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MAR 1 4 2012

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Dear BCT members:

Enclosed for your review is the *Draft Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California, dated March 2012*. Please provide comments **no later than April 30, 2012**.

If you should you have any questions about this matter, please contact Lara Urizar at (619) 532-0960 or me at (619) 532-0913.

Sincerely,

KEITH FORMAN
BRAC Environmental Coordinator
By direction of the Director

Enclosure: 1. Draft Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California, March 2012.

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Draft

Record of Decision for Parcel E-2

Hunters Point Naval Shipyard
San Francisco, California

March 2012

Prepared by:
Department of the Navy
Base Realignment and Closure
Program Management Office West
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Prepared under:
Naval Facilities Engineering Command
Contract Number N68711-05-C-6011

ERRG-6011-0000-0016

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Acronyms and Abbreviations

ARARs	applicable or relevant and appropriate requirements
ARIC	area requiring institutional controls
bgs	below ground surface
BRAC	Base Realignment and Closure
Cal. Code Regs.	California Code of Regulations
CDPH	California Department of Public Health
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
^{60}Co	cobalt-60
COCs	chemicals of concern
COECs	chemicals of ecological concern
COPEC	chemical of potential ecological concern
^{137}Cs	cesium-137
CSM	conceptual site model
DTSC	Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
FFA	Federal Facility Agreement
FS	Feasibility Study
HHRA	human health risk assessment
HI	hazard index
HPNS	Hunters Point Naval Shipyard
IR	Installation Restoration
LUC RD	land use control remedial design
MOA	Memorandum of Agreement
MPE	maximum probable earthquake
msl	mean sea level
Navy	Department of the Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NMOCs	non-methane organic compounds

Acronyms and Abbreviations *(continued)*

NPL	National Priorities List
NRDL	Naval Radiological Defense Laboratory
OMP	operation and maintenance plan
pCi/g	picocuries per gram
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
ppmv	parts per million by volume
PSCs	protective soil concentrations
^{226}Ra	radium-226
RAOs	remedial action objectives
RD	remedial design
RI	Remedial Investigation
RME	reasonable maximum exposure
RMP	risk management plan
ROC	radionuclide of concern
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SLERA	screening-level ecological risk assessment
^{90}Sr	strontium-90
SVOCs	semivolatile organic compounds
tit.	title
TPH	total petroleum hydrocarbons
UCSF	University of California at San Francisco
VOCs	volatile organic compounds
Water Board	San Francisco Bay Regional Water Quality Control Board
µg/L	micrograms per liter
§	Section
95 UCL activity level	95th percent upper confidence limit of the mean activity level

Section 1. Declaration

This Record of Decision (ROD) presents the selected remedy for Parcel E-2 at Hunters Point Naval Shipyard (HPNS) in San Francisco, California. HPNS was placed on the National Priorities List (NPL) in 1989 (U.S. Environmental Protection Agency [EPA] ID: CA71170090087). The remedy was selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 (Title 42 United States Code Section (§) 9601, et seq.); and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (Title 40 Code of Federal Regulations Part 300). This decision is based on the Administrative Record file for this site[1] (Attachment 1). The Department of the Navy (Navy) and EPA jointly selected the remedy for Parcel E-2. The California Department of Toxic Substances Control (DTSC) and the San Francisco Bay Regional Water Quality Control Board (Water Board) concur on the remedy for Parcel E-2. The Navy provides funding for site cleanups at HPNS. The Federal Facility Agreement (FFA) for HPNS documents how the Navy intends to meet and implement CERCLA in partnership with EPA, DTSC, and the Water Board.

Parcel E is one of six parcels (Parcels A through F) originally designated for environmental restoration. In September 2004, the Navy divided Parcel E into two parcels (Parcels E and E-2) to facilitate closure of the Parcel E-2 Landfill and its adjacent areas[2]. Long-term uses in Parcel E-2 consist mostly of open space except for a small area in the northeast portion of the parcel, which is designated for multiple uses including recreational, industrial, and residential. Environmental investigations began at Parcel E, including Parcel E-2, in 1984. The Final Remedial Investigation (RI)/Feasibility Study (FS) Report was completed and submitted in 2011. This ROD documents the final remedial action for Parcel E-2 and does not include or affect any other sites at HPNS.

1.1. SELECTED REMEDY

The CERCLA remedial action selected in this ROD is necessary to protect the public health, welfare, or the environment from actual or potential releases of hazardous substances from Parcel E-2. The selected remedy for Parcel E-2 addresses the following contaminated media:

[1] **Bold blue text** identifies detailed site information available in the Administrative Record and listed in the References Table (Attachment 2). This ROD is also available on CD, whereby bold blue text serves as a hyperlink to reference information. The excerpts referenced by the hyperlinks are part of the ROD. The hyperlink will open a text box at the top of the screen. A blue box surrounds applicable information in the hyperlink. To the extent inconsistencies may exist between the referenced information attached to the ROD via hyperlinks and the information in the basic ROD itself, the language in the basic ROD controls.

[2] Discussions within this ROD (as well as the RI/FS Report and its radiological addendum) that reference documents published prior to September 2004 refer to the portion of Parcel E that became Parcel E-2.

- **Soil** – metals (antimony, arsenic, cadmium, copper, iron, lead, manganese, mercury, nickel, vanadium, and zinc), radionuclides (cesium-137 [^{137}Cs], cobalt-60 [^{60}Co], radium-226 [^{226}Ra], and strontium-90 [^{90}Sr]), pesticides, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), and dioxins
- **Shoreline sediment** – metals (antimony, copper, lead, mercury, nickel, and zinc), radionuclides (^{226}Ra, ^{137}Cs, and ^{90}Sr), pesticides, and PCBs
- **Landfill gas** – methane and volatile organic compounds (VOCs)
- **Groundwater** – metals (arsenic, chromium VI, iron, lead, and thallium), radionuclides (^{226}Ra, ^{137}Cs, and ^{90}Sr), pesticides, PCBs, PAHs, TPH, and VOCs

The selected remedy consists of the following actions to address risks posed by contaminated media:

- Remove and dispose of contaminated soil in selected areas
- Separate and dispose of materials and soil with radiological contamination
- Install a protective liner and soil cover over all of Parcel E-2
- Install below-ground barriers to limit groundwater flow from the landfill to San Francisco Bay
- Remove and treat landfill gas to prevent it from moving beyond the Parcel E-2 boundary
- Build a shoreline revetment
- Monitor and maintain the different parts of the preferred alternative to ensure they are working properly
- Use institutional controls to restrict specific land uses and activities on Parcel E-2

1.2. STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state statutes and regulations that are applicable or relevant and appropriate to the remedy, and is cost-effective. The selected remedy uses permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable because it provides the best balance of tradeoffs relative to the five balancing criteria and properly considers the two modifying criteria[3]. The selected remedy does not satisfy the statutory preference for treatment[4] as a principal element because there is no cost-effective means of treating the large quantity of low-level soil contamination throughout Parcel E-2 and the small quantities of principal threat wastes at the PCB Hot Spot Area cannot be treated in a cost-effective manner. However, the principal threat wastes at the PCB Hot Spot Area are being excavated

[3] As defined in the NCP (Title 40 Code of Federal Regulations § 300.430[f][1][i]), the five primary balancing criteria are long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. State and community acceptance are modifying criteria that shall be considered in remedy selection.

[4] As defined in the NCP (Title 40 Code of Federal Regulations § 300.5), "treatment technology" means any unit operation or series of unit operations that alters the composition of a hazardous substance or pollutant or contaminant through chemical, biological, or physical means so as to reduce toxicity, mobility, or volume of the contaminated materials being treated. Treatment technologies are an alternative to land disposal of hazardous wastes without treatment.

under a removal action that is scheduled to be completed in 2012. In addition, the protective liner and below-ground barriers are expected to reduce the mobility of contamination and natural attenuation mechanisms will reduce contaminant toxicity, mobility, and volume. Statutory five-year reviews pursuant to CERCLA § 121 and the NCP will be conducted because the remedy will leave contamination in place at Parcel E-2 above concentrations that allow for unrestricted use and unlimited exposure.

1.3. DATA CERTIFICATION CHECKLIST

The following information is included in Section 2 of this ROD. Additional information can be found in the Administrative Record file for this site:

- Chemicals of concern (COC) and chemicals of ecological concern (COECs) and their concentrations (Sections 2.3 and 2.5).
- Baseline risk represented by COCs and COECs (Section 2.5).
- Remediation goals established for COCs and COECs and the basis for these goals (Sections 2.5 and 2.7).
- Principal threat wastes (Section 2.6).
- Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater (Section 2.4).
- Potential land and groundwater use that will be available at Parcel E-2 as a result of the selected remedy (Section 2.9.3).
- Estimated capital costs, annual operation and maintenance, and total present worth costs; discount rate; and the number of years over which the remedy cost estimate is projected (Section 2.8).
- Key factors that led to selecting the remedy (e.g., a description of how the selected remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision) (Section 2.9.1).

1.4. AUTHORIZING SIGNATURES

This signature sheet documents the Navy's and EPA's co-selection of the remedy in this ROD. This signature sheet also documents the State of California's (DTSC and Water Board) concurrence with this ROD.

Keith S. Forman
Base Realignment and Closure Environmental Coordinator
Base Realignment and Closure Program Management Office West
Department of the Navy

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Ryan K. Miya
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California Environmental Protection Agency
Department of Toxic Substances Control

Date

Bruce H. Wolfe
Executive Officer
California Environmental Protection Agency
San Francisco Regional Water Quality Control Board

Date

Section 2. Decision Summary

2.1. SITE DESCRIPTION AND HISTORY

HPNS is located in southeastern San Francisco on a peninsula that extends east into San Francisco Bay (see Figure 1). HPNS consists of 866 acres: 420 acres on land and 446 acres under water in the San Francisco Bay. In 1940, the Navy obtained ownership of HPNS for shipbuilding, repair, and maintenance activities. After World War II, activities at HPNS shifted to submarine maintenance and repair. HPNS was also the site of the Naval Radiological Defense Laboratory (NRDL). A history of Navy radiological operations at HPNS is provided in Volume II of the Historical Radiological Assessment (HRA), and radiological operations at Parcel E-2 are summarized in Section 2.2.

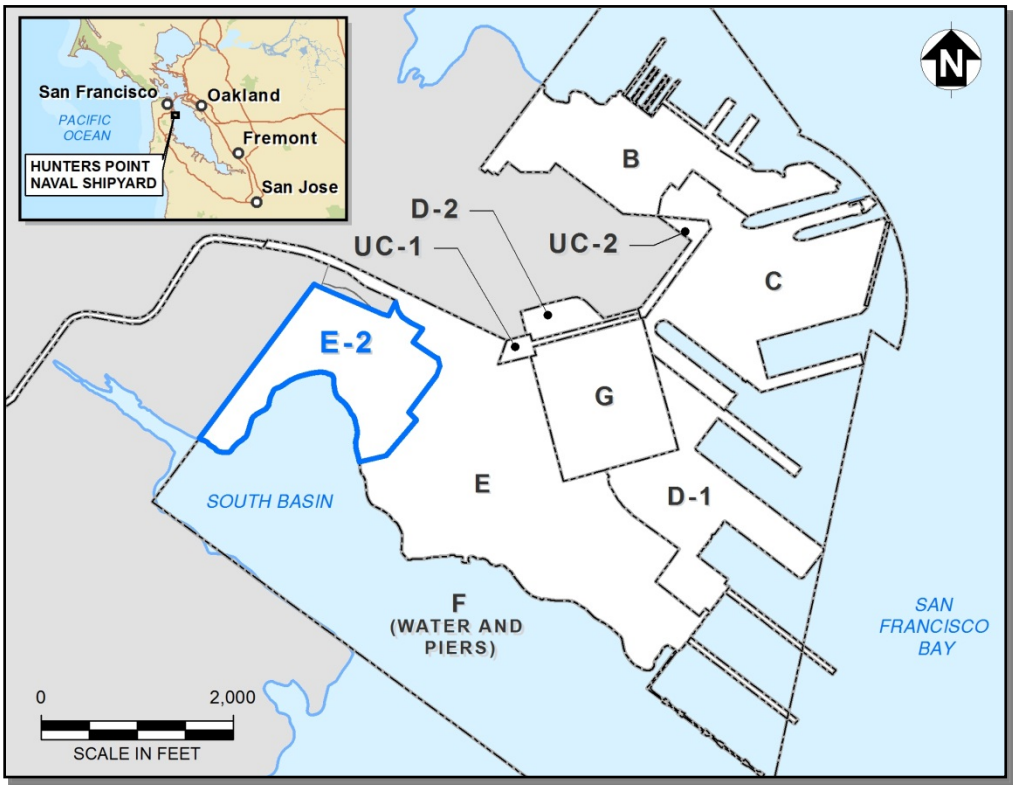

Figure 1. Facility and Parcel E-2 Location Map

HPNS was deactivated in 1974 and remained relatively unused until 1976. Between 1976 and 1986, the Navy leased most of HPNS to Triple A Machine Shop, Inc., a private ship repair company. In 1987, the Navy resumed occupancy of HPNS. Because past shipyard operations left hazardous substances on site, HPNS property was placed on the NPL in 1989 pursuant to CERCLA, as amended by the SARA. In 1991, HPNS was designated for closure pursuant to the Defense Base Closure and Realignment Act of

1990. Closure activities at HPNS involve conducting environmental remediation and making the property available for nondefense use.

Parcel E-2$_{(1)}$, which includes about 47 acres of shoreline and lowland coast along the southwestern portion of the shipyard (see Figure 1), consists of four distinct study areas that were designated to organize the information presented in the RI/FS Report (see Figure 2):

- The Parcel E-2 Landfill, located in the north-central part of Parcel E-2
- The Panhandle Area, located west and southwest of the Parcel E-2 Landfill
- The East Adjacent Area, located to the east of the Parcel E-2 Landfill
- The Shoreline Area, located at the edge of San Francisco Bay

A small portion of the Parcel E-2 Landfill extends north onto property owned by the University of California at San Francisco (UCSF) (see Figure 2).

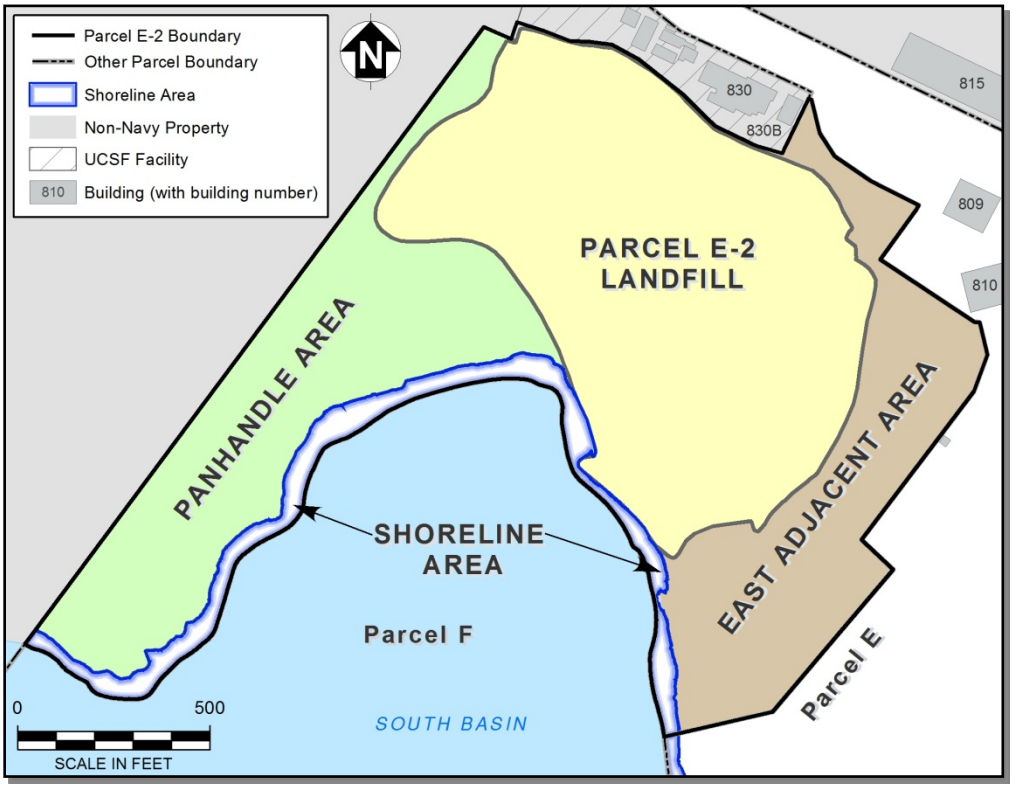

Figure 2. Parcel E-2 Areas

2.2. SITE CHARACTERISTICS

Parcel E-2 was created by filling in the bay margin with various materials, including native soil, rock, and sediments, as well as construction and industrial debris. The ground surface elevation at Parcel E-2 varies from approximately 30 feet above mean sea level (msl) in the northern portion of the parcel to a few feet above msl along the southwestern portion of the parcel. The **Parcel E-2 Landfill**(2) is a 22-acre area where the Navy disposed of various shipyard wastes from the mid-1950s to the early-1970s. These wastes include:

- Construction debris (including wood, steel, concrete, and soil)
- Municipal-type trash (including paper, plastic, and metal)
- Industrial waste (including sandblast waste, paint sludge, solvents, and PCB-containing waste oils)

The Navy's investigations showed that the landfill waste consists of mostly construction debris and trash, with smaller amounts of industrial waste. After the landfill closed in the early 1970s, the Navy covered it with 2 to 5 feet of soil. The volume of soil cover, landfill waste, and impacted soil is estimated to be more than 1,000,000 cubic yards.

Fill materials in the East Adjacent, Panhandle, and Shoreline Areas of Parcel E-2(3) are distinct from the Parcel E-2 Landfill. Specifically, fill materials in the East Adjacent, Panhandle, and Shoreline Areas consist primarily of soil, sediment, and rock with isolated solid waste locations that are not contiguous with solid waste in the Parcel E-2 Landfill. The characteristics of the East Adjacent, Panhandle, and Shoreline Areas are described below.

- The East Adjacent Area was created by filling in San Francisco Bay prior to the 1950s with soil and construction debris. Some industrial waste was disposed of in parts of the East Adjacent Area, including an area referred to as the PCB Hot Spot Area.
- The Panhandle Area was created by filling in San Francisco Bay in the 1950s with soil and construction debris. The Navy disposed of metal slag in a part of the Panhandle Area referred to as the Metal Slag Area. Also, the Navy tested ship-shielding technologies in another part of the Panhandle Area referred to as the Experimental Ship-Shielding Area.
- The Shoreline Area is adjacent to San Francisco Bay and contains contaminated sediments. Contaminated sediments above msl will be addressed by the selected remedy for Parcel E-2. Contaminated sediments below msl will be addressed by the selected remedy for Parcel F, the Navy's property offshore of HPNS.

The HRA identified **areas where low-level radiological material may be located**(4) at Parcel E-2. These areas are shown on Figure 3.

