O1-0001-092110	6.45	1.2	5.375
SFSA	High Molecular Weight PAHs	FSA-SB-11O1-0001-092110	1.429	1.2	1.190833333
SFSA	High Molecular Weight PAHs	FSA-SB-12O1-0001-092010	7.86	1.2	6.55
SFSA	High Molecular Weight PAHs	FSA-SB-13O1-0001-092210	8.58	1.2	7.15
SFSA	High Molecular Weight PAHs	FSA-SB-14O1-0001-092010	4.34	1.2	3.616666667
SFSA	High Molecular Weight PAHs	FSA-SB-15O1-0001-092110	3.18	1.2	2.65
SFSA	High Molecular Weight PAHs	FSA-SB-16O1-0001-092210	3.475	1.2	2.895833333
SFSA	High Molecular Weight PAHs	FSA-SB-17O1-0001-091710	32.9	1.2	27.41666667
SFSA	High Molecular Weight PAHs	FSA-SB-18O1-0001-091610	4.29	1.2	3.575
SFSA	High Molecular Weight PAHs	FSA-SB-19O1-0001-092110	2.82	1.2	2.35
SFSA	High Molecular Weight PAHs	FSA-SB-20O1-0001-091510	16.44	1.2	13.7
SFSA	High Molecular Weight PAHs	FSA-SB-21O1-0001-092010	3.06	1.2	2.55
SFSA	High Molecular Weight PAHs	FSA-SB-22O1-0001-091710	2.15	1.2	1.791666667
SFSA	High Molecular Weight PAHs	FSA-SB-24O1-0001-091310	1.53	1.2	1.275
SFSA	High Molecular Weight PAHs	FSA-SB-25O1-0001-091310	2.04	1.2	1.7
SFSA	High Molecular Weight PAHs	FSA-SB-26O1-0001-091410	38	1.2	31.66666667
SFSA	High Molecular Weight PAHs	FSA-SB-27O1-0001-091410	21.84	1.2	18.2
SFSA	High Molecular Weight PAHs	FSA-SB-28O1-0001-091510	6.18	1.2	5.15
SFSA	High Molecular Weight PAHs	FSA-SB-29O1-0001-091510	9.07	1.2	7.558333333
SFSA	High Molecular Weight PAHs	FSA-SB-30O1-0001-091410	14.17	1.2	11.80833333
SFSA	High Molecular Weight PAHs	FSA-SB-31O1-0001-091510	16.77	1.2	13.975
SFSA	High Molecular Weight PAHs	FSA-SS-03-091510	9.92	1.2	8.266666667
SFSA	High Molecular Weight PAHs	FSA-SS-06-091510	11.9	1.2	9.916666667
SFSA	High Molecular Weight PAHs	FSA-SS-32-091510	1.683	1.2	1.4025

Table E-1
Sample by Sample Comparison of Detected Soil Concentrations with Phytotoxicity Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
SFSA	Lead	FSA-013-0001-0-081610	57	120	0.475
SFSA	Lead	FSA-024-0001-0-081710	166	120	1.383333333
SFSA	Lead	FSA-039-0001-0-081710	50.9	120	0.424166667
SFSA	Lead	FSA-060-0001-0-081710	105	120	0.875
SFSA	Lead	FSA-062-0001-0-081710	65.4	120	0.545
SFSA	Lead	FSA-066-0001-0-081810	467	120	3.891666667
SFSA	Lead	FSA-075-0001-0-082510	105	120	0.875
SFSA	Lead	FSA-089-0001-0-081810	29.7	120	0.2475
SFSA	Lead	FSA-102-0001-0-081810	133	120	1.108333333
SFSA	Lead	FSA-105-0001-0-081910	40.5	120	0.3375
SFSA	Lead	FSA-106-0001-0-081810	3825	120	31.875
SFSA	Lead	FSA-151-0001-0-081910	5189	120	43.24166667
SFSA	Lead	FSA-168-0001-0-082310	24438	120	203.65
SFSA	Lead	FSA-171-0001-0-082310	4096	120	34.13333333
SFSA	Lead	FSA-MW-34O1-0001-091310	52.6	120	0.438333333
SFSA	Lead	FSA-MW-35O1-0001-091710	147	120	1.225
SFSA	Lead	FSA-MW-36O1-0001-092210	17.8	120	0.148333333
SFSA	Lead	FSA-MW-37O1-0001-092210	7.4	120	0.061666667
SFSA	Lead	FSA-SB-08O1-0001-091710	86.8	120	0.723333333
SFSA	Lead	FSA-SB-09O1-0001-092710	46.6	120	0.388333333
SFSA	Lead	FSA-SB-10O1-0001-092110	68.8	120	0.573333333
SFSA	Lead	FSA-SB-11O1-0001-092110	223	120	1.858333333
SFSA	Lead	FSA-SB-12O1-0001-092010	122	120	1.016666667
SFSA	Lead	FSA-SB-13O1-0001-092210	169	120	1.408333333
SFSA	Lead	FSA-SB-14O1-0001-092010	26.2	120	0.218333333
SFSA	Lead	FSA-SB-15O1-0001-092110	16.7	120	0.139166667
SFSA	Lead	FSA-SB-16O1-0001-092210	46.9	120	0.390833333
SFSA	Lead	FSA-SB-17O1-0001-091710	401	120	3.341666667
SFSA	Lead	FSA-SB-18O1-0001-091610	72.4	120	0.603333333
SFSA	Lead	FSA-SB-19O1-0001-092110	182	120	1.516666667
SFSA	Lead	FSA-SB-20O1-0001-091510	1096	120	9.133333333
SFSA	Lead	FSA-SB-21O1-0001-092010	2325	120	19.375
SFSA	Lead	FSA-SB-22O1-0001-091710	37.1	120	0.309166667
SFSA	Lead	FSA-SB-24O1-0001-091310	49.8	120	0.415
SFSA	Lead	FSA-SB-25O1-0001-091310	26	120	0.216666667
SFSA	Lead	FSA-SB-26O1-0001-091410	1321	120	11.00833333
SFSA	Lead	FSA-SB-27O1-0001-091410	516	120	4.3
SFSA	Lead	FSA-SB-28O1-0001-091510	67.5	120	0.5625
SFSA	Lead	FSA-SB-29O1-0001-091510	21.5	120	0.179166667
SFSA	Lead	FSA-SB-30O1-0001-091410	108	120	0.9
SFSA	Lead	FSA-SB-31O1-0001-091510	71.2	120	0.593333333
SFSA	Lead	FSA-SB-40O1-0001-092110	116	120	0.966666667
SFSA	Lead	FSA-SB-DUP01-0001-091510	22.3	120	0.185833333
SFSA	Lead	FSA-SB-DUP02-0001-092110	1878	120	15.65
SFSA	Lead	FSA-SB-DUP03-0001-092210	54.2	120	0.451666667
SFSA	Lead	FSA-SS-03-091510	115	120	0.958333333
SFSA	Lead	FSA-SS-06-091510	85.9	120	0.715833333
SFSA	Lead	FSA-SS-32-091510	9.3	120	0.0775
SFSA	Manganese	FSA-013-0001-0-081610	210	220	0.954545455
SFSA	Manganese	FSA-024-0001-0-081710	286	220	1.3

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
SFSA	Manganese	FSA-039-0001-0-081710	364	220	1.654545455
SFSA	Manganese	FSA-060-0001-0-081710	236	220	1.072727273
SFSA	Manganese	FSA-062-0001-0-081710	340	220	1.545454545
SFSA	Manganese	FSA-066-0001-0-081810	104	220	0.472727273
SFSA	Manganese	FSA-075-0001-0-082510	175	220	0.795454545
SFSA	Manganese	FSA-089-0001-0-081810	172	220	0.781818182
SFSA	Manganese	FSA-102-0001-0-081810	313	220	1.422727273
SFSA	Manganese	FSA-105-0001-0-081910	171	220	0.777272727
SFSA	Manganese	FSA-106-0001-0-081810	422	220	1.918181818
SFSA	Manganese	FSA-151-0001-0-081910	247	220	1.122727273
SFSA	Manganese	FSA-168-0001-0-082310	427	220	1.940909091
SFSA	Manganese	FSA-171-0001-0-082310	516	220	2.345454545
SFSA	Manganese	FSA-MW-34O1-0001-091310	279	220	1.268181818
SFSA	Manganese	FSA-MW-35O1-0001-091710	286	220	1.3
SFSA	Manganese	FSA-MW-36O1-0001-092210	144	220	0.654545455
SFSA	Manganese	FSA-MW-37O1-0001-092210	374	220	1.7
SFSA	Manganese	FSA-SB-08O1-0001-091710	340	220	1.545454545
SFSA	Manganese	FSA-SB-09O1-0001-092710	59.8	220	0.271818182
SFSA	Manganese	FSA-SB-10O1-0001-092110	226	220	1.027272727
SFSA	Manganese	FSA-SB-11O1-0001-092110	382	220	1.736363636
SFSA	Manganese	FSA-SB-12O1-0001-092010	164	220	0.745454545
SFSA	Manganese	FSA-SB-13O1-0001-092210	250	220	1.136363636
SFSA	Manganese	FSA-SB-14O1-0001-092010	158	220	0.718181818
SFSA	Manganese	FSA-SB-15O1-0001-092110	168	220	0.763636364
SFSA	Manganese	FSA-SB-16O1-0001-092210	252	220	1.145454545
SFSA	Manganese	FSA-SB-17O1-0001-091710	238	220	1.081818182
SFSA	Manganese	FSA-SB-18O1-0001-091610	164	220	0.745454545
SFSA	Manganese	FSA-SB-19O1-0001-092110	254	220	1.154545455
SFSA	Manganese	FSA-SB-20O1-0001-091510	166	220	0.754545455
SFSA	Manganese	FSA-SB-21O1-0001-092010	780	220	3.545454545
SFSA	Manganese	FSA-SB-22O1-0001-091710	150	220	0.681818182
SFSA	Manganese	FSA-SB-24O1-0001-091310	180	220	0.818181818
SFSA	Manganese	FSA-SB-25O1-0001-091310	252	220	1.145454545
SFSA	Manganese	FSA-SB-26O1-0001-091410	759	220	3.45
SFSA	Manganese	FSA-SB-27O1-0001-091410	445	220	2.022727273
SFSA	Manganese	FSA-SB-28O1-0001-091510	137	220	0.622727273
SFSA	Manganese	FSA-SB-29O1-0001-091510	74.9	220	0.340454545
SFSA	Manganese	FSA-SB-30O1-0001-091410	212	220	0.963636364
SFSA	Manganese	FSA-SB-31O1-0001-091510	168	220	0.763636364
SFSA	Manganese	FSA-SB-40O1-0001-092110	312	220	1.418181818
SFSA	Manganese	FSA-SB-DUP01-0001-091510	68.2	220	0.31
SFSA	Manganese	FSA-SB-DUP02-0001-092110	611	220	2.777272727
SFSA	Manganese	FSA-SB-DUP03-0001-092210	305	220	1.386363636
SFSA	Manganese	FSA-SS-03-091510	451	220	2.05
SFSA	Manganese	FSA-SS-06-091510	689	220	3.131818182
SFSA	Manganese	FSA-SS-32-091510	223	220	1.013636364
SFSA	Mercury	FSA-013-0001-0-081610	0.43	0.349	1.232091691
SFSA	Mercury	FSA-039-0001-0-081710	19.6	0.349	56.16045845
SFSA	Mercury	FSA-060-0001-0-081710	0.83	0.349	2.378223496
SFSA	Mercury	FSA-062-0001-0-081710	108	0.349	309.4555874

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
SFSA	Mercury	FSA-066-0001-0-081810	0.88	0.349	2.521489971
SFSA	Mercury	FSA-075-0001-0-082510	1.7	0.349	4.871060172
SFSA	Mercury	FSA-089-0001-0-081810	2.4	0.349	6.876790831
SFSA	Mercury	FSA-102-0001-0-081810	0.58	0.349	1.661891117
SFSA	Mercury	FSA-105-0001-0-081910	2.8	0.349	8.022922636
SFSA	Mercury	FSA-106-0001-0-081810	37.3	0.349	106.8767908
SFSA	Mercury	FSA-151-0001-0-081910	10.2	0.349	29.22636103
SFSA	Mercury	FSA-168-0001-0-082310	5.3	0.349	15.18624642
SFSA	Mercury	FSA-171-0001-0-082310	5.1	0.349	14.61318052
SFSA	Mercury	FSA-MW-34O1-0001-091310	0.25	0.349	0.716332378
SFSA	Mercury	FSA-MW-35O1-0001-091710	1.4	0.349	4.011461318
SFSA	Mercury	FSA-MW-36O1-0001-092210	0.64	0.349	1.833810888
SFSA	Mercury	FSA-MW-37O1-0001-092210	0.095	0.349	0.272206304
SFSA	Mercury	FSA-SB-08O1-0001-091710	0.73	0.349	2.091690544
SFSA	Mercury	FSA-SB-09O1-0001-092710	1.9	0.349	5.444126074
SFSA	Mercury	FSA-SB-10O1-0001-092110	4.8	0.349	13.75358166
SFSA	Mercury	FSA-SB-11O1-0001-092110	62.5	0.349	179.0830946
SFSA	Mercury	FSA-SB-12O1-0001-092010	13	0.349	37.24928367
SFSA	Mercury	FSA-SB-13O1-0001-092210	4.7	0.349	13.46704871
SFSA	Mercury	FSA-SB-14O1-0001-092010	0.055	0.349	0.157593123
SFSA	Mercury	FSA-SB-15O1-0001-092110	0.15	0.349	0.429799427
SFSA	Mercury	FSA-SB-16O1-0001-092210	0.95	0.349	2.722063037
SFSA	Mercury	FSA-SB-17O1-0001-091710	4.4	0.349	12.60744986
SFSA	Mercury	FSA-SB-18O1-0001-091610	1.8	0.349	5.157593123
SFSA	Mercury	FSA-SB-19O1-0001-092110	8.9	0.349	25.50143266
SFSA	Mercury	FSA-SB-20O1-0001-091510	5.3	0.349	15.18624642
SFSA	Mercury	FSA-SB-21O1-0001-092010	10.2	0.349	29.22636103
SFSA	Mercury	FSA-SB-22O1-0001-091710	0.61	0.349	1.747851003
SFSA	Mercury	FSA-SB-24O1-0001-091310	0.21	0.349	0.601719198
SFSA	Mercury	FSA-SB-25O1-0001-091310	0.27	0.349	0.773638968
SFSA	Mercury	FSA-SB-26O1-0001-091410	2.3	0.349	6.59025788
SFSA	Mercury	FSA-SB-27O1-0001-091410	0.48	0.349	1.375358166
SFSA	Mercury	FSA-SB-28O1-0001-091510	6.4	0.349	18.33810888
SFSA	Mercury	FSA-SB-29O1-0001-091510	0.32	0.349	0.916905444
SFSA	Mercury	FSA-SB-30O1-0001-091410	1.1	0.349	3.151862464
SFSA	Mercury	FSA-SB-31O1-0001-091510	5.5	0.349	15.75931232
SFSA	Mercury	FSA-SB-40O1-0001-092110	72.5	0.349	207.7363897
SFSA	Mercury	FSA-SB-DUP01-0001-091510	0.083	0.349	0.23782235
SFSA	Mercury	FSA-SB-DUP02-0001-092110	125	0.349	358.1661891
SFSA	Mercury	FSA-SB-DUP03-0001-092210	1.1	0.349	3.151862464
SFSA	Mercury	FSA-SS-03-091510	6.4	0.349	18.33810888
SFSA	Mercury	FSA-SS-06-091510	1.8	0.349	5.157593123
SFSA	Mercury	FSA-SS-32-091510	0.32	0.349	0.916905444
SFSA	Nickel	FSA-013-0001-0-081610	8.6	38	0.226315789
SFSA	Nickel	FSA-024-0001-0-081710	24.4	38	0.642105263
SFSA	Nickel	FSA-039-0001-0-081710	13	38	0.342105263
SFSA	Nickel	FSA-060-0001-0-081710	8.7	38	0.228947368
SFSA	Nickel	FSA-062-0001-0-081710	10.2	38	0.268421053
SFSA	Nickel	FSA-066-0001-0-081810	14	38	0.368421053
SFSA	Nickel	FSA-075-0001-0-082510	342	38	9

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
SFSA	Nickel	FSA-089-0001-0-081810	9	38	0.236842105
SFSA	Nickel	FSA-102-0001-0-081810	18.3	38	0.481578947
SFSA	Nickel	FSA-105-0001-0-081910	8.8	38	0.231578947
SFSA	Nickel	FSA-106-0001-0-081810	24.9	38	0.655263158
SFSA	Nickel	FSA-151-0001-0-081910	4.1	38	0.107894737
SFSA	Nickel	FSA-168-0001-0-082310	15	38	0.394736842
SFSA	Nickel	FSA-171-0001-0-082310	66.9	38	1.760526316
SFSA	Nickel	FSA-MW-34O1-0001-091310	12	38	0.315789474
SFSA	Nickel	FSA-MW-35O1-0001-091710	48.5	38	1.276315789
SFSA	Nickel	FSA-MW-36O1-0001-092210	9.8	38	0.257894737
SFSA	Nickel	FSA-MW-37O1-0001-092210	5.7	38	0.15
SFSA	Nickel	FSA-SB-08O1-0001-091710	28.1	38	0.739473684
SFSA	Nickel	FSA-SB-09O1-0001-092710	11.2	38	0.294736842
SFSA	Nickel	FSA-SB-10O1-0001-092110	17.5	38	0.460526316
SFSA	Nickel	FSA-SB-11O1-0001-092110	14.5	38	0.381578947
SFSA	Nickel	FSA-SB-12O1-0001-092010	13	38	0.342105263
SFSA	Nickel	FSA-SB-13O1-0001-092210	12.3	38	0.323684211
SFSA	Nickel	FSA-SB-14O1-0001-092010	6.6	38	0.173684211
SFSA	Nickel	FSA-SB-15O1-0001-092110	13.5	38	0.355263158
SFSA	Nickel	FSA-SB-16O1-0001-092210	22.1	38	0.581578947
SFSA	Nickel	FSA-SB-17O1-0001-091710	22.7	38	0.597368421
SFSA	Nickel	FSA-SB-18O1-0001-091610	9.1	38	0.239473684
SFSA	Nickel	FSA-SB-19O1-0001-092110	18.8	38	0.494736842
SFSA	Nickel	FSA-SB-20O1-0001-091510	10.1	38	0.265789474
SFSA	Nickel	FSA-SB-21O1-0001-092010	69.3	38	1.823684211
SFSA	Nickel	FSA-SB-22O1-0001-091710	8	38	0.210526316
SFSA	Nickel	FSA-SB-24O1-0001-091310	6.2	38	0.163157895
SFSA	Nickel	FSA-SB-25O1-0001-091310	10.7	38	0.281578947
SFSA	Nickel	FSA-SB-26O1-0001-091410	20.6	38	0.542105263
SFSA	Nickel	FSA-SB-27O1-0001-091410	25.5	38	0.671052632
SFSA	Nickel	FSA-SB-28O1-0001-091510	13.5	38	0.355263158
SFSA	Nickel	FSA-SB-29O1-0001-091510	11.5	38	0.302631579
SFSA	Nickel	FSA-SB-30O1-0001-091410	22.2	38	0.584210526
SFSA	Nickel	FSA-SB-31O1-0001-091510	9.1	38	0.239473684
SFSA	Nickel	FSA-SB-40O1-0001-092110	18.7	38	0.492105263
SFSA	Nickel	FSA-SB-DUP01-0001-091510	14.4	38	0.378947368
SFSA	Nickel	FSA-SB-DUP02-0001-092110	12.7	38	0.334210526
SFSA	Nickel	FSA-SB-DUP03-0001-092210	19.3	38	0.507894737
SFSA	Nickel	FSA-SS-03-091510	15.9	38	0.418421053
SFSA	Nickel	FSA-SS-06-091510	99.6	38	2.621052632
SFSA	Nickel	FSA-SS-32-091510	9.1	38	0.239473684
SFSA	Selenium	FSA-013-0001-0-081610	0.3	0.52	0.576923077
SFSA	Selenium	FSA-024-0001-0-081710	0.84	0.52	1.615384615
SFSA	Selenium	FSA-039-0001-0-081710	0.87	0.52	1.673076923
SFSA	Selenium	FSA-060-0001-0-081710	0.29	0.52	0.557692308
SFSA	Selenium	FSA-062-0001-0-081710	0.98	0.52	1.884615385
SFSA	Selenium	FSA-066-0001-0-081810	1.4	0.52	2.692307692
SFSA	Selenium	FSA-075-0001-0-082510	0.43	0.52	0.826923077
SFSA	Selenium	FSA-089-0001-0-081810	1.1	0.52	2.115384615
SFSA	Selenium	FSA-102-0001-0-081810	1.1	0.52	2.115384615

