Appendix L. Screening Level Ecological Risk Assessment for Parcel E-2

Table of Contents

LIST OF FIGURES ..... **III**

LIST OF TABLES ..... **III**

ACRONYMS AND ABBREVIATIONS ..... **IV**

SECTION L1. INTRODUCTION **1-1**

L1.1. Overview of the Ecological Risk Assessment Process 1-1

L1.2. Data Quality Objectives 1-2

L1.3. Ecology and Typical Species of Parcel E-2 1-2

SECTION L2. SCREENING-LEVEL PROBLEM FORMULATION AND ECOLOGICAL EFFECTS CHARACTERIZATION (STEP 1) **2-1**

L2.1. Effects Characterization (Step 1) 2-1

L2.2. General Approach to Screening-Level Evaluation 2-1

L2.3. Fate and Transport Pathways 2-2

L2.4. Identification of Complete Exposure Pathways and Generic Assessment Endpoints 2-2

L2.4.1. Ecological Receptors 2-2

L2.5. Selection of Screening Ecotoxicity Values 2-3

L2.5.1. PSCs for Ecological Receptors 2-3

L2.6. Chemicals with No Screening Values 2-4

L2.7. Evaluation of Detection Limits 2-4

SECTION L3. SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENT FOR AVERAGE RECEPTORS **3-1**

L3.1. Approach for Evaluating Risk to Receptors 3-1

L3.2. Protective Soil Concentrations and the Hazard Quotient Interpretation 3-1

L3.2.1. PSCs 3-2

L3.2.2. Hazard Quotient Approach 3-2

L3.3. Risk Estimates 3-2

L3.3.1. Landfill Area 3-2

L3.3.2. East Adjacent Area 3-3

L3.3.3. Panhandle Area 3-4

SECTION L4. RISK CHARACTERIZATION **4-1**

L4.1. Refinement of Chemicals of Potential Ecological Concern 4-2

L4.1.1. Comparison of Soil Concentrations with HPALs 4-2

L4.2. Risk Characterization for Parcel E-2 4-2

L4.3. Uncertainty in the Screening Level Ecological Risk Assessment 4-3

L4.3.1. Sample Data 4-3

Table of Contents (continued)

L4.3.2. Ambient Screening Concentrations 4-3
L4.3.3. Toxicological Benchmarks 4-3
L4.3.4. Hazard Quotients 4-4
L4.4. Conclusions and Recommendations of the SLERA 4-4

SECTION L5. REFERENCES.....5-1

List of Figures

Figure L-1. Cadmium Concentrations Exceeding the Protective Soil Concentration In 0 - 3' Soil
Figure L-2. Copper Concentrations Exceeding the Protective Soil Concentration In 0 - 3' Soil
Figure L-3. Lead Concentrations Exceeding the Protective Soil Concentration In 0 - 3' Soil
Figure L-4. Vanadium Concentrations Exceeding the Protective Soil Concentration In 0 - 3' Soil
Figure L-5. Zinc Concentrations Exceeding the Protective Soil Concentration In 0 - 3' Soil
Figure L-6. Managanese Concentrations Exceeding the Protective Soil Concentration In 0 - 3' Soil

List of Tables

Table L-1. Number and Type of Analyses Used in SLERA by Subarea
Table L-2. Soil Data for SLERA Analysis, Landfill Area
Table L-3. Soil Data for SLERA Analysis, East Adjacent Area
Table L-4. Soil Data for SLERA Analysis, Panhandle Area
Table L-5. Comparison of Parcel E-2 Pre-2000 Data and All Data
Table L-6. Summary of Mammalian and Avian Protective Soil Concentrations Derived in 2000 and 2005
Table L-7. Hazard Quotient for Birds and Mammals at Parcel E-2
Table L-8. Toxicological Affects on Birds and Mammals at Parcel E-2

Acronyms and Abbreviations

ATSDR	Agency for Toxic Substances and Disease Registry
BERA	Baseline ecological risk assessment
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COPEC	chemical of potential ecological concern
DDT	dichlorodiphenyltrichloroethane
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
ERA	ecological risk assessment
ER-M	effects range-median
HPAL	Hunters Point ambient level
HMW	high molecular weight
HPS	Hunters Point Shipyard
HQ	hazard quotient
LFR	Levine-Fricke Recon
LMW	low-molecular weight
mg/kg	milligram per kilogram
Navy	U.S. Department of the Navy
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PSC	protective soil concentration
RI/FS	remedial investigation/feasibility study

Acronyms and Abbreviations (continued)

SLERA	screening-level ecological risk assessment
SulTech	Sullivan Consulting Group and Tetra Tech EM, Inc.
TtEMI	Tetra Tech EM Inc.
UCL95	95 percent upper confidence limit
USFWS	U.S. Fish and Wildlife Service

Section L1. Introduction

This appendix presents an evaluation of risk to onshore ecological receptors exposed to soil in Parcel E-2 at Hunters Point Shipyard in San Francisco, California. It follows standard practice in developing a screening-level ecological risk assessment (SLERA), as described in guidance from the U.S. Environmental Protection Agency (EPA) (EPA, 1997). However, much of the background information on Parcel E-2, such as history, previous investigations, data collection and analysis, and other typical elements, is presented in the remedial investigation/feasibility study (RI/FS), of which this appendix is a part. As such, this appendix is not intended to stand alone, but is an integral part of the RI/FS.

This SLERA was conducted to update the previous ecological risk assessments at Parcel E-2[1]. This SLERA was necessitated by the collection of additional data during a soil data gaps investigation in 2002, which resulted in the identification of new chemicals of potential ecological concern (COPECs) and the calculation of corresponding protective soil concentrations (PSCs). The objective of the SLERA is to determine the potential for significant risk to terrestrial receptors exposed to soil from 0 to 3 feet below ground surface (bgs) at Parcel E-2 within the onshore area. A separate SLERA was performed to evaluate potential ecological risk to aquatic receptors exposed to intertidal sediment within the Shoreline Area of Parcel E-2. This shoreline SLERA (Sullivan Consulting Group and Tetra Tech EM, Inc. [SulTech], 2005) is presented in Appendix G to this RI/FS.

This section provides an overview of the ecological risk assessment (ERA) process, data quality objectives (DQO), and the ecology and typical species present at Parcel E-2. Section L2.0 presents the problem formulation and approach to the SLERA. Section L3.0 summarizes risk to birds and mammals. Section L4.0 presents the risk characterization. Section L5.0 provides the references used to prepare this appendix. Figures and tables are included after Section L5.0.

L1.1. OVERVIEW OF THE ECOLOGICAL RISK ASSESSMENT PROCESS

Ecological risk assessments are intended to fulfill three basic functions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): 1) document whether actual or

[1] In September 2004, the Navy divided Parcel E into two parcels (E and E-2). Discussions within this appendix that reference reports published prior to September 2004 refer to the portion of Parcel E that became Parcel E-2. A summary of past ecological assessments performed at Parcels E and E-2 is presented in Section 3.5 of the RI/FS.

potential ecological risks exist at a site; 2) identify chemicals at a site that pose a potential ecological risk; and 3) generate data to be used to evaluate cleanup options, if necessary.

The EPA separates the ERA process into the following eight steps (EPA, 1997):

- Step 1: Screening-level problem formulation and evaluation of ecological effects
- Step 2: Screening-level preliminary exposure estimate and risk calculation
- Step 3: Baseline ecological risk assessment (BERA) problem formulation
- Step 4: Study design and DQOs
- Step 5: Field verification of sampling design
- Step 6: Site investigation and analysis of exposure and effects
- Step 7: Risk characterization
- Step 8: Risk management

The substantive elements of steps 1 and 2 make up the SLERA. This appendix extends the SLERA into the initial phase of Step 3, which corresponds to Step 3a "Refinement of Conservative Exposure Assumptions" of the Navy's ERA process (Navy, 1999). Step 3a focuses on refining the list of COPECs based on comparison with Hunters Point ambient levels (HPAL). Further refinement of the ecological risks, using food chain modeling for birds and mammals, was not considered necessary given that human health risk evaluations have shown cancer risks greater than 1×10^{-6} and total noncancer hazard indices greater than 1.0 in the majority of Parcel E-2 areas. Consistent with this finding, surface soil throughout Parcel E-2 is planned for remedial option analysis in the FS.

L1.2. DATA QUALITY OBJECTIVES

DQOs established for this investigation provided the framework for deciding: 1) where and how data were collected from within Parcel E-2; 2) what criteria were used to screen data; and 3) how screened data were evaluated to identify potential sources areas of contamination. The following study question concerns ecological risk and is addressed in this appendix: "Does contamination within Parcel E-2 indicate a potential for significant risk to ecological receptors exposed to soil from 0-3 feet bgs?"

The study question focuses on risk to ecological receptors exposed to contaminated soil at Parcel E-2. To address this question, the SLERA screened concentrations of chemicals in soil samples collected from 0-3 feet bgs at Parcel E-2 against PSCs for ecological receptors. Derivation of PSCs is described in Section L2.4.1. Section L3.0 summarizes the evaluation of risk to receptors at Parcel E-2.

L1.3. ECOLOGY AND TYPICAL SPECIES OF PARCEL E-2

The focus of this SLERA is the 47 acres of upland area of Parcel E-2 is (see Figure 1-2 in the RI/FS). Figure 1.2 shows the location of the Landfill, and the four distinct, but contiguous, areas contained within Parcel E-2:

1. The "Landfill Area", which comprises the entire Landfill and its immediate perimeter

2. The “East Adjacent Area”, located to the east of the Landfill Area
3. The “Panhandle Area”, located west/southwest of the Landfill Area
4. The “Shoreline Area”, located at the interface with San Francisco Bay

Risk to ecological receptors in the Shoreline Area was addressed in a separate SLERA (SulTech, 2005) that is presented in Appendix G to this RI/FS. Therefore, information pertaining to the Shoreline Area is not presented in this appendix.

The ecology of the non-shoreline areas of Parcel E-2 includes industrial, ruderal (disturbed), grassland, and wetland habitats. The original ecological risk assessment for Parcel E (Tetra Tech EM, Inc. [TtEMI] and Levine-Fricke Recon [LFR], 2000a) selected the key receptors present within Parcel E. This SLERA is a follow-on assessment consistent with the general approach as presented in the validation report (TtEMI and LFR, 2000a).

The American kestrel (*Falco sparverius*) and the red-tailed hawk (*Buteo jamaicensis*) are reported to be present within Parcel E-2 and are the key avian receptors for this SLERA. The adult and juvenile house mouse (*Mus musculus*) is the mammal species chosen as the key receptor for this Parcel E-2 SLERA.

Section L2. Screening-Level Problem Formulation and Ecological Effects Characterization (Step 1)

L2.1. EFFECTS CHARACTERIZATION (STEP 1)

The SLERA described in steps 1 and 2 of EPA's eight-step process results in a list of "preliminary contaminants of concern for the baseline risk assessment" (EPA 1997, page 2-1). This section describes the screening methods used to identify COPECs in Parcel E-2 soil samples based on comparison to toxicological benchmarks for particular groups of ecological receptors.

L2.2. GENERAL APPROACH TO SCREENING-LEVEL EVALUATION

All chemicals detected in surface soil samples (0 to 3.0 feet bgs) from Parcels E-2, with the exception of essential mineral nutrients, were screened against PSCs for key receptors to identify COPECs. Essential mineral nutrients include sodium, chloride, potassium, phosphorus, magnesium, and calcium. A hazard quotient (HQ) approach was used to identify site-related chemicals that may pose risks to average receptors present at Parcel E-2.

The process and rationale for identifying COPECs are similar for all areas and ecological receptors. In the evaluation of risk to average receptors, concentrations of chemicals in soil were screened against PSCs (see Section L4.0). In the risk characterization step, COPECs were refined by comparing to HPAL (PRC Environmental Management, Inc. 1995) (see Section L4.0).

The site-specific data set used in this SLERA included (1) laboratory chemical analysis of soil samples and (2) results of ecological surveys. Table L-1 summarizes the shallow soil samples (0 to 3 feet bgs) collected from the three subareas of Parcel E-2. Tables L-2 to L-4 present the data used in this SLERA for the Landfill Area (Table L-2), the East Adjacent Area (Table L-3) and the Panhandle Area (Table L-4). Analytical data used in this SLERA included metals, polychlorinated biphenyls (PCBs), pesticides, and semivolatile organic compounds. PSCs were not calculated for volatile organic compounds, total petroleum hydrocarbons, dioxins and furans, or organotins. The results of ecological surveys are presented in the Parcel E Ecological Risk Assessment Validation Study Report (TtEMI and LFR, 2000a).

Additionally, the evaluation of risk to receptors used the following data:

- Wildlife surveys conducted as part of previous studies in Parcel E (TtEMI and LFR, 2000a)

- PSCs for receptors based on twelve collocated tissue and soil samples collected from within Parcel E.

For purposes of the SLERA, all of Parcel E-2 was considered terrestrial habitat (consisting of industrial, ruderal, grassland and wetland habitats) and the solid medium was defined as soil. The rationale for choosing sampling locations and analytical methods are provided in the main text of the RI/FS. Complete analytical data are provided in Appendix J of the RI/FS.

L2.3. FATE AND TRANSPORT PATHWAYS

The primary source of contaminants in soil within Parcel E-2 is solid waste in the Landfill Area and includes (but is not limited to) wood, paper, plastic, metal, glass, asphalt, concrete, and bricks. This is described in more detail in the RI/FS. The affected soil can also act as direct exposure pathways for contaminants or can be the source of leaching contaminants to groundwater, surface water, or emissions constituents. Metals present beneath the ground surface in Parcel E-2 are effectively immobile because they are not transported overland as dry particulate materials. Groundwater discharge and the potential for groundwater to exceed aquatic criteria at the property boundary are addressed in the groundwater nature and extent evaluation (Section 5) and Appendix M of the RI/FS).

L2.4. IDENTIFICATION OF COMPLETE EXPOSURE PATHWAYS AND GENERIC ASSESSMENT ENDPOINTS

At the screening level, exposure pathways were assumed to be complete to all ecological receptors that potentially occur within Parcel E-2. EPA defines an assessment endpoint as an "explicit expression of an environmental value to be protected" (EPA 1997). Site-specific factors for Parcel E-2 influenced the selection of endpoints. These include the occurrence, ecological significance, life and natural history characteristics, and potential toxicological susceptibility of receptors; the known and potential contaminants present and their mechanisms of toxicity; and the spatial and temporal patterns of potential exposure. Measurement endpoints are considered to be primary lines of evidence that have a direct relationship to the assessment endpoints defined for each receptor group.

L2.4.1. Ecological Receptors

Various birds and mammals forage in the terrestrial habitat that characterizes Parcel E-2. Key bird species reported to be present within Parcel E-2 include both the American Kestral and the red-tailed hawk. The house mouse, a key mammal receptor, is also known to be present within Parcel E-2, especially in the Panhandle Area (TtEMI and LFR, 2000a).

Protection of the population was used as the endpoint for all species, except those for which the individual is the unit of protection because of federal or state threatened or endangered status. Taxa reported to use the habitats at Hunters Point Shipyard (HPS) were considered as possible assessment endpoints; in general, assessment endpoints with important ecological, toxicological, and social considerations at HPS were chosen. Results of the receptor research effort and surveys provided information for the selection of

relevant terrestrial assessment endpoints. Assessment endpoints were chosen to represent environmental characteristics of biological and social significance, such as individuals or populations of organisms that, if found to be significantly affected by exposure to stressors (such as COPECs) at a site, would indicate a need for remediation (EPA, 1992a).

Section L3.0 summarizes the evaluation of risk to these receptors by evaluating the hazard quotients for the COPECs and their respective PSCs.

The risk question addressed for each endpoint was as follows: Does the comparison of the maximum soil concentrations to PSCs for individual COPECs indicate a potential for significant risk to receptors?

L2.5. SELECTION OF SCREENING ECOTOXICITY VALUES

Soil samples collected from each location within Parcel E-2 were compared with PSCs, which were derived toxicological benchmarks appropriate for each of the generic assessment endpoints identified in Section L2.3. Toxicological benchmarks derived from the published scientific literature are available for birds and mammals exposed to chemicals in ingested soil and prey. The generation of PSCs is discussed below.

L2.5.1. PSCs for Ecological Receptors

The evaluation of potential risk to average ecological receptors focused on a comparison of chemical concentrations in soil to the respective PSCs (see Section L3.0). PSCs were originally derived using twelve collocated soil and tissue samples collected from within Parcel E (TtEMI and LFR, 2000b). Three of the samples were from the Panhandle Area of Parcel E-2. PSCs were derived for cadmium, copper, lead, nickel, selenium, and zinc because these chemicals were shown to pose a potential risk to birds and mammals based on conservative food chain modeling. The purpose of the PSCs was to use site-specific prey tissue data to represent actual bioavailability of chemicals at the site rather than rely on bioaccumulation factors published in the scientific literature.

Since the time of the derivation of the original PSCs, Parcel E-2 has been split from Parcel E, additional soil data have been collected, and some soils have been removed. The new data set was evaluated to determine whether any chemicals which had originally been screened out were now shown to pose a potential risk to birds or mammals at E-2.

Summary statistics were generated for the original soil data that was used in the early phases of the RI for Parcel E and the combined data set representing existing soil samples at Parcel E-2. Chemicals with at least a five percent frequency of detection were retained for evaluation. These included aluminum, antimony, arsenic, barium, beryllium, cadmium, total chromium, chromium VI, cobalt, copper, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, tin, vanadium, zinc, dieldrin, methoxychlor, 2-butanone, toluene, trichloroethene, xylene total aroclors, total chlordanes, total dichlordiphenyltrichloroethanes (DDT), total PCB, total low molecular weight (LMW) polynuclear aromatic hydrocarbons (PAH), and total high molecular weight (HMW) PAHs (Table L-5).

Chemicals for which the 95 percent upper confidence limit (UCL95) in the current data set were at least 10 percent higher than in the previous data set were retained for further evaluation. PSCs were calculated for these chemicals using the methods described in the Draft Final Protective Soil Concentrations Technical Memorandum (TtEMI and LFR, 2000b). The following chemicals were retained for PSC calculation: beryllium, chromium VI, copper, manganese, selenium, thallium, vanadium, dieldrin, methoxychlor, total arochlors, total chlordanes, total DDTs, total HMW PAHs, and total LMW PAHs. Selenium was re-evaluated because the original PSC was less than the ambient concentration of selenium in soil at Parcel E. Based on the new data set available, a site-specific and reliable PSC for selenium was derived. No previous PSC was calculated for vanadium. The newly-calculated PSC for vanadium was less than the HPAL, so this SLERA uses the HPAL for vanadium as the PSC. Table L-6 provides a summary of the PSCs for all identified COPECs at Parcel E-2.

L2.6. CHEMICALS WITH NO SCREENING VALUES

Chemicals cannot be eliminated during the early stages of the risk assessment simply because no benchmarks are available (EPA, 1997). Experience and common sense suggest that chemicals without benchmarks do not typically drive cleanup decisions. In most cases, the lack of a toxicological benchmark is due to inadequate exposure and effects data in the literature, as evaluated by the authors of published benchmarks (Long and others 1995; Efroymson and others, 1997). In such cases, the Navy finds it indefensible to derive benchmarks based on an independent evaluation of the literature.

In steps 1 and 2 of the eight-step ERA framework, chemicals detected at the site were retained "by default" if no toxicological benchmark was available (EPA, 1997). As a result, the potential for any of these chemicals to induce toxicity is unknown. The chemicals for which no valid toxicological benchmarks were available are not considered primary COPECs, and further consideration of these chemicals is limited to the uncertainty discussion (see Section L4.3). Primary COPECs are those that exceed PSCs.

L2.7. EVALUATION OF DETECTION LIMITS

If detection limits are higher than toxicological benchmarks or regulatory screening criteria, nondetect data points cannot be used to evaluate risk (EPA, 2001). Detection limits achieved with standard Contract Laboratory Program methods for most inorganic chemicals are usually lower than available benchmarks; however, detection limits achieved with Contract Laboratory Program methods for organic chemicals can be higher than available benchmarks. Chemicals for which detection limits were higher than benchmarks or screening values were retained as COPECs for this assessment.

Soil samples from Parcel E-2 were analyzed using low detection limit methods for PAHs, pesticides, and PCBs to achieve detection limits below or near screening values. However, low detection limits were not always achieved because of high percent moisture and matrix interference in many samples.

Section L3. Screening-Level Ecological Risk Assessment for Average Receptors

This section presents the estimation of risk to birds and mammals reported to be present in the upland areas of Parcel E-2. This evaluation contains more site-specific data, and thus fewer conservative assumptions, than is typical of a SLERA. However, it does not contain enough data to be considered a BERA. This section discusses the HQ approach to determine the potential for risk to species present at Parcel E-2.

Section L3.1 presents the approach to evaluating potential risk to receptors at Parcel E-2. Section L3.2 presents the PSCs and the hazard quotient calculations. Section L3.3 presents the estimated risk to receptors based on the HQ calculations.

L3.1. APPROACH FOR EVALUATING RISK TO RECEPTORS

Available data for evaluating potential for risk to average receptors included (1) measured concentrations of chemicals in soil, and (2) PSCs for Parcel E-2 (as described in Section L2.4.1), PSCs were derived for two key avian receptors (the American kestrel and the red-tailed hawk) and one key mammalian receptor (the house mouse). The lowest of the three PSCs was used as the benchmark for each chemical for the evaluation of potential risk to vertebrate receptors at Parcel E-2. In most cases, the lowest PSC was based on risk to the house mouse, a small omnivorous mammal.

L3.2. PROTECTIVE SOIL CONCENTRATIONS AND THE HAZARD QUOTIENT INTERPRETATION

Maximum concentrations of COPECs were compared with PSCs to determine whether there is the potential for risk to ecological receptors.

$$HQ = \frac{\text{Maximum Soil Concentration}}{\text{PSC}} \qquad \frac{\text{mg/kg}}{\text{mg/kg}}$$

Where:

HQ =Hazard quotient (unitless)

Maximum Concentration = Maximum detected soil concentration for a given COPEC in milligrams per kilograms (mg/kg)

PSC =Protective soil concentration (mg/kg)

L3.2.1. PSCs

PSCs used in the SLERA were derived using methods described in the Draft Final Protective Soil Concentrations Technical Memorandum (TtEMI and LFR, 2000b). A PSC represents a concentration below which soil contamination is believed to pose no unacceptable risk to the receptor group for which it is derived. PSCs were calculated for the American kestrel, red-tailed hawk, and house mouse. For this SLERA, HQs were calculated using the lowest of the three PSCs so that the resulting risk assessment would be protective of all three types of receptors

L3.2.2. Hazard Quotient Approach

As discussed in the guidance (EPA 1998), receptors may be at risk if the HQ exceeds 1.0. HQs were calculated for each of three subareas, as shown in Table L-7. Because of differences in the degree of conservatism in selecting PSCs for various chemicals, resulting HQ values should not be compared between chemicals or receptors or summed in a hazard index; instead, HQs should be considered individually.

L3.3. RISK ESTIMATES

In each of the three subareas, HQs were calculated for beryllium, cadmium, chromium VI, copper, lead, manganese, nickel, selenium, thallium, vanadium, zinc, dieldrin, methoxychlor, total arochlors, total chlordanes, total DDTs, total HMW PAHs, and total LMW PAHs. Table L-7 presents calculations of HQs for birds and mammals in Parcel E-2 subareas. Table L-8 presents the toxicological affects of various chemicals on avian and mammal receptors. Figure L-1 shows the cadmium analytical results and HQs for the samples that exceeded the PSC for cadmium of 4.24 mg/kg. Figure L-2 shows the HQs for the samples that exceeded the PSC for copper of 469.6 mg/kg. Figure L-3 shows the HQs for the samples that exceeded the PSC for lead of 441.9 mg/kg. Figure L-4 shows the HQs for the samples that exceeded the PSC for vanadium of 117.2 mg/kg. Figure L-5 shows the HQs for the samples that exceeded the PSC for zinc of 719.3 mg/kg. Figure L-6 shows the HQs for the samples that exceeded the PSC for manganese of 2,433.2 mg/kg.

L3.3.1. Landfill Area

HQs for receptors in the Landfill Area of Parcel E-2 indicated that there is no significant risk (HQ less than 1.0) to the average receptor from chemical exposure to beryllium, chromium VI, manganese, nickel, thallium, dieldrin, methoxychlor, total arochlors, total DDTs, total HMW PAHs, and total LMW PAHs. HQs indicate the potential for significant risk (HQ exceeding 1.0) to the average receptor from chemical exposure to cadmium, copper, lead, vanadium and zinc in the Landfill Area. Each of these chemicals and their associated HQs is discussed below.

