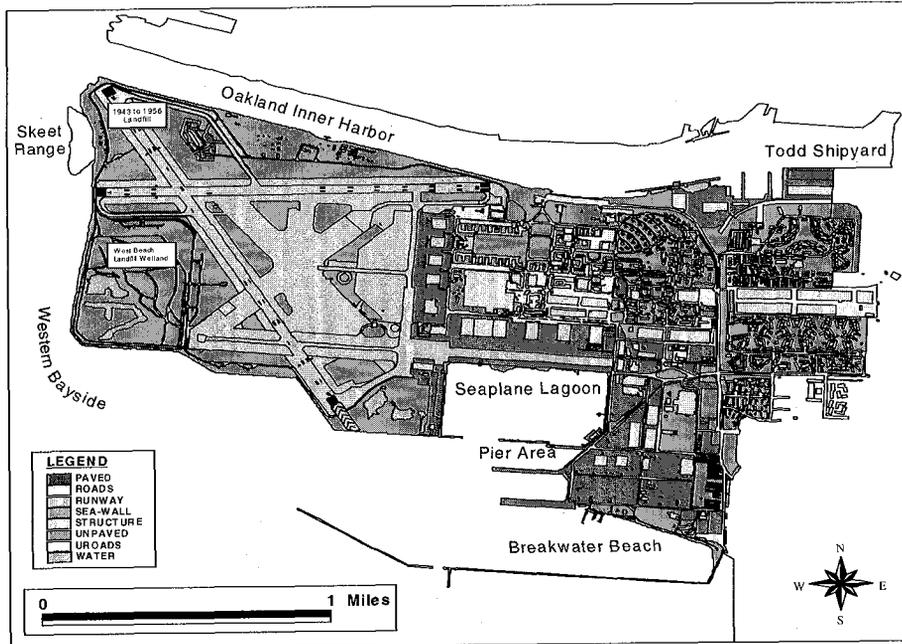


**FIELD SUMMARY REPORT  
EXPEDITED FIELD SAMPLING  
IR SITES 1 & 15  
ALAMEDA POINT, CALIFORNIA**



*Prepared for*



**Base Realignment and Closure  
Program Management Office West  
1455 Frazee Road, Suite 900  
San Diego, CA 92108**

**CONTRACT NO.: N68711-01-D-6009  
TASK ORDER NO.: 0007, Mod. 04**

*Prepared by*  
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**March 2006**

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EXPEDITED FIELD SAMPLING  
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**Contract No. N68711-01-D-6009  
Task Order No. 0007, Modification No. 04  
Project No. G601507**

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**Contract No. N68711-01-D-6009, Task Order No. 0007**  
**Field Summary Report Expedited Field Sampling at IR Sites 1 & 15,**  
**Alameda Point, California**

Dear Mr. Baughman,

Battelle is pleased to submit 2 copies of the *Field Summary Report for Expedited Field Sampling at IR Sites 1 & 15, Alameda Point, California* for your records. This document, which incorporates responses to Navy comments issued earlier versions of the report, is being distributed to those persons listed on your transmittal letter. If you have any questions or comments, please feel free to contact me by telephone at (614) 424-4796 (office) or (614) 332-2564 (mobile), or by e-mail at [williamsont@battelle.org](mailto:williamsont@battelle.org).

Sincerely,



Travis Williamson, P.E.  
Project Manager  
Environmental Restoration Department

cc: Ms. Claudia Richardson, NAVFAC SW (1 HC/1 CD)  
Ms. Diane Silva, NAVFAC SW (3 HC/3 CD)  
Ms. Joyce Howell-Payne, NAVFAC SW (letter only)



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## ABBREVIATIONS AND ACRONYMS

ARRA	Alameda Reuse and Redevelopment Authority
bgs	below ground surface
BRAC	Base Realignment and Closure Act (of 1990)
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethene
DDT	dichlorodiphenyltrichloroethane
DQO	data quality objective
GPS	global positioning system
IAS	Initial Assessment Study
IDW	investigation-derived waste
IR	Installation Restoration
NA	not analyzed
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NEESA	Naval Energy and Environmental Support Activity
ng/kg	nanogram per kilogram
NIST	National Institute of Standards and Technology
NS	not sampled
OEW	ordnance and explosive waste
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCDD	polychlorinated dibenzodioxin
PCDF	polychlorinated dibenzofuran
PG	(California) Professional Geologist
pCi/g	picocurie(s) per gram
PID	photoionization detector
QA/QC	quality assurance/quality control
Ra-226	radium <sup>226</sup>
Ra-228	radium <sup>228</sup>
SAP	Sampling and Analysis Plan
SHSP	Site Health and Safety Plan
STLC	Soluble Threshold Limit Concentration
SVOC	semivolatile organic compound
TAL	Target Analyte List
TCLP	Toxicity Characteristic Leaching Procedure
TCL	Target Compound List

USACE United States Army Corps of Engineers  
USDA United States Department of Agriculture  
U.S. EPA United States Environmental Protection Agency

VOC volatile organic compound

## 1.0 INTRODUCTION

This Field Summary Report has been prepared for Naval Facilities Engineering Command (NAVFAC) Southwest under Contract No. N68711-01-D-6009, Task Order No. 0007, Modification 04 in support of expedited environmental characterization activities at Installation Restoration (IR) Sites 1 and 15, located at the former Naval Air Station (NAS) Alameda in Alameda, California. IR Site 1 is the 1943 to 1956 disposal area in the far northwest corner of former NAS Alameda, and IR Site 15 is the former transformer storage area associated with former Buildings 301 and 389 located in the north central portion of former NAS Alameda. These sites are described in greater detail below and in other documents previously submitted by the Navy. The purpose of this Field Summary Report is to summarize the expedited sampling activities that were performed at the subject sites and to document the analytical results for samples that were collected to address potential data gaps.

Several historical investigations have been completed at IR Sites 1 and 15 in an effort to characterize contamination potentially present at these sites from historical Navy operations. A review of the results of those investigations and identification of potential data gaps led to specific requirements for a limited amount of additional sampling at IR Sites 1 and 15, which was described in the *Final Expedited Field Sampling Work Plan at IR Sites 1 & 15* (Battelle, 2005), hereafter referred to as the Work Plan.

As stated in the Work Plan, with respect to IR Site 1:

- Soils from the Burn Area at IR Site 1 (see Section 2.2.1) had not previously been analyzed for incineration-related compounds such as polychlorinated dibenzodioxins (PCDDs) or polychlorinated dibenzofurans (PCDFs). In addition, analysis of soils for Toxicity Characteristic Leaching Procedure (TCLP) and Soluble Threshold Limit Concentration (STLC) parameters appeared warranted to facilitate consideration of waste disposal options.
- Proposed future use of IR Site 1 includes a public beach area (hereafter referred to as the Beach Area). Risks in the Beach Area at IR Site 1 related to contamination previously identified at the site are not fully known, and data collection was necessary to complete this evaluation.

With respect to IR Site 15:

- Historical data collected at IR Site 15 suggested that additional sampling for analysis of polycyclic aromatic hydrocarbons (PAHs) in soils was required to ensure that no elevated levels of these compounds occur in this area.

The activities described in the Work Plan were designed to provide data necessary to reduce uncertainties and facilitate informed decision-making by the Navy for the ongoing remedy selection and design process for IR Site 1. In addition, the Work Plan was designed to address potential data gaps at IR Site 15, allowing the Navy's ongoing remedial design process to continue for that site. The conceptual framework of the expedited sampling approach for IR Sites 1 and 15 was originally developed by the Navy, and was forwarded to Battelle to develop the Work Plan. This Field Summary Report summarizes the results of the expedited field sampling activities, which have previously been provided to the Navy and their consultants in an electronic format for specific site characterization within the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process at the respective sites. There is no data interpretation presented as part of this Field Summary Report.

## 1.1 Objectives

The primary objective of this Field Summary Report is to describe the collection and analysis of additional samples that were required to fill potential data gaps in the existing characterization of IR Sites 1 and 15. The specific objectives are as follows:

- Describe expedited soil and/or sediment sampling that was performed in April 2005 to further characterize environmental conditions at IR Sites 1 and 15;
- List deviations from the Work Plan that were required in the field during the expedited field sampling activities due to unique site conditions; and,
- Document and briefly summarize analytical data results for the soil and/or sediment samples that were collected during expedited field sampling at IR Sites 1 and 15.

## 1.2 Field Summary Report Organization

This Field Summary Report is organized as follows:

**Section 1.0: Introduction.** Presents an introduction to and the specific objectives of the Field Summary Report.

**Section 2.0: Site Background.** Provides a description of and summarizes previous and current investigations that have been or are being conducted at IR Sites 1 and 15.

**Section 3.0: Preliminary Activities.** Provides a description of field preparation/mobilization activities that were performed prior to the expedited sampling event at IR Sites 1 and 15.

**Section 4.0: Field Sampling Activities and Data.** Describes how the expedited sampling was performed at IR Sites 1 and 15, and presents and briefly summarizes the analytical data generated.

**Section 5.0: Data Summary and Description of Problems and Deviations.** Provides a brief summary of the data generated at IR Sites 1 and 15, and describes the minor problems that were encountered during the expedited sampling activities and deviations from the Work Plan that were required in the field.

**Section 6.0: References.**

**Appendix A: Soil/Sediment Boring Logs**

**Appendix B: Waste Manifest**

**Appendix C: Analytical Data In Electronic Format**

## 2.0 SITE BACKGROUND

This section summarizes the general history and characteristics of IR Sites 1 and 15, and provides a brief summary of the previous environmental investigations conducted at the sites.

### 2.1 Description of IR Sites 1 and 15

Former NAS Alameda in Alameda, California (herein referred to as Alameda Point) is located on the western end of Alameda Island, which lies on the eastern side of San Francisco Bay, adjacent to the City of Oakland. The location of Alameda Point is depicted on Figure 2-1. Alameda Point served as an aircraft maintenance, repair, and refitting center and a base of operations for Naval surface craft from prior to World War II until its closure in 1997. Closure of Alameda Point was mandated by the Defense Base Realignment and Closure Act (BRAC) of 1990.

IR Site 1 is located in the far northwestern corner of Alameda Point, as depicted on Figure 2-2. IR Site 1 is bounded to the west by San Francisco Bay, to the north by the Oakland Inner Harbor, and to the east and south by runways, tarmacs, and related features. This site is commonly known as the 1943 to 1956 disposal area, and was historically used for disposal of base-related wastes from the early 1940s until 1956. Beginning in 1956, wastes from Alameda Point were directed to IR Site 2 (the West Beach Landfill), which is located immediately south of IR Site 1. After use of IR Site 1 ceased for disposal operations, it was covered and converted to recreational use, including skeet/pistol ranges, a picnic grounds, a baseball diamond, and various recreational buildings. A more detailed description of IR Site 1 can be found in previous submittals related to this site, including the *Initial Assessment Study (IAS)* for Alameda Point (Naval Energy and Environmental Support Activity [NEESA], 1983), the *Alameda Point Golf Course Draft Environmental Impact Report* (Alameda Reuse and Redevelopment Authority [ARRA], 2004), the *Final OU-3 Remedial Investigation Report, Alameda Point, Alameda* (Tetra Tech EM, Inc., 1999), and the *Final Feasibility Study Report IR Site 1, 1943 – 1956 Disposal Area* (Bechtel, 2006).

IR Site 15 is located in the north-central portion of Alameda Point (see Figure 2-2) and is the former location of Buildings 301 and 389. The site is bounded to the north by the Oakland Inner Harbor, and to the east, west, and south by runways, tarmacs, and related features. Prior to 1974, electrical transformers taken out of commission at Alameda Point were stored on bare ground north of the runways adjacent to the Oakland Inner Harbor channel, in the vicinity of Buildings 301 and 389. It is reported that occasional leaks of transformer oil potentially containing polychlorinated biphenyls (PCBs) occurred in the area. It also is reported that transformer oil was historically drained from the transformers and intentionally spread on the ground to control weed growth in the vicinity of former Buildings 301 and 389. A more detailed description of IR Site 15 can be found in previous submittals related to this site, including the IAS (NEESA, 1983), the *Remedial Investigation Report for Sites 14 and 15, Alameda Point, Alameda* (TetraTech EM, Inc., 2003), and the *Alameda Point Golf Course Draft Environmental Impact Report* (ARRA, 2004).

Additional information pertaining to the general physical and biological characteristics of IR Sites 1 and 15 (i.e., geology, hydrogeology, hydrology, and ecology) can be found in the documents mentioned above and other summaries previously submitted by the Navy related to historical site activities and/or investigation activities completed at these sites, or in sources such as the *Soil Survey of Alameda County, California, Western Part* (United States Department of Agriculture [USDA], 1981).

## **2.2 Potential Sources of Contamination and Previous Studies**

### **2.2.1 IR Site 1**

IR Site 1 was used for disposal of wastes from Alameda Point from 1943 until 1956. In 1956, wastes from Alameda Point were redirected for disposal to IR Site 2 (i.e., the West Beach Landfill) at Alameda Point. During the time it was used for disposal operations, IR Site 1 reportedly received significant volumes of waste material that included waste oil, paint waste, solvents, cleaning compounds, scrap metal, putrescible waste, and radiological material (NEESA, 1983). In addition, waste material was reportedly historically incinerated at IR Site 1 in an area that is currently known as the Burn Area. The materials disposed at IR Site 1 and the historical practice of waste incineration represent potential sources of contamination to environmental media at the site.

A significant amount of investigative work has already been undertaken at IR Site 1, and this investigative work has been summarized in various documents previously submitted by the Navy. All of the historical sampling completed at IR Site 1 is not summarized herein; however, to demonstrate the volume of investigative work historically completed at IR Site 1, Figures 2-3 through 2-5 show the historical sampling locations at this site. Figure 2-3 shows all of the historical sampling locations at IR Site 1, and Figures 2-4 and 2-5 represent magnified depictions of the Burn Area and the Beach Area, respectively.

### **2.2.2 IR Site 15**

Electrical transformers taken out of commission at Alameda Point were stored on bare ground north of the runways adjacent to the Oakland Inner Harbor channel, in the vicinity of Buildings 301 and 389. This portion of Alameda Point is now known as IR Site 15. It is reported that occasional leaks of transformer oil potentially containing PCBs occurred in this area. It also is reported that transformer oil historically was drained from the transformers and intentionally spread on the ground to control weed growth in the vicinity of former Buildings 301 and 389 (NEESA, 1983).

As with IR Site 1, a significant amount of investigative work has already been undertaken at IR Site 15, and this investigative work has been summarized in various documents previously submitted by the Navy. Again, the historical sampling completed at IR Site 15 is not summarized herein; however, to demonstrate the volume of investigative work historically completed at IR Site 15, Figure 2-6 shows the historical sampling locations at this site.