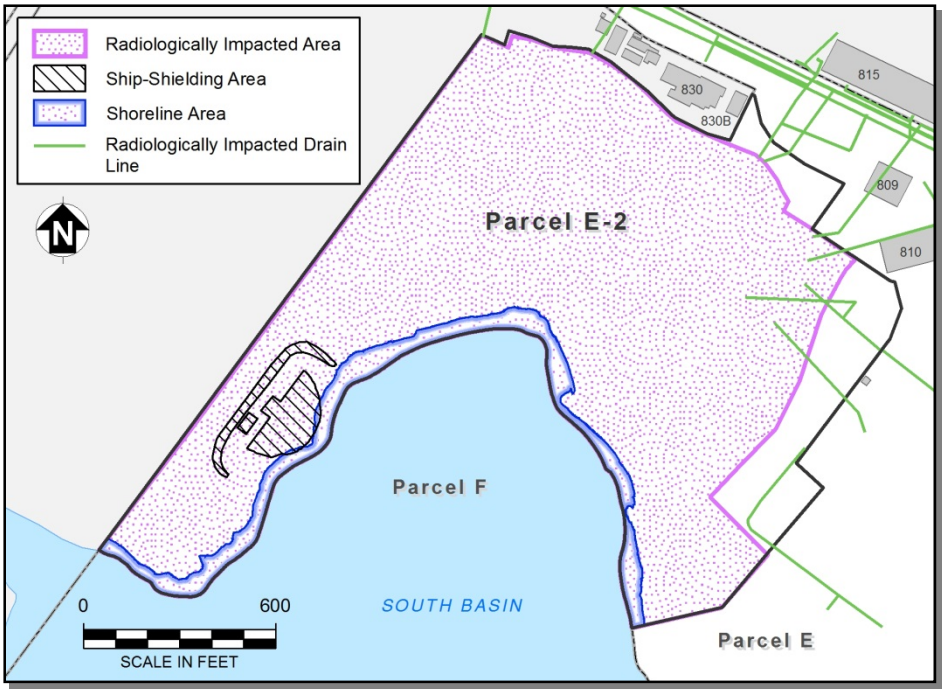

Figure 3. Radiologically Impacted Areas

The following **radiological operations**(5) were identified at Parcel E-2:

- Dials, gauges, and deck markers painted with radioactive paint (containing ^{226}Ra to make the devices glow in the dark) were disposed of at the Parcel E-2 Landfill, the Panhandle Area, and the East Adjacent Area.
- Industrial debris and metal slag with dials, gauges, and deck markers painted with radioactive paint were disposed of at the Metal Slag Area (removed during a previous removal action).
- Small amounts of low-level radionuclides may be present in drain lines in the eastern part of Parcel E-2. Potential releases of low-level radionuclides into drain lines at former NRDL buildings located outside of Parcel E-2 (in Parcel E) may have led to drain lines in the eastern part of Parcel E-2. The drain lines in Parcel E and any contamination in them are currently being excavated as part of an ongoing removal action being performed throughout HPNS.
- Materials used during radiological experiments by NRDL may have been disposed of at the Parcel E-2 Landfill, the Panhandle Area, and the East Adjacent Area. However, historic records presented in the HRA suggest that such material was strictly controlled, particularly after 1954 when the U.S. Atomic Energy Commission began regulating the use of radionuclides at HPNS. This information indicates that the volume of NRDL waste potentially disposed of in the Parcel E-2 Landfill was relatively low because most of the landfill was filled after 1955.
- Sandblast waste from cleaning ships used during weapons testing in the South Pacific may have been disposed of at the Parcel E-2 Landfill, the Panhandle Area, and the East Adjacent Area. However, historic records presented in the HRA indicate that waste with the highest levels of radioactivity was controlled and not disposed of at Parcel E-2.

The **hydrostratigraphy**(6) of Parcel E-2 consists of four distinct units: the shallow A-aquifer, several aquitard zones, the deeper B-aquifer, and underlying bedrock water-bearing zone. An aquitard zone separates the A- and B-aquifer across most of Parcel E-2, except in the northwest corner. The presence of additional aquitard zones within the B-aquifer sediments isolate the uppermost portions of the B-aquifer (that are interconnected with the A-aquifer) from the lower portions of the B-aquifer. Groundwater is not currently used for any purpose at Parcel E-2. Groundwater in the A-aquifer is not suitable as a potential source of **drinking water**(7). Based on an evaluation of site-specific conditions relative to pertinent regulatory criteria, groundwater in the B-aquifer has a moderate potential to be used as a future source of drinking water.

Groundwater flow patterns(8) at Parcel E-2 are complex because they are potentially affected by (1) a groundwater sink located in adjacent Parcel E; (2) leaks of groundwater into former sanitary sewers or storm drains; (4) recharge from water supply lines; and (3) tides in San Francisco Bay. Most groundwater at Parcel E-2 flows toward the bay. In the northeastern portion of Parcel E-2, however, groundwater has historically flowed toward the groundwater sink in Parcel E, where groundwater elevations are below msl. The sink was likely caused by leaks of groundwater into sanitary sewer lines, which were then pumped to the off-site, publicly owned treatment works, thereby lowering groundwater levels in the area. Flow patterns continue to change now that pumping has been discontinued and as sewer and storm drain lines are removed throughout Parcel E and other HPNS parcels. Sewer and storm drain lines remain in the northern and eastern portions of Parcel E-2 (Figure 4).

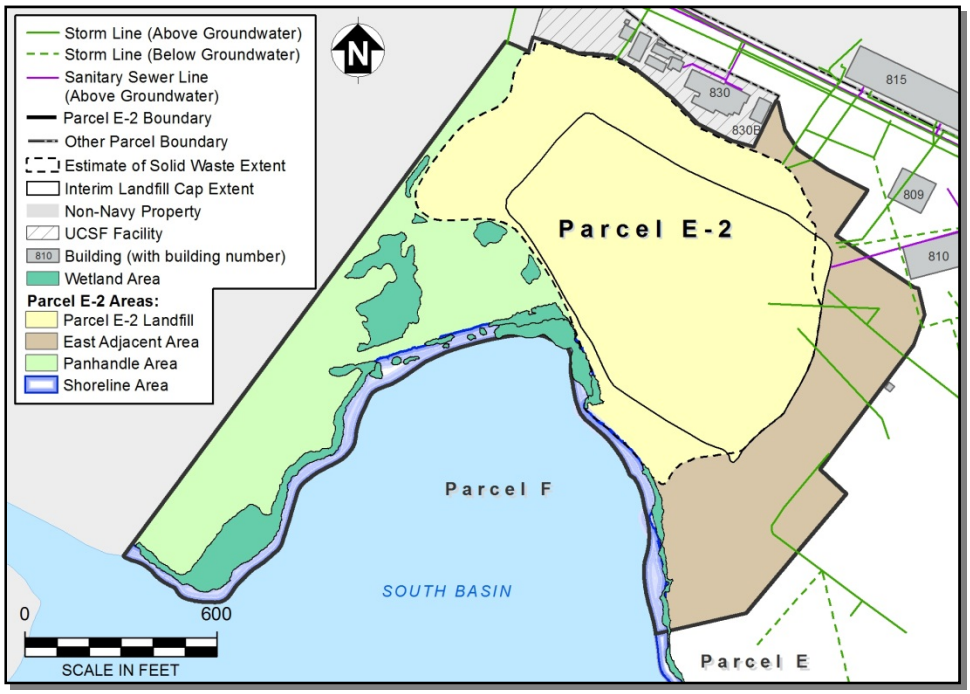

Figure 4. Parcel E-2 Site Features

Parcel E-2 ecology(9) includes terrestrial habitat, aquatic environments, and transitional wetlands. All of these ecological areas have been disturbed by human activities such as excavation, filling, and development, and support relatively few plant species. Birds, mammals, and reptiles have been observed in this parcel. No threatened or endangered species are known to inhabit Parcel E-2 or its immediate vicinity. Wetlands are located in the Panhandle Area and Shoreline Area (Figure 4). The wetlands provide habitat for wintering and migrating wildlife; however, their value in terms of social significance, effectiveness, and opportunity is low because the wetlands are located on a CERCLA site on manmade land.

2.3. PREVIOUS INVESTIGATIONS

Parcel E-2 was one of the first environmental investigation sites identified at HPNS during the Initial Assessment Study conducted by the Navy (1984), and the Navy has performed numerous **environmental investigations**(10) at Parcel E-2 since then. The Navy has collected extensive information during these investigations, as well as during ongoing environmental monitoring programs for groundwater and landfill gas, including:

- Over 2,000 soil samples and over 800 groundwater samples analyzed for various radionuclides and nonradioactive chemicals to determine the types and concentrations of chemicals
- Over 30 trenches and over 200 soil borings to identify the types of waste disposed of at Parcel E-2
- Over 3,000 soil gas and outdoor air samples analyzed for methane and other organic chemicals to track emissions from the landfill
- Special investigations to address the unique site conditions at Parcel E-2 that included identifying buried waste using special geophysical instruments, evaluating liquefaction potential, identifying existing wetlands, and analyzing shoreline sediment for various chemicals

Figures 5 and 6 shows the locations where samples were collected to analyze groundwater, soil, and landfill gas during the numerous site investigations. The RI/FS Report (May 5, 2011) and radiological addendum (March 4, 2011) summarize the results of the environmental investigations at Parcel E-2 and document how much is known about the site. The previous investigations provide sufficient information to evaluate site risks, develop remedial alternatives, and support the remedy decision made in this ROD.

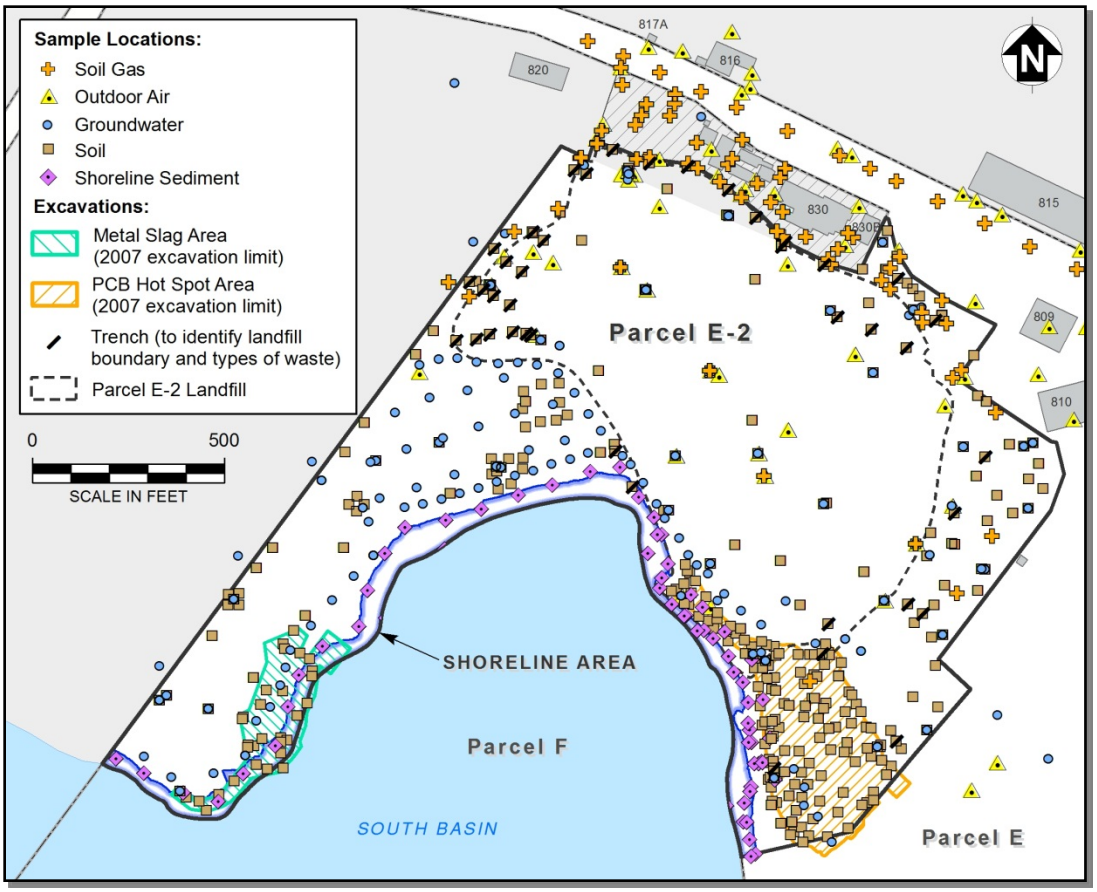

Figure 5. Previous Sampling Locations for Nonradioactive Chemicals

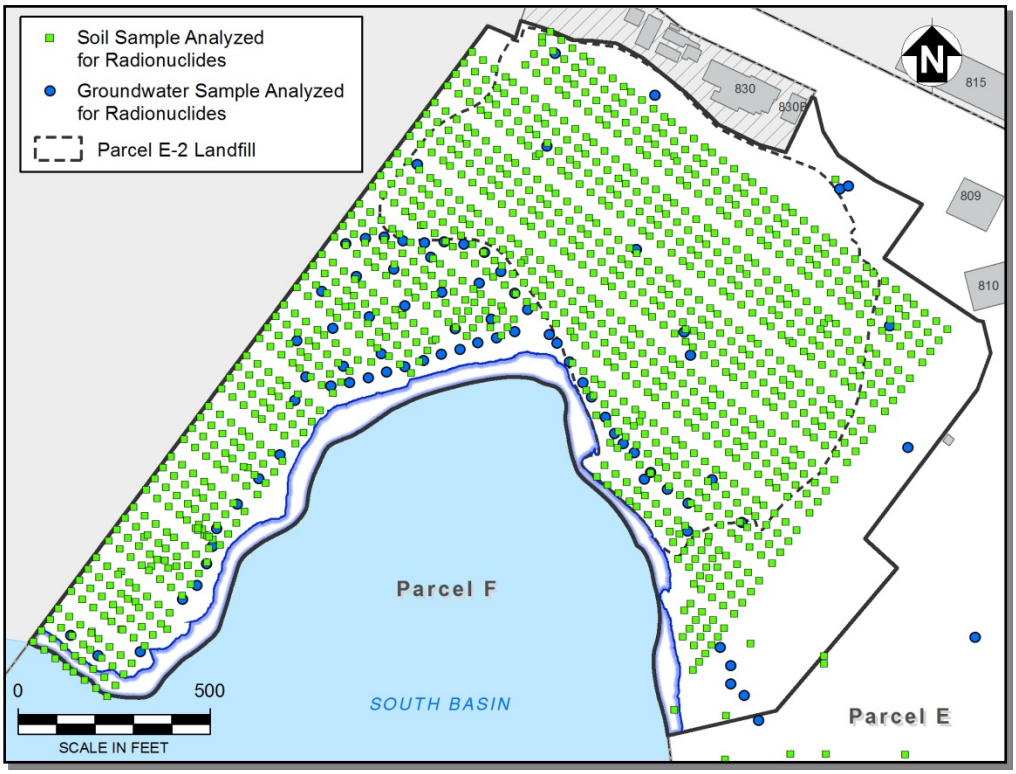

Figure 6. Previous Sampling Locations for Radionuclides

The Navy has also performed several removal actions at Parcel E-2 (Figure 7) to minimize potential exposure to hazardous chemicals. The removal actions successfully removed significant amounts of contamination from certain areas of Parcel E-2; however, contamination remains elsewhere at Parcel E-2, which the Navy intends to address with the selected remedy described in this ROD. Table 1 summarizes the previous studies, investigations, and removal actions conducted at Parcel E-2.

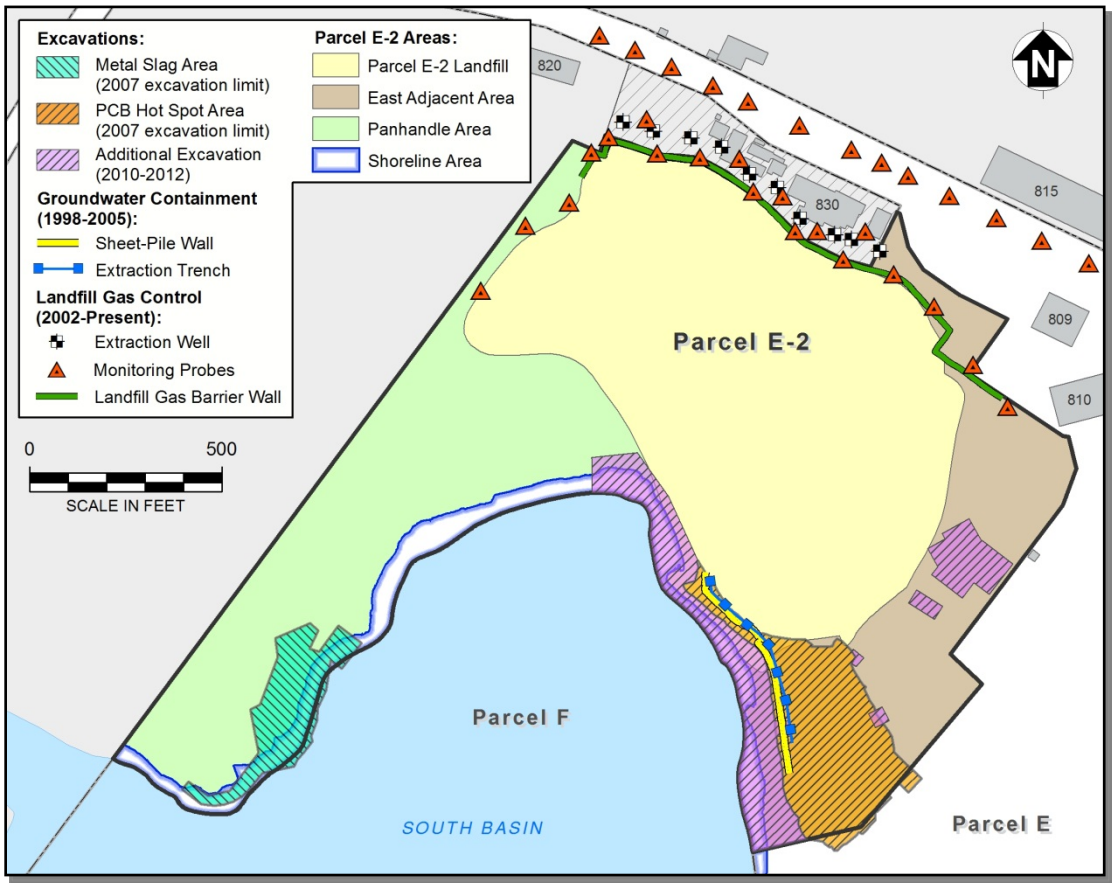

Figure 7. Previous Removal Actions

Table 1. Previous Investigations and Removal Actions

Previous Investigation/ Removal Action[a]	Date(s)	Investigation/Removal Action Activities
Initial Assessment Survey	1984	Records reviews and a visual inspection of the landfill (IAS Site 3, later renamed IR Site 01/21) were conducted. The IAS concluded it was highly probable that chemicals from waste disposed of in the Parcel E-2 Landfill had reached groundwater and were migrating toward San Francisco Bay.
Confirmation Study/ Verification Step	1987	A geophysical survey, subsurface exploration using exploratory borings, and soil and groundwater sampling were conducted in the area of the landfill. The study concluded that soil at the Parcel E-2 Landfill contained various VOCs and SVOCs that were associated with petroleum products and some chlorinated organic solvents.
Area Study	1987	The study was conducted throughout HPNS to evaluate whether a release of hazardous substances to soil had occurred at construction sites outside the boundaries of previously identified investigation sites. The area study primarily concluded that soil within Study Area A, including Parcels E and E-2, contained naturally occurring asbestos derived from serpentine bedrock
Solid Waste Air Quality Assessment Test	1988	The study included evaluation of meteorological conditions, ambient air quality, landfill gas compositions, surface gas emissions, and subsurface gas migration. Methane was detected in isolated pockets at IR Site 01/21 and at the northern edge of the IR Site 01/21 boundary (near the UCSF compound, but within the solid waste footprint).
OU-I RI	1988 – 1992	The Parcel E-2 Landfill progressed to the RI stage as IR Site 01/21 and was grouped (along with IR Sites 02 and 03 in Parcel E) into OU-I. The first phase of the OU-I RI (from 1988 to 1989) included a geophysical survey and test pit excavation to delineate the extent of landfill waste, a soil gas survey to evaluate the presence of VOCs in soil and groundwater, and installation of deep soil borings to define subsurface stratigraphy. Subsequent investigation phases involved sampling of soil and groundwater (performed from 1990 to 1992).
Radiological Investigations (Phases I and II)	1991 and 1993	During the Phase I investigation, nine radioactive point source anomalies associated with radium-containing devices were observed near the ground surface in the southwestern portion of Parcel E-2. During the Phase II investigation, trenches were excavated near these areas but no elevated gamma count rates were measured.
Parcel E RI/FS	1995 to 1998	The RI at the landfill was completed in conjunction with other Parcel E IR sites, and involved additional field investigation performed from October 1995 to June 1996. The Parcel E RI also included a baseline ERA and HHRA.
Groundwater Extraction System and Containment Barrier	1997 to 1998	A vertical sheet-pile wall and groundwater extraction system were installed at the southeast portion of Parcel E-2 to control contaminated groundwater next to San Francisco Bay. The sheet-pile wall, which remains in place, consists of interlocking steel panels and limits the flow of groundwater to the bay. The extraction system consisted of horizontal and vertical pipes and groundwater pumps, and removed contaminated groundwater that was transported to the off–site, publicly owned treatment works. The Navy operated the extraction system until 2005, when it was removed so that the contaminant source (i.e., the PCB Hot Spot Area) could be excavated and disposed of at one or more approved off–site landfills. During its 6 years of operation, extracted groundwater was tested for chemical contaminants and found to meet the City and County of San Francisco's requirements for direct discharge to the sewer system.
Interim Landfill Cap Construction	2000 to 2001	A protective liner and soil cover were installed over part of the landfill (about 14.5 acres) to stop smoldering below ground following a brush fire. The fire started on August 16, 2000, and was extinguished at the surface within 6 hours, but small areas continued to smolder below ground for approximately 1 month. Because the protective liner and soil cover limit air from entering into the landfill, they smothered any smoldering areas below ground. An extensive air monitoring program was performed during cap construction to demonstrate that public health and the environment of the nearby community were not compromised by air emissions from the subsurface smoldering and landfill capping activities.