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
SFSA	Selenium	FSA-105-0001-0-081910	0.18	0.52	0.346153846
SFSA	Selenium	FSA-106-0001-0-081810	2.7	0.52	5.192307692
SFSA	Selenium	FSA-151-0001-0-081910	0.27	0.52	0.519230769
SFSA	Selenium	FSA-168-0001-0-082310	5	0.52	9.615384615
SFSA	Selenium	FSA-171-0001-0-082310	3.4	0.52	6.538461538
SFSA	Selenium	FSA-MW-34O1-0001-091310	0.9	0.52	1.730769231
SFSA	Selenium	FSA-MW-36O1-0001-092210	2.4	0.52	4.615384615
SFSA	Selenium	FSA-MW-37O1-0001-092210	0.67	0.52	1.288461538
SFSA	Selenium	FSA-SB-08O1-0001-091710	0.84	0.52	1.615384615
SFSA	Selenium	FSA-SB-09O1-0001-092710	1.9	0.52	3.653846154
SFSA	Selenium	FSA-SB-10O1-0001-092110	0.74	0.52	1.423076923
SFSA	Selenium	FSA-SB-11O1-0001-092110	1.3	0.52	2.5
SFSA	Selenium	FSA-SB-12O1-0001-092010	5.4	0.52	10.38461538
SFSA	Selenium	FSA-SB-13O1-0001-092210	1.1	0.52	2.115384615
SFSA	Selenium	FSA-SB-14O1-0001-092010	0.57	0.52	1.096153846
SFSA	Selenium	FSA-SB-15O1-0001-092110	1.7	0.52	3.269230769
SFSA	Selenium	FSA-SB-16O1-0001-092210	0.63	0.52	1.211538462
SFSA	Selenium	FSA-SB-17O1-0001-091710	5	0.52	9.615384615
SFSA	Selenium	FSA-SB-18O1-0001-091610	0.49	0.52	0.942307692
SFSA	Selenium	FSA-SB-19O1-0001-092110	0.99	0.52	1.903846154
SFSA	Selenium	FSA-SB-22O1-0001-091710	5.9	0.52	11.34615385
SFSA	Selenium	FSA-SB-24O1-0001-091310	0.93	0.52	1.788461538
SFSA	Selenium	FSA-SB-25O1-0001-091310	1.1	0.52	2.115384615
SFSA	Selenium	FSA-SB-26O1-0001-091410	2.2	0.52	4.230769231
SFSA	Selenium	FSA-SB-27O1-0001-091410	1.1	0.52	2.115384615
SFSA	Selenium	FSA-SB-28O1-0001-091510	0.98	0.52	1.884615385
SFSA	Selenium	FSA-SB-29O1-0001-091510	1.5	0.52	2.884615385
SFSA	Selenium	FSA-SB-30O1-0001-091410	1.6	0.52	3.076923077
SFSA	Selenium	FSA-SB-31O1-0001-091510	0.56	0.52	1.076923077
SFSA	Selenium	FSA-SB-40O1-0001-092110	1.8	0.52	3.461538462
SFSA	Selenium	FSA-SB-DUP01-0001-091510	1.3	0.52	2.5
SFSA	Selenium	FSA-SB-DUP02-0001-092110	1.2	0.52	2.307692308
SFSA	Selenium	FSA-SB-DUP03-0001-092210	0.68	0.52	1.307692308
SFSA	Selenium	FSA-SS-03-091510	0.89	0.52	1.711538462
SFSA	Selenium	FSA-SS-32-091510	0.69	0.52	1.326923077
SFSA	Silver	FSA-089-0001-0-081810	0.14	560	0.00025
SFSA	Silver	FSA-106-0001-0-081810	1.3	560	0.002321429
SFSA	Silver	FSA-151-0001-0-081910	0.72	560	0.001285714
SFSA	Silver	FSA-168-0001-0-082310	1.8	560	0.003214286
SFSA	Silver	FSA-171-0001-0-082310	1.5	560	0.002678571
SFSA	Silver	FSA-SB-11O1-0001-092110	0.72	560	0.001285714
SFSA	Silver	FSA-SB-21O1-0001-092010	0.51	560	0.000910714
SFSA	Silver	FSA-SB-DUP02-0001-092110	5.5	560	0.009821429
SFSA	Vanadium	FSA-013-0001-0-081610	19.8	2	9.9
SFSA	Vanadium	FSA-024-0001-0-081710	31.8	2	15.9
SFSA	Vanadium	FSA-039-0001-0-081710	25	2	12.5
SFSA	Vanadium	FSA-060-0001-0-081710	24.5	2	12.25
SFSA	Vanadium	FSA-062-0001-0-081710	13	2	6.5
SFSA	Vanadium	FSA-066-0001-0-081810	19.1	2	9.55
SFSA	Vanadium	FSA-075-0001-0-082510	20	2	10

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
SFSA	Vanadium	FSA-089-0001-0-081810	12	2	6
SFSA	Vanadium	FSA-102-0001-0-081810	16.4	2	8.2
SFSA	Vanadium	FSA-105-0001-0-081910	23.4	2	11.7
SFSA	Vanadium	FSA-106-0001-0-081810	32.8	2	16.4
SFSA	Vanadium	FSA-151-0001-0-081910	19.9	2	9.95
SFSA	Vanadium	FSA-168-0001-0-082310	28.1	2	14.05
SFSA	Vanadium	FSA-171-0001-0-082310	72.7	2	36.35
SFSA	Vanadium	FSA-MW-34O1-0001-091310	24	2	12
SFSA	Vanadium	FSA-MW-35O1-0001-091710	16.7	2	8.35
SFSA	Vanadium	FSA-MW-36O1-0001-092210	12.3	2	6.15
SFSA	Vanadium	FSA-MW-37O1-0001-092210	14	2	7
SFSA	Vanadium	FSA-SB-08O1-0001-091710	17.5	2	8.75
SFSA	Vanadium	FSA-SB-09O1-0001-092710	21.9	2	10.95
SFSA	Vanadium	FSA-SB-10O1-0001-092110	23.2	2	11.6
SFSA	Vanadium	FSA-SB-11O1-0001-092110	16.3	2	8.15
SFSA	Vanadium	FSA-SB-12O1-0001-092010	23.4	2	11.7
SFSA	Vanadium	FSA-SB-13O1-0001-092210	17.7	2	8.85
SFSA	Vanadium	FSA-SB-14O1-0001-092010	15.4	2	7.7
SFSA	Vanadium	FSA-SB-15O1-0001-092110	11.6	2	5.8
SFSA	Vanadium	FSA-SB-16O1-0001-092210	20.3	2	10.15
SFSA	Vanadium	FSA-SB-17O1-0001-091710	17.9	2	8.95
SFSA	Vanadium	FSA-SB-18O1-0001-091610	15.1	2	7.55
SFSA	Vanadium	FSA-SB-19O1-0001-092110	30.1	2	15.05
SFSA	Vanadium	FSA-SB-20O1-0001-091510	38.7	2	19.35
SFSA	Vanadium	FSA-SB-21O1-0001-092010	39.8	2	19.9
SFSA	Vanadium	FSA-SB-22O1-0001-091710	16.5	2	8.25
SFSA	Vanadium	FSA-SB-24O1-0001-091310	17.1	2	8.55
SFSA	Vanadium	FSA-SB-25O1-0001-091310	22.9	2	11.45
SFSA	Vanadium	FSA-SB-26O1-0001-091410	15.7	2	7.85
SFSA	Vanadium	FSA-SB-27O1-0001-091410	31.9	2	15.95
SFSA	Vanadium	FSA-SB-28O1-0001-091510	34	2	17
SFSA	Vanadium	FSA-SB-29O1-0001-091510	12.8	2	6.4
SFSA	Vanadium	FSA-SB-30O1-0001-091410	21.5	2	10.75
SFSA	Vanadium	FSA-SB-31O1-0001-091510	16.1	2	8.05
SFSA	Vanadium	FSA-SB-40O1-0001-092110	18.3	2	9.15
SFSA	Vanadium	FSA-SB-DUP01-0001-091510	15.8	2	7.9
SFSA	Vanadium	FSA-SB-DUP02-0001-092110	17.6	2	8.8
SFSA	Vanadium	FSA-SB-DUP03-0001-092210	23.3	2	11.65
SFSA	Vanadium	FSA-SS-03-091510	23.9	2	11.95
SFSA	Vanadium	FSA-SS-06-091510	30.2	2	15.1
SFSA	Vanadium	FSA-SS-32-091510	27.9	2	13.95
SFSA	Zinc	FSA-013-0001-0-081610	123	160	0.76875
SFSA	Zinc	FSA-024-0001-0-081710	95.2	160	0.595
SFSA	Zinc	FSA-039-0001-0-081710	68.9	160	0.430625
SFSA	Zinc	FSA-060-0001-0-081710	62.5	160	0.390625
SFSA	Zinc	FSA-062-0001-0-081710	72.3	160	0.451875
SFSA	Zinc	FSA-066-0001-0-081810	388	160	2.425
SFSA	Zinc	FSA-075-0001-0-082510	192	160	1.2
SFSA	Zinc	FSA-089-0001-0-081810	43.3	160	0.270625
SFSA	Zinc	FSA-102-0001-0-081810	229	160	1.43125

Table E-1
Sample by Sample Comparison of Detected Soil Concentrations with Phytotoxicity Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
SFSA	Zinc	FSA-105-0001-0-081910	40.5	160	0.253125
SFSA	Zinc	FSA-106-0001-0-081810	454	160	2.8375
SFSA	Zinc	FSA-151-0001-0-081910	157	160	0.98125
SFSA	Zinc	FSA-168-0001-0-082310	637	160	3.98125
SFSA	Zinc	FSA-171-0001-0-082310	839	160	5.24375
SFSA	Zinc	FSA-MW-34O1-0001-091310	60.3	160	0.376875
SFSA	Zinc	FSA-MW-35O1-0001-091710	314	160	1.9625
SFSA	Zinc	FSA-MW-36O1-0001-092210	72.4	160	0.4525
SFSA	Zinc	FSA-MW-37O1-0001-092210	46.6	160	0.29125
SFSA	Zinc	FSA-SB-08O1-0001-091710	84.9	160	0.530625
SFSA	Zinc	FSA-SB-09O1-0001-092710	45.3	160	0.283125
SFSA	Zinc	FSA-SB-10O1-0001-092110	104	160	0.65
SFSA	Zinc	FSA-SB-11O1-0001-092110	105	160	0.65625
SFSA	Zinc	FSA-SB-12O1-0001-092010	133	160	0.83125
SFSA	Zinc	FSA-SB-13O1-0001-092210	130	160	0.8125
SFSA	Zinc	FSA-SB-14O1-0001-092010	75	160	0.46875
SFSA	Zinc	FSA-SB-15O1-0001-092110	50.3	160	0.314375
SFSA	Zinc	FSA-SB-16O1-0001-092210	98.9	160	0.618125
SFSA	Zinc	FSA-SB-17O1-0001-091710	260	160	1.625
SFSA	Zinc	FSA-SB-18O1-0001-091610	84.4	160	0.5275
SFSA	Zinc	FSA-SB-19O1-0001-092110	117	160	0.73125
SFSA	Zinc	FSA-SB-20O1-0001-091510	74.7	160	0.466875
SFSA	Zinc	FSA-SB-21O1-0001-092010	290	160	1.8125
SFSA	Zinc	FSA-SB-22O1-0001-091710	34	160	0.2125
SFSA	Zinc	FSA-SB-24O1-0001-091310	31.4	160	0.19625
SFSA	Zinc	FSA-SB-25O1-0001-091310	38.5	160	0.240625
SFSA	Zinc	FSA-SB-26O1-0001-091410	215	160	1.34375
SFSA	Zinc	FSA-SB-27O1-0001-091410	138	160	0.8625
SFSA	Zinc	FSA-SB-28O1-0001-091510	40.5	160	0.253125
SFSA	Zinc	FSA-SB-29O1-0001-091510	71	160	0.44375
SFSA	Zinc	FSA-SB-30O1-0001-091410	217	160	1.35625
SFSA	Zinc	FSA-SB-31O1-0001-091510	42.2	160	0.26375
SFSA	Zinc	FSA-SB-40O1-0001-092110	107	160	0.66875
SFSA	Zinc	FSA-SB-DUP01-0001-091510	71.5	160	0.446875
SFSA	Zinc	FSA-SB-DUP02-0001-092110	113	160	0.70625
SFSA	Zinc	FSA-SB-DUP03-0001-092210	52.4	160	0.3275
SFSA	Zinc	FSA-SS-03-091510	116	160	0.725
SFSA	Zinc	FSA-SS-06-091510	166	160	1.0375
SFSA	Zinc	FSA-SS-32-091510	45.9	160	0.286875
EFSA	Aluminum	FSA-137-0001-0-082610	1307	5	261.4
EFSA	Aluminum	FSA-SB-23O1-0001-091610	5958	5	1191.6
EFSA	Aluminum	FSA-SB-33O1-0001-092310	5537	5	1107.4
EFSA	Aluminum	FSA-SB-34O1-0001-091610	5032	5	1006.4
EFSA	Aluminum	FSA-SB-35O1-0001-091610	6128	5	1225.6
EFSA	Aluminum	FSA-SB-36O1-0001-091610	10774	5	2154.8
EFSA	Aluminum	FSA-SB-37O1-0001-091510	6841	5	1368.2
EFSA	Aluminum	FSA-SB-38O1-0001-091610	6425	5	1285
EFSA	Aluminum	FSA-SB-DUP04-0001-092310	5694	5	1138.8
EFSA	Aluminum	FSA-SS-17-091510	9330	5	1866
EFSA	Aluminum	FSA-SS-18-091510	4664	5	932.8

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
EFSA	Aluminum	FSA-SS-22-091510	1920	5	384
EFSA	Aluminum	FSA-SS-25-091510	1878	5	375.6
EFSA	Aluminum	FSA-SS-DUP01-091510	2001	5	400.2
EFSA	Antimony	FSA-137-0001-0-082610	1.1	0.5	2.2
EFSA	Antimony	FSA-SB-23O1-0001-091610	0.62	0.5	1.24
EFSA	Antimony	FSA-SB-35O1-0001-091610	1.2	0.5	2.4
EFSA	Antimony	FSA-SB-36O1-0001-091610	0.45	0.5	0.9
EFSA	Antimony	FSA-SB-38O1-0001-091610	0.88	0.5	1.76
EFSA	Antimony	FSA-SS-22-091510	1.5	0.5	3
EFSA	Antimony	FSA-SS-25-091510	16.5	0.5	33
EFSA	Antimony	FSA-SS-DUP01-091510	2.1	0.5	4.2
EFSA	Arsenic	FSA-137-0001-0-082610	14.5	18	0.805555556
EFSA	Arsenic	FSA-SB-23O1-0001-091610	3.4	18	0.188888889
EFSA	Arsenic	FSA-SB-33O1-0001-092310	1.8	18	0.1
EFSA	Arsenic	FSA-SB-34O1-0001-091610	8.5	18	0.472222222
EFSA	Arsenic	FSA-SB-35O1-0001-091610	38.7	18	2.15
EFSA	Arsenic	FSA-SB-36O1-0001-091610	4	18	0.222222222
EFSA	Arsenic	FSA-SB-37O1-0001-091510	3.2	18	0.177777778
EFSA	Arsenic	FSA-SB-38O1-0001-091610	2.2	18	0.122222222
EFSA	Arsenic	FSA-SB-DUP04-0001-092310	1.9	18	0.105555556
EFSA	Arsenic	FSA-SS-17-091510	3	18	0.166666667
EFSA	Arsenic	FSA-SS-18-091510	1.9	18	0.105555556
EFSA	Arsenic	FSA-SS-22-091510	13.3	18	0.738888889
EFSA	Arsenic	FSA-SS-25-091510	27.5	18	1.527777778
EFSA	Arsenic	FSA-SS-DUP01-091510	24.2	18	1.344444444
EFSA	Barium	FSA-137-0001-0-082610	116	5	23.2
EFSA	Barium	FSA-SB-23O1-0001-091610	59.2	5	11.84
EFSA	Barium	FSA-SB-33O1-0001-092310	40.4	5	8.08
EFSA	Barium	FSA-SB-34O1-0001-091610	724	5	144.8
EFSA	Barium	FSA-SB-35O1-0001-091610	92.8	5	18.56
EFSA	Barium	FSA-SB-36O1-0001-091610	54.2	5	10.84
EFSA	Barium	FSA-SB-37O1-0001-091510	49.5	5	9.9
EFSA	Barium	FSA-SB-38O1-0001-091610	52.8	5	10.56
EFSA	Barium	FSA-SB-DUP04-0001-092310	53.8	5	10.76
EFSA	Barium	FSA-SS-17-091510	42.7	5	8.54
EFSA	Barium	FSA-SS-18-091510	110	5	22
EFSA	Barium	FSA-SS-22-091510	196	5	39.2
EFSA	Barium	FSA-SS-25-091510	279	5	55.8
EFSA	Barium	FSA-SS-DUP01-091510	274	5	54.8
EFSA	Cadmium	FSA-137-0001-0-082610	0.24	32	0.0075
EFSA	Cadmium	FSA-SB-23O1-0001-091610	0.37	32	0.0115625
EFSA	Cadmium	FSA-SB-34O1-0001-091610	0.35	32	0.0109375
EFSA	Cadmium	FSA-SB-35O1-0001-091610	0.58	32	0.018125
EFSA	Cadmium	FSA-SB-37O1-0001-091510	0.15	32	0.0046875
EFSA	Cadmium	FSA-SS-18-091510	0.66	32	0.020625
EFSA	Cadmium	FSA-SS-22-091510	0.31	32	0.0096875
EFSA	Cadmium	FSA-SS-25-091510	1.1	32	0.034375
EFSA	Cadmium	FSA-SS-DUP01-091510	0.88	32	0.0275
EFSA	Chromium	FSA-137-0001-0-082610	7.9	0.018	438.8888889
EFSA	Chromium	FSA-SB-23O1-0001-091610	6.7	0.018	372.2222222

Table E-1
Sample by Sample Comparison of Detected Soil Concentrations with Phytotoxicity Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
EFSA	Chromium	FSA-SB-33O1-0001-092310	8.1	0.018	450
EFSA	Chromium	FSA-SB-34O1-0001-091610	10.3	0.018	572.2222222
EFSA	Chromium	FSA-SB-35O1-0001-091610	20.2	0.018	1122.222222
EFSA	Chromium	FSA-SB-36O1-0001-091610	13.8	0.018	766.6666667
EFSA	Chromium	FSA-SB-37O1-0001-091510	9.9	0.018	550
EFSA	Chromium	FSA-SB-38O1-0001-091610	11.7	0.018	650
EFSA	Chromium	FSA-SB-DUP04-0001-092310	8.2	0.018	455.5555556
EFSA	Chromium	FSA-SS-17-091510	9.9	0.018	550
EFSA	Chromium	FSA-SS-18-091510	8.5	0.018	472.2222222
EFSA	Chromium	FSA-SS-22-091510	7.1	0.018	394.4444444
EFSA	Chromium	FSA-SS-25-091510	8.9	0.018	494.4444444
EFSA	Chromium	FSA-SS-DUP01-091510	9.8	0.018	544.4444444
EFSA	Cobalt	FSA-137-0001-0-082610	4.2	13	0.323076923
EFSA	Cobalt	FSA-SB-23O1-0001-091610	4.4	13	0.338461538
EFSA	Cobalt	FSA-SB-33O1-0001-092310	4	13	0.307692308
EFSA	Cobalt	FSA-SB-34O1-0001-091610	6.3	13	0.484615385
EFSA	Cobalt	FSA-SB-35O1-0001-091610	8.2	13	0.630769231
EFSA	Cobalt	FSA-SB-36O1-0001-091610	8.5	13	0.653846154
EFSA	Cobalt	FSA-SB-37O1-0001-091510	6	13	0.461538462
EFSA	Cobalt	FSA-SB-38O1-0001-091610	4.9	13	0.376923077
EFSA	Cobalt	FSA-SB-DUP04-0001-092310	5	13	0.384615385
EFSA	Cobalt	FSA-SS-17-091510	6.6	13	0.507692308
EFSA	Cobalt	FSA-SS-18-091510	3.7	13	0.284615385
EFSA	Cobalt	FSA-SS-22-091510	6	13	0.461538462
EFSA	Cobalt	FSA-SS-25-091510	7.2	13	0.553846154
EFSA	Cobalt	FSA-SS-DUP01-091510	6.8	13	0.523076923
EFSA	Copper	FSA-137-0001-0-082610	88.1	70	1.258571429
EFSA	Copper	FSA-SB-23O1-0001-091610	18.9	70	0.27
EFSA	Copper	FSA-SB-33O1-0001-092310	15.8	70	0.225714286
EFSA	Copper	FSA-SB-34O1-0001-091610	57.1	70	0.815714286
EFSA	Copper	FSA-SB-35O1-0001-091610	64.2	70	0.917142857
EFSA	Copper	FSA-SB-36O1-0001-091610	31.8	70	0.454285714
EFSA	Copper	FSA-SB-37O1-0001-091510	33.5	70	0.478571429
EFSA	Copper	FSA-SB-38O1-0001-091610	41.6	70	0.594285714
EFSA	Copper	FSA-SB-DUP04-0001-092310	16.3	70	0.232857143
EFSA	Copper	FSA-SS-17-091510	19.3	70	0.275714286
EFSA	Copper	FSA-SS-18-091510	14.6	70	0.208571429
EFSA	Copper	FSA-SS-22-091510	79.5	70	1.135714286
EFSA	Copper	FSA-SS-25-091510	194	70	2.771428571
EFSA	Copper	FSA-SS-DUP01-091510	165	70	2.357142857
EFSA	Heptachlor	FSA-SS-25-091510	0.018	1	0.018
EFSA	Heptachlor	FSA-SS-DUP01-091510	0.019	1	0.019
EFSA	High Molecular Weight PAHs	FSA-SB-23O1-0001-091610	1.527	1.2	1.2725
EFSA	High Molecular Weight PAHs	FSA-SB-34O1-0001-091610	14.21	1.2	11.84166667
EFSA	High Molecular Weight PAHs	FSA-SB-35O1-0001-091610	9.27	1.2	7.725
EFSA	High Molecular Weight PAHs	FSA-SB-37O1-0001-091510	2.04	1.2	1.7
EFSA	High Molecular Weight PAHs	FSA-SB-38O1-0001-091610	19.28	1.2	16.06666667
EFSA	High Molecular Weight PAHs	FSA-SS-17-091510	0.702	1.2	0.585
EFSA	High Molecular Weight PAHs	FSA-SS-18-091510	1.7	1.2	1.416666667
EFSA	High Molecular Weight PAHs	FSA-SS-22-091510	18.39	1.2	15.325

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
EFSA	High Molecular Weight PAHs	FSA-SS-25-091510	240.35	1.2	200.2916667
EFSA	Lead	FSA-137-0001-0-082610	71.3	120	0.594166667
EFSA	Lead	FSA-SB-23O1-0001-091610	12.7	120	0.105833333
EFSA	Lead	FSA-SB-33O1-0001-092310	22.2	120	0.185
EFSA	Lead	FSA-SB-34O1-0001-091610	27.9	120	0.2325
EFSA	Lead	FSA-SB-35O1-0001-091610	67.9	120	0.565833333
EFSA	Lead	FSA-SB-36O1-0001-091610	14.6	120	0.121666667
EFSA	Lead	FSA-SB-37O1-0001-091510	18.5	120	0.154166667
EFSA	Lead	FSA-SB-38O1-0001-091610	41.6	120	0.346666667
EFSA	Lead	FSA-SB-DUP04-0001-092310	19	120	0.158333333
EFSA	Lead	FSA-SS-17-091510	10.1	120	0.084166667
EFSA	Lead	FSA-SS-18-091510	11.9	120	0.099166667
EFSA	Lead	FSA-SS-22-091510	169	120	1.408333333
EFSA	Lead	FSA-SS-25-091510	1177	120	9.808333333
EFSA	Lead	FSA-SS-DUP01-091510	197	120	1.641666667
EFSA	Manganese	FSA-137-0001-0-082610	107	220	0.486363636
EFSA	Manganese	FSA-SB-23O1-0001-091610	158	220	0.718181818
EFSA	Manganese	FSA-SB-33O1-0001-092310	221	220	1.004545455
EFSA	Manganese	FSA-SB-34O1-0001-091610	325	220	1.477272727
EFSA	Manganese	FSA-SB-35O1-0001-091610	368	220	1.672727273
EFSA	Manganese	FSA-SB-36O1-0001-091610	307	220	1.395454545
EFSA	Manganese	FSA-SB-37O1-0001-091510	262	220	1.190909091
EFSA	Manganese	FSA-SB-38O1-0001-091610	240	220	1.090909091
EFSA	Manganese	FSA-SB-DUP04-0001-092310	241	220	1.095454545
EFSA	Manganese	FSA-SS-17-091510	242	220	1.1
EFSA	Manganese	FSA-SS-18-091510	716	220	3.254545455
EFSA	Manganese	FSA-SS-22-091510	254	220	1.154545455
EFSA	Manganese	FSA-SS-25-091510	333	220	1.513636364
EFSA	Manganese	FSA-SS-DUP01-091510	291	220	1.322727273
EFSA	Mercury	FSA-137-0001-0-082610	34.4	0.349	98.56733524
EFSA	Mercury	FSA-SB-23O1-0001-091610	0.079	0.349	0.226361032
EFSA	Mercury	FSA-SB-34O1-0001-091610	21.4	0.349	61.31805158
EFSA	Mercury	FSA-SB-35O1-0001-091610	1.5	0.349	4.297994269
EFSA	Mercury	FSA-SB-37O1-0001-091510	0.14	0.349	0.401146132
EFSA	Mercury	FSA-SB-38O1-0001-091610	0.13	0.349	0.372492837
EFSA	Mercury	FSA-SB-DUP04-0001-092310	0.075	0.349	0.214899713
EFSA	Mercury	FSA-SS-18-091510	0.28	0.349	0.802292264
EFSA	Mercury	FSA-SS-22-091510	17.2	0.349	49.28366762
EFSA	Mercury	FSA-SS-25-091510	5.8	0.349	16.61891117
EFSA	Mercury	FSA-SS-DUP01-091510	5.5	0.349	15.75931232
EFSA	Nickel	FSA-137-0001-0-082610	13.2	38	0.347368421
EFSA	Nickel	FSA-SB-23O1-0001-091610	4.8	38	0.126315789
EFSA	Nickel	FSA-SB-33O1-0001-092310	5.9	38	0.155263158
EFSA	Nickel	FSA-SB-34O1-0001-091610	13.1	38	0.344736842
EFSA	Nickel	FSA-SB-35O1-0001-091610	17.3	38	0.455263158
EFSA	Nickel	FSA-SB-36O1-0001-091610	10.3	38	0.271052632
EFSA	Nickel	FSA-SB-37O1-0001-091510	28.5	38	0.75
EFSA	Nickel	FSA-SB-38O1-0001-091610	7.9	38	0.207894737
EFSA	Nickel	FSA-SB-DUP04-0001-092310	6.3	38	0.165789474
EFSA	Nickel	FSA-SS-17-091510	8.5	38	0.223684211