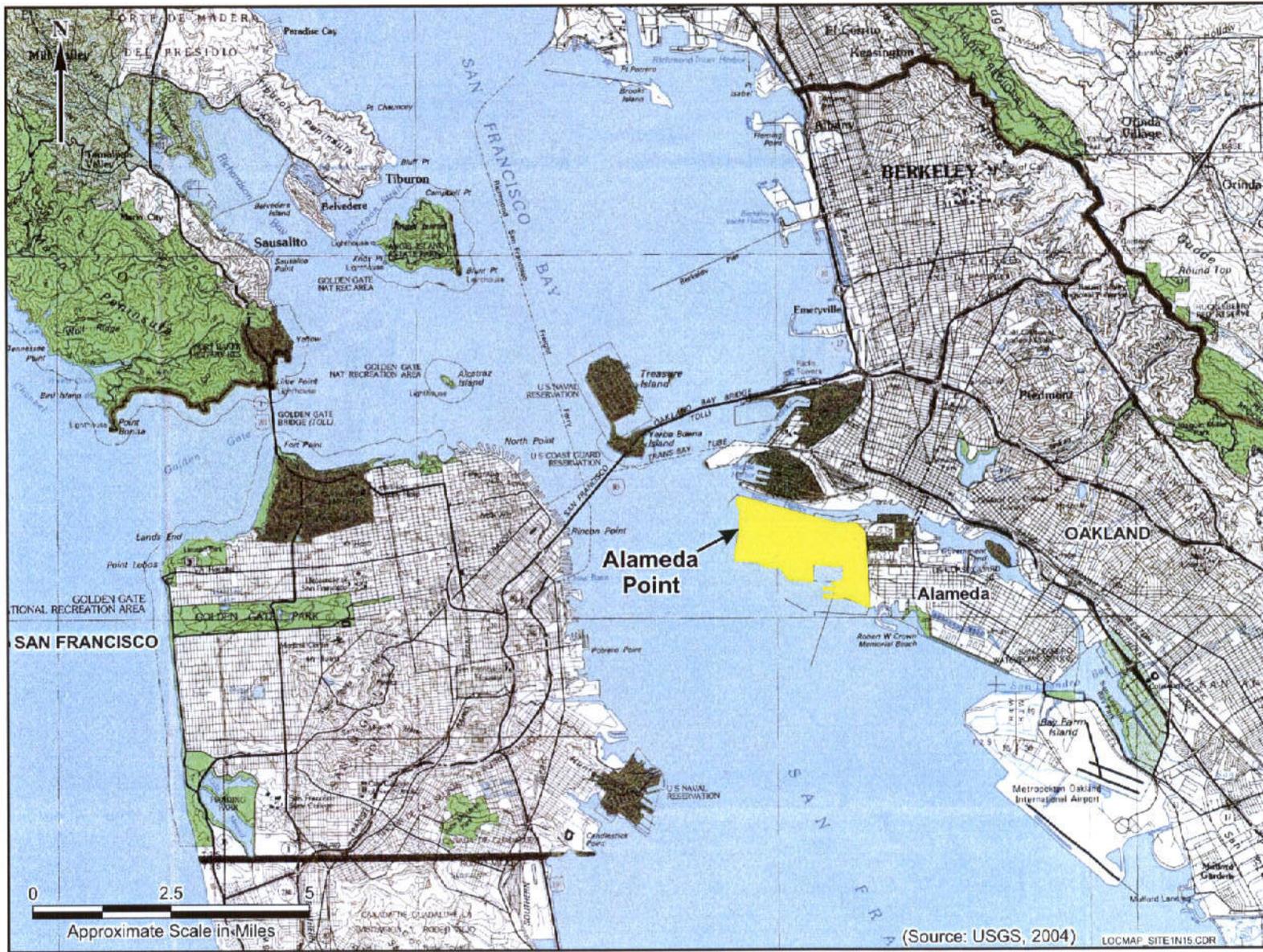


Figure 2-1. Location Map of Alameda Point

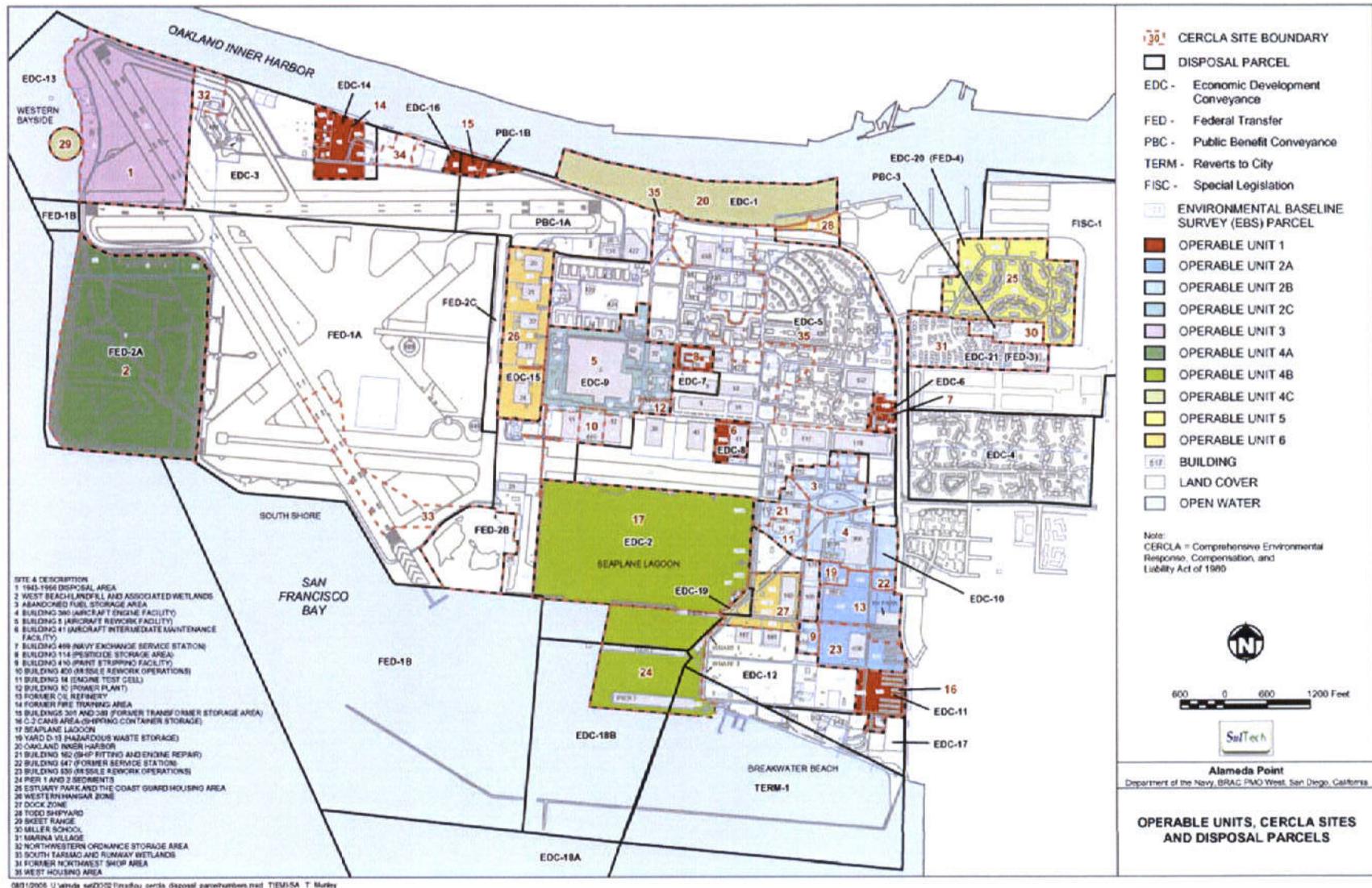


Figure 2-2. IR Sites at Alameda Point

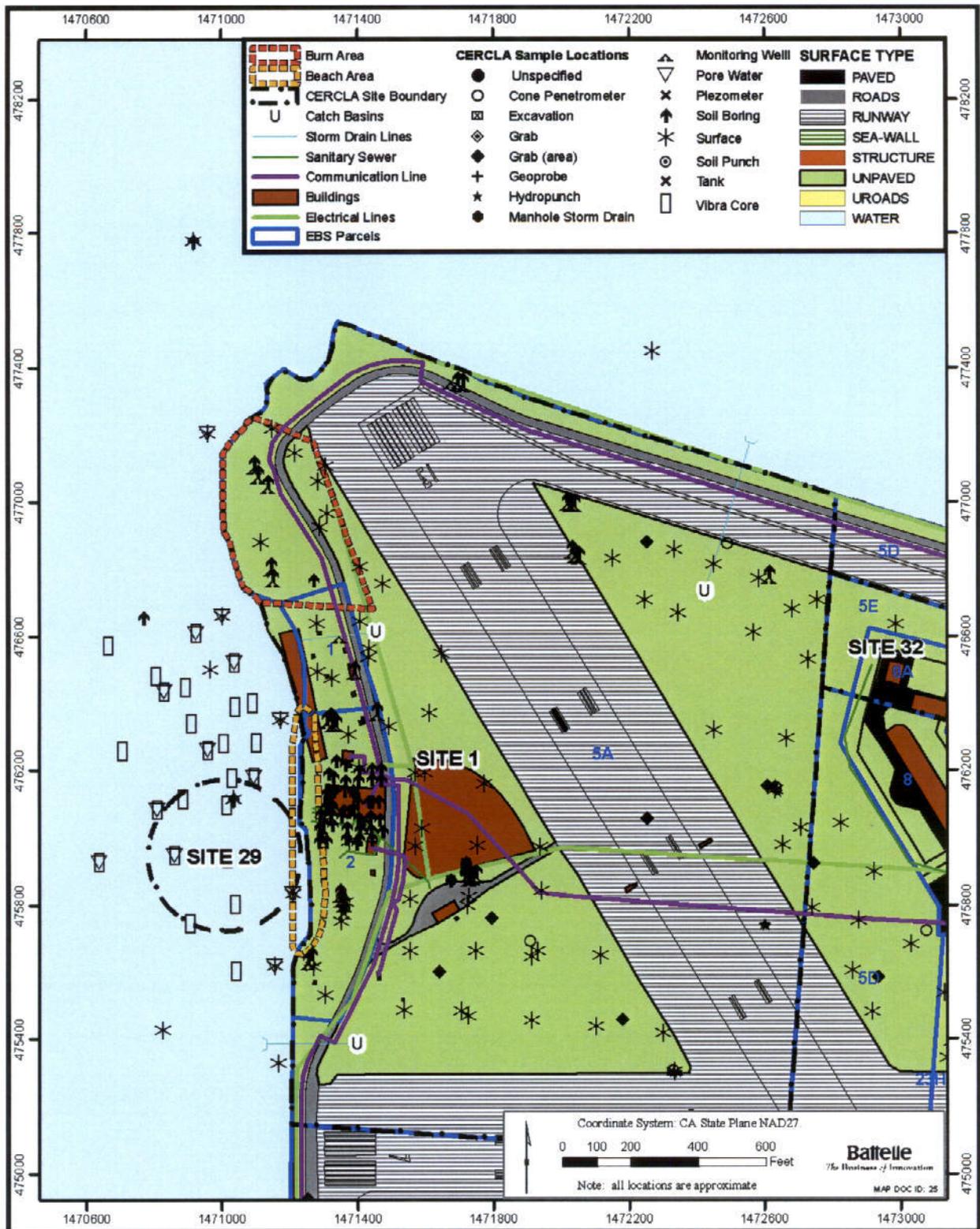


Figure 2-3. Historical Sampling Locations at IR Site 1

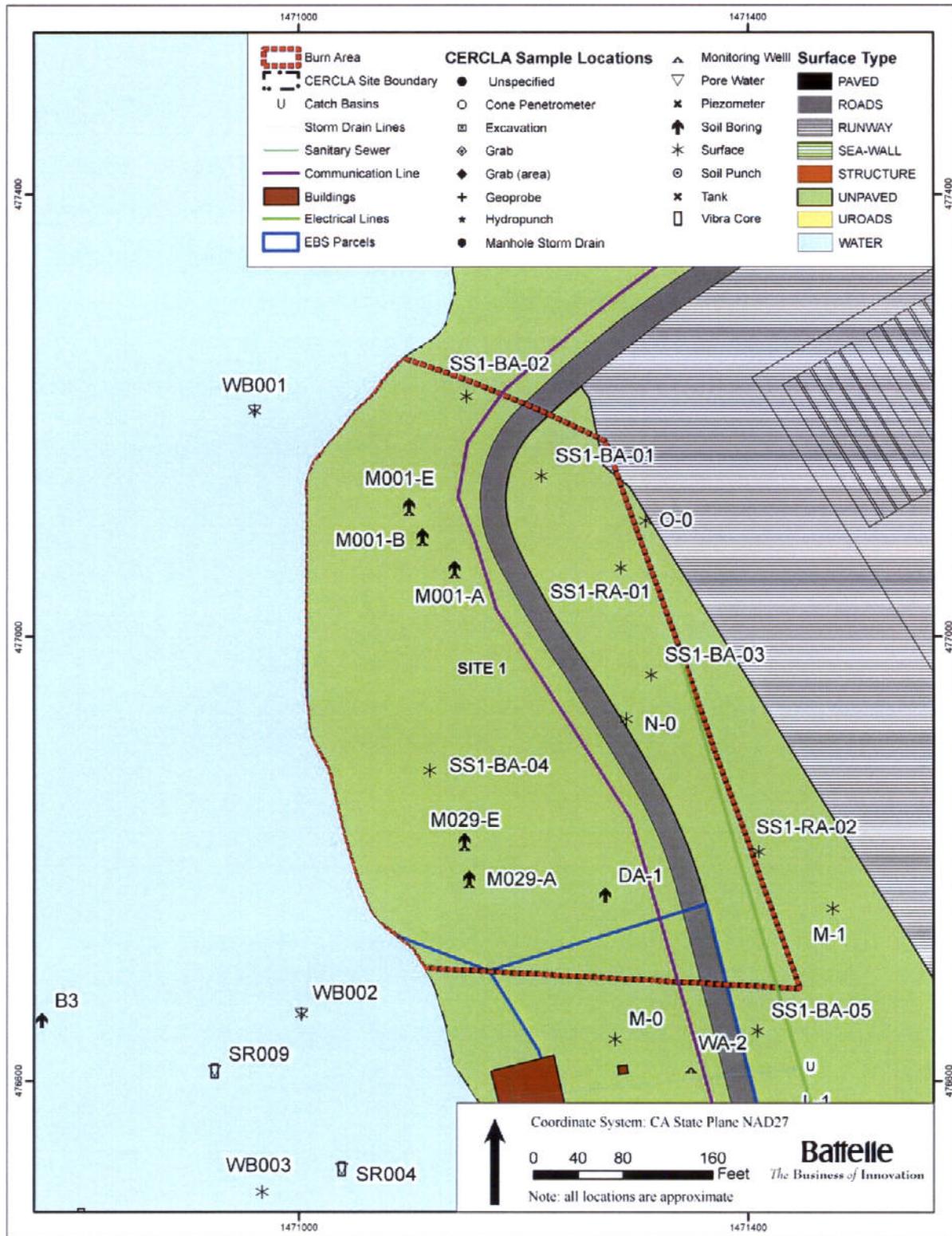


Figure 2-4. Historical Sampling Locations in the Burn Area at IR Site 1

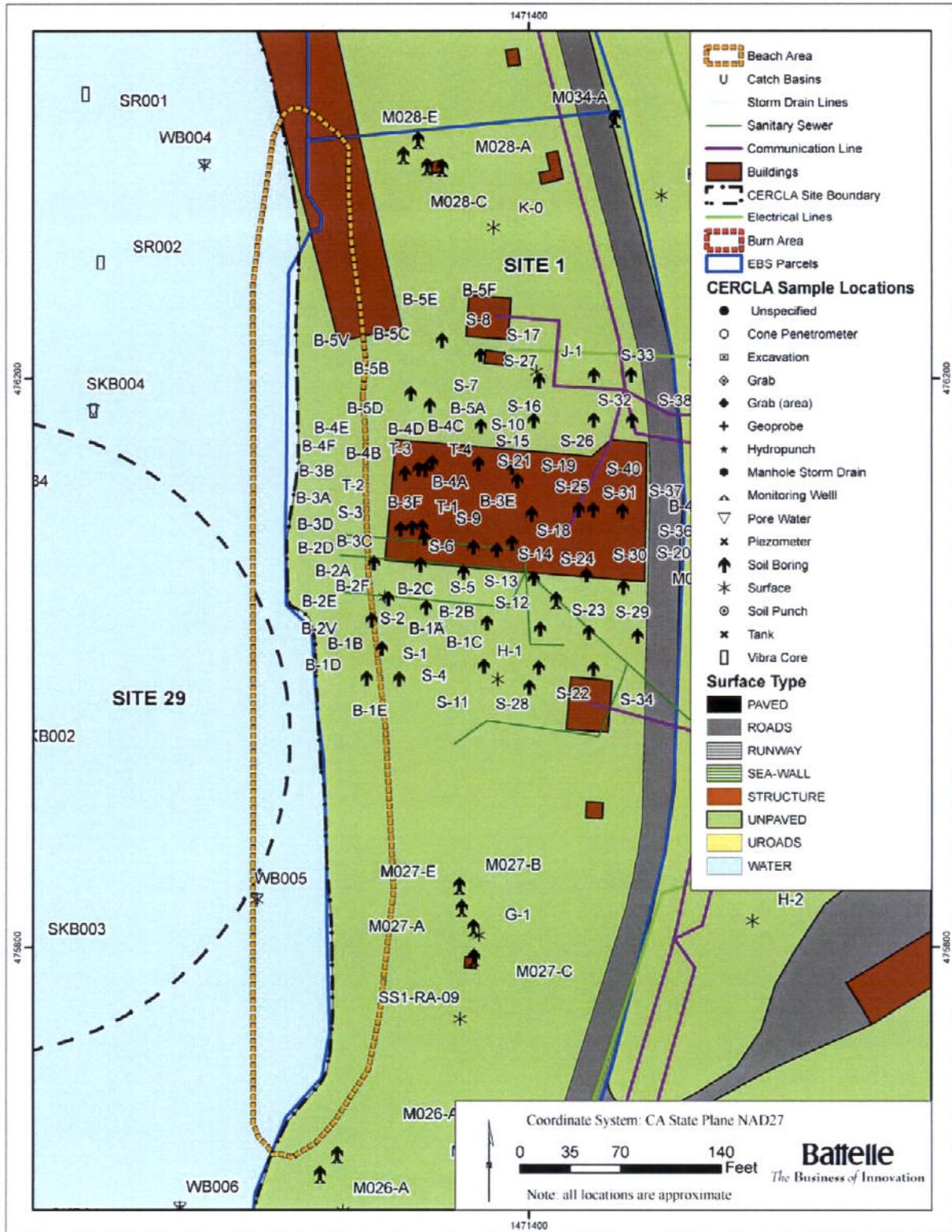


Figure 2-5. Historical Sampling Locations in the Beach Area at IR Site 1

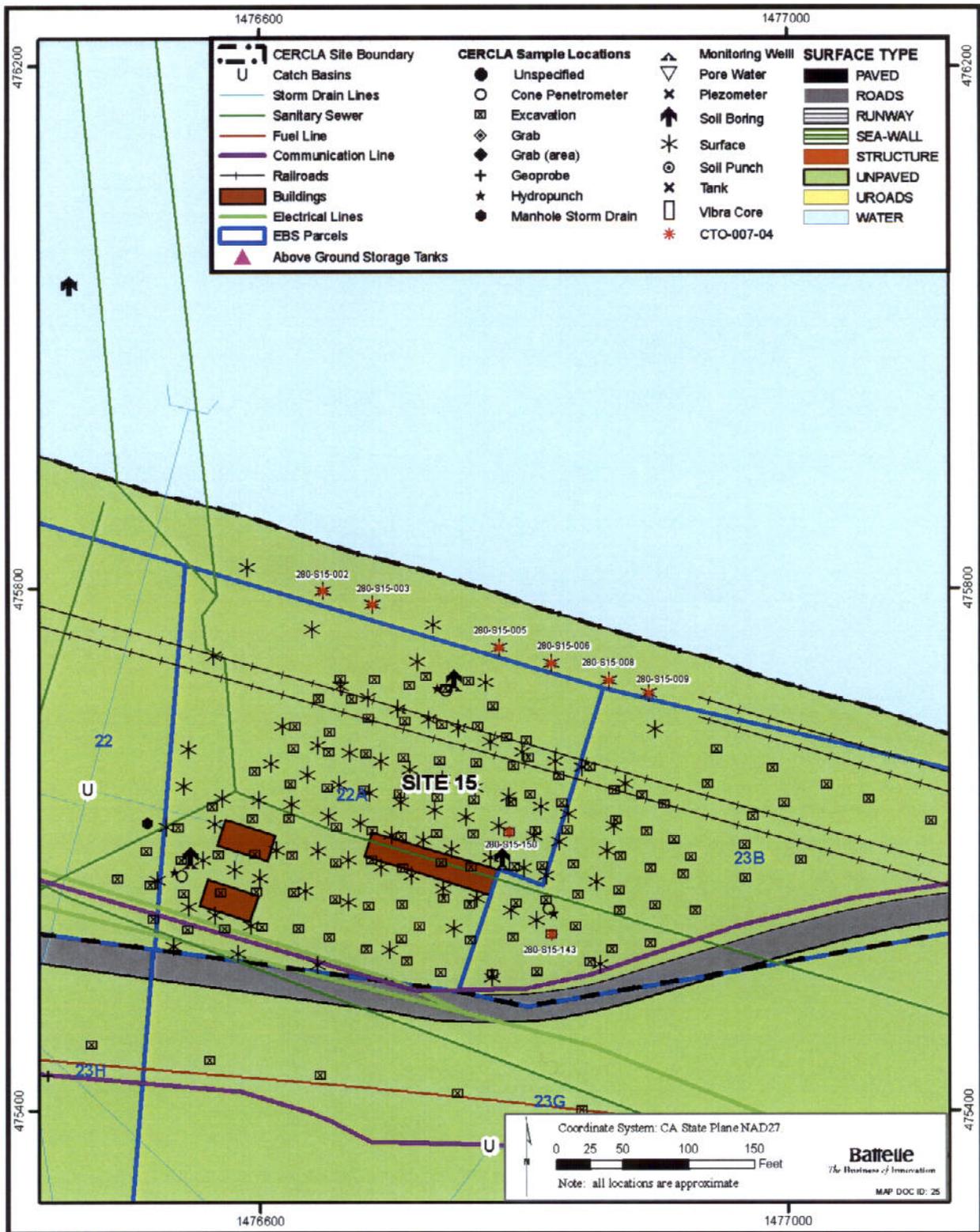


Figure 2-6. Historical Sampling Locations at IR Site 15

### 3.0 PRELIMINARY ACTIVITIES

This section summarizes preliminary preparation and mobilization activities that were performed prior to the onset of the expedited sampling activities.

#### 3.1 Field Preparation/Mobilization

Expedited field sampling activities at IR Sites 1 and 15 took place between March 14 and 17, 2005. Extensive preparation was required prior to initiating the sampling activities. Coordination was required with subcontracted analytical laboratories, equipment and material suppliers, drilling subcontractors, and ordnance and explosive waste (OEW) avoidance specialists. Three subcontracted laboratories were selected to perform various chemical analyses: Columbia Analytical Services of Kelso, Washington; Battelle of Duxbury, Massachusetts; and Severn Trent Laboratories of St. Louis, Missouri. Precision Sampling of Richmond, California provided drilling services for the Site 1 Beach Area soil sampling, and Gregg Insitu of Martinez, CA provided drilling services for the Site 1 Burn Area soil sampling. Power Surveying, Inc., a veteran-owned small disadvantaged business of Frederick, Colorado was retained to provide OEW avoidance services during invasive soil sampling in the IR Site 1 Burn and Beach Areas. Equipment and materials were obtained from various vendors and suppliers.

Between March 6 and 8, 2005, field equipment and supplies were mobilized to the previously established IR Site 2 contractor staging yard. A kickoff meeting was held with Navy personnel on March 7, 2005, during which a site health and safety briefing was conducted and the schedule of events was discussed. On March 14, 2005, after Navy representatives had reviewed and approved the Work Plan and the Sampling and Analysis Plan (SAP) and Site Health and Safety Plan (SHSP) appended to the Work Plan (i.e., Appendices A and B of the Work Plan, respectively), sampling locations were flagged in the field with the aid of a hand-held Trimble Geoplotter<sup>®</sup> GeoXT<sup>™</sup> Global Positioning System (GPS) unit.

#### 3.2 Radiation Health and Safety Monitoring

On March 14, 2005, a Battelle radiation specialist arrived at Alameda Point along with the following equipment and materials so that radiation monitoring activities described in Attachment 3 of the SHSP could be completed during the IR Site 1 expedited sampling:

- Ludlum Model 19 Exposure Rate Meter used to perform low-level (i.e., micro-Roentgen [ $\mu\text{R}$ ]) gamma radiation measurements;
- Eberline ESP-2 meter with Ludlum Model 43-20 gas proportional detector used to conduct direct surveys;
- Ludlum 2929 Alpha Beta Scaler with Model 43-10-1 used to count smear samples; and
- Flat-plate technetium-99 and thorium-230 standards traceable to the National Institute of Standards and Technology (NIST) used to calibrate the gas proportional instruments for beta and alpha detection.

Twenty background soil samples were collected from 0 to 4 ft below ground surface (bgs) in the reference sampling area shown in Figure 3-1 that was used to establish background radium-226 levels during radiological surveying activities conducted separately by Tetra Tech Foster Wheeler, Inc., at IR Sites 1 and 2. These samples were scanned using the field equipment listed above, and the background activity dose rate at Alameda Point was determined to be 9  $\mu\text{R}$  per hour ( $\mu\text{R}/\text{hr}$ ). This background activity dose rate was used as the screening benchmark for radiological screening that was conducted on soil/sediment

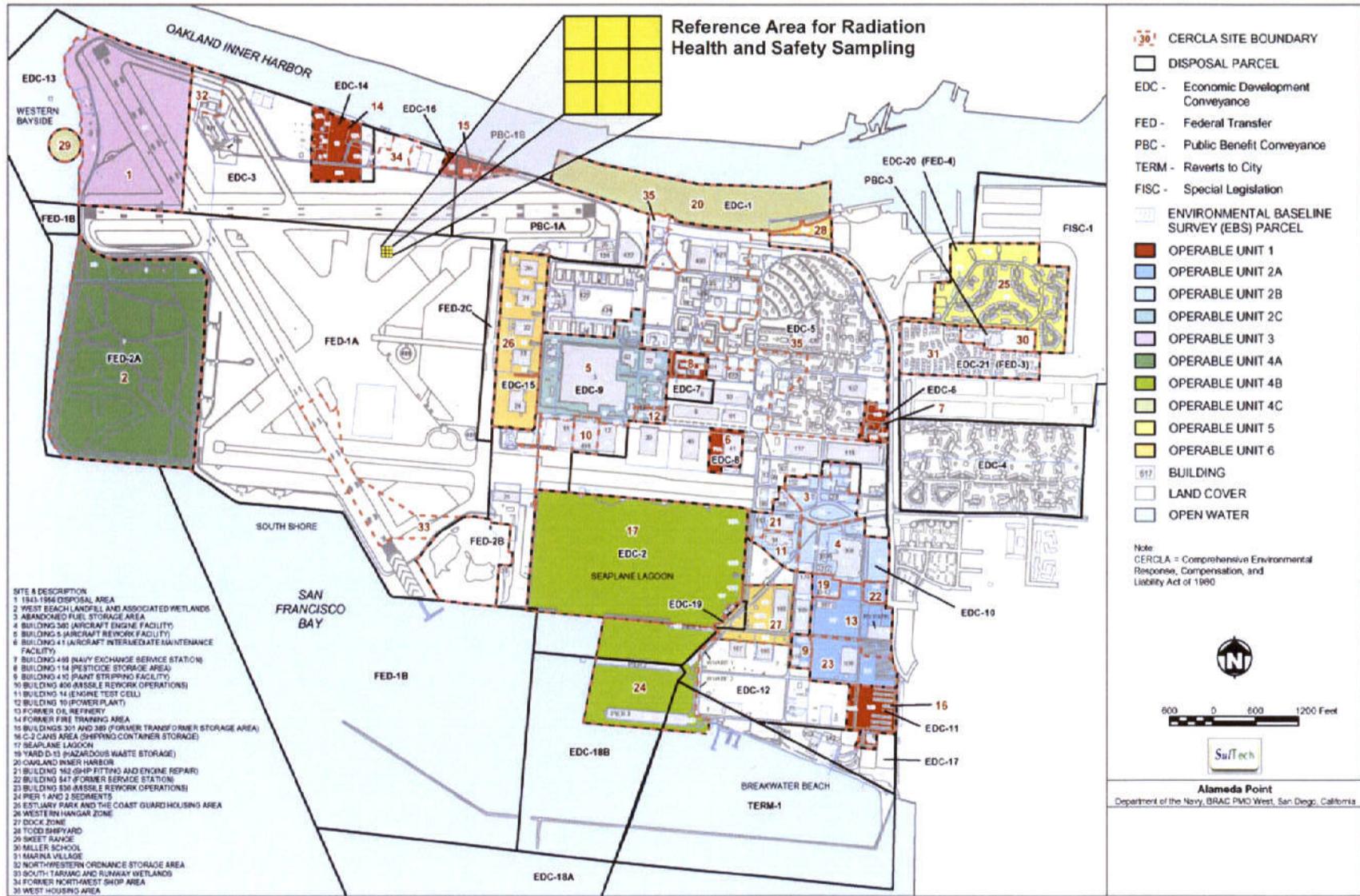


Figure 3-1. Reference Area for Radiation Health and Safety Sampling

samples and sampling equipment used at IR Site 1. Note that at no time was the background dose rate exceeded during the IR Site 1 expedited field sampling activities. Radiation monitoring was not conducted at IR Site 15 because there was no known or remotely likely possibility of encountering radiologically active material during the sampling conducted at that site.

## 4.0 FIELD SAMPLING ACTIVITIES AND DATA

This section discusses the general investigative scope of work that was implemented during the expedited field sampling at IR Sites 1 and 15. This work was performed to address data gaps from previous investigations, and to generate a repository of site-specific data in order to reduce uncertainties and facilitate informed decision-making by the Navy and regulatory agencies for the ongoing remedy selection and design process for these sites. Analytical results for all environmental samples also are presented in this section.

The following subsections discuss and briefly describe the field sampling methods that were employed at IR Sites 1 and 15 during the expedited field sampling. Specific sampling procedures, protocols, and specific analytical methodologies related to the phases of investigation presented in the sections below have previously been described in greater detail in the SAP, which was included as Appendix A of the Work Plan. All field sampling activities were completed in strict accordance with the SHSP, which was included as Appendix B of the Work Plan. Throughout the implementation of the expedited field sampling activities, all standards of care were exercised to ensure that natural resources (i.e., biota and abiotic resources) were protected to the maximum extent possible while still ensuring completion of the field sampling program and generation of the necessary data.

During the expedited field sampling, soil cores were collected from the IR Site 1 Burn Area and IR Site 15, and both soil and sediment cores were collected from the IR Site 1 Beach Area. Samples were analyzed for a suite of target analytes previously detected at the site, potentially present based on existing site history information, and/or specifically requested by regulators. A GPS unit was used during field activities to track the coordinates of sampling locations. The GPS unit provided a high degree of location accuracy and allowed particular sampling locations to be resampled as necessary.

### 4.1 Field Sampling and Analytical Results at IR Site 1

Soil sampling was performed in two separate areas at IR Site 1 along the former pistol range berm, namely the Burn Area and the Beach Area. In addition, sediment cores were advanced along the Beach Area west of the pistol range berm. The following subsections briefly describe the field sampling methods that were employed at the Burn Area and Beach Area at IR Site 1, and present the analytical results from samples that were collected during the expedited field sampling.

Given the potential presence of military ordnance, OEW avoidance activities were implemented as prescribed in the United States Army Corps of Engineers document *Munitions and Explosives of Concern Support During Hazardous, Toxic, and Radioactive Waste and Construction Activities* (USACE, 2004) as a safety precaution for all onshore sampling conducted at IR Site 1. OEW avoidance included visual inspection and screening of the ground surface with a hand-held magnetometer (i.e., a Schonstedt magnetic locator) along access routes and at each sampling location. In addition, appropriate health and safety precautions were taken to protect against exposure to potential radiological contamination, as further described in the SHSP.

#### 4.1.1 IR Site 1 Burn Area Soil Sampling

Four soil borings were completed within the Burn Area at IR Site 1, with two of the borings being completed as close to within 20 ft of the shoreline as possible. Figure 4-1 shows the approximate locations of the soil cores, and Table 4-1 lists the sample name and coordinates and the analytical suite that was performed for each sample collected from the Burn Area. The two soil borings that were to be completed within 20 ft of the shoreline were located as close as possible to this target distance while avoiding interference from the large riprap protective covering present along the shore of IR Site 1. The Work Plan

indicated that each boring was to be advanced to 30 ft bgs or to the Bay Mud geologic unit, whichever came first. Each of the soil borings were completed to a depth of at least 30 ft bgs because the Bay Mud unit was not encountered at a shallower depth.

Initially, attempts were made to advance the Burn Area soil borings using direct-push (i.e., Geoprobe®) drilling techniques. However, refusal was encountered at approximately 3 to 5 ft bgs and it was determined that a hollow-stem auger assembly that was adaptable to the Geoprobe® rig was needed to advance each of the borings. Soil cuttings brought to the surface by the drilling augers were visually characterized (i.e., for lithology and observations of potential contaminant impact). All observations were recorded by a California Professional Geologist (PG) on standard soil boring forms, which are provided in Appendix A. No waste material was observed during the drilling activities with the exception of minor metal debris, consisting mostly of screws and nails, observed within the upper 5 ft of two boreholes (see Appendix A). There was no evidence of historical burning (e.g., charred debris or stained soils) based on visual observation of the drill cuttings. Extracted soil cores were screened at regular intervals for evidence of contamination using radiation screening devices and a photoionization detector (PID) that monitored for the presence and concentration of organic vapors. All measurements from these devices also were recorded on the appropriate soil boring forms. The organic vapor concentrations and radiation dose rates measured during the expedited field sampling activities were all below background levels. Radiation screening results indicated that no radiological activity was measured above the background value described in Section 3.2. Drilling and core logging were accomplished in accordance with standard operating procedures specified in the project SAP and/or SHSP. Decontamination of field equipment and collection/disposal of investigation-derived waste (IDW) was similarly completed in accordance with procedures contained in the project SAP and/or SHSP. The waste manifest form associated with disposal of IDW generated during the expedited field sampling activities is provided in Appendix B.