Table 1. Previous Investigations and Removal Actions *(continued)*

Previous Investigation/ Removal Action[a]	Date(s)	Investigation/Removal Action Activities
Groundwater Data Gaps Investigation	July 2000 to October 2002	The groundwater data gaps investigation was conducted in three phases between 2000 and 2002 to better define the extent of groundwater contamination at HPNS. Water level measurements and a tidal study were used to refine the Parcel E-2 hydrogeological conceptual model, and three rounds of groundwater monitoring were used to develop a basewide groundwater monitoring program.
Radiological Investigations, Phase V (and other interim investigations)	2001 to 2005	In 2001, a characterization survey of the Parcels E and E-2 shoreline was performed that identified the Metal Slag Area. The Phase V investigation was performed from 2002 to 2003 at Parcel E-2. Several areas with elevated levels of radioactivity were reported.
Nonstandard Data Gaps Investigation	October 2001 to November 2002	Four separate investigations were conducted. ▪ Wetlands Delineation and Functions and Values Assessment (October 2001 to April 2002). Two wetland areas were identified at Parcel E-2: (1) about 2.4 acres of tidal wetlands along the shoreline and (2) about 1.3 acres of inland seasonal freshwater wetland in the Panhandle Area. The functions and values assessment found that the value of these wetlands is low. ▪ Landfill Lateral Extent Evaluation (March to April 2002). Test pits and soil borings were installed to determine that the lateral extent of landfill waste is about 22 acres and the vertical extent varies from 5 to 25 feet thick. ▪ Landfill Liquefaction Potential (April 2002). The evaluation indicated that most of the cohesionless soil layers (66 to 67 percent) would not liquefy during a MPE. The evaluation determined that, for the remaining soil layers that could liquefy during a MPE, lateral movement of soil below the waste would be less than 4 to 5 feet. The evaluation also concluded that, if containment were selected as the final remediation measure, further analysis would be required to properly design the landfill cap, and ensure the overall stability of the landfill site and other closure features. ▪ Landfill Gas Characterization (April to November 2002). Ambient air and soil gas surveys were conducted, and GMP01 through GMP21 were installed and monitored on a weekly basis. Results from GMP monitoring indicated that methane, the main component of landfill gas, was present at levels that exceeded the LEL (5 percent by volume in air) in subsurface areas in the northern part of the landfill and aboveground at four areas on the UCSF compound. Trace concentrations of NMOCs were also detected in this area; however, a screening evaluation concluded that the detected levels of NMOCs did not pose an unacceptable risk to human health.
Landfill Gas TCRA	August 2002 to May 2003	A landfill gas barrier wall, monitoring probes, and extraction wells were installed along the northern Parcel E-2 boundary to control gas from moving past the landfill boundary. The barrier wall, which consists of thick interlocking plastic panels, limits landfill gas from moving past the wall and directs it into a collection trench. The monitoring probes are used to verify that landfill gas is properly controlled. The extraction wells, which were used from 2002 to 2003 to remove landfill gas that had migrated under the UCSF facility, are currently used for monitoring purposes only. The Navy continues to operate and maintain the barrier wall to control landfill gas.
Standard Data Gaps Investigation	September 2002 to February 2003	The Navy reviewed aerial photographs and logs from test pits, soil borings, monitoring wells, and GMPs from various investigations at Parcel E-2 to identify known and potential contaminant sources that required additional delineation. Results from the standard data gaps investigation were also used to delineate the PCB Hot Spot Area and to characterize the nature and extent of chemicals in sediment in the Shoreline Area.
Landfill Gas Monitoring and Control	May 2003 to Present	Landfill gas is being monitored on a regular basis under the Interim Landfill Gas Monitoring and Control Plan to verify that hazardous concentrations of landfill gas are not migrating beyond the fence line of the landfill and onto the UCSF compound. The landfill gas control system is operated using both passive venting and active extraction.

Table 1. Previous Investigations and Removal Actions *(continued)*

Previous Investigation/ Removal Action[a]	Date(s)	Investigation/Removal Action Activities
Interim Cap Inspection and Maintenance	July 2003 to Present	Inspection and maintenance of the interim landfill cap is performed in accordance with a site-specific operation and maintenance plan.
Stormwater Management and Monitoring	July 2003 to Present	Stormwater discharge in Parcel E-2 is managed in accordance with a site-specific plan that is reviewed and updated regularly.
Basewide Groundwater Monitoring Program	June 2004 to Present	The Navy monitors groundwater on a regular basis under this program to evaluate chemicals previously detected at concentrations that may pose a potential risk to human health and the environment.
Metal Slag Area Removal Action	June 2005 to May 2006	The TCRA at the Metal Slag Area was performed to remove metal slag and debris containing low-level radiological material, as well as non-radiological chemical contamination incidental to the area. Approximately 8,200 cubic yards of contaminated soil and sediment, including 119 cubic yards of material with radionuclides, were excavated from this area in the southwest portion of Parcel E-2 and disposed of at one or more approved off-site landfills.
PCB Hot Spot Area Removal Action (Phase 1)	June 2005 to September 2006	The TCRA at the PCB Hot Spot Area was designed to remove PCB- and petroleum hydrocarbon-contaminated soil and debris, possibly containing low-level radiological material. The removal action goals also included removal of free-phase petroleum hydrocarbons to a practical extent. Approximately 44,500 cubic yards of contaminated soil, including 611 cubic yards of material with radionuclides, was excavated from this area in the southeast portion of Parcel E-2 and disposed of at one or more approved off-site landfills.
Groundwater Investigation	September 2007 to June 2008	A focused groundwater investigation was performed to evaluate chemical (i.e., dissolved metals, PCBs, petroleum hydrocarbons, and ammonia) concentrations along the Parcel E-2 shoreline. Study areas included areas adjacent to the Parcel E-2 Landfill, the PCB Hot Spot, and Metal Slag Area. The scope of the investigation was expanded to include supplemental sampling for specific radionuclides.
PCB Hot Spot Area Removal Action (Phase 2)	March 2010 to present	The Phase 2 TCRA at the PCB Hot Spot Area was designed to remove contaminated soil and debris from the shoreline portion of the PCB Hot Spot Area, and other select hot spots identified in the RI/FS Report. Approximately 40,000 cubic yards of contaminated soil is currently being excavated from areas not addressed during the Phase 1 removal action. The excavated soil is being disposed of at one or more approved off-site landfills, and the work is expected to be completed in spring of 2012.
Experimental Ship-Shielding Area Removal Action	February 2012 to present	The TCRA at the Experimental Ship-Shielding Area was designed to remove soil and debris containing low-level radiological material (containing ^{60}Co). Approximately 3,300 cubic yards of soil is currently being excavated and screened for radioactivity. Low-level radiological material identified during the screening process will be disposed of at an approved off-site landfill. The work is expected to be completed in summer 2012.

Notes:

[a] = The documents listed are available in the Administrative Record and provide detailed information used to support remedy selection at Parcel E-2.

^{60}Co = cobalt-60
ERA = ecological risk assessment
FS = feasibility study
GMPs = gas monitoring probes
HHRA = human health risk assessment
HPNS = Hunters Point Naval Shipyard
IAS = initial site assessment
IR = Installation Restoration
LEL = lower explosive limit
MPE = maximum probably earthquake
NMOCs = nonmethane organic compounds
OU = Operable Unit
PCB = polychlorinated biphenyl
RI = remedial investigation
SVOCs = semivolatile organic compounds
TCRA = time-critical removal action
UCSF = University of California San Francisco
VOCs = volatile organic compounds

Based on previous investigations and removal actions, the sources and extent of the remaining contamination in soil, sediment, landfill gas, and groundwater have been characterized adequately to select an appropriate remedy. This determination is consistent with **EPA guidance for CERCLA landfills**(11), which presents a specialized RI/FS process intended to improve and accelerate the site characterization and remedy evaluation process and to ensure consistent evaluation of remedial alternatives at similar sites. This process, which was applied to the Parcel E-2 Landfill, is based on the rationale that the unique characteristics of landfills (such as the presence of large volumes of municipal wastes frequently co-disposed with industrial wastes) limit the selection of practicable remedial alternatives. Consistent with EPA guidance, further characterization of solid waste is not necessary or appropriate for selecting a remedy for the Parcel E-2 Landfill. In addition, characterization efforts in the East Adjacent, Panhandle, and Shoreline Areas have provided sufficient data to evaluate potential risks to humans and wildlife because past sampling locations have focused on the most likely contaminant sources (based on a comprehensive review of historic aerial photographs and any visual evidence of contamination), to the extent practical. Sections 2.3.1, 2.3.2, 2.3.3, 2.3.4, and 2.3.5 summarize the nature and extent of nonradioactive contamination in soil, sediment, landfill gas, and groundwater. Section 2.3.6 describes the nature and extent of radionuclides in soil, sediment, and groundwater at Parcel E-2.

2.3.1. Solid Waste and Soil in the Parcel E-2 Landfill

The Navy installed 28 soil borings and 18 monitoring wells and excavated 25 test pits within the Parcel E-2 Landfill to evaluate the nature and extent of contamination. Based on these investigations, the Navy determined that contiguous solid waste in the Parcel E-2 Landfill is composed primarily of municipal-type waste and construction debris. In addition to municipal-type waste and construction debris, historic information indicates that industrial wastes were also disposed of in or around the Parcel E-2 Landfill, including sandblast waste, radioluminescent devices, asbestos-containing debris, paint sludge, solvents, and waste oils. The characterization data suggest that the quantity of industrial waste within the Parcel E-2 Landfill is less than the quantity of municipal-type waste and construction debris.

The soil data set for the Parcel E-2 Landfill includes 333 soil samples collected from the intermittent soil fill mixed with the solid waste. Metals, semivolatile organic compounds (SVOCs), VOCs, PCBs, pesticides, and petroleum hydrocarbons were detected at **concentrations exceeding the evaluation criteria**(12) in soil samples collected at the Parcel E-2 Landfill. Nearly all of the chemicals detected in Parcel E-2 Landfill soil at concentrations exceeding the evaluation criteria were of a limited extent relative to the overall waste volume. These results indicate that lesser quantities of potentially hazardous industrial wastes are present in the landfill as compared with municipal-type waste and construction debris.

2.3.2. Soil and Isolated Solid Waste in the East Adjacent and Panhandle Areas

The nature and extent of solid waste in the East Adjacent and Panhandle Areas are distinct from the solid waste defined in the Parcel E-2 Landfill. Specifically, fill material in the East Adjacent and Panhandle Areas consists primarily of soil and rock with isolated solid waste locations that are not contiguous with solid waste in the Parcel E-2 Landfill. Solid waste within the East Adjacent and Panhandle Areas consists of a heterogeneous distribution of construction debris and isolated locations of industrial wastes. The soil data set for the East Adjacent and Panhandle Areas includes 754 soil samples from 113 soil borings, 113 excavation grids within the PCB Hot Spot Area and Metal Slag Area, and 14 test pits. Metals, SVOCs, VOCs, pesticides, PCBs, dioxins and furans, and petroleum hydrocarbons were detected at **concentrations exceeding the evaluation criteria**(12) in soil samples collected in the East Adjacent and Panhandle Areas. The noncontiguous and heterogeneous nature of the fill material within the East Adjacent and Panhandle Areas results in a high degree of uncertainty that this fill and the chemicals in soil can be delineated into discrete zones for remediation activities.

2.3.3. Shoreline Sediment

The sediment data set includes 100 samples collected from 50 locations along the Parcel E-2 shoreline. Shoreline sediment was found to contain concentrations of copper and lead that are a **potential source of contamination to Parcel F**(13). In addition, benthic invertebrates, birds, and mammals are at risk from exposure to PCBs in surface sediments along the Parcel E-2 shoreline. Source control measures are warranted along the Parcel E-2 shoreline, particularly in the Metal Slag Area of the Panhandle Area and the Parcel E-2 Landfill, to control potential releases of copper and lead to Parcel F and to mitigate potential risk to benthic invertebrates, birds, and mammals in the shoreline. These conditions warrant the evaluation of remedial alternatives for intertidal sediments along the entire Parcel E-2 shoreline.

2.3.4. Landfill Gas

Landfill gas characterization(14), which consisted of 57 temporary soil gas borings and 21 permanent gas monitoring probes, determined that elevated methane concentrations were present north of the Parcel E-2 Landfill (including property owned by UCSF). The Navy conducted a removal action that was successful in (1) removing landfill gas and reducing subsurface methane concentrations at the UCSF compound and (2) controlling future migration of landfill gas to off-site areas. Data collected as part of the landfill gas characterization study, the removal action, and ongoing landfill gas monitoring have adequately defined the nature and extent of landfill gas at Parcel E-2. Additional studies are planned, in conjunction with the remedial design (RD), to more thoroughly evaluate soil gas concentrations in the Panhandle Area and East Adjacent Area and to assess whether methane or non-methane organic compounds (NMOCs) are present in the areas at concentrations that may be hazardous to human health.

2.3.5. Groundwater

Groundwater conditions at Parcel E-2 have been the subject of multiple investigations performed from 1990 through 2008, and the groundwater data set consists of samples collected from 116 A-aquifer wells and 10 B-aquifer wells that were analyzed for various chemicals. Through data collected during these investigations, groundwater contamination has been confirmed in both the A-aquifer and uppermost B-aquifer. **Groundwater contaminants**(15) include metals, SVOCs, VOCs, pesticides, PCBs, petroleum hydrocarbons, and anions (such as ammonia and cyanide). Groundwater sampling results indicated that the concentrations and extent of contamination in the uppermost B-aquifer are less than observed in the A-aquifer because an aquitard is present beneath most of Parcel E-2. Primary potential migration pathways for contaminated groundwater include migration and discharge of A-aquifer groundwater into San Francisco Bay and wetlands and migration of A-aquifer groundwater (including the saturated waste layer) into the uppermost B-aquifer.

2.3.6. Radionuclides in Soil, Sediment, and Groundwater

Past **radiological investigations**(16) have involved collection of over 1,000 soil samples within the upper 6 inches of the ground surface and analysis for a suite of 17 radionuclides. The investigation area was divided into 73 survey units (each 2,000 square meters, or 21,528 square feet). Within each survey unit, pertinent statistics for each radionuclide of concern (ROC), including the mean and maximum activity levels and the 95th percent upper confidence limit of the mean activity level (95 UCL activity level), were calculated within each survey unit. For evaluation purposes, the 95 UCL activity levels for each ROC were compared against residential and outdoor worker release criteria to provide the following general assessment of the distribution of **ROCs in surface soil**(17) at Parcel E-2.

- The extent of ^{137}Cs in surface soil is moderately extensive because the 95 UCL activity level exceeded the release criterion (0.113 picocuries per gram [pCi/g]; residential and outdoor worker release criteria are identical) in 16 out of 72 survey units.
- The extent of ^{226}Ra in surface soil is widespread because the 95 UCL activity level exceeded the release criterion (1 pCi/g above background not to exceed 2 pCi/g; residential and outdoor worker release criteria are identical) in 69 out of 73 survey units.
- The extent of ^{60}Co in surface soil is moderately extensive because the 95 UCL activity level exceeded the release criterion for an outdoor worker (0.0602 pCi/g) in three of the eight survey units located in the vicinity of the Experimental Ship-Shielding Area. However, using the more conservative residential release criterion (0.0361 pCi/g), the extent of ^{60}Co in surface soil in the vicinity of the Experimental Ship-Shielding Area is extensive because the 95 UCL activity level exceeded the release criterion for residents in all eight of the survey units.
- ^{90}Sr is not present in surface soil at radioactivity levels exceeding the outdoor worker release criterion (10.8 pCi/g); however, using the more conservative residential release criterion (0.331 pCi/g), the extent of ^{90}Sr in surface soil in Parcel E-2 is moderately extensive because the 95 UCL activity level exceeded the release criterion for residents in 37 of the survey units.

The extent of radioactive contamination in subsurface soil and shoreline sediment has not been completely defined; however, the selected remedy conservatively assumes, consistent with the findings of the HRA and radiological addendum to the RI/FS Report, that potential radionuclides (specifically, ^{137}Cs, ^{60}Co, ^{226}Ra, and ^{90}Sr) may be present in subsurface soil and shoreline sediment at Parcel E-2 and will therefore require remedial action. In addition, the RI/FS Report concluded that subsurface soil and shoreline sediment throughout Parcel E-2 contains nonradioactive chemicals that require remedial action. As a result, the selected remedy addresses the potential radionuclides and nonradioactive chemicals in subsurface soil and shoreline sediment at Parcel E-2.

The groundwater data set from two investigations, performed in 2002 and 2008, consists of samples collected from 78 A-aquifer wells and one B-aquifer well and analyzed for ^{137}Cs, ^{226}Ra, and ^{90}Sr. The **radionuclide groundwater data**(18) were evaluated by simple (non-statistical) threshold comparisons with a fixed standard (such as drinking water standards) and by statistical tests comparing the site data with fixed standards (one-sample statistical tests). Through these comparisons, the radiological addendum concluded that groundwater does not appear to have been impacted by radionuclides at activity levels that warrant remedial action. However, nonradioactive chemicals in groundwater within and in close proximity to the Parcel E-2 Landfill require remedial action, including monitoring, institutional controls, source removal, and containment. As a conservative measure, future monitoring will include analysis for radionuclides in groundwater to verify the conclusions of the radiological addendum.