<u>Cadmium</u>

Potential significant risk to receptors from exposure to cadmium in soil in the Landfill Area was indicated by the HQ for cadmium of 2.83 in a single location.

Copper

Potential significant risk to receptors from exposure to copper in soil in the Landfill Area was indicated by the HQ for copper of 1.81 to 3.04 in three locations.

Lead

Potential significant risk to receptors from exposure to lead in soil in the Landfill Area was indicated by the HQ for lead of 1.69 in one location.

Vanadium

Potential significant risk to receptors from exposure to vanadium in soil in the Landfill Area was indicated by the HQ for vanadium of 1.13 in one location.

Zinc

Potential significant risk to receptors from exposure to zinc in soil in the Landfill Area was indicated by the HQ for zinc of 1.42 to 1.67 in two locations. The refinement of COPECs based on the HPAL for zinc (109.9 mg/kg) is discussed in Section L4.0.

L3.3.2. East Adjacent Area

HQs for receptors in the East Adjacent Area of Parcel E-2 indicate that there is little or no significant risk (HQ less than 1.0) to the average receptor from chemical exposure to beryllium, chromium VI, manganese, nickel, thallium, dieldrin, methoxychlor, total DDTs, total HMW PAHs, and total LMW PAHs. HQs indicated the potential for significant risk (HQ exceeding 1.0) to vertebrate receptors from chemical exposure to cadmium, copper, lead, vanadium, and zinc. A HQ equal to 1.0 was calculated for total aroclors based on one sample collected in the East Adjacent area. Since there was only one sample that was essentially equal to its PSC, total Aroclors are not considered a significant risk to receptors in the East Adjacent Area. Each of these chemicals and their associated HQs is discussed below.

Cadmium

Potential significant risk to receptors from exposure to cadmium in soil in the east adjacent area was indicated by the HQ for cadmium of 1.46 to 2.78 in five locations.

Copper

Potential significant risk to receptors from exposure to copper in soil in the East Adjacent Area was indicated by the HQ for copper of 1.11 to 10.58 in 12 locations.

Lead

Potential significant risk to receptors from exposure to lead in soil in the East Adjacent Area was indicated by the HQ for lead of 1.05 to 25.3 in 12 locations.

Vanadium

Potential significant risk to receptors from exposure to vanadium in soil in the East Adjacent Area was indicated by the HQ for vanadium of 1.78 in one location.

Zinc

Potential significant risk to receptors from exposure to zinc in soil in the East Adjacent Area was indicated by the HQ for zinc of 1.16 to 5.70 in ten locations.

L3.3.3. Panhandle Area

HQs for receptors in the Panhandle Area of Parcel E-2 indicate that there is little or no significant risk (HQ less than 1.0) to the average receptor from chemical exposure to beryllium, chromium VI, nickel, thallium, dieldrin, methoxychlor, total aroclors, total DDTs, total HMW PAHs, and total LMW PAHs. HQs indicated the potential for significant risk (HQ exceeding 1.0) to the average receptor from chemical exposure to cadmium, copper, lead, manganese, vanadium, and zinc. Each of these chemicals and their associated HQs is discussed below.

Cadmium

Potential significant risk to receptors from exposure to cadmium in soil in the Panhandle Area was indicated by the HQ for cadmium of 1.18 to 2.10 in three locations.

Copper

Potential significant risk to receptors from exposure to copper in soil in the Panhandle Area was indicated by the HQ for copper of 1.09 to 11.29 in eight locations.

Lead

Potential significant risk to receptors from exposure to lead in soil in the Panhandle Area was indicated by the HQ for lead of 1.2 to 21.04 in seven locations.

Manganese

Potential significant risk to receptors from exposure to manganese in soil in the Panhandle Area was indicated by the HQ for manganese of 1.11 to 1.15 in two locations.

Vanadium

Potential significant risk to receptors from exposure to vanadium in soil in the Panhandle Area was indicated by an HQ for vanadium of 1.19 to 17.9 in five locations. The refinement of COPECs based on the HPAL for vanadium (117.2 mg/kg) is discussed in Section L4.0.

Zinc

Potential significant risk to receptors from exposure to zinc in soil in the Panhandle Area was indicated by the HQ for zinc of 1.01 to 9.59 in nine locations.

Section L4. Risk Characterization

Risk characterization, as described in EPA's "Risk Characterization Handbook" (EPA, 2000b), is "a conscious and deliberate process to bring all important considerations about risk, both the likelihood of the risk but also the strengths and limitations of the assessment and a description of how others have assessed the risk into an integrated picture." Risk characterization must summarize strengths, limitations, and results of the risk assessment in a social, legal, and economic context to support negotiated agreements with other stakeholders, including the public (EPA, 2000b). The risk characterization "conveys the risk assessor's judgment as to the nature and existence of (or lack of) ecological risks" (EPA, 2000b). In addition, risk characterization must adhere to principles of transparency, clarity, consistency, and reasonableness.

Risk characterization integrates information from the exposure and effects assessments to evaluate relationships between chemical exposure and the expression of ecological effects (EPA, 1997). This integration relies primarily on weight-of-evidence arguments that evaluate all lines of evidence introduced into the risk assessment. Discussion of uncertainties at each level of the risk assessment is another key aspect of risk characterization.

The two components of risk characterization are risk estimation and risk description. Risk estimation integrates exposure profiles for each receptor group with information on effects and summarizes the associated uncertainties. Risk description presents the information necessary for interpreting risk results and identifies appropriate thresholds for defining adverse effects for each assessment endpoint.

This section characterizes risk to all assessment endpoints within Parcel E-2. The key findings, assumptions, strengths, and limitations of the risk assessment attributable to exposure to chemical stressors at a site are discussed in the context of the ecological significance of predicted effects. Ecological significance is a measure of the degree to which eliminating an estimated risk will make a difference, given the other dynamic factors operating in the environment (EPA, 2000b).

The risk characterization considers the science of risk assessment as well as the policy and other decisions that were made by the risk assessment team (EPA, 2000b). Decisions about what to sample and where to collect samples within Parcel E-2 were based in part on policy considerations, including limitations of time and budget. Likewise, some decisions deferred to standard practice in EPA Region IX, including development of HPALs. However, most decisions were made specifically to achieve the highest level of confidence in the conclusions of the SLERA, within the context of previous and ongoing remedial work at HPS.

Section L4.1 discusses the refinement of COPECs by comparing Parcel E-2 soil concentrations with HPALs. Section L4.2 summarizes the risk characterization for Parcel E-2. Section L4.3 discusses uncertainty in the SLERA. Section L4.4 summarizes the conclusions of the SLERA.

L4.1. REFINEMENT OF CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN

EPA guidance on conducting ERAs recommends that the list of COPECs be reevaluated in the problem formulation step of the BERA to account for site-specific and regional conditions (EPA, 2001). In addition, Navy policy requires that COPECs be compared with regional ambient concentrations of chemicals during problem formulation of the BERA to avoid evaluating chemicals that are not associated with past or current site specific activities (Navy, 2000). This section represents the initial step of the BERA problem formulation (Step 3a), as described in Section L1.0. This section discusses the refinement of COPECs based on comparison with HPALs.

L4.1.1. Comparison of Soil Concentrations with HPALs

The objective of the comparison of soil concentrations with HPALs was to identify the inorganic chemicals present within Parcel E-2 that could be considered sources of contamination requiring investigation under CERCLA.

Inorganic chemicals for which the maximum concentrations exceeded both HPALs and PSCs were retained as COPECs. The calculated PSC for vanadium was less than the HPAL, so the HPAL for vanadium was used in the HQ calculations, as, required by Navy guidance (Navy, 1999). Therefore, there is no refinement of vanadium based on its HPAL. Maximum concentrations less than HPALs were dropped from further consideration. Chemicals that exceed PSCs and have no HPALs available were retained by default.

Within the Landfill Area, East Adjacent Area, and Panhandle Area, concentrations of cadmium, copper, lead, vanadium, and zinc exceeded both PSCs and HPALs for soil, and were therefore retained as COPECs. Within the Panhandle Area, concentrations of manganese also exceeded both PSCs and HPALs for soil, and was therefore retained as a COPEC.

L4.2. RISK CHARACTERIZATION FOR PARCEL E-2

Within the Landfill Area, East Adjacent Area, and Panhandle Area, birds and mammals are at potential risk from exposure to cadmium, copper, lead, vanadium, and zinc in soil. In the Panhandle Area of Parcel E-2, receptors are also at potentially significant risk from exposure to manganese in soil. Receptors if the East Adjacent Area are also at risk (not considered significant) from exposure to total aroclors in soil.

No other chemicals were shown to pose a potential for significant risk to receptors within Parcel E-2.

L4.3. UNCERTAINTY IN THE SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT

Uncertainty plays an important role in risk-based decision-making; therefore, uncertainty is incorporated explicitly into the risk characterization in a SLERA. Although identifying known sources of uncertainty is more useful than using conservative default assumptions, many site-specific parameters cannot be determined easily, and the SLERA must rely on estimates. Uncertainty is generally defined as a component of risk or degree of hazard resulting from imperfect knowledge of the present or future state of the system under consideration (Suter, 1993).

The following three sources of uncertainty in ERAs are described in Suter (1993):

1. Mistakes in execution of assessment activities such as errors, including incorrect measurements, data recording errors, and computational errors.
2. Imperfect knowledge of factors that could be known such as lack of knowledge about some aspect of the ecosystem that may be relevant, including practical constraints on the ability to measure everything; lack of knowledge on the toxicological effects of all chemicals on all species.
3. Inherent randomness of the world such as stochasticity in physical or biological processes that may affect assumptions or actual risk, including variation in population parameters or rainfall patterns. The complexity of ecological systems tends to increase the level of uncertainty involved in ERAs compared with human health risk assessments. Using realistic assumptions and multiple lines of evidence is the best approach to reducing uncertainty associated with conclusions in an ERA.

The sections below briefly review some sources of uncertainty identified for this SLERA.

L4.3.1. Sample Data

Data collected from selected locations within Parcel E-2 were used to evaluate conditions over the entire area of Parcel E-2; therefore, all parameters measured are only estimates with associated error. Overall, the required detection limits were achieved. Because the risk is clearly driven by a few metals, minor issues with detection limits for organic chemicals were not considered a significant source of uncertainty.

L4.3.2. Ambient Screening Concentrations

The data set used to develop ambient screening concentrations for inorganic chemicals at HPS is considered of high quality and usable for risk assessment. However, HPALs for cobalt, chromium, and nickel were calculated using a regression equation based on concentrations of magnesium, (TtEMI, 1999). For these chemicals, uncertainty in the actual ambient concentration is greater.

L4.3.3. Toxicological Benchmarks

Screening values (such as PSCs) used to identify COPECs and levels of risk to ecological receptors include multiple sources of uncertainty. Although these values were based on numerous studies, the

relevance of any benchmark to a particular site is unknown. Effects on receptors at a site may be underestimated or overestimated based on this approach; however, the practice of using these values for screening chemicals in environmental media is widespread and is currently the best method available for preliminary screening. Screening values were not available for all chemicals detected in soil within Parcel E-2; as a result, some COPECs could not be adequately evaluated given current knowledge. Most of the screening values are based on single chemical exposures or on single chemicals analyzed within the context of effects observed in complex chemical mixture exposures. The effect of multiple chemical stressors operating synergistically or antagonistically was not incorporated into this SLERA.

Screening values are based on total concentrations and do not address uncertainty associated with individual chemical species (some forms are more toxic than others). PSCs are most appropriate for assessing risk to average receptors. These benchmarks were used to evaluate risk to all receptors in the area. The lack of suitable screening values for some chemicals and groups of receptors is considered an important source of uncertainty in this SLERA.

L4.3.4. Hazard Quotients

HQs resulting from comparison of site chemicals with screening values (such as PSCs) are common in ERAs. An HQ greater than 1.0 is generally considered to indicate a potential for risk (EPA, 1997). However, the HQ cannot be used to determine either the probability or the magnitude of effects, and caution should be exercised in the interpretation of HQs. HQs for different chemicals cannot be summed to assess cumulative risk because of the different modes of chemical action and different levels of confidence in the underlying PSCs.

L4.4. CONCLUSIONS AND RECOMMENDATIONS OF THE SLERA

The data presented in this appendix and in the entire RI/FS indicate that soils in Parcel E-2 pose a potential significant risk to bird and mammal receptors. In these areas, some potentially toxic chemicals were detected at concentrations exceeding HPALs and PSCs, indicating a potential significant risk to receptors.

Cadmium, copper, lead, vanadium and zinc pose a potential threat to birds and mammals in all three sub areas of Parcel E-2. Manganese poses a potential threat to receptors exposed to soil in the Panhandle Area, but not within the Landfill or East Adjacent Areas.

Section L5. References

ATSDR. 1991. "Toxicological Profile for Manganese." U.S. Public Health Service. Atlanta, Georgia.

Amdur, M.O., J. Doull, and C.D. Klaassen. 1991. *Casarett and Doull's Toxicology: The Basic Science of Poisons*. Fourth Edition. McGraw-Hill Inc. New York. Pages 639 to 646.

Domingo, J.L. 1994. "Metal-induced Developmental Toxicity in Mammals: A Review." *Journal of Toxicology and Environmental Health*. Volume 42. Pages 123 to 141.

Efroymson, R.A., G.W. Suter II, B.E. Sample, and D.S. Jones. 1997. "Preliminary Remediation Goals for Ecological Endpoints." U.S. Department of Energy. August.

Eisler, R. 1985. "Selenium Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review." U.S. Fish and Wildlife Service (USFWS). *Biological Report.* Volume 85. Report No. 5.

Eisler, R. 1986. "Polychlorinated Biphenyl Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review." USFWS. *Biological Report.* Volume 85. Report No. 1.7.

Eisler, R. 1988. "Lead Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review." USFWS. *Biological Report.* Volume 85, No. 1.14.

Eisler, R. 1993. "Zinc Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review." USFWS. *Biological Report.* Report No. 10.

Long, E.R., D.D. MacDonald, S.L. Smith, and F.D. Calder. 1995. "Incidence of Adverse Biological Effects Within Ranges of Chemical Concentrations in Marine and Estuarine Sediments." *Environmental Management.* Volume 19. Number 1. Pages 81-97.

Owen, C.A. 1981. *Copper Deficiency and Toxicity: Acquired and Inherited, in Plants, Animals, and Man*. Pages 84 to 102. Noyes Publications. New Jersey.

Prasad,A.S. 1995. "Zinc: An Overview." *Nutrition.* Volume 11. Pages 93 to 99.

PRC Environmental Management, Inc. 1995. "Draft Calculation of Hunters Point Ambient Levels." April 11.

Risk Assessment Information System. 1995. "Toxicity Profiles." Oak Ridge, Tennessee.

Scheuhammer, A.M. 1987. "The Chronic Toxicity of Aluminum, Cadmium, Mercury, and Lead in Birds:

Sittig, M. 1991. *Handbook of Toxic and Hazardous Chemicals and Carcinogens.* 3rd Edition. Noyes Publications. Park Ridge, New Jersey.

Suter, G.W. II. 1993. *Ecological Risk Assessment.* Lewis Publishers. Ann Arbor, Michigan.

Tetra Tech EM, Inc. (TtEMI) and Levine-Fricke-Recon (LFR). 2000a. "Ecological Risk Assessment Validation Study Report, Parcel E, Hunters Point Shipyard, San Francisco, California, Draft Final." March 14.

TtEMI and LFR. 2000b. "Draft Final Protective Soil Concentrations, Technical Memorandum, Parcel E, Hunters Point Shipyard, San Francisco, California."

TtEMI, LFR, and Uribe & Associates. 1997. "Parcel E Remedial Investigation, Draft Final Report, Hunters Point Shipyard, San Francisco, California." October 27.

Tetra Tech EM Inc. (Tetra Tech). 1999. "Draft Final Technical Memorandum, Nickel Screening and Implementation Plan, Hunters Point Shipyard, San Francisco, California." August 4.

U.S. Department of the Navy (Navy). 1999. "Navy Policy for Conducting Ecological Risk Assessment."

Navy. 2000. "Navy Interim Final Policy on the Use of Background Chemical Levels."

U.S. Environmental Protection Agency (EPA). 1997. "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final." Environmental Response Team. Edison, New Jersey. EPA 540/F-95/038.

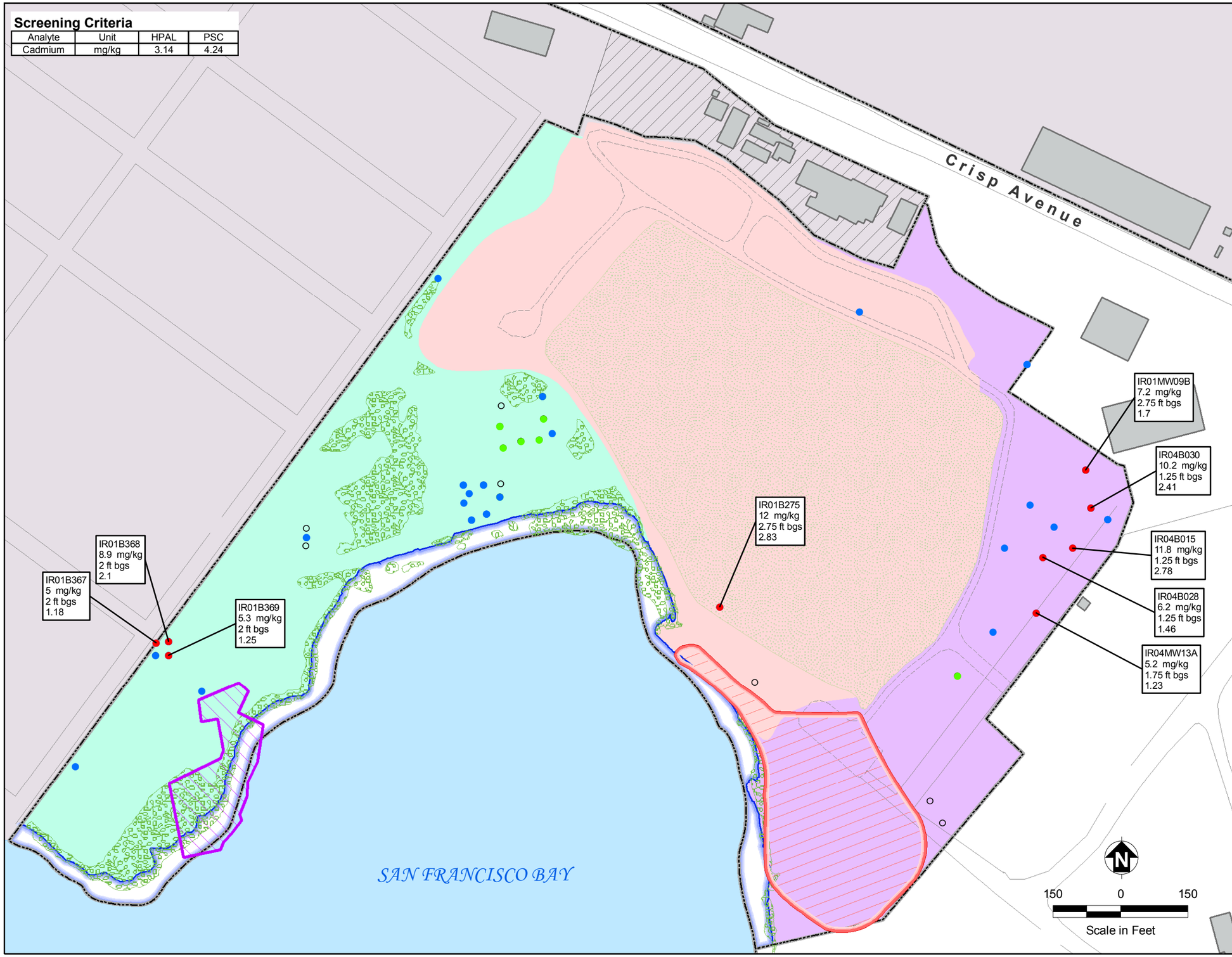
EPA. 1998. "Guidelines for Ecological Risk Assessment. Risk Assessment Forum." EPA/630/R-95/002F. Washington, DC.

EPA. 2000a. "Draft Guidance for Ecological Soil Screening Levels (Eco-SSLs)." July 10.

EPA. 2000b. "Risk Characterization Handbook." EPA 100-B-00-002. December.

EPA. 2001. "The Role of Screening-level Risk Assessments and Refining Contaminants of Concern in Baseline Ecological Risk Assessments." ECO Update. EPA Publication 9345.0-14. Office of Solid Waste and Emergency Response. EPA 540/F-01/014. June.

Figures



Screening Criteria

Analyte	Unit	HPAL	PSC
Cadmium	mg/kg	3.14	4.24

- Not Analyzed
- Analyte Not Detected
- Concentration Less Than PSC
- Concentration Greater Than PSC
- Road
- Gravel Road
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property
- Metal Slag Hotspot *
- PCB Hotspot *
- Wetland Area

Notes:

Results are only shown for locations where results have exceeded the PSC.

PSC = Protective Soil Concentration
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface

* Results in PCB and Metal Slag hotspots are not shown since the areas are undergoing remediation. Post-excavation data will be presented in the draft final RI/FS.

IR04B030	Sample ID
10.2 J mg/kg	Concentration and Qualifier
1.25 ft bgs	Depth
11.8	Hazard Quotient

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

Hunters Point Shipyard, San Francisco, California
U.S. Department of the Navy, BRAC PMO West, San Diego, California

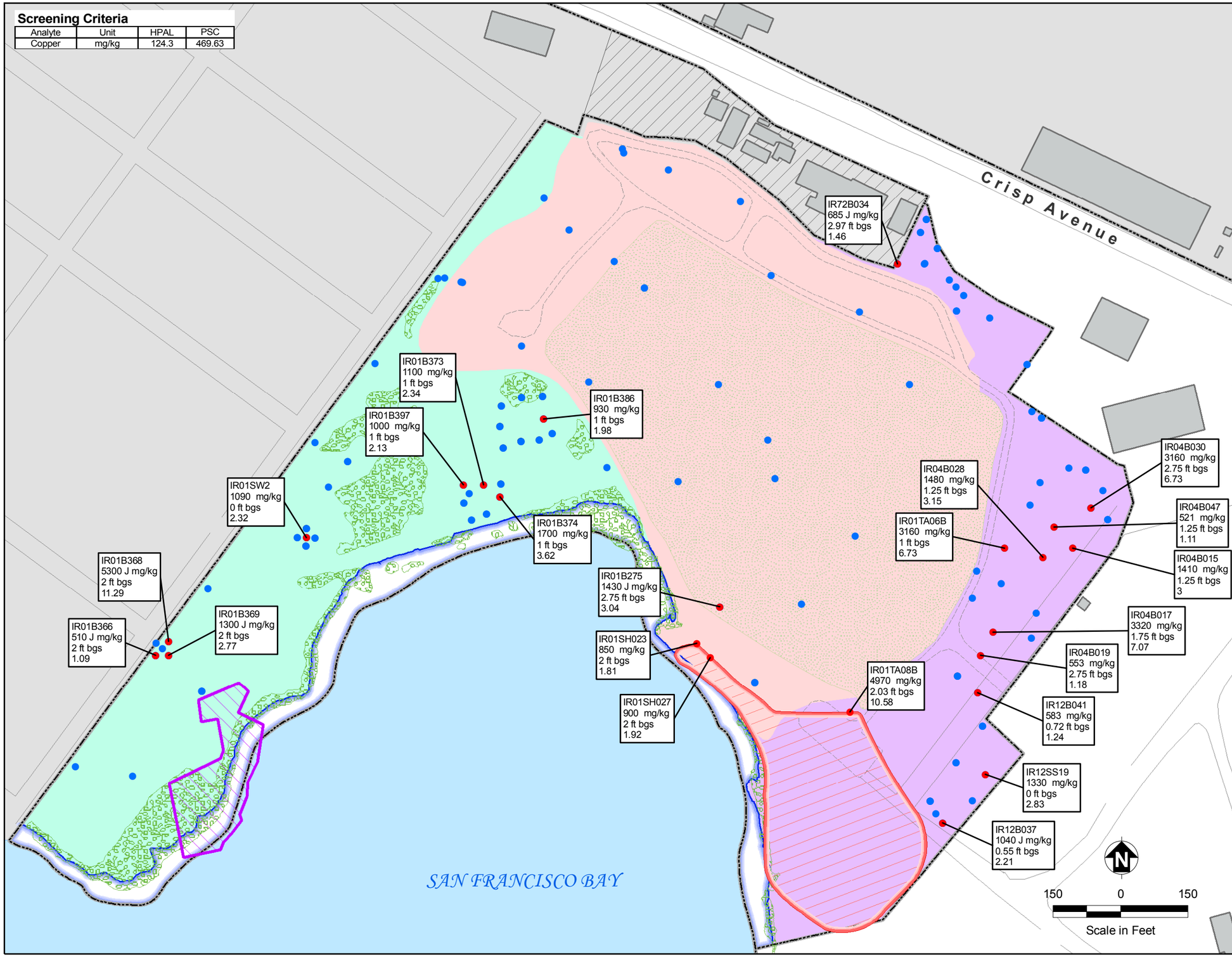
FIGURE L-1

CADMIUM CONCENTRATIONS EXCEEDING THE PROTECTIVE SOIL CONCENTRATION IN 0 - 3' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Screening Criteria

Analyte	Unit	HPAL	PSC
Copper	mg/kg	124.3	469.63



- Not Analyzed
- Analyte Not Detected
- Concentration Less Than PSC
- Concentration Greater Than PSC
- Road
- Gravel Road
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property
- Metal Slag Hotspot *
- PCB Hotspot *
- Wetland Area

Notes:

Results are only shown for locations where results have exceeded the PSC.