Soil samples were collected by homogenizing the soil volume from the depth intervals (as listed in Table 4-1) and filling laboratory-provided sample glassware with a sufficient sample volume to complete the necessary laboratory analyses. Composite samples from the 0 to 2 ft, 2 to 10 ft, and 20 to 30 ft bgs intervals were collected at all locations. In addition, samples from the 10 to 20 ft bgs interval were collected from two of the cores (IR1-SOC15 and IR1-SOC16) to provide additional useful data. Based on the potential data gaps identified for this portion of the site, soil samples from the IR Site 1 Burn Area were analyzed for all or some of the following list of laboratory analytes (standard laboratory methodology is provided in parentheses):

- PCDDs/PCDFs (United States Environmental Protection Agency [U.S. EPA] Method 8290);
- TCLP (U.S. EPA Method 1311) – target TCLP analytes were based on typical disposal facility acceptance criteria (including the following: volatile organic compounds [VOCs]; semivolatile organic compounds [SVOCs]/PAHs; pesticides/herbicides; and metals); and
- STLC (U.S. EPA Method 1312) – target STLC analytes were based on typical disposal facility acceptance criteria (including the following: VOCs; SVOCs/PAHs; pesticides/herbicides; and metals).

PCDDs/PCDFs were analyzed in all Burn Area soil samples because they represented the primary data gap that was to be addressed. However, the available funding for the expedited sampling activities was not sufficient to analyze each and every Burn Area soil sample for the full suite of TCLP and STLC analyses listed above. Accordingly, a plan was developed to analyze a suitable number of samples for the various TCLP and STLC parameters. TCLP and STLC analyses were not performed in any surface soil samples because future excavation and disposal activities would most likely be associated with soils at depth rather than at the surface. In addition, only TCLP or STLC analysis (i.e., one method or the other)

was completed in soil samples collected from discrete intervals at each Burn Area sampling location, with the exception of location IR1-SOC13, where both TCLP and STLC analyses were completed in soils from 2 to 10 ft bgs and 20 to 30 ft bgs.

#### **4.1.2 Analytical Results for IR Site 1 Burn Area Soil Sampling**

All samples from the IR Site 1 Burn Area were submitted with a 30-day laboratory turnaround time and appropriate quality assurance/quality control (QA/QC) samples (e.g., duplicates and blanks) were included as described in the project SAP. The analytical data for soil samples collected from the Burn Area at IR Site 1 are provided in Microsoft<sup>®</sup> Excel format in Appendix C on the CD-ROM provided with this report. Tables C-1 (PCDD/PCDF results) and C-2 (TCLP and STLC results) in Appendix C summarize the data generated during the expedited field sampling activities at the Burn Area of IR Site 1. Note that analytical results for duplicate samples were averaged and treated as a single data point while calculating the summary statistics in Tables C-1 and C-2. The summary statistics were used to develop the text describing the analytical results below.

Fifteen individual PCDD/PCDF congeners (i.e., specific tetra-, hexa-, hepta-, octa-, and pentachloro congeners) were evaluated in the soil samples collected from the IR Site 1 Burn Area. Seven of these individual PCDD/PCDF congeners were detected in each of the soil samples collected from the four IR Site 1 Burn Area soil sampling locations. Seven other individual congeners were detected in at least 80% of the samples, and one congener was detected in 50% of the samples. In addition, the non-congener-specific PCDD/PCDF groups octachlorodibenzodioxin and tetrachlorodibenzofuran were detected in all of the soil samples, and octachlorodibenzofuran was detected in all but one sample. The maximum concentration of only one of the fifteen individual congeners, 1,2,3,4,6,7,8-HpCDD, exceeded 1 µg/kg. 2,3,7,8-TCDD, was detected in all but two of the soil samples, with a maximum concentration of approximately 13 nanograms per kilogram (ng/kg).

No detectable concentrations of leachable SVOCs/PAHs, VOCs, or pesticides/herbicides were observed in any of the IR Site 1 Burn Area soil samples analyzed using STLC or TCLP methods. Leachable concentrations of several metals were observed for these samples analyzed using the STLC method. Arsenic, barium, chromium, cobalt, lead, nickel, vanadium, and zinc were detected in the STLC leachate for all IR Site 1 Burn Area soil samples analyzed using this method. Antimony and molybdenum were detected in the leachate from 80% of the samples, and cadmium and copper in the leachate from 40% of the samples. Beryllium, mercury, selenium, silver, and thallium were not detected in the leachate from any of the samples. Using the TCLP method, leachable concentrations of metals also were detected in IR Site 1 Burn Area soils. Barium was detected in the leachate from each of the samples analyzed using the TCLP method, and cadmium and lead were detected in the leachate from roughly 85% and 71% of the samples, respectively. A leachable concentration of arsenic was detected in one sample analyzed using the TCLP method. In general, the concentrations of leachable metals detected in the IR Site 1 Burn Area soil samples were less than 1 or 2 mg/L, with the exception of barium (11.6 mg/L), lead (34.1 mg/L), and zinc (48.4 mg/L) under the STLC method.

#### **4.1.3 IR Site 1 Beach Area Soil and Sediment Sampling**

During the expedited field sampling event, soil and sediment coring were completed at the Site 1 Beach Area as shown in Figure 4-1 and summarized in Tables 4-2 and 4-3. Soil cores were performed along the eastern edge of the former pistol range berm while sediment cores were performed on the western edge, within the actual Beach Area that is present during low tide.

A total of 11 soil borings were completed near the western shoreline of the Beach Area and slightly east of the former pistol range berm, spaced evenly at 50-ft intervals along a roughly north-south oriented

transect. The soil borings were located as close as possible to the shoreline, along the eastern edge of a berm that was used as a former pistol range. The soil borings were completed to depths between 4 and 8 ft bgs, depending on the depth at which groundwater was encountered (i.e., the borings were not advanced significantly beyond the water table). Soil cores were collected continuously at each boring location using a Geoprobe® (i.e., direct-push) drilling unit equipped with stainless steel macrocore samplers and disposable polybutyrate core liners. Originally, 12 soil borings were planned. However, one location (IR1-SOC04) was not sampled because an unknown, potentially ordnance-related item was discovered on the ground surface by the OEW specialist near the proposed sampling location. The Navy's Environmental Compliance Officer was notified immediately and the area was cordoned off with yellow caution tape. Upon visual inspection by the Environmental Compliance Officer, the item was determined to be inert and similar to other items that have been found in the same area in the past.

Immediately offshore of the Beach Area and directly perpendicular to the originally planned locations of the onshore soil borings, sediment cores were collected to 4 ft below the sediment surface. However, one sediment core location (IR1-SED06) could not be advanced due to the presence of a large steel barge along the shoreline. Therefore, another sediment core (IR1-SED13) was completed at the southern extent of the Beach Area to ensure complete coverage of the area. A total of 12 sediment cores were completed, and were completed using hand-coring equipment deployed from the shoreline at approximately low tide.

Soil and sediment cores were retrieved, opened, and visually characterized (i.e., for lithology and observations of potential contaminant impact). All observations were recorded by or under the supervision of a California PG on standard soil boring forms, which are provided in Appendix A. In addition, soils were screened at regular intervals for evidence of contamination using radiation screening devices and a PID that monitored for the presence and concentration of organic vapors as prescribed in the project SAP and SHSP. All measurements from these devices also were recorded on the appropriate soil boring forms. Radiation screening results indicated that no radiological activity at the Beach Area was measured above the background value described in Section 3.2. Similarly, no organic vapor concentrations measured in the field were above background levels. Drilling and core logging were accomplished in accordance with standard operating procedures specified in the project SAP and/or SHSP. Decontamination of field equipment and collection/disposal of IDW was similarly completed in accordance with procedures contained in the project SAP and/or SHSP. The waste manifest form associated with disposal of IDW generated during the expedited field sampling activities is provided in Appendix B.

From each soil boring location, a homogenized soil sample was collected from the 0 to 2 ft bgs interval and from the 2 to 5 ft bgs interval (with the exception of location IR1-SOC02, where only the 0 to 2 ft bgs interval was sampled due to poor sample recovery and a shallower depth to water). From each sediment core location, a single homogenized sediment sample was collected from the 0 to 4 ft interval below the sediment surface. Samples were collected by homogenizing the soil/sediment volume from the target depth interval and filling laboratory provided sample glassware with a sufficient sample volume to complete necessary laboratory analyses. Sampling activities were completed in accordance with specific procedures contained in the SAP. Based on the potential data gaps identified for this portion of IR Site 1, all soil and sediment samples from the Beach Area were analyzed for the following list of laboratory analytes (standard laboratory methodology is provided in parentheses):

- VOCs (U.S. EPA Methods 8260B and 5035);
- SVOCs/PAHs (U.S. EPA Method 8270C);
- Target Compound List (TCL) pesticides (U.S. EPA Method 8081A);
- TCL PCB Aroclors (U.S. EPA Method 8082);
- Target Analyte List (TAL) metals (U.S. EPA Method 6010B and 7000 series); and

- Radium 226 (Ra-226) and Radium 228 (Ra-228) (U.S. EPA Method 901.1M or DOE-HASL).

#### 4.1.4 Analytical Results for IR Site 1 Beach Area Soil and Sediment Sampling

All samples from the Beach Area at IR Site 1 were submitted with a 30-day laboratory turnaround time, and appropriate QA/QC samples (e.g., duplicates and blanks) were included as described in the project SAP. The analytical data for soil and sediment samples collected from the Beach Area at IR Site 1 are provided in Microsoft® Excel format on the CD-ROM provided with this report. Tables C-3 (soil samples) and C-4 (sediment samples) in Appendix C summarize the data generated during the expedited field sampling activities at the IR Site 1 Beach Area. Note that analytical results for duplicate samples were averaged and treated as a single data point while calculating the summary statistics in Tables C-3 and C-4. The summary statistics were used to develop the text describing the analytical results below.

Several metals, SVOCs/PAHs, pesticides, and PCBs were detected in the soil samples collected from the IR Site 1 Beach Area. Of the metals analyzed, aluminum, antimony, arsenic, barium, beryllium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, silver, thallium, vanadium, and zinc were detected in all of the soil samples; and cadmium was detected in roughly 80% of the samples. Molybdenum and selenium were detected in approximately 20% and 5% of the soil samples, respectively. Of the SVOCs/PAHs analyzed, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, fluoranthene, phenanthrene, and pyrene were detected in all of the samples; and acenaphthene, anthracene, benzo(k)fluoranthene, carbazole, dibenz(a,h)anthracene, fluorene, and indeno(1,2,3-cd)pyrene were detected in at least 50% of the soil samples. Several other SVOCs/PAHs were detected in fewer than 40% of the soil samples collected from the IR Site 1 Beach Area. Maximum metals and SVOC/PAH concentrations varied substantially for each individual analyte. Of the pesticides analyzed, 2,4-DDD, 2,4-DDT, 4,4-DDD, 4,4-DDE, 4,4-DDT, dieldrin, endosulfan II, endrin aldehyde, *alpha*-chlordane, and *trans*-nonachlor were detected in 50% or more of the soil samples. Several other pesticides were detected in fewer than 40% of the samples, and six individual pesticides were not detected in any samples. Maximum pesticide concentrations were all below 0.2 µg/kg. PCB Aroclors 1248, 1254, and 1260 were detected in at least one of the IR Site 1 Beach Area soil samples. Maximum individual PCB Aroclor concentrations did not exceed 0.6 µg/kg. Only four individual VOCs were detected in the IR Site 1 Beach Area soil samples, with maximum detected concentrations of all below 20 µg/kg. Ra-226 was detected in all of the samples, and Ra-228 was detected in roughly 40% of the samples, with maximum concentrations of approximately 2.6 picocuries per gram (pCi/g) and 0.9 pCi/g, respectively. Note that the maximum Ra-226 result of 2.6 pCi/g is based on the average concentration measured in a site sample (1.89 pCi/g) and a field duplicate sample (3.28 pCi/g).

The sediment data generated at the IR Site 1 Beach Area were very similar to the soil data. Several metals, SVOCs/PAHs, pesticides, and PCBs were detected in the sediment samples. Of the metals analyzed, aluminum, antimony, arsenic, barium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, silver, thallium, vanadium, and zinc were detected in all of the samples; and cadmium was detected in roughly 80% of the samples. Beryllium, cadmium, and selenium were detected in approximately 75%, 60%, and 40% of the samples, respectively. Molybdenum was not detected. Of the SVOCs/PAHs analyzed, acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, carbazole, chrysene, dibenz(a,h)-anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene were detected in all of the samples; and 2-methylnaphthalene, 4-methylphenol, acenaphthylene, diethylhexyl phthalate, dibenzofuran, fluorene, naphthalene, and phenol were detected in at least one sample. Maximum metal and SVOC/PAH concentrations varied substantially for each individual analyte. Of the pesticides analyzed, 2,4-DDD, 2,4-DDT, 4,4-DDD, 4,4-DDE, 4,4-DDT, and *alpha*-chlordane were detected in 50% or more of the soil samples. Several other pesticides were detected in fewer than roughly 40% of the samples, and

12 individual pesticides were not detected in any samples. Maximum pesticide concentrations were all below 0.02 µg/kg. PCB Aroclors 1254 and 1260 were detected in at least one of the IR Site 1 Beach Area sediment samples. Maximum individual PCB Aroclor concentrations did not exceed 0.3 µg/kg. Only three individual VOCs were detected in the IR Site 1 Beach Area sediment samples, with maximum detected concentrations of all at or below 20 µg/kg. Ra-226 was detected in 83% of the sediment samples with a maximum concentration of approximately 0.7 pCi/g, and Ra-228 was not detected in any samples.

#### 4.1.5 IR Site 15 Soil Sampling

Six soil borings were completed at IR Site 15. Three of the soil borings were completed between previously sampled locations, and three were completed along the shoreline of the site. The soil borings were completed using hand-coring tools to a depth of approximately 2.5 ft bgs. Figure 4-2 shows the soil sampling locations at IR Site 15 and Table 4-4 summarizes the sampling identification, coordinates, and analytical suite for each sample.

Soil samples were visually characterized (i.e., for lithology and observations of potential contaminant impact). All observations were recorded by a California PG on standard soil boring forms, which are provided in Appendix A. In addition, soils were screened using radiation screening devices and an organic vapor meter for evidence of contamination as prescribed in the project SAP and SHSP (Battelle, 2005). All measurements from these devices also were recorded on the appropriate soil boring forms. Radiation screening results indicated that no radiological activity at the Beach Area was measured above the background value discussed in Section 3.2. No organic vapors measured in the field were above background levels. Sample collection and core logging was accomplished in accordance with standard operating procedures specified in the project SAP (Battelle, 2005). Decontamination of field equipment was similarly completed in accordance with procedures contained in the project SAP and/or SHSP. No IDW was generated during the IR Site 15 sampling effort.

From each soil boring location, two discrete soil samples were collected. One soil sample was collected from the surface (i.e., approximately 0-0.5 ft bgs) and a second was collected from approximately 2-2.5 ft bgs. The soil samples were collected by homogenizing the soil volume from the target depth interval and filling laboratory provided sample glassware with a sufficient sample volume to complete necessary laboratory analyses. Sampling activities were completed in accordance with specific procedures contained in the SAP. Based on the potential data gaps associated with this site, all soil samples from IR Site 15 were analyzed for the following laboratory analytes (standard laboratory methodology is provided in parentheses):

- SVOCs/PAHs (U.S. EPA Method 8270C).

#### 4.1.6 Analytical Results for IR Site 15 Soil Sampling

All samples from IR Site 15 were submitted with a 5-day laboratory turnaround time, and appropriate QA/QC samples (e.g., duplicates and blanks) were included as described in the project SAP. The analytical data for soil samples collected from IR Site 15 are provided in Microsoft<sup>®</sup> Excel format on the CD-ROM provided with this report. Table C-5 in Appendix C summarizes the SVOC/PAH data generated during the expedited field sampling activities at IR Site 15. Note that analytical results for duplicate samples were averaged and treated as a single data point while calculating the summary statistics in Table C-5. The summary statistics were used to develop the text describing the analytical results below.

Acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)-perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, naphthalene, phenol,

phenanthrene, and pyrene were detected in at least 75% of the soil samples collected from IR Site 15. 2-Methylnaphthalene, acetophenone, acenaphthene, butyl benzyl phthalate, carbazole, dibenz(a,h)anthracene, dibenzofuran, and fluorene were detected in 33% to approximately 60% of the soil samples. 4-Methylphenol, benzaldehyde, and pentachlorophenol were each detected in one soil sample.

No other SVOCs/PAHs were detected in the soil samples collected from IR Site 15. Concentrations of individual SVOCs/PAHs detected in IR Site 15 soils varied significantly for each individual analyte.

#### **4.2 Data Evaluation**

Analytical data received following off-site laboratory analysis were validated in accordance with the protocols described in the project SAP. Data were reviewed to ensure that the data quality objectives (DQOs) established for the expedited field sampling effort were met, and that the data are sufficient in quantity and quality to be considered suitable and usable. The purpose of this Field Summary Report is to convey the methodology that was employed to collect the supplemental data, and to document and briefly summarize the supplemental data generated at IR Sites 1 and 15. The Navy will determine how these data will be used to support ongoing remedial selection and/or design efforts at IR Sites 1 and 15, and no data analysis or interpretation towards that end was completed as part of this report.

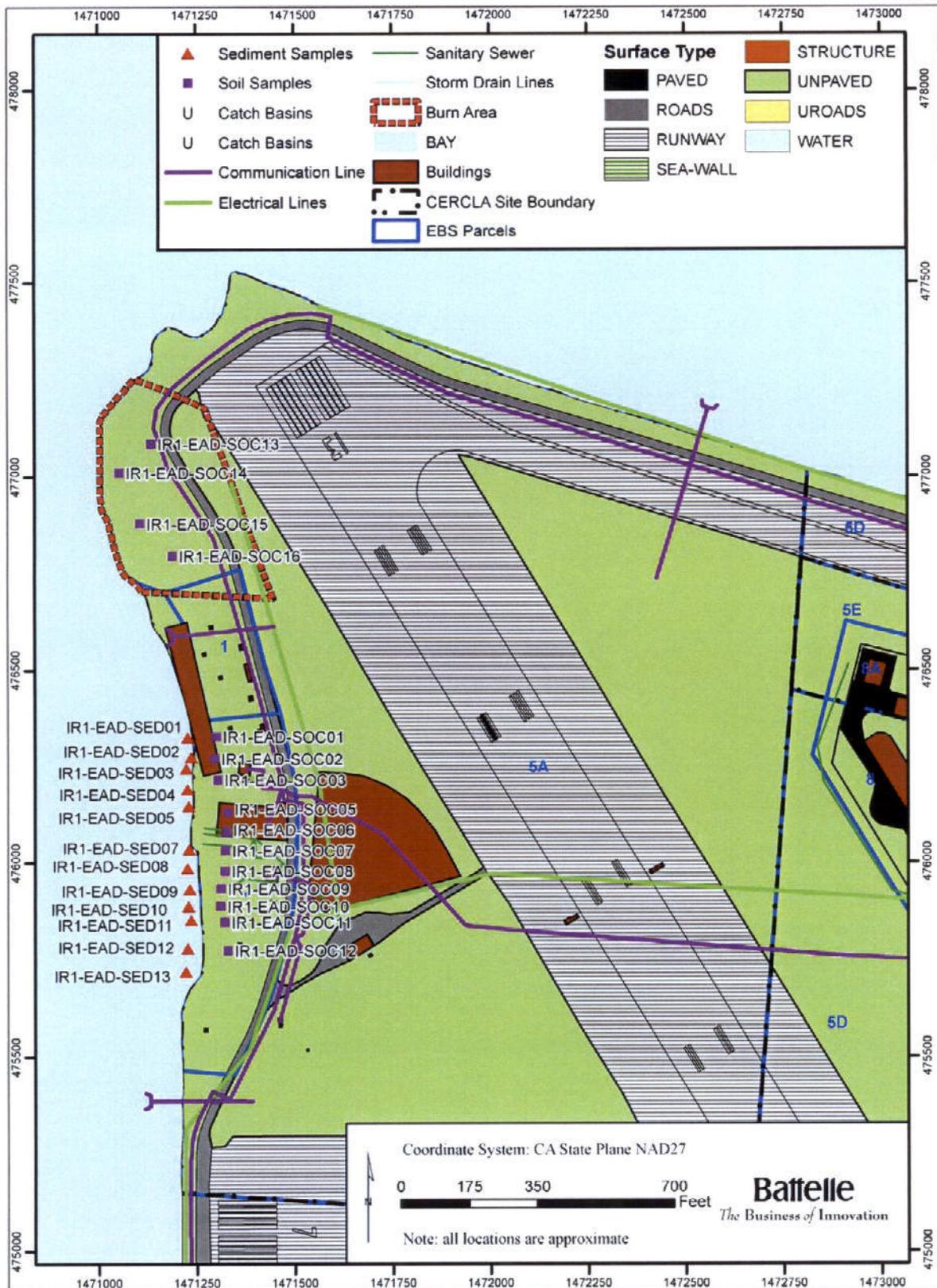


Figure 4-1. Expedited Soil and Sediment Sampling Locations at Burn and Beach Areas at IR Site 1

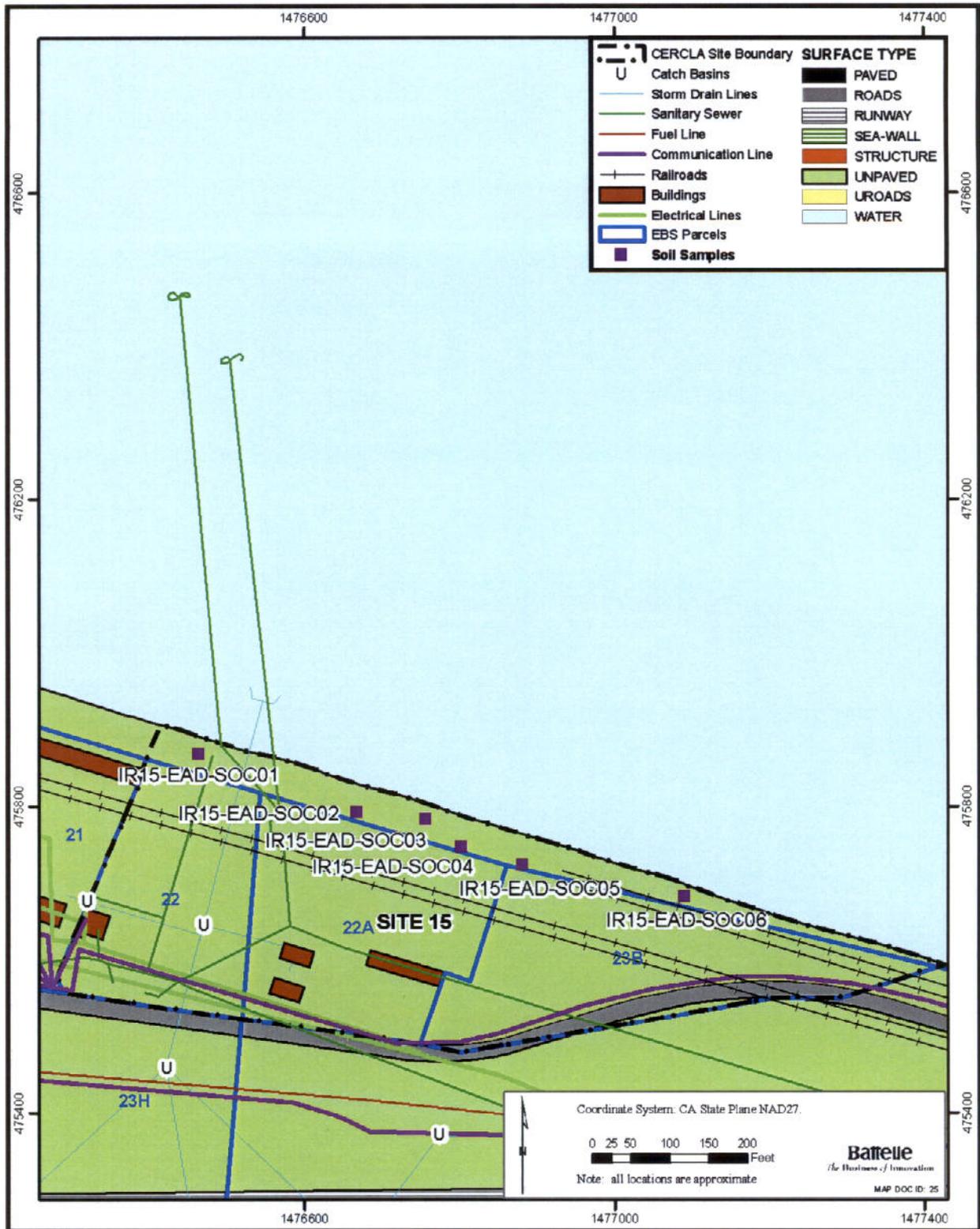


Figure 4-2. Expedited Soil Sampling Locations at IR Site 15

**Table 4-1. Summary of Soil Samples and Analyses Performed at IR Site 1 Burn Area**

Sampling ID	Northing <sup>(a)</sup>	Easting <sup>(a)</sup>	Soil Sample Interval (ft bgs)	STLC	TCLP	PCDDs/PCDFs
IR1-EAD-SOC13	477085.873	1471135.851	0-2'	NA	NA	X
			2-10'	X	X	X
			20-30'	X	X	X
IR1-EAD-SOC14	477011.079	1471053.94	0-2'	NA	NA	X
			2-10'	NA	X	X
			20-30'	NA	X	X
IR1-EAD-SOC15	476878.325	1471106.931	0-2'	NA	NA	X
			2-10'	X	NA	X
			10-20'	X	NA	X
			20-30' <sup>(b)</sup>	X	NA	X
IR1-EAD-SOC16	476794.873	1471189.864	0-2'	NA	NA	X
			2-10'	NA	X	X
			10-20'	NA	X	X
			20-30'	NA	X	X

<sup>(a)</sup> North American Datum of 1927, California State Plane Coordinate System, Zone 3.