2.4. CURRENT AND POTENTIAL FUTURE SITE USES

The data analysis, risk evaluations, and remedial alternatives presented in the RI/FS Report assumed that the **future reuse**(19) of Parcel E-2 will be open space. This assumption was developed in consultation with the City and County of San Francisco based on the 1997 "Hunters Point Shipyard Redevelopment Plan." Pursuant to the City and County of San Francisco's **2010 amended Redevelopment Plan**(20), a small area (about 0.42 acres) in the East Adjacent Area is part of the "Shipyard South Multi-Use District," and may be used for recreational, industrial, and residential purposes. The selected remedy will allow for potential residential use in this 0.42-acre area if it is demonstrated that soil contaminants do not exceed levels established elsewhere at HPNS for residential reuse, or if any contaminants that exceed those established levels are properly contained by the remedy. Section 2.9.2 describes how the selected remedy will address the range of potential reuses in this 0.42-acre area. Figure 8 presents the planned reuses within Parcel E-2.

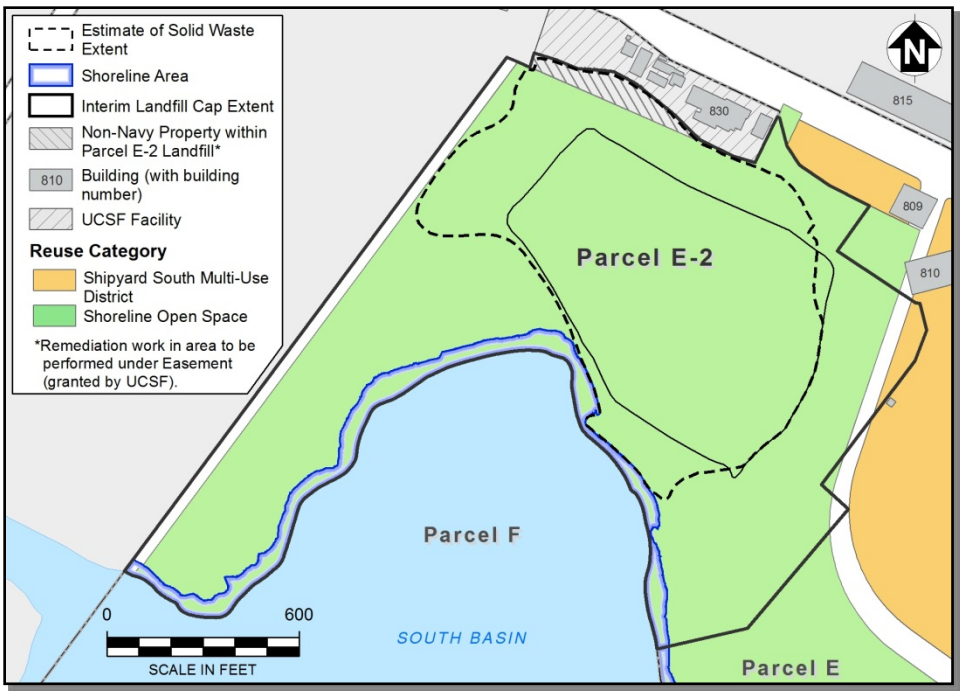

Figure 8. Planned Reuses

Groundwater in the A-aquifer, as discussed in the RI/FS Report, is not suitable for use as **drinking water**(7). Exposures to the A-aquifer were evaluated based on transport of groundwater to San Francisco Bay. Groundwater in the B-aquifer was evaluated as a drinking water source, based on pertinent regulatory criteria, and was determined to have a moderate potential for use as drinking water.

2.5. SUMMARY OF SITE RISKS

Potential contamination at Parcel E-2 is mostly attributed to waste disposal activities by the Navy or other tenants except for several metals (such as arsenic, manganese, and nickel), which were found at concentrations consistent with ambient levels in the local serpentine bedrock. Contaminated media at Parcel E-2 consist of soil, subsurface air (emanating from the landfill), groundwater, surface water runoff, and intertidal sediment. The primary contaminant transport mechanisms are (1) surface water runoff into San Francisco Bay, (2) water infiltration and percolation into subsurface soil and groundwater, and (3) landfill gas migration to off-site property. A general conceptual site model (CSM) for Parcel E-2 is provided on Figure 9. Based on the CSM, Parcel E-2 was evaluated for potential risks to human health and the environment in the RI/FS Report and its radiological addendum. Section 2.5.1 presents the results of the human health risk assessment (HHRA). Section 2.5.2 presents the results of the ecological risk assessments.

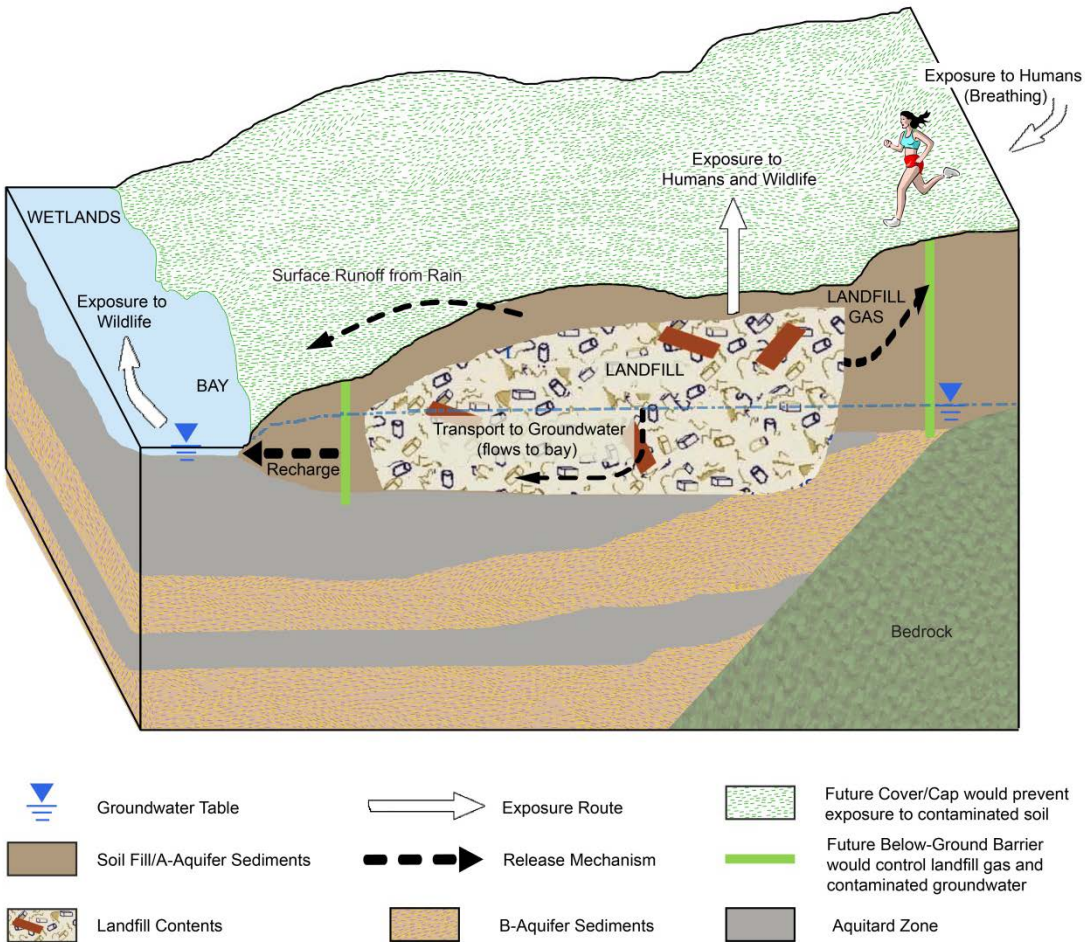

Figure 9. Conceptual Site Model

2.5.1. Human Health Risk Assessment

Based on a **CSM for human health**(21), a **quantitative HHRA**(22) was completed for soil and groundwater at the Parcel E-2 Landfill and the East Adjacent and Panhandle Areas. In addition, risks to human health from NMOCs in landfill gas were evaluated using the Johnson and Ettinger vapor intrusion model. Potential **cancer risks and noncancer hazards**(23) were calculated based on reasonable maximum exposure (RME) assumptions recommended by EPA and DTSC. These assumptions are based on an RME rather than an average or medium range exposure assumption and provide a conservative and protective approach that estimates the highest health risks that are reasonably expected to occur at a site. Actual risks from exposures to chemicals in soil and groundwater at Parcel E-2 are likely to be lower.

Cancer risk is the estimated probability that a person will develop cancer from exposure to site contaminants and is generally expressed as an upper-bound probability. For example, a 1 in 1,000,000 chance is a risk that for every 1,000,000 people, one additional cancer case may occur as a result of exposure to site contaminants. The Navy adopted a conservative approach at Parcel E-2 and evaluated

action where potential risk exceeded 1 in 1,000,000, which meets the most conservative end of the risk management range established by EPA. The 1 in 1,000,000 risk level is used as the point of departure for determining cleanup goals for alternatives when applicable or relevant and appropriate requirements (ARARs) are not available or are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure.

Noncancer hazard is the risk of health effects other than cancer, and is expressed as a number called the hazard index (HI). An HI of 1 or less is considered an acceptable exposure level for noncancer health hazards. The Navy evaluated action at Parcel E-2 areas with an HI greater than 1.

Both **total and incremental risks**(24) were evaluated for exposure to soil. For the total risk evaluation, all detected chemicals, including naturally occurring metals from the serpentine bedrock-derived fill material, were included as chemicals of potential concern regardless of their concentration. Only the essential nutrients calcium, magnesium, potassium, and sodium were not included as chemicals of potential concern. The total risk evaluation provides an estimate of the risks posed by chemicals and radionuclides at the site, including those present at concentrations at or less than ambient levels. For the incremental risk evaluation, the above essential nutrients and detected metals with maximum measured concentrations less than the Hunters Point ambient levels were excluded as chemicals of potential concern. The incremental risk evaluation provides an estimate of risks posed by metals and radionuclides present at the site that exceed the ambient levels.

Potential unacceptable risks include cancer risks and noncancer hazards for future receptors from exposure to soil or groundwater as discussed below. Potential unacceptable risk is defined as an excess lifetime cancer risk of greater than 1 in 1,000,000 or a segregated HI greater than 1 as calculated by the incremental risk evaluation.

Based on the **HHRA results for nonradioactive chemicals in soil and groundwater**(25), cancer risks exceeded 1 in 1,000,000 and noncancer hazards were greater than 1 (see Tables 2 and 3). In addition, **cancer risks from exposure to radionuclides in soil**(26) exceeded 1 in 1,000,000 (see Table 2). The highest cancer risks and noncancer hazards in soil were driven by PCB concentrations at the western and southwestern sidewall of the PCB Hot Spot Area, where the Phase 1 excavation activities stopped. Risk in this area is being addressed by the Phase 2 removal action, which is scheduled to be completed in 2012. The highest cancer risks and noncancer hazards in groundwater were estimated for future residents that could theoretically drink groundwater beneath Parcel E-2; however, groundwater is an unlikely source of drinking water because of high natural salt levels.

Table 2. Cancer Risks and Noncancer Hazards, Soil[a]

Parcel E-2 Area	Exposure Scenario	Cancer Risk		Noncancer Hazard Index
		Nonradioactive Chemicals	Radionuclides	
Parcel E-2 Landfill	Recreational	2 in 10,000	2 in 10,000	20
Panhandle Area	Recreational	6 in 10,000	1 in 10,000	6
East Adjacent Area	Recreational	6 in 10,000	2 in 10,000	10

Notes:

a = Listed risk value is the highest calculated value for Parcel E-2; risk is based on conditions before cleanup.

Table 3. Cancer Risks and Noncancer Hazards, Soil Gas and Groundwater[a,b]

Exposure Pathway	Exposure Scenario	Cancer Risk	Noncancer Hazard Index
Breathing Vapors from Landfill Gas	Residential[c]	6 in 10,000,000	<1
Breathing Vapors from Groundwater	Construction Worker	1 in 10,000	<1
Drinking Groundwater	Residential[d]	5 in 1,000	80

Notes:

a = Listed risk value is the highest calculated value for Parcel E-2; risk is based on conditions before cleanup.

b = No complete exposure pathways for planned open space reuse; other pathways evaluated to conservatively estimate risk.

c = Evaluation used gas data collected north of the landfill for residential exposure scenario.

d = Evaluation used shallow and deep groundwater data; groundwater is an unlikely source of drinking water because of high natural salt levels.

Estimated cancer risks from exposure to **NMOCs in landfill gas**(27) were less than 1 in 1,000,000 and noncancer hazards were less than 1 (see Table 3). Although remedial action is not required to mitigate cancer risks or noncancer hazards associated with landfill gas exposure, the selected remedy includes measures to ensure that methane concentrations are controlled within limits specified in California Code of Regulations (Cal. Code Regs.) Title (tit.) 27 § 20921(a). In addition, an NMOC action level of 500 parts per million by volume (ppmv) was developed, as part of the ongoing landfill gas monitoring program, to ensure that cancer risks remain less than 1 in 1,000,000 and noncancer hazards remain below 1.

The HHRA specifies the **assumptions and uncertainties**(28) inherent in the risk assessment process due to the number of samples collected or their location, the literature-based exposure and toxicity values used to calculate risk, and risk characterization across multiple media and exposure pathways. The effects of uncertainties are overestimation or underestimation of the actual cancer risk or HI. In general, the risk assessment process is based on the use of conservative (health protective) assumptions that when combined are intended to overestimate the actual risk.

2.5.2. Ecological Risk Assessment

The Navy performed a **screening-level ecological risk assessment**(29) (SLERA) to evaluate risks to wildlife (such as small mammals, birds, and marine life) from exposure to soil and sediment. The SLERA compared soil data against site-specific protective soil concentrations (PSCs) and ambient levels, and shoreline sediment data against various regulatory criteria (most notably, effects range-median values and ambient levels for San Francisco Bay). Based on comparison results, the Navy concluded that contaminated soil and shoreline sediment in Parcel E-2 pose a potential threat to wildlife. COECs include cadmium, copper, lead, manganese, mercury, nickel, vanadium, and zinc; PAHs; total dichlorodiphenyltrichloroethane (i.e., DDT); and total PCBs. The SLERA is a conservative assessment of potential risks to wildlife that was necessitated by the collection of additional data during the soil data gaps investigation in 2002. The Navy determined that the SLERA did not require further refinement because the original baseline ecological risk assessment, performed in 1997 as part of the original Parcel E RI (when Parcel E-2 was part of Parcel E), reached similar conclusions.

In addition, the Navy performed a SLERA to evaluate **risks to aquatic wildlife**(30) from exposure to potentially contaminated groundwater at Parcel E-2. Chemical concentrations in groundwater were screened against the assigned aquatic evaluation criteria, mainly comprising saltwater aquatic criteria, to identify chemicals of potential ecological concern (COPECs) for surface water quality. Site-specific data for select COPECs were then evaluated against **trigger levels**(31), consistent with the methods used in recent FS reports at other HPNS parcels, to further confirm if the COPECs needed to be addressed in remedial alternatives. Based on concentrations exceeding trigger levels (as adjusted based on ambient levels), the following chemicals (or groups of chemicals) pose a potential risk to aquatic wildlife exposed to potentially contaminated groundwater at Parcel E-2: copper, lead, and zinc; un-ionized ammonia, sulfide, and cyanide; PCBs; and TPH.

2.5.3. Basis for Response Action

The response action selected in this ROD is necessary to protect the public health, welfare, or the environment from actual or potential releases of hazardous substances into the environment. The Navy, in partnership with EPA, DTSC, and the Water Board, considered all pertinent factors in accordance with CERCLA and NCP remedy selection criteria and determined that remedial action is necessary to clean up soil, sediment, groundwater, landfill gas, and radiologically-impacted sanitary sewer and storm drain lines and soil at Parcel E-2. This determination was made because:

- Based on the HHRA results for **nonradioactive chemicals in soil**(32) and **groundwater**(33), cancer risks exceed 1 in 1,000,000 and noncancer hazards were greater than 1 (see Tables 2 and 3).
- Cancer risks from exposure to **radionuclides in soil**(34) exceed 1 in 1,000,000 (see Table 2).

- Methane concentrations in **landfill gas**(35) must be controlled within limits specified in Cal. Code Regs. tit. 27 § 20921(a).
- Based on the **SLERA results**(36), chemical concentrations in soil, shoreline sediment, and groundwater in Parcel E-2 pose a potential threat to wildlife.

The HHRA identified numerous nonradioactive COCs and several ROCs (specifically, ^{137}Cs, ^{60}Co, ^{226}Ra, and ^{90}Sr) in soil present at concentrations that posed an unacceptable cancer risk or noncancer hazard. The elevated concentrations of several COCs (most notably lead and PCBs) and one ROC (^{226}Ra) were found to be dispersed over large portions of Parcel E-2. The widespread extent of these COCs and ROC prompted the Navy to consider a combination of removal and containment options in developing potential response actions. Specifically, the Navy identified an approach that proposed removal of the soil areas that posed the most significant risk to humans, and proposed containment for the remaining soil areas that posed a lower risk to humans.

In identifying potential areas for removal, the Navy focused the list of COCs to those nonradioactive chemicals present at concentrations that exceeded the **remediation goals**(37), which generally correspond to a cancer risk of 1 in 1,000,000 or a noncancer HI of 1, by a factor of 10 or 100. Areas containing elevated nonradioactive COC concentrations pose the most significant risk to humans and are referred to as **hot spots**(38). Similarly, the Navy focused the list of COECs in soil and sediment to those nonradioactive chemicals present at concentrations that exceeded the remediation goals (corresponding to PSCs and other pertinent regulatory criteria) by a factor of 10 or 100.

The hot spots identified based on the process described above were categorized based on their potential risk to humans and wildlife:

- Near-shore hot spots were determined to pose the most substantial risk because they are a continuing source to groundwater contamination and are located in close proximity to San Francisco Bay. For COCs and COECs at these locations, hot spot goals were established at 10 times the remediation goals.
- Upland hot spots were determined to pose a slightly lower risk because they do not appear to be a continuing source to groundwater contamination and are located farther inland from San Francisco Bay. For COCs and COECs at these locations, hot spot goals were established at 100 times the remediation goals.
- An area was identified that appears to be a continuing source of VOCs to groundwater. Although this source area does not pose a risk to future recreational users at Parcel E-2, it could migrate to the adjacent Parcel E property at concentrations that may pose an unacceptable risk to future occupants. For VOCs at these locations, hot spot goals were established equal to the remediation goals for future residential occupants (consistent with the planned reuse at the adjacent Parcel E property).

Figure 10 identifies the locations of COCs and COECs at the nearshore hot spots, upland hot spots, and VOC source areas.

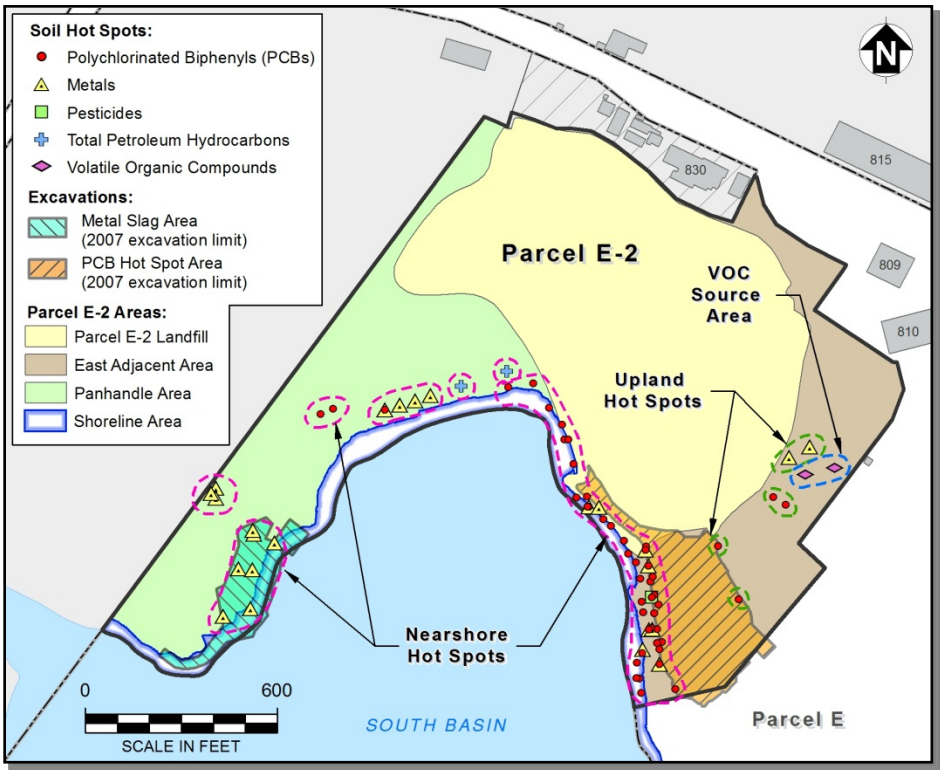

Figure 10. Hot Spots in Soil and Sediment

Table 4 identifies the COCs and COECs at the soil hot spots, along with the most stringent remediation goals and hot spot goals for each COC and COEC.