Table E-1
Sample by Sample Comparison of Detected Soil Concentrations with Phytotoxicity Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Phytotoxicity Benchmark (mg/kg)	Ratio
EFSA	Nickel	FSA-SS-18-091510	8.3	38	0.218421053
EFSA	Nickel	FSA-SS-22-091510	15.3	38	0.402631579
EFSA	Nickel	FSA-SS-25-091510	21.6	38	0.568421053
EFSA	Nickel	FSA-SS-DUP01-091510	20.9	38	0.55
EFSA	Selenium	FSA-137-0001-0-082610	0.86	0.52	1.653846154
EFSA	Selenium	FSA-SB-23O1-0001-091610	2.1	0.52	4.038461538
EFSA	Selenium	FSA-SB-34O1-0001-091610	0.68	0.52	1.307692308
EFSA	Selenium	FSA-SB-35O1-0001-091610	0.54	0.52	1.038461538
EFSA	Selenium	FSA-SS-17-091510	0.49	0.52	0.942307692
EFSA	Selenium	FSA-SS-18-091510	1.3	0.52	2.5
EFSA	Selenium	FSA-SS-22-091510	1.2	0.52	2.307692308
EFSA	Selenium	FSA-SS-25-091510	1.4	0.52	2.692307692
EFSA	Selenium	FSA-SS-DUP01-091510	1.5	0.52	2.884615385
EFSA	Silver	FSA-137-0001-0-082610	1.2	560	0.002142857
EFSA	Vanadium	FSA-137-0001-0-082610	15.2	2	7.6
EFSA	Vanadium	FSA-SB-23O1-0001-091610	18.6	2	9.3
EFSA	Vanadium	FSA-SB-33O1-0001-092310	16.2	2	8.1
EFSA	Vanadium	FSA-SB-34O1-0001-091610	21.5	2	10.75
EFSA	Vanadium	FSA-SB-35O1-0001-091610	29	2	14.5
EFSA	Vanadium	FSA-SB-36O1-0001-091610	30.8	2	15.4
EFSA	Vanadium	FSA-SB-37O1-0001-091510	19.8	2	9.9
EFSA	Vanadium	FSA-SB-38O1-0001-091610	21.2	2	10.6
EFSA	Vanadium	FSA-SB-DUP04-0001-092310	15.4	2	7.7
EFSA	Vanadium	FSA-SS-17-091510	23.8	2	11.9
EFSA	Vanadium	FSA-SS-18-091510	15.3	2	7.65
EFSA	Vanadium	FSA-SS-22-091510	14.2	2	7.1
EFSA	Vanadium	FSA-SS-25-091510	12.8	2	6.4
EFSA	Vanadium	FSA-SS-DUP01-091510	16.3	2	8.15
EFSA	Zinc	FSA-137-0001-0-082610	56.3	160	0.351875
EFSA	Zinc	FSA-SB-23O1-0001-091610	30.8	160	0.1925
EFSA	Zinc	FSA-SB-33O1-0001-092310	28.9	160	0.180625
EFSA	Zinc	FSA-SB-34O1-0001-091610	86.2	160	0.53875
EFSA	Zinc	FSA-SB-35O1-0001-091610	193	160	1.20625
EFSA	Zinc	FSA-SB-36O1-0001-091610	49.9	160	0.311875
EFSA	Zinc	FSA-SB-37O1-0001-091510	63.6	160	0.3975
EFSA	Zinc	FSA-SB-38O1-0001-091610	53.8	160	0.33625
EFSA	Zinc	FSA-SB-DUP04-0001-092310	39.7	160	0.248125
EFSA	Zinc	FSA-SS-17-091510	42	160	0.2625
EFSA	Zinc	FSA-SS-18-091510	113	160	0.70625
EFSA	Zinc	FSA-SS-22-091510	91.6	160	0.5725
EFSA	Zinc	FSA-SS-25-091510	487	160	3.04375
EFSA	Zinc	FSA-SS-DUP01-091510	324	160	2.025

APPENDIX F

APPENDIX F

SAMPLE BY SAMPLE COMPARISON OF DETECTED SOIL CONCENTRATIONS WITH SOIL INVERTEBRATE BENCHMARKS

Table F-1
Sample by Sample Comparison of Detected Soil Concentrations with Soil Invertebrate Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
CHP	Aluminum	MW-24O1-0805-1300	3530	600	9.25
CHP	Aluminum	MW-25O1-0805-1415	5550	600	8.033333333
CHP	Aluminum	MW-29O1-0811-0915	4820	600	7.533333333
CHP	Aluminum	MW-31O1-0811-1535	4520	600	8.65
CHP	Aluminum	MW-DUP02-0811-0920A	5190	600	5.933333333
CHP	Aluminum	SB-01O1-0812-1215	3560	600	8.95
CHP	Aluminum	SB-02O1-0807-0830	5370	600	9.516666667
CHP	Aluminum	SB-03O1-0813-0835	5710	600	7.2
CHP	Aluminum	SB-04O1-0813-1120	4320	600	5.383333333
CHP	Aluminum	SB-05O1-0812-1105	3230	600	10.78333333
CHP	Aluminum	SB-06O1-0810-1520	6470	600	7
CHP	Aluminum	SB-DUP03-0813-1120A	4200	78	0.028205128
CHP	Antimony	MW-24O1-0805-1300	2.2	78	0.020512821
CHP	Antimony	MW-25O1-0805-1415	1.6	78	0.042307692
CHP	Antimony	MW-31O1-0811-1535	3.3	78	0.033333333
CHP	Antimony	SB-02O1-0807-0830	2.6	78	0.017948718
CHP	Antimony	SB-03O1-0813-0835	1.4	78	0.03974359
CHP	Antimony	SB-05O1-0812-1105	3.1	0.25	10.4
CHP	Arsenic	MW-24O1-0805-1300	2.6	0.25	41.6
CHP	Arsenic	MW-25O1-0805-1415	10.4	0.25	12.8
CHP	Arsenic	MW-29O1-0811-0915	3.2	0.25	54.8
CHP	Arsenic	MW-31O1-0811-1535	13.7	0.25	10.4
CHP	Arsenic	MW-DUP02-0811-0920A	2.6	0.25	6
CHP	Arsenic	SB-01O1-0812-1215	1.5	0.25	3312
CHP	Arsenic	SB-02O1-0807-0830	828	0.25	18.8
CHP	Arsenic	SB-03O1-0813-0835	4.7	0.25	6.8
CHP	Arsenic	SB-04O1-0813-1120	1.7	0.25	50.4
CHP	Arsenic	SB-05O1-0812-1105	12.6	0.25	110
CHP	Arsenic	SB-06O1-0810-1520	27.5	0.25	9.6
CHP	Arsenic	SB-DUP03-0813-1120A	2.4	330	0.162424242
CHP	Barium	MW-24O1-0805-1300	53.6	330	0.76969697
CHP	Barium	MW-25O1-0805-1415	254	330	0.43030303
CHP	Barium	MW-29O1-0811-0915	142	330	0.751515152
CHP	Barium	MW-31O1-0811-1535	248	330	0.333333333
CHP	Barium	MW-DUP02-0811-0920A	110	330	0.73030303
CHP	Barium	SB-01O1-0812-1215	241	330	0.6
CHP	Barium	SB-02O1-0807-0830	198	330	0.244242424
CHP	Barium	SB-03O1-0813-0835	80.6	330	0.082727273
CHP	Barium	SB-04O1-0813-1120	27.3	330	0.275757576
CHP	Barium	SB-05O1-0812-1105	91	330	0.421212121
CHP	Barium	SB-06O1-0810-1520	139	330	0.093030303
CHP	Barium	SB-DUP03-0813-1120A	30.7	140	0.0065
CHP	Cadmium	MW-24O1-0805-1300	0.91	140	0.002642857
CHP	Cadmium	MW-25O1-0805-1415	0.37	140	0.001214286
CHP	Cadmium	MW-29O1-0811-0915	0.17	140	0.009285714
CHP	Cadmium	MW-31O1-0811-1535	1.3	140	0.000928571
CHP	Cadmium	MW-DUP02-0811-0920A	0.13	140	0.007857143
CHP	Cadmium	SB-01O1-0812-1215	1.1	140	0.001714286
CHP	Cadmium	SB-02O1-0807-0830	0.24	140	0.006857143
CHP	Cadmium	SB-06O1-0810-1520	0.96	0.2	42.5
CHP	Chromium	MW-24O1-0805-1300	8.5	0.2	38.5
CHP	Chromium	MW-25O1-0805-1415	7.7	0.2	47
CHP	Chromium	MW-29O1-0811-0915	9.4	0.2	148.5
CHP	Chromium	MW-31O1-0811-1535	29.7	0.2	42
CHP	Chromium	MW-DUP02-0811-0920A	8.4	0.2	30.5
CHP	Chromium	SB-01O1-0812-1215	6.1	0.2	57.5
CHP	Chromium	SB-02O1-0807-0830	11.5	0.2	44.5
CHP	Chromium	SB-03O1-0813-0835	8.9	0.2	29.5
CHP	Chromium	SB-04O1-0813-1120	5.9	0.2	38.5
CHP	Chromium	SB-05O1-0812-1105	7.7	0.2	71
CHP	Chromium	SB-06O1-0810-1520	14.2	0.2	33.5
CHP	Chromium	SB-DUP03-0813-1120A	6.7	1000	0.0185
CHP	Cobalt	MW-24O1-0805-1300	18.5	1000	0.0064
CHP	Cobalt	MW-25O1-0805-1415	6.4	1000	0.0054
CHP	Cobalt	MW-29O1-0811-0915	5.4	1000	0.0072

Table F-1

Sample by Sample Comparison of Detected Soil Concentrations with Soil Invertebrate Benchmarks

Chlor-Alkali Facility (Former) Superfund Site

Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
CHP	Cobalt	MW-31O1-0811-1535	7.2	1000	0.0055
CHP	Cobalt	MW-DUP02-0811-0920A	5.5	1000	0.0163
CHP	Cobalt	SB-01O1-0812-1215	16.3	1000	0.0045
CHP	Cobalt	SB-02O1-0807-0830	4.5	1000	0.0096
CHP	Cobalt	SB-03O1-0813-0835	9.6	1000	0.0045
CHP	Cobalt	SB-04O1-0813-1120	4.5	1000	0.0089
CHP	Cobalt	SB-05O1-0812-1105	8.9	1000	0.0047
CHP	Cobalt	SB-06O1-0810-1520	4.7	1000	0.0043
CHP	Cobalt	SB-DUP03-0813-1120A	4.3	80	1.5125
CHP	Copper	MW-24O1-0805-1300	121	80	1.6125
CHP	Copper	MW-25O1-0805-1415	129	80	0.3925
CHP	Copper	MW-29O1-0811-0915	31.4	80	1.625
CHP	Copper	MW-31O1-0811-1535	130	80	0.33375
CHP	Copper	MW-DUP02-0811-0920A	26.7	80	1.05625
CHP	Copper	SB-01O1-0812-1215	84.5	80	0.4325
CHP	Copper	SB-02O1-0807-0830	34.6	80	0.715
CHP	Copper	SB-03O1-0813-0835	57.2	80	0.29375
CHP	Copper	SB-04O1-0813-1120	23.5	80	0.78
CHP	Copper	SB-05O1-0812-1105	62.4	80	0.19375
CHP	Copper	SB-06O1-0810-1520	15.5	80	0.23875
CHP	Copper	SB-DUP03-0813-1120A	19.1	18	0.498888889
CHP	High Molecular Weight PAHs	MW-24O1-0805-1300	8.98	18	0.716666667
CHP	High Molecular Weight PAHs	MW-25O1-0805-1415	12.9	18	0.915
CHP	High Molecular Weight PAHs	MW-29O1-0811-0915	16.47	18	1.004444444
CHP	High Molecular Weight PAHs	MW-31O1-0811-1535	18.08	18	0.431111111
CHP	High Molecular Weight PAHs	SB-01O1-0812-1215	7.76	18	0.411666667
CHP	High Molecular Weight PAHs	SB-03O1-0813-0835	7.41	18	0.088111111
CHP	High Molecular Weight PAHs	SB-04O1-0813-1120	1.586	18	0.161555556
CHP	High Molecular Weight PAHs	SB-05O1-0812-1105	2.908	18	0.129833333
CHP	High Molecular Weight PAHs	SB-06O1-0810-1520	2.337	200	89
CHP	Iron	MW-24O1-0805-1300	17800	200	53.5
CHP	Iron	MW-25O1-0805-1415	10700	200	54
CHP	Iron	MW-29O1-0811-0915	10800	200	195.5
CHP	Iron	MW-31O1-0811-1535	39100	200	54
CHP	Iron	MW-DUP02-0811-0920A	10800	200	80
CHP	Iron	SB-01O1-0812-1215	16000	200	86.5
CHP	Iron	SB-02O1-0807-0830	17300	200	70.5
CHP	Iron	SB-03O1-0813-0835	14100	200	42.3
CHP	Iron	SB-04O1-0813-1120	8460	200	79.5
CHP	Iron	SB-05O1-0812-1105	15900	200	62.5
CHP	Iron	SB-06O1-0810-1520	12500	200	44.3
CHP	Iron	SB-DUP03-0813-1120A	8860	1700	0.065294118
CHP	Lead	MW-24O1-0805-1300	111	1700	0.073529412
CHP	Lead	MW-25O1-0805-1415	125	1700	0.021
CHP	Lead	MW-29O1-0811-0915	35.7	1700	0.224705882
CHP	Lead	MW-31O1-0811-1535	382	1700	0.018352941
CHP	Lead	MW-DUP02-0811-0920A	31.2	1700	0.039470588
CHP	Lead	SB-01O1-0812-1215	67.1	1700	0.036352941
CHP	Lead	SB-02O1-0807-0830	61.8	1700	0.137058824
CHP	Lead	SB-03O1-0813-0835	233	1700	0.019058824
CHP	Lead	SB-04O1-0813-1120	32.4	1700	0.033352941
CHP	Lead	SB-05O1-0812-1105	56.7	1700	0.038705882
CHP	Lead	SB-06O1-0810-1520	65.8	1700	0.012529412
CHP	Lead	SB-DUP03-0813-1120A	21.3	29	0.265517241
CHP	Low Molecular Weight PAHs	MW-24O1-0805-1300	7.7	29	0.153793103
CHP	Low Molecular Weight PAHs	MW-25O1-0805-1415	4.46	29	0.201758621
CHP	Low Molecular Weight PAHs	MW-29O1-0811-0915	5.851	29	0.246931034
CHP	Low Molecular Weight PAHs	MW-31O1-0811-1535	7.161	29	0.066551724
CHP	Low Molecular Weight PAHs	SB-01O1-0812-1215	1.93	29	0.122586207
CHP	Low Molecular Weight PAHs	SB-03O1-0813-0835	3.555	29	0.061137931
CHP	Low Molecular Weight PAHs	SB-04O1-0813-1120	1.773	29	0.078310345
CHP	Low Molecular Weight PAHs	SB-05O1-0812-1105	2.271	29	0.075137931
CHP	Low Molecular Weight PAHs	SB-06O1-0810-1520	2.179	450	0.36
CHP	Manganese	MW-24O1-0805-1300	162	450	0.384444444
CHP	Manganese	MW-25O1-0805-1415	173	450	0.393333333

Table F-1
Sample by Sample Comparison of Detected Soil Concentrations with Soil Invertebrate Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
CHP	Manganese	MW-29O1-0811-0915	177	450	0.595555556
CHP	Manganese	MW-31O1-0811-1535	268	450	0.353333333
CHP	Manganese	MW-DUP02-0811-0920A	159	450	0.266666667
CHP	Manganese	SB-01O1-0812-1215	120	450	0.453333333
CHP	Manganese	SB-02O1-0807-0830	204	450	0.602222222
CHP	Manganese	SB-03O1-0813-0835	271	450	0.28
CHP	Manganese	SB-04O1-0813-1120	126	450	0.408888889
CHP	Manganese	SB-05O1-0812-1105	184	450	0.48
CHP	Manganese	SB-06O1-0810-1520	216	450	0.317777778
CHP	Manganese	SB-DUP03-0813-1120A	143	2.5	1.2
CHP	Mercury	MW-24O1-0805-1300	3	2.5	53.2
CHP	Mercury	MW-25O1-0805-1415	133	2.5	20.64
CHP	Mercury	MW-29O1-0811-0915	51.6	2.5	1.04
CHP	Mercury	MW-31O1-0811-1535	2.6	2.5	58.8
CHP	Mercury	MW-DUP02-0811-0920A	147	2.5	0.284
CHP	Mercury	SB-01O1-0812-1215	0.71	2.5	5.12
CHP	Mercury	SB-02O1-0807-0830	12.8	2.5	1
CHP	Mercury	SB-03O1-0813-0835	2.5	2.5	0.4
CHP	Mercury	SB-04O1-0813-1120	1	2.5	0.72
CHP	Mercury	SB-05O1-0812-1105	1.8	2.5	0.296
CHP	Mercury	SB-06O1-0810-1520	0.74	2.5	0.308
CHP	Mercury	SB-DUP03-0813-1120A	0.77	280	0.033214286
CHP	Nickel	MW-24O1-0805-1300	9.3	280	0.045357143
CHP	Nickel	MW-25O1-0805-1415	12.7	280	0.028571429
CHP	Nickel	MW-29O1-0811-0915	8	280	0.079285714
CHP	Nickel	MW-31O1-0811-1535	22.2	280	0.028571429
CHP	Nickel	MW-DUP02-0811-0920A	8	280	0.032142857
CHP	Nickel	SB-01O1-0812-1215	9	280	0.037857143
CHP	Nickel	SB-02O1-0807-0830	10.6	280	0.033214286
CHP	Nickel	SB-03O1-0813-0835	9.3	280	0.018571429
CHP	Nickel	SB-04O1-0813-1120	5.2	280	0.271071429
CHP	Nickel	SB-05O1-0812-1105	75.9	280	0.049642857
CHP	Nickel	SB-06O1-0810-1520	13.9	280	0.021428571
CHP	Nickel	SB-DUP03-0813-1120A	6	4.1	0.512195122
CHP	Selenium	MW-24O1-0805-1300	2.1	4.1	0.243902439
CHP	Selenium	SB-01O1-0812-1215	1	4.1	0.341463415
CHP	Selenium	SB-03O1-0813-0835	1.4	4.1	0.126829268
CHP	Selenium	SB-04O1-0813-1120	0.52	4.1	0.365853659
CHP	Selenium	SB-05O1-0812-1105	1.5	4.1	0.129268293
CHP	Selenium	SB-DUP03-0813-1120A	0.53	50	0.026
CHP	Silver	MW-25O1-0805-1415	1.3	50	0.048
CHP	Silver	MW-29O1-0811-0915	2.4	50	0.0042
CHP	Silver	MW-31O1-0811-1535	0.21	50	0.042
CHP	Silver	MW-DUP02-0811-0920A	2.1	50	0.0022
CHP	Silver	SB-02O1-0807-0830	0.11	20	0.575
CHP	Vanadium	MW-24O1-0805-1300	11.5	20	0.805
CHP	Vanadium	MW-25O1-0805-1415	16.1	20	0.85
CHP	Vanadium	MW-29O1-0811-0915	17	20	0.955
CHP	Vanadium	MW-31O1-0811-1535	19.1	20	1.045
CHP	Vanadium	MW-DUP02-0811-0920A	20.9	20	0.64
CHP	Vanadium	SB-01O1-0812-1215	12.8	20	0.915
CHP	Vanadium	SB-02O1-0807-0830	18.3	20	0.86
CHP	Vanadium	SB-03O1-0813-0835	17.2	20	0.665
CHP	Vanadium	SB-04O1-0813-1120	13.3	20	0.94
CHP	Vanadium	SB-05O1-0812-1105	18.8	20	0.995
CHP	Vanadium	SB-06O1-0810-1520	19.9	20	0.7
CHP	Vanadium	SB-DUP03-0813-1120A	14	120	1.55
CHP	Zinc	MW-24O1-0805-1300	186	120	0.8
CHP	Zinc	MW-25O1-0805-1415	96	120	0.449166667
CHP	Zinc	MW-29O1-0811-0915	53.9	120	1.825
CHP	Zinc	MW-31O1-0811-1535	219	120	0.4275
CHP	Zinc	MW-DUP02-0811-0920A	51.3	120	2.441666667
CHP	Zinc	SB-01O1-0812-1215	293	120	1.166666667
CHP	Zinc	SB-02O1-0807-0830	140	120	0.858333333
CHP	Zinc	SB-03O1-0813-0835	103	120	0.28