<sup>(b)</sup> Duplicate sample collected.

X = analyzed; NA = not analyzed.

**Table 4-2. Summary of Soil Samples and Analyses Performed at IR Site 1 Beach Area**

Sampling ID	Northing <sup>(a)</sup>	Easting <sup>(a)</sup>	Soil/Sediment Sample Interval (ft bgs)	PCBs/ Pesticides	SVOCs/ PAHs	VOCs	Metals	Radium-226/Radium-228
IR1-EAD-SOC01	476328.058	1471300.538	0-2' <sup>(c)</sup>	X	X	X	X	X
			2-5'	X	X	X	X	X
IR1-EAD-SOC02	476271.419	1471296.052	0-2'	X	X	X	X	X
IR1-EAD-SOC03	476216.227	1471304.342	0-2'	X	X	X	X	X
			2-5'	X	X	X	X	X
IR1-EAD-SOC04 <sup>(b)</sup>	NS	NS	NS	NS	NS	NS	NS	NS
IR1-EAD-SOC05	476131.737	1471329.412	0-2'	X	X	X	X	X
			2-5'	X	X	X	X	X
IR1-EAD-SOC06	476080.944	1471325.897	0-2'	X	X	X	X	X
			2-5'	X	X	X	X	X
IR1-EAD-SOC07	476033.106	1471323.382	0-2'	X	X	X	X	X
			2-5'	X	X	X	X	X
IR1-EAD-SOC08	475979.176	1471322.327	0-2'	X	X	X	X	X
			2-5' <sup>(c)</sup>	X	X	X	X	X
IR1-EAD-SOC09	475934.085	1471312.375	0-2'	X	X	X	X	X
			2-5'	X	X	X	X	X
IR1-EAD-SOC10	475888.227	1471311.699	0-2'	X	X	X	X	X
			2-5'	X	X	X	X	X
IR1-EAD-SOC11	475847.235	1471322.369	0-2'	X	X	X	X	X
			2-5'	X	X	X	X	X
IR1-EAD-SOC12	475774.097	1471330.196	0-2'	X	X	X	X	X
			2-5'	X	X	X	X	X

<sup>(a)</sup> North American Datum of 1927, California State Plane Coordinate System, Zone 3.

<sup>(b)</sup> Soil sampling not performed at this location because an unknown, potential ordnance-related item that was determined to be inert, was discovered in the vicinity.

<sup>(c)</sup> Duplicate sample collected.

X = analyzed; NS = not sampled.

**Table 4-3. Summary of Sediment Samples and Analyses Performed at IR Site 1 Beach Area**

Sampling ID	Northing <sup>(a)</sup>	Easting <sup>(a)</sup>	Soil/Sediment Sample Interval (ft bgs)	PCBs/ Pesticides	SVOCs/ PAHs	VOCs	Metals	Ra-226 and Ra-228
IR1-EAD-SED01	476325.329	1471228.097	0-4'	X	X	X	X	X
IR1-EAD-SED02	476274.955	1471236.842	0-4'	X	X	X	X	X
IR1-EAD-SED03	476245.264	1471224.012	0-4'	X	X	X	X	X
IR1-EAD-SED04	476191.043	1471226.998	0-4'	X	X	X	X	X
IR1-EAD-SED05	476147.112	1471230.053	0-4'	X	X	X	X	X
IR1-EAD-SED06 <sup>(b)</sup>	NS	NS	NS	NS	NS	NS	NS	NS
IR1-EAD-SED07	476034.669	1471231.152	0-4'	X	X	X	X	X
IR1-EAD-SED08	475985.538	1471227.093	0-4'	X	X	X	X	X
IR1-EAD-SED09	475931.841	1471232.951	0-4'	X	X	X	X	X
IR1-EAD-SED10	475887.423	1471230.13	0-4'	X	X	X	X	X
IR1-EAD-SED11	475851.289	1471237.112	0-4'	X	X	X	X	X
IR1-EAD-SED12	475779.354	1471227.609	0-4' <sup>(c)</sup>	X	X	X	X	X
IR1-EAD-SED13	475718.757	1471223.845	0-4'	X	X	X	X	X

<sup>(a)</sup> North American Datum of 1927, California State Plane Coordinate System, Zone 3.

<sup>(b)</sup> Sediment sampling not performed at this location because a large steel barge prevented access.

<sup>(c)</sup> Duplicate sample collected.

X = analyzed; NS = not sampled.

**Table 4-4. Summary of Soil Samples and Analyses Performed at IR Site 15**

<b>Sampling ID</b>	<b>Northing<sup>(a)</sup></b>	<b>Easting<sup>(a)</sup></b>	<b>Soil Sample Interval (ft bgs)</b>	<b>SVOCs/PAHs</b>
IR15-EAD-SOC01	475849.797	1476490.717	0-0.5'	X
			2-2.5'	X
IR15- EAD-SOC02	475779.052	1476682.53	0-0.5'	X
			2-2.5'	X
IR15- EAD-SOC03	475770.784	1476771.6	0-0.5'	X
			2-2.5'	X
IR15- EAD-SOC04	475737.241	1476819.223	0-0.5'	X
			2-2.5'	X
IR15- EAD-SOC05	475711.231	1476895.975	0-0.5'	X
			2-2.5'	X
IR15- EAD-SOC06	475671.442	1477103.54	0-0.5'	X
			2-2.5'	X

<sup>(a)</sup> North American Datum of 1927, California State Plane Coordinate System, Zone 3.  
X = analyzed.

## 5.0 DATA SUMMARY AND DESCRIPTION OF PROBLEMS AND DEVIATIONS

### 5.1 Data Summary

The data generated during the expedited field sampling program at IR Sites 1 and 15 were described and summarized briefly in Section 4.1. The purpose of this Field Summary Report is to convey the methodology that was employed to collect the supplemental data, and to document and briefly summarize the supplemental data generated at IR Sites 1 and 15. No data analysis or interpretation was completed as part of the expedited field sampling scope. The following are the key observations related to the expedited field sampling data and encapsulate the summary provided in Section 4.1:

- **IR Site 1 Burn Area**
  - Several individual PCDD/PCDF congeners were detected in many of the IR Site 1 Burn Area soil samples. The maximum concentration of only one of the individual congeners, 1,2,3,4,6,7,8-HpCDD, exceeded 1 µg/kg. 2,3,7,8-TCDD was detected in all but two of the soil samples, with a maximum concentration of approximately 13 ng/kg.
  - No detectable concentrations of leachable SVOCs/PAHs, VOCs, or pesticides/herbicides were observed in any of the IR Site 1 Burn Area soil samples analyzed using STLC or TCLP methods. Leachable concentrations of several metals were observed using both methods. In general, the concentrations of leachable metals detected in IR Site 1 Burn Area soil samples were less than 1 or 2 mg/L.
  
- **IR Site 1 Beach Area**
  - Several metals, SVOCs/PAHs, and pesticides, a few PCBs and VOCs, and Ra-226 and Ra-228 were detected in the soil samples collected from the Beach Area at IR Site 1. Maximum metal and SVOC/PAH concentrations varied substantially for each individual analyte. Maximum pesticide concentrations were all below 0.2 µg/kg, and maximum individual PCB Aroclor concentrations did not exceed 0.6 µg/kg. Maximum detected concentrations of VOCs were all below 20 µg/kg and maximum detected concentrations of Ra-226 and Ra-228 were 2.6 pCi/g and 0.9 pCi/g, respectively.
  - Several metals, SVOCs/PAHs, and pesticides, a few PCBs and VOCs, and Ra-226 were detected in the sediment samples collected from the Beach Area at IR Site 1. Maximum metal and SVOC/PAH concentrations varied substantially for each individual analyte. Maximum pesticide concentrations were all below 0.02 µg/kg, and maximum individual PCB Aroclor concentrations did not exceed 0.3 µg/kg. Maximum detected concentrations of VOCs were all at or below 20 µg/kg, and Ra-226 was detected with a maximum concentration of approximately 0.7 pCi/g.
  
- **IR Site 15**
  - Several SVOCs/PAHs were detected in the soil samples collected from IR Site 15. Concentrations of individual SVOCs/PAHs detected in IR Site 15 soils varied significantly for each individual analyte.

## 5.2 Description of Problems and Deviations

Some problems were encountered and certain deviations from the Work Plan were required to implement the expedited field sampling activities:

- Soil coring at the Burn Area in IR Site 1 could not be accomplished using Geoprobe® direct-push techniques because highly consolidated material was present and refusal was encountered at approximately 3 to 5 ft bgs. Instead, a hollow-stem auger assembly was attached to the Geoprobe® rig and used to advance the borings to 30 ft bgs. Soil lithology was classified and sampling was performed by collecting soils as they were brought to the surface by the augers.
- All IR Site 1 Burn Area soil samples could not be analyzed for TCLP and STLC parameters because insufficient funds were available at the time of the field activities. A modified sampling program for these analyses, which is summarized in Table 4-1, was instead implemented during the expedited sampling activities to generate sufficient TCLP and STLC data with the appropriated funding. Generally, either TCLP or STLC data (i.e., not both) were collected from each Burn Area sampling location.
- Additional samples were collected from the 10 to 20 ft bgs interval at IR Site 1 Burn Area soil sampling locations IR1-SOC15 and IR1-SOC16 to provide additional useful data.
- Only the 0 to 2 ft bgs depth interval could be sampled at location IR1-SOC02 in the IR Site 1 Beach Area due poor sample recovery and a shallow depth to groundwater.
- Soil sampling was not performed at location IR1-SOC04, located north and east of the berm at the IR Site 1 Beach Area, because an unknown piece of ordnance that was determined to be inert and similar to items that have been found in the same area in the past was located near the proposed sampling location.
- Sediment coring could not be performed at location IR1-SED06 in the IR Site 1 Beach Area because a large steel barge is located in this area, rendering this planned sampling location inaccessible.
- An additional sediment sampling location, IR1-SED13, was cored at the southern edge of the Beach Area at IR Site 1 to ensure complete coverage of the area.

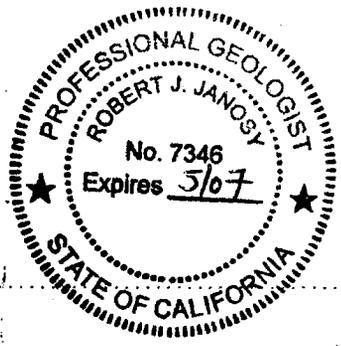
## 6.0 REFERENCES

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**APPENDIX A**  
**SOIL/SEDIMENT BORING LOGS**

Permit Number: NA Project Number: 6601507-71 Boring Location: R150C01 Date Logged: 16 March 04 Geologist: R. Janosy Total Depth: 4' Reviewed by:	Drilling Contractor: Precision Sampling Driller: Ernesto Jasso Drilling Equipment: Geoprobe 6610AT Drilling Method: Direct push Boring Diameter: 2 1/2" Sampler Type: microcore Hammer Type: NA	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: bentonite chips Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic Vapor	Comments
				% Gravel	% Sand	% Fines					
0		SP	SAND, yellowish brn, fine-med grn, clean, loose, micaceous, dry, no odds, broken up clay targets		100				R150C01 0-2 @ 1430	0.1	RAD = 0.1 x 200cpm
		SP/SH	same, but some fines, little gravel + clay targets		90	10			R150C01 2-4 @ 1430		
			TD = 4'		10	80	10				
5											
10											
15											



Permit Number: NA Project Number: 6001507-71 Boring Location: IR150C02 Date Logged: 16 March 05 Geologist: R. Janosy Total Depth: 4' Reviewed by:	Drilling Contractor: Precision Sampling Driller: Ernesto Jasso Drilling Equipment: Geoprobe 6610 DT Drilling Method: Direct Push Boring Diameter: 2 1/2" Sampler Type: micro core Hammer Type: NA	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: bentonite chips Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic % Vapor	Comments
				% Gravel	% Sand	% Fines					
0		SP	SAND, fine grn, yellowish brn, clean, firm-loose, moist, no odor/debris, micaceous	85	15			IR150C02 0-2 @1400	0.1	PAO=0.1 x 200cpm	
		D	asphalt debris, gravelly								
		SP	SAND, med grn, yellowish brn, clean, micaceous, wet, no odor/debris			100					
			TD=4'								
5											
10											
15											



Permit Number: <i>NA</i> Project Number: <i>6601507-71</i> Boring Location: <i>IR150C03</i> Date Logged: <i>16 March 05</i> Geologist: <i>R. Jansy</i> Total Depth: <i>4 ft</i> Reviewed by:	Drilling Contractor: <i>Precision Sampling</i> Driller: <i>Ernesto Jasso</i> Drilling Equipment: <i>Geoprobe 6610 DT</i> Drilling Method: <i>Direct Push</i> Boring Diameter: <i>2 1/2"</i> Sampler Type: <i>microcore</i> Hammer Type: <i>NA</i>	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: <i>bentonite chips</i> Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic Vapor	Comments
				% Clay	% Sand	% Fines					
0											
		SM	Silty SAND, yellowish brown 10YR 5/4, Fin med gr, little fines		85	15		IR150C03 0-2 @ 1330	0.1	RAD=0.1 x 200cpm	
			same, but reddish brn, gravelly-asphalt		30	20		IR150C03 2-4 @ 1330		collected RAD swipes	
		SP	SAND, yellowish brn, med gr, clean, firm same as above, but wet		35	15					
			TD=4 ft								
5											
10											
15											



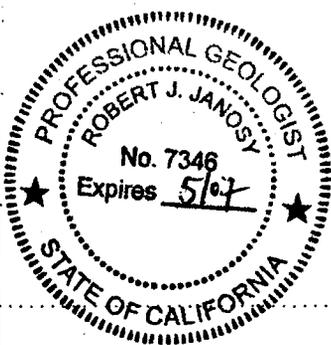
Permit Number: NA Project Number: 6601507-71 Boring Location: IR150C05 Date Logged: 16 March 05 Geologist: R. Janosy Total Depth: 7' Reviewed by:	Drilling Contractor: Precision Sampling Driller: Ernesto Jasso Drilling Equipment: Geoprobe 6610 DT Drilling Method: Direct Push Boring Diameter: 2 1/2" Sampler Type: Microcore Hammer Type: NA	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: bentonite chips Monitoring Device Installed: <input type="checkbox"/> Yes <input type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic Vapor	Comments
				% Gravel	% Sand	% Fines					
0											
		SM	si lty SAND, yellowish brn, some gravel, fine grn, loose, damp, no odor/debris, roots	5	70	25		IR150C05 0-2 @ 1130		0.1	RAD=0.1 v 200CPM
		SM	same but less fines same, but more fines, stiff		85	15		IR150C05 2-5 @ 1130			RAD wipes collected
5		SM	same, but reddish brn, some gravel, moist	10	60	30					
		SP	SAND, brn, med grn, clean, firm, saturated. TD = 7ft.			100					
10											
15											



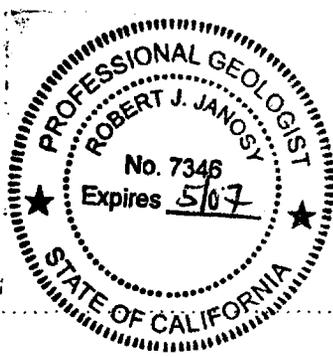
Permit Number: NA Project Number: G601507-71 Boring Location: 1R150C06 Date Logged: 16 March 06 Geologist: R. Janosy Total Depth: 7 FT Reviewed by:	Drilling Contractor: Precision Sampling Driller: Ernesto Jasso Drilling Equipment: Geoprobe 6610AT Drilling Method: Direct Push Boring Diameter: 2 1/2 Sampler Type: macrocore Hammer Type: NA	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: bentonite chips Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading				Blow Counts	Sample Interval	Sample ID	Organic % Vapor	Comments
				% Gravel	% Sand	% Silt	% Clay					
0		SM	silty SAND, yellowish brn 10YR 5/4, fine gm, loose		70	30			1R150C06 0-2@ 1100	0.1	RAO = 0.1 x 200 cpm	
		CL	CLAY, brownish grey, plastic, stiff, no odor, debris, damp.				100				collect RAO wipes	
		SM	silty SAND, reddish brown, w/ gravel, med gm, loose, damp, no odor/debris		15	50	35		1R150C06 2-5@ 1100			
5		CL	CLAY - same as above				100					
		SM	silty SAND - same as above.									
			TD = 7 FT.									
10												
15												



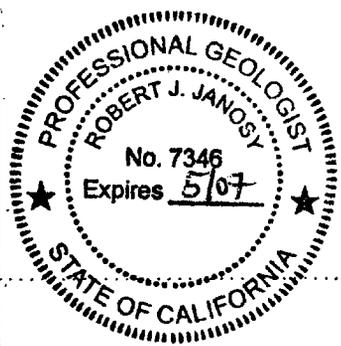
Permit Number: NA Project Number: G601507-71 Boring Location: IR150C07 Date Logged: 16 March 05 Geologist: R. Janosy Total Depth: 7' Reviewed by:	Drilling Contractor: Precision Sampling Driller: Ernesto Jasso Drilling Equipment: Geoprobe 6610 DT Drilling Method: Direct Push Boring Diameter: 2 1/2" Sampler Type: macrocore Hammer Type: NA	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: bentonite chips Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology USCS Symbol	Sample Description	Grading			Blow Counts Sample Interval	Sample ID	Organic # Vapor	Comments
			% Gravel	% Sand	% Fines				
0	SP	SAND, yellowish brn, fine-med grn, clean, firm, micaceous, moist, no odor, plastic from shotgun shell (used).		100			IR150C07 0-2 @ 1045	0.1	RAD=0.1 x 200cpm
3	SM	silty SAND, brown/reddish brown w/ gravel upto 1/2". sand is med grn, loose-firm, no debris/odor, damp. same - but concrete at 4 1/2'	20	50	30		IR150C07 2-5 @ 1045		collect RAD wipes
4 1/2		concrete							
5		gravelly SAND, reddish brn/black, medium-coarse, loose, no odor/debris, wet. gravel up to 1/4"	30	65	5				
		TD=7ft.							



Permit Number: NA Project Number: 6601507-71 Boring Location: IR1 S0C08 Date Logged: 16 March 05 Geologist: R. Janosy Total Depth: 6' 4" Reviewed by:	Drilling Contractor: Precision Sampling Driller: Ernesto Jasso Drilling Equipment: Geoprobe 6610 DT Drilling Method: Direct Push Boring Diameter: 2 1/2" Sampler Type: MTCO Core Hammer Type: NA	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: bentonite chips Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic Vapor	Comments
				% Gravel	% Sand	% Fines					
0		SP	SAND, yellowish brn 10YR 5/4, clean, loose, micaceous, damp, no odors/debris, med-fine grn		95	5		IR1S0C08 0-2 @ 1015	0.1	RAD = 0.1 x 200cpm	
		SM	Silty SAND w/ pebbles/gravel, mottled - reddish brn, drk reddish brn, yellowish brn, med grn, firm, gravel upto 1" mostly < 1/2", damp, no odors/debris		20	50	30				collect RAD wipes
			same					IR1S0C08 2-5 + DUP @ 1015			
5		SP	SAND, yellowish brn 10YR 5/4, clean, loose, micaceous, fine-med grn, wet, no odor.			100					
			TD = 6'								



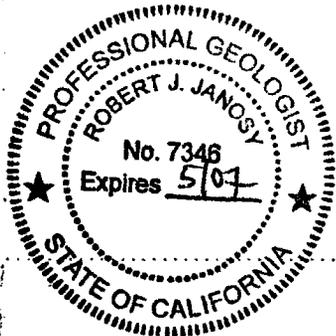
Permit Number: NA Project Number: G601507-71 Boring Location: 1R150C9 Date Logged: 16 March 05 Geologist: R. Jansy Total Depth: 6 Reviewed by:	Drilling Contractor: Precision Sampling Driller: Ernesto Jasso Drilling Equipment: Geoprobe 6610AT Drilling Method: Direct Push Boring Diameter: 2 1/2" Sampler Type: MC core Hammer Type: NA	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: bentonite chips Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic Vapor	Comments
				% Coarse	% Sand	% Fines					
0		SM	silty SAND, yellowish brn, med-fine grn, loose, damp, no odors/debris		80	20			1R150C09 0-2 @ 0945	0.1	RAD = 0.1 x 200 cpm
		SP	SAND, yellowish brn, med grn, clean, wet								Collect RAD wipes
		SM	silty SAND w/ gravel - color variations from reddish brn, yellowish brn, firm gravel up to 1/2", sand med grn, moist, no odor/debris		20	50	30		1R150C09 2-5 @ 0945		
		SM	same, but wet debris @ 7' - rag								
			TD = 7'								



Permit Number: NA Project Number: G601507-71 Boring Location: IR150C10 Date Logged: 16 March 05 Geologist: R. Janosy Total Depth: 6' Reviewed by:	Drilling Contractor: Precision Sampling Driller: Ernesto Jasso Drilling Equipment: Geoprobe 6610 DT Drilling Method: Direct Push Boring Diameter: 2 1/2" Sampler Type: Microcore Hammer Type: NA	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: Bentonite chips Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	% Organic Vapor	Comments
				% Gravel	% Sand	% Fines					
0		SM	silty SAND, w/ gravel (concrete), loose, med gn	10	50	40			IR150C10 0-2 @	0.0	RAD = 0.1 x 200 cpm
		SP	SAND, clean, yellowish brn firm, micaceous						0930		collect RAD wipes
		CL	CLAY, grey, stiff, slightly plastic			20	80				
		SM	silty SAND w/ pebbles, med gn, loose - firm yellowish brn - reddish brn, moist, no debris/odors.	15	50	35			IR150C10 2-5 @ 0930		
5			same, but wet at 6'								
			TD = 6'								
10											
15											



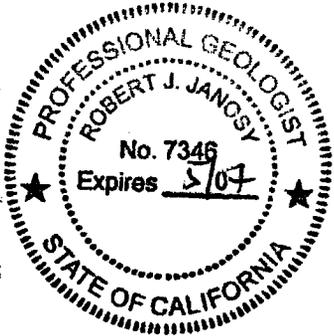
Permit Number: NA Project Number: 6601507-71 Boring Location: RI SPC11 Date Logged: 16 March 05 Geologist: R. Janosy Total Depth: 6' Reviewed by:	Drilling Contractor: Precision Sampling Driller: Ernesto Jasso Drilling Equipment: Geoprobe 66100T Drilling Method: Direct Push Boring Diameter: 2 1/2" Sampler Type: Microcore Hammer Type: NA	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: bentonite chips Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic Vapor	Comments
				% Gravel	% Sand	% Fines					
0		SM	silty SAND, med gm, w/gravel, yellowish brown 10YR 5/4, loose, moist, no odor, no debris, roots	20	60	20		0-2'	RI SPC11 0900	0.0	RAD = 0.1 x 200 cpm
		SP	SAND, clean, yellowish brn, 10YR 5/4, fine-med gm, micaceous, damp, firm, no odor, debris		90	10		2-5'	RI SPC11 0900		collect RAD wipes
2		SP	same								
			TD = 6'								
10											
15											