Table 4. Chemicals of Concern at Hot Spots

Hot Spot Category	Impacted Media	COC/COEC	Remediation Goal (mg/kg)	Hot Spot Goal (mg/kg)	Basis for Hot Spot Goal
Nearshore Hot Spots	Soil	Copper	470	4,700	10 times remediation goal for terrestrial wildlife[a]
		Heptachlor epoxide	0.21	2.1	10 times remediation goal for recreational users[a]
		Lead	197	1,970	10 times remediation goal for terrestrial wildlife[a]
		Total PCBs	0.74	7.4	10 times remediation goal for recreational users[a]
		Total TPH	3,500	3,500	TPH source criterion[b]
		Zinc	719	7,190	10 times remediation goal for terrestrial wildlife[a]

Table 4. Chemicals of Concern at Hot Spots *(continued)*

Hot Spot Category	Impacted Media	COC/COEC	Remediation Goal (mg/kg)	Hot Spot Goal (mg/kg)	Basis for Hot Spot Goal
Nearshore Hot Spots *(continued)*	Intertidal Sediment	Copper	270	2,700	10 times remediation goal for aquatic wildlife[a]
		Lead	218	2,180	10 times remediation goal for aquatic wildlife[a]
		Total PCBs	0.18	1.8	10 times remediation goal for aquatic wildlife[a]
		Total TPH	3,500	3,500	TPH source criterion[b]
Upland Hot Spots	Soil	Lead	197	19,700	100 times remediation goal for terrestrial wildlife[a]
		Total PCBs	0.74	74	100 times remediation goal for recreational users[a]
		Total TPH	3,500	3,500	TPH source criterion[b]
VOC Source Area	Soil	1,1-Dichloroethane	--	2.8	Residential RBC (for Parcel E)[c]
		Tetrachloroethene	--	0.48	Residential RBC (for Parcel E)[c]
		Trichloroethene	--	2.9	Residential RBC (for Parcel E)[c]
		Vinyl chloride	--	0.024	Residential RBC (for Parcel E)[c]

Notes:

a Remediation goals for recreational users, terrestrial wildlife, and aquatic wildlife are detailed in Table 5.

b The TPH source criterion represents the most conservative evaluation criterion for potential sources of groundwater contamination that may impact aquatic wildlife in San Francisco Bay, and is selected as the hotspot goal in areas where total TPH is known to be present in groundwater at concentrations exceeding the corresponding remediation goal (see Table 7 and Figure 11). The presence of total TPH at individual hot spots will be further evaluated in the remedial design.

c Residential RBCs (for the select VOCs that are present in Parcel E-2 and impact groundwater at Parcel E at concentrations that pose a risk to humans) represent the most conservative evaluation criteria and are selected as hotspot goals to maximize the effectiveness of the VOC source removal effort and on the presumption that, based on available site data, the VOC source area is limited in volume (see Figure 10).

COC = chemical of concern
COEC = chemical of ecological concern
mg/kg = milligrams per kilogram
PCBs = polychlorinated biphenyls
RBC = risk-based criteria
TPH = total petroleum hydrocarbons
VOC = volatile organic compounds
-- = not applicable

The Navy focused the removal for ROCs to the surface of radiologically impacted areas in Parcel E-2 (see Figure 3) because these areas posed the most significant risk to future recreational users. Following cleanup of ROCs near the ground surface, a cover (comprised of clean imported soil and geosynthetic material) and institutional controls, would effectively prevent unacceptable exposures to remaining concentrations of COCs and ROCs.

The HHRA identified numerous nonradioactive COCs in groundwater present at concentrations that exceeded remediation goals corresponding to either a cancer risk level of 1 in 1,000,000 or a noncancer hazard index of 1. In evaluating potential response actions, the Navy determined that potential risks to humans from exposure to groundwater could be adequately addressed through institutional controls and monitoring. However, the SLERA identified several nonradioactive COPECs in groundwater that could

migrate to San Francisco Bay at concentrations that exceed evaluation criteria for aquatic wildlife. The COPECs identified are copper, lead, and zinc; un-ionized ammonia, sulfide, and cyanide; PCBs; and TPH. Figure 11 identifies the groundwater areas where COPECs are present at concentrations that pose a potential risk to aquatic wildlife. Remedial action, in the form of source removal, containment, and monitoring, is needed to address this potential risk, and will be further evaluated in the RD using results from the ongoing groundwater monitoring program. Un-ionized ammonia and sulfide are not shown on Figure 11 because these COPECs are generated during decomposition of organic matter (both naturally occurring and anthropogenic) in reducing environments, and are readily transformed to non-toxic compounds upon discharge to oxygenated surface water. Accordingly, neither source removal nor containment is needed to protect aquatic wildlife from exposure to these COPECs; however, monitoring for these COPECs will be performed to verify the protectiveness of the remedy. As discussed in Section 2.3.6, the radiological addendum concluded that groundwater does not appear to have been impacted by radionuclides at activity levels that warrant remedial action; however, because monitoring is being performed for various COCs and COPECs, future monitoring will include analysis for radionuclides in groundwater to verify the conclusions of the radiological addendum.

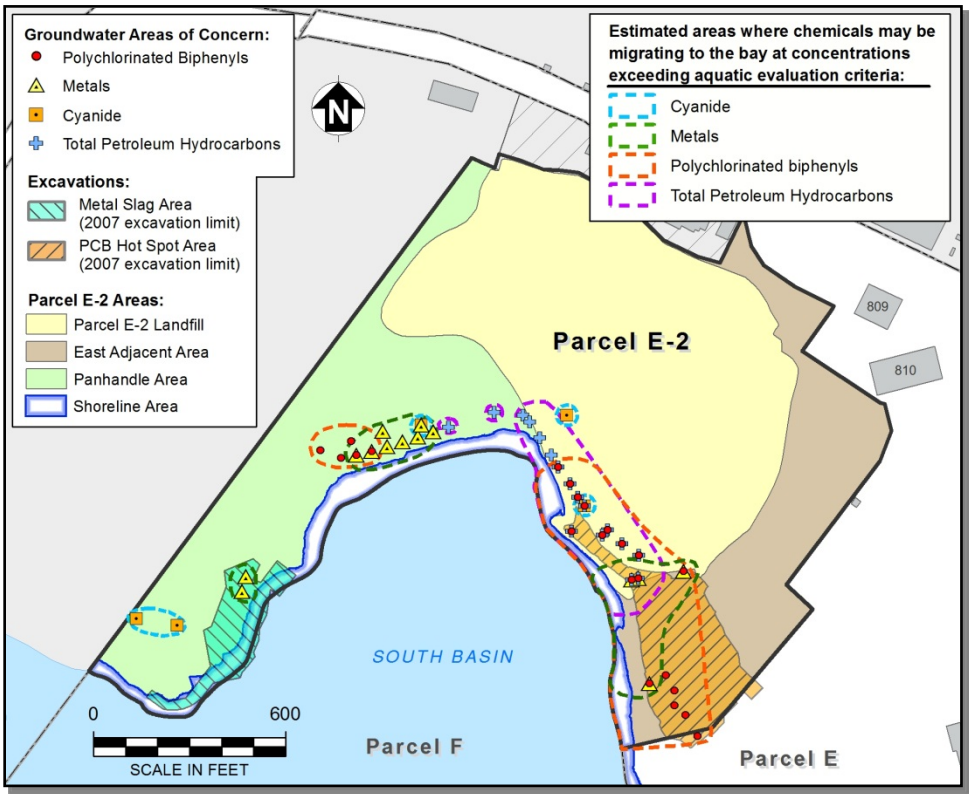

Figure 11. Groundwater Areas Posing a Potential Risk to Aquatic Wildlife

2.6. PRINCIPAL THREAT WASTE

According to EPA's "Guide to Principal Threat and Low Level Threat Wastes," principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. The Navy identified **potential hot spots within the Parcel E-2 Landfill**(39), but determined that these materials are not principal threat wastes because they (1) are located at relatively deep depths (8 to 17 feet below ground surface [bgs]); (2) have not migrated to A- or B-aquifer groundwater; (3) are located far from the Parcel E-2 shoreline (390 to 780 feet); and (4) are not connected with the PCB Hot Spot Area.

Following the Phase 1 removal action at the PCB Hot Spot Area, remaining chemical concentrations were identified as potential principal threat wastes because (1) PCB and heptachlor epoxide concentrations exceed the remediation goals by more than 100 times and are located at relatively shallow depths (0.5 to 7 feet bgs); (2) PCB and heptachlor epoxide were reported in groundwater during a subsequent data gaps investigation in this area; and (3) the area is located along the Parcel E-2 shoreline. To promptly address this potential threat, the Navy initiated a Phase 2 removal action in this area in 2010, which is scheduled to be completed in 2012.

2.7. REMEDIAL ACTION OBJECTIVES

Remedial action objectives(40) (RAOs) are established based on attainment of regulatory requirements, standards, and guidance; contaminated media; COCs and COECs; potential receptors and exposure scenarios; and human health and ecological risks. Ultimately, the success of a remedial action is measured by its ability to meet the RAOs. Planned future land use is an important component in developing RAOs, and the RAOs for Parcel E-2 are based on the City and County of San Francisco's 1997 reuse plan. However, pursuant to the city's 2010 amended plan, a small area (about 0.42 acres) in the East Adjacent Area may be used for recreational, industrial, and residential purposes. The selected remedy will allow for potential residential use in this 0.42-acre area if it is demonstrated that soil contaminants do not exceed levels established elsewhere at HPNS for residential reuse, or if any contaminants that exceed those established levels are properly contained by the selected remedy. Section 2.9.2 describes how the selected remedy will address the range of potential reuses in this 0.42-acre area.

The RAOs for Parcel E-2 were developed in conjunction with the regulatory agencies and are listed below by medium.

Soil and Sediment RAOs

1. Prevent or minimize human exposure to inorganic and organic chemicals at concentrations greater than remediation goals (see Table 5) for the following exposure pathways:

- Ingestion of, outdoor inhalation of, and dermal exposure to solid waste, soil, or sediment from 0 to 2 feet bgs by recreational users throughout Parcel E-2.
- Ingestion of, outdoor air inhalation of, and dermal exposure to solid waste, soil, or sediment from 0 to 10 feet bgs by construction workers throughout Parcel E-2.

2. Prevent or minimize ecological exposure to concentrations of inorganic and organic chemicals in solid waste or soil greater than remediation goals (see Table 5) from 0 to 3 feet bgs by terrestrial wildlife throughout Parcel E-2.
3. Prevent or minimize ecological exposure to concentrations of inorganic and organic chemicals in intertidal sediment greater than remediation goals (see Table 5) from 0 to 2.5 feet bgs by aquatic wildlife throughout the Shoreline Area.
4. Prevent or minimize exposure to ROCs at activity levels that exceed remediation goals (see Table 6) for all potentially complete exposure pathways.

Landfill Gas RAOs

1. Control methane concentrations to 5 percent (by volume in air) or less at subsurface points of compliance.
2. Control methane concentrations to 1.25 percent (by volume in air) or less in on-site structures ("on site" for this ROD is defined as any area within the subsurface points of compliance for landfill gas).
3. Prevent or minimize exposure to NMOCs at concentrations greater than 500 ppmv at the subsurface points of compliance.
4. Prevent or minimize exposure to NMOCs at concentrations greater than 5 ppmv above background levels in the breathing zone of on-site workers and visitors.

Groundwater RAOs, Domestic Use

1. Prevent or minimize exposure to groundwater that may contain COCs at concentrations greater than remediation goals (see Table 7) through the domestic use pathway.
2. Prevent or minimize migration of B-aquifer groundwater that may contain COCs at concentrations greater than remediation goals (see Table 7) beyond the **point of compliance**(41) (defined in the RI/FS Report at the downgradient boundary of Parcel E-2).

Groundwater RAOs, Construction Worker

1. Prevent or minimize dermal exposure to and vapor inhalation from A-aquifer groundwater containing COCs at concentrations greater than remediation goals (see Table 7) by construction workers.

Groundwater RAOs, Protection of Wildlife

1. Prevent or minimize migration of COPECs to prevent discharge that would result in concentrations greater than the corresponding **water quality criteria**(42) for aquatic wildlife.
2. Prevent or minimize migration of A-aquifer groundwater containing total TPH concentrations greater than the remediation goal (see Table 7) (where commingled with CERCLA substances) into San Francisco Bay.

Surface Water RAOs

1. Prevent or minimize migration of COPECs to prevent discharge that would result in concentrations greater than the corresponding **water quality criteria**(42) for aquatic wildlife.

Table 5 lists the remediation goals for COCs and COECs in soil and sediment. Table 6 lists the remediation goals for ROCs in soil and sediment, and Table 7 lists the remediation goals for COCs and COECs in groundwater.

Table 5. Remediation Goals for Nonradioactive Chemicals in Soil and Sediment

Exposure Scenario	COC/COEC	Remediation Goal (mg/kg)	Exposure Scenario	COC/COEC	Remediation Goal (mg/kg)
Recreational	Antimony	270	Construction Worker *(continued)*	Dioxin (TEQ)	0.000023
	Aroclor-1242	0.74		Heptachlor epoxide	1
	Aroclor-1248	0.74		Indeno(1,2,3-cd)pyrene	6.5
	Aroclor-1254	0.74		Iron	93,000
	Aroclor-1260	0.74		Lead	800
	Arsenic	11.1		Manganese	6,900
	Benzo(a)anthracene	1.3		Naphthalene	75
	Benzo(a)pyrene	0.33		Total PCBs (non-dioxin)	2.1
	Benzo(b)fluoranthene	1.3		Total TPH	3,500
	Benzo(k)fluoranthene	1.3		Vanadium	310
	Dieldrin	0.12	Terrestrial Wildlife	Cadmium	4.2
	Heptachlor epoxide	0.21		Copper	470
	Indeno(1,2,3-cd)pyrene	1.3		Lead	197
	Lead	155		Manganese	2,433
	Total PCBs (Non-Dioxin)	0.74		Mercury	1.0
Construction Worker	4,4'-DDT	45		Nickel	1,941
	Antimony	120		Vanadium	117
	Aroclor-1016	7.4		Zinc	719
	Aroclor-1242	2.1		Total DDT	3.53
	Aroclor-1248	2.1		Total PCBs	37
	Aroclor-1254	2.1		Total HMW PAHs	231

Table 5. Remediation Goals for Nonradioactive Chemicals in Soil and Sediment *(continued)*

Exposure Scenario	COC/COEC	Remediation Goal (mg/kg)	Exposure Scenario	COC/COEC	Remediation Goal (mg/kg)
Construction Worker *(continued)*	Aroclor-1260	2.1	Aquatic Wildlife	Antimony	25
	Arsenic	11.1		Copper	270
	Benzo(a)anthracene	6.5		Lead	218
	Benzo(a)pyrene	0.65		Mercury	0.71
	Benzo(b)fluoranthene	6.5		Nickel	112
	Benzo(k)fluoranthene	6.5		Zinc	410
	Cadmium	150		Total DDTs	0.046
	Copper	11,000		Dieldrin	0.008
	Dibenz(a,h)anthracene	1.1		Endrin	0.045
	Dieldrin	0.57		Total PCBs	0.18

Notes: The source of the remediation goals is presented in Sections 7 and 9 of the RI/FS Report.
COC = chemical of concern
COEC = chemical of ecological concern
DDT = dichlorodiphenyltrichloroethane
HMW = high-molecular weight
mg/kg = milligrams per kilogram
PAHs = polycyclic aromatic hydrocarbons
PCBs = polychlorinated biphenyls
TEQ = toxic equivalent

Table 6. Remediation Goals for Radionuclides in Soil and Sediment

	Exposure Scenario	
Radionuclide of Concern	Outdoor Worker (pCi/g)	Resident[a] (pCi/g)
Cesium-137	0.113	0.113
Cobalt-60	0.0602	0.0361
Radium-226	1.0	1.0
Strontium-90	10.8	0.331

Notes: The source of the remediation goals is presented in Sections 7 and 9 of the radiological addendum.
a = Residential use is not planned for Parcel E-2, but residential goals are proposed as an additional level of protection.
pCi/g = picocuries per gram

Table 7. Remediation Goals for Groundwater

Exposure Scenario	COC/COEC	Remediation Goal (µg/L)	Exposure Scenario	COC/COEC	Remediation Goal (µg/L)
Construction Worker Exposure to Shallow Groundwater	Benzo(a)anthracene	0.67	Domestic Use of Deep Groundwater	Bis(2-ethylhexyl)phthalate	10
	Benzo(a)pyrene	0.05		beta-BHC	0.05
	Benzo(b)fluoranthene	0.45		Carbon tetrachloride	0.5
	Benzo(k)fluoranthene	0.45		Chloroform	80
	Dibenz(a,h)anthracene	0.05		Chromium VI	109
	Indeno(1,2,3-cd)pyrene	0.31		Chrysene	0.56
	Lead	15		Dibenz(a,h)anthracene	2
Domestic Use of Deep Groundwater	1,1-Dichloroethane	5		Dieldrin	0.02
	1,2,3-Trichloropropane	1		Heptachlor	0.01
	1,2-Dichloroethane	0.5		Heptachlor epoxide	0.01
	1,4-Dichlorobenzene	5		Heptachlor epoxide A	0.01
	4-Nitrophenol	3.4		Heptachlor epoxide B	0.01
	Aroclor-1016	0.5		Indeno(1,2,3-cd)pyrene	0.2
	Aroclor-1242	0.5		Iron	10,950
	Aroclor-1254	0.5		Lead	15
	Aroclor-1260	0.5		Methylene chloride	5
	Arsenic	10		Naphthalene	1
	Benzene	1		Tetrachloroethene	5
	Benzo(a)anthracene	0.2		Thallium	2
	Benzo(a)pyrene	0.2		Trichloroethene	5
	Benzo(b)fluoranthene	0.2		Vinyl chloride	0.5
	Benzo(k)fluoranthene	0.2	Wildlife in the bay	Total TPH (goals vary based on distance from the bay)[a]	1,400 to 20,000

Notes: The source of the remediation goals is presented in Sections 7 and 9 of the RI/FS Report.