PSC = Protective Soil Concentration
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface

* Results in PCB and Metal Slag hotspots are not shown since the areas are undergoing remediation. Post-excavation data will be presented in the draft final RI/FS.

IR04B030	Sample ID
10.2 J mg/kg	Concentration and Qualifier
1.25 ft bgs	Depth
11.8	Hazard Quotient

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

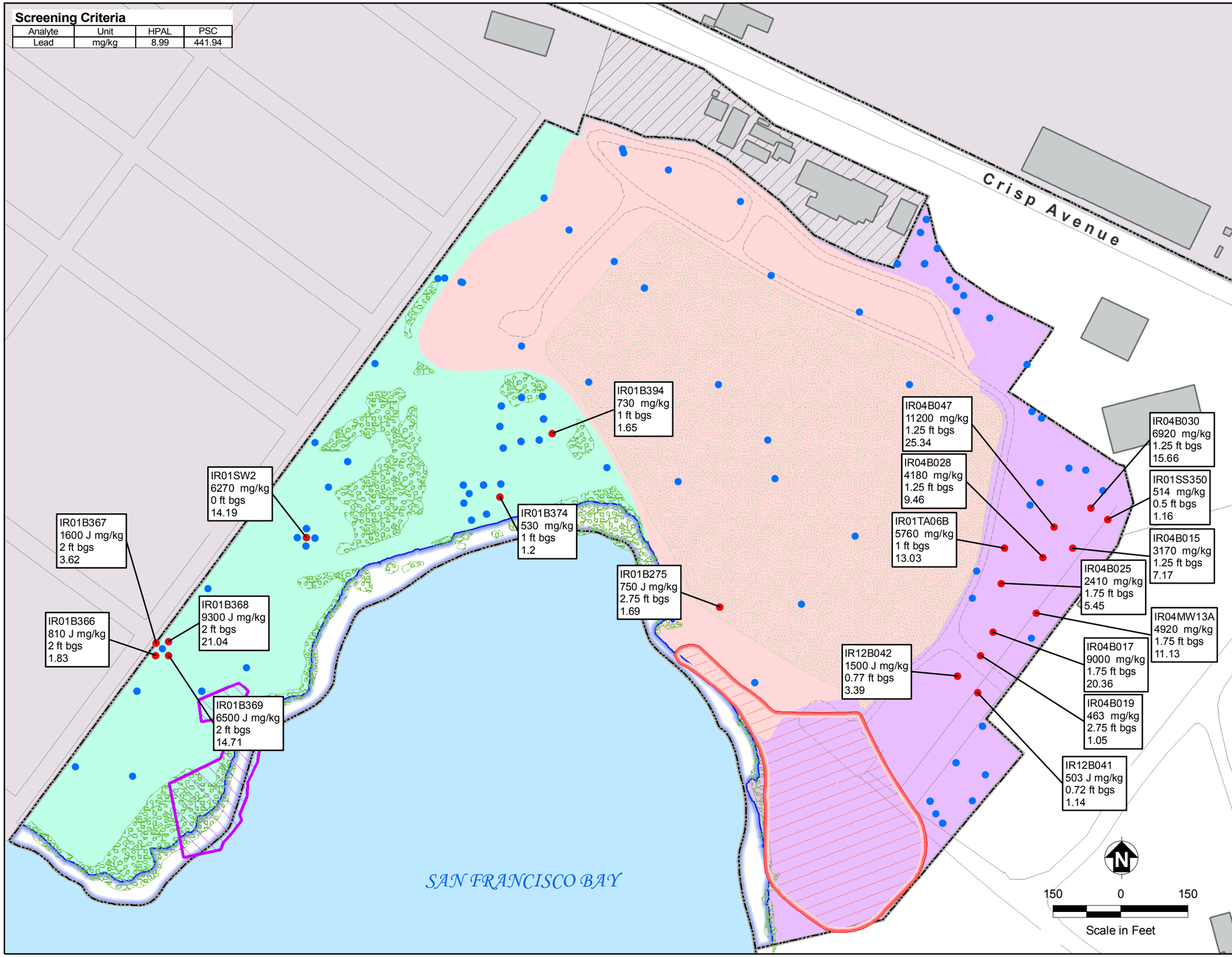
Hunters Point Shipyard, San Francisco, California

U.S. Department of the Navy, BRAC PMO West, San Diego, California

FIGURE L-2

COPPER CONCENTRATIONS EXCEEDING THE PROTECTIVE SOIL CONCENTRATION IN 0 - 3' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2



Screening Criteria

Analyte	Unit	HPAL	PSC
Lead	mg/kg	8.99	441.94

- Not Analyzed
- Analyte Not Detected
- Concentration Less Than PSC
- Concentration Greater Than PSC
- Road
- Gravel Road
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property
- Metal Slag Hotspot *
- PCB Hotspot *
- Wetland Area

Notes:

Results are only shown for locations where results have exceeded the PSC.

PSC = Protective Soil Concentration
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface

* Results in PCB and Metal Slag hotspots are not shown since the areas are undergoing remediation. Post-excavation data will be presented in the draft final RI/FS.

IR04B030	Sample ID
10.2 J mg/kg	Concentration and Qualifier
1.25 ft bgs	Depth
11.8	Hazard Quotient

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

Hunters Point Shipyard, San Francisco, California
U.S. Department of the Navy, BRAC PMO West, San Diego, California

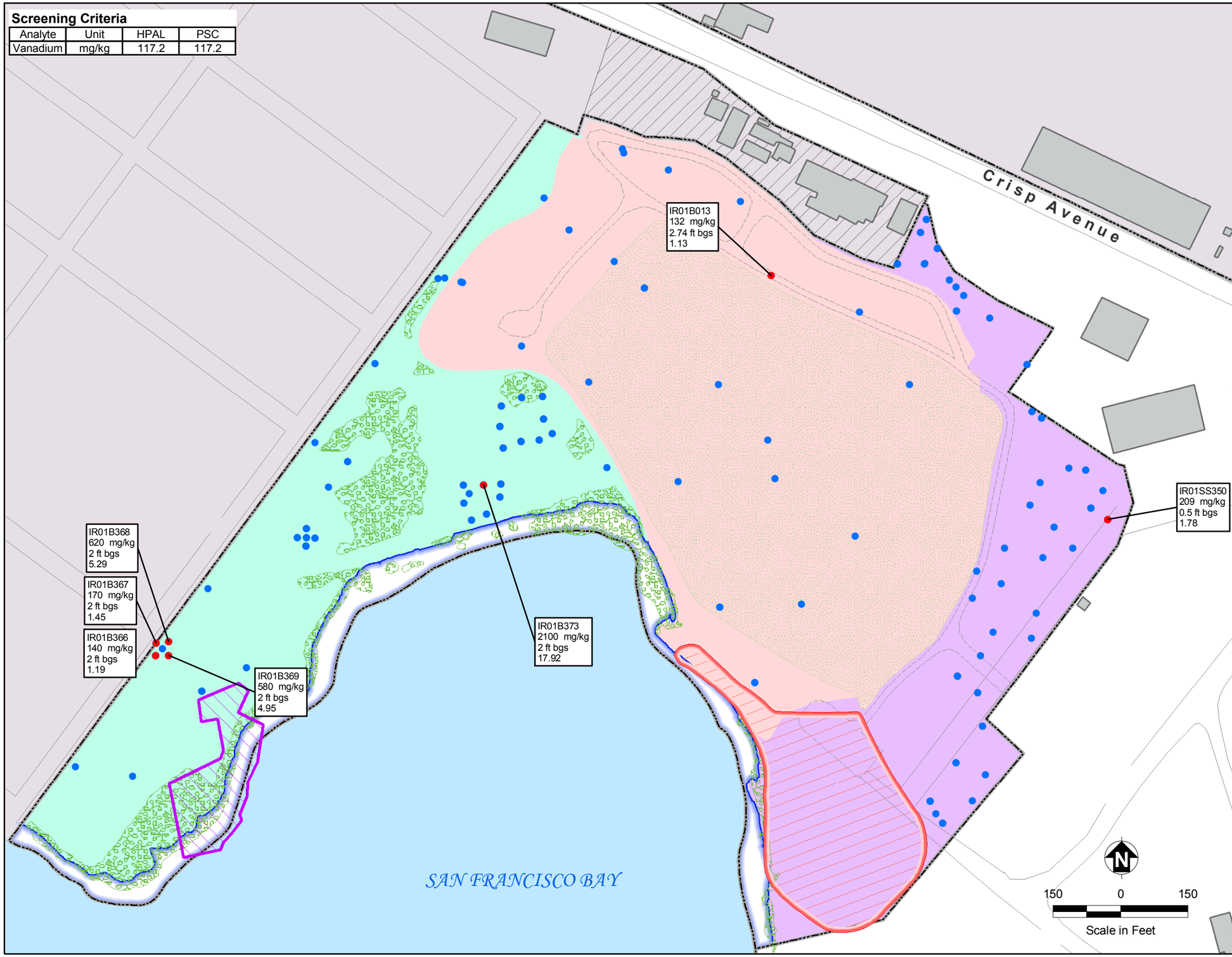
FIGURE L-3

LEAD CONCENTRATIONS EXCEEDING THE PROTECTIVE SOIL CONCENTRATION IN 0 - 3' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Screening Criteria

Analyte	Unit	HPAL	PSC
Vanadium	mg/kg	117.2	117.2



- Not Analyzed
- Analyte Not Detected
- Concentration Less Than PSC
- Concentration Greater Than PSC
- Road
- Gravel Road
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property
- Metal Slag Hotspot *
- PCB Hotspot *
- Wetland Area

Notes:

Results are only shown for locations where results have exceeded the PSC.

PSC = Protective Soil Concentration
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface

* Results in PCB and Metal Slag hotspots are not shown since the areas are undergoing remediation. Post-excavation data will be presented in the draft final RI/FS.

IR04B030	Sample ID
10.2 J mg/kg	Concentration and Qualifier
1.25 ft bgs	Depth
11.8	Hazard Quotient

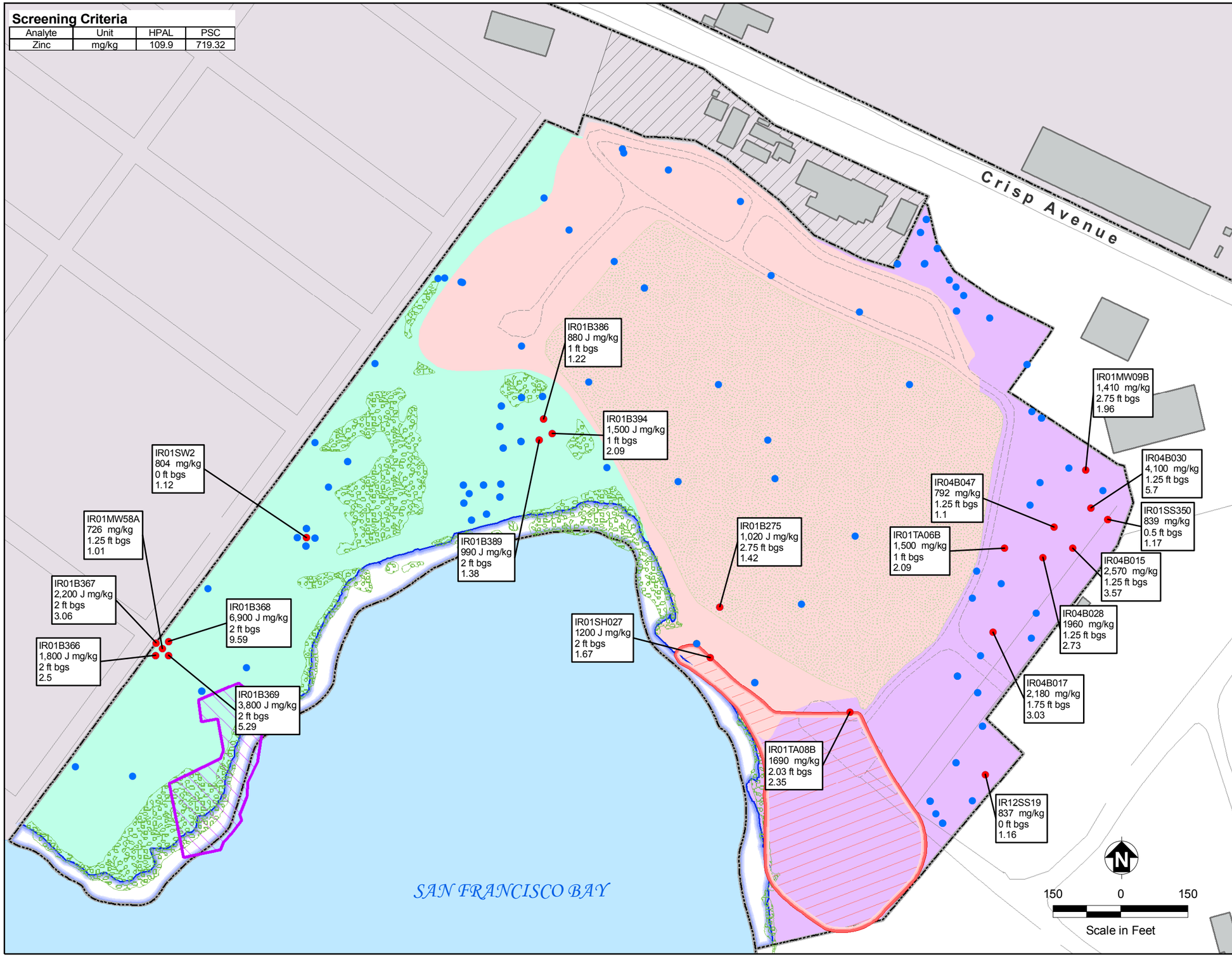
ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

Hunters Point Shipyard, San Francisco, California
U.S. Department of the Navy, BRAC PMO West, San Diego, California

FIGURE L-4

VANADIUM CONCENTRATIONS EXCEEDING THE PROTECTIVE SOIL CONCENTRATION IN 0 - 3' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2



Screening Criteria

Analyte	Unit	HPAL	PSC
Zinc	mg/kg	109.9	719.32

- Not Analyzed
- Analyte Not Detected
- Concentration Less Than PSC
- Concentration Greater Than PSC
- Road
- Gravel Road
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property
- Metal Slag Hotspot *
- PCB Hotspot *
- Wetland Area

Notes:

Results are only shown for locations where results have exceeded the PSC.

PSC = Protective Soil Concentration
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface

* Results in PCB and Metal Slag hotspots are not shown since the areas are undergoing remediation. Post-excavation data will be presented in the draft final RI/FS.

IR04B030	Sample ID
10.2 J mg/kg	Concentration and Qualifier
1.25 ft bgs	Depth
11.8	Hazard Quotient

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

Hunters Point Shipyard, San Francisco, California

U.S. Department of the Navy, BRAC PMO West, San Diego, California

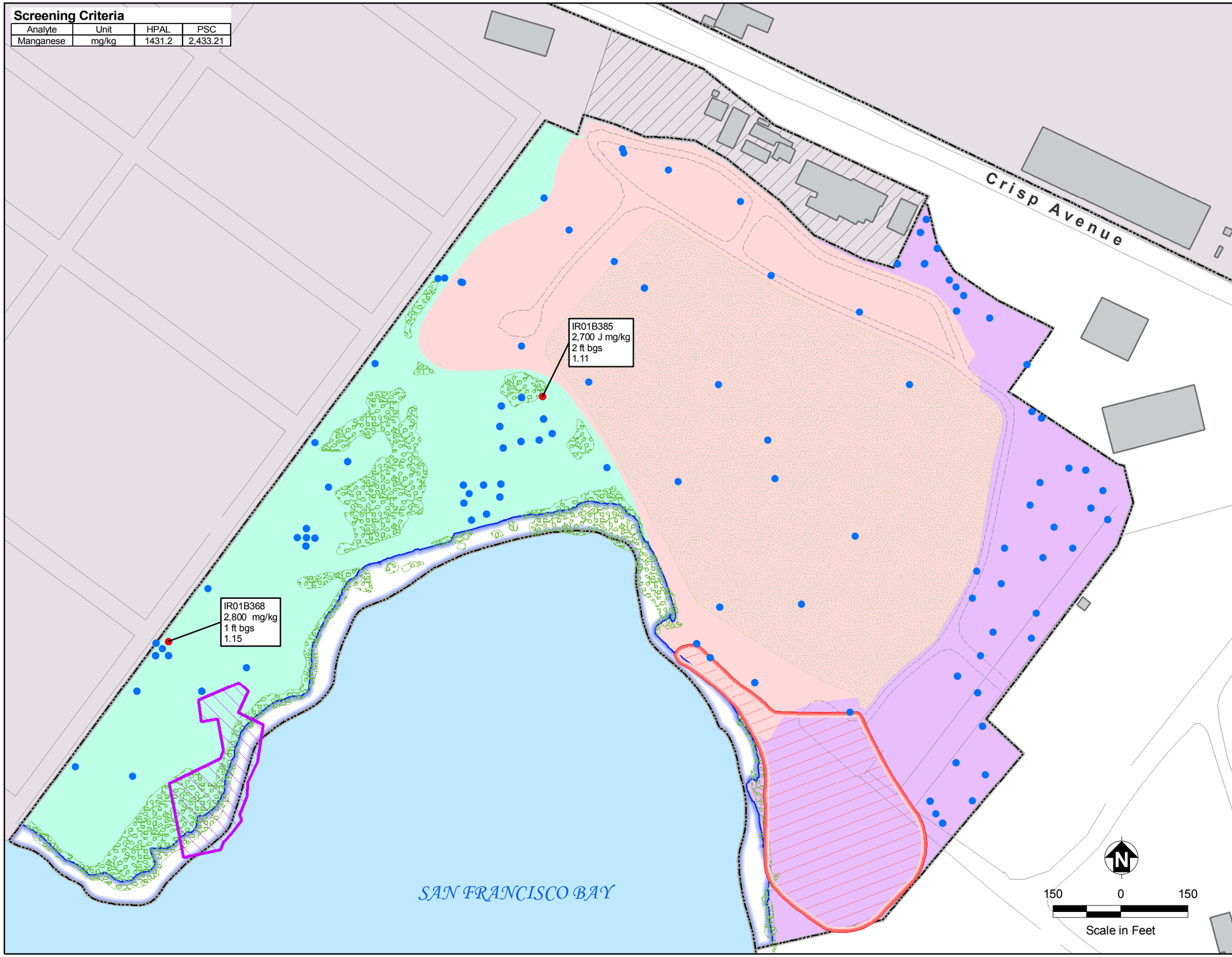
FIGURE L-5

ZINC CONCENTRATIONS EXCEEDING THE PROTECTIVE SOIL CONCENTRATION IN 0 - 3' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Screening Criteria

Analyte	Unit	HPAL	PSC
Manganese	mg/kg	1431.2	2,433.21



- Not Analyzed
- Analyte Not Detected
- Concentration Less Than PSC
- Concentration Greater Than PSC
- Road
- Gravel Road
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property
- Metal Slag Hotspot *
- PCB Hotspot *
- Wetland Area

Notes:

Results are only shown for locations where results have exceeded the PSC.

PSC = Protective Soil Concentration
mg/kg = milligrams per kilogram
ft bgs = feet below ground surface

* Results in PCB and Metal Slag hotspots are not shown since the areas are undergoing remediation. Post-excavation data will be presented in the draft final RI/FS.