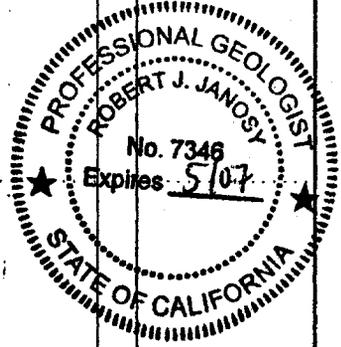
Permit Number: NA Project Number: G601507-71 Boring Location: IR1 SOC12 Date Logged: 16 March Geologist: R. Jancosy Total Depth: 8 Reviewed by:	Drilling Contractor: Precision Driller: Ernesta Jasso Drilling Equipment: Geoprobe 6610DT Drilling Method: direct push Boring Diameter: 2 1/2 Sampler Type: macrocore Hammer Type: NA	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: bentonite chips Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic Vapor	Comments
				% Gravel	% Sand	% Fines					
0		SM	SILTY SAND, yellowish brn, fine gm, loose, damp, no odor, roots - no debris same, but more fines, drk brn	5	75	20		IR1 SOC12 0-2 @0830	0.0	RAD = 0.1 x 200 cpm	
		SP	SAND, yellowish brn, med-fine gm, clean, micaceous, moist, no odor					IR1 SOC12 2-5 @0830		collect RAD wipes	
5		SP	Same, but saturated, no odors								
		SP	brownish grey, no odors								
			TD = 8'								



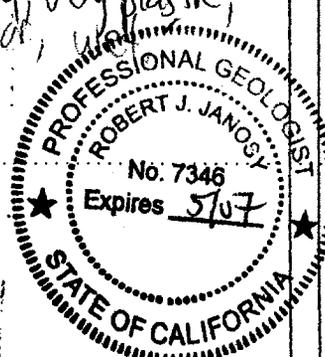
Permit Number: Project Number: <i>G601507-712</i> Boring Location: <i>50C13</i> Date Logged: <i>15 March 05</i> Geologist: <i>R. Janosy</i> Total Depth: <i>35'</i> Reviewed by:	Drilling Contractor: <i>Gregg</i> Driller: <i>Don</i> Drilling Equipment: <i>SIMCO</i> Drilling Method: <i>Hollow Stem</i> Boring Diameter: <i>3 1/4</i> Sampler Type: <i>NA</i> Hammer Type: <i>NA</i>	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: <i>Cement</i> Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic % Vapor	Comments
				% Gravel	% Sand	% Fines					
0			Handauger to 30" - road base, hard part - metal debris - mostly screws, nails, wood.				█	PR150C13 0-2'			
5		SM					X				
10		SM	silty SAND, med-coarse gm, black, saturated, slight creosote odor		85%	20	X	IR150C13 2-10'			
15		SM	same as above				X				
20							█				
25							█	IR150C13 20-36			
30		CL	clay, silver grey, soft, very plastic, saturated, little silt, no odor				█				
35			same.  TD = 35'				█				



Permit Number: Project Number: <i>6601507-712</i> Boring Location: <i>SoCIA</i> Date Logged: <i>15 March 05</i> Geologist: <i>R. Janosy</i> Total Depth: <i>30'</i> Reviewed by:	Drilling Contractor: <i>Gregg Drilling</i> Driller: <i>Don</i> Drilling Equipment: <i>Geoprobe M250P</i> Drilling Method: <i>auger</i> Boring Diameter: <i>3 1/4"</i> Sampler Type: <i>NA - soil cuttings</i> Hammer Type:	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: <i>Cement</i> Monitoring Device Installed: <input type="checkbox"/> Yes <input type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic Vapor	Comments
				% Gravel	% Sand	% Fines					
0			<i>silt SAND, reddish brn, med grn, loose, no odor, damp-moist</i>	<i>10</i>	<i>55</i>	<i>35</i>		<i>IR150C15 0-2</i>	<i>a1</i>	<i>@1500</i>	
5			<i>SAME, but wet, drk grey to black</i>			<i>90</i>		<i>IR150C15 2-10 @1515</i>			
10			<i>same but sandy, black &amp; coarser grn. sand</i>					<i>IR150C15 10-20 @1520</i>			
20			<i>same - very saturated, coarse sand</i>			<i>80</i>		<i>IR150C15 20-30 @1530</i>		<i>plus duplicate</i>	
25			<i>CLay, greenish grey, very plastic, soft, organic odor, wet</i>								
30			<i>TD = 30'</i>								



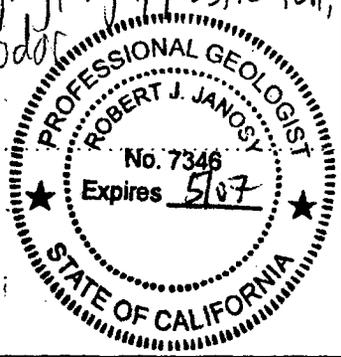
Permit Number: Project Number: <u>G601507-712</u> Boring Location: <u>SOC15</u> Date Logged: <u>15 March 05</u> Geologist: <u>R. Janosy</u> Total Depth: <u>30'</u> Reviewed by:	Drilling Contractor: <u>Gregg</u> Driller: <u>Don</u> Drilling Equipment: <u>Geoprobe</u> Drilling Method: <u>Auger</u> Boring Diameter: <u>5 1/2"</u> Sampler Type: <u>NA - Cuttings</u> Hammer Type: <u>NA</u>	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: <u>Soil backfill</u> Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Count	Sample Interval	Sample ID	Organic Vapor	Comments
				% Gravel	% Sand	% Fines					
0											
0-2		SM	silty sand, reddish brn, med gm, little gravel, loose, no odors, damp. - some metal debris.	10	50	40			IR1 SOC15 0-2	0.1	
2-10			same, but saturated, black coarser sand, minor metal debris.						IR1 SOC15 2-10		
10-20		SM							IR1 SOC15 10-20		
20-30									IR1 SOC15 20-30		
30		CL									
30			TD=30'								



Permit Number: Project Number: <i>G601507-712</i> Boring Location: <i>SOC 16</i> Date Logged: <i>15 March 05</i> Geologist: <i>R. J. Janosy</i> Total Depth: <i>30'</i> Reviewed by:	Drilling Contractor: <i>Gregg</i> Driller: <i>Don</i> Drilling Equipment: <i>Geoprobe</i> Drilling Method: <i>Auger</i> Boring Diameter: <i>5 1/2"</i> Sampler Type: <i>NA - soil cuttings</i> Hammer Type: <i>NA</i>	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: <i>soil backfill</i> Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology USCS Symbol	Sample Description	Grading			Blow Counts Sample Interval	Sample ID	Organic # Vapor	Comments
			% Gravel	% Sand	% Fines				
0	SM	silty SAND, red dish brown w/ gravel, med-coarse grn, loose, damp, no odors	15	40	45	IR150C16 0-2		@ 1545	
5		CLAY w/ silt, greenish grey, highly plastic, soft, organic odor, wet,				IR150C16 2-10		@ 1550	
10	CL	Same.							
15	SM	silty SAND, drk grey-black, med-coarse grn, soupy w/ very saturated, no odors	75	25		IR150C16 10-20		@ 1555	
20		Same							
25	CL	CLAY, greenish grey, highly plastic-fat, soft, organic odor				IR150C16 20-30		@ 1600	
30		TD=30'							



Project No. G601507	Date: 16 MARCH 05	Recorder: R. JANOSY
Station ID: IRI SED01	On Station: (local)	Off Station: (local)
Northing (NAD83, meters)	Easting (NAD83, meters)	DGPS Accuracy Estimate (± m):
Water depth (ft): 0.0	Penetration depth (cm): 4.0 FT.	Sample Time: (local) 1300

Sampler (circle one): Ponar (0.04 m<sup>2</sup>)    Stainless/Teflon Scoop    Other: MICROCORE

Samples Collected (✓): Sediment Chemical / Physical ✓    Bioassay

Pore Water    Other:

General Sediment Description (circle as appropriate)

Color: Black    Dark Gray    Gray    Brown    Other:

Type: Cobble    Gravel    Sand (coarse med fine)    Silt    Clay

Wood chips    Shells or Shell Hash    Other:

Odor: None    Slight    Moderate    Strong

Petroleum    H<sub>2</sub>S    Other:

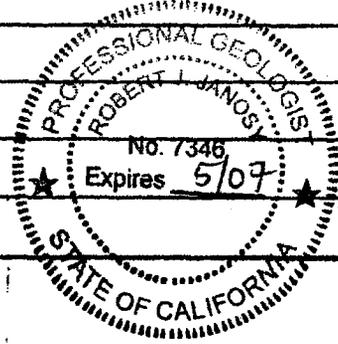
0-3' YELLOWISH-BROWN  
DIRTY S/L; SP SAND  
COARSE GRA. CLEAN,  
VERY FIRM, MICACEOUS,  
WET, NO ODDORS, NO DEBRIS

3'-4' DARK GREY-BLK  
GREY 2-5/10Y  
SP w/ ~25% GRAVELS.  
MED. GRN. SANDS,  
WET, MICACEOUS,  
NO ODDORS,  
NO DEBRIS

TOTAL DEPTH = 4.0'

Sample ID	Matrix	Lab	Analysis	Container # / Size / Type	Temp(°C) / Pres
IRI SED01 0-4	SED	CAS	VOC	ENCORE(3)	FROZEN
IRI SED01 0-4	SED	CAS	SVOC	80Z.	4°C
IRI SED01 0-4	SED	CAS	METALS	80Z.	4°C
IRI SED01 0-4	SED	DUXBURY	PEST/PCB	80Z	4°C
IRI SED01 0-4	SED	STL	RAD	160Z.	4°C

Field Activities / Comments / Observations:



Field Team Leader Signature

*Robert L. Janosy*

75AR

Project No. G601507	Date: 3/17/2005	Recorder: SCOTT LOWE
Station ID: SED02 (IR1 SED02)	On Station: (local)	Off Station: (local)
Northing (NAD83, meters)	Easting (NAD83, meters)	DGPS Accuracy Estimate (± m):
Water depth (ft): 0.0	Penetration depth (cm): 4.0 FT	Sample Time: (local) 0934

Sampler (circle one): Ponar (0.04 m<sup>2</sup>) Stainless/Teflon Scoop Other MICROCORE

Samples Collected (✓): Sediment Chemical Physical ✓ Bioassay

Pore Water Other:

**General Sediment Description (circle as appropriate)**

Color: Black Dark Gray Gray Brown Other

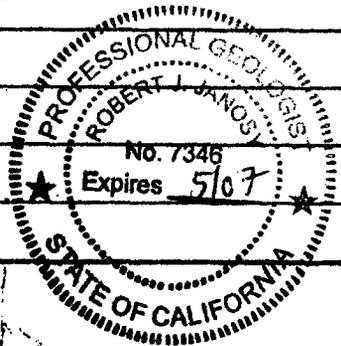
Type: Cobble Gravel Sand (coarse-med fine) Silt Clay  
Wood chips Shells or Shell Hash Other:

Odor: None Slight Moderate Strong  
Petroleum H2S Other:

0-3' YELLOWISH-BROWN 10YR 5/4; SR SAND COARSE GRN. CLEAN, VERY FIRM, MICACIOUS WET, NO ODORS	3'-4' DARK GREY-BLK. GREY 1 2.5/10Y SP W/ ~25% GRAVELS-MED. GRN. SANDS, WET, MICACEOUS, NO ODORS, NO DEBRIS	TOTAL DEPTH=4.0'
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Sample ID	Matrix	Lab	Analysis	Container # / Size / Type	Temp(°C) / Pres
IR1 SED02 0-4	SED	CAS	VOC	ENCORE (3)	FROZEN
IR1 SED02 0-4	SED	CAS	SVOC	<del>80Z.</del> 80Z.	4°C
IR1 SED02 0-4	SED	CAS	METALS	80Z.	4°C
IR1 SED02 0-4	SED	DUXBURY	PEST/PCB	80Z.	4°C
IR1 SED02 0-4	SED	STL	PAH	160Z.	4°C

Field Activities / Comments / Observations:



1 JAR

Field Team Leader Signature

*[Handwritten Signature]*

Project No. G601507	Date: 17 MARCH 05	Recorder: SCOTT LOWE
Station ID: IR1 SED03	On Station: (local)	Off Station: (local)
Northing (NAD83, meters)	Easting (NAD83, meters)	
Water depth (ft): 0.0 FT	Penetration depth (cm): 4.0 FT	Sample Time: (local) 1210

Sampler (circle one): Ponar (0.04 m<sup>2</sup>)    Stainless/Teflon Scoop    Other: MICROCORE

Samples Collected (✓): Sediment Chemical / Physical ✓    Bioassay

Pore Water    Other:

General Sediment Description (circle as appropriate)

Color: Black    Dark Gray    Gray    Brown    Other?

Type: Cobble    Gravel    Sand (coarse-med fine)    Silt    Clay

Wood chips    Shells or Shell Hash    Other:

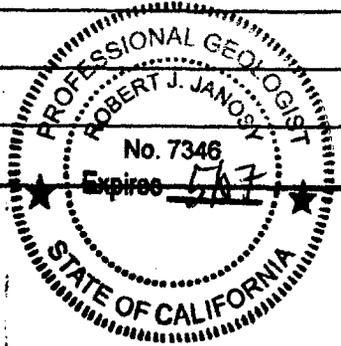
Odor: None    Slight    Moderate    Strong

Petroleum    H<sub>2</sub>S    Other:

0-3' YELLOWISH-BROWN 10% 2.5/4 SP MED. SANDS, CLEAN, VERY FIRM, NO ODORS, NO DEBRIS MICACEOUS	3'-3.80' DARK GREY-BLK GREY 2.5/101 SP MED-COARSE SANDS, ~20% GRAVELS, CLEAN, VERY FIRM, NO ODORS, NO DEBRIS MICACEOUS	3.80'-4.0' BLuish-GREY GREY 2.5/5 PB SP w/ FINE SANDS, CLEAN WET, NO ODORS MICACEOUS, NO DEBRIS
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Sample ID	Matrix	Lab	Analysis	Container # / Size / Type	Temp(°C) / Pres
IR1 SED03 0-4	SED	CAS	VOC	ENCORE (3)	FROZEN
IR1 SED03 0-4	SED	CAS	SVOC	8 OZ	4°C
IR1 SED03 0-4	SED	CAS	METALS	8 OZ	4°C
IR1 SED03 0-4	SED	DUXBURY	PEST/PCB	8 OZ	4°C
IR1 SED03 0-4	SED	STL	RAD	10 OZ	4°C

Field Activities / Comments / Observations:



Field Team Leader Signature [Signature]

JAR

Project No. G601507	Date: 17 MARCH 05	Recorder: SCOTT LOWE
Station ID: IR1 SED 04	On Station: (local)	Off Station: (local)
Northing (NAD83, meters)	Easting (NAD83, meters)	
Water depth (ft): 0.0 FT.	Penetration depth (cm): 4.0 FT.	Sample Time: (local) 1200

Sampler (circle one): Ponar (0.04 m<sup>2</sup>)    Stainless/Teflon Scoop    Other MICROCORE

Samples Collected (✓): Sediment Chemical Physical ✓    Bioassay

Pore Water    Other:

**General Sediment Description (circle as appropriate)**

Color: Black    Dark Gray    Gray    Brown    Other:

Type: Cobble    Gravel    Sand (coarse-med-fine)    Silt    Clay

Wood chips    Shells or Shell Hash    Other:

Odor: None    Slight    Moderate    Strong

Petroleum    H2S    Other:

0-2.5'  
YELLOWISH-BROWN  
10YR 5/4  
SP CLEAN  
MED. SAND  
w/ 2" DARK  
GREY LENSE  
OF MED SAND  
(clean), well-  
Rounded, very  
firm, wet  
MICACEOUS,  
NO ODOR,  
NO DEBRIS

2.5'-3.5'  
DARK GREY-BLK  
GREY 1 2.5/10Y  
SP MED-COARSE  
SANDS w/ ~15%  
GRAVELS, Little  
Shell FRAG, CLEAN, WET,  
MICACEOUS,  
NO ODOR, NO  
DEBRIS, Very  
firm

3.5'-4.0'  
BLuish-Grey  
GREY 2 5/5 PB  
SP w/ FINE-SAND  
CLEAN, wet, well-  
Rounded, NO  
ODOR, NO DEBRIS,  
Very firm

Sample ID	Matrix	Lab	Analysis	Container # / Size / Type	Temp(°C) / Pres
IR1 SED 04 0-4	SED	CAS	VOC	ENCORE (3)	FROZEN
IR1 SED 04 0-4	SED	CAS	SVOC	8 OZ.	4°C
IR1 SED 04 0-4	SED	CAS	METALS	8 OZ.	4°C
IR1 SED 04 0-4	SED	<del>W</del> DUXBURY	PEST/PCB	8 OZ.	4°C
IR1 SED 04 0-4	SED	STL	RAD	16 OZ.	4°C

Field Activities / Comments / Observations:

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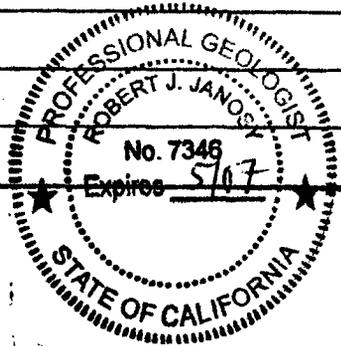


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Field Team Leader Signature Robert J. Janosy



JAR

Project No. G601507	Date: 17 March 05	Recorder: SCOTT LOWE
Station ID: IR1 SED 05	On Station: (local)	Off Station: (local)
Northing (NAD83, meters)	Easting (NAD83, meters)	DGPS Accuracy Estimate (± m):
Water depth (ft): 0.0 Ft.	Penetration depth (cm): 0-4 Ft. (4.0 Ft.)	Sample Time: (local) 0955

Sampler (circle one): Ponar (0.04 m<sup>2</sup>) Stainless/Teflon Scoop **Other: MICROCORE**

Samples Collected (✓): Sediment **Chemical**/Physical ✓ Bioassay

Pore Water Other:

**General Sediment Description (circle as appropriate)**

Color: Black Dark Gray Gray Brown **Other:**

Type: Cobble Gravel **Sand** **coarse-med**/fine) Silt Clay

Wood chips Shells or Shell Hash Other:

Odor: **None** Slight Moderate Strong

Petroleum H2S Other:

0'-2.5' YELLOWISH-BROWN 10YR 5/4; SP SAND COARSE GRN. CLEAN. VERY FIRM; MICACEOUS; WET, NO ODOR, NO DEBRIS	2.5'-4.0' DARK GREY-BLK; GREY 2.5/10Y SP W/ ~30% GRAVEL, MED. GRN. SANDS, WET, MICACEOUS, NO ODORS, NO DEBRIS	*TOTAL DEPTH = 4.0'
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Sample ID	Matrix	Lab	Analysis	Container # / Size / Type	Temp(°C) / Pres
IR1 SED 05 0-4	SED	CAS	VOC	ENCORE(3)	FROZEN
IR1 SED 05 0-4	SED	CAS	SVOC	80Z.	4°C
IR1 SED 05 0-4	SED	CAS	METALS	80Z.	4°C
IR1 SED 05 0-4	SED	DUXBURY	PEST/PCB	80Z.	4°C
IR1 SED 05 0-4	SED	STL	RAD	160Z.	4°C

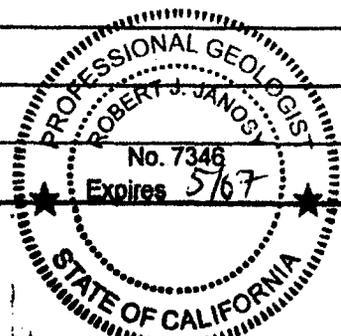
Field Activities / Comments / Observations:

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1 JAR

Field Team Leader Signature

*[Handwritten Signature]*

Project No. G601507	Date: 17 MARCH 05	Recorder: SCOTT LOWE
Station ID: IRI SED 07	On Station: (local)	Off Station: (local)
Northing (NAD83, meters)	Easting (NAD83, meters)	DGPS Accuracy Estimate (± m):
Water depth (ft): 0.0 Ft	Penetration depth (cm): 4.0 Ft.	Sample Time: (local) 1010

Sampler (circle one): Ponar (0.04 m<sup>2</sup>)    Stainless/Teflon Scoop    Other: MICROCORE

Samples Collected (✓): Sediment Chemical / Physical ✓    Bioassay

Pore Water    Other:

General Sediment Description (circle as appropriate)

Color: Black    Dark Gray    Gray    Brown    Other:

Type: Cobble    Gravel    Sand (coarse-med fine)    Silt    Clay

Odor: None    Slight    Moderate    Strong

Petroleum    H2S    Other:

0'-1.5' YELLOWISH-BROWN 10% 5/4; SP-SAND COARSE GRN. CLEAN, VERY FIRM, MICACEOUS, WET, NO ODOR, NO DEBRIS	1.5'-3.0' DARK GREY-BLK GREY 1 2.5/104 SP w/ ~20% GRAVELS, SOME SHELL WASH w/ MED. SANDS, WET, MICACEOUS, NO ODORS	3.0'-4.0' BLuish-GREY GREY 2 5/SPB SP w/ 100% MED. SANDS, CLEAN, WELL ROUNDED, VERY FIRM, WET, MICACEOUS, NO ODOR, NO DEBRIS
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Sample ID	Matrix	Lab	Analysis	Container # / Size / Type	Temp(°C) / Pres
IRI SED 07 0-4	SED	CAS	VOC	ENCORE(3)	FROZEN
IRI SED 07 0-4	SED	CAS	SVOC	8 OZ.	4°C
IRI SED 07 0-4	SED	CAS	METALS	8 OZ.	4°C
IRI SED 07 0-4	SED	DUXBURY	PEST/PCB	8 OZ.	4°C
IRI SED 07 0-4	SED	STL	RAID	110 OZ.	4°C

Field Activities / Comments / Observations:

Field Team Leader Signature: Robert J. Janosy



75AE

Project No. G601507	Date: 17 MARCH 05	Recorder: SCOTT LOWE
Station ID: IR1 SED 08	On Station: (local)	Off Station: (local)
Northing (NAD83, meters)	Easting (NAD83, meters)	DGPS Accuracy Estimate (± m):
Water depth (ft): 0.0 FT.	Penetration depth (cm): 4.0 FT.	Sample Time: (local) 1147

Sampler (circle one): Ponar (0.04 m<sup>2</sup>)    Stainless/Teflon Scoop    Other: MICROCORE

Samples Collected (✓): Sediment Chemical / Physical ✓    Bioassay

Pore Water    Other:

**General Sediment Description (circle as appropriate)**

Color: Black    Dark Gray    Gray    Brown    Other

Type: Cobble    Gravel    Sand    coarse-med-fine    Silt    Clay

Wood chips    Shells or Shell Hash    Other:

Odor: None    Slight    Moderate    Strong

Petroleum    H<sub>2</sub>S    Other:

0'-2'  
YELLOWISH-BROWN  
10 YR 5/4  
SP MED. SAND  
W/ SOME SHELL  
HASH - WELL  
ROUNDED, WET,  
MICA CELESTINE,  
VERY FIRM,  
NO ODOR,  
NO DEBRIS,  
CLEAN

2'-3'  
DARK GRAY-BLK  
GREY 12.5/10Y  
SP W/ MED  
SANDS, SOME  
SHELL HASH,  
CLEAN SANDS,  
WET, VERY FIRM,  
NO ODORS,  
NO DEBRIS

3'-4'  
BLuish-GREY  
GREY 2.5/5 PB  
SP W/ FINE SAND,  
~1" THICK  
SILTY SAND LENS,  
ALL CLEAN, WET,  
MICA CELESTINE,  
VERY FIRM,  
NO ODORS,  
NO DEBRIS

Sample ID	Matrix	Lab	Analysis	Container # / Size / Type	Temp(°C) / Pres
IR1 SED 08 0-4	SED	CAS	VOC	ENCORE (3)	FROZEN
IR1 SED 08 0-4	SED	CAS	SVOC	8 OZ.	4°C
IR1 SED 08 0-4	SED	CAS	METALS	8 OZ.	4°C
IR1 SED 08 0-4	SED	DUXBURY	PEST/PCB	8 OZ.	4°C
IR1 SED 08 0-4	SED	STL	RAD	16 OZ.	4°C

Field Activities / Comments / Observations:



Field Team Leader Signature

*[Handwritten Signature]*

JAR

Project No. G601507	Date: 17 MARCH 05	Recorder: SCOTT LOWE
Station ID: IR1 SED 09	On Station: (local)	Off Station: (local)
Northing (NAD83, meters)	Easting (NAD83, meters)	
Water depth (ft): 0.0 FT.	Penetration depth (cm): 4.0 FT.	Sample Time: (local) 1030

Sampler (circle one): Ponar (0.04 m<sup>2</sup>)    Stainless/Teflon Scoop    Other MICROCORE

Samples Collected (✓): Sediment Chemical / Physical ✓    Bioassay

Pore Water    Other:

General Sediment Description (circle as appropriate)

Color: Black    Dark Gray    Gray    Brown    Other

Type: Cobble    Gravel    Sand (coarse-med-fine)    Silt    Clay

Odor: None    Slight    Moderate    Strong

Wood chips    Shells or Shell Hash    Other:

Petroleum    H2S    Other:

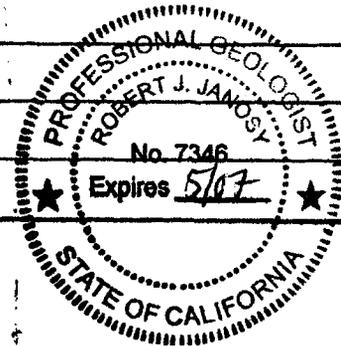
0'-2.5'  
YELLOWISH-BROWN  
10YR 5/4;  
SP SAND  
w/ ~10% GRAVELS;  
COARSE GRN SANDS-CLEAN  
VERY FIRM,  
MICACEOUS,  
WET,  
NO ODDORS,  
NO DEBRIS

2.5'-3.5'  
DARK GRAY-BLW  
GLEY 1 2.5/10Y  
SP w/ ~20% GRAVELS, SOME SHELL MASH w/ MED. SANDS, MICACEOUS,  
WET,  
NO ODDORS,

3.5'-4'  
BLUISH-GRAY  
GLEY 2 5/5PB  
SP w/ ~25% MED SANDS, ~75% MED-FINE SANDS → CLEAN, VERY FIRM,  
MICACEOUS,  
WET,  
NO ODDORS,  
NO DEBRIS

Sample ID	Matrix	Lab	Analysis	Container # / Size / Type	Temp(°C) / Pres
IR1 SED 09 0-4	SED	CAS	VOC	ENCORE (3)	FROZEN
IR1 SED 09 0-4	SED	CAS	SVOC	8 OZ	4°C
IR1 SED 09 0-4	SED	CAS	METALS	8 OZ.	4°C
IR1 SED 09 0-4	SED	DUXBURY	PEST/PCB	8 OZ.	4°C
IR1 SED 09 0-4	SED	STL	PAH	16 OZ.	4°C

Field Activities / Comments / Observations:



Field Team Leader Signature [Signature]

7346

Project No. G601507	Date: 17 MARCH 05	Recorder: SCOTT LOWE
Station ID: IR1 SED10	On Station: (local)	Off Station: (local)
Northing (NAD83, meters)	Easting (NAD83, meters)	DGPS Accuracy Estimate (± m):
Water depth (ft): 0.0 FT	Penetration depth (cm): 4.0 Ft.	Sample Time: (local) 1128

Sampler (circle one): Ponar (0.04 m<sup>2</sup>)    Stainless/Teflon Scoop    Other MICROCORE

Samples Collected (✓): Sediment Chemical / Physical ✓    Bioassay

Pore Water    Other:

General Sediment Description (circle as appropriate)

Color: Black    Dark Gray    Gray    Brown    Other

Type: Cobble    Gravel    Sand (coarse-med fine)    Silt    Clay

Wood chips    Shells or Shell Hash    Other:

Odor: None    Slight    Moderate    Strong

Petroleum    H2S    Other:

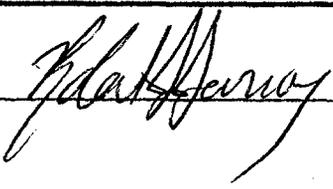
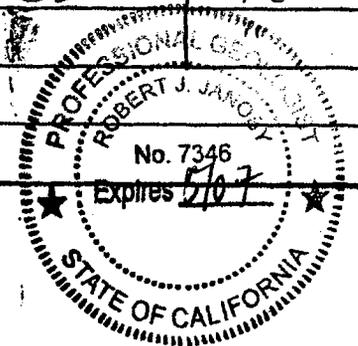
0'-2.5' YELLOWISH-BROWN 10YR 5/4 SP GRAVELY-SAND W/ MED-COARSE SANDS, CLEAN, W/ SOME SHELL MASH, WET, MICACEOUS, NO ODORS, VERY DENSE, NO DEBRIS	2.5'-3.5' DARK GREEN-BLK GLEY 1 2.5/10Y SP W/ MED. SANDS, SOME SHELL MASH, CLEAN, WET, MICACEOUS, VERY FIRM, NO ODORS, NO DEBRIS	3.5'-4.0' BLuish-GREEN GLEY 2 5/5 SP W/ MED-FINE SANDS, CLEAN, WET, MICACEOUS, VERY FIRM, NO ODORS, NO DEBRIS
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Sample ID	Matrix	Lab	Analysis	Container # / Size / Type	Temp(°C) / Pres
IR1 SED10 0-4	SED	CAS	VOC	ENVELOPE (3)	FROZEN
IR1 SED10 0-4 DUP	SED	CAS	VOC	"	"
IR1 SED10 0-4	"	CAS	SVOC	8 OZ.	4°C
IR1 SED10 0-4 DUP	"	CAS	SVOC	"	"
IR1 SED10 0-4 <del>DUP</del>	"	CAS	METALS	8 OZ.	4°C
IR1 SED10 0-4 <del>DUP</del>	"	CAS	METALS	"	"
IR1 SED10 0-4 <del>DUP</del>	"	DUXBURY	PEST/PCB	8 OZ.	4°C
IR1 SED10 0-4 DUP	"	DUXBURY	PEST/PCB	"	"

Field Activities / Comments / Observations: MORE SMPLS. ID

IR1 SED10 0-4	SED	STL	RAD	16 OZ.	4°C
IR1 SED10 0-4 DUP	"	STL	RAD	"	"

Field Team Leader Signature

1 JAR  
1 JAR

Project No. G601507	Date: 17 MARCH 05	Recorder: SCOTT LOWE
Station ID: IR1 SED 11	On Station: (local)	Off Station: (local)
Northing (NAD83, meters)	Easting (NAD83, meters)	DGPS Accuracy Estimate (± m):
Water depth (ft): 0.0 Ft	Penetration depth (cm): 4.0 Ft	Sample Time: (local) 1045

Sampler (circle one): Ponar (0.04 m<sup>2</sup>)    Stainless/Teflon Scoop    Other MICROCORE

Samples Collected (✓): Sediment Chemical / Physical ✓    Bioassay

Pore Water    Other:

General Sediment Description (circle as appropriate)

Color: Black    Dark Gray    Gray    Brown    Other:

Type: Cobble    Gravel    Sand (coarse-med-fine)    Silt    Clay

Wood chips    Shells or Shell Hash    Other:

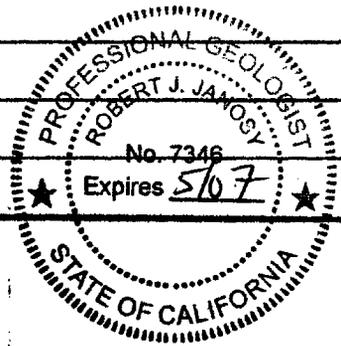
Odor: None    Slight    Moderate    Strong

Petroleum    H2S    Other:

0-2.5' YELLOWISH BROWN 10 YR 5/4 SP GRAVELLY SAND, ~10% GRAVEL, 90% MED SANDS, CLEAN, VERY FIRM, MICACEOUS, WET, NO ODOR, SOME SHELL HASH	2.5'-3.0' YELLOWISH-BROWN 10 YR 5/4 SP SANDY GRAVEL UP TO 0.5 INCH, WELL-ROUNDED W/ MED SANDS, CLEAN, VERY FIRM, SOME SHELL HASH, WET, MICACEOUS, NO ODOR	3.0'-4.0' DARK GREY-BLK GLY 1 2.5/10 Y SP W/ FINE SANDS, CLEAN, VERY FIRM, WET, MICACEOUS, NO ODOR
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Sample ID	Matrix	Lab	Analysis	Container # / Size / Type	Temp(°C) / Pres
IR1 SED 11 0-4	SED	CAS	VOC	ENCORE (3)	Frozen
IR1 SED 11 0-4	SED	CAS	SVOC	8 OZ.	4°C
IR1 SED 11 0-4	SED	CAS	METALS	8 OZ.	4°C
IR1 SED 11 0-4	SED	DUXBURY	PEST/PCB	8 OZ.	4°C
IR1 SED 11 0-4	SED	STL	RAD	16 OZ.	4°C

Field Activities / Comments / Observations:



Field Team Leader Signature: [Signature]

7 JAR

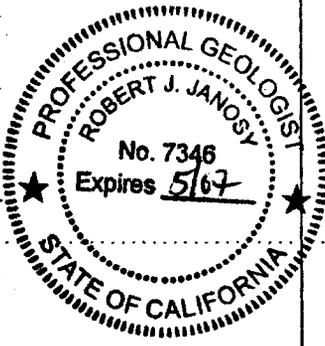
60601-IR15

# Battelle

## ALAMEDA POINT - IR SITE 15 SOIL BORING LOG

Permit Number: Project Number: <i>G601507-212</i> Boring Location: <i>Sq601</i> Date Logged: <i>14 March 05</i> Geologist: <i>R. Janosy</i> Total Depth: <i>2.5'</i> Reviewed by:	Drilling Contractor: <i>NA</i> Driller: <i>NA</i> Drilling Equipment: <i>Hand Auger</i> Drilling Method: <i>Hand Auger</i> Boring Diameter: <i>2 1/2"</i> Sampler Type: <i>bucket auger</i> Hammer Type: <i>NA</i>	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: <i>backfill soil</i> Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading		Blow Counts	Sample Interval	Sample ID	Organic Vapor	Comments
				% Gravel	% Sand					
0										
0			<i>silty SAND, med gm, yellowish brn 10yr GA, subrounded, soft, wet, no odor.</i>	<i>75</i>	<i>25</i>		<i>IR1550C01 0-0.5</i>	<i>0.1</i>	<i>@ 1555</i>	
			<i>silty SAND, fine-very fine gm, greenish grey, soft, wet, no odor</i>	<i>60</i>	<i>40</i>		<i>IR1550C01 2-2.5</i>		<i>@ 1555</i>	
			<i>TD = 2.5'</i>							
5										
10										
15										



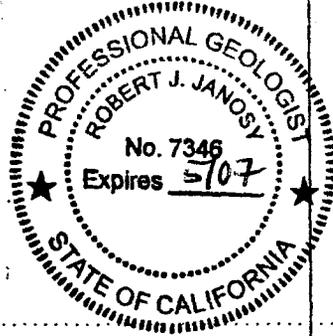
Permit Number: Project Number: <u>6001507-212</u> Boring Location: <u>SOCO2</u> Date Logged: <u>14 March 05</u> Geologist: <u>R. Janosy</u> Total Depth: <u>2.5 ft</u> Reviewed by:	Drilling Contractor: <u>NA</u> Driller: <u>NA</u> Drilling Equipment: <u>Hard Auger</u> Drilling Method: Boring Diameter: <u>2 1/2"</u> Sampler Type: <u>bucket auger</u> Hammer Type: <u>NA</u>	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: <u>backfill</u> Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic # Vapor	Comments
				% Coarse	% Sand	% Fines					
0		SP	SAND, clean, yellowish brn 10YR 5/4, med grn, rounded, micaceous, damp, no odor, loose		100			IRISSOCO2 0-0.5	0.1	@1610	
		SM	silty SAND, brown, med grn, subrounded, firm, wet, no odor		55	35		IRISSOCO2 2-2.5		@1610	
			TD = 2.5 ft								
5											
10											
15											



Permit Number: Project Number: <i>G601507-212</i> Boring Location: <i>SOC03</i> Date Logged: <i>14 March 05</i> Geologist: <i>R. Janosi</i> Total Depth: <i>2.5 ft</i> Reviewed by:	Drilling Contractor: <i>NA</i> Driller: <i>NA</i> Drilling Equipment: <i>Hand auger</i> Drilling Method: Boring Diameter: <i>2 1/2"</i> Sampler Type: <i>Bucket auger</i> Hammer Type: <i>NA</i>	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: Monitoring Device Installed: <input type="checkbox"/> Yes <input type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic % Vapor	Comments
				% Gravel	% Sand	% Fines					
0		<i>SM</i>	silty SAND, yellowish brn, 10YR 6/4 med grn, subrounded, firm, moist, roots, no odor  same, but cleaner SAND, wet, no odor.  TD = 2.5 ft.	<i>65</i>	<i>35</i>			<i>IR15SOC03</i> <i>0-0.5</i>	<i>0.1</i>	<i>@ 1425</i>	
				<i>20</i>	<i>70</i>			<i>IR15SOC08</i> <i>2-2.5</i>		<i>@ 1425</i>	
5											
10											
15											



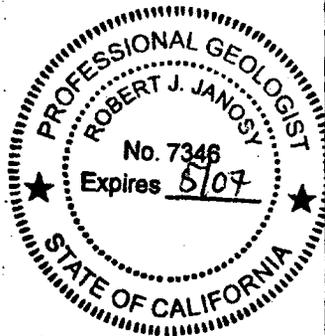
Permit Number: Project Number: <b>6601507-212</b> Boring Location: <b>SOCDA</b> Date Logged: <b>14 March 05</b> Geologist: <b>R. Janosy</b> Total Depth: <b>2.5 ft</b> Reviewed by:	Drilling Contractor: <b>NA</b> Driller: <b>NA</b> Drilling Equipment: <b>Hand Auger</b> Drilling Method: <b>NA</b> Boring Diameter: <b>2 1/2"</b> Sampler Type: <b>Bucket Auger</b> Hammer Type: <b>NA</b>	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: <b>Soil</b> Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic vapor	Comments
				% Gravel	% Sand	% Fines					
0		SM	silty SAND, yellowish brn 10YR 5/4, med grn, rounded, fm, roots, damp, no odor	65	35			IR15SOC04 0-0.5	0.1	@1640	
		SC	SILT, yellowish grey, mottled fm-stiff, slightly plastic, no odor, wet					IR15SOC04 2-2.5		@1640	
5											
10											
15											



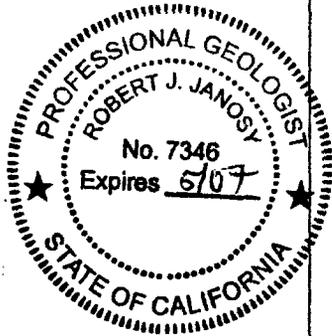
Permit Number: Project Number: <b>G601507-212</b> Boring Location: <b>SOCOS</b> Date Logged: <b>14 March 05</b> Geologist: <b>R. Janosy</b> Total Depth: <b>2.5'</b> Reviewed by:	Drilling Contractor: <b>NA</b> Driller: <b>NA</b> Drilling Equipment: <b>Hand auger</b> Drilling Method: Boring Diameter: <b>2 1/2" "</b> Sampler Type: <b>Bucket Auger</b> Hammer Type: <b>NA</b>	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: <b>Soil</b> Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic Vapor	Comments
				% Gravel	% Sand	% Fines					
0		SM	silty SAND, med grn, drk yellowish brn, 10%R 4/4, rounded, moist, no odor, roots.						IRISSOCOS 0-0.5	oil	@ 1700
		SP	SAND, med grn, yellowish brn 10%R SK clean, rounded, firm, wet, no odor, micaceous. TD = 2.5'						IRISSOCOS 2-2.5		@ 1700
5											
10											
15											



Permit Number: Project Number: 6601507-212 Boring Location: S0C06 Date Logged: 14 March 05 Geologist: R. Janosy Total Depth: 2.5 Reviewed by:	Drilling Contractor: NA Driller: NA Drilling Equipment: Hand Auger Drilling Method: Boring Diameter: 2 1/2" Sampler Type: Bucket Auger Hammer Type: NA	Northing (NAD 83): Easting (NAD 83): Surface Elevation (NAVD 88): Borehole Abandoned: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Backfill Method: SOT Monitoring Device Installed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type:
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Depth (feet bgs)	Lithology	USCS Symbol	Sample Description	Grading			Blow Counts	Sample Interval	Sample ID	Organic Vapor	Comments
				% Gravel	% Sand	% Fines					
0 - 0.5		SM	silty SAND, greenish grey, med gm, loose, subrounded, abundant roots, organic odor, saturated	55	48			IRISSOCOS 0-0.5		a. @ 1775	
0.5 - 2.5		CL	sandy CLAY, greyish green sand is fine gm, very soft, plastic, saturated, organic odor	10	90			IRISSOCOS 2-2.5			
			TD = 2.5 ft								



**APPENDIX B**  
**WASTE MANIFEST**

R/H 05705060

**NON-HAZARDOUS WASTE MANIFEST**

1. Generator's US EPA ID No. **CA.2.1.7.00.23.236** Manifest Document No. **15807**

2. Page 1 of 1

3. Generator's Name and Mailing Address **Poco San Francisco Bay Area: Alameda St Site 2 Alameda Point, Ca 94501**  
4. Generator's Phone (570) **719-5946 Gregory Grace**

5. Transporter 1 Company Name **Don Beste TRSA** 6. US EPA ID Number **CA1982513637**

A. Transporter's Phone **1-800-838-1477**

7. Transporter 2 Company Name

B. Transporter's Phone

9. Designated Facility Name and Site Address **Chemical Waste Management 35351 Old Sky Line Rd Kettleman City, Ca 93239** 10. US EPA ID Number **CA7000646117**

C. Facility's Phone **559-386-9711**

11. Waste Shipping Name and Description

12. Containers No. Type 13. Total Quantity 14. Unit Wt/Vol

a. **Non-Hazardous Wastes, Liquid**

**0.01 DM 0.055 G**

b.

c.

d.

D. Additional Descriptions for Materials Listed Above **Profile - a) EC 2067**

E. Handling Codes for Wastes Listed Above **03**

15. Special Handling Instructions and Additional Information **Work proper PPE when handling Material 24 hour emergency # 1-800-424-9300**

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name **Gregory J. Grace**

Signature **Gregory J. Grace** Month Day Year **05 27 05**

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name **Daniel Miranda**

Signature **D Miranda** Month Day Year **05 27 05**

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 19.

Printed/Typed Name **Ramona Ramos**

Signature **RR** Month Day Year **05 27 05**

GENERATOR

TRANSPORTER

FACILITY

23896305  
 IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-9802; WITHIN CALIFORNIA, CALL 1-800-852-7550  
 GENERATOR  
 FACILITY

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No. CAZ17002323603812		Manifest Document No.		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.							
3. Generator's Name and Mailing Address Roice San Francisco Bay Area Alameda #R Site 2 Alameda Point, Ca 94501						A. State Manifest Document Number 23896305									
4. Generator's Phone 510 749-5940 Gregory Grace						B. State Generator's ID									
5. Transporter 1 Company Name Den Beste Tran						C. State Transporter's ID (Reserved)									
6. US EPA ID Number CAD982513632						D. Transporter's Phone 7800-838-1477									
7. Transporter 2 Company Name						E. State Transporter's ID (Reserved)									
8. US EPA ID Number						F. Transporter's Phone									
9. Designated Facility Name and Site Address Chemical Waste Management 35251 BID SKYLINE RD Kettleman City, Ca 93239						G. State Facility ID CAT000646117									
10. US EPA ID Number						H. Facility's Phone 559-386-9711									
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number) Non-HAZARDOUS Waste, Solid (Soil with Trace metals)						12. Containers		13. Total Quantity		14. Unit		1. Waste Number			
						Na. Type		Quantity		Wt/Vol		State		EPA/Other	
						003 D,M		01500		P		181			
15. Special Handling Instructions and Additional Information Work Proper PPE When Handling Material 24 HOUR Emergency # 1-800-424-9208						K. Handling Codes for Wastes Listed Above a) 03 b) N/A									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.  If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.															
Printed/Typed Name Gregory J. Grace				Signature Gregory J. Grace				Month 05		Day 27		Year 05			
17. Transporter 1 Acknowledgement of Receipt of Materials						Signature Daniel Miranda				Month 05		Day 27		Year 05	
18. Transporter 2 Acknowledgement of Receipt of Materials						Signature				Month		Day		Year	
19. Discrepancy Indication Space															
20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 12															
Printed/Typed Name Ramon Ramos				Signature R Ramos				Month 05		Day 27		Year 05			

DO NOT WRITE BELOW THIS LINE.

Yellow: TSDF SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS.  
 (Generators who submit hazardous waste for transport out-of-state, produce completed copy of this copy and send to DTSC within 30 days.)

**APPENDIX C**

**STATISTICAL SUMMARY TABLES AND ANALYTICAL DATA IN ELECTRONIC FORMAT**

Table C-1. Summary of PCDD/PCDF Results for IR Site 1 Burn Area Soil Sampling

Analyte	Unit	Number of Samples			Detects			Non-Detects	
		Total	Detects	Frequency of Detection	Minimum Detected Concentration	Mean Detected Concentration	Maximum Detected Concentration	Minimum Method Detection Limit	Maximum Method Detection Limit
<b>PCDDs/PCDFs</b>									
1,2,3,4,6,7,8-HpCDD	ng/kg dry weight	14	14	1	15.56	720.46	2347.37	0.20	4.83
1,2,3,4,6,7,8-HpCDF	ng/kg dry weight	14	14	1	2.55	178.79	773.64	0.12	1.41
1,2,3,4,7,8,9-HpCDF	ng/kg dry weight	14	11	0.79	0.84	13.71	50.18	0.16	1.92
1,2,3,4,7,8-HxCDD	ng/kg dry weight	14	13	0.93	0.22	18.54	50.30	0.05	0.97
1,2,3,4,7,8-HxCDF	ng/kg dry weight	14	14	1	0.94	89.39	338.25	0.09	1.89
1,2,3,6,7,8-HxCDD	ng/kg dry weight	14	13	0.93	0.68	37.86	133.10	0.04	0.81
1,2,3,6,7,8-HxCDF	ng/kg dry weight	14	14	1	0.40	28.60	122.38	0.09	1.97
1,2,3,7,8,9-HxCDD	ng/kg dry weight	14	13	0.93	0.93	63.81	180.10	0.04	0.82
1,2,3,7,8,9-HxCDF	ng/kg dry weight	14	7	0.5	0.87	3.41	9.07	0.11	2.43
1,2,3,7,8-PeCDD	ng/kg dry weight	14	13	0.93	0.27	10.18	46.90	0.05	0.56
1,2,3,7,8-PeCDF	ng/kg dry weight	14	14	1	0.29	20.76	86.27	0.13	2.26
2,3,4,6,7,8-HxCDF	ng/kg dry weight	14	14	1	0.61	37.20	152.88	0.10	2.11
2,3,4,7,8-PeCDF	ng/kg dry weight	14	14	1	0.57	36.24	154.39	0.13	2.11
2,3,7,8-TCDD	ng/kg dry weight	14	12	0.86	0.47	2.98	12.70	0.05	0.27
2,3,7,8-TCDF	ng/kg dry weight	14	12	0.86	2.65	34.13	85.10	0.72	6.42
OCDD	ng/kg dry weight	14	14	1	53.14	3210.96	10090.43	0.14	3.57
OCDF	ng/kg dry weight	14	13	0.93	1.71	286.70	1514.88	0.16	3.55
TETRACHLORODIBENZOFURAN	ng/kg dry weight	14	14	1	7.89	725.50	3012.49	0.11	0.85

Table C-1. Summary of PCDD/PCDF Results for IR Site 1 Burn Area Soil Sampling

Analyte	Unit	Number of Samples			Detects			Non-Detects	
		Total	Detects	Frequency of Detection	Minimum Detected Concentration	Mean Detected Concentration	Maximum Detected Concentration	Minimum Method Detection Limit	Maximum Method Detection Limit
<b>PCDDs/PCDFs</b>									
1,2,3,4,6,7,8-HpCDD	ng/kg dry weight	14	14	1	15.56	720.46	2347.37	0.20	4.83
1,2,3,4,6,7,8-HpCDF	ng/kg dry weight	14	14	1	2.55	178.79	773.64	0.12	1.41
1,2,3,4,7,8,9-HpCDF	ng/kg dry weight	14	11	0.79	0.84	13.71	50.18	0.16	1.92
1,2,3,4,7,8-HxCDD	ng/kg dry weight	14	13	0.93	0.22	18.54	50.30	0.05	0.97
1,2,3,4,7,8-HxCDF	ng/kg dry weight	14	14	1	0.94	89.39	338.25	0.09	1.89
1,2,3,6,7,8-HxCDD	ng/kg dry weight	14	13	0.93	0.68	37.86	133.10	0.04	0.81
1,2,3,6,7,8-HxCDF	ng/kg dry weight	14	14	1	0.40	28.60	122.38	0.09	1.97
1,2,3,7,8,9-HxCDD	ng/kg dry weight	14	13	0.93	0.93	63.81	180.10	0.04	0.82
1,2,3,7,8,9-HxCDF	ng/kg dry weight	14	7	0.5	0.87	3.41	9.07	0.11	2.43
1,2,3,7,8-PeCDD	ng/kg dry weight	14	13	0.93	0.27	10.18	46.90	0.05	0.56
1,2,3,7,8-PeCDF	ng/kg dry weight	14	14	1	0.29	20.76	86.27	0.13	2.26
2,3,4,6,7,8-HxCDF	ng/kg dry weight	14	14	1	0.61	37.20	152.88	0.10	2.11
2,3,4,7,8-PeCDF	ng/kg dry weight	14	14	1	0.57	36.24	154.39	0.13	2.11
2,3,7,8-TCDD	ng/kg dry weight	14	12	0.86	0.47	2.98	12.70	0.05	0.27
2,3,7,8-TCDF	ng/kg dry weight	14	12	0.86	2.65	34.13	85.10	0.72	6.42
OCDD	ng/kg dry weight	14	14	1	53.14	3210.96	10090.43	0.14	3.57
OCDF	ng/kg dry weight	14	13	0.93	1.71	286.70	1514.88	0.16	3.55
TETRACHLORODIBENZOFURAN	ng/kg dry weight	14	14	1	7.89	725.50	3012.49	0.11	0.85