[a] =The distance-based TPH criteria are as follows:

Distance from shoreline (feet)	Total TPH (µg/L)	Distance from shoreline (feet)	Total TPH (µg/L)
0–<25	1,400	125–<150	6,949
25–<50	1,467	150–<175	9,539
50–<75	2,092	175–<200	12,604
75–<100	3,216	200–<225	16,145
100–<125	4,839	≥225	20,000

BHC = benzene hexachloride
COC = chemical of concern
COEC = chemical of ecological concern
TPH = total petroleum hydrocarbons
µg/L = micrograms per liter

2.8. DESCRIPTION AND EVALUATION OF REMEDIAL ALTERNATIVES

The Navy screened a range of **general response actions and remedial technologies**(43) and then, using the retained technologies, developed alternatives in the FS to address contamination at Parcel E-2. In developing the remedial alternatives, the Navy evaluated conditions at the Parcel E-2 Landfill relative to specific criteria established by EPA in their **presumptive remedy guidance**(44) for CERCLA landfills. The Navy determined that the Parcel E-2 Landfill meets all of the criteria specified in EPA's presumptive remedy guidance, and that the FS could be simplified to focus only on containment of the Parcel E-2 Landfill. However, based on feedback from members of the local community, the Navy chose to evaluate complete excavation of the landfill in the FS (Alternative 2) to provide information to support the community's review of potential remedial alternatives for Parcel E-2. In addition, the Navy evaluated several remedial alternatives (Alternatives 3, 4, and 5) involving containment with removal of nearshore and upland hot spots that, as described in Section 2.5.3, are located outside of the Parcel E-2 Landfill and pose a significant risk to humans and wildlife.

2.8.1. Description of Remedial Alternatives

The remedial alternatives evaluated for Parcel E-2 are listed and briefly described below. Table 8 (on page 37)describes the major components and cost of each remedial alternative identified for Parcel E-2.

- **Alternative 1 – No Action:** For this alternative, no remedial action would take place. The no action alternative is retained throughout the FS process as required by the NCP to provide a baseline for comparison with and evaluation of other alternatives.
- **Alternative 2 – Excavate and Dispose of Solid Waste, Soil, and Sediment (including monitoring, institutional controls, and unlined freshwater wetlands):** This alternative consists of removing all waste and contaminated soil from the 22-acre Parcel E-2 Landfill (up to 30 feet deep, which includes soil under the waste that may be contaminated) and all shallow soil and sediment from the Panhandle Area, East Adjacent Area, and Shoreline Area (up to 16 feet deep). Alternative 2 would involve excavating an estimated 1,166,000 cubic yards of waste, soil, and sediment from Parcel E-2 and disposing of it at one or more approved off-site landfills, as appropriate.
- **Alternative 3 – Contain Solid Waste, Soil, and Sediment with Hot Spot Removal (including monitoring, institutional controls, and lined freshwater wetlands):** This alternative consists of removing contaminated soil from nearshore hot spots adjacent to the PCB Hot Spot and Metal Slag Areas and disposing of it at one or more approved off-site landfills, as appropriate, followed by covering the remaining soil, waste, and sediment with at least 2 feet of clean soil. Alternative 3 would involve excavating 15,500 cubic yards of waste, soil, and sediment from Parcel E-2 (up to 16 feet deep), with disposal at an approved off-site landfill. In addition, the entire parcel would be scanned for radioactivity to a depth of 1 foot, and radiological contamination near the ground surface would also be excavated and disposed of one or more approved off-site landfills, as appropriate. Excavation would also be performed in the Panhandle Area to build new wetlands (both tidal and freshwater), and the excavated material would be screened to remove radiological

contamination before placing it elsewhere on Parcel E-2. A minimum 2-feet-thick soil cover would be placed over all of Parcel E-2, and a protective liner would be placed under the soil cover in all areas except the new tidal wetlands (the soil cover in the wetlands would be 4-feet-thick) to minimize water seeping into the contaminated material. Alternative 3 would include elements to control landfill gas and limit the flow of contaminated groundwater to San Francisco Bay.

- **Alternative 4 – Contain Solid Waste, Soil, Sediment, and Groundwater with Hot Spot Removal (including monitoring, institutional controls, and lined freshwater wetlands):** This alternative includes the same elements as Alternative 3, but includes removal of all hot spots and additional elements to contain groundwater. A total of 26,700 cubic yards of waste, soil, and sediment would be removed from Parcel E-2 (up to 16 feet deep) and disposed of at one or more approved off-site landfills, as appropriate. This is an additional 11,200 cubic yards compared to Alternative 3. Alternative 4 would also involve building a below-ground barrier near San Francisco Bay to better limit the flow of contaminated groundwater to the bay.
- **Alternative 5 – Contain Solid Waste, Soil, Sediment, and Groundwater with Hot Spot Removal (including monitoring, institutional controls, and unlined freshwater wetlands):** This alternative would have the same components as Alternative 4, but would include restoration of freshwater wetlands without a liner.

Alternatives 2, 3, 4, and 5 would each include monitoring and maintenance that would be performed as long as necessary to protect human health and the environment.

Table 8. Remedial Alternatives

	Remedial Alternative Number and Key Components	Cost
1	No actions or costs; this alternative is required by CERCLA as a baseline for comparison with the other alternatives.	No cost
2	**Excavation and Off-Site Disposal:** Excavate all waste and contaminated soil in the Parcel E-2 Landfill and all shallow waste, soil, and sediment in the Panhandle Area, East Adjacent Area, and Shoreline Area. Dispose of excavated waste and contaminated soil and sediment at an off-site landfill. **Wetlands Restoration in Panhandle Area and Shoreline Area:** Build new tidal and freshwater wetlands with appropriate soil and vegetation. Maintain and monitor wetlands. **Groundwater Monitoring/ICs:** Implement long-term monitoring of groundwater to assess whether chemicals are migrating and to monitor changes in ambient conditions. Impose ICs to limit the use of land or restrict activities that take place within an area. **Additional Radiological Actions:** Excavate potential radioactive contamination from (1) drain lines that extend into the East Adjacent Area but are located outside of the boundary of IR Site 01/21, and (2) berm in the Experimental Ship-Shielding Area. Dispose of excavated waste and soil at an off-site landfill. Perform final radiological surveys at all excavated areas prior to backfilling with clean, imported soil.	Capital Cost: $363.2M(45) Total O&M Cost: $3.8M Present-Worth Cost: $351.5M (2.8% discount rate) Timeframe: 34 years *Note: Cost includes $5.5M for radiological actions(46) that are common to each alternative.*
3	**Excavation and Off-Site Disposal:** Excavate all radioactive contamination near the ground surface. Excavate select nearshore hot spots in the Panhandle Area, East Adjacent Area, and Shoreline Area. Dispose of excavated waste and soil at an off-site landfill. **Excavation and On-Site Consolidation:** Excavate soil and debris from the parts of the Panhandle Area planned for new wetlands, and excavate sediment and debris from the Shoreline Area. Consolidate excavated soil, sediment, and debris at Parcel E-2. **Containment:** Install soil cover over all of Parcel E-2 and place a protective liner under the soil cover in all areas except the new tidal wetlands in the Panhandle Area. Build shoreline revetment at the edge of the soil cover. Perform active landfill gas extraction and treatment. Install below-ground barrier and drain at western boundary to divert groundwater flow into the landfill. Inspect and maintain soil cover, protective liner, groundwater barrier/drain, and gas control system. **Wetlands Restoration in Panhandle Area:** Build new tidal wetlands with appropriate soil and vegetation, but without a liner and shoreline revetment. Build new freshwater wetlands with appropriate soil and vegetation, and with a liner and shoreline revetment. Maintain and monitor wetlands. **Monitoring/ICs:** Implement long-term monitoring of landfill gas, stormwater, and groundwater to assess whether chemicals are migrating and to monitor changes in ambient conditions. Impose ICs to limit the use of land or restrict activities that take place within an area. **Additional Radiological Actions:** Excavate potential radioactive contamination from (1) drain lines that extend into the East Adjacent Area but are located outside of the boundary of IR Site 01/21, and (2) berm in the Experimental Ship-Shielding Area. Dispose of excavated waste and soil at an off-site landfill. Perform final radiological surveys at all excavated areas prior to backfilling with clean, imported soil.	Capital Cost: $62.4M(47) Total O&M Cost: $26.0M Present-Worth Cost: $78.4M (2.8% discount rate) Timeframe: 32 years *Note: Cost reflects the more expensive landfill gas treatment option (Option B); the specific treatment option will be identified in the remedial design. Cost also includes $5.5M for radiological actions that are common to each alternative.*
4	*All of the same elements as Alternative 3, but would also include:* **Additional Excavation and Off-Site Disposal:** Excavate additional nearshore and upland hot spots in the Panhandle Area, East Adjacent Area, and Shoreline Area (Tiers 3, 4, and 5 hot spots). Dispose of excavated waste and soil at an off-site landfill. **Groundwater Containment:** Build below-ground barrier along shoreline to better limit the flow of contaminated groundwater to San Francisco Bay. Extend the below-ground barrier south into the PCB Hot Spot Area, if needed to protect the bay. **Natural Clay Liner for Freshwater Wetlands:** New freshwater wetlands would be built with a natural clay liner.	Capital Cost: $70.8M(48) Total O&M Cost: $26.0M Present-Worth Cost: $86.6M (2.8% discount rate) Timeframe: 32 years *Same notes as Alternative 3.*
5	*All of the same elements as Alternative 4, but would also include:* **No Liner for Freshwater Wetlands:** New freshwater wetlands would be built without a liner.	Capital Cost: $70.9M(49) Total O&M Cost: $26.0M Present-Worth Cost: $86.7M (2.8% discount rate) Timeframe: 32 years

Notes:

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
ICs = institutional controls
IR = Installation Restoration
O&M = operation and maintenance
PCB = Polychlorinated Biphenyl

2.8.2. Comparative Analysis of Alternatives

A comparative analysis of alternatives with respect to the **nine evaluation criteria**(50) is provided below. Table 9 provides a relative ranking of the alternatives.

Table 9. Relative Ranking of Remedial Alternatives

CERCLA Criteria	1 No Action	2 Excavate and Dispose of Solid Waste, Soil, and Sediment (including monitoring, institutional controls, and unlined freshwater wetlands)	3 Contain Solid Waste, Soil, and Sediment with Hot Spot Removal (including monitoring, institutional controls, and lined freshwater wetlands)	4 Contain Solid Waste, Soil, Sediment, and Groundwater with Hot Spot Removal (including monitoring, institutional controls, and lined freshwater wetlands)	5[a] Contain Solid Waste, Soil, Sediment, and Groundwater with Hot Spot Removal (including monitoring, institutional controls, and unlined freshwater wetlands)
Threshold Criteria					
Overall Protection of Human Health and the Environment	No	Yes	Yes	Yes	Yes
Compliance with ARARs	N/A	Yes	Yes	Yes	Yes
Balancing Criteria					
Long-Term Effectiveness and Permanence					
Reduction in Toxicity, Mobility, or Volume Through Treatment					
Short-Term Effectiveness					
Implementability					
Present Worth Cost ($M)	0	351.5	78.4	86.6	86.7
Modifying Criteria					
State Acceptance					
Community Acceptance					

Notes: Fill symbol by quarters from open (poor) to full (excellent).

a = Indicates preferred alternative

ARARs = applicable or relevant and appropriate requirements

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act

Threshold Criteria

Overall Protection of Human Health and the Environment. Alternatives 2, 3, 4, and 5 provide adequate protection of human health and the environment, thereby satisfying this threshold criterion and making these alternatives eligible for selection as the final remedial action. Alternative 1, the "no action" alternative, would not provide adequate protection of human health and the environment and is not eligible for selection as the final remedial action.

Compliance with ARARs. Alternatives 2, 3, 4, and 5 comply with state and federal ARARs, thereby satisfying this threshold criterion and making these alternatives eligible for selection as the final remedial action. ARARs do not apply to the no-action alternative.

Primary Balancing Criteria

Long-Term Effectiveness and Permanence. Alternatives 2, 3, 4, and 5 each would be effective in the long-term. Alternative 2 would be most effective in the long-term because waste, soil, and sediment posing an unacceptable risk would be excavated and moved to another landfill. Alternatives 3, 4, and 5 would each be effective in the long-term because the hot spot areas would be removed and the final soil cover, protective liner, and control systems (for landfill gas and groundwater) would protect people and wildlife from being exposed to remaining contamination. The final cover, liner, and control systems would be maintained as long as contamination that could pose an unacceptable risk remains at the site. Alternatives 4 and 5 each include additional actions (additional excavation and installation of the below-ground barrier near San Francisco Bay) that would make them more effective in the long-term when compared with Alternative 3.

Reduction in Toxicity, Mobility, or Volume through Treatment. Alternatives 2, 3, 4, and 5 would perform equally in the way they reduce the toxicity, mobility, and volume of contaminants through treatment. These alternatives focus on removing and/or containing contaminants at Parcel E-2 and do not involve a significant amount of treatment.

Short-Term Effectiveness. Because of its invasive nature, Alternative 2 would pose more short-term risks to site workers and the surrounding community than the containment remedies (Alternatives 3, 4, and 5). These risks could include exposure to dust, noise, and increased construction traffic. Alternative 2 is estimated to span a 4-year period, during which excavation and disposal of solid waste, soil, and sediment would take place. This period is twice as long as the estimated 2-year construction period to implement Alternatives 3, 4, or 5, which involves construction of a cap and its associated control systems. Alternatives 3, 4, and 5 would also require less disruption of in-place solid waste, soil, and sediment than the excavation remedy. Based on these factors, the short-term effectiveness of Alternative 2 is deemed to be substantially lower than Alternatives 3, 4, and 5 (the containment alternatives), which are expected to have moderate to high short-term effectiveness. Alternative 1 would have the highest relative short-term

effectiveness because it would not involve remediation activities that might pose risks to the community, workers, or the environment.

Implementability. Alternative 2 presents numerous technical barriers that must be overcome for successful implementation because of the size and scale of the proposed excavation, thus the implementability of this remedy is lower than Alternatives 3, 4, and 5. Various controls would need to be implemented to minimize acute risks to site workers associated with Alternative 2. The massive scale of the excavation effort, coupled with the heterogeneous site conditions, make such controls difficult to implement. In contrast, the technologies for constructing Alternatives 3, 4, and 5 are proven and accepted technologies. Based on these factors, the implementability of Alternatives 3, 4, and 5 far exceeds that of Alternative 2, which has a low implementability. The no action alternative (Alternative 1) would have the highest relative implementability because no resources are required to implement this alternative and no known administrative considerations would affect its overall implementability.

Cost. Alternative 2 is the most costly ($351.5 million) primarily because it includes the excavation and off-site disposal of over 1.1 million cubic yards of solid waste, soil, and sediment. In comparison, Alternatives 3, 4, and 5 have more moderate costs (ranging from $78.4 to 86.7 million) for remedial construction and long-term operation, maintenance, and monitoring. Alternative 1 requires no action; therefore, no costs are associated with this alternative.

Modifying Criteria

State Acceptance. State involvement has been solicited throughout the CERCLA process. The State of California concurs with the Navy's selected remedial alternative (Alternative 5).

Community Acceptance. Community acceptance is evaluated based on comments received from the public during the public comment period for the proposed plan. The proposed plan, which identified Alternative 5 as the preferred remedial alternative, was presented to the community and discussed during a public meeting on September 20, 2011. Comments were also gathered during the public comment period from September 7 through November 21, 2011. In general, public comments expressed a preference for Alternative 2 and concerns regarding the long-term effectiveness of Alternatives 3, 4, and 5. However, segments of the community, represented by the San Francisco Redevelopment Agency and the Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have expressed their support of Alternatives 4 and 5. Attachment 3, the responsiveness summary, of this ROD addresses the public's comments and concerns about the selected remedial alternative at Parcel E-2 (Alternative 5). Additional information regarding the Navy's community participation efforts for Parcel E-2 is provided in Section 2.10.

2.9. SELECTED REMEDY

2.9.1. Rationale for Selected Remedy

The selected remedy for Parcel E-2 is Alternative 5, Contain Solid Waste, Soil, Sediment, and Groundwater with Hot Spot Removal (including monitoring, institutional controls, and unlined freshwater wetlands). The remedy was selected based on an evaluation of the remedial alternatives, as described in Section 2.8, relative to the nine evaluation criteria. The selected remedy complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria. The Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative published in the proposed plan (Alternative 5). The State of California, through DTSC and the Water Board, and segments of the community, represented by the San Francisco Redevelopment Agency and Mayor's Hunters Point Shipyard Citizens Advisory Committee, support Alternative 5. As detailed in Attachment 3, the information presented by members of the community that do not support Alternative 5 does not justify modification of Alternative 5, or selection of a different alternative, based upon the community acceptance criteria. The remedy will effectively reduce site risks by removing significant amounts of contaminants and safely containing the remaining material. The cover, landfill gas controls, and groundwater controls will prevent contact with hazardous materials at levels that might pose an unacceptable risk. The selected remedy will be designed to address potential sea level rise, erosion, and earthquakes and will meet the standards used at other landfills nationwide. In addition, the selected remedy will be subject to statutory reviews every 5 years, pursuant to CERCLA, to ensure that it remains protective of human health and the environment. The five-year reviews will consider multiple technical factors, including but not limited to potential sea level rise, erosion, and earthquakes. The selected remedy allows the property to be used in the future in a manner consistent with the 2010 amended Redevelopment Plan and includes monitoring and maintenance that would be performed as long as necessary to protect human health and the environment.

The Navy's selection of Alternative 5 is consistent with EPA's recommendation that containment actions are typically the best alternative for large landfill sites (greater than 10 acres) instead of removal or treatment actions. As described in Sections 2.3 and 2.8, the Navy determined that the Parcel E-2 Landfill has been adequately characterized and meets all of the criteria specified in EPA's **presumptive remedy guidance**(44). However, the Navy's evaluation has exceeded the requirements of the presumptive remedy guidance by evaluating complete excavation of the landfill in the FS (Alternative 2) to explain the relative risks of that alternative compared to the containment alternatives (Alternatives 3, 4, and 5), thereby supporting the community's review of potential remedial alternatives for Parcel E-2.

2.9.2. Description of Selected Remedy

The selected remedy consists of removing nearshore and upland hot spots that pose a significant risk to humans and wildlife (Figure 12), with disposal at one or more approved off-site landfills, as appropriate, and backfilling of the excavations with clean soil. The hot spot excavations will generally not extend

deeper than 10 feet bgs, consistent with the maximum depth evaluated in the HHRA; however, excavations at select nearshore hot spots may extend as deep as 16 feet bgs if necessary to remove continuing sources to groundwater contamination, and in accordance with performance criteria to be provided in the RD. Figure 12 also shows several areas on Parcel E-2 that are currently being excavated as part of a removal action. The excavation areas are close to the Phase 1 excavation at the PCB Hot Spot Area and, as discussed in Section 2.6, may contain principal threat wastes. The RI/FS Report estimated the hot spot excavations to comprise 33,500 cubic yards of waste, soil, and sediment; however, this estimated volume has increased because of the site conditions encountered during the current removal action. The RD will analyze the conditions after the removal action, and will specify the additional hot spot removal necessary to meet the hot spot goals.