IR04B030	Sample ID
10.2 J mg/kg	Concentration and Qualifier
1.25 ft bgs	Depth
11.8	Hazard Quotient

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

Hunters Point Shipyard, San Francisco, California
U.S. Department of the Navy, BRAC PMO West, San Diego, California

FIGURE L-6

MANGANESE CONCENTRATIONS EXCEEDING THE PROTECTIVE SOIL CONCENTRATION IN 0 - 3' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Tables

Table L-1 Number and Type of Analyses by Subarea

Analyses	Landfill Area	East Adjacent Area	Panhandle Area
Soil (0 to 3.0 feet bgs)			
Total number of samples	36	71	84
Metals	29	54	75
PCBs and pesticides	26	52	68
SVOCs	26	51	62

Notes:

bgs below ground surface

PCBs polychlorinated biphenyls

SVOCs semi-volatile organic compounds

Table L-2
Soil Data for SLERA Analysis, Landfill Area

Sample ID	Location ID	Sample Date	Depth	BERYLLIUM	CADMIUM	COPPER	CHROMIUM VI	LEAD	MANGANESE	NICKEL	SELENIUM	THALLIUM	VANADIUM	ZINC	DIELDRIN	METHOXYCHLOR
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
9116H713	IR01B003A	04/18/91	1.04	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9114H671	IR01B004	04/01/91	1.91	0.62	<0.63 U	50.5	NA	43.1	614	47.4	<0.54 U	<0.58 U	66.9	82.5	<0.019 U	<0.093 U
9111H658	IR01B005A	03/14/91	1.61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9219A160	IR01B011	05/05/92	1.25	0.76	<0.38 U	27.5 J	<0.05 U	95.2	568	274	NA	<0.51 U	61.3	84.7	<0.036 U	<0.18 U
9220A209	IR01B012	05/12/92	2.47	0.7	0.67	68.1	<0.05 U	214	1190	52.8	<0.41 UJ	<0.49 U	49.4	141	<0.034 U	<0.17 U
9219A169	IR01B013	05/05/92	2.74	1.2	<0.37 U	47.7 J	<0.05 U	251	615	95.1	NA	<0.51 U	132	128	<0.035 U	<0.18 U
9041L025	IR01B017A	10/12/90	1.25	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9218H114	IR01B018G	04/29/92	1.25	0.65	<0.61 U	42	<0.05 U	8.5	923	53.3 J	<0.55 UJ	<0.39 U	98.7	60.1	<0.017 U	<0.087 U
9219A183	IR01B019	05/06/92	1.25	0.91	<0.38 U	43.5	<0.05 U	43.5	1020	48	<0.42 UJ	0.54	74.7	71.6	<0.035 U	<0.18 U
9219H130	IR01B021A	05/07/92	1.25	0.72	<0.61 U	81.1	<0.05 U	7.7	1500	66.5	0.63	<0.39 UJ	95.4	71.6 J	<0.017 U	<0.087 U
9045G425	IR01B023	11/06/90	1	NA	NA	NA	<0.05 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
9219A190	IR01B024	05/07/92	1.25	0.54	<0.6 U	27.4	<0.05 U	4.3	845	52.5 J	<0.54 U	<0.39 U	116	53.1	<0.017 U	<0.086 U
9219A197	IR01B029	05/08/92	1.25	0.58	<0.6 U	43.1	<0.05 U	58	849	49 J	<0.54 U	<0.39 U	63.5	84.8	<0.086 U	<0.43 U
9220H163	IR01B030	05/12/92	1.75	0.26	<0.36 U	37.2	<0.05 U	64.7	306	61.2	NA	<0.48 U	32.7	86.9	<0.034 U	<0.17 U
9111H662	IR01B031A	03/15/91	1	<0.57 U	<0.62 U	26.9	NA	10.8	625 J	157	<0.53 U	<0.58 U	49.6	63.3	<0.019 U	<0.093 U
9045P035	IR01B039	11/05/90	1	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9045G413	IR01B040	11/06/90	1	NA	NA	NA	<0.05 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
9045G420	IR01B041	11/06/90	1	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9226A372	IR01B275	06/26/92	1.25	<0.46 U	<0.48 U	44.1 J	<0.05 U	115 J	419	33.7 J	<0.27 UJ	0.25	48 J	98.8 J	<0.017 U	<0.083 U
9226A373	IR01B275	06/26/92	2.75	<0.38 U	12	1430 J	<0.05 U	750 J	562	430 J	1.7 J	<0.22 U	84.3 J	1020 J	<0.018 U	<0.088 U
IR01B380030	IR01B380	11/07/02	2.5	0.49	<0.25 U	54 J	<0.06 U	<5.2 UJ	1100	140 J	<2.2 UJ	<0.36 U	59	54 J	<0.0037 U	<0.0073 U
IR01B380020	IR01B380	11/12/02	1	0.41	<0.59 U	28	<0.06 R	10 J	210	80	<2.5 U	<0.19 U	47	53	<0.0037 U	<0.0075 U
IR01B380030A	IR01B380	01/24/03	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9116H704	IR01MW02B	04/17/91	1.14	0.82	<0.57 U	26.6 J	NA	35.1 J	849	855	<0.49 UJ	<0.53 U	45.8	87.9	<0.17 U	<0.85 U
9117H723	IR01MW03A	04/24/91	0.68	0.54	<0.6 U	44.2	<0.05 U	56.2	754	982	<0.52 U	<0.56 U	71.7	100	<0.09 U	<0.45 U
9217H108	IR01MW05A	04/27/92	0.81	0.35	<0.6 U	35.2	<0.05 U	110	379	65.5 J	<0.54 UJ	<0.39 U	53.5	211	NA	NA
9218A135	IR01MW16A	04/29/92	1.25	0.43	<0.58 U	36.9	<0.05 U	68.1	663	59.9 J	<0.52 UJ	<0.38 U	58.8	102	<0.083 U	<0.42 U
9204H077	IR01MW17B	01/22/92	1.25	1.4	<0.42 U	47.8	<0.05 U	9.2	1550	52.5	<0.42 UJ	<0.53 U	101	58.3	<0.019 U	<0.093 U
9204H078	IR01MW17B	01/22/92	2.75	0.74	<0.45	26.1	<0.05 U	13.3	252	66.2	<0.45 UJ	<0.58 U	47.3	64.8	<0.02 U	<0.1 U
9116H695	IR01MW26B	04/15/91	1.25	0.9	<0.63 U	49	<0.05 U	13 J	872	231	<0.53 UJ	<0.58 U	70.6	52.9	<0.019 U	<0.093 U
9218A142	IR01MW31A	05/01/92	1.25	0.56	<0.6 U	24.7 J	<0.05 U	12	303	77.9	<0.54 U	<0.39 UJ	47.6	46.2 J	<0.017 U	<0.086 U
9542J514	IR01MW366A	10/20/95	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.004 U	<0.019 U
9117H719	IR01MW38A	04/23/91	1	0.94	<0.59 U	53.7	<0.05 U	39.1	551	40.2	<0.51 U	<0.55 U	58.2 J	72.3 J	<0.18 UJ	<0.88 UJ
9043H335	IR01MW42A	10/25/90	1.12	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9228A413	IR01SS366	07/10/92	0	<0.1 U	<0.54 U	381	<0.05 U	40.3	35.6	4 J	<0.58 U	<0.32 U	3.5	349	<0.016 UJ	<0.081 UJ
8843B003	IR01T04A	01/09/89	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ERRG

Table L-2
Soil Data for SLERA Analysis, Landfill Area

Sample ID	Location ID	Sample Date	Depth	BERYLLIUM	CADMIUM	COPPER	CHROMIUM VI	LEAD	MANGANESE	NICKEL	SELENIUM	THALLIUM	VANADIUM	ZINC	DIELDRIN	METHOXYCHLOR
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analyses				25	25	25	29	25	25	25	22	25	25	25	25	25
Detections				21	2	25	0	24	25	25	2	2	25	25	0	0
Minimum Concentration				0.26	0.67	24.7		4.3	35.6	4	0.63	0.25	3.5	46.2		
Maximum Concentration				1.4	12	1430		750	1550	982	1.7	0.54	132	1020		
Median				0.62	0.67	43.1	NA	39.1	615	61.2	2.5	0.36	58.8	72.3	NA	NA
Standard Deviation				0.32	2.4	283	0.0085	152	380	246	0.40	0.086	28	196	0.023	0.12
Mean				0.61	0.73	111	0.022	83	702	163	0.37	0.24	65	132	0.019	0.096
HPAL SOIL				0.71	3.14	124.3		8.99	1431.2		1.95	0.81	117.2	109.9		
HPAL SOIL Hits				9	1	2		21	2		0	0	1	5		
PSC SOIL				134.76	4.24	469.63	668.71	441.94	2433.21	1941.38	9.82	88.48	117.2	719.32	18.38	508.76
PSC SOIL Hits				0	1	1	0	1	0	0	0	0	1	1	0	0

Notes:

J Estimated value

U Undetected

R Rejected value because of accuracy problems in matrix spike, blank spike, or surrogate spike

Table L-2
Soil Data for SLERA Analysis, Landfill Area

Sample ID	Location ID	Sample Date	Depth	4,4'-DDT	AROCLOR-1016	AROCLOR-1221	AROCLOR-1232	AROCLOR-1242	AROCLOR-1248	AROCLOR-1254	AROCLOR-1260	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
9116H713	IR01B003A	04/18/91	1.04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9114H671	IR01B004	04/01/91	1.91	<0.019 U	<0.093 U	<0.093 U	<0.093 U	<0.093 U	<0.093 U	<0.19 U	<0.19 U	0.37 J	0.51	0.56	0.48	0.26 J
9111H658	IR01B005A	03/14/91	1.61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9219A160	IR01B011	05/05/92	1.25	<0.036 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.36 U	<0.36 U	1	1.1	0.9	0.46 J	<0.74
9220A209	IR01B012	05/12/92	2.47	<0.034 U	<0.17 U	<0.17 U	<0.17 U	<0.17 U	<0.17 U	<0.34 U	<0.34 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U
9219A169	IR01B013	05/05/92	2.74	<0.035 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.35 U	<0.35 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U
9041L025	IR01B017A	10/12/90	1.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9218H114	IR01B018G	04/29/92	1.25	<0.017 U	<0.087 U	<0.087 U	<0.087 U	0.024 J	<0.087 U	<0.17 U	<0.17 U	0.45	0.56	0.7	0.3	0.24
9219A183	IR01B019	05/06/92	1.25	<0.035 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.35 U	<0.35 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U
9219H130	IR01B021A	05/07/92	1.25	<0.017 U	<0.087 U	<0.087 U	<0.087 U	<0.087 U	<0.087 U	<0.17 U	<0.17 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U
9045G425	IR01B023	11/06/90	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9219A190	IR01B024	05/07/92	1.25	<0.017 U	<0.086 U	<0.086 U	<0.086 U	<0.086 U	<0.086 U	<0.17 U	<0.17 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U
9219A197	IR01B029	05/08/92	1.25	<0.086 U	<0.43 U	<0.43 U	<0.43 U	<0.43 U	<0.43 U	<0.86 U	<0.86 U	0.79	1.1	1.3	1.5	0.34 J
9220H163	IR01B030	05/12/92	1.75	<0.034 U	<0.17 U	<0.17 U	<0.17 U	<0.17 U	<0.17 U	<0.34 U	<0.34 U	0.37 J	0.43 J	<0.7 U	<0.7 U	0.36 J
9111H662	IR01B031A	03/15/91	1	<0.019 U	<0.093 U	<0.093 U	<0.093 U	<0.093 U	<0.093 U	<0.19 U	<0.19 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U
9045P035	IR01B039	11/05/90	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9045G413	IR01B040	11/06/90	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9045G420	IR01B041	11/06/90	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9226A372	IR01B275	06/26/92	1.25	<0.017 U	<0.083 U	<0.083 U	<0.083 U	<0.083 U	<0.083 U	<0.17 U	<0.17 U	2.3	3.1	4.1	3.4	1.1
9226A373	IR01B275	06/26/92	2.75	<0.018 U	<0.088 U	<0.088 U	<0.088 U	<0.088 U	<0.088 U	<0.18 U	5.9	<1.5 U	0.2 J	0.47 J	0.4 J	<1.5 U
IR01B380030	IR01B380	11/07/02	2.5	0.023	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	0.11	NA	NA	NA	NA	NA
IR01B380020	IR01B380	11/12/02	1	<0.0037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	0.23	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U
IR01B380030A	IR01B380	01/24/03	2	NA	NA	NA	NA	NA	NA	NA	NA	<0.073 U	<0.073 U	0.11	<0.073 U	0.0097 J
9116H704	IR01MW02B	04/17/91	1.14	<0.17 U	<0.85 U	<0.85 U	<0.85 U	<0.85 U	<0.85 U	<1.7 U	<1.7 U	0.24 J	0.26 J	0.33 J	0.18 J	0.17 J
9117H723	IR01MW03A	04/24/91	0.68	<0.09 U	<0.45 U	<0.45 U	<0.45 U	<0.45 U	<0.45 U	<0.9 U	<0.9 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U
9217H108	IR01MW05A	04/27/92	0.81	0.036 J	NA	NA	NA	NA	NA	NA	NA	0.089 J	0.3 J	0.27 J	0.15 J	0.086 J
9218A135	IR01MW16A	04/29/92	1.25	<0.083 U	<0.42 U	<0.42 U	<0.42 U	<0.42 U	<0.42 U	<0.83 U	<0.83 U	1.5	2.4	3.1	2.8	1.1
9204H077	IR01MW17B	01/22/92	1.25	<0.019 U	<0.093 U	<0.093 U	<0.093 U	<0.093 U	<0.093 U	<0.19 U	<0.19 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U
9204H078	IR01MW17B	01/22/92	2.75	<0.02 U	<0.1 U	<0.1 U	<0.1 U	<0.1 U	<0.1 U	<0.2 U	<0.2 U	<0.42 U	<0.42 U	<0.42 U	<0.42 U	<0.42 U
9116H695	IR01MW26B	04/15/91	1.25	<0.019 U	<0.093 U	<0.093 U	<0.093 U	<0.093 U	<0.093 U	<0.19 U	<0.19 U	0.96	1.1	1.2	1.2	0.39 J
9218A142	IR01MW31A	05/01/92	1.25	<0.017 U	<0.086 U	<0.086 U	<0.086 U	<0.086 U	<0.086 U	<0.17 U	<0.17 U	<0.35 U	<0.35 U	0.043 J	<0.35 U	<0.35 U
9542J514	IR01MW366A	10/20/95	0.5	<0.004 U	<0.037 U	<0.074 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	0.1	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U
9117H719	IR01MW38A	04/23/91	1	<0.18 UJ	<0.88 UJ	<0.88 UJ	<0.88 UJ	<0.88 UJ	<0.88 UJ	<1.8 UJ	<1.8 UJ	0.79 J	0.86 J	0.85 J	0.8 J	0.32 J
9043H335	IR01MW42A	10/25/90	1.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9228A413	IR01SS366	07/10/92	0	<0.016 UJ	<0.081 UJ	<0.081 UJ	<0.081 UJ	<0.081 UJ	<0.081 UJ	<0.16 UJ	<0.16 UJ	<0.33 U	<0.33 U	0.074 J	<0.33 U	<0.33 U
8843B003	IR01T04A	01/09/89	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table L-2
Soil Data for SLERA Analysis, Landfill Area

Sample ID	Location ID	Sample Date	Depth	4,4'-DDT	AROCLOR-1016	AROCLOR-1221	AROCLOR-1232	AROCLOR-1242	AROCLOR-1248	AROCLOR-1254	AROCLOR-1260	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(G,H,I)PERYLENE	BENZO(K)FLUORANTHENE
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analyses				26	25	25	25	25	25	25	25	26	26	26	26	26
Detections				2	0	0	0	1	0	0	4	11	12	14	11	11
Minimum Concentration				0.023				0.024			0.1	0.089	0.2	0.043	0.15	0.0097
Maximum Concentration				0.036				0.024			5.9	2.3	3.1	4.1	3.4	1.1
Median				0.17	NA	NA	NA	0.88	NA	NA	1.7	0.79	0.86	0.7	0.8	0.74
Standard Deviation				0.023	0.11	0.11	0.11	0.12	0.11	0.23	1.1	0.57	0.75	0.96	0.85	0.39
Mean				0.022	0.098	0.099	0.10	0.097	0.098	0.19	0.43	0.54	0.63	0.71	0.64	0.38
HPAL SOIL																
HPAL SOIL Hits																
PSC SOIL				3.53	36.92	36.92	36.92	36.92	36.92	36.92	36.92	231.41	231.41	231.41	231.41	231.41
PSC SOIL Hits				0	0	0	0	0	0	0	0	0	0	0	0	0

Notes:

J Estimated value

U Undetected

R Rejected value because of accuracy problems in matrix spike, blank s

Table L-2
Soil Data for SLERA Analysis, Landfill Area

Sample ID	Location ID	Sample Date	Depth	CHRYSENE	DIBENZ(A,H)ANTHRACENE	FLUORANTHENE	INDENO(1,2,3-CD)PYRENE	PYRENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	FLUORENE	NAPHTHALENE	PHENANTHRENE
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
9116H713	IR01B003A	04/18/91	1.04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9114H671	IR01B004	04/01/91	1.91	0.45	<0.38 U	0.94	0.35 J	1.4	<0.38 U	0.13 J	0.078 J	0.04 J	0.13 J	0.68
9111H658	IR01B005A	03/14/91	1.61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9219A160	IR01B011	05/05/92	1.25	1.6	<0.74 U	2.6	0.41 J	5.7	<0.74 U	0.73 J	<0.74 U	0.43 J	2.1	4
9220A209	IR01B012	05/12/92	2.47	<3.6 U	<3.6 U	0.89 J	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U
9219A169	IR01B013	05/05/92	2.74	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U
9041L025	IR01B017A	10/12/90	1.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9218H114	IR01B018G	04/29/92	1.25	0.5	0.043 J	1.5	0.3	1.7	<0.18 U	0.3	0.21	0.16 J	0.28	1.7
9219A183	IR01B019	05/06/92	1.25	<0.74 U	<0.74 U	0.46 J	<0.74 U	0.7 J	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	0.46 J
9219H130	IR01B021A	05/07/92	1.25	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U
9045G425	IR01B023	11/06/90	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9219A190	IR01B024	05/07/92	1.25	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U
9219A197	IR01B029	05/08/92	1.25	1	0.11 J	2.5	1.2	3	<0.35 U	0.4	0.29 J	0.16 J	0.29 J	2.1
9220H163	IR01B030	05/12/92	1.75	0.48 J	<0.7 U	0.4 J	<0.7 U	0.51 J	<0.7 U	<0.7 U	<0.7 U	<0.7 U	<0.7 U	<0.7 U
9111H662	IR01B031A	03/15/91	1	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U
9045P035	IR01B039	11/05/90	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9045G413	IR01B040	11/06/90	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9045G420	IR01B041	11/06/90	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9226A372	IR01B275	06/26/92	1.25	2.2	<0.34 U	5.6	3.1	3.8 J	0.13 J	1.1	0.66	0.54	1.3	4.6
9226A373	IR01B275	06/26/92	2.75	14	<1.5 U	<1.5 U	<1.5 U	0.81 J	<1.5 U	<1.5 U	<1.5 U	0.17 J	0.21 J	<1.5
IR01B380030	IR01B380	11/07/02	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IR01B380020	IR01B380	11/12/02	1	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U
IR01B380030A	IR01B380	01/24/03	2	0.023 J	<0.073 U	0.022 J	<0.073 U	0.023 J	<0.073 U	<0.073 U	<0.073 U	<0.073 U	<0.073 U	0.044 J
9116H704	IR01MW02B	04/17/91	1.14	0.39	0.043 J	0.59	0.2 J	0.49	<0.35 U	<0.35 U	0.068 J	<0.35 U	<0.35 U	0.41
9117H723	IR01MW03A	04/24/91	0.68	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U
9217H108	IR01MW05A	04/27/92	0.81	0.14 J	0.054 J	0.16 J	0.15 J	0.18 J	<0.35 U	0.04 J	0.044 J	<0.35 U	<0.35 U	0.11 J
9218A135	IR01MW16A	04/29/92	1.25	2.3	0.25 J	6	2.9	7.1	<0.69 U	0.63 J	0.28 J	0.23 J	0.79	5
9204H077	IR01MW17B	01/22/92	1.25	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U
9204H078	IR01MW17B	01/22/92	2.75	<0.42 U	<0.42 U	<0.42 U	<0.42 U	<0.42 U	<0.42 U	<0.42 U	<0.42 U	<0.42 U	<0.42 U	<0.42 U
9116H695	IR01MW26B	04/15/91	1.25	1.6	0.093 J	4.1	1.1	4.6	0.32 J	<0.76 U	0.38 J	0.2 J	1.4	4.2
9218A142	IR01MW31A	05/01/92	1.25	<0.35 U	<0.35 U	0.068 J	<0.35 U	0.072 J	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	0.056 J
9542J514	IR01MW366A	10/20/95	0.5	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U
9117H719	IR01MW38A	04/23/91	1	1.2 J	<1.5 U	1.8	0.64 J	2.3	<1.5 U	0.33 J	0.33 J	0.23 J	0.74 J	2.5
9043H335	IR01MW42A	10/25/90	1.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9228A413	IR01SS366	07/10/92	0	0.046 J	<0.33 U	0.067 J	<0.33 U	0.046 J	<0.33 U	<0.33 U	<0.33 U	<0.33 U	<0.33 U	<0.33 U
8843B003	IR01T04A	01/09/89	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table L-2
Soil Data for SLERA Analysis, Landfill Area

Sample ID	Location ID	Sample Date	Depth	CHRYSENE	DIBENZ(A,H)ANTHRACENE	FLUORANTHENE	INDENO(1,2,3-CD)PYRENE	PYRENE	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	FLUORENE	NAPHTHALENE	PHENANTHRENE
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analyses				26	26	26	26	26	26	26	26	26	26	26
Detections				14	6	16	10	16	2	8	9	9	9	13
Minimum Concentration				0.023	0.043	0.022	0.15	0.023	0.13	0.04	0.044	0.04	0.13	0.044
Maximum Concentration				14	0.25	6	3.1	7.1	0.32	1.1	0.66	0.54	2.1	5
Median				1	0.74	0.89	1.5	1.4	1.5	0.63	0.74	0.73	0.74	1.7
Standard Deviation				2.7	0.36	1.7	0.81	1.9	0.35	0.38	0.35	0.33	0.55	1.6
Mean				1.2	0.30	1.2	0.61	1.4	0.32	0.38	0.32	0.28	0.48	1.2
HPAL SOIL														
HPAL SOIL Hits														
PSC SOIL				231.41	231.41	231.41	231.41	231.41	10056	10056	10056	10056	10056	10056
PSC SOIL Hits				0	0	0	0	0	0	0	0	0	0	0

Notes:

J Estimated value

U Undetected

R Rejected value because of accuracy problems in matrix spike, blank s

Table L-3
Soil Data for SLERA Analysis, East Adjacent Area

Sample ID	Location ID	Sample Date	Depth	BERYLLIUM	CADMIUM	COPPER	CHROMIUM VI	LEAD	MANGANESE	NICKEL	SELENIUM	THALLIUM	VANADIUM	ZINC	DIELDRIN	METHOXYCHLOR
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
9110H624	IR01MW07A	03/08/91	-0.07	0.08	<0.57 U	20.4	<0.05 U	101	282	30.5	<0.48 UJ	<0.52 UJ	22.1	41.9	<0.017 UJ	<0.083 UJ
9110H625	IR01MW07A	03/08/91	2.43	0.55	<0.63 U	66	<0.05 U	3.6	1070	51.6	<0.53 UJ	<0.58 UJ	109	70.1	<0.019 U	<0.093 U
9203H067	IR01MW09B	01/17/92	0.75	<0.72 U	5	152 J	<0.05 U	74.3	926	54.5	<0.39 U	<0.5 UJ	60.3	610	<0.035 UJ	<0.17 UJ
9203H068	IR01MW09B	01/17/92	2.75	<0.72 U	7.2	219	<0.05 U	127	746	76.3	<0.39 U	<0.5 UJ	70.4	1410	<0.035 U	<0.17 U
9543J518	IR01MW367A	10/24/95	2.77	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.037 U	<0.19 U
9050N259	IR01SS078	12/13/90	0	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9227J144	IR01SS350	06/30/92	0.5	0.49	0.94 J	414	<0.05 U	514	859	349 J	<0.61 U	<0.34 UJ	209	839	<0.42 U	<2.1 U
9122M034	IR01TA05A	05/20/91	2.52	0.92	<0.35 U	123	<0.05 U	233	1060	NA	<0.75 U	<0.38 U	67.1	272	<0.089 U	<0.44 U
9122M035	IR01TA06B	05/21/91	1	0.41	1.8	3160	<0.05 UJ	5760	329	NA	<0.72 U	<0.36 U	32.9	1500	<1.7 U	<8.5 U
9123M024	IR01TA07A	05/15/91	2.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9122M039	IR02TA11A	05/22/91	1.56	1.1	<0.44 U	289	<0.05 U	120	949	NA	<0.96 U	<0.48 U	79.6	359	<0.23 U	<11 U
9142H884	IR04B002	10/15/91	1.25	0.72	<0.76 U	45.2	<0.05 U	54.3	677	71	<0.65 U	<0.33 U	75.2	90.4	<0.089 U	<0.44 U
9143M260	IR04B004	10/22/91	1.75	0.47	<0.5 U	17.4	<0.05 U	307 J	737	1500	<0.54 UJ	<0.43 U	46.3	48.2	<0.017 U	<0.085 U
9142M211	IR04B007	10/16/91	1.75	<0.96 U	<0.7 U	131	<0.05 U	441	941	169	<0.6 U	<0.31 U	66.5	560	<0.082 UJ	<0.41 UJ
9143M295	IR04B015	10/24/91	1.25	<0.99 U	11.8	1410	<0.05 U	3170	1160	564	<0.44 UJ	<3.1 U	82.5	2570	<0.17 U	<0.84 U
9143M278	IR04B016	10/23/91	2.89	<0.91 U	1.5	138	<0.05 U	119	1810 J	185	<0.46 UJ	<0.63 U	65.7	589	<0.017 U	<0.087 U
9143M270	IR04B017	10/22/91	1.75	<0.32 U	3.8	3320	<0.05 U	9000	320 J	652	<0.44 UJ	<0.6 U	25.3	2180	<0.017 U	<0.083 U
9224A276	IR04B019	06/09/92	2.75	<0.2 U	<0.5 U	553	<0.05 U	463	514	593	4.5	<0.49 U	46.8	401	<0.017 U	<0.085 U
9224A272	IR04B020	06/09/92	1.66	0.72	<0.45 U	45.6	<0.05 U	33.8	363	32.8	<0.43 U	<0.52 U	44.3	52.3	<0.018 U	<0.09 U
9224H259	IR04B025	06/08/92	1.75	<0.13 U	<0.6 U	165	<0.05 U	2410	233	38.2	<0.41 U	<0.75 UJ	53.6	232 J	<0.017 U	<0.086 U
9224A268	IR04B026	06/09/92	2.22	<0.25 U	<0.39 U	21.7	<0.05 U	49.4	230	36.5	<0.41 U	<0.69 U	45.4	50.2	<0.017 U	<0.087 U
9224A279	IR04B028	06/09/92	1.25	<0.1 U	6.2	1480	<0.05 UJ	4180	715	209	<0.4 U	<0.48 U	35.1	1960	<0.017 U	<0.084 U
9048N193	IR04B029	11/27/90	1	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9048N194	IR04B029	11/27/90	2.5	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9225A289	IR04B030	06/16/92	1.25	<0.21 U	10.2	1400	1.01 J	6920	1270 J3	293	<0.41 UJ	<0.49 U	76.9	4100	<0.017 U	<0.085 U
9225A290	IR04B030	06/16/92	2.75	<0.04 U	1.9	3160	<0.05 U	514	160 J3	117	<0.41 UJ	<0.5 U	14.7	964	<0.017 U	<0.086 U
9046H432	IR04B033	11/15/90	0.5	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9224A282	IR04B047	06/09/92	1.25	<0.28 U	3.2	521	1.5	11200	733	313	<0.4 U	<0.48 U	58.5	792	<0.017 U	<0.084 U
9143M286	IR04MW13A	10/23/91	1.75	<0.83 U	5.2	391	<0.05 U	4920	728	457	<0.45 UJ	<3.1 U	59.3	568	<0.17 U	<0.85 U
9046G487	IR04MW31A	11/15/90	2.4	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9048N186	IR04MW35A	11/26/90	1	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9048N187	IR04MW35A	11/26/90	3	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9047N154	IR04MW36A	11/19/90	1.5	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
IR12B037020	IR12B037	08/28/02	0.55	<0.12 U	<0.08 U	1040 J	<0.05 U	160 J	753 J	234 J	0.97 J	4.1 J	68.8 J	474 J	<0.017 U	<0.089 U
IR12B037100	IR12B037	08/28/02	2.55	<0.11 U	<0.08 U	51.2 J	<0.06 U	9.1 J	792 J	843 J	0.39 J	5.6	62.6 J	53 J	<0.019 U	<0.097 U
IR12B038020	IR12B038	08/29/02	0	<0.08 U	<0.81 U	40.5	<0.06 U	11.6 J	693 J	1100 J	<.28 UJ	4.6	39.3 J	43 J	<0.017 U	0.15 J
IR12B038100	IR12B038	08/29/02	2	<0.1 U	<0.7 U	24.4	<0.06 U	6.3 J	740 J	1030 J	<.3 UJ	4.8	59.9 J	40 J	<0.019 U	<0.099 UJ
IR12B039020	IR12B039	08/29/02	0	<0.09 U	<0.83 U	240	<0.05 U	59.6 J	602 J	791 J	<.28 UJ	4.2	50.3 J	131 J	<0.017 U	<0.089 UJ