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
CHP	Zinc	SB-04O1-0813-1120	33.6	120	0.464166667
CHP	Zinc	SB-05O1-0812-1105	55.7	120	2.625
CHP	Zinc	SB-06O1-0810-1520	315	120	0.256666667
CHP	Zinc	SB-DUP03-0813-1120A	30.8	600	6.621666667
SFSA	Aluminum	FSA-013-0001-0-081610	3973	600	11.37333333
SFSA	Aluminum	FSA-024-0001-0-081710	6824	600	9.7
SFSA	Aluminum	FSA-039-0001-0-081710	5820	600	11.11833333
SFSA	Aluminum	FSA-060-0001-0-081710	6671	600	5.123333333
SFSA	Aluminum	FSA-062-0001-0-081710	3074	600	6.488333333
SFSA	Aluminum	FSA-066-0001-0-081810	3893	600	5.631666667
SFSA	Aluminum	FSA-075-0001-0-082510	3379	600	6.48
SFSA	Aluminum	FSA-089-0001-0-081810	3888	600	4.115
SFSA	Aluminum	FSA-102-0001-0-081810	2469	600	7.088333333
SFSA	Aluminum	FSA-105-0001-0-081910	4253	600	1.405
SFSA	Aluminum	FSA-106-0001-0-081810	843	600	10.80166667
SFSA	Aluminum	FSA-151-0001-0-081910	6481	600	8.748333333
SFSA	Aluminum	FSA-168-0001-0-082310	5249	600	6.678333333
SFSA	Aluminum	FSA-171-0001-0-082310	4007	600	13.03666667
SFSA	Aluminum	FSA-MW-34O1-0001-091310	7822	600	7.178333333
SFSA	Aluminum	FSA-MW-35O1-0001-091710	4307	600	4.836666667
SFSA	Aluminum	FSA-MW-36O1-0001-092210	2902	600	7.716666667
SFSA	Aluminum	FSA-MW-37O1-0001-092210	4630	600	7.935
SFSA	Aluminum	FSA-SB-08O1-0001-091710	4761	600	4.206666667
SFSA	Aluminum	FSA-SB-09O1-0001-092710	2524	600	6.316666667
SFSA	Aluminum	FSA-SB-10O1-0001-092110	3790	600	7.158333333
SFSA	Aluminum	FSA-SB-11O1-0001-092110	4295	600	5.783333333
SFSA	Aluminum	FSA-SB-12O1-0001-092010	3470	600	8.566666667
SFSA	Aluminum	FSA-SB-13O1-0001-092210	5140	600	9.151666667
SFSA	Aluminum	FSA-SB-14O1-0001-092010	5491	600	7.465
SFSA	Aluminum	FSA-SB-15O1-0001-092110	4479	600	8.638333333
SFSA	Aluminum	FSA-SB-16O1-0001-092210	5183	600	6.37
SFSA	Aluminum	FSA-SB-17O1-0001-091710	3822	600	7.366666667
SFSA	Aluminum	FSA-SB-18O1-0001-091610	4420	600	9.318333333
SFSA	Aluminum	FSA-SB-19O1-0001-092110	5591	600	3.456666667
SFSA	Aluminum	FSA-SB-20O1-0001-091510	2074	600	6.373333333
SFSA	Aluminum	FSA-SB-21O1-0001-092010	3824	600	8.265
SFSA	Aluminum	FSA-SB-22O1-0001-091710	4959	600	12.66333333
SFSA	Aluminum	FSA-SB-24O1-0001-091310	7598	600	10.11333333
SFSA	Aluminum	FSA-SB-25O1-0001-091310	6068	600	6.176666667
SFSA	Aluminum	FSA-SB-26O1-0001-091410	3706	600	8.583333333
SFSA	Aluminum	FSA-SB-27O1-0001-091410	5150	600	12.04
SFSA	Aluminum	FSA-SB-28O1-0001-091510	7224	600	3.886666667
SFSA	Aluminum	FSA-SB-29O1-0001-091510	2332	600	3.52
SFSA	Aluminum	FSA-SB-30O1-0001-091410	2112	600	6.705
SFSA	Aluminum	FSA-SB-31O1-0001-091510	4023	600	8.273333333
SFSA	Aluminum	FSA-SB-40O1-0001-092110	4964	600	3.771666667
SFSA	Aluminum	FSA-SB-DUP01-0001-091510	2263	600	6.54
SFSA	Aluminum	FSA-SB-DUP02-0001-092110	3924	600	10.125
SFSA	Aluminum	FSA-SB-DUP03-0001-092210	6075	600	7.883333333
SFSA	Aluminum	FSA-SS-03-091510	4730	600	8.568333333
SFSA	Aluminum	FSA-SS-06-091510	5141	600	11.40166667
SFSA	Aluminum	FSA-SS-32-091510	6841	78	0.03974359
SFSA	Antimony	FSA-024-0001-0-081710	3.1	78	0.028205128
SFSA	Antimony	FSA-039-0001-0-081710	2.2	78	0.03974359
SFSA	Antimony	FSA-062-0001-0-081710	3.1	78	0.030769231
SFSA	Antimony	FSA-066-0001-0-081810	2.4	78	0.019230769
SFSA	Antimony	FSA-089-0001-0-081810	1.5	78	0.115384615
SFSA	Antimony	FSA-102-0001-0-081810	9	78	0.010128205
SFSA	Antimony	FSA-105-0001-0-081910	0.79	78	0.728205128
SFSA	Antimony	FSA-106-0001-0-081810	56.8	78	7.435897436
SFSA	Antimony	FSA-151-0001-0-081910	580	78	4.653846154
SFSA	Antimony	FSA-168-0001-0-082310	363	78	2.153846154
SFSA	Antimony	FSA-171-0001-0-082310	168	78	0.016666667
SFSA	Antimony	FSA-MW-35O1-0001-091710	1.3	78	0.005897436
SFSA	Antimony	FSA-SB-08O1-0001-091710	0.46	78	0.006666667

Table F-1
Sample by Sample Comparison of Detected Soil Concentrations with Soil Invertebrate Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
SFSA	Antimony	FSA-SB-10O1-0001-092110	0.52	78	0.103846154
SFSA	Antimony	FSA-SB-11O1-0001-092110	8.1	78	0.026923077
SFSA	Antimony	FSA-SB-12O1-0001-092010	2.1	78	0.016666667
SFSA	Antimony	FSA-SB-13O1-0001-092210	1.3	78	0.017948718
SFSA	Antimony	FSA-SB-16O1-0001-092210	1.4	78	0.035897436
SFSA	Antimony	FSA-SB-17O1-0001-091710	2.8	78	0.012820513
SFSA	Antimony	FSA-SB-18O1-0001-091610	1	78	0.020512821
SFSA	Antimony	FSA-SB-19O1-0001-092110	1.6	78	0.061538462
SFSA	Antimony	FSA-SB-20O1-0001-091510	4.8	78	0.716666667
SFSA	Antimony	FSA-SB-21O1-0001-092010	55.9	78	0.115384615
SFSA	Antimony	FSA-SB-26O1-0001-091410	9	78	0.188461538
SFSA	Antimony	FSA-SB-27O1-0001-091410	14.7	78	0.03974359
SFSA	Antimony	FSA-SB-30O1-0001-091410	3.1	78	0.032051282
SFSA	Antimony	FSA-SB-40O1-0001-092110	2.5	78	0.152564103
SFSA	Antimony	FSA-SB-DUP02-0001-092110	11.9	78	0.023076923
SFSA	Antimony	FSA-SS-03-091510	1.8	78	0.035897436
SFSA	Antimony	FSA-SS-06-091510	2.8	0.25	12.8
SFSA	Arsenic	FSA-013-0001-0-081610	3.2	0.25	56.8
SFSA	Arsenic	FSA-024-0001-0-081710	14.2	0.25	144
SFSA	Arsenic	FSA-039-0001-0-081710	36	0.25	15.6
SFSA	Arsenic	FSA-060-0001-0-081710	3.9	0.25	36.4
SFSA	Arsenic	FSA-062-0001-0-081710	9.1	0.25	46
SFSA	Arsenic	FSA-066-0001-0-081810	11.5	0.25	35.6
SFSA	Arsenic	FSA-075-0001-0-082510	8.9	0.25	151.2
SFSA	Arsenic	FSA-089-0001-0-081810	37.8	0.25	1124
SFSA	Arsenic	FSA-102-0001-0-081810	281	0.25	19.6
SFSA	Arsenic	FSA-105-0001-0-081910	4.9	0.25	420
SFSA	Arsenic	FSA-106-0001-0-081810	105	0.25	56.4
SFSA	Arsenic	FSA-151-0001-0-081910	14.1	0.25	349.2
SFSA	Arsenic	FSA-168-0001-0-082310	87.3	0.25	225.6
SFSA	Arsenic	FSA-171-0001-0-082310	56.4	0.25	30.8
SFSA	Arsenic	FSA-MW-34O1-0001-091310	7.7	0.25	15.2
SFSA	Arsenic	FSA-MW-35O1-0001-091710	3.8	0.25	17.6
SFSA	Arsenic	FSA-MW-36O1-0001-092210	4.4	0.25	8.8
SFSA	Arsenic	FSA-MW-37O1-0001-092210	2.2	0.25	12.8
SFSA	Arsenic	FSA-SB-08O1-0001-091710	3.2	0.25	24.8
SFSA	Arsenic	FSA-SB-09O1-0001-092710	6.2	0.25	20
SFSA	Arsenic	FSA-SB-10O1-0001-092110	5	0.25	36.4
SFSA	Arsenic	FSA-SB-11O1-0001-092110	9.1	0.25	52.8
SFSA	Arsenic	FSA-SB-12O1-0001-092010	13.2	0.25	23.6
SFSA	Arsenic	FSA-SB-13O1-0001-092210	5.9	0.25	11.6
SFSA	Arsenic	FSA-SB-14O1-0001-092010	2.9	0.25	10.8
SFSA	Arsenic	FSA-SB-15O1-0001-092110	2.7	0.25	22.4
SFSA	Arsenic	FSA-SB-16O1-0001-092210	5.6	0.25	271.2
SFSA	Arsenic	FSA-SB-17O1-0001-091710	67.8	0.25	222
SFSA	Arsenic	FSA-SB-18O1-0001-091610	55.5	0.25	55.2
SFSA	Arsenic	FSA-SB-19O1-0001-092110	13.8	0.25	51.2
SFSA	Arsenic	FSA-SB-20O1-0001-091510	12.8	0.25	326.8
SFSA	Arsenic	FSA-SB-21O1-0001-092010	81.7	0.25	25.6
SFSA	Arsenic	FSA-SB-24O1-0001-091310	6.4	0.25	152.8
SFSA	Arsenic	FSA-SB-25O1-0001-091310	38.2	0.25	111.2
SFSA	Arsenic	FSA-SB-26O1-0001-091410	27.8	0.25	68.4
SFSA	Arsenic	FSA-SB-27O1-0001-091410	17.1	0.25	45.2
SFSA	Arsenic	FSA-SB-28O1-0001-091510	11.3	0.25	24
SFSA	Arsenic	FSA-SB-29O1-0001-091510	6	0.25	672
SFSA	Arsenic	FSA-SB-30O1-0001-091410	168	0.25	21.2
SFSA	Arsenic	FSA-SB-31O1-0001-091510	5.3	0.25	60.4
SFSA	Arsenic	FSA-SB-40O1-0001-092110	15.1	0.25	24.8
SFSA	Arsenic	FSA-SB-DUP01-0001-091510	6.2	0.25	23.6
SFSA	Arsenic	FSA-SB-DUP02-0001-092110	5.9	0.25	27.6
SFSA	Arsenic	FSA-SB-DUP03-0001-092210	6.9	0.25	51.2
SFSA	Arsenic	FSA-SS-03-091510	12.8	0.25	33.2
SFSA	Arsenic	FSA-SS-06-091510	8.3	0.25	13.2
SFSA	Arsenic	FSA-SS-32-091510	3.3	330	0.315151515
SFSA	Barium	FSA-013-0001-0-081610	104	330	0.366666667

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
SFSA	Barium	FSA-024-0001-0-081710	121	330	0.298484848
SFSA	Barium	FSA-039-0001-0-081710	98.5	330	0.143333333
SFSA	Barium	FSA-060-0001-0-081710	47.3	330	0.409090909
SFSA	Barium	FSA-062-0001-0-081710	135	330	0.542424242
SFSA	Barium	FSA-066-0001-0-081810	179	330	0.621212121
SFSA	Barium	FSA-075-0001-0-082510	205	330	0.269393939
SFSA	Barium	FSA-089-0001-0-081810	88.9	330	0.327272727
SFSA	Barium	FSA-102-0001-0-081810	108	330	0.210606061
SFSA	Barium	FSA-105-0001-0-081910	69.5	330	4.372727273
SFSA	Barium	FSA-106-0001-0-081810	1443	330	0.254242424
SFSA	Barium	FSA-151-0001-0-081910	83.9	330	4
SFSA	Barium	FSA-168-0001-0-082310	1320	330	1.912121212
SFSA	Barium	FSA-171-0001-0-082310	631	330	0.256969697
SFSA	Barium	FSA-MW-34O1-0001-091310	84.8	330	0.268787879
SFSA	Barium	FSA-MW-35O1-0001-091710	88.7	330	0.120909091
SFSA	Barium	FSA-MW-36O1-0001-092210	39.9	330	0.125757576
SFSA	Barium	FSA-MW-37O1-0001-092210	41.5	330	0.375757576
SFSA	Barium	FSA-SB-08O1-0001-091710	124	330	0.163333333
SFSA	Barium	FSA-SB-09O1-0001-092710	53.9	330	0.238181818
SFSA	Barium	FSA-SB-10O1-0001-092110	78.6	330	0.231515152
SFSA	Barium	FSA-SB-11O1-0001-092110	76.4	330	0.572727273
SFSA	Barium	FSA-SB-12O1-0001-092010	189	330	0.27969697
SFSA	Barium	FSA-SB-13O1-0001-092210	92.3	330	0.150606061
SFSA	Barium	FSA-SB-14O1-0001-092010	49.7	330	0.10030303
SFSA	Barium	FSA-SB-15O1-0001-092110	33.1	330	0.167272727
SFSA	Barium	FSA-SB-16O1-0001-092210	55.2	330	0.675757576
SFSA	Barium	FSA-SB-17O1-0001-091710	223	330	0.336363636
SFSA	Barium	FSA-SB-18O1-0001-091610	111	330	0.315151515
SFSA	Barium	FSA-SB-19O1-0001-092110	104	330	0.712121212
SFSA	Barium	FSA-SB-20O1-0001-091510	235	330	1.424242424
SFSA	Barium	FSA-SB-21O1-0001-092010	470	330	0.126060606
SFSA	Barium	FSA-SB-22O1-0001-091710	41.6	330	0.232424242
SFSA	Barium	FSA-SB-24O1-0001-091310	76.7	330	0.174545455
SFSA	Barium	FSA-SB-25O1-0001-091310	57.6	330	0.442424242
SFSA	Barium	FSA-SB-26O1-0001-091410	146	330	0.224242424
SFSA	Barium	FSA-SB-27O1-0001-091410	74	330	0.360606061
SFSA	Barium	FSA-SB-28O1-0001-091510	119	330	0.126969697
SFSA	Barium	FSA-SB-29O1-0001-091510	41.9	330	0.238181818
SFSA	Barium	FSA-SB-30O1-0001-091410	78.6	330	0.277878788
SFSA	Barium	FSA-SB-31O1-0001-091510	91.7	330	1.206060606
SFSA	Barium	FSA-SB-40O1-0001-092110	398	330	0.127878788
SFSA	Barium	FSA-SB-DUP01-0001-091510	42.2	330	0.246969697
SFSA	Barium	FSA-SB-DUP02-0001-092110	81.5	330	0.204242424
SFSA	Barium	FSA-SB-DUP03-0001-092210	67.4	330	0.283939394
SFSA	Barium	FSA-SS-03-091510	93.7	330	0.246060606
SFSA	Barium	FSA-SS-06-091510	81.2	330	0.099393939
SFSA	Barium	FSA-SS-32-091510	32.8	140	0.002357143
SFSA	Cadmium	FSA-013-0001-0-081610	0.33	140	0.001928571
SFSA	Cadmium	FSA-075-0001-0-082510	0.27	140	0.03
SFSA	Cadmium	FSA-106-0001-0-081810	4.2	140	0.007857143
SFSA	Cadmium	FSA-168-0001-0-082310	1.1	140	0.003
SFSA	Cadmium	FSA-MW-35O1-0001-091710	0.42	140	0.000785714
SFSA	Cadmium	FSA-MW-37O1-0001-092210	0.11	140	0.002071429
SFSA	Cadmium	FSA-SB-08O1-0001-091710	0.29	140	0.003642857
SFSA	Cadmium	FSA-SB-10O1-0001-092110	0.51	140	0.001571429
SFSA	Cadmium	FSA-SB-11O1-0001-092110	0.22	140	0.009285714
SFSA	Cadmium	FSA-SB-12O1-0001-092010	1.3	140	0.0045
SFSA	Cadmium	FSA-SB-13O1-0001-092210	0.63	140	0.001142857
SFSA	Cadmium	FSA-SB-14O1-0001-092010	0.16	140	0.001857143
SFSA	Cadmium	FSA-SB-16O1-0001-092210	0.26	140	0.012142857
SFSA	Cadmium	FSA-SB-17O1-0001-091710	1.7	140	0.001571429
SFSA	Cadmium	FSA-SB-18O1-0001-091610	0.22	140	0.0025
SFSA	Cadmium	FSA-SB-19O1-0001-092110	0.35	140	0.000785714
SFSA	Cadmium	FSA-SB-20O1-0001-091510	0.11	140	0.009285714
SFSA	Cadmium	FSA-SB-21O1-0001-092010	1.3	140	0.000528571

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
SFSA	Cadmium	FSA-SB-22O1-0001-091710	0.074	140	0.0025
SFSA	Cadmium	FSA-SB-26O1-0001-091410	0.35	140	0.001785714
SFSA	Cadmium	FSA-SB-40O1-0001-092110	0.25	140	0.001571429
SFSA	Cadmium	FSA-SB-DUP02-0001-092110	0.22	140	0.001071429
SFSA	Cadmium	FSA-SB-DUP03-0001-092210	0.15	140	0.003285714
SFSA	Cadmium	FSA-SS-03-091510	0.46	140	0.003071429
SFSA	Cadmium	FSA-SS-06-091510	0.43	0.2	72
SFSA	Chromium	FSA-013-0001-0-081610	14.4	0.2	98.5
SFSA	Chromium	FSA-024-0001-0-081710	19.7	0.2	63
SFSA	Chromium	FSA-039-0001-0-081710	12.6	0.2	152
SFSA	Chromium	FSA-060-0001-0-081710	30.4	0.2	36.5
SFSA	Chromium	FSA-062-0001-0-081710	7.3	0.2	78.5
SFSA	Chromium	FSA-066-0001-0-081810	15.7	0.2	44
SFSA	Chromium	FSA-075-0001-0-082510	8.8	0.2	25
SFSA	Chromium	FSA-089-0001-0-081810	5	0.2	78
SFSA	Chromium	FSA-102-0001-0-081810	15.6	0.2	40.5
SFSA	Chromium	FSA-105-0001-0-081910	8.1	0.2	271.5
SFSA	Chromium	FSA-106-0001-0-081810	54.3	0.2	19.5
SFSA	Chromium	FSA-151-0001-0-081910	3.9	0.2	269
SFSA	Chromium	FSA-168-0001-0-082310	53.8	0.2	226.5
SFSA	Chromium	FSA-171-0001-0-082310	45.3	0.2	57
SFSA	Chromium	FSA-MW-34O1-0001-091310	11.4	0.2	60
SFSA	Chromium	FSA-MW-35O1-0001-091710	12	0.2	35.5
SFSA	Chromium	FSA-MW-36O1-0001-092210	7.1	0.2	37.5
SFSA	Chromium	FSA-MW-37O1-0001-092210	7.5	0.2	56
SFSA	Chromium	FSA-SB-08O1-0001-091710	11.2	0.2	35
SFSA	Chromium	FSA-SB-09O1-0001-092710	7	0.2	57.5
SFSA	Chromium	FSA-SB-10O1-0001-092110	11.5	0.2	60
SFSA	Chromium	FSA-SB-11O1-0001-092110	12	0.2	63
SFSA	Chromium	FSA-SB-12O1-0001-092010	12.6	0.2	54
SFSA	Chromium	FSA-SB-13O1-0001-092210	10.8	0.2	29
SFSA	Chromium	FSA-SB-14O1-0001-092010	5.8	0.2	27.5
SFSA	Chromium	FSA-SB-15O1-0001-092110	5.5	0.2	50
SFSA	Chromium	FSA-SB-16O1-0001-092210	10	0.2	65.5
SFSA	Chromium	FSA-SB-17O1-0001-091710	13.1	0.2	52
SFSA	Chromium	FSA-SB-18O1-0001-091610	10.4	0.2	79.5
SFSA	Chromium	FSA-SB-19O1-0001-092110	15.9	0.2	38.5
SFSA	Chromium	FSA-SB-20O1-0001-091510	7.7	0.2	163.5
SFSA	Chromium	FSA-SB-21O1-0001-092010	32.7	0.2	47
SFSA	Chromium	FSA-SB-22O1-0001-091710	9.4	0.2	60
SFSA	Chromium	FSA-SB-24O1-0001-091310	12	0.2	62
SFSA	Chromium	FSA-SB-25O1-0001-091310	12.4	0.2	54.5
SFSA	Chromium	FSA-SB-26O1-0001-091410	10.9	0.2	157
SFSA	Chromium	FSA-SB-27O1-0001-091410	31.4	0.2	49
SFSA	Chromium	FSA-SB-28O1-0001-091510	9.8	0.2	33.5
SFSA	Chromium	FSA-SB-29O1-0001-091510	6.7	0.2	59
SFSA	Chromium	FSA-SB-30O1-0001-091410	11.8	0.2	41
SFSA	Chromium	FSA-SB-31O1-0001-091510	8.2	0.2	62
SFSA	Chromium	FSA-SB-40O1-0001-092110	12.4	0.2	33
SFSA	Chromium	FSA-SB-DUP01-0001-091510	6.6	0.2	46
SFSA	Chromium	FSA-SB-DUP02-0001-092110	9.2	0.2	42
SFSA	Chromium	FSA-SB-DUP03-0001-092210	8.4	0.2	58.5
SFSA	Chromium	FSA-SS-03-091510	11.7	0.2	130
SFSA	Chromium	FSA-SS-06-091510	26	0.2	44
SFSA	Chromium	FSA-SS-32-091510	8.8	1000	0.0041
SFSA	Cobalt	FSA-013-0001-0-081610	4.1	1000	0.0065
SFSA	Cobalt	FSA-024-0001-0-081710	6.5	1000	0.0066
SFSA	Cobalt	FSA-039-0001-0-081710	6.6	1000	0.0039
SFSA	Cobalt	FSA-060-0001-0-081710	3.9	1000	0.0054
SFSA	Cobalt	FSA-062-0001-0-081710	5.4	1000	0.0042
SFSA	Cobalt	FSA-066-0001-0-081810	4.2	1000	0.0055
SFSA	Cobalt	FSA-075-0001-0-082510	5.5	1000	0.0058
SFSA	Cobalt	FSA-089-0001-0-081810	5.8	1000	0.0076
SFSA	Cobalt	FSA-102-0001-0-081810	7.6	1000	0.0047
SFSA	Cobalt	FSA-105-0001-0-081910	4.7	1000	0.0037