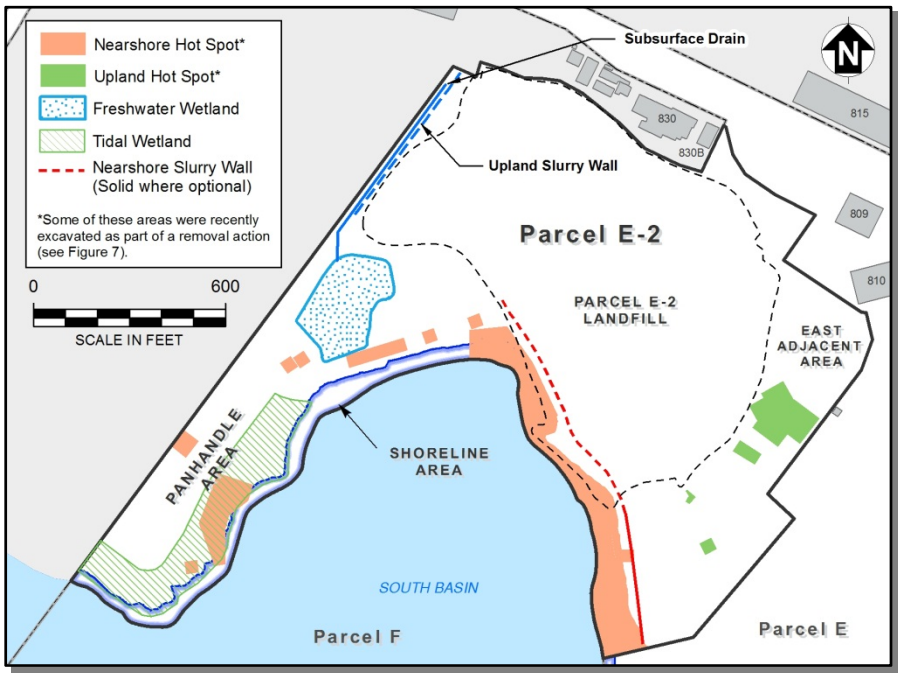

Figure 12. Hot Spot Excavations and Groundwater Containment Features

Radiological contamination near the ground surface will also be removed and disposed of at one or more approved off-site landfills, as appropriate. Additional excavation would be performed in the Panhandle Area to build **new wetlands**(51), and this excavated material would be screened to remove radiological contamination before placing it elsewhere on Parcel E-2 (Figure 13). The wetlands are not required to prevent exposure to contaminants, but are being created to offset the loss of wetlands at Parcel E-2 and other areas at HPNS. The Panhandle Area is the best location to create wetlands at HPNS because of its location along the shore of the South Basin.

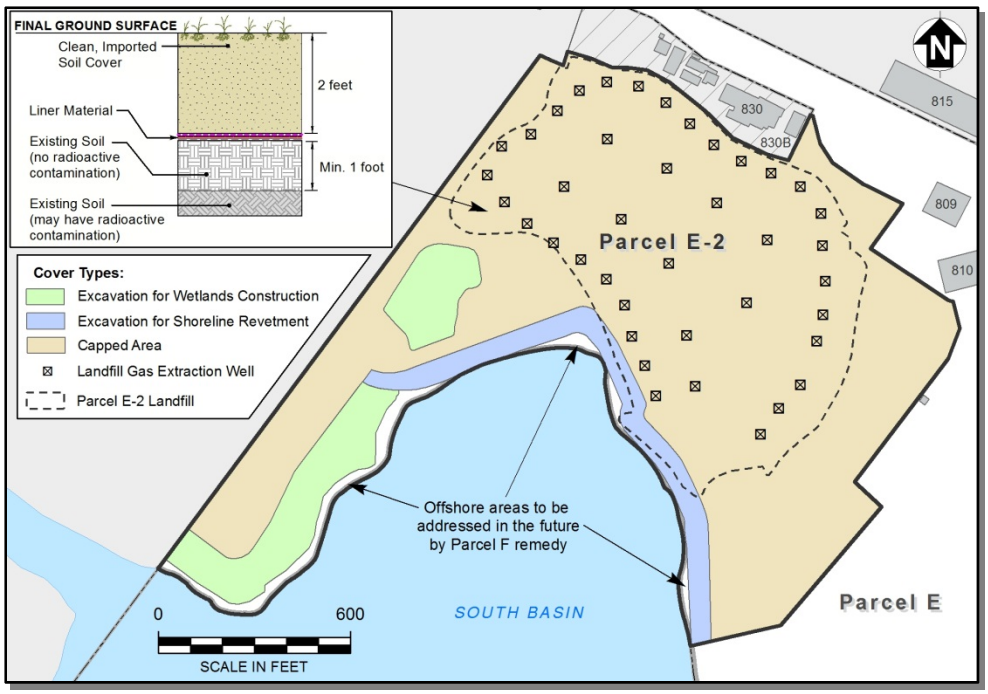

Figure 13. Excavation and Cover Plan

A minimum 2-feet-thick soil cover would be placed over all of Parcel E-2, and a protective liner would be placed under the soil cover in all areas except the new wetlands. The protective liner will minimize water seeping into the contaminated material, deter animals from burrowing under the cover, and serve as a visual marker for the bottom of the cover. A liner would not be used in the new wetlands, so that they function more naturally. To prevent exposure to contaminated material, the soil cover in the new wetlands would be 4 feet thick and would include a visual marker at the bottom of the cover.

The selected remedy would expand the existing **landfill gas controls**(52), which focus on the northern edge of the Parcel E-2 Landfill, by actively removing and treating gas from the entire Parcel E-2 Landfill (Figure 13). The existing landfill gas controls have been effective as an interim measure in preventing off-site migration of landfill gases from Parcel E-2; however, the expanded system is necessary to effectively control landfill gas in the long-term. Extracted landfill gas would be treated by either an enclosed flare or adsorbent material (such as a charcoal filter). An enclosed flare involves controlled burning of methane and low levels of other organic chemicals. An enclosed flare is the most common technology for treating landfill gas, and it limits the amount of methane (a greenhouse gas) that is released to the atmosphere. Adsorbent material is designed to capture NMOCs but not methane. The Navy currently uses a charcoal filter to capture NMOCs from the landfill gas control system. The Navy will further evaluate the treatment options during the design and will consult with the regulatory agencies and the community to determine which treatment option will be used.

Flow of contaminated groundwater into San Francisco Bay would be limited by installing a **below-ground barrier and drain along the western boundary**(53) (Figure 12). This barrier and drain would divert groundwater flow into the landfill to the new freshwater wetland. In addition, a **below-ground barrier would be installed near the shoreline**(54) and groundwater quality would be monitored at an appropriate location near the barrier (to be determined in the RD). The **groundwater would be pumped and treated if necessary**(55) to keep contaminants from flowing into San Francisco Bay.

The selected remedy includes a preliminary plan, developed with input from various technical experts that would **control soil movement during the maximum probable earthquake**(56) (MPE). If present over a large enough area and depth, certain types of soil (sands and silts) can liquefy during an earthquake and cause the ground surface to move. The Navy studied the soil in and around the Parcel E-2 Landfill and found that most soil would not liquefy even during the MPE. Additionally, the soil layers that might liquefy would be controlled through proper design and construction of the final cover using methods that are well established for sites in the San Francisco Bay area. The Navy will further evaluate, including consulting with other technical experts, this very important part of the design to make sure that the final cover is built to withstand the appropriate design earthquake and comply with numerous other regulatory requirements for landfill covers.

Parcel E-2 is planned for open space that includes parks and restored wetlands (with the exception of a small, 0.42-acre area that is described in the following paragraph). The covered upland area of Parcel E-2 would be accessible to pedestrians and may include part of the regional trail planned for the edge of San Francisco Bay. The new tidal wetlands would be combined with the planned wetland restoration at the non-Navy, California State Parks property immediately west of Parcel E-2 along Yosemite Slough. The shorelines adjacent to the upland area and the new tidal wetlands would require protection to make sure people and wildlife are not exposed to contaminated soil that is not excavated. The new tidal wetlands would have gradual slopes that can be protected by natural soil and vegetation. The upland area would have steeper slopes that require stronger protection. A rock revetment structure, consisting of large rocks placed on the shoreline slope, is proposed to prevent erosion and protect the edge of the covered upland area (Figure 13). The top of the revetment would extend high enough to protect against flooding from a **potential rise in sea level**(57), but would not obstruct pedestrians' views of San Francisco Bay because trails would be placed at about the same height as the top of the revetment. The bottom of the revetment would stop near the mean tide line, and the areas exposed during low tide would be natural sediment.

As discussed in Section 2.4, a small area (about 0.42 acres) in the East Adjacent Area is part of the "Shipyard South Multi-Use District," and may be used for recreational, industrial, and residential purposes. Although the selected remedy was initially developed (in the RI/FS Report) based on the future use of Parcel E-2 as open space, the Navy determined that, with relatively minor adjustments, the selected remedy could properly contain low-level soil contamination in the small 0.42-acre area and accommodate

industrial or residential use in this area. The following elements of the selected remedy will be adjusted (during the RD) if necessary to integrate with the range of potential reuses in this 0.42-acre area:

- Cover Type: The conceptual design for the cover in the East Adjacent Area (including the 0.42-acre area) consists of a 2-foot-thick soil layer underlain by a protective liner. The cover design for the 0.42-acre area will be further evaluated during the remedial design. Potential modifications to the cover design for the 0.42-acre area, if necessary to support specific planned reuses and supported by adequate data, may include modification of the soil cover (to exclude the protective liner) or use of another durable cover material (such as asphalt or concrete).
- Landfill Gas Control: Landfill gas control is not expected to be required in the East Adjacent Area but will be further studied during the RD. If landfill gas control is determined to be necessary in the East Adjacent Area, then the selected remedy will be designed to ensure that landfill gas is controlled within the Parcel E-2 boundary.
- Site Grading and Surface Water Drainage: The conceptual design for the cover in the East Adjacent Area includes gradual slopes that direct surface water runoff into a drainage channel along the eastern boundary of Parcel E-2. The site grading and drainage channel may require adjustment to align with the proposed redevelopment at the 0.42-acre area in Parcel E-2 and the adjoining portions of Parcel E.

The potential adjustments identified above will be further evaluated in the RD (which will be submitted for review and approval by EPA, DTSC, and the Water Board), and will be discussed with representatives from the City and County of San Francisco. The potential adjustments can be performed in a manner that (1) ensures the protection of human health and the environment, (2) complies with ARARs, and (3) is consistent with the evaluation of the remedial alternatives, as described in Section 2.8, relative to the nine evaluation criteria. In addition, institutional controls (described further on the following pages) will be implemented for continued protection of human health and the environment and to ensure the integrity of the final remedial action throughout Parcel E-2.

The selected remedy includes the following monitoring and maintenance activities that would be performed as long as necessary to protect human health and the environment and to comply with pertinent state and federal ARARs (see Attachment 4):

- Groundwater monitoring will be performed, consistent with the requirements of Cal. Code Regs. tit. 22 § 66264.100(d) and § 66264.310(b)(3), to verify that chemical concentrations in groundwater do not exceed concentrations designated by the RAOs at the point of compliance.
- Landfill gas monitoring will be performed to meet the RAOs and to demonstrate compliance with Cal. Code Regs. tit. 27 § 20917 through § 20934.
- Stormwater and erosion controls will be installed and maintained as required under Cal. Code Regs. tit. 27 § 20365(c) and (d), and stormwater discharges will be monitored as required under Cal. Code Regs. tit. 22 § 66264.97(c)(1) and (c)(2)(B).
- The cover will be inspected and maintained to ensure its integrity as required under Cal. Code Regs. tit. 27 § 21180(a).

The long-term monitoring and maintenance program will be detailed in the post-closure operation and maintenance plan (OMP) for Parcel E-2, consistent with content requirements as provided in Cal. Code Regs. tit. 27 § 21800(c), and submitted for review and approval by EPA, DTSC, and the Water Board in conjunction with the RD. Regulatory agency oversight will continue during long-term operation and maintenance of the selected remedy. In addition, the selected remedy will be subject to statutory reviews every 5 years pursuant to CERCLA to ensure that it remains protective of human health and the environment.

The Navy and the regulatory agencies would also implement institutional controls for continued protection of human health and the environment and to ensure the integrity of the final remedial action. Institutional controls are legal and administrative mechanisms used to implement land use and activity restrictions that are used to limit the exposure of future landowner(s) or user(s) of the property to hazardous substances present on the property, and to ensure the integrity of the remedial action. Institutional controls are required on a property where the selected remedial cleanup levels result in contamination remaining at the property above levels that allow for unlimited use and unrestricted exposure. Institutional controls will be maintained until the concentrations of hazardous substances in soil and groundwater are at such levels to allow for unrestricted use and exposure. Implementation of institutional controls includes requirements for monitoring and inspections, and reporting to ensure compliance with land use or activity restrictions. Figure 14 presents the area requiring institutional controls (ARIC).

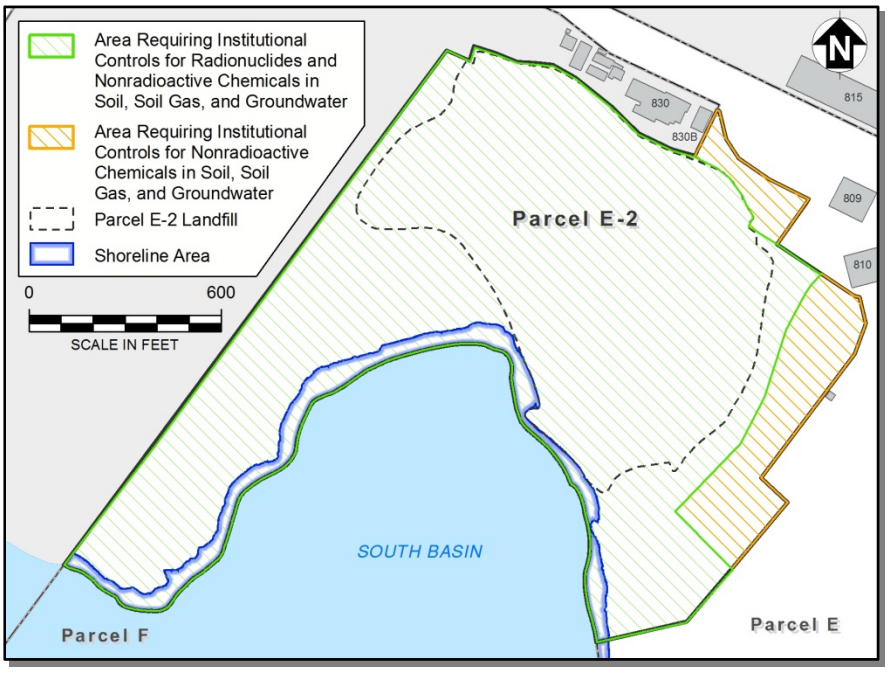

Figure 14. Area Requiring Institutional Controls

The Navy has determined that it will rely on proprietary controls in the form of environmental restrictive covenants as provided in the "Memorandum of Agreement between the United States Department of the Navy and the California Department of Toxic Substances Control" and attached covenant models (hereinafter referred to as the "Navy/DTSC MOA").

More specifically, land use and activity restrictions will be incorporated into two separate legal instruments as provided in the Navy/DTSC MOA:

1. Restrictive covenants included in one or more Quitclaim Deeds from the Navy to the property recipient.
2. Restrictive covenants included in one or more "Covenant to Restrict Use of Property" entered into by the Navy and DTSC as provided in the Navy/DTSC MOA and consistent with the substantive provisions of Cal. Code Regs. tit. 22 § 67391.1.

The "Covenant(s) to Restrict Use of Property" will incorporate the land use and activity restrictions into environmental restrictive covenants that run with the land and that are enforceable by DTSC against future transferees. The Quitclaim Deed(s) will include the identical land use and activity restrictions in environmental restrictive covenants that run with the land and that will be enforceable by the Navy against future transferees.

The land use and activity restrictions in the "Covenant(s) to Restrict Use of Property" and Quitclaim Deed(s) shall be defined in the land use control remedial design (LUC RD) report that would be prepared by the Navy, reviewed and approved by the other FFA signatories and, if deemed necessary, implemented through the Parcel E-2 Risk Management Plan (RMP) to be prepared by the CCSF and approved by the Navy, other FFA signatories and the California Department of Public Health (CDPH). The LUC RD report shall be referenced in the applicable Covenant to Restrict Use of Property and Deed.

In addition to being set forth in the "Covenant(s) to Restrict Use of Property" and Quitclaim Deed(s) as described above, restrictions applied to specified portions of the property will be described in findings of suitability to transfer and findings of suitability for early transfer. The Navy will also seek to access the portion of the Parcel E-2 Landfill extending onto UCSF property (as identified on Figure 8) to perform the remedial action pursuant to easements, or another appropriate legal mechanism, entered into with UCSF. In addition, the Navy may also seek to control use, through easements or another appropriate legal mechanism, of the portion of the Parcel E-2 Landfill extending onto UCSF property to ensure that its future use is compatible with the selected remedy. Specific requirements for accessing or potentially controlling use of the portion of the Parcel E-2 Landfill extending onto UCSF property will be specified in the LUC RD report.

Access

The Deed and Covenant shall provide that the Navy and other FFA signatories, where applicable, and for CDPH in the radiological ARIC (Figure 14), and their authorized agents, employees, contractors, and subcontractors shall have the right to enter upon HPNS Parcel E-2 to conduct investigations, tests, or surveys; inspect field activities; or construct, operate, and maintain any response or remedial action as required or necessary under the cleanup program, including but not limited to monitoring wells, pumping wells, treatment facilities, and cap and containment systems.

Implementation

The Navy shall address and describe implementation and maintenance actions for institutional controls, including periodic inspections and reporting requirements, in the preliminary and final RD reports to be developed and submitted to the other FFA signatories for review pursuant to the FFA (see "Navy Principles and Procedures for Specifying, Monitoring and Enforcement of Land Use Controls and Other Post-ROD Actions" attached to January 16, 2004 Department of Defense memorandum titled "Comprehensive Environmental Response, Compensation and Liability Act [CERCLA] Record of Decision [ROD] and Post-ROD Policy"). The preliminary and final RD reports are primary documents as provided in Section 7.3 of the FFA.

The Navy is responsible for implementing, maintaining, reporting on, and enforcing institutional controls. Although the Navy may later transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means, the Navy shall retain ultimate responsibility for remedy integrity.

Land Use and Activity Restrictions that Apply throughout Parcel E-2

The following paragraphs describe the institutional control objectives to be achieved through land use and activity restrictions throughout Parcel E-2 to ensure that any necessary measures to protect human health and the environment and the integrity of the remedy have been undertaken.

Land Use Restrictions

The City and County of San Francisco has designated most of HPS Parcel E-2 for open space reuse. A small area (about 0.42 acres) in the East Adjacent Area is designated as part of the Shipyard South Multi-Use District, which includes potential recreational, industrial, and residential reuse. Parcel E-2 shall be restricted to open space and recreational uses, unless written approval for other uses is granted by the FFA signatories. In addition, the following land uses are specifically prohibited in all Parcel E-2 areas, unless written approval for such uses is granted by the FFA signatories (e.g., in the small area designated as Shipyard South Multi-Use District), in accordance with the Covenant(s) to Restrict Use of the Property, Quitclaim Deed(s), LUC RD report, and Parcel E-2 RMP, if applicable:

a. A residence, including any mobile home or factory built housing, constructed or installed for use as residential human habitation.

b. A hospital for humans.

c. A school for persons under 21 years of age.

d. A daycare facility for children.

e. Any permanently occupied human habitation, including those used for commercial or industrial purposes.

For the small area designated as part of the Shipyard South Multi-Use District, any deviation from the restricted land uses specified above shall be described in writing and reference the appropriate engineering and institutional controls that will be relied upon to protect human health and the environment. This document must be submitted to and approved in writing by the FFA signatories in accordance with procedures (including dispute resolution procedures) and timeframes that will be set forth in the OMP and LUC RD report.

General Activity Restrictions

The following activities are restricted throughout HPNS Parcel E-2 and must be conducted in accordance with the "Covenant(s) to Restrict Use of Property," Quitclaim Deed(s), the OMP, the LUC RD report and, if deemed necessary, the Parcel E-2 RMP and any other work plan or document approved in accordance with these referenced documents:

a. "Land-disturbing activity," which includes but is not limited to (1) excavation of soil; (2) construction of roads, utilities, facilities, structures, and appurtenances of any kind; (3) demolition or removal of "hardscape" (for example, concrete roadways, parking lots, foundations, and sidewalks); (4) any other activity that involves movement of soil to the surface from below the surface of the land; and (5) any other activity that causes or facilitates the movement of groundwater known to be contaminated with radionuclides or nonradioactive chemicals.

b. Alteration, disturbance, or removal of any component of a response or cleanup action (including but not limited to pump-and-treat facilities, revetment walls and shoreline protection, and soil cap containment systems); groundwater extraction, injection, and monitoring wells and associated piping and equipment; or associated utilities.

c. Extraction of groundwater and installation of new groundwater wells.

d. Removal of or damage to security features (e.g., locks on monitoring wells, survey monuments, fencing, signs, or monitoring equipment and associated pipelines and appurtenances).