ERRG

Table L-3
Soil Data for SLERA Analysis, East Adjacent Area

Sample ID	Location ID	Sample Date	Depth	BERYLLIUM	CADMIUM	COPPER	CHROMIUM VI	LEAD	MANGANESE	NICKEL	SELENIUM	THALLIUM	VANADIUM	ZINC	DIELDRIN	METHOXYCHLOR
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
IR12B039100	IR12B039	08/29/02	2	<0.32 U	<0.59 U	50.5	<0.05 U	9.4 J	644 J	367 J	<0.28 UJ	6.9	73.9 J	66 J	<0.018 U	<0.094 UJ
IR12B040020	IR12B040	08/29/02	0	<0.09 U	<0.9 U	108	<0.05 U	63.7 J	485 J	671 J	<0.26 UJ	<03.5 U	37.7 J	222 J	<0.017 U	<0.089 UJ
IR12B040100	IR12B040	08/29/02	2	<0.1 U	<01 U	35.5	<0.06 U	9.1 J	682 J	1010 J	<.28 UJ	5.3	52.3 J	46 J	<0.019 U	<0.097 UJ
IR12B041020	IR12B041	08/29/02	0.72	<0.22 U	<0.51 U	583	<0.05 U	503 J	431 J	328 J	0.34 J	<01.9 U	40.5 J	298 J	0.25 J	1.3 J
IR12B041100	IR12B041	08/29/02	2.72	<0.04 U	<0.84 U1	25	<0.06 U	80.9 J	499 J	842 J	<.29 UJ	<4 U	34 J	424 J	<0.018 U	<0.093 UJ
IR12B042020	IR12B042	08/29/02	0.77	<0.31 U	<0.64 UJ	449	<0.05 U	1500 J	577 J	188 J	0.58 J	<01.7 U	66.1 J	246 J	<0.018 U	1.3 J
IR12B042020A	IR12B042	08/29/02	2.27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IR12B042100	IR12B042	08/29/02	2.77	<0.04 U	<0.75 U	21.1	<0.06 U	6.8 J	597 J	1150 J	<0.27 UJ	4.9	39.2 J	32 J	<0.019 U	<0.096 UJ
9131H770	IR12MW11A	08/01/91	2.25	<1.1 U	<1.1 U	18.1	<0.05 U	2.6	654	1030	<1.1 U	<1.1 UJ	33.3	40.7	<0.017 U	<0.086 U
9129X131	IR12SS19	07/18/91	0	0.7	<0.7 U	1330	<0.05 U	227	723	194 J	<0.6 UJ	<0.31 U	38.2	837	<0.16 U	<0.82 U
9540J400	IR72B025	10/05/95	1	<0.02 U	<0.04 U	45.4	NA	12.5	769	258	<0.83 U	<0.74 UJ	33.9	42.7	<0.007 U	<0.035 U
9540J401	IR72B025	10/05/95	2.5	<0.1 U	<0.04 U	31.8	NA	9.4	829	75.8	<0.82 U	<0.4 UJ	80.2	77.3	<0.007 U	<0.035 U
9540J395	IR72B026	10/05/95	0.5	<0.02 U	<0.05 U	50.2	NA	9.9	872	496 J	<0.91 U	<0.44 U	87.3	83.1 J	<0.004 U	<0.019 U
9540J396	IR72B026	10/05/95	2.5	<0.02 U	<0.04 U	23.2	NA	5.7	574	1130 J	<0.86 U	<0.42 U	28.6	49.2 J	<0.004 U	<0.019 U
9540J403	IR72B027	10/05/95	1	<0.02 U	<0.05 U	44.7	NA	32.9	679	738	<0.9 U	<0.44 UJ	48.5	69.6	<0.004 U	<0.019 U
9540J404	IR72B027	10/05/95	3	<0.02 U	<0.05 U	21.5	NA	8.6	668	158	<0.9 U	<0.44 UJ	63.6	64.4	<0.004 U	<0.019 U
9544W130	IR72B034	10/30/95	0.47	<0.02 U	<0.04 U	41.5 J	NA	56.4	560	86	0.89	<0.41 UJ	55.9	104	<0.004 U	<0.018 U
9544W131	IR72B034	10/30/95	2.97	<0.02 U	<0.04 UJ	685 J	NA	402	637	290	<0.84 U	<0.41 UJ	52.7	206	<0.004 U	<0.018 U
9544W132	IR72B035	10/30/95	0.5	<0.02 U	<0.04 U	5.1 J	NA	7.7	1290	1300	<0.85 U	<0.41 UJ	18.8	41.3	<0.004 U	<0.018 U
9544W135	IR72B037	10/30/95	1.04	<0.02 U	<0.04 U	41.2 J	NA	67.9	924	933	<0.85 U	<0.41 UJ	50.1	103	<0.018 U	<0.091 U
9545J586	IR72B038	11/06/95	1.33	<0.02 U1	<0.04 U	33.5	NA	87	447	197 J	<0.83 U	<0.4 UJ	37.4	104	<0.018 UJ	<0.089 UJ
9606J849	IR72B039	02/07/96	2	<0.02 U	<0.04 UJ	50.1	NA	2.6 J	639	56.3	<0.49 U	<0.4 U	113	65.8 J	<0.004 U	<0.018 U
0149P26	IR72GB24C	12/04/01	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
0149P27	IR72GB24C	12/04/01	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9547W199	IR72SS18	11/22/95	0	<0.02 U	<0.04 U	113 J	NA	59.7	821	935	<0.82 U	<0.4 UJ	31.5	291 J	NA	NA
9547W196	IR72SS19	11/22/95	0	<0.02 U	<0.04 U	35.6 J	NA	62.7	1040	1200	<0.83 U	<0.4 UJ	29.6	344 J	NA	NA
9547W200	IR72SS20	11/22/95	0	<0.02 U	<0.04 U	74.1 J	NA	74.7	742	904	<0.83 U	<0.4 UJ	30.2	294 J	NA	NA
9547W203	IR72SS22	11/22/95	0	<0.02 U	0.13	46 J	NA	93.1	916	972	<0.8 U	<0.39 UJ	28.5	291 J	<0.034 UJ	<0.17 UJ
9547W202	IR72SS24	11/22/95	0	<0.02 U	<0.05 U	38.7 J	NA	87.6	728	950	<0.88 U	<0.43 UJ	26.4	221 J	<0.019 U	<0.095 U
9918Z058	IR72SS41	05/04/99	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9918Z058A	IR72SS41	05/04/99	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9918Z057	IR72SS42	05/04/99	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9918Z057A	IR72SS42	05/04/99	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table L-3
Soil Data for SLERA Analysis, East Adjacent Area

Sample ID	Location ID	Sample Date	Depth	BERYLLIUM	CADMIUM	COPPER	CHROMIUM VI	LEAD	MANGANESE	NICKEL	SELENIUM	THALLIUM	VANADIUM	ZINC	DIELDRIN	METHOXYCHLOR
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analyses				54	54	54	45	54	54	51	54	54	54	54	52	52
Detections				10	13	54	2	54	54	51	6	8	54	54	1	3
Minimum Concentration				0.08	0.13	5.1	1.01	2.6	160	30.5	0.34	4.1	14.7	32	0.25	0.15
Maximum Concentration				1.1	11.8	3320	1.5	11200	1810	1500	4.5	6.9	209	4100	0.25	1.3
Median				0.91	0.9	51.2	1.01	74.7	715	349	0.9	4.2	50.1	221	1.7	8.5
Standard Deviation				0.27	2.5	786	0.26	2356	292	426	0.58	1.8	30	752	0.12	0.97
Mean				0.22	1.3	419	0.080	1008	719	486	0.43	1.2	55	475	0.041	0.33
HPAL SOIL				0.71	3.14	124.3		8.99	1431.2		1.95	0.81	117.2	109.9		
HPAL SOIL Hits				4	8	22		46	1		1	8	1	30		
PSC SOIL				134.76	4.24	469.63	668.71	441.94	2433.21	1941.38	9.82	88.48	117.2	719.32	18.38	508.76
PSC SOIL Hits				0	5	12	0	13	0	0	0	0	1	10	0	0

Notes:

J Estimated value

U Undetected

R Rejected value

Table L-3
Soil Data for SLERA Analysis, East Adjacent Area

Sample ID	Location ID	Sample Date	Depth	4,4'-DDT	AROCLOR-1016	AROCLOR-1221	AROCLOR-1232	AROCLOR-1242	AROCLOR-1248	AROCLOR-1254	AROCLOR-1260	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BENZO(A)ANTHRACE	BENZO(A)PYRENE
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
9110H624	IR01MW07A	03/08/91	-0.07	<0.017 UJ	<0.083 UJ	<0.083 UJ3	<0.083 UJ	<0.083 UJ	<0.083 UJ	<0.17 UJ	<0.17 UJ	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U
9110H625	IR01MW07A	03/08/91	2.43	<0.019 U	<0.093 U	<0.093 U	<0.093 U	<0.093 U	<0.093 U	<0.19 U	<0.19 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U
9203H067	IR01MW09B	01/17/92	0.75	<0.035 UJ	<0.17 UJ	<0.17 UJ5	<0.17 UJ	<0.17 UJ	<0.17 UJ	<0.35 UJ	<0.35 UJ	<0.72 UJ	<0.72 UJ	<0.72 UJ	<0.72 UJ	<0.72 UJ
9203H068	IR01MW09B	01/17/92	2.75	<0.035 U	<0.17 U	<0.17 U	<0.17 U	<0.17 U	<0.17 U	<0.35 U	<0.35 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U
9543J518	IR01MW367A	10/24/95	2.77	<0.037 U	<0.37 U	<0.74 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	1.8	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 UJ
9050N259	IR01SS078	12/13/90	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9227J144	IR01SS350	06/30/92	0.5	<0.42 U	<2.1 U	<2.1 U	<2.1 U	<2.1 U	<2.1 U	<4.2 U	1.4 J	<0.35 U	0.056 J	0.05 J	0.16 J	0.2 J
9122M034	IR01TA05A	05/20/91	2.52	0.007 J	<0.44 U	<0.44 U	<0.44 U	<0.44 U	<0.44 U	<0.89 U	0.42 J	<0.37 U	<0.37 U	<0.37 U	0.054 J	0.05 J
9122M035	IR01TA06B	05/21/91	1	<1.7 U	<0.85 U	<0.85 U	<0.85 U	<0.85 U	<8.5 U	<17 U	<17 U	<21 U	<21 U	<21 U	2.3 J	3.4 J
9123M024	IR01TA07A	05/15/91	2.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9122M039	IR02TA11A	05/22/91	1.56	<2.3 U	<1.1 U	<1.1 U	<1.1 U	<11 U	<11 U	<23 U	1.3 J	<0.46 U	<0.46 U	0.15 J	0.8	0.72
9142H884	IR04B002	10/15/91	1.25	<0.089 U	<0.44 U	<0.44 U	<0.44 U	<0.44 U	<0.44 U	<0.89 U	0.1 J	<0.37 U	0.038 J	0.22 J	0.13 J	0.14 J
9143M260	IR04B004	10/22/91	1.75	<0.017 U	<0.085 U	<0.085 U	<0.085 U	<0.085 U	<0.085 U	<0.17 U	0.15 J	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U
9142M211	IR04B007	10/16/91	1.75	<0.082 UJ	<0.41 UJ	<0.41 UJ	<0.41 UJ	<0.41 UJ	<0.41 UJ	<0.82 UJ	0.21 J	<0.34 U	<0.34 U	<0.34 U	<0.34 U	<0.34 U
9143M295	IR04B015	10/24/91	1.25	<0.17 U	<0.84 U	<0.84 U	<0.84 U	<0.84 U	<0.84 U	<1.7 U	14	<0.35 U	<0.35 U	<0.35 U	0.22 J	0.24 J
9143M278	IR04B016	10/23/91	2.89	<0.017 U	<0.087 U	<0.087 U	<0.087 U	<0.087 U	<0.087 U	<0.17 U	0.29	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U
9143M270	IR04B017	10/22/91	1.75	<0.017 U	<0.083 U	<0.083 U	<0.083 U	<0.083 U	<0.083 U	<0.17 U	2.8	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U
9224A276	IR04B019	06/09/92	2.75	<0.017 U	<0.085 U	<0.085 U	<0.085 U	<0.085 U	<0.085 U	<0.17 U	12	<0.71 U	<0.71 U	<0.71 U	<0.71 U	<0.71 U
9224A272	IR04B020	06/09/92	1.66	<0.018 U	<0.09 U	<0.09 U	<0.09 U	<0.09 U	<0.09 U	<0.18 U	<0.18 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U
9224H259	IR04B025	06/08/92	1.75	<0.017 U	<0.086 U	<0.086 U	<0.086 U	<0.086 U	<0.086 U	<0.17 U	0.98	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U
9224A268	IR04B026	06/09/92	2.22	<0.017 U	<0.087 U	<0.087 U	<0.087 U	<0.087 U	<0.087 U	<0.17 U	<0.17 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U
9224A279	IR04B028	06/09/92	1.25	<0.017 U	<0.084 U	<0.084 U	<0.084 U	<0.084 U	<0.084 U	<0.17 U	3.7	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U
9048N193	IR04B029	11/27/90	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9048N194	IR04B029	11/27/90	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9225A289	IR04B030	06/16/92	1.25	<0.017 U	<0.085 U	<0.085 U	<0.085 U	<0.085 U	<0.085 U	<0.17 U	8.9	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U
9225A290	IR04B030	06/16/92	2.75	<0.017 U	<0.086 U	<0.086 U	<0.086 U	<0.086 U	<0.086 U	<0.17 U	0.38	<0.36 U	<0.36 U	<0.36 U	0.099 J	<0.36 U
9046H432	IR04B033	11/15/90	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9224A282	IR04B047	06/09/92	1.25	<0.017 U	<0.084 U	<0.084 U	<0.084 U	<0.084 U	<0.084 U	<0.17 U	2.6	<1.8 U	<1.8 U	<1.8 U	<1.8 U	<1.8 U
9143M286	IR04MW13A	10/23/91	1.75	<0.17 U	<0.85 U	<0.85 U	<0.85 U	<0.85 U	<0.85 U	<1.7 U	25	<3.5 U	<3.5 U	<3.5 U	<3.5 U	<3.5 U
9046G487	IR04MW31A	11/15/90	2.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9048N186	IR04MW35A	11/26/90	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9048N187	IR04MW35A	11/26/90	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9047N154	IR04MW36A	11/19/90	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IR12B037020	IR12B037	08/28/02	0.55	<0.026 UJ	<0.17 UJ	<0.34 UJ	<0.17 UJ	<0.17 UJ	<0.17 UJ	<0.17 UJ	1.4 J	0.19	NA	0.29	0.92	1.1 J
IR12B037100	IR12B037	08/28/02	2.55	<0.019 U	<0.19 U	<0.38 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.15 U	NA	<0.15 U	<0.15 U	<0.15 U
IR12B038020	IR12B038	08/29/02	0	<0.11 UJ	<0.17 U	<0.35 U	<0.17 U	<0.17 U	<0.17 U	<0.17 U	1.3	<0.14 U	NA	<0.14 U	0.26	0.31
IR12B038100	IR12B038	08/29/02	2	<0.019 U	<0.19 U	<0.38 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.16 U	NA	<0.16 U	<0.16 U	<0.16 U
IR12B039020	IR12B039	08/29/02	0	<0.017 U	<0.17 U	<0.34 U	<0.17 U	<0.17 U	<0.17 U	<0.17 U	0.59	<0.14 U	NA	<0.14 U	0.13 J	0.19

Table L-3
Soil Data for SLERA Analysis, East Adjacent Area

Sample ID	Location ID	Sample Date	Depth	4,4'-DDT	AROCLOR-1016	AROCLOR-1221	AROCLOR-1232	AROCLOR-1242	AROCLOR-1248	AROCLOR-1254	AROCLOR-1260	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BENZO(A)ANTHRACE	BENZO(A)PYRENE
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
IR12B039100	IR12B039	08/29/02	2	<0.018 U	<0.18 U	<0.37 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.15 U	NA	<0.15 U	<0.15 U	<0.15 U
IR12B040020	IR12B040	08/29/02	0	<0.017 U	<0.17 U	<0.35 U	<0.17 U	<0.17 U	<0.17 U	<0.17 U	<0.17 U	<0.14 U	NA	<0.14 U	<0.14 U	<0.14 U
IR12B040100	IR12B040	08/29/02	2	<0.019 U	<0.19 U	<0.38 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.15 U	NA	<0.15 U	<0.15 U	<0.15 U
IR12B041020	IR12B041	08/29/02	0.72	0.27	<0.18 U	<0.36 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	26	<0.14 U	NA	<0.14 U	<0.14 U	0.091 J
IR12B041100	IR12B041	08/29/02	2.72	<0.018 U	<0.18 U	<0.36 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.15 U	NA	<0.15 U	<0.15 U	<0.15 U
IR12B042020	IR12B042	08/29/02	0.77	0.66 J	<0.18 U	<0.35 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	37	0.3	NA	<0.14 U	0.18	0.23
IR12B042020A	IR12B042	08/29/02	2.27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IR12B042100	IR12B042	08/29/02	2.77	<0.019 U	<0.19 U	<0.37 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.15 U	NA	<0.15 U	<0.15 U	<0.15 U
9131H770	IR12MW11A	08/01/91	2.25	<0.017 U	<0.086 U	<0.086 U	<0.086 U	<0.086 U	<0.086 U	<0.17 U	<0.18 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U
9129X131	IR12SS19	07/18/91	0	<0.16 U	<0.82 U	<0.82 U	<0.82 U	<0.82 U	<0.82 U	0.45 J	1.9	0.069 J	<0.68 U	0.097 J	0.55 J	0.61 J
9540J400	IR72B025	10/05/95	1	<0.007 U	<0.071 U	<0.14 U	<0.071 U	<0.071 U	<0.071 U	<0.071 U	<0.071 U	<0.7 U	<0.7 U	<0.7 U	<7 U	<7 UJ
9540J401	IR72B025	10/05/95	2.5	<0.007 U	<0.07 U	<0.14 U	<0.07 U	<0.07 U	<0.07 U	<0.07 U	<0.07 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<3.5 U
9540J395	IR72B026	10/05/95	0.5	<0.004 U	<0.039 U	<0.078 U	<0.039 U	<0.039 U	<0.039 U	<0.039 U	<0.039 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U
9540J396	IR72B026	10/05/95	2.5	<0.004 U	<0.037 U	<0.074 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U
9540J403	IR72B027	10/05/95	1	<0.004 U	<0.038 U	<0.077 U	<0.038 U	<0.038 U	<0.038 U	<0.038 U	<0.038 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U
9540J404	IR72B027	10/05/95	3	<0.004 U	<0.039 U	<0.078 U	<0.039 U	<0.039 U	<0.039 U	<0.039 U	<0.039 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U
9544W130	IR72B034	10/30/95	0.47	<0.004 U	<0.036 U	<0.072 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.067	<0.35 U	0.088 J	0.076 J	0.23 J	<1.8 U
9544W131	IR72B034	10/30/95	2.97	<0.004 U	<0.036 U	<0.072 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.13	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.71 U
9544W132	IR72B035	10/30/95	0.5	<0.004 U	<0.036 U	<0.072 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.035 J	<0.36 U	<0.36 U	0.18 J	<0.36 U	<0.36 U
9544W135	IR72B037	10/30/95	1.04	<0.018 U	<0.18 U	<0.36 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	0.21	NA	NA	NA	NA	NA
9545J586	IR72B038	11/06/95	1.33	<0.018 UJ	<0.18 UJ	<0.35 UJ	<0.18 UJ	<0.18 UJ	<0.18 UJ	<0.18 UJ	<0.18 UJ	<0.35 U	0.16 J	0.13 J	<3.5 U	<3.5 U
9606J849	IR72B039	02/07/96	2	<0.004 U	<0.035 U	<0.071 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U
0149P26	IR72GB24C	12/04/01	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
0149P27	IR72GB24C	12/04/01	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9547W199	IR72SS18	11/22/95	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9547W196	IR72SS19	11/22/95	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9547W200	IR72SS20	11/22/95	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9547W203	IR72SS22	11/22/95	0	<0.034 UJ	<0.34 UJ	<0.69 UJ	<0.34 UJ	<0.34 UJ	<0.34 UJ	<0.34 UJ	<0.34 UJ	<10 U	<10 U	<10 U	<10 UJ	NA
9547W202	IR72SS24	11/22/95	0	<0.019 U	<0.19 U	<0.38 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.19 U	<0.38 U	<0.38 U	<0.38 U	NA	NA
9918Z058	IR72SS41	05/04/99	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9918Z058A	IR72SS41	05/04/99	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9918Z057	IR72SS42	05/04/99	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9918Z057A	IR72SS42	05/04/99	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table L-3
Soil Data for SLERA Analysis, East Adjacent Area

Sample ID	Location ID	Sample Date	Depth	4,4'-DDT	AROCLOR-1016	AROCLOR-1221	AROCLOR-1232	AROCLOR-1242	AROCLOR-1248	AROCLOR-1254	AROCLOR-1260	ACENAPHTHENE	ACENAPHTHYLENE	ANTHRACENE	BENZO(A)ANTHRACE	BENZO(A)PYRENE
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analyses				52	52	52	52	52	52	52	52	51	39	51	50	49
Detections				3	0	0	0	0	0	1	27	3	4	8	13	12
Minimum Concentration				0.007						0.45	0.035	0.069	0.038	0.05	0.054	0.05
Maximum Concentration				0.66						0.45	37	0.3	0.16	0.29	2.3	3.4
Median				0.27	NA	NA	NA	NA	NA	23	1.4	10	3.6	3.5	0.92	3.5
Standard Deviation				0.21	0.18	0.18	0.18	0.77	0.95	2.0	7.3	1.6	1.8	1.6	0.94	0.78
Mean				0.076	0.13	0.16	0.13	0.22	0.30	0.56	3.0	0.62	0.78	0.61	0.58	0.56
HPAL SOIL																
HPAL SOIL Hits																
PSC SOIL				3.53	36.92	36.92	36.92	36.92	36.92	36.92	36.92	10056	10056	10056	231.41	231.41
PSC SOIL Hits				0	0	0	0	0	0	0	0	0	0	0	0	0

Notes:

J Estimated value

U Undetected

R Rejected value

Table L-3
Soil Data for SLERA Analysis, East Adjacent Area

Sample ID	Location ID	Sample Date	Depth	BENZO(B)FLUORANTH	BENZO(G,H,I)PERYLE	BENZO(K)FLUORANTH	CHRYSENE	DIBENZ(A,H)ANTHRAC	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYR	NAPHTHALENE	PHENANTHRENE	PYRENE
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
9110H624	IR01MW07A	03/08/91	-0.07	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U
9110H625	IR01MW07A	03/08/91	2.43	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U
9203H067	IR01MW09B	01/17/92	0.75	<0.72 UJ	<0.72 UJ	<0.72 UJ	0.63 UJ	<0.72 UJ	<0.72 UJ	<0.72 UJ	<0.72 UJ	<0.72 UJ	<0.72 UJ	<0.72 UJ
9203H068	IR01MW09B	01/17/92	2.75	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U
9543J518	IR01MW367A	10/24/95	2.77	0.16 J	<0.37 UJ	<0.37 UJ	<0.37 U	<0.37 UJ	<0.37 U	<0.37 U	<0.37 UJ	<0.37 U	<0.37 U	0.3 J
9050N259	IR01SS078	12/13/90	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9227J144	IR01SS350	06/30/92	0.5	0.37	0.22 J	0.11 J	0.23 J	<0.35 U	0.49	<0.35 U	0.23 J	0.09 J	<0.35	0.44
9122M034	IR01TA05A	05/20/91	2.52	0.12 J	0.067 J	0.048 J	0.11 J	<0.37 U	0.086 J	<0.37 U	0.053 J	<0.37 U	0.071 J	0.14 J
9122M035	IR01TA06B	05/21/91	1	6.6 J	2.2 J	2.1 J	5.8 J	<21 U	2.4 J	<21 U	<21 U	<21 U	<21 U	6.3 J
9123M024	IR01TA07A	05/15/91	2.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9122M039	IR02TA11A	05/22/91	1.56	2.7	0.24 J	1	2	0.083 J	2	<0.46 U	0.3 J	0.072 J	<0.46	1.4
9142H884	IR04B002	10/15/91	1.25	0.17 J	0.17 J	0.048 J	0.13 J	<0.37 U	0.25 J	<0.37 U	0.16 J	0.067 J	<0.37 U	0.42
9143M260	IR04B004	10/22/91	1.75	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U
9142M211	IR04B007	10/16/91	1.75	<0.34 U	<0.34 U	<0.34 U	<0.34 U	<0.34 U	<0.34 U	<0.34 U	<0.34 U	0.067 J	0.067 J	<0.34 U
9143M295	IR04B015	10/24/91	1.25	0.66	0.38	<0.35 U	0.32 J	<0.35 U	0.45	<0.35 U	0.32 J	<0.35 U	0.3 J	0.57
9143M278	IR04B016	10/23/91	2.89	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U
9143M270	IR04B017	10/22/91	1.75	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U
9224A276	IR04B019	06/09/92	2.75	<0.71 U	<0.71 U	<0.71 U	<0.71 U	<0.71 U	<0.71 U	<0.71 U	<0.71 U	<0.71 U	<0.71 U	<0.71 U
9224A272	IR04B020	06/09/92	1.66	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U
9224H259	IR04B025	06/08/92	1.75	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U
9224A268	IR04B026	06/09/92	2.22	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U
9224A279	IR04B028	06/09/92	1.25	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	1.3 J	<1.7 U	<1.7 U	<1.7 U	<1.7 U	1 J
9048N193	IR04B029	11/27/90	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9048N194	IR04B029	11/27/90	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9225A289	IR04B030	06/16/92	1.25	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U	<3.6 U
9225A290	IR04B030	06/16/92	2.75	0.17 J	<0.36 U	<0.36 U	0.17 J	<0.36 U	0.22 J	<0.36 U	<0.36 U	<0.36 U	0.27 J	0.22 J
9046H432	IR04B033	11/15/90	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9224A282	IR04B047	06/09/92	1.25	<1.8 U	<1.8 U	<1.8 UJ	<1.8 U	<1.8 U	<1.8 U	<1.8 U	<1.8 U	<1.8 U	<1.8 U	0.88 J
9143M286	IR04MW13A	10/23/91	1.75	<3.5 U	<3.5 U	<3.5 U	<3.5 U	<3.5 U	<3.5 U	<3.5 U	<3.5 U	<3.5 U	<3.5 U	<3.5 U
9046G487	IR04MW31A	11/15/90	2.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9048N186	IR04MW35A	11/26/90	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9048N187	IR04MW35A	11/26/90	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9047N154	IR04MW36A	11/19/90	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IR12B037020	IR12B037	08/28/02	0.55	1.6 JY	1.1 J	0.5 JY	0.99	0.22 J	1.6	0.15	0.81 J0	<0.14 U	1.3	2.8 J3
IR12B037100	IR12B037	08/28/02	2.55	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	0.077 J	0.12 J
IR12B038020	IR12B038	08/29/02	0	0.67	0.22	<0.14 U	0.38	<0.14 U	0.48	<0.14 U	0.17	<0.14 U	0.35	0.67
IR12B038100	IR12B038	08/29/02	2	<0.16 U	<0.16 U	<0.16 U	<0.16 U	<0.16 U	<0.16 U	<0.16 U	<0.16 U	<0.16 U	<0.16 U	<0.16 U
IR12B039020	IR12B039	08/29/02	0	0.44	0.29	<0.14 U	0.23	<0.14 U	0.19	<0.14 U	0.24	<0.14 U	0.15	0.31

Table L-3
Soil Data for SLERA Analysis, East Adjacent Area

Sample ID	Location ID	Sample Date	Depth	BENZO(B)FLUORANTH	BENZO(G,H,I)PERYLE	BENZO(K)FLUORANTH	CHRYSENE	DIBENZ(A,H)ANTHRAC	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYR	NAPHTHALENE	PHENANTHRENE	PYRENE
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
IR12B039100	IR12B039	08/29/02	2	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U
IR12B040020	IR12B040	08/29/02	0	<0.14 U	<0.14 U	<0.14 U	<0.14 U	<0.14 U	<0.14 U	<0.14 U	<0.14 U	<0.14 U	<0.14 U	<0.14 U
IR12B040100	IR12B040	08/29/02	2	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U
IR12B041020	IR12B041	08/29/02	0.72	0.21 JY	<0.14 J	<0.14 UJ0	0.31	<0.14 UJ0	0.11 J	<0.14 U	0.11 J0	<0.14 U	0.11 J	0.21
IR12B041100	IR12B041	08/29/02	2.72	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U
IR12B042020	IR12B042	08/29/02	0.77	0.37	0.27	<0.14 U	0.83	<0.14 U	0.25	0.43	0.16	0.61	1.3	1.3
IR12B042020A	IR12B042	08/29/02	2.27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IR12B042100	IR12B042	08/29/02	2.77	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U
9131H770	IR12MW11A	08/01/91	2.25	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U
9129X131	IR12SS19	07/18/91	0	1.2	0.59 J	<0.68 U	0.84	0.12 J	1.2	<0.68 U	0.55 J	<0.68 U	<0.64 U	0.94
9540J400	IR72B025	10/05/95	1	<7 UJ	<7 UJ	<7 UJ0	<7 U	<7 UJ	<0.7 U	<0.7 U	<7 UJ0	<0.7 U	<0.7 U	<7 U
9540J401	IR72B025	10/05/95	2.5	<3.5 U	<3.5 U	<3.5 U	<0.35 U	<3.5 U	<0.35 U	<0.35 U	<3.5 U	<0.35 U	<0.35 U	<0.35 U
9540J395	IR72B026	10/05/95	0.5	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U
9540J396	IR72B026	10/05/95	2.5	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U
9540J403	IR72B027	10/05/95	1	0.085 J	<0.38 U	<0.38 U	0.082 J	<0.38 U	0.17 J	<0.38 U	<0.38 U	<0.38 U	0.19 J	0.2 J
9540J404	IR72B027	10/05/95	3	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U
9544W130	IR72B034	10/30/95	0.47	<1.8 U	<1.8 U	<1.8 U	0.28 J	<1.8 U	0.58	<0.35 U	<1.8 U	0.087 J	0.75	1
9544W131	IR72B034	10/30/95	2.97	<0.71 U	<0.71 U	<0.71 U	<0.35 U	<0.71 U	<0.35 U	<0.35 U	<0.71 U	<0.35 U	<0.35 U	<0.35 U
9544W132	IR72B035	10/30/95	0.5	0.092 J	<0.36 U	<0.36 U	<0.36 U	<0.36 U	0.17 J	<0.36 U	<0.36 U	<0.36 U	<0.36 U	0.22 J
9544W135	IR72B037	10/30/95	1.04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9545J586	IR72B038	11/06/95	1.33	<3.5 U	<3.5 U	<3.5 U	<3.5 U	<3.5 U	0.73	0.072 J	<3.5 U	0.16 J	0.79	2 J0
9606J849	IR72B039	02/07/96	2	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	0.2 J
0149P26	IR72GB24C	12/04/01	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
0149P27	IR72GB24C	12/04/01	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9547W199	IR72SS18	11/22/95	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9547W196	IR72SS19	11/22/95	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9547W200	IR72SS20	11/22/95	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9547W203	IR72SS22	11/22/95	0	NA	NA	NA	<10 UJ	NA	<10 U	<10 U	NA	<10 U	<10 U	6.9 J
9547W202	IR72SS24	11/22/95	0	NA	NA	NA	1.5 J	NA	<0.38 U	<0.38 U	NA	<0.38 U	<0.38 U	1.6 J
9918Z058	IR72SS41	05/04/99	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9918Z058A	IR72SS41	05/04/99	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9918Z057	IR72SS42	05/04/99	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9918Z057A	IR72SS42	05/04/99	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table L-3
Soil Data for SLERA Analysis, East Adjacent Area

Sample ID	Location ID	Sample Date	Depth	BENZO(B)FLUORANTH	BENZO(G,H,I)PERYLE	BENZO(K)FLUORANTH	CHRYSENE	DIBENZ(A,H)ANTHRAC	FLUORANTHENE	FLUORENE	INDENO(1,2,3-CD)PYR	NAPHTHALENE	PHENANTHRENE	PYRENE
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analyses				49	49	49	51	49	51	51	49	51	51	51
Detections				16	11	6	17	3	18	3	11	7	13	24
Minimum Concentration				0.085	0.067	0.048	0.082	0.083	0.086	0.072	0.053	0.067	0.067	0.12
Maximum Concentration				6.6	2.2	2.1	5.8	0.22	2.4	0.43	0.81	0.61	1.3	6.9
Median				1.6	3.5	3.6	0.99	7	1.8	10	3.5	3.6	1.8	1
Standard Deviation				1.1	0.71	0.71	1.2	1.6	0.86	1.6	1.6	1.6	1.6	1.4
Mean				0.71	0.53	0.51	0.74	0.65	0.59	0.62	0.69	0.59	0.70	0.87
HPAL SOIL														
HPAL SOIL Hits														
PSC SOIL				231.41	231.41	231.41	231.41	231.41	231.41	10056	231.41	10056	10056	231.41
PSC SOIL Hits				0	0	0	0	0	0	0	0	0	0	0

Notes:

J Estimated value

U Undetected

R Rejected value

Table L-4
Soil Data for SLERA Analysis, Panhandle Area

Sample ID	Location ID	Sample Date	Depth	BERYLLIUM	CADMIUM	COPPER	CHROMIUM VI	LEAD	MANGANESE	NICKEL	SELENIUM	THALLIUM	VANADIUM	ZINC	DIELDRIN	METHOXYCHLOR
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
9219A176	IR01B015	05/06/92	1.25	0.32	<0.38 U	47.3	<0.05 U	67.5	504	771	<0.42 UJ	<0.51 U	26.9	97.2	<0.035 U	<0.18 U
9219H142	IR01B028	05/08/92	1.75	0.29	<0.61 U	70	<0.05 U	53	311	37.6	<0.55 U	<0.39 UJ	40.5	75.2 J	<0.018 U	<0.088 U
9044P022	IR01B032	11/02/90	1.25	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044P023	IR01B032	11/02/90	2.25	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9041L018	IR01B034	10/10/90	0.75	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044P027	IR01B035	11/02/90	2.75	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9043H323	IR01B048A	10/24/90	1.25	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9041H290	IR01B049	10/11/90	0.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044H363	IR01B050	11/01/90	0.75	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9043H339	IR01B055	10/26/90	1.62	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044H358	IR01B056	11/01/90	1.25	NA	NA	NA	<0.05 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
9041H284	IR01B060	10/09/90	1.62	NA	NA	NA	<0.125 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044P014	IR01B061	10/29/90	1.25	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9041L010	IR01B064	10/10/90	0.75	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9225H318	IR01B273	06/17/92	1.75	0.25	<0.47 UJ	<11.2 U	<0.05 U	73.6	123	22.4 J	<0.088 UJ	<0.18 UJ	28.8	44.1	<0.016 U	<0.082 U
9225A315	IR01B274	06/18/92	1.25	0.31 J	<0.5 U	19.3 J	<0.05 UJ	63.3	214 J	54.9	<0.96 U	<0.19 U	50.8	78.8	<0.016 U	<0.081 U
9227H345	IR01B364	06/29/92	1.75	<0.04 U	<0.35 U	18.4	<0.05 U	141	154 J	31.2	<0.4 UJ	<0.48 U	21.9 J	103	<0.017 U	<0.083 U
9227H351	IR01B365	06/29/92	1.25	<0.26 U	<0.36 U	23.9	<0.05 U	186	325 J	41.3	<0.4 UJ	<0.48 U	41.9 J	102	<0.017 U	<0.084 U
IR01B366020	IR01B366	11/26/02	1	0.23	<0.28 U	25 J	<0.06 R	<4.8 UJ	280	36	<2.4 UJ	<0.18 U	17	36 J	<0.0036 U	<0.019 U
IR01B366100	IR01B366	11/26/02	2	0.19	4.1	510 J	<0.06 R	810 J	510	160	<2.5 UJ	<0.27 U	140	1800 J	<0.02 U	<0.11 U
IR01B367020	IR01B367	12/04/02	1	0.29	<0.33 U	<23 J	<0.05 U	36 J	230	260 J	<2.3 UJ	<0.47 U	43	94 J	<0.0035 U	<0.007 U
IR01B367100	IR01B367	12/04/02	2	0.33	5	180	<0.06 U	1600 J	550	150 J	<2.4 U	<0.6 U	170	2200 J	<0.0039 UJ	<0.0077 UJ
IR01B368020	IR01B368	11/26/02	1	0.15	8.8	2200 J	0.07 J	4900 J	2800	160	<2.4 UJ	<02.8 U	19	2900 J	<0.0036 U	<0.019 U
IR01B368100	IR01B368	11/26/02	2	<0.023 U	8.9	5300 J	<0.06 R	9300 J	2500	290	<2.5 UJ	4.3	620	6900 J	<0.038 UJ	<0.2 U
IR01B369020	IR01B369	11/26/02	1	0.14	<0.42 U	140 J	<0.05 R	51 J	460	66	<2.4 UJ	<0.18 U	69	170 J	<0.0036 U	<0.019 U
IR01B369100	IR01B369	11/26/02	2	<0.021 U	5.3	1300 J	<0.06 R	6500 J	1600	230	<2.4 UJ	<03.1 U	580	3800 J	0.09	<0.2 U
IR01B370020	IR01B370	11/26/02	1	0.16	<0.29 U	25 J	<0.06 R	81 J	230	24	<2.5 UJ	<0.21 U	27	76 J	<0.074 U	<0.38 U
IR01B370030	IR01B370	11/26/02	2	0.27	<0.27 U	37 J	<0.05 U	77 J	380	68	<2.4 UJ	<0.18 U	43	79 J	<0.0036 U	<0.019 U
IR01B371030	IR01B371	11/26/02	2	0.22	<0.31 UJ	19 J	<0.06 U	67 J	300	110	<2.4 UJ	<0.18 U	36	67 J	<0.37 U	<1.9 U
IR01B371020	IR01B371	11/26/02	1	0.18	<0.29 U	18 J	<0.06 U	54 J	230	120	<2.5 UJ	<0.19 U	35	55 J	<0.037 U	<0.19 U
IR01B372020	IR01B372	11/26/02	1	0.22	<0.41 U	42 J	<0.05 U	300 J	690	260	<2.3 UJ	<0.17 U	46	66 J	<0.034 U	<0.18 U
IR01B372030	IR01B372	11/26/02	2	0.45	<0.29 U	37 J	<0.06 U	32 J	690	420	<2.5 UJ	<0.19 U	55	63 J	<0.0038 UJ	<0.02 UJ
IR01B373020	IR01B373	11/26/02	1	0.063 J	3.4	1100	<0.05 U	180	250	63	<2.1 U	<0.16 U	83	370 J	<0.017 U	<0.089 U
IR01B373030	IR01B373	11/26/02	2	<0.022 U	0.69 J	470	<0.06 U	170	750	1600	<2.4 U	<0.18 U	2100	520 J	0.071	<0.19 U
IR01B374020	IR01B374	11/26/02	1	<0.36 UJ	2.1 J	1700	<0.05 UJ	530	2400 J	160 J	<2.2 UJ	<0.17 U	49 J	570 J	<0.035 U	<0.18 U
IR01B374030	IR01B374	11/26/02	2	<0.48 U	<01 UJ	140	<0.05 UJ	120	660 J	71 J	<2.3 UJ	<0.17 U	60 J	270 J	<0.034 U	<0.17 U
IR01B375020	IR01B375	11/26/02	1	0.24	0.27 J	44	<0.05 U	10	590	380	<2.4 U	<0.18 U	43	68 J	<0.018 U	<0.091 U
IR01B375030	IR01B375	11/26/02	2	0.16	0.41 J	33 J	<0.05 U	48	1300	840	<2.3 U	<0.17 U	38	240 J	<0.17 U	<0.89 U
IR01B375015	IR01B375	11/26/02	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IR01B376020	IR01B376	11/26/02	1	0.26	0.23 J	390	<0.05 U	120	590	250	<2.4 U	<0.18 U	50	140 J	<0.036 U	<0.19 U

ERRG

Table L-4
Soil Data for SLERA Analysis, Panhandle Area

Sample ID	Location ID	Sample Date	Depth	BERYLLIUM	CADMIUM	COPPER	CHROMIUM VI	LEAD	MANGANESE	NICKEL	SELENIUM	THALLIUM	VANADIUM	ZINC	DIELDRIN	METHOXYCHLOR
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
IR01B376030	IR01B376	11/26/02	2	0.14	0.35 J	36 J	<0.05 U	13	660	790	<2.3 U	<0.17 U	39	49 J	<0.072 U	<0.37 U
IR01B378020	IR01B378	11/26/02	1	<0.43 U	<0.45 UJ	250	<0.06 U	160	550 J	140 J	<2.4 UJ	<0.18 U	56 J	350 J	<0.019 UJ	<0.096 U
IR01B378030	IR01B378	11/26/02	2	<0.29 U	<0.27 U	22	<0.05 U	4.7 J	330 J	39 J	<2.3 UJ	<0.18 U	27 J	39 J	<0.036 U	<0.19 U
IR01B379020	IR01B379	11/26/02	1	0.56	<0.44 UJ	52	0.06 J	2.4 J	980 J	310 J	<2.3 UJ	<0.17 U	63 J	68 J	<0.034 U	<0.17 U
IR01B379030	IR01B379	11/26/02	2	<0.26 U	<01.2 UJ	95	<0.06 UJ	360	190 J	39 J	<2.6 UJ	<0.19 U	28 J	330 J	<0.019 UJ	<0.097 UJ
IR01B383020	IR01B383	11/26/02	1	0.61	<0.27 U	230	<0.05 UJ	6.3 J	1100 J	150 J	<2.3 UJ	<0.36 U	100 J	120 J	<0.035 U	<0.18 UJ
IR01B383030	IR01B383	11/26/02	2	<0.45 UJ	<0.27 U	27	<0.05 UJ	45	380 J	53 J	<2.3 UJ	<0.25 U	51 J	78 J	<0.036 U	<0.18 U
IR01B384020	IR01B384	11/26/02	1	<0.27 U	<0.28 U	19	<0.06 UJ	110	280 J	35 J	<2.4 UJ	<0.29 U	30 J	77 J	<0.037 U	<0.19 U
IR01B384030	IR01B384	11/26/02	2	<0.25 U	<0.28 U	14	<0.06 UJ	83	560 J	31 J	<2.4 UJ	<0.18 U	25 J	58 J	<0.037 U	<0.19 U
IR01B385020	IR01B385	11/26/02	1	<0.52 U	<0.37 UJ	68	<0.05 UJ	42	850 J	120 J	<2.4 UJ	<0.18 U	74 J	87 J	0.036	<0.18 UJ
IR01B385030	IR01B385	11/26/02	2	0.59	2.6 J	200	<0.07 UJ	110	2700 J	99 J	<3 UJ	<0.23 U	64 J	220 J	<0.047 U	<0.24 U
IR01B386020	IR01B386	11/26/02	1	<0.19 U	<0.35 UJ	930	<0.05 UJ	380	360 J	21 J	<5 UJ	<0.18 U	3.8 J	880 J	<0.044 UJ	<0.18 U
IR01B386030	IR01B386	11/26/02	2	<0.25 U	<0.27 U	43	<0.06 UJ	140	220 J	49 J	<2.3 UJ	<0.17 U	26 J	240 J	<0.037 U	<0.19 U
IR01B389020	IR01B389	11/26/02	1	0.76 J	<2.9 U	69	<0.06 UJ	220	580 J	130 J	<25 UJ	<0.36 U	59 J	270 J	<0.038 U	<0.19 U
IR01B389030	IR01B389	11/26/02	2	<0.38 U	<01.9 UJ	120	<0.05 UJ	260	340 J	92 J	<2.4 UJ	<0.18 U	47 J	990 J	<0.073 U	<0.38 U
IR01B390020	IR01B390	11/26/02	1	0.68	<0.34 UJ	49	<0.63 UJ	64	490 J	93 J	<2.5 UJ	<0.19 U	74 J	110 J	<4.2 U	<21 U
IR01B390030	IR01B390	11/26/02	2	<0.44 U	<2.7 U	160	1.1 J	230	550 J	100 J	<23 UJ	<0.18 U	60 J	340 J	3.2 J	<2.7 UJ
IR01B394020	IR01B394	11/26/02	1	<0.43 U	4.2 J	450	10 J	730	570 J	130 J	<2.9 UJ	<0.81 U	40 J	1500 J	6.4 J	4.2
IR01B394030	IR01B394	11/26/02	2	<0.47 U	<0.29 U	54	<0.56 UJ	150	400 J	49 J	<2.5 UJ	<0.49 U	36 J	130 J	<0.18 U	<0.94 U
IR01B395020	IR01B395	11/26/02	1	0.26	<0.094 U	88	0.06	30	710	810	<2.3 U	<0.18 U	43	120 J	<0.018 U	<0.093 U
IR01B395030	IR01B395	11/26/02	2	0.22	0.22 J	140	<0.05 U	73	610	400	<1.9 U	<0.14 U	35	170 J	<0.035 U	<0.18 U
IR01B396020	IR01B396	11/26/02	1	<0.22 U	<0.61 U	140 J	<0.05 UJ	20	810	1500	<2.3 UJ	<0.17 U	32	91 J	<0.036 U	<0.18 U
IR01B396030	IR01B396	11/26/02	2	<0.33 UJ	<0.27 U	99 J	<0.06 UJ	39	580	810	<2.3 UJ	<0.18 U	31	120 J	<0.037 U	<0.19 U
IR01B397020	IR01B397	11/26/02	1	0.18	0.34 J	1000	<0.05 U	110	600	210	<2.3 U	<0.17 U	38	560 J	0.029	<0.091 U
IR01B397030	IR01B397	11/26/02	2	0.27	0.46 J	130	0.06	180	660	52	<2.4 U	<0.18 U	53	380 J	<0.018 U	<0.091 U
IR01B399020	IR01B399	11/26/02	1	0.56	<0.46 U	46 J	<0.06 U	<5.6 UJ	900	350	<2.5 UJ	<0.19 U	83	76 J	<0.0038 U	<0.019 U
IR01B399030	IR01B399	11/26/02	2	0.22	<0.41 U	18 J	<0.05 U	42 J	440	260	<2.4 UJ	<0.18 U	35	47 J	<0.018 U	<0.093 U
9115M001	IR01MW53B	04/09/91	1.25	0.42	0.86	249 J	<0.05 U	302	672	79.6	<0.48 U	<0.52 U	47.5	522	<0.017 U	<0.42 U
9110H616	IR01MW58A	03/07/91	1.25	0.47	<0.61 U	295	<0.05 U	379	581	458	<0.52 UJ	<0.56 UJ	72.2	726	<0.018 U	<0.091 U
9201N006	IR01MW62A	01/06/92	1.25	1.2	<0.42 U	28.3	<0.05 UJ	54.2	640	325	<0.42 U	<0.54 UJ	89.4	94	<0.019 U	<0.094 U
9151A048	IR01MW63A	12/17/91	1.75	<0.37 U	0.65	12	<0.05 U	63	185	174	NA	NA	23.8	60.4	<0.018 U	<0.09 U
9836D003C	IR01PH1	09/01/98	0	<0.04 U	<0.55 U	83.6	NA	219	781 J	50.8	0.45 J	<0.64 UJ	36.8	262	<0.0001 U	<0.0004 UJ
9836D005C	IR01PH1	09/01/98	0	<0.04 U	0.71	96.9	NA	222	484 J	47.6	0.64 J	<0.64 UJ	30.7	287	<0.0002 U	<0.0007 UJ
9836D007C	IR01PH1	09/01/98	0	0.15 J	<0.13 U	44.9	NA	39.7	1280 J	51.2	0.66 J	<0.57 UJ	36.5	202	<0.0001 U	<0.0004 UJ
9050N260	IR01SS082	12/14/90	0	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9050N261	IR01SS083	12/14/90	0	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9050N262	IR01SS084	12/14/90	0	NA	NA	NA	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
9227J143	IR01SS351	06/30/92	0.5	0.55	<0.61 U	27.8	<0.05 U	46.2	503	165 J	<0.65 U	<0.36 U	58.5	86.6	<0.09 U	<0.45 U
9227J142	IR01SS353	06/30/92	0.5	<0.12 U	<0.64 U	<0.85 U	<0.05 U	50.8	0.15	<4.1 U	<0.69 U	<0.38 U	<0.33 U	<3.9 U	<0.019 U	<0.095 U
9836C001C	IR01SW1	09/01/98	0	0.06 J	<0.15 U	11.2	NA	50.3	140 J	26.9	<0.35 UJ	<0.61 UJ	26.2	63.9	<0.0001 U	<0.0003 UJ