Table F-1
Sample by Sample Comparison of Detected Soil Concentrations with Soil Invertebrate Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
SFSA	Cobalt	FSA-106-0001-0-081810	3.7	1000	0.0042
SFSA	Cobalt	FSA-151-0001-0-081910	4.2	1000	0.0062
SFSA	Cobalt	FSA-168-0001-0-082310	6.2	1000	0.0073
SFSA	Cobalt	FSA-171-0001-0-082310	7.3	1000	0.009
SFSA	Cobalt	FSA-MW-34O1-0001-091310	9	1000	0.0053
SFSA	Cobalt	FSA-MW-35O1-0001-091710	5.3	1000	0.0046
SFSA	Cobalt	FSA-MW-36O1-0001-092210	4.6	1000	0.0045
SFSA	Cobalt	FSA-MW-37O1-0001-092210	4.5	1000	0.0077
SFSA	Cobalt	FSA-SB-08O1-0001-091710	7.7	1000	0.0036
SFSA	Cobalt	FSA-SB-09O1-0001-092710	3.6	1000	0.0048
SFSA	Cobalt	FSA-SB-10O1-0001-092110	4.8	1000	0.0078
SFSA	Cobalt	FSA-SB-11O1-0001-092110	7.8	1000	0.0105
SFSA	Cobalt	FSA-SB-12O1-0001-092010	10.5	1000	0.0053
SFSA	Cobalt	FSA-SB-13O1-0001-092210	5.3	1000	0.0045
SFSA	Cobalt	FSA-SB-14O1-0001-092010	4.5	1000	0.0045
SFSA	Cobalt	FSA-SB-15O1-0001-092110	4.5	1000	0.0079
SFSA	Cobalt	FSA-SB-16O1-0001-092210	7.9	1000	0.0075
SFSA	Cobalt	FSA-SB-17O1-0001-091710	7.5	1000	0.0052
SFSA	Cobalt	FSA-SB-18O1-0001-091610	5.2	1000	0.007
SFSA	Cobalt	FSA-SB-19O1-0001-092110	7	1000	0.0036
SFSA	Cobalt	FSA-SB-20O1-0001-091510	3.6	1000	0.0297
SFSA	Cobalt	FSA-SB-21O1-0001-092010	29.7	1000	0.0036
SFSA	Cobalt	FSA-SB-22O1-0001-091710	3.6	1000	0.0039
SFSA	Cobalt	FSA-SB-24O1-0001-091310	3.9	1000	0.0068
SFSA	Cobalt	FSA-SB-25O1-0001-091310	6.8	1000	0.0075
SFSA	Cobalt	FSA-SB-26O1-0001-091410	7.5	1000	0.0141
SFSA	Cobalt	FSA-SB-27O1-0001-091410	14.1	1000	0.0066
SFSA	Cobalt	FSA-SB-28O1-0001-091510	6.6	1000	0.005
SFSA	Cobalt	FSA-SB-29O1-0001-091510	5	1000	0.0082
SFSA	Cobalt	FSA-SB-30O1-0001-091410	8.2	1000	0.006
SFSA	Cobalt	FSA-SB-31O1-0001-091510	6	1000	0.0097
SFSA	Cobalt	FSA-SB-40O1-0001-092110	9.7	1000	0.0074
SFSA	Cobalt	FSA-SB-DUP01-0001-091510	7.4	1000	0.0069
SFSA	Cobalt	FSA-SB-DUP02-0001-092110	6.9	1000	0.0079
SFSA	Cobalt	FSA-SB-DUP03-0001-092210	7.9	1000	0.0054
SFSA	Cobalt	FSA-SS-03-091510	5.4	1000	0.0115
SFSA	Cobalt	FSA-SS-06-091510	11.5	1000	0.0061
SFSA	Cobalt	FSA-SS-32-091510	6.1	80	0.535
SFSA	Copper	FSA-013-0001-0-081610	42.8	80	0.89875
SFSA	Copper	FSA-024-0001-0-081710	71.9	80	1.1
SFSA	Copper	FSA-039-0001-0-081710	88	80	0.515
SFSA	Copper	FSA-060-0001-0-081710	41.2	80	1.35
SFSA	Copper	FSA-062-0001-0-081710	108	80	4.3375
SFSA	Copper	FSA-066-0001-0-081810	347	80	0.525
SFSA	Copper	FSA-075-0001-0-082510	42	80	2.6125
SFSA	Copper	FSA-089-0001-0-081810	209	80	1.4625
SFSA	Copper	FSA-102-0001-0-081810	117	80	0.33125
SFSA	Copper	FSA-105-0001-0-081910	26.5	80	13.3375
SFSA	Copper	FSA-106-0001-0-081810	1067	80	1.5625
SFSA	Copper	FSA-151-0001-0-081910	125	80	23.625
SFSA	Copper	FSA-168-0001-0-082310	1890	80	15.5
SFSA	Copper	FSA-171-0001-0-082310	1240	80	0.575
SFSA	Copper	FSA-MW-34O1-0001-091310	46	80	0.82125
SFSA	Copper	FSA-MW-35O1-0001-091710	65.7	80	0.27875
SFSA	Copper	FSA-MW-36O1-0001-092210	22.3	80	0.16875
SFSA	Copper	FSA-MW-37O1-0001-092210	13.5	80	0.39
SFSA	Copper	FSA-SB-08O1-0001-091710	31.2	80	0.3275
SFSA	Copper	FSA-SB-09O1-0001-092710	26.2	80	0.84
SFSA	Copper	FSA-SB-10O1-0001-092110	67.2	80	1.0675
SFSA	Copper	FSA-SB-11O1-0001-092110	85.4	80	1.22
SFSA	Copper	FSA-SB-12O1-0001-092010	97.6	80	1.10375
SFSA	Copper	FSA-SB-13O1-0001-092210	88.3	80	0.18375
SFSA	Copper	FSA-SB-14O1-0001-092010	14.7	80	0.17
SFSA	Copper	FSA-SB-15O1-0001-092110	13.6	80	0.39
SFSA	Copper	FSA-SB-16O1-0001-092210	31.2	80	2.0625

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
SFSA	Copper	FSA-SB-17O1-0001-091710	165	80	0.89875
SFSA	Copper	FSA-SB-18O1-0001-091610	71.9	80	2.1875
SFSA	Copper	FSA-SB-19O1-0001-092110	175	80	1.75
SFSA	Copper	FSA-SB-20O1-0001-091510	140	80	15.2
SFSA	Copper	FSA-SB-21O1-0001-092010	1216	80	0.21625
SFSA	Copper	FSA-SB-22O1-0001-091710	17.3	80	0.73625
SFSA	Copper	FSA-SB-24O1-0001-091310	58.9	80	0.38
SFSA	Copper	FSA-SB-25O1-0001-091310	30.4	80	1.5625
SFSA	Copper	FSA-SB-26O1-0001-091410	125	80	2.2125
SFSA	Copper	FSA-SB-27O1-0001-091410	177	80	0.465
SFSA	Copper	FSA-SB-28O1-0001-091510	37.2	80	0.44375
SFSA	Copper	FSA-SB-29O1-0001-091510	35.5	80	0.74125
SFSA	Copper	FSA-SB-30O1-0001-091410	59.3	80	0.59125
SFSA	Copper	FSA-SB-31O1-0001-091510	47.3	80	1.3875
SFSA	Copper	FSA-SB-40O1-0001-092110	111	80	0.48125
SFSA	Copper	FSA-SB-DUP01-0001-091510	38.5	80	0.9375
SFSA	Copper	FSA-SB-DUP02-0001-092110	75	80	0.435
SFSA	Copper	FSA-SB-DUP03-0001-092210	34.8	80	0.925
SFSA	Copper	FSA-SS-03-091510	74	80	0.99
SFSA	Copper	FSA-SS-06-091510	79.2	80	0.21
SFSA	Copper	FSA-SS-32-091510	16.8	18	0.685555556
SFSA	High Molecular Weight PAHs	FSA-MW-34O1-0001-091310	12.34	18	0.195
SFSA	High Molecular Weight PAHs	FSA-MW-35O1-0001-091710	3.51	18	0.159444444
SFSA	High Molecular Weight PAHs	FSA-MW-36O1-0001-092210	2.87	18	0.075888889
SFSA	High Molecular Weight PAHs	FSA-MW-37O1-0001-092210	1.366	18	0.186111111
SFSA	High Molecular Weight PAHs	FSA-SB-08O1-0001-091710	3.35	18	0.067666667
SFSA	High Molecular Weight PAHs	FSA-SB-09O1-0001-092710	1.218	18	0.358333333
SFSA	High Molecular Weight PAHs	FSA-SB-10O1-0001-092110	6.45	18	0.079388889
SFSA	High Molecular Weight PAHs	FSA-SB-11O1-0001-092110	1.429	18	0.436666667
SFSA	High Molecular Weight PAHs	FSA-SB-12O1-0001-092010	7.86	18	0.476666667
SFSA	High Molecular Weight PAHs	FSA-SB-13O1-0001-092210	8.58	18	0.241111111
SFSA	High Molecular Weight PAHs	FSA-SB-14O1-0001-092010	4.34	18	0.176666667
SFSA	High Molecular Weight PAHs	FSA-SB-15O1-0001-092110	3.18	18	0.193055556
SFSA	High Molecular Weight PAHs	FSA-SB-16O1-0001-092210	3.475	18	1.827777778
SFSA	High Molecular Weight PAHs	FSA-SB-17O1-0001-091710	32.9	18	0.238333333
SFSA	High Molecular Weight PAHs	FSA-SB-18O1-0001-091610	4.29	18	0.156666667
SFSA	High Molecular Weight PAHs	FSA-SB-19O1-0001-092110	2.82	18	0.913333333
SFSA	High Molecular Weight PAHs	FSA-SB-20O1-0001-091510	16.44	18	0.17
SFSA	High Molecular Weight PAHs	FSA-SB-21O1-0001-092010	3.06	18	0.119444444
SFSA	High Molecular Weight PAHs	FSA-SB-22O1-0001-091710	2.15	18	0.085
SFSA	High Molecular Weight PAHs	FSA-SB-24O1-0001-091310	1.53	18	0.113333333
SFSA	High Molecular Weight PAHs	FSA-SB-25O1-0001-091310	2.04	18	2.111111111
SFSA	High Molecular Weight PAHs	FSA-SB-26O1-0001-091410	38	18	1.213333333
SFSA	High Molecular Weight PAHs	FSA-SB-27O1-0001-091410	21.84	18	0.343333333
SFSA	High Molecular Weight PAHs	FSA-SB-28O1-0001-091510	6.18	18	0.503888889
SFSA	High Molecular Weight PAHs	FSA-SB-29O1-0001-091510	9.07	18	0.787222222
SFSA	High Molecular Weight PAHs	FSA-SB-30O1-0001-091410	14.17	18	0.931666667
SFSA	High Molecular Weight PAHs	FSA-SB-31O1-0001-091510	16.77	18	0.551111111
SFSA	High Molecular Weight PAHs	FSA-SS-03-091510	9.92	18	0.661111111
SFSA	High Molecular Weight PAHs	FSA-SS-06-091510	11.9	18	0.0935
SFSA	High Molecular Weight PAHs	FSA-SS-32-091510	1.683	200	57.555
SFSA	Iron	FSA-013-0001-0-081610	11511	200	174.575
SFSA	Iron	FSA-024-0001-0-081710	34915	200	92.245
SFSA	Iron	FSA-039-0001-0-081710	18449	200	69.345
SFSA	Iron	FSA-060-0001-0-081710	13869	200	130.49
SFSA	Iron	FSA-062-0001-0-081710	26098	200	54.855
SFSA	Iron	FSA-066-0001-0-081810	10971	200	49.175
SFSA	Iron	FSA-075-0001-0-082510	9835	200	50.095
SFSA	Iron	FSA-089-0001-0-081810	10019	200	135.875
SFSA	Iron	FSA-102-0001-0-081810	27175	200	45.895
SFSA	Iron	FSA-105-0001-0-081910	9179	200	701.545
SFSA	Iron	FSA-106-0001-0-081810	140309	200	156.13
SFSA	Iron	FSA-151-0001-0-081910	31226	200	404.42
SFSA	Iron	FSA-168-0001-0-082310	80884	200	1175.055
SFSA	Iron	FSA-171-0001-0-082310	235011	200	88.415

Table F-1
Sample by Sample Comparison of Detected Soil Concentrations with Soil Invertebrate Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
SFSA	Iron	FSA-MW-34O1-0001-091310	17683	200	75.575
SFSA	Iron	FSA-MW-35O1-0001-091710	15115	200	33.535
SFSA	Iron	FSA-MW-36O1-0001-092210	6707	200	42.33
SFSA	Iron	FSA-MW-37O1-0001-092210	8466	200	44.16
SFSA	Iron	FSA-SB-08O1-0001-091710	8832	200	21.625
SFSA	Iron	FSA-SB-09O1-0001-092710	4325	200	49.525
SFSA	Iron	FSA-SB-10O1-0001-092110	9905	200	93.365
SFSA	Iron	FSA-SB-11O1-0001-092110	18673	200	112.765
SFSA	Iron	FSA-SB-12O1-0001-092010	22553	200	69.315
SFSA	Iron	FSA-SB-13O1-0001-092210	13863	200	43.205
SFSA	Iron	FSA-SB-14O1-0001-092010	8641	200	40.14
SFSA	Iron	FSA-SB-15O1-0001-092110	8028	200	62.22
SFSA	Iron	FSA-SB-16O1-0001-092210	12444	200	124.435
SFSA	Iron	FSA-SB-17O1-0001-091710	24887	200	68.1
SFSA	Iron	FSA-SB-18O1-0001-091610	13620	200	86.975
SFSA	Iron	FSA-SB-19O1-0001-092110	17395	200	98.315
SFSA	Iron	FSA-SB-20O1-0001-091510	19663	200	598.245
SFSA	Iron	FSA-SB-21O1-0001-092010	119649	200	52.16
SFSA	Iron	FSA-SB-22O1-0001-091710	10432	200	56.705
SFSA	Iron	FSA-SB-24O1-0001-091310	11341	200	94.43
SFSA	Iron	FSA-SB-25O1-0001-091310	18886	200	159.45
SFSA	Iron	FSA-SB-26O1-0001-091410	31890	200	192.265
SFSA	Iron	FSA-SB-27O1-0001-091410	38453	200	46.095
SFSA	Iron	FSA-SB-28O1-0001-091510	9219	200	45.395
SFSA	Iron	FSA-SB-29O1-0001-091510	9079	200	87.965
SFSA	Iron	FSA-SB-30O1-0001-091410	17593	200	47.505
SFSA	Iron	FSA-SB-31O1-0001-091510	9501	200	144.415
SFSA	Iron	FSA-SB-40O1-0001-092110	28883	200	61.54
SFSA	Iron	FSA-SB-DUP01-0001-091510	12308	200	65.055
SFSA	Iron	FSA-SB-DUP02-0001-092110	13011	200	67.36
SFSA	Iron	FSA-SB-DUP03-0001-092210	13472	200	73.83
SFSA	Iron	FSA-SS-03-091510	14766	200	255.255
SFSA	Iron	FSA-SS-06-091510	51051	200	57.945
SFSA	Iron	FSA-SS-32-091510	11589	1700	0.033529412
SFSA	Lead	FSA-013-0001-0-081610	57	1700	0.097647059
SFSA	Lead	FSA-024-0001-0-081710	166	1700	0.029941176
SFSA	Lead	FSA-039-0001-0-081710	50.9	1700	0.061764706
SFSA	Lead	FSA-060-0001-0-081710	105	1700	0.038470588
SFSA	Lead	FSA-062-0001-0-081710	65.4	1700	0.274705882
SFSA	Lead	FSA-066-0001-0-081810	467	1700	0.061764706
SFSA	Lead	FSA-075-0001-0-082510	105	1700	0.017470588
SFSA	Lead	FSA-089-0001-0-081810	29.7	1700	0.078235294
SFSA	Lead	FSA-102-0001-0-081810	133	1700	0.023823529
SFSA	Lead	FSA-105-0001-0-081910	40.5	1700	2.25
SFSA	Lead	FSA-106-0001-0-081810	3825	1700	3.052352941
SFSA	Lead	FSA-151-0001-0-081910	5189	1700	14.37529412
SFSA	Lead	FSA-168-0001-0-082310	24438	1700	2.409411765
SFSA	Lead	FSA-171-0001-0-082310	4096	1700	0.030941176
SFSA	Lead	FSA-MW-34O1-0001-091310	52.6	1700	0.086470588
SFSA	Lead	FSA-MW-35O1-0001-091710	147	1700	0.010470588
SFSA	Lead	FSA-MW-36O1-0001-092210	17.8	1700	0.004352941
SFSA	Lead	FSA-MW-37O1-0001-092210	7.4	1700	0.051058824
SFSA	Lead	FSA-SB-08O1-0001-091710	86.8	1700	0.027411765
SFSA	Lead	FSA-SB-09O1-0001-092710	46.6	1700	0.040470588
SFSA	Lead	FSA-SB-10O1-0001-092110	68.8	1700	0.131176471
SFSA	Lead	FSA-SB-11O1-0001-092110	223	1700	0.071764706
SFSA	Lead	FSA-SB-12O1-0001-092010	122	1700	0.099411765
SFSA	Lead	FSA-SB-13O1-0001-092210	169	1700	0.015411765
SFSA	Lead	FSA-SB-14O1-0001-092010	26.2	1700	0.009823529
SFSA	Lead	FSA-SB-15O1-0001-092110	16.7	1700	0.027588235
SFSA	Lead	FSA-SB-16O1-0001-092210	46.9	1700	0.235882353
SFSA	Lead	FSA-SB-17O1-0001-091710	401	1700	0.042588235
SFSA	Lead	FSA-SB-18O1-0001-091610	72.4	1700	0.107058824
SFSA	Lead	FSA-SB-19O1-0001-092110	182	1700	0.644705882
SFSA	Lead	FSA-SB-20O1-0001-091510	1096	1700	1.367647059

Table F-1
Sample by Sample Comparison of Detected Soil Concentrations with Soil Invertebrate Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
SFSA	Lead	FSA-SB-21O1-0001-092010	2325	1700	0.021823529
SFSA	Lead	FSA-SB-22O1-0001-091710	37.1	1700	0.029294118
SFSA	Lead	FSA-SB-24O1-0001-091310	49.8	1700	0.015294118
SFSA	Lead	FSA-SB-25O1-0001-091310	26	1700	0.777058824
SFSA	Lead	FSA-SB-26O1-0001-091410	1321	1700	0.303529412
SFSA	Lead	FSA-SB-27O1-0001-091410	516	1700	0.039705882
SFSA	Lead	FSA-SB-28O1-0001-091510	67.5	1700	0.012647059
SFSA	Lead	FSA-SB-29O1-0001-091510	21.5	1700	0.063529412
SFSA	Lead	FSA-SB-30O1-0001-091410	108	1700	0.041882353
SFSA	Lead	FSA-SB-31O1-0001-091510	71.2	1700	0.068235294
SFSA	Lead	FSA-SB-40O1-0001-092110	116	1700	0.013117647
SFSA	Lead	FSA-SB-DUP01-0001-091510	22.3	1700	1.104705882
SFSA	Lead	FSA-SB-DUP02-0001-092110	1878	1700	0.031882353
SFSA	Lead	FSA-SB-DUP03-0001-092210	54.2	1700	0.067647059
SFSA	Lead	FSA-SS-03-091510	115	1700	0.050529412
SFSA	Lead	FSA-SS-06-091510	85.9	1700	0.005470588
SFSA	Lead	FSA-SS-32-091510	9.3	29	0.147241379
SFSA	Low Molecular Weight PAHs	FSA-MW-34O1-0001-091310	4.27	29	0.064827586
SFSA	Low Molecular Weight PAHs	FSA-MW-35O1-0001-091710	1.88	29	0.077931034
SFSA	Low Molecular Weight PAHs	FSA-MW-36O1-0001-092210	2.26	29	0.062413793
SFSA	Low Molecular Weight PAHs	FSA-MW-37O1-0001-092210	1.81	29	0.08862069
SFSA	Low Molecular Weight PAHs	FSA-SB-08O1-0001-091710	2.57	29	0.05862069
SFSA	Low Molecular Weight PAHs	FSA-SB-09O1-0001-092710	1.7	29	0.098275862
SFSA	Low Molecular Weight PAHs	FSA-SB-10O1-0001-092110	2.85	29	0.062517241
SFSA	Low Molecular Weight PAHs	FSA-SB-11O1-0001-092110	1.813	29	0.116206897
SFSA	Low Molecular Weight PAHs	FSA-SB-12O1-0001-092010	3.37	29	0.127241379
SFSA	Low Molecular Weight PAHs	FSA-SB-13O1-0001-092210	3.69	29	0.106344828
SFSA	Low Molecular Weight PAHs	FSA-SB-14O1-0001-092010	3.084	29	0.064103448
SFSA	Low Molecular Weight PAHs	FSA-SB-15O1-0001-092110	1.859	29	0.079103448
SFSA	Low Molecular Weight PAHs	FSA-SB-16O1-0001-092210	2.294	29	0.605517241
SFSA	Low Molecular Weight PAHs	FSA-SB-17O1-0001-091710	17.56	29	0.104482759
SFSA	Low Molecular Weight PAHs	FSA-SB-18O1-0001-091610	3.03	29	0.072068966
SFSA	Low Molecular Weight PAHs	FSA-SB-19O1-0001-092110	2.09	29	0.212758621
SFSA	Low Molecular Weight PAHs	FSA-SB-20O1-0001-091510	6.17	29	0.087241379
SFSA	Low Molecular Weight PAHs	FSA-SB-21O1-0001-092010	2.53	29	0.076206897
SFSA	Low Molecular Weight PAHs	FSA-SB-22O1-0001-091710	2.21	29	0.066103448
SFSA	Low Molecular Weight PAHs	FSA-SB-24O1-0001-091310	1.917	29	0.066206897
SFSA	Low Molecular Weight PAHs	FSA-SB-25O1-0001-091310	1.92	29	0.85137931
SFSA	Low Molecular Weight PAHs	FSA-SB-26O1-0001-091410	24.69	29	0.267931034
SFSA	Low Molecular Weight PAHs	FSA-SB-27O1-0001-091410	7.77	29	0.091068966
SFSA	Low Molecular Weight PAHs	FSA-SB-28O1-0001-091510	2.641	29	0.118103448
SFSA	Low Molecular Weight PAHs	FSA-SB-29O1-0001-091510	3.425	29	0.168275862
SFSA	Low Molecular Weight PAHs	FSA-SB-30O1-0001-091410	4.88	29	0.119310345
SFSA	Low Molecular Weight PAHs	FSA-SB-31O1-0001-091510	3.46	29	0.11537931
SFSA	Low Molecular Weight PAHs	FSA-SS-03-091510	3.346	29	0.146068966
SFSA	Low Molecular Weight PAHs	FSA-SS-06-091510	4.236	450	0.466666667
SFSA	Manganese	FSA-013-0001-0-081610	210	450	0.635555556
SFSA	Manganese	FSA-024-0001-0-081710	286	450	0.808888889
SFSA	Manganese	FSA-039-0001-0-081710	364	450	0.524444444
SFSA	Manganese	FSA-060-0001-0-081710	236	450	0.755555556
SFSA	Manganese	FSA-062-0001-0-081710	340	450	0.231111111
SFSA	Manganese	FSA-066-0001-0-081810	104	450	0.388888889
SFSA	Manganese	FSA-075-0001-0-082510	175	450	0.382222222
SFSA	Manganese	FSA-089-0001-0-081810	172	450	0.695555556
SFSA	Manganese	FSA-102-0001-0-081810	313	450	0.38
SFSA	Manganese	FSA-105-0001-0-081910	171	450	0.937777778
SFSA	Manganese	FSA-106-0001-0-081810	422	450	0.548888889
SFSA	Manganese	FSA-151-0001-0-081910	247	450	0.948888889
SFSA	Manganese	FSA-168-0001-0-082310	427	450	1.146666667
SFSA	Manganese	FSA-171-0001-0-082310	516	450	0.62
SFSA	Manganese	FSA-MW-34O1-0001-091310	279	450	0.635555556
SFSA	Manganese	FSA-MW-35O1-0001-091710	286	450	0.32
SFSA	Manganese	FSA-MW-36O1-0001-092210	144	450	0.831111111
SFSA	Manganese	FSA-MW-37O1-0001-092210	374	450	0.755555556
SFSA	Manganese	FSA-SB-08O1-0001-091710	340	450	0.132888889