Table C-2. Summary of STLC and TCLP Results for IR Site 1 Burn Area Soil Sampling

Analyte	Unit	Number of Samples			Detects			Non-Detects	
		Total	Detects	Frequency of Detection	Minimum Detected Concentration	Mean Detected Concentration	Maximum Detected Concentration	Minimum Method Detection Limit	Maximum Method Detection Limit
<b>STLC Metals</b>									
Antimony	mg/L	5	4	0.8	0.66	1.21	1.78	0.25	0.25
Arsenic	mg/L	5	5	1	0.05	0.18	0.32	0.04	0.04
Barium	mg/L	5	5	1	4.60	7.34	11.60	2.50	2.50
Beryllium	mg/L	5	0	0				0.03	0.03
Cadmium	mg/L	5	2	0.4	0.11	0.63	1.14	0.03	0.03
Chromium	mg/L	5	5	1	0.57	1.23	1.96	0.03	0.03
Cobalt	mg/L	5	5	1	0.13	0.23	0.32	0.05	0.05
Copper	mg/L	5	2	0.4	0.06	0.39	0.72	0.05	0.05
Lead	mg/L	5	5	1	0.57	12.83	34.10	0.25	0.25
Mercury	mg/L	5	0	0				0.04	0.04
Molybdenum	mg/L	5	4	0.8	0.13	0.22	0.45	0.05	0.05
Nickel	mg/L	5	5	1	0.75	1.73	2.40	0.10	0.10
Selenium	mg/L	5	0	0				0.04	0.04
Silver	mg/L	5	0	0				0.05	0.05
Thallium	mg/L	5	0	0				0.05	0.05
Vanadium	mg/L	5	5	1	0.64	1.11	1.52	0.05	0.05
Zinc	mg/L	5	5	1	2.35	35.67	48.40	0.05	0.05
<b>STLC SVOCs/PAHs</b>									
2,4,5-TRICHLOROPHENOL	mg/L	5	0	0				0.009	0.009
2,4,6-TRICHLOROPHENOL	mg/L	5	0	0				0.007	0.007
2,4-DINITROTOLUENE	mg/L	5	0	0				0.01	0.01
2-METHYLPHENOL	mg/L	5	0	0				0.009	0.009
4-METHYLPHENOL	mg/L	5	0	0				0.005	0.005
HEXACHLOROBUTADIENE	mg/L	5	0	0				0.006	0.006
HEXACHLOROETHANE	mg/L	5	0	0				0.005	0.005
Hexachlorobenzene	mg/L	5	0	0				0.009	0.009
NITROBENZENE	mg/L	5	0	0				0.008	0.008
PENTACHLOROPHENOL	mg/L	5	0	0				0.01	0.01
Pyridine	mg/L	5	0	0				0.25	0.25
<b>STLC VOCs</b>									
1,4-DICHLOROBENZENE	ug/L	5	0	0				35	35
BENZENE	ug/L	5	0	0				42	42
CARBON TETRACHLORIDE	ug/L	5	0	0				50	50
CHLOROETHYLENE	ug/L	5	0	0				38	38
CHLOROFORM	ug/L	5	0	0				39	39
ETHYLENE DICHLORIDE	ug/L	5	0	0				46	46
METHYL ETHYL KETONE	ug/L	5	0	0				1300	1300
TETRACHLOROETHYLENE	ug/L	5	0	0				44	44
TRICHLOROETHYLENE	ug/L	5	0	0				48	48
VINYL CHLORIDE	ug/L	5	0	0				85	85
VINYLDENE CHLORIDE	ug/L	5	0	0				48	48
<b>STLC Pesticides/Herbicides</b>									
Chlordane	mg/L	5	0	0				0.005	0.005
Endrin	mg/L	5	0	0				0.0005	0.0005
Heptachlor	mg/L	5	0	0				0.0005	0.0005
Heptachlor epoxide	mg/L	5	0	0				0.0005	0.0005
Methoxychlor	mg/L	5	0	0				0.001	0.001
Toxaphene	mg/L	5	0	0				0.01	0.01
g-BHC	mg/L	5	0	0				0.0005	0.0005
2,4-Dichlorophenoxyacetic acid	ug/L	5	0	0				100	100
Sivex	ug/L	5	0	0				20	20
<b>TCLP Metals</b>									
Arsenic	mg/L	7	1	0.14	0.07	0.07	0.07	0.06	0.06
Barium	mg/L	7	7	1	1.50	1.76	2.30	0.50	0.50
Cadmium	mg/L	7	6	0.86	0.01	0.10	0.19	0.005	0.005
Chromium	mg/L	7	0	0				0.002	0.002
Lead	mg/L	7	5	0.71	0.07	0.19	0.36	0.04	0.04
Mercury	mg/L	7	0	0				0.0004	0.0004
Selenium	mg/L	7	0	0				0.05	0.05
Silver	mg/L	7	0	0				0.003	0.003
<b>TCLP SVOCs/PAHs</b>									
2,4,5-TRICHLOROPHENOL	mg/L	7	0	0				0.009	0.009
2,4,6-TRICHLOROPHENOL	mg/L	7	0	0				0.007	0.007
2,4-DINITROTOLUENE	mg/L	7	0	0				0.01	0.01
2-METHYLPHENOL	mg/L	7	0	0				0.009	0.009
4-METHYLPHENOL	mg/L	7	0	0				0.005	0.005
HEXACHLOROBUTADIENE	mg/L	7	0	0				0.006	0.006
HEXACHLOROETHANE	mg/L	7	0	0				0.005	0.005
Hexachlorobenzene	mg/L	7	0	0				0.009	0.009
NITROBENZENE	mg/L	7	0	0				0.008	0.008
PENTACHLOROPHENOL	mg/L	7	0	0				0.01	0.01
Pyridine	mg/L	7	0	0				0.25	0.25
<b>TCLP VOCs</b>									
1,4-DICHLOROBENZENE	mg/L	7	0	0				0.09	0.09
BENZENE	mg/L	7	0	0				0.11	0.11
CARBON TETRACHLORIDE	mg/L	7	0	0				0.13	0.13
CHLOROETHYLENE	mg/L	7	0	0				0.09	0.09
CHLOROFORM	mg/L	7	0	0				0.10	0.10
ETHYLENE DICHLORIDE	mg/L	7	0	0				0.12	0.12
METHYL ETHYL KETONE	mg/L	7	0	0				3.30	3.30
TETRACHLOROETHYLENE	mg/L	7	0	0				0.11	0.11
TRICHLOROETHYLENE	mg/L	7	0	0				0.12	0.12
VINYL CHLORIDE	mg/L	7	0	0				0.02	0.02
VINYLDENE CHLORIDE	mg/L	7	0	0				0.12	0.12
<b>TCLP Pesticides/Herbicides</b>									
Chlordane	mg/L	7	0	0				0.005	0.005
Endrin	mg/L	7	0	0				0.0005	0.0005
Heptachlor	mg/L	7	0	0				0.0005	0.0005
Heptachlor epoxide	mg/L	7	0	0				0.0005	0.0005
Methoxychlor	mg/L	7	0	0				0.001	0.001
Toxaphene	mg/L	7	0	0				0.01	0.01
g-BHC	mg/L	7	0	0				0.0005	0.0005
2,4-Dichlorophenoxyacetic acid	ug/L	7	0	0				100	100
Sivex	ug/L	7	0	0				20	20

Table C-3. Summary of Analytical Results for IR Site 1 Beach Area Soil Sampling

Analyte	Unit	Number of Samples			Detects			Non-Detects	
		Total	Detects	Frequency of Detection	Minimum Detected Concentration	Mean Detected Concentration	Maximum Detected Concentration	Minimum Method Detection Limit	Maximum Method Detection Limit
<b>Metals</b>									
Aluminum	mg/kg dry weight	21	21	1	4730	11491.67	53700	10	11
Antimony	mg/kg dry weight	21	21	1	0.14	3.07	36.7	0.03	0.03
Arsenic	mg/kg dry weight	21	21	1	1.84	33.33	634	0.05	1.06
Berium	mg/kg dry weight	21	21	1	40.7	125.95	454	0.2	0.2
Beryllium	mg/kg dry weight	21	21	1	0.1	0.27	0.6	0.1	0.1
Cadmium	mg/kg dry weight	21	17	0.81	1.4	11.04	102	0.8	0.9
Chromium	mg/kg dry weight	21	21	1	22.4	119.25	1510	0.6	0.7
Cobalt	mg/kg dry weight	21	21	1	4.4	22.99	354	2.1	2.3
Copper	mg/kg dry weight	21	21	1	13.1	455.42	6160	0.9	1
Iron	mg/kg dry weight	21	21	1	9970	19374.76	54900	3.1	3.4
Lead	mg/kg dry weight	21	21	1	8.74	2587.91	44600	0.02	21.2
Magnesium	mg/kg dry weight	21	21	1	2160	3878.81	9560	0.5	0.6
Manganese	mg/kg dry weight	21	21	1	142	303.45	852	0.3	0.3
Mercury	ng/g dry weight	21	21	1	21.4	196.45	836	1.5	1.5
Molybdenum	mg/kg dry weight	21	4	0.19	2.9	15.7	48.9	2.1	2.3
Nickel	mg/kg dry weight	21	21	1	23.2	112.44	1540	0.04	2.27
Selenium	mg/kg dry weight	21	1	0.05	4.2	4.2	4.2	0.1	0.1
Silver	mg/kg dry weight	21	21	1	0.037	1.35	9.58	0.003	0.003
Thallium	mg/kg dry weight	21	21	1	0.021	0.05	0.14	0.002	0.002
Vanadium	mg/kg dry weight	21	21	1	18.8	30.32	86	0.9	1
Zinc	mg/kg dry weight	21	21	1	33.9	232.65	1031.5	0.5	0.6
<b>SVOCs/PAHs</b>									
1,2,4,5-TETRACHLOROBENZEN	ug/kg dry weight	21	0	0				5.3	490
1-AMINO-4-NITROBENZENE	ug/kg dry weight	21	0	0				3.7	340
2,4,5-TRICHLOROPHENOL	ug/kg dry weight	21	0	0				3.2	300
2,4,6-TRICHLOROPHENOL	ug/kg dry weight	21	0	0				2	180
2,4-DICHLOROPHENOL	ug/kg dry weight	21	0	0				2	180
2,4-DIMETHYLPHENOL	ug/kg dry weight	21	0	0				5.9	550
2,4-DINITROPHENOL	ug/kg dry weight	21	0	0				39	3600
2,4-DINITROTOLUENE	ug/kg dry weight	21	1	0.05	47	47	47	3	280
2,6-DINITROTOLUENE	ug/kg dry weight	21	0	0				3	280
2-CHLORONAPHTHALENE	ug/kg dry weight	21	0	0				3.9	360
2-CHLOROPHENOL	ug/kg dry weight	21	0	0				1.9	170
2-METHYLPHENOL	ug/kg dry weight	21	0	0				3.7	340
2-Methylnaphthalene	ug/kg dry weight	21	7	0.33	1.5	175.07	900	1.3	120
2-NITROANILINE	ug/kg dry weight	21	0	0				2.9	270
2-NITROPHENOL	ug/kg dry weight	21	0	0				2.8	260
3,3'-DICHLOROBENZIDINE	ug/kg dry weight	21	0	0				4	370
3-NITROANILINE	ug/kg dry weight	21	0	0				2.8	260
4,6-DINITRO-2-METHYLPHENO	ug/kg dry weight	21	0	0				1.9	170
4-BROMOPHENYL PHENYL ETHE	ug/kg dry weight	21	0	0				1.5	140
4-CHLORO-3-METHYLPHENOL	ug/kg dry weight	21	0	0				2.3	210
4-CHLOROANILINE	ug/kg dry weight	21	0	0				2.3	210
4-CHLOROPHENYL PHENYL ETH	ug/kg dry weight	21	0	0				2.2	200
4-METHYLPHENOL	ug/kg dry weight	21	2	0.1	13	96.5	180	3.1	290
4-NITROPHENOL	ug/kg dry weight	21	0	0				32	3000
ACETOPHENONE	ug/kg dry weight	21	1	0.05	40	40	40	13	1200
ATRAZINE	ug/kg dry weight	21	0	0				2.4	220
Acenaphthene	ug/kg dry weight	21	16	0.76	1.5	1659.21	19000	1.1	99
Acenaphthylene	ug/kg dry weight	21	8	0.38	2.9	63.63	160	1.5	140
Anthracene	ug/kg dry weight	21	19	0.9	6	1870.92	20000	1.5	140
BENZALDEHYDE	ug/kg dry weight	21	0	0				9.4	880
BIS(2-CHLOROETHOXY)METHANE	ug/kg dry weight	21	0	0				1.4	130
BIS(2-CHLOROETHYL) ETHER	ug/kg dry weight	21	0	0				2.6	240
BIS(2-CHLOROISOPROPYL) ET	ug/kg dry weight	21	0	0				1.3	120
BUTYL BENZYL PHTHALATE	ug/kg dry weight	21	3	0.14	34	97.33	210	1.6	150
Benzo(a)anthracene	ug/kg dry weight	21	21	1	17	10881.33	110000	1.5	700
Benzo(a)pyrene	ug/kg dry weight	21	21	1	31	16540.57	190000	1.8	800
Benzo(b)fluoranthene	ug/kg dry weight	21	21	1	28	18228.38	190000	2.7	1300
Benzo(g,h,i)perylene	ug/kg dry weight	21	21	1	52	10976.71	120000	2.5	1200
Benzo(k)fluoranthene	ug/kg dry weight	21	19	0.9	17	7474.74	78000	2.7	1300
Biphenyl	ug/kg dry weight	21	0	0				5.2	480
CAPROLACTAM	ug/kg dry weight	21	0	0				13	1200
CARBAZOLE	ug/kg dry weight	21	18	0.86	1.5	1372.02	14000	1.4	130
Chrysene	ug/kg dry weight	21	21	1	29	13519	140000	1.5	700
Di-n-BUTYL PHTHALATE	ug/kg dry weight	21	0	0				2.8	260
Di-n-OCTYL PHTHALATE	ug/kg dry weight	21	0	0				1.3	600
DIETHYL PHTHALATE	ug/kg dry weight	21	0	0				3.8	350
DIETHYLHEXYL PHTHALATE	ug/kg dry weight	21	6	0.29	44	271.5	440	1.9	170
DIMETHYL PHTHALATE	ug/kg dry weight	21	0	0				2	180
Dibenz(a,h)anthracene	ug/kg dry weight	21	19	0.9	8	3098.16	30000	2.4	1100
Dibenzofuran	ug/kg dry weight	21	4	0.19	26	794	2600	1.4	130
Fluoranthene	ug/kg dry weight	21	21	1	16	15586.86	160000	2.4	1100
Fluorene	ug/kg dry weight	21	11	0.52	18	836.68	7000	1.9	170
HEXACHLOROBUTADIENE	ug/kg dry weight	21	0	0				1.5	140
HEXACHLOROCCYCLOPENTADIENE	ug/kg dry weight	21	0	0				16	1500
HEXACHLOROETHANE	ug/kg dry weight	21	0	0				2.4	220
Hexachlorobenzene	ug/kg dry weight	21	0	0				2.3	210
ISOPHORONE	ug/kg dry weight	21	0	0				1.8	160
Indeno(1,2,3-cd)pyrene	ug/kg dry weight	21	20	0.95	43	12258.9	130000	2.1	950
N-NITROSODI-n-PROPYLAMINE	ug/kg dry weight	21	0	0				3.5	320
N-NITROSODIPHENYLAMINE	ug/kg dry weight	21	2	0.1	170	180	190	2.4	220
NITROBENZENE	ug/kg dry weight	21	0	0				2.2	200
Naphthalene	ug/kg dry weight	21	9	0.43	2.4	183.44	1200	1.4	130
PENTACHLOROPHENOL	ug/kg dry weight	21	0	0				9.1	850
PHENOL	ug/kg dry weight	21	1	0.05	21	21	21	2.1	190
Phenanthrene	ug/kg dry weight	21	21	1	9.8	6208.85	81000	1.4	650
Pyrene	ug/kg dry weight	21	21	1	21	16720.38	170000	1.4	650
<b>VOCs</b>									
1,1,2,2-TETRACHLOROETHANE	ug/kg dry weight	21	0	0				0.79	1.5
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	ug/kg dry weight	21	0	0				0.79	1.5
1,1,2-TRICHLOROETHANE	ug/kg dry weight	21	0	0				0.74	1.4
1,2,3-TRICHLOROBENZENE	ug/kg dry weight	21	0	0				0.96	1.8
1,2,4-TRICHLOROBENZENE	ug/kg dry weight	21	0	0				0.82	1.5
1,2-DIBROMO-3-CHLOROPROPA	ug/kg dry weight	21	0	0				0.91	1.7

Table C-3. Summary of Analytical Results for IR Site 1 Beach Area Soil Sampling

Analyte	Unit	Number of Samples			Detects			Non-Detects	
		Total	Detects	Frequency of Detection	Minimum Detected Concentration	Mean Detected Concentration	Maximum Detected Concentration	Minimum Method Detection Limit	Maximum Method Detection Limit
<b>VOCs (continued)</b>									
1,2-DIBROMOETHANE	ug/kg dry weight	21	0	0				0.84	1.6
1,2-DICHLOROBENZENE	ug/kg dry weight	21	0	0				0.69	1.3
1,2-DICHLOROPROPANE	ug/kg dry weight	21	0	0				0.77	1.4
1,3-DICHLOROBENZENE	ug/kg dry weight	21	0	0				0.76	1.4
1,4-DICHLOROBENZENE	ug/kg dry weight	21	0	0				0.87	1.6
2-HEXANONE	ug/kg dry weight	21	0	0				6.5	12
4-METHYL-2-PENTANONE	ug/kg dry weight	21	0	0				5.9	11
ACETONE	ug/kg dry weight	21	1	0.05	18	18	18	11	20
BENZENE	ug/kg dry weight	21	0	0				0.84	1.6
BROMOCHLOROMETHANE	ug/kg dry weight	21	0	0				1.1	1.9
BROMODICHLOROMETHANE	ug/kg dry weight	21	0	0				0.57	1.1
BROMOFORM	ug/kg dry weight	21	0	0				0.82	1.5
BROMOMETHANE	ug/kg dry weight	21	0	0				0.85	1.6
CARBON DISULFIDE	ug/kg dry weight	21	0	0				1.6	2.9
CARBON TETRACHLORIDE	ug/kg dry weight	21	0	0				0.64	1.2
CHLOROBENZENE	ug/kg dry weight	21	0	0				0.75	1.4
CHLOROETHANE	ug/kg dry weight	21	0	0				0.83	1.5
CHLOROFORM	ug/kg dry weight	21	0	0				0.61	1.1
CHLOROMETHANE	ug/kg dry weight	21	1	0.05	1.2	1.2	1.2	1.1	1.9
CYCLOHEXANE	ug/kg dry weight	20	0	0				0.72	0.91
CYCLOHEXANE, METHYL-	ug/kg dry weight	20	0	0				0.76	0.96
DIBROMOCHLOROMETHANE	ug/kg dry weight	21	0	0				0.64	1.2
DICHLORODIFLOROMETHANE	ug/kg dry weight	21	0	0				0.75	1.4
DICHLOROMETHANE	ug/kg dry weight	21	4	0.19	2.7	3.73	6.2	2.7	4.8
Diisopropyl Ether	ug/kg dry weight	21	0	0				0.37	0.65
ETHYL BENZENE	ug/kg dry weight	21	0	0				0.61	1.1
ETHYLENE DICHLORIDE	ug/kg dry weight	21	0	0				0.72	1.3
ETHYLIDENE DICHLORIDE	ug/kg dry weight	21	0	0				0.83	1.5
ISOPROPYLBENZENE	ug/kg dry weight	21	0	0				0.73	1.3
METHANE, TRICHLOROFLUORO-	ug/kg dry weight	21	0	0				0.78	1.4
METHYL CHLOROFORM	ug/kg dry weight	21	0	0				0.61	1.1
METHYL ETHYL KETONE	ug/kg dry weight	21	0	0				13	23
METHYL tert-BUTYL ETHER	ug/kg dry weight	21	0	0				0.69	1.3
Methyl Acetate	ug/kg dry weight	20	0	0				0.78	0.99
Naphthalene	ug/kg dry weight	21	0	0				0.95	1.8
STYRENE	ug/kg dry weight	21	0	0				0.78	1.4
TETRACHLOROETHYLENE	ug/kg dry weight	21	0	0				0.33	0.6
TOLUENE	ug/kg dry weight	21	0	0				0.9	1.7
TRICHLOROETHYLENE	ug/kg dry weight	21	1	0.05	0.82	0.82	0.82	0.3	0.54
VINYL CHLORIDE	ug/kg dry weight	21	0	0				0.66	1.2
VINYLDENE CHLORIDE	ug/kg dry weight	21	0	0				0.76	1.4
cis-1,2-DICHLOROETHENE	ug/kg dry weight	21	0	0				0.89	1.6
cis-1,3-DICHLOROPROPENE	ug/kg dry weight	21	0	0				0.81	1.5
m,p-XYLENE	ug/kg dry weight	21	0	0				1.6	2.9
o-XYLENE	ug/kg dry weight	21	0	0				0.74	1.4
trans-1,2-DICHLOROETHENE	ug/kg dry weight	21	0	0				0.78	1.4
trans-1,3-DICHLOROPROPENE	ug/kg dry weight	21	0	0				0.64	1.2
<b>Pesticides</b>									
24'-DDD	ng/g dry weight	21	18	0.86	0.43	6.42	28.44	0.01	0.07
24'-DDE	ng/g dry weight	21	3	0.14	0.28	0.32	0.37	0.02	0.03
24'-DDT	ng/g dry weight	21	19	0.9	0.1	1.46	17.32	0.01	0.07
44'-DDD	ng/g dry weight	21	16	0.76	0.45	4.16	31.02	0.03	0.17
44'-DDE	ng/g dry weight	21	18	0.86	0.1	4.8	48.83	0.01	0.37
44'-DDT	ng/g dry weight	21	18	0.86	0.26	13.92	171.19	0.01	0.28
ALDRIN	ng/g dry weight	21	1	0.05	0.26	0.26	0.26	0.03	0.03
Dieldrin	ng/g dry weight	21	12	0.57	0.49	2.93	16.66	0.01	0.42
Endosulfan I	ng/g dry weight	21	0	0				0.04	0.04
Endosulfan II	ng/g dry weight	21	11	0.52	0.11	0.85	2.58	0.03	0.04
Endosulfan Sulfate	ng/g dry weight	21	8	0.38	0.5	2.85	13.57	0.02	0.35
Endrin	ng/g dry weight	21	0	0				0.03	0.03
Endrin Aldehyde	ng/g dry weight	21	17	0.81	0.14	1.53	14.91	0.03	0.04
Endrin ketone	ng/g dry weight	21	1	0.05	0.53	0.53	0.53	0.02	0.03
Heptachlor	ng/g dry weight	21	2	0.1	0.07	0.12	0.16	0.02	0.03
Heptachlor epoxide	ng/g dry weight	21	1	0.05	0.08	0.08	0.08	0.02	0.03
Methoxychlor	ng/g dry weight	21	6	0.29	1.72	6.33	20.53	0.6	3.18
Toxaphene	ng/g dry weight	21	0	0				5.73	8.16
a-Chlordane	ng/g dry weight	21	17	0.81	0.11	0.93	5.95	0.02	0.03
a-HCH	ng/g dry weight	21	0	0				0.06	0.08
b-HCH	ng/g dry weight	21	0	0				0.05	0.08
cis-nonachlor	ng/g dry weight	21	10	0.48	0.27	0.82	2.17	0.02	0.02
d-HCH	ng/g dry weight	21	0	0				0.04	0.05
g-BHC	ng/g dry weight	21	1	0.05	0.3	0.3	0.3	0.02	0.03
g-Chlordane	ng/g dry weight	21	7	0.33	0.23	1.33	5.57	0.01	0.02
trans-nonachlor	ng/g dry weight	21	15	0.71	0.09	0.91	4.82	0.02	0.02
<b>PCBs</b>									
Aroclor 1016	ng/g dry weight	21	0	0				5.72	8.16
Aroclor 1221	ng/g dry weight	21	0	0				5.72	8.16
Aroclor 1232	ng/g dry weight	21	0	0				5.72	8.16
Aroclor 1242	ng/g dry weight	21	0	0				5.72	8.16
Aroclor 1248	ng/g dry weight	21	1	0.05	61.29	61.29	61.29	5.72	8.16
Aroclor 1254	ng/g dry weight	21	2	0.1	90.92	158.77	226.61	5.72	8.16
Aroclor 1260	ng/g dry weight	21	9	0.43	47.89	223.28	596.91	5.72	8.16
<b>Radionuclides</b>									
RADIUM 226	pCi/g dry weight	21	21	1	0.39	0.86	2.59	0.16	0.31
RADIUM 228	pCi/g dry weight	21	8	0.38	0.62	0.74	0.9	0.5	0.77