Table L-4
Soil Data for SLERA Analysis, Panhandle Area

Sample ID	Location ID	Sample Date	Depth	BERYLLIUM	CADMIUM	COPPER	CHROMIUM VI	LEAD	MANGANESE	NICKEL	SELENIUM	THALLIUM	VANADIUM	ZINC	DIELDRIN	METHOXYCHLOR
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
9836C003C	IR01SW1	09/01/98	0	0.05 J	<0.08 U	17.1	NA	75.1	116 J	24.3	0.38 J	<0.62 UJ	22.6	78.7	<0.0001 U	<0.0003 UJ
9836C005C	IR01SW2	09/01/98	0	<0.03 U	2	932	NA	6270	662 J	204	0.76 J	<0.56 UJ	30.3	798	<0.01 U	<0.034 U
9836D001C	IR01SW2	09/01/98	0	<0.03 U	2.2	1090	NA	6130	954 J	366	0.59 J	<0.5 UJ	27.9	804	<0.011 U	<0.036 U
W29W001	WE18D	03/21/02	3	0.24	0.28	55.2 J	<0.057 R	166 J	398 J	46	0.24	<0.041 U	43.5 J	75.1 J	<0.096 U	<0.48 U
Analyses				68	68	68	75	68	68	68	67	67	68	68	68	68
Detections				40	23	65	6	66	68	67	7	1	67	67	6	1
Minimum Concentration				0.05	0.22	11.2	0.06	2.4	0.15	21	0.24	4.3	3.8	36	0.029	4.2
Maximum Concentration				1.2	8.9	5300	10	9300	2800	1600	0.76	4.3	2100	6900	6.4	4.2
Median				0.27	0.46	68	0.56	81	550	120	3	0.36	43	120	0.37	4.2
Standard Deviation				0.21	0.55	746	1.2	1760	573	311	1.9	0.69	266	1032	0.89	1.4
Mean				0.29	0.24	315	0.18	636	653	229	1.3	0.32	93	479	0.19	0.35
HPAL SOIL				0.71	3.14	124.3		8.99	1431.2		1.95	0.81	117.2	109.9		
HPAL SOIL Hits				2	7	25		63	5		0	1	5	36		
PSC SOIL				134.76	4.24	469.63	668.71	441.94	2433.21	1941.38	9.82	88.48	117.2	719.32	18.38	508.76
PSC SOIL Hits				0	4	11	0	9	3	0	0	0	5	11	0	0

Notes:

J Estimated value

U Undetected

R Rejected value because of accuracy problems in matrix spike, blank spike, or surrogate spike

Table L-4
Soil Data for SLERA Analysis, Panhandle Area

Sample ID	Location ID	Sample Date	Depth	4,4'-DDT	AROCLOR-1016	AROCLOR-1221	AROCLOR-1232	AROCLOR-1242	AROCLOR-1248	AROCLOR-1254	AROCLOR-1260	BENZO(A)ANTHRA	BENZO(A)PYRENE	BENZO(B)FLUORA	BENZO(G,H,I)PER	BENZO(K)FLUORA
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
9219A176	IR01B015	05/06/92	1.25	<0.035 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.35 U	<0.35 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U
9219H142	IR01B028	05/08/92	1.75	<0.018 U	<0.088 U	<0.088 U	<0.088 U	<0.088 U	<0.088 U	<0.18 U	<0.18 U	<0.36 U	0.038 J	0.045 J	<0.36 U	<0.36 U
9044P022	IR01B032	11/02/90	1.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044P023	IR01B032	11/02/90	2.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9041L018	IR01B034	10/10/90	0.75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044P027	IR01B035	11/02/90	2.75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9043H323	IR01B048A	10/24/90	1.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9041H290	IR01B049	10/11/90	0.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044H363	IR01B050	11/01/90	0.75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9043H339	IR01B055	10/26/90	1.62	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044H358	IR01B056	11/01/90	1.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9041H284	IR01B060	10/09/90	1.62	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044P014	IR01B061	10/29/90	1.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9041L010	IR01B064	10/10/90	0.75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9225H318	IR01B273	06/17/92	1.75	<0.016 U	<0.082 U	<0.082 U	<0.082 U	<0.082 U	<0.082 U	<0.16 U	<0.16 U	<0.34 UJ	<0.34 UJ	<0.34 UJ	<0.34 UJ	<0.34 UJ
9225A315	IR01B274	06/18/92	1.25	<0.016 U	<0.081 U	<0.081 U	<0.081 U	<0.081 U	<0.081 U	<0.16 U	<0.16 U	<0.34 U	<0.34 U	<0.34 U	<0.34 U	<0.34 U
9227H345	IR01B364	06/29/92	1.75	<0.017 U	<0.083 U	<0.083 U	<0.083 U	<0.083 U	<0.083 U	<0.17 U	<0.17 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U
9227H351	IR01B365	06/29/92	1.25	<0.017 U	<0.084 U	<0.084 U	<0.084 U	<0.084 U	<0.084 U	<0.17 U	<0.17 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U
IR01B366020	IR01B366	11/26/02	1	<0.0036 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U
IR01B366100	IR01B366	11/26/02	2	<0.02 UJ	<0.041 UJ	<0.041 UJ	<0.041 UJ	<0.041 UJ	<0.041 UJ	<0.041 UJ	0.14 J	<0.81 U	<0.81 U	1.1	<0.81 U	1.7
IR01B367020	IR01B367	12/04/02	1	<0.0035 UJ	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.36 U	0.31 J	<0.36 U	0.37	<0.36 U
IR01B367100	IR01B367	12/04/02	2	<0.0039 UJ	<0.039 UJ	<0.039 UJ	<0.039 UJ	<0.039 UJ	<0.039 UJ	0.081 J	<0.039 UJ	0.045 J	0.043 J	0.24 JY	<0.2 UJ	<0.2 U
IR01B368020	IR01B368	11/26/02	1	<0.0036 UJ	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.26	<0.036 U	<0.074 U	<0.074 U	<0.074 U	<0.074 U	<0.074 U
IR01B368100	IR01B368	11/26/02	2	0.065 J	<0.038 UJ	<0.038 UJ	<0.038 UJ	<0.038 UJ	<0.038 UJ	0.46 J	0.32 J5	0.39 J	<0.77 U	1.1	<0.77 U	1.6
IR01B369020	IR01B369	11/26/02	1	<0.0036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.055	<0.036 U	<0.072 U	<0.072 U	0.084	<0.072 U	0.15
IR01B369100	IR01B369	11/26/02	2	<0.22 U	<0.038 UJ	<0.038 UJ	<0.038 UJ	<0.038 UJ	<0.038 UJ	0.25 J	0.17 J	<1.5 U	<1.5 U	<1.5 U	<1.5 U	<1.5 U
IR01B370020	IR01B370	11/26/02	1	<0.074 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.15 UJ	<0.15 R	<0.15 R	<0.15 R0	<0.15 R
IR01B370030	IR01B370	11/26/02	2	<0.0036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.075 U	<0.075 U	0.099	<0.075 U	0.16
IR01B371030	IR01B371	11/26/02	2	<0.37 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<1.5 U	<1.5 R	<1.5 R	<1.5 R	<1.5 R
IR01B371020	IR01B371	11/26/02	1	<0.05 UJ	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.023 J	<0.074 U	<0.074 UJ	<0.074 UJ	<0.074 UJ	<0.074 UJ
IR01B372020	IR01B372	11/26/02	1	<0.034 U	<0.034 U	<0.034 U	<0.034 U	<0.034 U	<0.034 U	<0.034 U	20	<0.069 U	<0.069 U	<0.069 U	<0.069 U	<0.069 U
IR01B372030	IR01B372	11/26/02	2	<0.0038 UJ	<0.038 U	<0.038 U	<0.038 U	<0.038 U	<0.038 U	<0.038 U	<0.038 U	<0.077 U	<0.077 U	0.09	<0.077 U	0.15
IR01B373020	IR01B373	11/26/02	1	0.012 J	<0.034 U	<0.034 U	<0.034 U	<0.034 U	0.22 J	0.22 J	<0.034 U	0.39	0.54	0.58	0.27	0.44
IR01B373030	IR01B373	11/26/02	2	<0.17 UJ	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	0.53	0.37	0.33	0.33	0.32	<0.075 U	0.28
IR01B374020	IR01B374	11/26/02	1	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	14	0.088	0.1	0.18	<0.071 U	0.18
IR01B374030	IR01B374	11/26/02	2	<0.034 U	<0.034 U	<0.034 U	<0.034 U	<0.034 U	<0.034 U	<0.034 U	0.16	<0.067 R	<0.067 UJ	0.054 J	<0.067 UJ	<0.067 UJ
IR01B375020	IR01B375	11/26/02	1	<0.018 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.029 J	<0.072 U	<0.072 U	0.088	<0.072 U	0.15
IR01B375030	IR01B375	11/26/02	2	<0.17 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.82 UJ	<0.82 R	<0.82 R	<0.82 R	<0.82 R
IR01B375015	IR01B375	11/26/02	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IR01B376020	IR01B376	11/26/02	1	0.037	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.38	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U

Table L-4
Soil Data for SLERA Analysis, Panhandle Area

Sample ID	Location ID	Sample Date	Depth	4,4'-DDT	AROCLOR-1016	AROCLOR-1221	AROCLOR-1232	AROCLOR-1242	AROCLOR-1248	AROCLOR-1254	AROCLOR-1260	BENZO(A)ANTHRA	BENZO(A)PYRENE	BENZO(B)FLUORA	BENZO(G,H,I)PER	BENZO(K)FLUORA
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
IR01B376030	IR01B376	11/26/02	2	<0.072 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.037	<0.072 UJ	<0.072 R	<0.072 R0	<0.072 R	<0.072 R
IR01B378020	IR01B378	11/26/02	1	<0.019 UJ	<0.037 U	<0.037 U	<0.037 U	<0.037 U	0.34	<0.037 U	<0.037 U	<1.5 U	3.1	3.7	<1.5 U	4.3
IR01B378030	IR01B378	11/26/02	2	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.11 J0	0.072 J	0.12 J	<0.071 UJ	<0.071 UJ
IR01B379020	IR01B379	11/26/02	1	<0.034 U	<0.034 U	<0.034 U	<0.034 U	<0.034 U	<0.034 U	<0.034 U	<0.034 U	<0.072 UJ	<0.072 UJ	<0.072 UJ	<0.072 UJ	<0.072 UJ
IR01B379030	IR01B379	11/26/02	2	0.028 J	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	0.05 J0	<0.076 UJ	0.089 J	<0.076 UJ	<0.076 UJ
IR01B383020	IR01B383	11/26/02	1	0.048 J	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	0.19 J	1.4	1.9 J	2.1 J	<0.07 UJ	2.1 J
IR01B383030	IR01B383	11/26/02	2	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.056	<0.072 U	0.051 J	0.11	<0.072 U	0.16
IR01B384020	IR01B384	11/26/02	1	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	0.16 J	0.25 J	0.35 J	<0.074 UJ	0.16 J
IR01B384030	IR01B384	11/26/02	2	<0.037 U	<0.038 U	<0.038 U	<0.038 U	<0.038 U	<0.038 U	<0.038 U	<0.038 U	<0.075 U	<0.075 U	0.1	<0.075 U	0.16
IR01B385020	IR01B385	11/26/02	1	0.087 J	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.027	6.1	0.74	4.9	<0.29 U	4
IR01B385030	IR01B385	11/26/02	2	<0.047 U	<0.047 U	<0.047 U	<0.047 U	<0.047 U	<0.047 U	<0.047 U	0.18	0.49	0.21 J	0.83 J	<0.096 UJ	0.56 J
IR01B386020	IR01B386	11/26/02	1	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	12	<0.036 U	<0.036 U	<1.5 U	3.2	4.4	<1.5 U	4.5
IR01B386030	IR01B386	11/26/02	2	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037	0.058 J	0.058 J	<0.073 UJ	0.11 J	<0.073 UJ	0.058 J
IR01B389020	IR01B389	11/26/02	1	<0.038 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	0.12	<0.037 U	0.049	0.27	0.23 J	0.25 J	<0.074 UJ	0.27 J
IR01B389030	IR01B389	11/26/02	2	<0.073 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.12	0.059 J	0.059 J	0.064 J	<0.073 UJ	<0.073 UJ
IR01B390020	IR01B390	11/26/02	1	<4.2 U	<0.038 U	<0.038 U	<0.038 U	<0.038 U	<0.038 U	<0.038 U	<0.038 U	5.3 J	8.6 J	12 J	<0.83 UJ	4.4 J
IR01B390030	IR01B390	11/26/02	2	<02.7 UJ	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	17	<0.037 U	51	16	64	<10 U	53
IR01B394020	IR01B394	11/26/02	1	<0.47 U	<0.043 U	<0.043 U	<0.043 U	<0.043 U	<0.043 U	<0.043 U	0.82	4	3.8	4.7	<0.94 U	3.9
IR01B394030	IR01B394	11/26/02	2	<0.18 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.73 U	<0.73 UJ	<0.73 UJ	<0.73 UJ	<0.73 UJ
IR01B395020	IR01B395	11/26/02	1	0.012 J	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.018 J	0.24	0.16	0.2	<0.072 U	0.21
IR01B395030	IR01B395	11/26/02	2	<0.035 U	<0.034 U	<0.034 U	<0.034 U	<0.034 U	0.13	<0.034 U	0.089	0.097 J	<0.069 R	0.15 J	<0.069 R	0.088 J
IR01B396020	IR01B396	11/26/02	1	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	0.098	0.29	0.34	0.56	0.079 J	0.3
IR01B396030	IR01B396	11/26/02	2	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	0.072	0.25	0.17	0.21	<0.075 U	0.23
IR01B397020	IR01B397	11/26/02	1	<0.018 UJ	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	0.21	0.13	0.47	0.53 J	0.59 J	<0.11 UJ	0.52 J
IR01B397030	IR01B397	11/26/02	2	<0.018 UJ	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	<0.035 U	0.053	0.24	0.18	0.2	<0.07 U	0.21
IR01B399020	IR01B399	11/26/02	1	0.004	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.037 U	<0.076 U	<0.076 U	0.088	<0.076 U	0.15
IR01B399030	IR01B399	11/26/02	2	<0.018 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.036 U	<0.073 U	<0.073 U	0.1	<0.073 U	0.16
9115M001	IR01MW53B	04/09/91	1.25	<0.017 U	<0.084 U	<0.084 U	<0.084 U	<0.084 U	<0.084 U	<0.84 U	<0.84 U	0.12 J	0.09 J	0.16 J	<0.69 U	<0.69 U
9110H616	IR01MW58A	03/07/91	1.25	<0.018 U	<0.091 U	<0.091 U	<0.091 U	<0.091 U	<0.091 U	<0.18 U	<0.18 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U
9201N006	IR01MW62A	01/06/92	1.25	<0.019 U	<0.094 U	<0.094 U	<0.094 U	<0.094 U	<0.094 U	<0.19 U	<0.19 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U
9151A048	IR01MW63A	12/17/91	1.75	<0.018 U	<0.09 U	<0.09 U	<0.09 U	<0.09 U	<0.09 U	<0.18 U	<0.18 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U
9836D003C	IR01PH1	09/01/98	0	0.004 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9836D005C	IR01PH1	09/01/98	0	0.002 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9836D007C	IR01PH1	09/01/98	0	0.001 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9050N260	IR01SS082	12/14/90	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9050N261	IR01SS083	12/14/90	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9050N262	IR01SS084	12/14/90	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9227J143	IR01SS351	06/30/92	0.5	<0.09 U	<0.45 U	<0.45 U	<0.45 U	<0.45 U	<0.45 U	<0.9 U	<0.9 U	<0.37 U	<0.37 U	0.072 J	0.036 J	<0.37 U
9227J142	IR01SS353	06/30/92	0.5	<0.019 U	<0.095 U	<0.095 U	<0.095 U	<0.095 U	<0.095 U	<0.19 U	<0.19 U	<0.39 U	<0.39 U	0.046 J	<0.39 U	<0.39 U
9836C001C	IR01SW1	09/01/98	0	0.001 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table L-4
Soil Data for SLERA Analysis, Panhandle Area

Sample ID	Location ID	Sample Date	Depth	4,4'-DDT	AROCLOR-1016	AROCLOR-1221	AROCLOR-1232	AROCLOR-1242	AROCLOR-1248	AROCLOR-1254	AROCLOR-1260	BENZO(A)ANTHRA	BENZO(A)PYRENE	BENZO(B)FLUORA	BENZO(G,H,I)PERY	BENZO(K)FLUORA
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
9836C003C	IR01SW1	09/01/98	0	0.002 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9836C005C	IR01SW2	09/01/98	0	<0.016 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9836D001C	IR01SW2	09/01/98	0	<0.018 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W29W001	WE18D	03/21/02	3	<0.096 U	<0.018 U	<0.018 U	<0.018 U	<0.018 U	<0.018 U	<0.018 U	0.33	<3.7 U	<3.7 U	<3.7 U	<3.7 U	<3.7 U
Analyses				68	61	61	61	61	61	61	61	61	61	61	61	61
Detections				13	0	0	0	0	5	9	26	24	25	39	4	30
Minimum Concentration				0.001					0.12	0.055	0.018	0.045	0.038	0.045	0.036	0.058
Maximum Concentration				0.087					12	17	20	51	16	64	0.37	53
Median				0.065	NA	NA	NA	NA	0.22	0.26	0.16	0.82	0.81	0.35	1.5	0.82
Standard Deviation				0.41	0.029	0.029	0.029	0.029	1.5	2.2	3.1	6.6	2.4	8.3	0.68	6.8
Mean				0.10	0.027	0.027	0.027	0.027	0.24	0.35	0.66	1.3	0.80	1.8	0.28	1.5
HPAL SOIL																
HPAL SOIL Hits																
PSC SOIL				3.53	36.92	36.92	36.92	36.92	36.92	36.92 36.9	36.92	231.41	231.41	231.41	231.41	231.41
PSC SOIL Hits				0	0	0	0	0	0	0	0	0	0	0	0	0

Notes:

J Estimated value

U Undetected

R Rejected value because of accuracy problems in matrix spike

Table L-4
Soil Data for SLERA Analysis, Panhandle Area

Sample ID	Location ID	Sample Date	Depth	CHRYSENE	DIBENZ(A,H)ANTH	FLUORANTHENE	INDENO(1,2,3-CD)P	PYRENE	ACENAPHTHENE	ACENAPHTHYLEN	ANTHRACENE	FLUORENE	NAPHTHALENE	PHENANTHRENE
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
9219A176	IR01B015	05/06/92	1.25	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U	<0.74 U
9219H142	IR01B028	05/08/92	1.75	<0.36 U	<0.36 U	0.042 J	<0.36 U	0.052 J	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U
9044P022	IR01B032	11/02/90	1.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044P023	IR01B032	11/02/90	2.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9041L018	IR01B034	10/10/90	0.75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044P027	IR01B035	11/02/90	2.75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9043H323	IR01B048A	10/24/90	1.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9041H290	IR01B049	10/11/90	0.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044H363	IR01B050	11/01/90	0.75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9043H339	IR01B055	10/26/90	1.62	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044H358	IR01B056	11/01/90	1.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9041H284	IR01B060	10/09/90	1.62	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9044P014	IR01B061	10/29/90	1.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9041L010	IR01B064	10/10/90	0.75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9225H318	IR01B273	06/17/92	1.75	<0.34 UJ	<0.34 UJ	<0.34 UJ	<0.34 UJ	<0.34 UJ	<0.34 UJ	<0.34 UJ	<0.34 UJ	<0.34 UJ	<0.34 UJ	<0.34 UJ
9225A315	IR01B274	06/18/92	1.25	<0.34 U	<0.34 U	<0.34 U	<0.34 U	<0.34 U	<0.34 U	<0.34 U	<0.34 U	<0.34 U	<0.34 U	<0.34 U
9227H345	IR01B364	06/29/92	1.75	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U
9227H351	IR01B365	06/29/92	1.25	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U	<0.35 U
IR01B366020	IR01B366	11/26/02	1	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U
IR01B366100	IR01B366	11/26/02	2	0.41 J	<0.81 U	0.78 J	<0.81 U	0.66 J	<0.81 U	<0.81 U	<0.81 U	<0.81 U	1.4	0.95
IR01B367020	IR01B367	12/04/02	1	0.32 J	0.076 J	0.084 J	<0.36 U	0.21 J	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U	<0.36 U
IR01B367100	IR01B367	12/04/02	2	0.082 J	<0.2 UJ	0.072 J	<0.2 UJ	0.12 J	<0.2 UJ	<0.2 UJ	<0.2 UJ	<0.2 UJ	1.2 J	0.11 J
IR01B368020	IR01B368	11/26/02	1	<0.074 U	<0.074 U	<0.074 U	<0.074 U	<0.074 U	<0.074 U	<0.074 U	<0.074 U	<0.074 U	<0.074 U	<0.074 U
IR01B368100	IR01B368	11/26/02	2	0.65 J	<0.77 U	0.8	<0.77 U	0.72 J	<0.77 U	<0.77 U	<0.77 U	<0.77 U	20	0.97
IR01B369020	IR01B369	11/26/02	1	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U
IR01B369100	IR01B369	11/26/02	2	0.8 J	<1.5 U	0.88 J	<1.5 U	1.4 J	<1.5 U	<1.5 U	<1.5 U	<1.5 U	47	1.3 J
IR01B370020	IR01B370	11/26/02	1	0.097 J	<0.15 R	<0.15 U	<0.15 R	<0.15 UJ	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U	<0.15 U
IR01B370030	IR01B370	11/26/02	2	<0.075 U	<0.075 U	<0.075 U	<0.075 U	0.04 J	<0.075 U	<0.075 U	<0.075 U	<0.075 U	<0.075 U	<0.075 U
IR01B371030	IR01B371	11/26/02	2	0.94 J	<1.5 R	<1.5 U	<1.5 R	<1.5 U	<1.5 U	<1.5 U	<1.5 U	<1.5 U	<1.5 U	<1.5 U
IR01B371020	IR01B371	11/26/02	1	<0.074 U	<0.074 UJ	<0.074 U	<0.074 UJ	<0.074 U	<0.074 U	<0.074 U	<0.074 U	<0.074 U	<0.074 U	<0.074 U
IR01B372020	IR01B372	11/26/02	1	<0.069 U	<0.069 U	<0.069 U	<0.069 U	<0.069 U	<0.069 U	<0.069 U	<0.069 U	<0.069 U	<0.069 U	<0.069 U
IR01B372030	IR01B372	11/26/02	2	<0.077 U	<0.077 U	<0.077 U	<0.077 U	<0.077 U	<0.077 U	<0.077 U	<0.077 U	<0.077 U	<0.077 U	<0.077 U
IR01B373020	IR01B373	11/26/02	1	0.58	0.23	0.94	0.34	1.1	0.048 J	<0.071 U	0.22	<0.071 U	<0.071 U	0.9
IR01B373030	IR01B373	11/26/02	2	0.33	<0.075 U	0.42	0.25	0.54	<0.075 U	<0.075 U	0.22	<0.075 U	<0.075 U	0.4
IR01B374020	IR01B374	11/26/02	1	0.13	<0.071 U	0.14	0.047 J	0.13	<0.071 U	<0.071 U	<0.071 U	<0.071 U	<0.071 U	0.065 J
IR01B374030	IR01B374	11/26/02	2	<0.067 R	<0.067 UJ	0.039 J	<0.067 UJ	0.054 J	<0.067 U	<0.067 U	<0.067 U	<0.067 U	<0.067 U	0.061 J
IR01B375020	IR01B375	11/26/02	1	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U
IR01B375030	IR01B375	11/26/02	2	<0.82 UJ	<0.82 R	<0.82 U	<0.82 R	<0.82 UJ	<0.82 U	<0.82 U	<0.82 U	<0.82 U	<0.82 U	<0.82 U
IR01B375015	IR01B375	11/26/02	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0046 U	NA
IR01B376020	IR01B376	11/26/02	1	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U