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
SFSA	Manganese	FSA-SB-09O1-0001-092710	59.8	450	0.502222222
SFSA	Manganese	FSA-SB-10O1-0001-092110	226	450	0.848888889
SFSA	Manganese	FSA-SB-11O1-0001-092110	382	450	0.364444444
SFSA	Manganese	FSA-SB-12O1-0001-092010	164	450	0.555555556
SFSA	Manganese	FSA-SB-13O1-0001-092210	250	450	0.351111111
SFSA	Manganese	FSA-SB-14O1-0001-092010	158	450	0.373333333
SFSA	Manganese	FSA-SB-15O1-0001-092110	168	450	0.56
SFSA	Manganese	FSA-SB-16O1-0001-092210	252	450	0.528888889
SFSA	Manganese	FSA-SB-17O1-0001-091710	238	450	0.364444444
SFSA	Manganese	FSA-SB-18O1-0001-091610	164	450	0.564444444
SFSA	Manganese	FSA-SB-19O1-0001-092110	254	450	0.368888889
SFSA	Manganese	FSA-SB-20O1-0001-091510	166	450	1.733333333
SFSA	Manganese	FSA-SB-21O1-0001-092010	780	450	0.333333333
SFSA	Manganese	FSA-SB-22O1-0001-091710	150	450	0.4
SFSA	Manganese	FSA-SB-24O1-0001-091310	180	450	0.56
SFSA	Manganese	FSA-SB-25O1-0001-091310	252	450	1.686666667
SFSA	Manganese	FSA-SB-26O1-0001-091410	759	450	0.988888889
SFSA	Manganese	FSA-SB-27O1-0001-091410	445	450	0.304444444
SFSA	Manganese	FSA-SB-28O1-0001-091510	137	450	0.166444444
SFSA	Manganese	FSA-SB-29O1-0001-091510	74.9	450	0.471111111
SFSA	Manganese	FSA-SB-30O1-0001-091410	212	450	0.373333333
SFSA	Manganese	FSA-SB-31O1-0001-091510	168	450	0.693333333
SFSA	Manganese	FSA-SB-40O1-0001-092110	312	450	0.151555556
SFSA	Manganese	FSA-SB-DUP01-0001-091510	68.2	450	1.357777778
SFSA	Manganese	FSA-SB-DUP02-0001-092110	611	450	0.677777778
SFSA	Manganese	FSA-SB-DUP03-0001-092210	305	450	1.002222222
SFSA	Manganese	FSA-SS-03-091510	451	450	1.531111111
SFSA	Manganese	FSA-SS-06-091510	689	450	0.495555556
SFSA	Manganese	FSA-SS-32-091510	223	2.5	0.172
SFSA	Mercury	FSA-013-0001-0-081610	0.43	2.5	7.84
SFSA	Mercury	FSA-039-0001-0-081710	19.6	2.5	0.332
SFSA	Mercury	FSA-060-0001-0-081710	0.83	2.5	43.2
SFSA	Mercury	FSA-062-0001-0-081710	108	2.5	0.352
SFSA	Mercury	FSA-066-0001-0-081810	0.88	2.5	0.68
SFSA	Mercury	FSA-075-0001-0-082510	1.7	2.5	0.96
SFSA	Mercury	FSA-089-0001-0-081810	2.4	2.5	0.232
SFSA	Mercury	FSA-102-0001-0-081810	0.58	2.5	1.12
SFSA	Mercury	FSA-105-0001-0-081910	2.8	2.5	14.92
SFSA	Mercury	FSA-106-0001-0-081810	37.3	2.5	4.08
SFSA	Mercury	FSA-151-0001-0-081910	10.2	2.5	2.12
SFSA	Mercury	FSA-168-0001-0-082310	5.3	2.5	2.04
SFSA	Mercury	FSA-171-0001-0-082310	5.1	2.5	0.1
SFSA	Mercury	FSA-MW-34O1-0001-091310	0.25	2.5	0.56
SFSA	Mercury	FSA-MW-35O1-0001-091710	1.4	2.5	0.256
SFSA	Mercury	FSA-MW-36O1-0001-092210	0.64	2.5	0.038
SFSA	Mercury	FSA-MW-37O1-0001-092210	0.095	2.5	0.292
SFSA	Mercury	FSA-SB-08O1-0001-091710	0.73	2.5	0.76
SFSA	Mercury	FSA-SB-09O1-0001-092710	1.9	2.5	1.92
SFSA	Mercury	FSA-SB-10O1-0001-092110	4.8	2.5	25
SFSA	Mercury	FSA-SB-11O1-0001-092110	62.5	2.5	5.2
SFSA	Mercury	FSA-SB-12O1-0001-092010	13	2.5	1.88
SFSA	Mercury	FSA-SB-13O1-0001-092210	4.7	2.5	0.022
SFSA	Mercury	FSA-SB-14O1-0001-092010	0.055	2.5	0.06
SFSA	Mercury	FSA-SB-15O1-0001-092110	0.15	2.5	0.38
SFSA	Mercury	FSA-SB-16O1-0001-092210	0.95	2.5	1.76
SFSA	Mercury	FSA-SB-17O1-0001-091710	4.4	2.5	0.72
SFSA	Mercury	FSA-SB-18O1-0001-091610	1.8	2.5	3.56
SFSA	Mercury	FSA-SB-19O1-0001-092110	8.9	2.5	2.12
SFSA	Mercury	FSA-SB-20O1-0001-091510	5.3	2.5	4.08
SFSA	Mercury	FSA-SB-21O1-0001-092010	10.2	2.5	0.244
SFSA	Mercury	FSA-SB-22O1-0001-091710	0.61	2.5	0.084
SFSA	Mercury	FSA-SB-24O1-0001-091310	0.21	2.5	0.108
SFSA	Mercury	FSA-SB-25O1-0001-091310	0.27	2.5	0.92
SFSA	Mercury	FSA-SB-26O1-0001-091410	2.3	2.5	0.192
SFSA	Mercury	FSA-SB-27O1-0001-091410	0.48	2.5	2.56

Table F-1
Sample by Sample Comparison of Detected Soil Concentrations with Soil Invertebrate Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
SFSA	Mercury	FSA-SB-28O1-0001-091510	6.4	2.5	0.128
SFSA	Mercury	FSA-SB-29O1-0001-091510	0.32	2.5	0.44
SFSA	Mercury	FSA-SB-30O1-0001-091410	1.1	2.5	2.2
SFSA	Mercury	FSA-SB-31O1-0001-091510	5.5	2.5	29
SFSA	Mercury	FSA-SB-40O1-0001-092110	72.5	2.5	0.0332
SFSA	Mercury	FSA-SB-DUP01-0001-091510	0.083	2.5	50
SFSA	Mercury	FSA-SB-DUP02-0001-092110	125	2.5	0.44
SFSA	Mercury	FSA-SB-DUP03-0001-092210	1.1	2.5	2.56
SFSA	Mercury	FSA-SS-03-091510	6.4	2.5	0.72
SFSA	Mercury	FSA-SS-06-091510	1.8	2.5	0.128
SFSA	Mercury	FSA-SS-32-091510	0.32	280	0.030714286
SFSA	Nickel	FSA-013-0001-0-081610	8.6	280	0.087142857
SFSA	Nickel	FSA-024-0001-0-081710	24.4	280	0.046428571
SFSA	Nickel	FSA-039-0001-0-081710	13	280	0.031071429
SFSA	Nickel	FSA-060-0001-0-081710	8.7	280	0.036428571
SFSA	Nickel	FSA-062-0001-0-081710	10.2	280	0.05
SFSA	Nickel	FSA-066-0001-0-081810	14	280	1.221428571
SFSA	Nickel	FSA-075-0001-0-082510	342	280	0.032142857
SFSA	Nickel	FSA-089-0001-0-081810	9	280	0.065357143
SFSA	Nickel	FSA-102-0001-0-081810	18.3	280	0.031428571
SFSA	Nickel	FSA-105-0001-0-081910	8.8	280	0.088928571
SFSA	Nickel	FSA-106-0001-0-081810	24.9	280	0.014642857
SFSA	Nickel	FSA-151-0001-0-081910	4.1	280	0.053571429
SFSA	Nickel	FSA-168-0001-0-082310	15	280	0.238928571
SFSA	Nickel	FSA-171-0001-0-082310	66.9	280	0.042857143
SFSA	Nickel	FSA-MW-34O1-0001-091310	12	280	0.173214286
SFSA	Nickel	FSA-MW-35O1-0001-091710	48.5	280	0.035
SFSA	Nickel	FSA-MW-36O1-0001-092210	9.8	280	0.020357143
SFSA	Nickel	FSA-MW-37O1-0001-092210	5.7	280	0.100357143
SFSA	Nickel	FSA-SB-08O1-0001-091710	28.1	280	0.04
SFSA	Nickel	FSA-SB-09O1-0001-092710	11.2	280	0.0625
SFSA	Nickel	FSA-SB-10O1-0001-092110	17.5	280	0.051785714
SFSA	Nickel	FSA-SB-11O1-0001-092110	14.5	280	0.046428571
SFSA	Nickel	FSA-SB-12O1-0001-092010	13	280	0.043928571
SFSA	Nickel	FSA-SB-13O1-0001-092210	12.3	280	0.023571429
SFSA	Nickel	FSA-SB-14O1-0001-092010	6.6	280	0.048214286
SFSA	Nickel	FSA-SB-15O1-0001-092110	13.5	280	0.078928571
SFSA	Nickel	FSA-SB-16O1-0001-092210	22.1	280	0.081071429
SFSA	Nickel	FSA-SB-17O1-0001-091710	22.7	280	0.0325
SFSA	Nickel	FSA-SB-18O1-0001-091610	9.1	280	0.067142857
SFSA	Nickel	FSA-SB-19O1-0001-092110	18.8	280	0.036071429
SFSA	Nickel	FSA-SB-20O1-0001-091510	10.1	280	0.2475
SFSA	Nickel	FSA-SB-21O1-0001-092010	69.3	280	0.028571429
SFSA	Nickel	FSA-SB-22O1-0001-091710	8	280	0.022142857
SFSA	Nickel	FSA-SB-24O1-0001-091310	6.2	280	0.038214286
SFSA	Nickel	FSA-SB-25O1-0001-091310	10.7	280	0.073571429
SFSA	Nickel	FSA-SB-26O1-0001-091410	20.6	280	0.091071429
SFSA	Nickel	FSA-SB-27O1-0001-091410	25.5	280	0.048214286
SFSA	Nickel	FSA-SB-28O1-0001-091510	13.5	280	0.041071429
SFSA	Nickel	FSA-SB-29O1-0001-091510	11.5	280	0.079285714
SFSA	Nickel	FSA-SB-30O1-0001-091410	22.2	280	0.0325
SFSA	Nickel	FSA-SB-31O1-0001-091510	9.1	280	0.066785714
SFSA	Nickel	FSA-SB-40O1-0001-092110	18.7	280	0.051428571
SFSA	Nickel	FSA-SB-DUP01-0001-091510	14.4	280	0.045357143
SFSA	Nickel	FSA-SB-DUP02-0001-092110	12.7	280	0.068928571
SFSA	Nickel	FSA-SB-DUP03-0001-092210	19.3	280	0.056785714
SFSA	Nickel	FSA-SS-03-091510	15.9	280	0.355714286
SFSA	Nickel	FSA-SS-06-091510	99.6	280	0.0325
SFSA	Nickel	FSA-SS-32-091510	9.1	4.1	0.073170732
SFSA	Selenium	FSA-013-0001-0-081610	0.3	4.1	0.204878049
SFSA	Selenium	FSA-024-0001-0-081710	0.84	4.1	0.212195122
SFSA	Selenium	FSA-039-0001-0-081710	0.87	4.1	0.070731707
SFSA	Selenium	FSA-060-0001-0-081710	0.29	4.1	0.23902439
SFSA	Selenium	FSA-062-0001-0-081710	0.98	4.1	0.341463415
SFSA	Selenium	FSA-066-0001-0-081810	1.4	4.1	0.104878049

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
SFSA	Selenium	FSA-075-0001-0-082510	0.43	4.1	0.268292683
SFSA	Selenium	FSA-089-0001-0-081810	1.1	4.1	0.268292683
SFSA	Selenium	FSA-102-0001-0-081810	1.1	4.1	0.043902439
SFSA	Selenium	FSA-105-0001-0-081910	0.18	4.1	0.658536585
SFSA	Selenium	FSA-106-0001-0-081810	2.7	4.1	0.065853659
SFSA	Selenium	FSA-151-0001-0-081910	0.27	4.1	1.219512195
SFSA	Selenium	FSA-168-0001-0-082310	5	4.1	0.829268293
SFSA	Selenium	FSA-171-0001-0-082310	3.4	4.1	0.219512195
SFSA	Selenium	FSA-MW-34O1-0001-091310	0.9	4.1	0.585365854
SFSA	Selenium	FSA-MW-36O1-0001-092210	2.4	4.1	0.163414634
SFSA	Selenium	FSA-MW-37O1-0001-092210	0.67	4.1	0.204878049
SFSA	Selenium	FSA-SB-08O1-0001-091710	0.84	4.1	0.463414634
SFSA	Selenium	FSA-SB-09O1-0001-092710	1.9	4.1	0.180487805
SFSA	Selenium	FSA-SB-10O1-0001-092110	0.74	4.1	0.317073171
SFSA	Selenium	FSA-SB-11O1-0001-092110	1.3	4.1	1.317073171
SFSA	Selenium	FSA-SB-12O1-0001-092010	5.4	4.1	0.268292683
SFSA	Selenium	FSA-SB-13O1-0001-092210	1.1	4.1	0.13902439
SFSA	Selenium	FSA-SB-14O1-0001-092010	0.57	4.1	0.414634146
SFSA	Selenium	FSA-SB-15O1-0001-092110	1.7	4.1	0.153658537
SFSA	Selenium	FSA-SB-16O1-0001-092210	0.63	4.1	1.219512195
SFSA	Selenium	FSA-SB-17O1-0001-091710	5	4.1	0.119512195
SFSA	Selenium	FSA-SB-18O1-0001-091610	0.49	4.1	0.241463415
SFSA	Selenium	FSA-SB-19O1-0001-092110	0.99	4.1	1.43902439
SFSA	Selenium	FSA-SB-22O1-0001-091710	5.9	4.1	0.226829268
SFSA	Selenium	FSA-SB-24O1-0001-091310	0.93	4.1	0.268292683
SFSA	Selenium	FSA-SB-25O1-0001-091310	1.1	4.1	0.536585366
SFSA	Selenium	FSA-SB-26O1-0001-091410	2.2	4.1	0.268292683
SFSA	Selenium	FSA-SB-27O1-0001-091410	1.1	4.1	0.23902439
SFSA	Selenium	FSA-SB-28O1-0001-091510	0.98	4.1	0.365853659
SFSA	Selenium	FSA-SB-29O1-0001-091510	1.5	4.1	0.390243902
SFSA	Selenium	FSA-SB-30O1-0001-091410	1.6	4.1	0.136585366
SFSA	Selenium	FSA-SB-31O1-0001-091510	0.56	4.1	0.43902439
SFSA	Selenium	FSA-SB-40O1-0001-092110	1.8	4.1	0.317073171
SFSA	Selenium	FSA-SB-DUP01-0001-091510	1.3	4.1	0.292682927
SFSA	Selenium	FSA-SB-DUP02-0001-092110	1.2	4.1	0.165853659
SFSA	Selenium	FSA-SB-DUP03-0001-092210	0.68	4.1	0.217073171
SFSA	Selenium	FSA-SS-03-091510	0.89	4.1	0.168292683
SFSA	Selenium	FSA-SS-32-091510	0.69	50	0.0028
SFSA	Silver	FSA-089-0001-0-081810	0.14	50	0.026
SFSA	Silver	FSA-106-0001-0-081810	1.3	50	0.0144
SFSA	Silver	FSA-151-0001-0-081910	0.72	50	0.036
SFSA	Silver	FSA-168-0001-0-082310	1.8	50	0.03
SFSA	Silver	FSA-171-0001-0-082310	1.5	50	0.0144
SFSA	Silver	FSA-SB-11O1-0001-092110	0.72	50	0.0102
SFSA	Silver	FSA-SB-21O1-0001-092010	0.51	50	0.11
SFSA	Silver	FSA-SB-DUP02-0001-092110	5.5	20	0.99
SFSA	Vanadium	FSA-013-0001-0-081610	19.8	20	1.59
SFSA	Vanadium	FSA-024-0001-0-081710	31.8	20	1.25
SFSA	Vanadium	FSA-039-0001-0-081710	25	20	1.225
SFSA	Vanadium	FSA-060-0001-0-081710	24.5	20	0.65
SFSA	Vanadium	FSA-062-0001-0-081710	13	20	0.955
SFSA	Vanadium	FSA-066-0001-0-081810	19.1	20	1
SFSA	Vanadium	FSA-075-0001-0-082510	20	20	0.6
SFSA	Vanadium	FSA-089-0001-0-081810	12	20	0.82
SFSA	Vanadium	FSA-102-0001-0-081810	16.4	20	1.17
SFSA	Vanadium	FSA-105-0001-0-081910	23.4	20	1.64
SFSA	Vanadium	FSA-106-0001-0-081810	32.8	20	0.995
SFSA	Vanadium	FSA-151-0001-0-081910	19.9	20	1.405
SFSA	Vanadium	FSA-168-0001-0-082310	28.1	20	3.635
SFSA	Vanadium	FSA-171-0001-0-082310	72.7	20	1.2
SFSA	Vanadium	FSA-MW-34O1-0001-091310	24	20	0.835
SFSA	Vanadium	FSA-MW-35O1-0001-091710	16.7	20	0.615
SFSA	Vanadium	FSA-MW-36O1-0001-092210	12.3	20	0.7
SFSA	Vanadium	FSA-MW-37O1-0001-092210	14	20	0.875
SFSA	Vanadium	FSA-SB-08O1-0001-091710	17.5	20	1.095

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
SFSA	Vanadium	FSA-SB-09O1-0001-092710	21.9	20	1.16
SFSA	Vanadium	FSA-SB-10O1-0001-092110	23.2	20	0.815
SFSA	Vanadium	FSA-SB-11O1-0001-092110	16.3	20	1.17
SFSA	Vanadium	FSA-SB-12O1-0001-092010	23.4	20	0.885
SFSA	Vanadium	FSA-SB-13O1-0001-092210	17.7	20	0.77
SFSA	Vanadium	FSA-SB-14O1-0001-092010	15.4	20	0.58
SFSA	Vanadium	FSA-SB-15O1-0001-092110	11.6	20	1.015
SFSA	Vanadium	FSA-SB-16O1-0001-092210	20.3	20	0.895
SFSA	Vanadium	FSA-SB-17O1-0001-091710	17.9	20	0.755
SFSA	Vanadium	FSA-SB-18O1-0001-091610	15.1	20	1.505
SFSA	Vanadium	FSA-SB-19O1-0001-092110	30.1	20	1.935
SFSA	Vanadium	FSA-SB-20O1-0001-091510	38.7	20	1.99
SFSA	Vanadium	FSA-SB-21O1-0001-092010	39.8	20	0.825
SFSA	Vanadium	FSA-SB-22O1-0001-091710	16.5	20	0.855
SFSA	Vanadium	FSA-SB-24O1-0001-091310	17.1	20	1.145
SFSA	Vanadium	FSA-SB-25O1-0001-091310	22.9	20	0.785
SFSA	Vanadium	FSA-SB-26O1-0001-091410	15.7	20	1.595
SFSA	Vanadium	FSA-SB-27O1-0001-091410	31.9	20	1.7
SFSA	Vanadium	FSA-SB-28O1-0001-091510	34	20	0.64
SFSA	Vanadium	FSA-SB-29O1-0001-091510	12.8	20	1.075
SFSA	Vanadium	FSA-SB-30O1-0001-091410	21.5	20	0.805
SFSA	Vanadium	FSA-SB-31O1-0001-091510	16.1	20	0.915
SFSA	Vanadium	FSA-SB-40O1-0001-092110	18.3	20	0.79
SFSA	Vanadium	FSA-SB-DUP01-0001-091510	15.8	20	0.88
SFSA	Vanadium	FSA-SB-DUP02-0001-092110	17.6	20	1.165
SFSA	Vanadium	FSA-SB-DUP03-0001-092210	23.3	20	1.195
SFSA	Vanadium	FSA-SS-03-091510	23.9	20	1.51
SFSA	Vanadium	FSA-SS-06-091510	30.2	20	1.395
SFSA	Vanadium	FSA-SS-32-091510	27.9	120	1.025
SFSA	Zinc	FSA-013-0001-0-081610	123	120	0.793333333
SFSA	Zinc	FSA-024-0001-0-081710	95.2	120	0.574166667
SFSA	Zinc	FSA-039-0001-0-081710	68.9	120	0.520833333
SFSA	Zinc	FSA-060-0001-0-081710	62.5	120	0.6025
SFSA	Zinc	FSA-062-0001-0-081710	72.3	120	3.233333333
SFSA	Zinc	FSA-066-0001-0-081810	388	120	1.6
SFSA	Zinc	FSA-075-0001-0-082510	192	120	0.360833333
SFSA	Zinc	FSA-089-0001-0-081810	43.3	120	1.908333333
SFSA	Zinc	FSA-102-0001-0-081810	229	120	0.3375
SFSA	Zinc	FSA-105-0001-0-081910	40.5	120	3.783333333
SFSA	Zinc	FSA-106-0001-0-081810	454	120	1.308333333
SFSA	Zinc	FSA-151-0001-0-081910	157	120	5.308333333
SFSA	Zinc	FSA-168-0001-0-082310	637	120	6.991666667
SFSA	Zinc	FSA-171-0001-0-082310	839	120	0.5025
SFSA	Zinc	FSA-MW-34O1-0001-091310	60.3	120	2.616666667
SFSA	Zinc	FSA-MW-35O1-0001-091710	314	120	0.603333333
SFSA	Zinc	FSA-MW-36O1-0001-092210	72.4	120	0.388333333
SFSA	Zinc	FSA-MW-37O1-0001-092210	46.6	120	0.7075
SFSA	Zinc	FSA-SB-08O1-0001-091710	84.9	120	0.3775
SFSA	Zinc	FSA-SB-09O1-0001-092710	45.3	120	0.866666667
SFSA	Zinc	FSA-SB-10O1-0001-092110	104	120	0.875
SFSA	Zinc	FSA-SB-11O1-0001-092110	105	120	1.108333333
SFSA	Zinc	FSA-SB-12O1-0001-092010	133	120	1.083333333
SFSA	Zinc	FSA-SB-13O1-0001-092210	130	120	0.625
SFSA	Zinc	FSA-SB-14O1-0001-092010	75	120	0.419166667
SFSA	Zinc	FSA-SB-15O1-0001-092110	50.3	120	0.824166667
SFSA	Zinc	FSA-SB-16O1-0001-092210	98.9	120	2.166666667
SFSA	Zinc	FSA-SB-17O1-0001-091710	260	120	0.703333333
SFSA	Zinc	FSA-SB-18O1-0001-091610	84.4	120	0.975
SFSA	Zinc	FSA-SB-19O1-0001-092110	117	120	0.6225
SFSA	Zinc	FSA-SB-20O1-0001-091510	74.7	120	2.416666667
SFSA	Zinc	FSA-SB-21O1-0001-092010	290	120	0.283333333
SFSA	Zinc	FSA-SB-22O1-0001-091710	34	120	0.261666667
SFSA	Zinc	FSA-SB-24O1-0001-091310	31.4	120	0.320833333
SFSA	Zinc	FSA-SB-25O1-0001-091310	38.5	120	1.791666667
SFSA	Zinc	FSA-SB-26O1-0001-091410	215	120	1.15