Table C-4. Summary of Analytical Data for IR Site 1 Beach Area Sediment Sampling

Analyte	Unit	Number of Samples			Detects			Non-Detects	
		Total	Detects	Frequency of Detection	Minimum Detected Concentration	Mean Detected Concentration	Maximum Detected Concentration	Minimum Method Detection Limit	Maximum Method Detection Limit
<b>Metals</b>									
Aluminum	mg/kg dry weight	12	12	1	3530	5082.5	6510	11	12
Antimony	mg/kg dry weight	12	12	1	0.3	1.16	2.42	0.02	0.02
Arsenic	mg/kg dry weight	12	12	1	2.38	3.13	4.94	0.06	0.06
Barium	mg/kg dry weight	12	12	1	15	58.85	190	0.2	0.2
Beryllium	mg/kg dry weight	12	9	0.75	0.1	0.16	0.2	0.1	0.1
Cadmium	mg/kg dry weight	12	7	0.58	1.1	2.59	6.8	0.9	1
Chromium	mg/kg dry weight	12	12	1	22	32.37	52.8	0.7	0.7
Cobalt	mg/kg dry weight	12	12	1	2.9	3.89	4.7	2.3	2.4
Copper	mg/kg dry weight	12	12	1	32	63.17	143	1	1.1
Iron	mg/kg dry weight	12	12	1	9980	13898.33	19300	3.4	19.35
Lead	mg/kg dry weight	12	12	1	23.2	46.68	67.2	0.02	0.02
Magnesium	mg/kg dry weight	12	12	1	2320	3098.75	4250	0.6	3.25
Manganese	mg/kg dry weight	12	12	1	118	184.92	623	0.3	1.95
Mercury	ng/g dry weight	12	12	1	45.4	274.33	1650	6	6
Molybdenum	mg/kg dry weight	12	0	0				2.3	2.4
Nickel	mg/kg dry weight	12	12	1	19.2	23.1	29.4	0.05	0.05
Selenium	mg/kg dry weight	12	5	0.42	0.1	0.18	0.2	0.1	0.1
Silver	mg/kg dry weight	12	12	1	0.07	1.4	7.18	0.005	0.005
Thallium	mg/kg dry weight	12	12	1	0.03	0.03	0.05	0.002	0.002
Vanadium	mg/kg dry weight	12	12	1	16.1	21.01	26.6	1	1.1
Zinc	mg/kg dry weight	12	12	1	68	110.21	193	0.6	0.6
<b>SVOCs/PAHs</b>									
1,2,4,6-TETRACHLOROBENZEN	ug/kg dry weight	12	0	0				5.7	2800
1-AMINO-4-NITROBENZENE	ug/kg dry weight	12	0	0				4	2000
2,4,5-TRICHLOROPHENOL	ug/kg dry weight	12	0	0				3.5	1700
2,4,6-TRICHLOROPHENOL	ug/kg dry weight	12	0	0				2.1	1100
2,4-DICHLOROPHENOL	ug/kg dry weight	12	0	0				2.1	1100
2,4-DIMETHYLPHENOL	ug/kg dry weight	12	0	0				6.4	3100
2,4-DINITROPHENOL	ug/kg dry weight	12	0	0				42	21000
2,4-DINITROTOLUENE	ug/kg dry weight	12	0	0				3.3	1600
2,6-DINITROTOLUENE	ug/kg dry weight	12	0	0				3.3	1600
2-CHLORONAPHTHALENE	ug/kg dry weight	12	0	0				4.2	2100
2-CHLOROPHENOL	ug/kg dry weight	12	0	0				2	960
2-METHYLPHENOL	ug/kg dry weight	12	0	0				4	2000
2-Methylnaphthalene	ug/kg dry weight	12	4	0.33	6.5	14.55	35	1.4	880
2-NITROANILINE	ug/kg dry weight	12	0	0				3.2	1600
2-NITROPHENOL	ug/kg dry weight	12	0	0				3.1	1500
3,3'-DICHLOROBENZIDINE	ug/kg dry weight	12	0	0				4.4	2100
3-NITROANILINE	ug/kg dry weight	12	0	0				3.1	1500
4,6-DINITRO-2-METHYLPHENO	ug/kg dry weight	12	0	0				2	960
4-BROMOPHENYL PHENYL ETHE	ug/kg dry weight	12	0	0				1.7	790
4-CHLORO-3-METHYLPHENOL	ug/kg dry weight	12	0	0				2.5	1200
4-CHLOROANILINE	ug/kg dry weight	12	0	0				2.5	1200
4-CHLOROPHENYL PHENYL ETH	ug/kg dry weight	12	0	0				2.4	1200
4-METHYLPHENOL	ug/kg dry weight	12	1	0.08	6.7	6.7	6.7	3.4	1700
4-NITROPHENOL	ug/kg dry weight	12	0	0				35	17000
ACETOPHENONE	ug/kg dry weight	12	0	0				14	6800
ATRAZINE	ug/kg dry weight	12	0	0				2.6	1300
Acenaphthene	ug/kg dry weight	12	12	1	17	632.75	3900	1.2	570
Acenaphthylene	ug/kg dry weight	12	3	0.25	3.1	16.37	32	1.7	790
Anthracene	ug/kg dry weight	12	12	1	18	2901.63	32000	1.7	790
BENZALDEHYDE	ug/kg dry weight	12	0	0				11	5000
BIS(2-CHLOROETHOXY)METHANE	ug/kg dry weight	12	0	0				1.6	740
BIS(2-CHLOROETHYL) ETHER	ug/kg dry weight	12	0	0				2.8	1400
BIS(2-CHLOROISOPROPYL) ET	ug/kg dry weight	12	0	0				1.4	680
BUTYL BENZYL PHTHALATE	ug/kg dry weight	12	0	0				1.8	850
Benzo(a)anthracene	ug/kg dry weight	12	12	1	130	11379.17	100000	7	790
Benzo(a)pyrene	ug/kg dry weight	12	12	1	230	11609.58	82000	8	910
Benzo(b)fluoranthene	ug/kg dry weight	12	12	1	240	14540	110000	13	1500
Benzo(g,h,i)perylene	ug/kg dry weight	12	12	1	150	8179.17	37000	12	1300
Benzo(k)fluoranthene	ug/kg dry weight	12	12	1	87	5211.42	40000	3	1500
Biphenyl	ug/kg dry weight	12	0	0				5.6	2800
CAPROLACTAM	ug/kg dry weight	12	0	0				14	6800
CARBAZOLE	ug/kg dry weight	12	12	1	11	2364.92	26000	1.6	740
Chrysene	ug/kg dry weight	12	12	1	150	11976.25	99000	7	790
Di-n-BUTYL PHTHALATE	ug/kg dry weight	12	0	0				3.1	1500
Di-n-OCTYL PHTHALATE	ug/kg dry weight	12	0	0				1.4	680
DIETHYL PHTHALATE	ug/kg dry weight	12	0	0				4.1	2000
DIETHYLHEXYL PHTHALATE	ug/kg dry weight	12	2	0.17	100	230	360	2	960
DIMETHYL PHTHALATE	ug/kg dry weight	12	0	0				2.1	1100
Dibenz(a,h)anthracene	ug/kg dry weight	12	12	1	41	1536.46	13000	2.6	1300
Dibenzofuran	ug/kg dry weight	12	5	0.42	8.4	385.68	1800	1.6	740
Fluoranthene	ug/kg dry weight	12	12	1	180	19885.42	200000	11	1300
Fluorene	ug/kg dry weight	12	9	0.75	12	744.22	5900	2	960
HEXACHLOROBTADIENE	ug/kg dry weight	12	0	0				1.7	790
HEXACHLOROCCYCLOPENTADIENE	ug/kg dry weight	12	0	0				18	8500
HEXACHLOROETHANE	ug/kg dry weight	12	0	0				2.6	1300
Hexachlorobenzene	ug/kg dry weight	12	0	0				2.5	1200
ISOPHORONE	ug/kg dry weight	12	0	0				1.9	910
Indeno(1,2,3-cd)pyrene	ug/kg dry weight	12	12	1	170	7661.25	48000	9.5	1100
N-NITROSODI-n-PROPYLAMINE	ug/kg dry weight	12	0	0				3.8	1900
N-NITROSODIPHENYLAMINE	ug/kg dry weight	12	0	0				2.6	1300
NITROBENZENE	ug/kg dry weight	12	0	0				2.4	1200
Naphthalene	ug/kg dry weight	12	8	0.67	7.6	166.24	1000	1.6	740
PENTACHLOROPHENOL	ug/kg dry weight	12	0	0				9.9	4800
PHENOL	ug/kg dry weight	12	2	0.17	16	18	20	2.3	1100
Phenanthrene	ug/kg dry weight	12	12	1	65	10929.13	120000	1.6	740
Pyrene	ug/kg dry weight	12	12	1	220	17157.08	160000	6.5	740
<b>VOCs</b>									
1,1,2,2-TETRACHLOROETHANE	ug/kg dry weight	12	0	0				0.85	0.9
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	ug/kg dry weight	12	0	0				0.86	0.91
1,1,2-TRICHLOROETHANE	ug/kg dry weight	12	0	0				0.8	0.85
1,2,3-TRICHLOROETHANE	ug/kg dry weight	12	0	0				1.1	1.15
1,2,4-TRICHLOROETHANE	ug/kg dry weight	12	0	0				0.89	0.94
1,2-DIBROMO-3-CHLOROPROPA	ug/kg dry weight	12	0	0				0.98	1.1

Table C-4. Summary of Analytical Data for IR Site 1 Beach Area Sediment Sampling

Analyte	Unit	Number of Samples			Detects			Non-Detects	
		Total	Detects	Frequency of Detection	Minimum Detected Concentration	Mean Detected Concentration	Maximum Detected Concentration	Minimum Method Detection Limit	Maximum Method Detection Limit
<b>VOCs (continued)</b>									
T,2-DIBROMOETHANE	ug/kg dry weight	12	0	0				0.91	0.97
T,2-DICHLOROBENZENE	ug/kg dry weight	12	0	0				0.75	0.8
T,2-DICHLOROPROPANE	ug/kg dry weight	12	0	0				0.83	0.88
T,3-DICHLOROBENZENE	ug/kg dry weight	12	0	0				0.82	0.87
1,4-DICHLOROBENZENE	ug/kg dry weight	12	0	0				0.95	1.04
2-HEXANONE	ug/kg dry weight	12	0	0				7.1	7.5
4-METHYL-2-PENTANONE	ug/kg dry weight	12	0	0				6.4	6.8
ACETONE	ug/kg dry weight	12	2	0.17	12	16	20	12	13
BENZENE	ug/kg dry weight	12	0	0				0.91	0.97
BROMOCHLOROMETHANE	ug/kg dry weight	12	0	0				0.6	0.64
BROMODICHLOROMETHANE	ug/kg dry weight	12	0	0				0.61	0.65
BROMOFORM	ug/kg dry weight	12	0	0				0.75	0.8
BROMOMETHANE	ug/kg dry weight	12	0	0				0.93	0.98
CARBON DISULFIDE	ug/kg dry weight	12	0	0				1.9	1.9
CARBON TETRACHLORIDE	ug/kg dry weight	12	0	0				0.7	0.74
CHLOROETHANE	ug/kg dry weight	12	0	0				0.81	0.86
CHLOROFORM	ug/kg dry weight	12	0	0				0.9	0.96
CHLOROMETHANE	ug/kg dry weight	12	0	0				0.66	0.7
CYCLOHEXANE	ug/kg dry weight	12	0	0				1.2	1.3
CYCLOHEXANE, METHYL-	ug/kg dry weight	12	0	0				0.78	0.82
DIBROMOCHLOROMETHANE	ug/kg dry weight	12	0	0				0.82	0.87
DICHLORODIFLUOROMETHANE	ug/kg dry weight	12	0	0				0.7	0.74
DICHLOROMETHANE	ug/kg dry weight	12	1	0.08	1.8	1.8	1.8	0.81	0.86
Diisopropyl Ether	ug/kg dry weight	12	0	0				1.2	1.2
ETHYL BENZENE	ug/kg dry weight	12	0	0				0.29	0.31
ETHYLENE DICHLORIDE	ug/kg dry weight	12	0	0				0.66	0.7
ETHYLDENE DICHLORIDE	ug/kg dry weight	12	0	0				0.78	0.82
ISOPROPYLBENZENE	ug/kg dry weight	12	0	0				0.9	0.96
METHANE, TRICHLOROFLUORO-	ug/kg dry weight	12	0	0				0.79	0.83
METHYL CHLOROFORM	ug/kg dry weight	12	0	0				0.85	0.9
METHYL ETHYL KETONE	ug/kg dry weight	12	0	0				0.66	0.7
METHYL tert-BUTYL ETHER	ug/kg dry weight	12	0	0				9.7	11
Methyl Acetate	ug/kg dry weight	12	0	0				0.75	0.8
Naphthalene	ug/kg dry weight	12	0	0				0.85	0.9
STYRENE	ug/kg dry weight	12	0	0				1.1	1.1
TETRACHLOROETHYLENE	ug/kg dry weight	12	0	0				0.85	0.9
TOLUENE	ug/kg dry weight	12	0	0				0.36	0.38
TRICHLOROETHYLENE	ug/kg dry weight	12	1	0.08	1.8	1.8	1.8	0.97	1.1
VINYL CHLORIDE	ug/kg dry weight	12	0	0				0.33	0.35
VINYLDENE CHLORIDE	ug/kg dry weight	12	0	0				0.72	0.76
cis-1,2-DICHLOROETHENE	ug/kg dry weight	12	0	0				0.8	0.85
cis-1,3-DICHLOROPROPENE	ug/kg dry weight	12	0	0				0.96	1.1
m,p-XYLENE	ug/kg dry weight	12	0	0				0.88	0.93
o-XYLENE	ug/kg dry weight	12	0	0				1.8	1.9
trans-1,2-DICHLOROETHENE	ug/kg dry weight	12	0	0				0.8	0.85
trans-1,3-DICHLOROPROPENE	ug/kg dry weight	12	0	0				0.85	0.9
		12	0	0				0.7	0.74
<b>Pesticides</b>									
24'-DDD	ng/g dry weight	12	9	0.75	1.13	2.25	4.56	0.01	0.02
24'-DDE	ng/g dry weight	12	4	0.33	0.08	0.29	0.43	0.02	0.03
24'-DDT	ng/g dry weight	12	10	0.83	0.17	0.79	2.28	0.01	0.02
44'-DDD	ng/g dry weight	12	12	1	2.83	5.89	15.65	0.03	0.34
44'-DDE	ng/g dry weight	12	12	1	0.65	1.22	2.26	0.01	0.02
44'-DDT	ng/g dry weight	12	6	0.5	0.27	0.81	1.62	0.01	0.01
ALDRIN	ng/g dry weight	12	0	0				0.03	0.03
Dieldrin	ng/g dry weight	12	4	0.33	0.28	0.39	0.66	0.01	0.01
Endosulfan I	ng/g dry weight	12	1	0.08	0.45	0.45	0.45	0.04	0.04
Endosulfan II	ng/g dry weight	12	0	0				0.03	0.04
Endosulfan Sulfate	ng/g dry weight	12	0	0				0.02	0.02
Endrin	ng/g dry weight	12	0	0				0.03	0.03
Endrin Aldehyde	ng/g dry weight	12	1	0.08	0.42	0.42	0.42	0.03	0.04
Endrin ketone	ng/g dry weight	12	0	0				0.02	0.03
Heptachlor	ng/g dry weight	12	0	0				0.02	0.03
Heptachlor epoxide	ng/g dry weight	12	1	0.08	1.16	1.16	1.16	0.02	0.03
Methoxychlor	ng/g dry weight	12	0	0				0.61	0.74
Toxaphene	ng/g dry weight	12	0	0				5.85	7.87
a-Chlordane	ng/g dry weight	12	7	0.58	0.37	0.53	0.76	0.02	0.03
a-HCH	ng/g dry weight	12	0	0				0.06	0.08
b-HCH	ng/g dry weight	12	0	0				0.05	0.06
cis-nonachlor	ng/g dry weight	12	5	0.42	0.15	0.33	0.68	0.02	0.02
d-HCH	ng/g dry weight	12	0	0				0.04	0.05
g-BHC	ng/g dry weight	12	0	0				0.02	0.03
g-Chlordane	ng/g dry weight	12	5	0.42	0.24	0.41	0.52	0.01	0.02
trans-nonachlor	ng/g dry weight	12	2	0.17	0.29	0.49	0.69	0.02	0.02
<b>PCBs</b>									
Aroclor 1016	ng/g dry weight	12	0	0				5.85	7.87
Aroclor 1221	ng/g dry weight	12	0	0				5.85	7.87
Aroclor 1232	ng/g dry weight	12	0	0				5.85	7.87
Aroclor 1242	ng/g dry weight	12	0	0				5.85	7.87
Aroclor 1248	ng/g dry weight	12	0	0				5.85	7.87
Aroclor 1254	ng/g dry weight	12	2	0.17	70.29	98.08	125.87	5.85	7.87
Aroclor 1260	ng/g dry weight	12	8	0.67	38.09	110.67	246.52	5.85	7.87
<b>Radionuclides</b>									
RADIUM 226	pCi/g dry weight	12	10	0.83	0.26	0.42	0.67	0.16	0.33
RADIUM 228	pCi/g dry weight	12	0	0				0.63	1.1

Table C-5. Summary of SVOC/PAH Data for IR Site 15 Soil Sampling

Analyte	Unit	Number of Samples			Detects			Non-Detects	
		Total	Detects	Frequency of Detection	Minimum Detected Concentration	Mean Detected Concentration	Maximum Detected Concentration	Minimum Method Detection Limit	Maximum Method Detection Limit
<b>SVOCs/PAHs</b>									
1,2,4,5-TETRACHLOROBENZEN	ug/kg dry weight	12	0	0				6.1	52
1-AMINO-4-NITROBENZENE	ug/kg dry weight	12	0	0				4.3	36
2,4,5-TRICHLOROPHENOL	ug/kg dry weight	12	0	0				3.8	32
2,4,6-TRICHLOROPHENOL	ug/kg dry weight	12	0	0				2.3	19
2,4-DICHLOROPHENOL	ug/kg dry weight	12	0	0				2.3	19
2,4-DIMETHYLPHENOL	ug/kg dry weight	12	0	0				6.85	58
2,4-DINITROPHENOL	ug/kg dry weight	12	0	0				45	380
2,4-DINITROTOLUENE	ug/kg dry weight	12	0	0				3.5	30
2,6-DINITROTOLUENE	ug/kg dry weight	12	0	0				3.5	30
2-CHLORONAPHTHALENE	ug/kg dry weight	12	0	0				4.5	38
2-CHLOROPHENOL	ug/kg dry weight	12	0	0				2.2	18
2-METHYLPHENOL	ug/kg dry weight	12	0	0				4.3	36
2-Methylnaphthalene	ug/kg dry weight	12	7	0.58	1.8	9.96	23	1.5	13
2-NITROANILINE	ug/kg dry weight	12	0	0				3.4	29
2-NITROPHENOL	ug/kg dry weight	12	0	0				3.3	28
3,3'-DICHLOROENZIDINE	ug/kg dry weight	12	0	0				4.6	39
3-NITROANILINE	ug/kg dry weight	12	0	0				3.3	28
4,6-DINITRO-2-METHYLPHENO	ug/kg dry weight	12	0	0				2.2	18
4-BROMOPHENYL PHENYL ETHE	ug/kg dry weight	12	0	0				1.8	15
4-CHLORO-3-METHYLPHENOL	ug/kg dry weight	12	0	0				2.65	23
4-CHLOROANILINE	ug/kg dry weight	12	0	0				2.65	23
4-CHLOROPHENYL PHENYL ETH	ug/kg dry weight	12	0	0				2.5	22
4-METHYLPHENOL	ug/kg dry weight	12	1	0.08	13	13	13	3.65	31
4-NITROPHENOL	ug/kg dry weight	12	0	0				38	320
ACETOPHENONE	ug/kg dry weight	12	6	0.5	20	40	77	15	130
ATRAZINE	ug/kg dry weight	12	0	0				2.8	24
Acenaphthene	ug/kg dry weight	12	4	0.33	3.9	16.73	36	1.3	11
Acenaphthylene	ug/kg dry weight	12	9	0.75	2.2	38.69	110	1.8	15
Anthracene	ug/kg dry weight	12	10	0.83	2	260.5	1900	1.8	15
BENZALDEHYDE	ug/kg dry weight	12	1	0.08	25	25	25	1.1	93
BIS(2-CHLOROETHOXY)METHANE	ug/kg dry weight	12	0	0				1.7	14
BIS(2-CHLOROETHYL) ETHER	ug/kg dry weight	12	0	0				3	26
BIS(2-CHLOROISOPROPYL) ET	ug/kg dry weight	12	0	0				1.5	13
BUTYL BENZYL PHTHALATE	ug/kg dry weight	12	4	0.33	9.7	26.68	56	1.9	16
Benzo(a)anthracene	ug/kg dry weight	12	11	0.92	4.2	178.88	780	1.8	15
Benzo(a)pyrene	ug/kg dry weight	12	11	0.92	4.2	144.01	480	2	17
Benzo(b)fluoranthene	ug/kg dry weight	12	11	0.92	6.9	270.08	960	3.15	27
Benzo(g,h,i)perylene	ug/kg dry weight	12	10	0.83	5	111.5	320	2.9	25
Benzo(k)fluoranthene	ug/kg dry weight	12	9	0.75	5	107.89	340	3.15	27
Biphenyl	ug/kg dry weight	12	0	0				6	51
CAPROLACTAM	ug/kg dry weight	12	0	0				15	130
CARBAZOLE	ug/kg dry weight	12	7	0.58	2.2	50.57	130	1.7	14
Chrysene	ug/kg dry weight	12	11	0.92	8.1	308.39	1400	1.8	15
DI-n-BUTYL PHTHALATE	ug/kg dry weight	12	0	0				3.3	28
DI-n-OCTYL PHTHALATE	ug/kg dry weight	12	0	0				1.5	13
DIETHYL PHTHALATE	ug/kg dry weight	12	0	0				4.4	37
DIETHYLHEXYL PHTHALATE	ug/kg dry weight	12	0	0				2.2	18
DIMETHYL PHTHALATE	ug/kg dry weight	12	0	0				2.3	19
Dibenz(a,h)anthracene	ug/kg dry weight	12	7	0.58	7.2	34.59	81	2.8	24
Dibenzofuran	ug/kg dry weight	12	5	0.42	6.4	19.56	35	1.7	14
Fluoranthene	ug/kg dry weight	12	11	0.92	11	535.55	3400	2.8	74
Fluorene	ug/kg dry weight	12	7	0.58	3.5	29.77	100	2.2	18
HEXACHLOROBUTADIENE	ug/kg dry weight	12	0	0				1.8	15
HEXACHLOROCYCLOPENTADIENE	ug/kg dry weight	12	0	0				19	160
HEXACHLOROETHANE	ug/kg dry weight	12	0	0				2.8	24
Hexachlorobenzene	ug/kg dry weight	12	0	0				2.65	23
ISOPHORONE	ug/kg dry weight	12	0	0				2	17
Indeno(1,2,3-cd)pyrene	ug/kg dry weight	12	11	0.92	3	102.75	290	2.4	20
N-NITROSODI-n-PROPYLAMINE	ug/kg dry weight	12	0	0				4	34
N-NITROSODIPHENYLAMINE	ug/kg dry weight	12	0	0				2.8	24
NITROBENZENE	ug/kg dry weight	12	0	0				2.5	22
Naphthalene	ug/kg dry weight	12	10	0.83	1.9	15.1	42	1.7	14
PENTACHLOROPHENOL	ug/kg dry weight	12	1	0.08	34	34	34	1.1	90
PHENOL	ug/kg dry weight	12	9	0.75	3.75	9.55	23	2.4	20
Phenanthrene	ug/kg dry weight	12	11	0.92	5	209.88	1100	1.7	14
Pyrene	ug/kg dry weight	12	11	0.92	12	468.27	2400	1.7	44