Table L-4
Soil Data for SLERA Analysis, Panhandle Area

Sample ID	Location ID	Sample Date	Depth	CHRYSENE	DIBENZ(A,H)ANTH	FLUORANTHENE	INDENO(1,2,3-CD)P	PYRENE	ACENAPHTHENE	ACENAPHTHYLEN	ANTHRACENE	FLUORENE	NAPHTHALENE	PHENANTHRENE
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
IR01B376030	IR01B376	11/26/02	2	0.077 J	<0.072 R	<0.072 U	<0.072 R	<0.072 UJ	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U
IR01B378020	IR01B378	11/26/02	1	<1.5 U	<1.5 U	4.5	<1.5 U	2.4	<1.5 U	<1.5 U	<1.5 U	<1.5 U	<1.5 U	<1.5 U
IR01B378030	IR01B378	11/26/02	2	0.19 J	<0.071 UJ	0.12	<0.071 UJ	0.27 J	<0.071 U	<0.071 U	0.042 J	0.044 J	0.097	0.25
IR01B379020	IR01B379	11/26/02	1	<0.072 UJ	<0.072 UJ	<0.072 U	<0.072 UJ	<0.072 UJ	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U
IR01B379030	IR01B379	11/26/02	2	0.085 J0	<0.076 UJ	0.078	<0.076 UJ	0.1 J	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U	0.075 J
IR01B383020	IR01B383	11/26/02	1	1.7	0.073 J	2.3	0.71 J	2.7	0.33	<0.07 U	0.35	0.27	0.055 J	1.7
IR01B383030	IR01B383	11/26/02	2	0.044 J	<0.072 U	0.1	<0.072 U	0.12	<0.072 U	<0.072 U	<0.072 U	<0.072 U	<0.072 U	0.098
IR01B384020	IR01B384	11/26/02	1	0.24 J	<0.074 UJ	0.35	<0.074 UJ	0.76 J	<0.074 U	0.052 J	0.038 J	<0.074 U	0.082	0.42
IR01B384030	IR01B384	11/26/02	2	<0.075 U	<0.075 U	0.049 J	<0.075 U	0.047 J	<0.075 U	<0.075 U	<0.075 U	<0.075 U	<0.075 U	0.039 J
IR01B385020	IR01B385	11/26/02	1	5.8	0.21 J	15	0.54	3.7	1.2	<0.29 U	1.9	1.7	0.18 J	14
IR01B385030	IR01B385	11/26/02	2	0.74	<0.096 UJ	1.5	0.11 J	1.1	0.078 J	<0.096 U	0.16	<0.096 U	<0.096 U	1.2
IR01B386020	IR01B386	11/26/02	1	<1.5 U	<1.5 U	<1.5 U	4.5	<1.5 U	<1.5 U	<1.5 U	<1.5 U	<1.5 U	<1.5 U	<1.5 U
IR01B386030	IR01B386	11/26/02	2	0.069 J	<0.073 UJ	0.057 J	0.067 J	0.13	<0.073 U	<0.073 U	0.057 J	<0.073 U	<0.073 U	<0.073 U
IR01B389020	IR01B389	11/26/02	1	0.19	<0.074 UJ	0.32	0.22 J	0.34	<0.074 U	<0.074 U	0.2	<0.074 U	<0.074 U	0.3
IR01B389030	IR01B389	11/26/02	2	0.089 J	<0.073 UJ	0.085	0.053 J	0.22 J	<0.073 U	<0.073 U	0.062 J	<0.073 U	<0.073 U	0.13
IR01B390020	IR01B390	11/26/02	1	7.9 J	<0.83 UJ	5	8.3 J	18 J	<0.83 U	0.88	1.4	0.99	1.5	5
IR01B390030	IR01B390	11/26/02	2	57	5.3 J	84	17	35	<10 U	<10 U	7.6 J	<10 U	<10 U	43
IR01B394020	IR01B394	11/26/02	1	3.8	<0.94 U	6.4	3.4	6.2	<0.94 U	<0.94 U	2.8	<0.94 U	<0.94 U	5
IR01B394030	IR01B394	11/26/02	2	<0.73 U	<0.73 UJ	<0.73 U	<0.73 UJ	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U	<0.73 U
IR01B395020	IR01B395	11/26/02	1	0.095	<0.072 U	0.26	0.21	0.16	<0.072 U	<0.072 U	0.19	<0.072 U	<0.072 U	0.16
IR01B395030	IR01B395	11/26/02	2	0.13 J	<0.069 R	0.21	0.091 J	0.33 J	<0.069 U	<0.069 U	<0.069 U	<0.069 U	<0.069 U	0.18
IR01B396020	IR01B396	11/26/02	1	0.41	<0.11 U	0.44	0.23	0.53	<0.11 U	<0.11 U	0.1 J	<0.11 U	0.091 J	0.27
IR01B396030	IR01B396	11/26/02	2	0.11	<0.075 U	0.25	0.24	0.13	<0.075 U	<0.075 U	<0.075 U	<0.075 U	<0.075 U	<0.075 U
IR01B397020	IR01B397	11/26/02	1	0.43	<0.11 UJ	0.74	0.38 J	0.94	<0.11 U	<0.11 U	0.31	<0.11 U	<0.11 U	0.62
IR01B397030	IR01B397	11/26/02	2	0.077	<0.07 U	0.35	0.23	0.33	<0.07 U	<0.07 U	<0.07 U	<0.07 U	<0.07 U	<0.07 U
IR01B399020	IR01B399	11/26/02	1	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U	<0.076 U	0.039 J
IR01B399030	IR01B399	11/26/02	2	0.039 J	<0.073 U	0.046 J	<0.073 U	0.053 J	<0.073 U	<0.073 U	<0.073 U	<0.073 U	<0.073 U	<0.073 U
9115M001	IR01MW53B	04/09/91	1.25	0.13 J	<0.69 U	0.2 J	<0.69 U	0.2 J	<0.69 U	<0.69 U	<0.69 U	<0.69 U	<0.69 U	0.13 J
9110H616	IR01MW58A	03/07/91	1.25	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U
9201N006	IR01MW62A	01/06/92	1.25	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U
9151A048	IR01MW63A	12/17/91	1.75	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U	<0.38 U
9836D003C	IR01PH1	09/01/98	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9836D005C	IR01PH1	09/01/98	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9836D007C	IR01PH1	09/01/98	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9050N260	IR01SS082	12/14/90	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9050N261	IR01SS083	12/14/90	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9050N262	IR01SS084	12/14/90	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9227J143	IR01SS351	06/30/92	0.5	0.058 J	<0.37 U	0.057 J	0.037 J	0.041 J	<0.37 U	<0.37 U	<0.37 U	<0.37 U	<0.37 U	0.073 J
9227J142	IR01SS353	06/30/92	0.5	<0.39 U	<0.39 U	0.046 J	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U	<0.39 U
9836C001C	IR01SW1	09/01/98	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table L-4
Soil Data for SLERA Analysis, Panhandle Area

Sample ID	Location ID	Sample Date	Depth	CHRYSENE	DIBENZ(A,H)ANTH	FLUORANTHENE	INDENO(1,2,3-CD)P	PYRENE	ACENAPHTHENE	ACENAPHTHYLEN	ANTHRACENE	FLUORENE	NAPHTHALENE	PHENANTHRENE
		Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
9836C003C	IR01SW1	09/01/98	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9836C005C	IR01SW2	09/01/98	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9836D001C	IR01SW2	09/01/98	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W29W001	WE18D	03/21/02	3	<3.7 U	<3.7 UJ	<3.7 U	<3.7 UJ	<3.7 U	NA	<3.7 U	<3.7 U	<3.7 U	<3.7 U	<3.7 U
Analyses				61	61	61	61	61	60	61	61	61	62	61
Detections				33	5	35	20	35	4	2	16	4	10	28
Minimum Concentration				0.039	0.073	0.039	0.037	0.04	0.048	0.052	0.038	0.044	0.055	0.039
Maximum Concentration				57	5.3	84	17	35	1.2	0.88	7.6	1.7	47	43
Median				0.74	1.5	0.82	0.82	0.53	1.5	3.7	1.5	1.7	1.4	0.62
Standard Deviation				7.3	0.72	11	2.5	5.0	0.67	0.69	1.1	0.71	6.4	5.8
Mean				1.5	0.28	2.2	0.75	1.4	0.27	0.28	0.42	0.31	1.4	1.4
HPAL SOIL														
HPAL SOIL Hits														
PSC SOIL				231.41	231.41	231.41	231.41	231.41	10056	10056	10056	10056	10056	10056
PSC SOIL Hits				0	0	0	0	0	0	0	0	0	0	0

Notes:

J Estimated value

U Undetected

R Rejected value because of accuracy problems in matrix spike

Table L-5 Comparison of Parcel E-2 Pre-2000 Data and All Data

Chemical (mg/kg)	Pre-2000 Data[1] Minimum	Pre-2000 Data[1] Maximum	Pre-2000 Data[1] 95UCL	All Data[1] Minimum	All Data[1] Maximum	All Data[1] 95UCL	Percent Increase of Concentration from Pre-2000 to All Data[2]
Aluminum	968	32,900	12,756.2	968	32,900	12,326.3	NC
Antimony	1	409	25.8	0.45	530	25.43	NC
Arsenic	1.3	215	11.28	1.3	215	8.92	NC
Barium	11.3	601	276.44	11.3	621	207.1	NC
Beryllium	0.05	1.4	0.42	0.05	1.4	0.56	**25**
Cadmium	0.13	12	1.82	0.13	12	1.29	NC
Chromium	6.8	594	236.45	6.8	860	201	NC
Chromium VI	1.01	1.5	NE	0.06	10	0.274	**85**
Cobalt	4.1	102	32.3	3	102	29.76	NC
Copper	5.1	3,320	433.93	5.1	3,700	491.83	**11.8**
Lead	2.6	11,200	1,371.43	2.4	11.2	849.34	NC
Manganese	0.15	1,810	743.03	0.15	2,800	970.34	**23.4**
Mercury	0.05	45.7	2.15	0.033	50	2.33	NC
Molybdenum	0.21	46.8	3.12	0.21	46.8	2.87	NC
Nickel	4	1,500	527.03	4	2,200	417.74	NC
Selenium	0.38	4.5	0.493	0.24	4.5	0.88	**44**
Silver	0.32	1.5	0.574	0.13	2	0.393	NC
Thallium	0.25	0.54	NE	0.25	4.6	0.454	**88.3**
Tin	3.8	8.2	NE	3.8	8.2	NE	NA
Vanadium	3.5	209	78.19	3.5	2,100	89.94	**13.1**

Table L-5 Comparison of Parcel E-2 Pre-2000 Data and All Data (Continued)

Chemical (mg/kg)	Pre-2000 Data[1] Minimum	Pre-2000 Data[1] Maximum	Pre-2000 Data[1] 95UCL	All Data[1] Minimum	All Data[1] Maximum	All Data[1] 95UCL	Percent Increase of Concentration from Pre-2000 to All Data[2]
Zinc	40.7	4,100	513.48	36	4,100	443.2	NC
Dieldrin	ND	ND	ND	0.029	6	0.212	**100**
Methoxychlor	ND	ND	ND	0.12	4	0.46	**100**
2-Butanone	0.001	0.017	0.0083	0.001	0	0.008	NC
Toluene	0.002	0.12	0.013	0.00054	0	0.0125	NC
Trichloroethene	0.001	0.013	0.005	0.001	0	0.0045	NC
Xylenes	0.004	0.056	0.007	ND	ND	ND	NC
Total Aroclors	0.161	27.975	NE	0.126	315.5	NE	**91.1**
Total Chlordanes	0.0018	0.054	NE	0.0018	1.12	NE	**95.2**
Total DDTs	0.0017	1.565	NE	0.0017	8.17	NE	**80.8**
Total PCBs	0.0095	8.561	NE	0.0095	8.561	NE	NC
Total HMW PAHs	1.654	99.4	NE	0.298	606.6	NE	**83.6**
Total LMW PAHs	1.408	109.8	NE	0.424	299.2	NE	**63.3**

Notes:

1. "All data" includes data collected before 2000 and data collected after 2000, while the pre-2000 data only includes the data collected before 2000. Soil samples that have been removed from the site during remedial activites are excluded from the "all" data set.
2. Percent difference was only calculated for those chemicals where the "All" chemical soil concentration exceeded the "pre-2000" chemical soil concentration. When the 95UCL was not available, the maximum concentration was used. The following formula was used: $[95UCL_{all}]$ - $[95UCL_{pre\text{-}2000}]/[95UCL_{all}]$ or $[Maximum_{all}]$ - $[Maximum_{pre\text{-}2000}]/[Maximum_{all}]$

25 Greater than 10 percent difference when "All" data exceeded "pre-2000" data.

DDT	Dichlorodiphenyltrichloroethane
LMW	Low molecular weight
NC	Not calculated, "All" concentration did not exceed "pre-2000" concentration
NE	Not evaluated
PCB	Polychlorinated biphenyl
HMW	High molecular weight
mg/kg	milligram per kilogram
ND	Not detected
PAH	Polynuclear aromatic hydrocarbon
95UCL	95 percent upper confidence limit

Table L-6 Summary of Mammalian and Avian Protective Soil Concentrations Derived in 2000 and 2005

Chemical	HPAL (mg/kg)	PSC (mg/kg)							
		Adult House Mouse		Juvenile House Mouse		American Kestral		Red-tailed Hawk	
		2000	2005	2000	2005	2000 [a]	2005	2000 [a]	2005
Beryllium[b]	0.71	NC	**134.76**	NC	171	NC	NC	NC	NC
Cadmium[c]	3.14	**4.24**	NC	8	NC	NC	NC	NC	NC
Chromium VI[b]	SS	NC	**668.71**	NC	850	NC	NC	NC	NC
Copper[c]	124	NC	**469.63**	NC	598	1,084	986	NC	133,137
Lead[c,d]	8.99	**808**	NC	1,365	NC	**441.94**	NC	NC	NC
Manganese[c]	1,431.2	NC	**2,433.21**	NC	3,083	NC	42,147	NC	5,713,172
Nickel[c,d]	SS	**1,941.38**	NC	2,751	NC	NC	NC	NC	NC
Selenium[c,e]	1.95	0.65	**9.82**	0.98	12	1.41	88	NC	11,936
Thallium[c]	0.81	NC	**88.48**	NC	112	NC	NC	NC	NC
Vanadium[b]	**117.2**	NC	42.03	NC	54	NC	4,335	NC	586,620
Zinc[c]	109.9	**719.32**	NC	1,111	NC	1,927	NC	NC	NC
Dieldrin[c,f]	NA	NC	**18.38**	NC	23	NC	NC	NC	NC
Methoxychlor[c]	NA	NC	**508.76**	NC	646	NC	NC	NC	NC
Total DDT[c]	NA	NC	162	NC	206	NC	**3.53**	NC	476
Total Aroclors[c,g]	NA	NC	62	NC	79	NC	**36.92**	NC	4,984
HMW PAHs[c]	NA	NC	**231.41**	NC	294	NC	NC	NC	NC
LMW PAHs[c]	NA	NC	**10,056**	NC	12,768	NC	NC	NC	NC

Table L-6 Notes:

All PSCs were calculated using the TRV_{low}

a As presented in Draft Final Protective Soil Concentrations Technical Memorandum, Parcel E, Hunters Point Shipyard, San Francisco, California (Tetra Tech EM Inc. [Tetra Tech] and LFR Levine-Fricke 2000).

b High and low TRV obtained from Sample, B.E., D.M. Opresko, and G.W. Suter II. 1996. Toxicological Benchmarks for Wildlife: 1996 Revision. ES/ER/TM-86/R3. June.

c High and low TRV obtained from U.S. Department of Navy. 1998. Development of Toxicity Reference Values for Conducting Ecological Risk Assessments at Naval Facilities in California. September.

d Presented as PSCs for lead and nickel using bioavailable doses (Tetra Tech and LFR 2000).

e HPAL selected as PSC based on Tetra Tech and LFR 2000.

f High and low TRV based on similar compound Aldrin.

g High and low TRV based on similar chemical group, polychlorinated biphenyls.

3.53 Bold Font indicates Lowest PSC. PSC value used in hazard quotient calculations.

DDT	Dichlorodiphenytrichloroethane
HPAL	Hunters Point Ambient Level
mg/kg	Milligram per kilogram
NA	Not applicable
NC	PSC not calculated
PAH	Polynuclear aromatic hydrocarbon
PSC	Protective Soil Concentration
SS	Soil specific
TRV_{low}	Toxicity reference value, low

Table L-7 Hazard Quotient for Birds and Mammals at Parcel E-2

Chemical	HPAL (mg/kg)	PSC (mg/kg)	Maximum Soil Concentrations (mg/kg)			Hazard Quotient[a]		
			Landfill Area	East Adjacent Area	Panhandle Area	Landfill Area	East Adjacent Area	Panhandle Area
Beryllium	0.71	134.76	1.4	1.1	1.2	0.01	0.008	0.009
Cadmium	3.14	4.24	12	11.8	8.9	**2.83**	**2.78**	**2.10**
Chromium VI	SS	668.71	ND	1.5	10	0.00[b]	0.002	0.015
Copper	124.3	469.63	1,430	3,320	5,300	**3.04**	**7.07**	**11.29**
Lead	8.99	441.9	750	11,200	9,300	**1.69**	**25.3**	**21.0**
Manganese	1,431.2	24,33.21	1,550	1,810	2,800	0.64	0.74	**1.15**
Nickel	SS	1,941.38	982	1,500	1,600	0.51	0.77	0.824
Selenium	1.95	9.82	1.7	4.5	0.76	0.17	0.46	0.08
Thallium	0.81	88.48	0.54	6.9	4.3	0.01	0.08	0.049
Vanadium	117.2	117.2	132	209	2,100	**1.13**	**1.78**	**17.9**
Zinc	109.9	719.32	1,020	4,100	6,900	**1.42**	**5.70**	**9.592**
Dieldrin	NA	18.38	ND	0.25	6.4	0.00[b]	0.01	0.348
Methoxychlor	NA	508.76	ND	1.3	4.2	0.00[b]	0.00	0.008
Total DDT	NA	3.53	0.036	0.66	0.087	0.01	0.19	0.025
Total Aroclors	NA	36.92	5.9	37	20	0.16	1.0	0.542
HMW PAHs	NA	231.41	14	6.9	84	0.06	0.03	0.363
LMW PAHs	NA	10,056	5	1.3	47	0.00	0.00	0.005

Table L-7 Notes:

a	The hazard quotient for each Parcel E-2 subarea is calculated by dividing the maximum soil concentration for each analyte by the respective PSC.
b	This chemical was not detected in any samples collected from within the subarea. The hazard quotient was calculated as zero.
DDT	Dichlorodiphenytrichloroethane
HMW	High molecular weight
HPAL	Hunters Point Ambient Level
LMW	Low molecular weight
mg/kg	Milligram per kilogram
NA	Not applicable
ND	Non-detected
PAH	Polynuclear aromatic hydrocarbon
PSC	Protective Soil Concentration
SS	Soil specific
3.53	Bold Font indicates a hazard quotient greater than 1.0

Table L-8 Toxicological Affects on Birds and Mammals at Parcel E-2

Chemical Compound	Key Avian Affects	Key Mammalian Affects
Cadmium	Sub-lethal effects of cadmium in birds include growth retardation, nephrotoxicity, anemia, damage to the testicles, absorptive epithelium of the duodenum, reduced egg production, and effects on calcium absorption (Scheuhammer 1987).	In mammals, cadmium is a known developmental toxin, causing teratogenic and mutagenic effects. Parental doses of cadmium decrease testosterone and produce adverse effects on the testes and prostates of test animals. Prenatal exposure to cadmium has fetotoxic effects, such as reduced fetal weight (Agency for Toxic Substances and Disease Registry [ATSDR] 1993a) and can cause adverse effects during development of the lungs, brain, testes, eyes, and palate (Domingo 1994). Small amounts of cadmium could also affect embryonic deoxyribonucleic acid and protein synthesis (Domingo 1994).
Copper	Copper can be toxic to birds. Diets that contain elevated levels of copper can slow growth rate, diminish egg production, and cause developmental abnormalities in various bird species (Owen 1981).	Mammals are relatively tolerant to copper, though different species of animals display varying levels of sensitivity to copper. The principal organ affected by exposure to copper is the liver, where copper primarily accumulates in subcellular organelles, ultimately causing liver cirrhosis in all mammals. Copper can also cause necrotic kidney tubules and brain damage (Owen 1981).
Lead	Lead produces a variety of toxic effects in birds, including damage to the nervous system, muscular paralysis, inhibition of heme synthesis, damage to kidneys, damage to the liver, and death (Eisler 1988). Organic forms of lead are more toxic to bird receptors than are inorganic forms (Eisler 1988).	In mammals, lead can have multiple toxic effects. Lead may cause damage to the nervous system, hematological effects, kidney dysfunction, sterility, abortion, neonatal mortality, growth retardation, delays in maturation, and reduced body weight (Amdur, Doull, and Klaassen 1991; Eisler 1988).
Vanadium	Very little data exist on acute or chronic effects of vanadium in birds, in part because of the extremely low absorption of vanadium from the gastrointestinal tract (Sittig 1991).	Very little data exist on acute or chronic effects of vanadium in mammals, in part because of the extremely low absorption of vanadium from the gastrointestinal tract (Sittig 1991).

Table L-8 Toxicological Affects on Birds and Mammals at Parcel E-2

Chemical Compound	Key Avian Affects	Key Mammalian Affects
Zinc	Birds are relatively tolerant to ingested zinc, though different species have varying sensitivities to dietary zinc exposure (Eisler 1993).	Excessive zinc intake adversely affects survival of all mammals tested and causes a wide variety of neurological, hematological, immunological, hepatic, renal, cardiovascular, developmental, and genotoxic effects (Eisler 1993). The adverse effects include growth retardation, testicular atrophy, changes in skin, and poor appetite (Eisler 1993; Prasad 1995).
Manganese	Elevated levels of manganese in birds have been shown to cause the following effects: decreased hemoglobin, anemia, reduced growth; in mammals, effects include alterations of brain chemicals, gastric irritation, delayed testicular development, low birth weights, behavioral changes, and muscular weakness (ATSDR 1991).	Manganese is an essential trace element in mammals. Rats that ingested elevated levels of manganese exhibited decreased weight gain, increased physical activity, alterations of brain chemicals, insomnia, disorientation, slight irritation of the stomach, anxiety, memory loss, motor disturbances, transient rash, tremors, difficulty walking, alterations in brain chemistry, decreased fertility, and delayed testicular development (ATSDR 1991; Risk Assessment Information System 1995).