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
SFSA	Zinc	FSA-SB-27O1-0001-091410	138	120	0.3375
SFSA	Zinc	FSA-SB-28O1-0001-091510	40.5	120	0.591666667
SFSA	Zinc	FSA-SB-29O1-0001-091510	71	120	1.808333333
SFSA	Zinc	FSA-SB-30O1-0001-091410	217	120	0.351666667
SFSA	Zinc	FSA-SB-31O1-0001-091510	42.2	120	0.891666667
SFSA	Zinc	FSA-SB-40O1-0001-092110	107	120	0.595833333
SFSA	Zinc	FSA-SB-DUP01-0001-091510	71.5	120	0.941666667
SFSA	Zinc	FSA-SB-DUP02-0001-092110	113	120	0.436666667
SFSA	Zinc	FSA-SB-DUP03-0001-092210	52.4	120	0.966666667
SFSA	Zinc	FSA-SS-03-091510	116	120	1.383333333
SFSA	Zinc	FSA-SS-06-091510	166	120	0.3825
SFSA	Zinc	FSA-SS-32-091510	45.9	600	2.178333333
EFSA	Aluminum	FSA-137-0001-0-082610	1307	600	9.93
EFSA	Aluminum	FSA-SB-23O1-0001-091610	5958	600	9.228333333
EFSA	Aluminum	FSA-SB-33O1-0001-092310	5537	600	8.386666667
EFSA	Aluminum	FSA-SB-34O1-0001-091610	5032	600	10.21333333
EFSA	Aluminum	FSA-SB-35O1-0001-091610	6128	600	17.95666667
EFSA	Aluminum	FSA-SB-36O1-0001-091610	10774	600	11.40166667
EFSA	Aluminum	FSA-SB-37O1-0001-091510	6841	600	10.70833333
EFSA	Aluminum	FSA-SB-38O1-0001-091610	6425	600	9.49
EFSA	Aluminum	FSA-SB-DUP04-0001-092310	5694	600	15.55
EFSA	Aluminum	FSA-SS-17-091510	9330	600	7.773333333
EFSA	Aluminum	FSA-SS-18-091510	4664	600	3.2
EFSA	Aluminum	FSA-SS-22-091510	1920	600	3.13
EFSA	Aluminum	FSA-SS-25-091510	1878	600	3.335
EFSA	Aluminum	FSA-SS-DUP01-091510	2001	78	0.014102564
EFSA	Antimony	FSA-137-0001-0-082610	1.1	78	0.007948718
EFSA	Antimony	FSA-SB-23O1-0001-091610	0.62	78	0.015384615
EFSA	Antimony	FSA-SB-35O1-0001-091610	1.2	78	0.005769231
EFSA	Antimony	FSA-SB-36O1-0001-091610	0.45	78	0.011282051
EFSA	Antimony	FSA-SB-38O1-0001-091610	0.88	78	0.019230769
EFSA	Antimony	FSA-SS-22-091510	1.5	78	0.211538462
EFSA	Antimony	FSA-SS-25-091510	16.5	78	0.026923077
EFSA	Antimony	FSA-SS-DUP01-091510	2.1	0.25	58
EFSA	Arsenic	FSA-137-0001-0-082610	14.5	0.25	13.6
EFSA	Arsenic	FSA-SB-23O1-0001-091610	3.4	0.25	7.2
EFSA	Arsenic	FSA-SB-33O1-0001-092310	1.8	0.25	34
EFSA	Arsenic	FSA-SB-34O1-0001-091610	8.5	0.25	154.8
EFSA	Arsenic	FSA-SB-35O1-0001-091610	38.7	0.25	16
EFSA	Arsenic	FSA-SB-36O1-0001-091610	4	0.25	12.8
EFSA	Arsenic	FSA-SB-37O1-0001-091510	3.2	0.25	8.8
EFSA	Arsenic	FSA-SB-38O1-0001-091610	2.2	0.25	7.6
EFSA	Arsenic	FSA-SB-DUP04-0001-092310	1.9	0.25	12
EFSA	Arsenic	FSA-SS-17-091510	3	0.25	7.6
EFSA	Arsenic	FSA-SS-18-091510	1.9	0.25	53.2
EFSA	Arsenic	FSA-SS-22-091510	13.3	0.25	110
EFSA	Arsenic	FSA-SS-25-091510	27.5	0.25	96.8
EFSA	Arsenic	FSA-SS-DUP01-091510	24.2	330	0.351515152
EFSA	Barium	FSA-137-0001-0-082610	116	330	0.179393939
EFSA	Barium	FSA-SB-23O1-0001-091610	59.2	330	0.122424242
EFSA	Barium	FSA-SB-33O1-0001-092310	40.4	330	2.193939394
EFSA	Barium	FSA-SB-34O1-0001-091610	724	330	0.281212121
EFSA	Barium	FSA-SB-35O1-0001-091610	92.8	330	0.164242424
EFSA	Barium	FSA-SB-36O1-0001-091610	54.2	330	0.15
EFSA	Barium	FSA-SB-37O1-0001-091510	49.5	330	0.16
EFSA	Barium	FSA-SB-38O1-0001-091610	52.8	330	0.163030303
EFSA	Barium	FSA-SB-DUP04-0001-092310	53.8	330	0.129393939
EFSA	Barium	FSA-SS-17-091510	42.7	330	0.333333333
EFSA	Barium	FSA-SS-18-091510	110	330	0.593939394
EFSA	Barium	FSA-SS-22-091510	196	330	0.845454545
EFSA	Barium	FSA-SS-25-091510	279	330	0.83030303
EFSA	Barium	FSA-SS-DUP01-091510	274	140	0.001714286
EFSA	Cadmium	FSA-137-0001-0-082610	0.24	140	0.002642857
EFSA	Cadmium	FSA-SB-23O1-0001-091610	0.37	140	0.0025
EFSA	Cadmium	FSA-SB-34O1-0001-091610	0.35	140	0.004142857

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
EFSA	Cadmium	FSA-SB-35O1-0001-091610	0.58	140	0.001071429
EFSA	Cadmium	FSA-SB-37O1-0001-091510	0.15	140	0.004714286
EFSA	Cadmium	FSA-SS-18-091510	0.66	140	0.002214286
EFSA	Cadmium	FSA-SS-22-091510	0.31	140	0.007857143
EFSA	Cadmium	FSA-SS-25-091510	1.1	140	0.006285714
EFSA	Cadmium	FSA-SS-DUP01-091510	0.88	0.2	39.5
EFSA	Chromium	FSA-137-0001-0-082610	7.9	0.2	33.5
EFSA	Chromium	FSA-SB-23O1-0001-091610	6.7	0.2	40.5
EFSA	Chromium	FSA-SB-33O1-0001-092310	8.1	0.2	51.5
EFSA	Chromium	FSA-SB-34O1-0001-091610	10.3	0.2	101
EFSA	Chromium	FSA-SB-35O1-0001-091610	20.2	0.2	69
EFSA	Chromium	FSA-SB-36O1-0001-091610	13.8	0.2	49.5
EFSA	Chromium	FSA-SB-37O1-0001-091510	9.9	0.2	58.5
EFSA	Chromium	FSA-SB-38O1-0001-091610	11.7	0.2	41
EFSA	Chromium	FSA-SB-DUP04-0001-092310	8.2	0.2	49.5
EFSA	Chromium	FSA-SS-17-091510	9.9	0.2	42.5
EFSA	Chromium	FSA-SS-18-091510	8.5	0.2	35.5
EFSA	Chromium	FSA-SS-22-091510	7.1	0.2	44.5
EFSA	Chromium	FSA-SS-25-091510	8.9	0.2	49
EFSA	Chromium	FSA-SS-DUP01-091510	9.8	1000	0.0042
EFSA	Cobalt	FSA-137-0001-0-082610	4.2	1000	0.0044
EFSA	Cobalt	FSA-SB-23O1-0001-091610	4.4	1000	0.004
EFSA	Cobalt	FSA-SB-33O1-0001-092310	4	1000	0.0063
EFSA	Cobalt	FSA-SB-34O1-0001-091610	6.3	1000	0.0082
EFSA	Cobalt	FSA-SB-35O1-0001-091610	8.2	1000	0.0085
EFSA	Cobalt	FSA-SB-36O1-0001-091610	8.5	1000	0.006
EFSA	Cobalt	FSA-SB-37O1-0001-091510	6	1000	0.0049
EFSA	Cobalt	FSA-SB-38O1-0001-091610	4.9	1000	0.005
EFSA	Cobalt	FSA-SB-DUP04-0001-092310	5	1000	0.0066
EFSA	Cobalt	FSA-SS-17-091510	6.6	1000	0.0037
EFSA	Cobalt	FSA-SS-18-091510	3.7	1000	0.006
EFSA	Cobalt	FSA-SS-22-091510	6	1000	0.0072
EFSA	Cobalt	FSA-SS-25-091510	7.2	1000	0.0068
EFSA	Cobalt	FSA-SS-DUP01-091510	6.8	80	1.10125
EFSA	Copper	FSA-137-0001-0-082610	88.1	80	0.23625
EFSA	Copper	FSA-SB-23O1-0001-091610	18.9	80	0.1975
EFSA	Copper	FSA-SB-33O1-0001-092310	15.8	80	0.71375
EFSA	Copper	FSA-SB-34O1-0001-091610	57.1	80	0.8025
EFSA	Copper	FSA-SB-35O1-0001-091610	64.2	80	0.3975
EFSA	Copper	FSA-SB-36O1-0001-091610	31.8	80	0.41875
EFSA	Copper	FSA-SB-37O1-0001-091510	33.5	80	0.52
EFSA	Copper	FSA-SB-38O1-0001-091610	41.6	80	0.20375
EFSA	Copper	FSA-SB-DUP04-0001-092310	16.3	80	0.24125
EFSA	Copper	FSA-SS-17-091510	19.3	80	0.1825
EFSA	Copper	FSA-SS-18-091510	14.6	80	0.99375
EFSA	Copper	FSA-SS-22-091510	79.5	80	2.425
EFSA	Copper	FSA-SS-25-091510	194	80	2.0625
EFSA	Copper	FSA-SS-DUP01-091510	165	18	0.084833333
EFSA	High Molecular Weight PAHs	FSA-SB-23O1-0001-091610	1.527	18	0.789444444
EFSA	High Molecular Weight PAHs	FSA-SB-34O1-0001-091610	14.21	18	0.515
EFSA	High Molecular Weight PAHs	FSA-SB-35O1-0001-091610	9.27	18	0.113333333
EFSA	High Molecular Weight PAHs	FSA-SB-37O1-0001-091510	2.04	18	1.071111111
EFSA	High Molecular Weight PAHs	FSA-SB-38O1-0001-091610	19.28	18	0.039
EFSA	High Molecular Weight PAHs	FSA-SS-17-091510	0.702	18	0.094444444
EFSA	High Molecular Weight PAHs	FSA-SS-18-091510	1.7	18	1.021666667
EFSA	High Molecular Weight PAHs	FSA-SS-22-091510	18.39	18	13.35277778
EFSA	High Molecular Weight PAHs	FSA-SS-25-091510	240.35	200	35.255
EFSA	Iron	FSA-137-0001-0-082610	7051	200	53.31
EFSA	Iron	FSA-SB-23O1-0001-091610	10662	200	42.84
EFSA	Iron	FSA-SB-33O1-0001-092310	8568	200	61.36
EFSA	Iron	FSA-SB-34O1-0001-091610	12272	200	92.76
EFSA	Iron	FSA-SB-35O1-0001-091610	18552	200	82.365
EFSA	Iron	FSA-SB-36O1-0001-091610	16473	200	54.42
EFSA	Iron	FSA-SB-37O1-0001-091510	10884	200	54.46
EFSA	Iron	FSA-SB-38O1-0001-091610	10892	200	43.405

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
EFSA	Iron	FSA-SB-DUP04-0001-092310	8681	200	63.06
EFSA	Iron	FSA-SS-17-091510	12612	200	44.34
EFSA	Iron	FSA-SS-18-091510	8868	200	35.675
EFSA	Iron	FSA-SS-22-091510	7135	200	84.38
EFSA	Iron	FSA-SS-25-091510	16876	200	69.95
EFSA	Iron	FSA-SS-DUP01-091510	13990	1700	0.041941176
EFSA	Lead	FSA-137-0001-0-082610	71.3	1700	0.007470588
EFSA	Lead	FSA-SB-23O1-0001-091610	12.7	1700	0.013058824
EFSA	Lead	FSA-SB-33O1-0001-092310	22.2	1700	0.016411765
EFSA	Lead	FSA-SB-34O1-0001-091610	27.9	1700	0.039941176
EFSA	Lead	FSA-SB-35O1-0001-091610	67.9	1700	0.008588235
EFSA	Lead	FSA-SB-36O1-0001-091610	14.6	1700	0.010882353
EFSA	Lead	FSA-SB-37O1-0001-091510	18.5	1700	0.024470588
EFSA	Lead	FSA-SB-38O1-0001-091610	41.6	1700	0.011176471
EFSA	Lead	FSA-SB-DUP04-0001-092310	19	1700	0.005941176
EFSA	Lead	FSA-SS-17-091510	10.1	1700	0.007
EFSA	Lead	FSA-SS-18-091510	11.9	1700	0.099411765
EFSA	Lead	FSA-SS-22-091510	169	1700	0.692352941
EFSA	Lead	FSA-SS-25-091510	1177	1700	0.115882353
EFSA	Lead	FSA-SS-DUP01-091510	197	29	0.052724138
EFSA	Low Molecular Weight PAHs	FSA-SB-23O1-0001-091610	1.529	29	0.05362069
EFSA	Low Molecular Weight PAHs	FSA-SB-33O1-0001-092310	1.555	29	0.143793103
EFSA	Low Molecular Weight PAHs	FSA-SB-34O1-0001-091610	4.17	29	0.166206897
EFSA	Low Molecular Weight PAHs	FSA-SB-35O1-0001-091610	4.82	29	0.058448276
EFSA	Low Molecular Weight PAHs	FSA-SB-37O1-0001-091510	1.695	29	0.50862069
EFSA	Low Molecular Weight PAHs	FSA-SB-38O1-0001-091610	14.75	29	0.052655172
EFSA	Low Molecular Weight PAHs	FSA-SS-17-091510	1.527	29	0.116896552
EFSA	Low Molecular Weight PAHs	FSA-SS-18-091510	3.39	29	0.561034483
EFSA	Low Molecular Weight PAHs	FSA-SS-22-091510	16.27	29	3.746551724
EFSA	Low Molecular Weight PAHs	FSA-SS-25-091510	108.65	450	0.237777778
EFSA	Manganese	FSA-137-0001-0-082610	107	450	0.351111111
EFSA	Manganese	FSA-SB-23O1-0001-091610	158	450	0.491111111
EFSA	Manganese	FSA-SB-33O1-0001-092310	221	450	0.722222222
EFSA	Manganese	FSA-SB-34O1-0001-091610	325	450	0.817777778
EFSA	Manganese	FSA-SB-35O1-0001-091610	368	450	0.682222222
EFSA	Manganese	FSA-SB-36O1-0001-091610	307	450	0.582222222
EFSA	Manganese	FSA-SB-37O1-0001-091510	262	450	0.533333333
EFSA	Manganese	FSA-SB-38O1-0001-091610	240	450	0.535555556
EFSA	Manganese	FSA-SB-DUP04-0001-092310	241	450	0.537777778
EFSA	Manganese	FSA-SS-17-091510	242	450	1.591111111
EFSA	Manganese	FSA-SS-18-091510	716	450	0.564444444
EFSA	Manganese	FSA-SS-22-091510	254	450	0.74
EFSA	Manganese	FSA-SS-25-091510	333	450	0.646666667
EFSA	Manganese	FSA-SS-DUP01-091510	291	2.5	13.76
EFSA	Mercury	FSA-137-0001-0-082610	34.4	2.5	0.0316
EFSA	Mercury	FSA-SB-23O1-0001-091610	0.079	2.5	8.56
EFSA	Mercury	FSA-SB-34O1-0001-091610	21.4	2.5	0.6
EFSA	Mercury	FSA-SB-35O1-0001-091610	1.5	2.5	0.056
EFSA	Mercury	FSA-SB-37O1-0001-091510	0.14	2.5	0.052
EFSA	Mercury	FSA-SB-38O1-0001-091610	0.13	2.5	0.03
EFSA	Mercury	FSA-SB-DUP04-0001-092310	0.075	2.5	0.112
EFSA	Mercury	FSA-SS-18-091510	0.28	2.5	6.88
EFSA	Mercury	FSA-SS-22-091510	17.2	2.5	2.32
EFSA	Mercury	FSA-SS-25-091510	5.8	2.5	2.2
EFSA	Mercury	FSA-SS-DUP01-091510	5.5	280	0.047142857
EFSA	Nickel	FSA-137-0001-0-082610	13.2	280	0.017142857
EFSA	Nickel	FSA-SB-23O1-0001-091610	4.8	280	0.021071429
EFSA	Nickel	FSA-SB-33O1-0001-092310	5.9	280	0.046785714
EFSA	Nickel	FSA-SB-34O1-0001-091610	13.1	280	0.061785714
EFSA	Nickel	FSA-SB-35O1-0001-091610	17.3	280	0.036785714
EFSA	Nickel	FSA-SB-36O1-0001-091610	10.3	280	0.101785714
EFSA	Nickel	FSA-SB-37O1-0001-091510	28.5	280	0.028214286
EFSA	Nickel	FSA-SB-38O1-0001-091610	7.9	280	0.0225
EFSA	Nickel	FSA-SB-DUP04-0001-092310	6.3	280	0.030357143
EFSA	Nickel	FSA-SS-17-091510	8.5	280	0.029642857

Location	Analyte	Sample ID	Result (mg/kg)	Soil Invertebrate Benchmark (mg/kg)	Ratio
EFSA	Nickel	FSA-SS-18-091510	8.3	280	0.054642857
EFSA	Nickel	FSA-SS-22-091510	15.3	280	0.077142857
EFSA	Nickel	FSA-SS-25-091510	21.6	280	0.074642857
EFSA	Nickel	FSA-SS-DUP01-091510	20.9	4.1	0.209756098
EFSA	Selenium	FSA-137-0001-0-082610	0.86	4.1	0.512195122
EFSA	Selenium	FSA-SB-23O1-0001-091610	2.1	4.1	0.165853659
EFSA	Selenium	FSA-SB-34O1-0001-091610	0.68	4.1	0.131707317
EFSA	Selenium	FSA-SB-35O1-0001-091610	0.54	4.1	0.119512195
EFSA	Selenium	FSA-SS-17-091510	0.49	4.1	0.317073171
EFSA	Selenium	FSA-SS-18-091510	1.3	4.1	0.292682927
EFSA	Selenium	FSA-SS-22-091510	1.2	4.1	0.341463415
EFSA	Selenium	FSA-SS-25-091510	1.4	4.1	0.365853659
EFSA	Selenium	FSA-SS-DUP01-091510	1.5	50	0.024
EFSA	Silver	FSA-137-0001-0-082610	1.2	20	0.76
EFSA	Vanadium	FSA-137-0001-0-082610	15.2	20	0.93
EFSA	Vanadium	FSA-SB-23O1-0001-091610	18.6	20	0.81
EFSA	Vanadium	FSA-SB-33O1-0001-092310	16.2	20	1.075
EFSA	Vanadium	FSA-SB-34O1-0001-091610	21.5	20	1.45
EFSA	Vanadium	FSA-SB-35O1-0001-091610	29	20	1.54
EFSA	Vanadium	FSA-SB-36O1-0001-091610	30.8	20	0.99
EFSA	Vanadium	FSA-SB-37O1-0001-091510	19.8	20	1.06
EFSA	Vanadium	FSA-SB-38O1-0001-091610	21.2	20	0.77
EFSA	Vanadium	FSA-SB-DUP04-0001-092310	15.4	20	1.19
EFSA	Vanadium	FSA-SS-17-091510	23.8	20	0.765
EFSA	Vanadium	FSA-SS-18-091510	15.3	20	0.71
EFSA	Vanadium	FSA-SS-22-091510	14.2	20	0.64
EFSA	Vanadium	FSA-SS-25-091510	12.8	20	0.815
EFSA	Vanadium	FSA-SS-DUP01-091510	16.3	120	0.469166667
EFSA	Zinc	FSA-137-0001-0-082610	56.3	120	0.256666667
EFSA	Zinc	FSA-SB-23O1-0001-091610	30.8	120	0.240833333
EFSA	Zinc	FSA-SB-33O1-0001-092310	28.9	120	0.718333333
EFSA	Zinc	FSA-SB-34O1-0001-091610	86.2	120	1.608333333
EFSA	Zinc	FSA-SB-35O1-0001-091610	193	120	0.415833333
EFSA	Zinc	FSA-SB-36O1-0001-091610	49.9	120	0.53
EFSA	Zinc	FSA-SB-37O1-0001-091510	63.6	120	0.448333333
EFSA	Zinc	FSA-SB-38O1-0001-091610	53.8	120	0.330833333
EFSA	Zinc	FSA-SB-DUP04-0001-092310	39.7	120	0.35
EFSA	Zinc	FSA-SS-17-091510	42	120	0.941666667
EFSA	Zinc	FSA-SS-18-091510	113	120	0.763333333
EFSA	Zinc	FSA-SS-22-091510	91.6	120	4.058333333
EFSA	Zinc	FSA-SS-25-091510	487	120	2.7
EFSA	Zinc	FSA-SS-DUP01-091510	324		

APPENDIX G

APPENDIX G

SAMPLE BY SAMPLE COMPARISON OF EFSA DETECTED SOIL CONCENTRATIONS WITH SEDIMENT BENCHMARKS

Table G-1
Sample by Sample Comparison of EFSA Detected Soil Concentrations with Sediment Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Analyte	Sample ID	Result (mg/kg)	Sediment Benchmark (mg/kg)	Ratio
2-Methylnaphthalene	FSA-SB-38O1-0001-091610	0.49	0.176	2.784090909
4,4'-DDD	FSA-SS-25-091510	0.037	0.00488	7.581967213
4,4'-DDD	FSA-SS-DUP01-091510	0.048	0.00488	9.836065574
4,4'-DDT	FSA-SB-37O1-0001-091510	0.0056	0.00416	1.346153846
Acenaphthene	FSA-SB-38O1-0001-091610	0.25	0.62	0.403225806
Acenaphthene	FSA-SS-25-091510	2.5	0.62	4.032258065
Acenaphthene	FSA-SS-DUP01-091510	3	0.62	4.838709677
Acenaphthylene	FSA-SB-34O1-0001-091610	0.72	0.0572	12.58741259
Acenaphthylene	FSA-SB-35O1-0001-091610	0.37	0.0572	6.468531469
Acenaphthylene	FSA-SB-38O1-0001-091610	1.5	0.0572	26.22377622
Acetone	FSA-SB-35O1-0001-091610	0.26	0.0087	29.88505747
Acetone	FSA-SB-38O1-0001-091610	0.12	0.0087	13.79310345
Acetone	FSA-SS-18-091510	0.11	0.0087	12.64367816
Alpha-BHC	FSA-SS-25-091510	0.0041	0.00237	1.729957806
Alpha-BHC	FSA-SS-DUP01-091510	0.0059	0.00237	2.489451477
Anthracene	FSA-SB-34O1-0001-091610	0.22	0.0572	3.846153846
Anthracene	FSA-SB-35O1-0001-091610	0.28	0.0572	4.895104895
Anthracene	FSA-SB-38O1-0001-091610	1.3	0.0572	22.72727273
Anthracene	FSA-SS-22-091510	0.36	0.0572	6.293706294
Anthracene	FSA-SS-25-091510	8.9	0.0572	155.5944056
Anthracene	FSA-SS-DUP01-091510	7.8	0.0572	136.3636364
Arsenic	FSA-137-0001-0-082610	14.5	9.79	1.481103166
Arsenic	FSA-SB-23O1-0001-091610	3.4	9.79	0.347293156
Arsenic	FSA-SB-33O1-0001-092310	1.8	9.79	0.183861083
Arsenic	FSA-SB-34O1-0001-091610	8.5	9.79	0.868232891
Arsenic	FSA-SB-35O1-0001-091610	38.7	9.79	3.953013279
Arsenic	FSA-SB-36O1-0001-091610	4	9.79	0.408580184
Arsenic	FSA-SB-37O1-0001-091510	3.2	9.79	0.326864147
Arsenic	FSA-SB-38O1-0001-091610	2.2	9.79	0.224719101
Arsenic	FSA-SB-DUP04-0001-092310	1.9	9.79	0.194075587
Arsenic	FSA-SS-17-091510	3	9.79	0.306435138
Arsenic	FSA-SS-18-091510	1.9	9.79	0.194075587
Arsenic	FSA-SS-22-091510	13.3	9.79	1.358529111
Arsenic	FSA-SS-25-091510	27.5	9.79	2.808988764
Arsenic	FSA-SS-DUP01-091510	24.2	9.79	2.471910112
Benzo(A)Anthracene	FSA-SB-34O1-0001-091610	1.4	0.108	12.96296296
Benzo(A)Anthracene	FSA-SB-35O1-0001-091610	1.2	0.108	11.11111111
Benzo(A)Anthracene	FSA-SB-37O1-0001-091510	0.24	0.108	2.222222222
Benzo(A)Anthracene	FSA-SB-38O1-0001-091610	2.2	0.108	20.37037037
Benzo(A)Anthracene	FSA-SS-17-091510	0.037	0.108	0.342592593
Benzo(A)Anthracene	FSA-SS-18-091510	0.13	0.108	1.203703704
Benzo(A)Anthracene	FSA-SS-22-091510	2.5	0.108	23.14814815
Benzo(A)Anthracene	FSA-SS-25-091510	37	0.108	342.5925926
Benzo(A)Anthracene	FSA-SS-DUP01-091510	32	0.108	296.2962963
Benzo(A)Pyrene	FSA-SB-34O1-0001-091610	1.8	0.15	12
Benzo(A)Pyrene	FSA-SB-35O1-0001-091610	1.1	0.15	7.333333333
Benzo(A)Pyrene	FSA-SB-37O1-0001-091510	0.32	0.15	2.133333333
Benzo(A)Pyrene	FSA-SB-38O1-0001-091610	2.5	0.15	16.66666667

Analyte	Sample ID	Result (mg/kg)	Sediment Benchmark (mg/kg)	Ratio
Benzo(A)Pyrene	FSA-SS-17-091510	0.048	0.15	0.32
Benzo(A)Pyrene	FSA-SS-18-091510	0.15	0.15	1
Benzo(A)Pyrene	FSA-SS-22-091510	1.9	0.15	12.66666667
Benzo(A)Pyrene	FSA-SS-25-091510	27	0.15	180
Benzo(A)Pyrene	FSA-SS-DUP01-091510	23	0.15	153.3333333
Benzo(B)Fluoranthene	FSA-SB-34O1-0001-091610	1.3	0.24	5.416666667
Benzo(B)Fluoranthene	FSA-SB-35O1-0001-091610	1.5	0.24	6.25
Benzo(B)Fluoranthene	FSA-SB-37O1-0001-091510	0.26	0.24	1.083333333
Benzo(B)Fluoranthene	FSA-SB-38O1-0001-091610	1.8	0.24	7.5
Benzo(B)Fluoranthene	FSA-SS-17-091510	0.056	0.24	0.233333333
Benzo(B)Fluoranthene	FSA-SS-18-091510	0.17	0.24	0.708333333
Benzo(B)Fluoranthene	FSA-SS-22-091510	2.5	0.24	10.41666667
Benzo(B)Fluoranthene	FSA-SS-25-091510	23	0.24	95.83333333
Benzo(B)Fluoranthene	FSA-SS-DUP01-091510	22	0.24	91.66666667
Benzo(G,H,I)Perylene	FSA-SB-34O1-0001-091610	2.1	0.17	12.35294118
Benzo(G,H,I)Perylene	FSA-SB-35O1-0001-091610	0.36	0.17	2.117647059
Benzo(G,H,I)Perylene	FSA-SB-37O1-0001-091510	0.16	0.17	0.941176471
Benzo(G,H,I)Perylene	FSA-SB-38O1-0001-091610	1.3	0.17	7.647058824
Benzo(G,H,I)Perylene	FSA-SS-17-091510	0.12	0.17	0.705882353
Benzo(G,H,I)Perylene	FSA-SS-18-091510	0.2	0.17	1.176470588
Benzo(G,H,I)Perylene	FSA-SS-22-091510	1.3	0.17	7.647058824
Benzo(G,H,I)Perylene	FSA-SS-25-091510	16	0.17	94.11764706
Benzo(G,H,I)Perylene	FSA-SS-DUP01-091510	14	0.17	82.35294118
Benzo(K)Fluoranthene	FSA-SB-34O1-0001-091610	1.7	0.24	7.083333333
Benzo(K)Fluoranthene	FSA-SB-35O1-0001-091610	1.1	0.24	4.583333333
Benzo(K)Fluoranthene	FSA-SB-37O1-0001-091510	0.16	0.24	0.666666667
Benzo(K)Fluoranthene	FSA-SB-38O1-0001-091610	2.1	0.24	8.75
Benzo(K)Fluoranthene	FSA-SS-17-091510	0.04	0.24	0.166666667
Benzo(K)Fluoranthene	FSA-SS-18-091510	0.11	0.24	0.458333333
Benzo(K)Fluoranthene	FSA-SS-22-091510	0.88	0.24	3.666666667
Benzo(K)Fluoranthene	FSA-SS-25-091510	25	0.24	104.1666667
Benzo(K)Fluoranthene	FSA-SS-DUP01-091510	15	0.24	62.5
Beta-BHC	FSA-SB-34O1-0001-091610	0.0047	0.00237	1.983122363
Cadmium	FSA-137-0001-0-082610	0.24	0.99	0.242424242
Cadmium	FSA-SB-23O1-0001-091610	0.37	0.99	0.373737374
Cadmium	FSA-SB-34O1-0001-091610	0.35	0.99	0.353535354
Cadmium	FSA-SB-35O1-0001-091610	0.58	0.99	0.585858586
Cadmium	FSA-SB-37O1-0001-091510	0.15	0.99	0.151515152
Cadmium	FSA-SS-18-091510	0.66	0.99	0.666666667
Cadmium	FSA-SS-22-091510	0.31	0.99	0.313131313
Cadmium	FSA-SS-25-091510	1.1	0.99	1.111111111
Cadmium	FSA-SS-DUP01-091510	0.88	0.99	0.888888889
Carbazole	FSA-SB-38O1-0001-091610	0.49	0.0572	8.566433566
Carbazole	FSA-SS-25-091510	1.7	0.0572	29.72027972
Chrysene	FSA-SB-34O1-0001-091610	1.7	0.166	10.24096386
Chrysene	FSA-SB-35O1-0001-091610	1.5	0.166	9.036144578
Chrysene	FSA-SB-37O1-0001-091510	0.23	0.166	1.385542169
Chrysene	FSA-SB-38O1-0001-091610	2.8	0.166	16.86746988

Analyte	Sample ID	Result (mg/kg)	Sediment Benchmark (mg/kg)	Ratio
Chrysene	FSA-SS-17-091510	0.048	0.166	0.289156627
Chrysene	FSA-SS-18-091510	0.15	0.166	0.903614458
Chrysene	FSA-SS-22-091510	2.7	0.166	16.26506024
Chrysene	FSA-SS-25-091510	36	0.166	216.8674699
Chrysene	FSA-SS-DUP01-091510	31	0.166	186.746988
Copper	FSA-137-0001-0-082610	88.1	31.6	2.787974684
Copper	FSA-SB-23O1-0001-091610	18.9	31.6	0.598101266
Copper	FSA-SB-33O1-0001-092310	15.8	31.6	0.5
Copper	FSA-SB-34O1-0001-091610	57.1	31.6	1.806962025
Copper	FSA-SB-35O1-0001-091610	64.2	31.6	2.03164557
Copper	FSA-SB-36O1-0001-091610	31.8	31.6	1.006329114
Copper	FSA-SB-37O1-0001-091510	33.5	31.6	1.060126582
Copper	FSA-SB-38O1-0001-091610	41.6	31.6	1.316455696
Copper	FSA-SB-DUP04-0001-092310	16.3	31.6	0.515822785
Copper	FSA-SS-17-091510	19.3	31.6	0.610759494
Copper	FSA-SS-18-091510	14.6	31.6	0.462025316
Copper	FSA-SS-22-091510	79.5	31.6	2.515822785
Copper	FSA-SS-25-091510	194	31.6	6.139240506
Copper	FSA-SS-DUP01-091510	165	31.6	5.221518987
Dibenz(A,H)Anthracene	FSA-SB-35O1-0001-091610	0.2	0.033	6.060606061
Dibenz(A,H)Anthracene	FSA-SS-22-091510	0.51	0.033	15.45454545
Dibenz(A,H)Anthracene	FSA-SS-25-091510	4.8	0.033	145.4545455
Dibenz(A,H)Anthracene	FSA-SS-DUP01-091510	4.9	0.033	148.4848485
Endrin Aldehyde	FSA-SS-DUP01-091510	0.049	0.00222	22.07207207
Endrin Ketone	FSA-SS-DUP01-091510	0.055	0.00222	24.77477477
Fluoranthene	FSA-SB-23O1-0001-091610	0.089	0.423	0.210401891
Fluoranthene	FSA-SB-34O1-0001-091610	1.7	0.423	4.01891253
Fluoranthene	FSA-SB-35O1-0001-091610	2	0.423	4.728132388
Fluoranthene	FSA-SB-37O1-0001-091510	0.34	0.423	0.803782506
Fluoranthene	FSA-SB-38O1-0001-091610	5.4	0.423	12.76595745
Fluoranthene	FSA-SB-DUP04-0001-092310	0.075	0.423	0.177304965
Fluoranthene	FSA-SS-17-091510	0.085	0.423	0.200945626
Fluoranthene	FSA-SS-18-091510	0.19	0.423	0.449172577
Fluoranthene	FSA-SS-22-091510	2.8	0.423	6.619385343
Fluoranthene	FSA-SS-25-091510	47	0.423	111.1111111
Fluoranthene	FSA-SS-DUP01-091510	35	0.423	82.74231678
Fluorene	FSA-SB-38O1-0001-091610	1.1	0.0774	14.2118863
Fluorene	FSA-SS-22-091510	0.11	0.0774	1.42118863
Fluorene	FSA-SS-25-091510	2.2	0.0774	28.42377261
Fluorene	FSA-SS-DUP01-091510	1.8	0.0774	23.25581395
Heptachlor	FSA-SS-25-091510	0.018	0.00247	7.287449393
Heptachlor	FSA-SS-DUP01-091510	0.019	0.00247	7.692307692
Indeno(1,2,3-Cd)Pyrene	FSA-SB-34O1-0001-091610	2	0.2	10
Indeno(1,2,3-Cd)Pyrene	FSA-SB-35O1-0001-091610	0.51	0.2	2.55
Indeno(1,2,3-Cd)Pyrene	FSA-SB-37O1-0001-091510	0.18	0.2	0.9
Indeno(1,2,3-Cd)Pyrene	FSA-SB-38O1-0001-091610	1.7	0.2	8.5
Indeno(1,2,3-Cd)Pyrene	FSA-SS-17-091510	0.07	0.2	0.35
Indeno(1,2,3-Cd)Pyrene	FSA-SS-18-091510	0.17	0.2	0.85

Table G-1
Sample by Sample Comparison of EFSA Detected Soil Concentrations with Sediment Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Analyte	Sample ID	Result (mg/kg)	Sediment Benchmark (mg/kg)	Ratio
Indeno(1,2,3-Cd)Pyrene	FSA-SS-22-091510	1.7	0.2	8.5
Indeno(1,2,3-Cd)Pyrene	FSA-SS-25-091510	25	0.2	125
Indeno(1,2,3-Cd)Pyrene	FSA-SS-DUP01-091510	20	0.2	100
Lead	FSA-137-0001-0-082610	71.3	35.8	1.991620112
Lead	FSA-SB-23O1-0001-091610	12.7	35.8	0.354748603
Lead	FSA-SB-33O1-0001-092310	22.2	35.8	0.620111732
Lead	FSA-SB-34O1-0001-091610	27.9	35.8	0.779329609
Lead	FSA-SB-35O1-0001-091610	67.9	35.8	1.896648045
Lead	FSA-SB-36O1-0001-091610	14.6	35.8	0.407821229
Lead	FSA-SB-37O1-0001-091510	18.5	35.8	0.516759777
Lead	FSA-SB-38O1-0001-091610	41.6	35.8	1.162011173
Lead	FSA-SB-DUP04-0001-092310	19	35.8	0.530726257
Lead	FSA-SS-17-091510	10.1	35.8	0.282122905
Lead	FSA-SS-18-091510	11.9	35.8	0.332402235
Lead	FSA-SS-22-091510	169	35.8	4.720670391
Lead	FSA-SS-25-091510	1177	35.8	32.87709497
Lead	FSA-SS-DUP01-091510	197	35.8	5.502793296
Manganese	FSA-137-0001-0-082610	107	460	0.232608696
Manganese	FSA-SB-23O1-0001-091610	158	460	0.343478261
Manganese	FSA-SB-33O1-0001-092310	221	460	0.480434783
Manganese	FSA-SB-34O1-0001-091610	325	460	0.706521739
Manganese	FSA-SB-35O1-0001-091610	368	460	0.8
Manganese	FSA-SB-36O1-0001-091610	307	460	0.667391304
Manganese	FSA-SB-37O1-0001-091510	262	460	0.569565217
Manganese	FSA-SB-38O1-0001-091610	240	460	0.52173913
Manganese	FSA-SB-DUP04-0001-092310	241	460	0.523913043
Manganese	FSA-SS-17-091510	242	460	0.526086957
Manganese	FSA-SS-18-091510	716	460	1.556521739
Manganese	FSA-SS-22-091510	254	460	0.552173913
Manganese	FSA-SS-25-091510	333	460	0.723913043
Manganese	FSA-SS-DUP01-091510	291	460	0.632608696
Mercury	FSA-137-0001-0-082610	34.4	0.18	191.1111111
Mercury	FSA-SB-23O1-0001-091610	0.079	0.18	0.438888889
Mercury	FSA-SB-34O1-0001-091610	21.4	0.18	118.8888889
Mercury	FSA-SB-35O1-0001-091610	1.5	0.18	8.333333333
Mercury	FSA-SB-37O1-0001-091510	0.14	0.18	0.777777778
Mercury	FSA-SB-38O1-0001-091610	0.13	0.18	0.722222222
Mercury	FSA-SB-DUP04-0001-092310	0.075	0.18	0.416666667
Mercury	FSA-SS-18-091510	0.28	0.18	1.555555556
Mercury	FSA-SS-22-091510	17.2	0.18	95.55555556
Mercury	FSA-SS-25-091510	5.8	0.18	32.22222222
Mercury	FSA-SS-DUP01-091510	5.5	0.18	30.55555556
Naphthalene	FSA-SB-38O1-0001-091610	0.42	0.176	2.386363636
Nickel	FSA-137-0001-0-082610	13.2	22.7	0.581497797
Nickel	FSA-SB-23O1-0001-091610	4.8	22.7	0.211453744
Nickel	FSA-SB-33O1-0001-092310	5.9	22.7	0.259911894
Nickel	FSA-SB-34O1-0001-091610	13.1	22.7	0.577092511
Nickel	FSA-SB-35O1-0001-091610	17.3	22.7	0.762114537

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Sample by Sample Comparison of EFSA Detected Soil Concentrations with Sediment Benchmarks
Chlor-Alkali Facility (Former) Superfund Site
Berlin, New Hampshire

Analyte	Sample ID	Result (mg/kg)	Sediment Benchmark (mg/kg)	Ratio
Nickel	FSA-SB-36O1-0001-091610	10.3	22.7	0.453744493
Nickel	FSA-SB-37O1-0001-091510	28.5	22.7	1.255506608
Nickel	FSA-SB-38O1-0001-091610	7.9	22.7	0.348017621
Nickel	FSA-SB-DUP04-0001-092310	6.3	22.7	0.27753304
Nickel	FSA-SS-17-091510	8.5	22.7	0.374449339
Nickel	FSA-SS-18-091510	8.3	22.7	0.365638767
Nickel	FSA-SS-22-091510	15.3	22.7	0.674008811
Nickel	FSA-SS-25-091510	21.6	22.7	0.95154185
Nickel	FSA-SS-DUP01-091510	20.9	22.7	0.920704846
Phenanthrene	FSA-SB-34O1-0001-091610	0.48	0.204	2.352941176
Phenanthrene	FSA-SB-35O1-0001-091610	0.47	0.204	2.303921569
Phenanthrene	FSA-SB-37O1-0001-091510	0.095	0.204	0.465686275
Phenanthrene	FSA-SB-38O1-0001-091610	3.8	0.204	18.62745098
Phenanthrene	FSA-SS-17-091510	0.042	0.204	0.205882353
Phenanthrene	FSA-SS-22-091510	1.5	0.204	7.352941176
Phenanthrene	FSA-SS-25-091510	35	0.204	171.5686275
Phenanthrene	FSA-SS-DUP01-091510	32	0.204	156.8627451
Pyrene	FSA-SB-23O1-0001-091610	0.087	0.195	0.446153846
Pyrene	FSA-SB-34O1-0001-091610	2	0.195	10.25641026
Pyrene	FSA-SB-35O1-0001-091610	1.8	0.195	9.230769231
Pyrene	FSA-SB-37O1-0001-091510	0.31	0.195	1.58974359
Pyrene	FSA-SB-38O1-0001-091610	4.7	0.195	24.1025641
Pyrene	FSA-SS-17-091510	0.083	0.195	0.425641026
Pyrene	FSA-SS-18-091510	0.22	0.195	1.128205128
Pyrene	FSA-SS-22-091510	4.4	0.195	22.56410256
Pyrene	FSA-SS-25-091510	57	0.195	292.3076923
Pyrene	FSA-SS-DUP01-091510	58	0.195	297.4358974
Silver	FSA-137-0001-0-082610	1.2	0.5	2.4
Zinc	FSA-137-0001-0-082610	56.3	121	0.465289256
Zinc	FSA-SB-23O1-0001-091610	30.8	121	0.254545455
Zinc	FSA-SB-33O1-0001-092310	28.9	121	0.238842975
Zinc	FSA-SB-34O1-0001-091610	86.2	121	0.712396694
Zinc	FSA-SB-35O1-0001-091610	193	121	1.595041322
Zinc	FSA-SB-36O1-0001-091610	49.9	121	0.412396694
Zinc	FSA-SB-37O1-0001-091510	63.6	121	0.525619835
Zinc	FSA-SB-38O1-0001-091610	53.8	121	0.444628099
Zinc	FSA-SB-DUP04-0001-092310	39.7	121	0.328099174
Zinc	FSA-SS-17-091510	42	121	0.347107438
Zinc	FSA-SS-18-091510	113	121	0.933884298
Zinc	FSA-SS-22-091510	91.6	121	0.757024793
Zinc	FSA-SS-25-091510	487	121	4.024793388
Zinc	FSA-SS-DUP01-091510	324	121	2.67768595