In addition, the following activities are prohibited throughout HPNS Parcel E-2:

a. Growing vegetables or fruits in native soil for human consumption.

b. Use of groundwater.

Additional Activity Restrictions Related to Radionuclides at Parcel E-2

Exposure to radionuclides in the radiological ARIC (Figure 14) would be prevented by three separate components: (1) an engineered cover, consisting of clean imported fill and (in most areas) a low hydraulic conductivity layer, to provide adequate shielding against residual radioactivity; (2) permeable geosynthetic fabric to serve as a "demarcation layer" between soil cover and underlying soil with residual radioactivity; and (3) institutional controls to implement land use and activity restrictions necessary to limit the exposure to radiological hazardous substances and to ensure the integrity of the remedial action.

In addition to the land use and activity restrictions specified above, the following activity restriction would apply in the radiological ARIC.

a. Land-disturbing activities within the radiological ARIC, as defined above and including installation of water lines, storm drains, or sanitary sewers, below the demarcation layer, are strictly prohibited unless approved in writing by the FFA signatories and the CDPH. Any proposed land-disturbing activity within the ARIC for radionuclides shall be required to be described in a work plan that will include but not be limited to a radiological work plan, the identification of a radiological safety specialist, a soil management plan, soil sampling and analysis requirements, and a plan for off-site disposal of any excavated radionuclides by the transferee in accordance with federal and state law. This work plan must also specify appropriate procedures for the proper identification and handling of material potentially presenting an explosive hazard. This work plan must be submitted to and approved in writing by the FFA signatories and CDPH in accordance with procedures (including dispute resolution procedures) and timeframes that will be set forth in the OMP and LUC RD report.

b. Following implementation of an approved land-disturbing activity within the radiological ARIC, the integrity of the cover/cap must be restored upon completion of excavation as provided in the OMP, LUC RD report, or similar document. A completion report describing the details of the implementation of the work plan, sampling and analysis (if required), off-site disposal (if required), and the restoration of the integrity of the cover/cap must be submitted to and approved in writing by the FFA signatories and CDPH in accordance with procedures (including dispute resolution procedures) and timeframes that will be set forth in the OMP and LUC RD report.

c. For land-disturbing activities, as defined above and including installation of water lines, storm drains, or sanitary sewers, above the demarcation layer, the LUC RD report, the OMP, or, if deemed necessary, the RMP or a project-specific work plan will list the procedures for ensuring that the cover is not disturbed or breeched. The specific design of the cover shall be agreed to in the RD.

At the time of transfer, the areas that require this restriction will be surveyed to define the legal metes and bounds for inclusion in the property transfer documents. No variance or exemption from this restriction shall be allowed unless written approval is provided by the FFA signatories and CDPH. The OMP or LUC RD report shall address any necessary additional soil and radiological management requirements, for example inspections, monitoring, and reporting requirements for portions of Parcel E-2 in the radiological ARIC.

Additional Activity Restrictions Related to Subsurface Gas at Parcel E-2

Any proposed construction of enclosed structures must be approved in accordance with the Covenant to Restrict Use of the Property, Quitclaim Deed(s), the LUC RD report and, if deemed necessary, the Parcel E-2 RMP prior to conducting such activities within the ARIC (Figure 14) to ensure compliance with the substantive provisions of Cal. Code Regs. tit. 27 § 21190(a), (b), (d), (e), (f) and (g), which require that postclosure land uses be designed and maintained to protect health and safety in areas affected by landfill gas migration. In particular, Cal. Code Regs. tit. 27 § 21190(g) specifies design and construction standards for "all on site construction within 1,000 feet of the boundary of any disposal area." The Navy has determined that the substantive provisions of Cal. Code Regs. tit. 27 § 21190(g) are relevant and appropriate for future construction within the Parcel E-2 boundary, including the portion of the Parcel E-2 Landfill that extends onto UCSF property, because Parcel E-2 may be affected by subsurface gas emanating from the Parcel E-2 Landfill. However, these provisions are not relevant and appropriate to future off-site construction beyond the Parcel E-2 boundary because these areas are not affected by subsurface gas emanating from the Parcel E-2 Landfill. The interim gas control system and ongoing monitoring program are effectively controlling the migration of hazardous levels of landfill gas beyond the Parcel E-2 boundary. The permanent gas control system in the selected remedy would continue to control the migration of hazardous levels of landfill gas beyond the Parcel E-2 boundary.

Human health can be protected through engineered containment systems, such as landfill caps and gas control systems, or other design alternatives that meet the specifications set forth in the RD reports, the LUC RD report and, if deemed necessary, the Parcel E-2 RMP. The FFA signatories may modify the ARIC, which will initially include all of HPNS Parcel E-2, as soil contamination areas and groundwater contaminant plumes that are producing unacceptable risks to human health are reduced over time; or in response to further soil, vapor, and groundwater sampling and analysis that establishes that areas now included in the ARIC do not pose an unacceptable risk to human health.

2.9.3. Expected Outcomes of the Selected Remedy

Once the selected remedy has been implemented, risks to human health and the environment under the planned recreational use will be acceptable and the RAOs will be achieved. Excavation and off-site disposal of hot spots and radioactive contamination near the ground surface will reduce site risks, and the cover will prevent contact with remaining contamination that might pose an unacceptable risk. The liner will minimize water seeping into the contaminated material, deter animals from burrowing under the cover, and serve as a visual marker for the bottom of the cover. The landfill gas and groundwater controls will effectively limit the migration of hazardous chemicals at concentration that may pose an unacceptable risk. The selected remedy will take a relatively short period of time to implement and will use readily available technologies and labor. Following implementation, long-term monitoring and maintenance will ensure the continued protection of human health and the environment. In addition,

institutional controls will restrict potential exposure to contaminated soil, sediment, landfill gas, and groundwater and the restrictions will be consistent with the planned future use of Parcel E-2.

2.9.4. Statutory Determinations

In accordance with the NCP, the selected remedy meets the following statutory determinations.

- **Protection of Human Health and the Environment** – The selected remedy will adequately protect human health and the environment by preventing exposure to COCs and COECs through the excavation of hot spots and radioactive contamination near the ground surface, installation and monitoring of a containment systems (including cover and landfill gas and groundwater controls), and the implementation of institutional controls.
- **Compliance with ARARs** – CERCLA § 121(d)(1) states that remedial actions on CERCLA sites must attain (or the decision document must justify the waiver of) any federal or more stringent state environmental standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate. The selected remedy for Parcel E-2 will comply with the substantive provisions of the federal and state requirements identified as ARARs. The chemical-, location-, and action-specific ARARs for the selected remedy are summarized in Attachment 4.
- **Cost-Effectiveness** – As specified in the NCP, the cost-effectiveness of a remedy is determined in two steps. First, the overall effectiveness of a remedial alternative is determined by evaluating the following three of the five balancing criteria: (1) long-term effectiveness and permanence; (2) reduction in toxicity, mobility, or volume through treatment; and (3) short-term effectiveness. The overall effectiveness is then compared to cost to determine whether a remedy is cost-effective. The selected remedy has a high overall effectiveness because, relative to the other remedial alternatives (most notably Alternative 2), it offers a high degree of long-term effectiveness in a manner that minimizes short-term risks. In contrast, the high degree of long-term effectiveness of Alternative 2 is offset by significant short-term risks. Reduction in toxicity, mobility, or volume through treatment is not a decisive factor because Alternatives 2, 3, 4, and 5 focus on removing and/or containing contaminants at Parcel E-2 and do not involve a significant amount of treatment. The selected remedy will provide high overall effectiveness proportional to its costs, as demonstrated by the improved overall effectiveness of Alternative 5 relative to Alternative 3 for a modest (approximately 10 percent) incremental cost increase. Therefore, the selected remedy is considered cost-effective. In contrast, Alternative 2 is not considered cost-effective because its lower overall effectiveness (relative to Alternative 5) is accompanied by a significant incremental cost increase (over 300 percent relative to Alternatives 3, 4, and 5).
- **Utilization of Permanent Solution and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable** – The Navy has determined that the selected containment remedy, combined with excavation of small quantities of more highly contaminated soil, represents the maximum extent to which permanent solutions and treatment are practicable at this site. The selected containment remedy (Alternative 5) provides the best balance of tradeoffs relative to the five balancing criteria: (1) long-term effectiveness and permanence; (2) reduction in toxicity, mobility, or volume through treatment; (3) short-term effectiveness; (4) implementability; (5) and cost. Alternative 5 provides a high degree of long-

term effectiveness, although not as high as Alternative 2, because the hot spot areas would be removed and the final soil cover, protective liner, and control systems (for landfill gas and groundwater) would protect people and wildlife from being exposed to remaining contamination. Reduction in toxicity, mobility, or volume through treatment is not a decisive factor because Alternatives 2, 3, 4, and 5 focus on removing and/or containing contaminants at Parcel E-2 and do not involve a significant amount of treatment. Alternative 5 provides the highest degree of short-term effectiveness and implementability because it uses proven and accepted technologies that can be implemented more quickly and readily than the other alternatives, most notably Alternative 2, thereby reducing the short-term risks to site workers and the surrounding community. Alternative 5 has comparable cost to Alternatives 3 and 4; Alternative 2 is significantly more expensive than Alternatives 3, 4, and 5. Relative to the two modifying criteria (state and community acceptance), Alternative 5 is accepted by the State of California and some segments of the local community; however, the overall community acceptance of Alternative 5 is poor because of the general preference for the more complete removal proposed under Alternative 2. In summary, Alternative 5 provides a combination of removal and containment that reduces risk sooner, is easier to implement and much more cost-effective than Alternative 2, and provides additional risk reduction as compared with Alternatives 3 and 4. The performance of Alternative 5 relative to the five balancing criteria, in addition to its acceptance by the state, outweigh the community's overall lack of acceptance for Alternative 5.

- **Preference for Treatment as a Principal Element** – The selected remedy does not satisfy the statutory preference for treatment[5] as a principal element because there is no cost-effective means of treating the large quantity of low-level soil contamination throughout Parcel E-2 and the small quantities of principal threat wastes at the PCB Hot Spot Area cannot be treated in a cost-effective manner. Accordingly, none of the remedial alternatives proposed a significant amount of treatment. The principal threat wastes at the PCB Hot Spot Area are being excavated under a removal action that is scheduled to be completed in 2012. The protective liner and below-ground barriers are expected to reduce the mobility of contamination, and natural attenuation mechanisms will reduce contaminant toxicity, mobility, and volume.
- **Five-Year Review Requirements** – Statutory five-year reviews pursuant to CERCLA § 121 and the NCP will be conducted because the selected remedy will leave contamination in place at Parcel E-2 above levels that allow for unrestricted use and unlimited exposure. Five-year reviews for Parcel E-2 will follow the ongoing schedule of five-year reviews established for other remedies in place at HPNS.

2.10. COMMUNITY PARTICIPATION

Community participation at HPNS includes public meetings, public information repositories, an Installation Restoration (IR) Program website, newsletters and fact sheets, public notices, and site tours. The Community Involvement Plan for HPNS provides detailed information on community participation for the IR Program and documents interests, issues, and concerns raised by the community regarding ongoing

[5] As defined in the NCP (Title 40 Code of Federal Regulations § 300.5), "treatment technology" means any unit operation or series of unit operations that alters the composition of a hazardous substance or pollutant or contaminant through chemical, biological, or physical means so as to reduce toxicity, mobility, or volume of the contaminated materials being treated. Treatment technologies are an alternative to land disposal of hazardous wastes without treatment.

investigation and cleanup activities at HPNS. The Navy held a community meeting on February 2, 2010, to solicit community input on updating the Community Involvement Plan for HPNS. The Navy used this input in preparing an update to the **Community Involvement Plan**(58), which was finalized in May 2011.

Starting in January 2010, the Navy began conducting bimonthly Community Technical Meetings to discuss the technical aspects of the CERCLA milestone documents with community members (and with participation from the Base Realignment and Closure [BRAC] Cleanup Team). Documents and relevant information relied upon in the remedy selection process are made available for public review in the public information repositories (listed at the end of this section) or on the **IR Program website**(59).

Community participation is also solicited through public mailings, including newsletters, fact sheets, public notices, and proposed plans, which are designed to broadly disseminate information throughout the local community. Public mailings for HPNS are sent to more than 2,000 groups and individuals that have added their names to the community mailing list, including residents in the local Hunters Point-Bayview community; city, state, and federal officials; regulatory agencies; and other interested groups and individuals. Previous updates and fact sheets have included general program information such as the status of environmental investigations and cleanup activities at each HPNS parcel. In addition, the Navy has held periodic site tours of HPNS to better explain the status of cleanup activities to interested community members.

For Parcel E-2, a significant effort was made to inform the public of the remedy proposed in the Proposed Plan and selected in this ROD. Prior to making the Proposed Plan available for public review, a public notice of the meeting and availability of documents was placed in the *San Francisco Chronicle* on September 4, 2011. Additional public notices were placed in the September 2011 editions of two publications (the *San Francisco Bayview* and the *Sun-Reporter*) in the local Hunters Point-Bayview community. The Proposed Plan, along with **two associated fact sheets**(60), was distributed to recipients on the community mailing list beginning on September 2, 2011. An online advertisement was also placed on the *San Francisco Bayview* website to direct users to the IR Program website, where electronic copies of the Proposed Plan, fact sheets, and the RI/FS Report were made available.

In accordance with CERCLA § 113 and § 117, the Navy provided a public comment period from September 7, 2011, to November 21, 2011, for the proposed remedial action described in the Proposed Plan for Parcel E-2. A public meeting to present the Proposed Plan was held from 6:00 to 9:00 p.m. on September 20, 2011. At the public meeting, the Navy gave presentations on the conditions at Parcel E-2, and the representatives from the Navy and regulatory agencies were available to answer questions. A **transcript of the public meeting**(61) prepared by a court reporter is part of the administrative record for this ROD and is available on the CD for this ROD. The initial public comment period was scheduled to end on October 24, 2011, but was extended to November 21, 2011, at the request of several community members. Additional public notices of the extension to the public comment period were placed in the *San*

Francisco Chronicle, the *San Francisco Bayview*, and the *Sun-Reporter*. Responses to spoken comments received during the public meeting and written comments received during the public comment period are included in the Responsiveness Summary in Section 3.

Key supporting documents that pertain to Parcel E-2 and a complete index of all Navy HPNS documents are available at the following information repositories:

San Francisco Main Library
100 Larkin Street
Government Information Center, 5th Floor
San Francisco, California 94102
Phone: (415) 557-4500

HPNS Office Trailer
690 Hudson Street
San Francisco, California 94124

For access to the Administrative Record contact:

Naval Facilities Engineering Command Southwest
Attention: Diane Silva, Command Records Manager
2965 Mole Road, Building 3519
San Diego, CA 92136
Phone: (619) 556-1280

For additional information on the IR Program contact:

Mr. Keith Forman
HPNS BRAC Environmental Coordinator
BRAC Program Management Office West
1455 Frazee Road, Suite 900
San Diego, California 92108-4310
Phone: (619) 532-0913
e-mail: keith.s.forman@navy.mil

Section 3. Responsiveness Summary

The responsiveness summary is the third component of a ROD; its purpose is to summarize information about the views of the public and regulatory agencies on both the remedial alternatives and general concerns about Parcel E-2 submitted during the public comment period. It documents in the record how public comments were integrated into the decision-making process. The participants in the public meeting, held on September 20, 2011, included community members and representatives of the Navy, EPA, DTSC, and the Water Board. Questions and concerns received during the meeting were addressed at the meeting and are documented in the meeting transcript. Responses to comments provided at the meeting and received during the public comment period by the Navy, EPA, DTSC, or the Water Board are included in the responsiveness summary (Attachment 3).

Attachment 1. Administrative Record

(Administrative Record provided on CD only)

HUNTERS POINT

DRAFT ENVIRONMENTAL RESTORATION RECORD INDEX - UPDATE (SORTED BY RECORD DATE/RECORD NUMBER)

DOCUMENTS RELATED TO PARCELS E AND E-2

UIC No. _ Rec. No. Doc. Control No. Record Type Contract No. Approx. # Pages	Record Date Prc. Date SSIC No. CTO No.	Author Author Affil. Recipient Recipient Affil.	Subject	Distribution	Sites	Location SWDIV Box No(s) CD No.	FRC Accession No. FRC Warehouse FRC Box No(s)
AR_N00217_000003 NONE REPORT NONE 94	**10-01-1984** 11-18-1999 5090.3.A. NONE	SPIERS, A. NAVAL ENERGY AND ENVIRONMENTAL SUPPORT ACTIVITY (NEESA) - PORT HUENEME, CA NAVFAC - SOUTHWEST DIVISION	INITIAL ASSESSMENT STUDY (IAS)	ADMIN RECORD	PARCEL A PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0001 30093199
AR_N00217_002880 NONE REPORT NONE 235	**03-19-1987** 11-18-1999 5090.3.A. NONE	EMCON	CONFIRMATION STUDY, VERIFICATION STEP - VOLUME I (SEE AR #2881 THROUGH AR #2883 - VOLUMES II THROUGH IV)	ADMIN RECORD	PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0045 30093199
AR_N00217_002881 NONE REPORT NONE 129	**03-19-1987** 11-18-1999 5090.3.A. NONE	EMCON	CONFIRMATION STUDY, VERIFICATION STEP - VOLUME II (SEE AR #2880 - VOLUME I, AR #2882 - VOLUME III AND AR #2883 - VOLUME IV)	ADMIN RECORD	PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0045 30093199
AR_N00217_002882 NONE REPORT NONE 280	**03-19-1987** 11-18-1999 5090.3.A. NONE	EMCON	CONFIRMATION STUDY, VERIFICATION STEP - VOLUME III (SEE AR #2880 - VOLUME I, AR #2881 - VOLUME II AND AR #2883 - VOLUME IV)	ADMIN RECORD	PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0045 30093199

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AR_N00217_002883 NONE REPORT NONE 489	**03-19-1987** 11-18-1999 5090.3.A. NONE	EMCON	CONFIRMATION STUDY, VERIFICATION STEP - VOLUME IV (SEE AR #2880 THROUGH AR #2882 - VOLUMES I THROUGH III)	ADMIN RECORD	PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0045 30093199
AR_N00217_000056 NONE REPORT NONE 588	**07-02-1987** 11-18-1999 5090.3.A. NONE	EMCON NAVFAC - EFA WEST	AREA STUDY FOR ASBESTOS CONTAINING MATERIAL AND ORGANIC AND INORGANIC SOIL CONTAMINATION (VOLUME 1: REPORT)	ADMIN RECORD	PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0001
AR_N00217_002914 NONE REPORT NONE 0	**07-02-1987** 11-18-1999 5090.3.A. NONE	EMCON NAVFAC - EFA WEST	AREA STUDY FOR ASBESTOS-CONTAINING MATERIAL AND ORGANIC AND INORGANIC SOIL CONTAMINATION (VOLUME 2 OF 2 - RATIONAL FOR CONCENTRATION LIMITS)	ADMIN RECORD	PARCEL B PARCEL E-2	NAVFAC - SOUTHWEST SW06020901	

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SF_N00217_000230 2176,121.02 REPORT NONE 132	**03-03-1988** 11-18-1999 5090.3.C. NONE	S. FARLEY HARDING LAWSON ASSOCIATES NAVFAC - EFA WEST	SCOPING DOCUMENT FOR THE REMEDIAL INVESTIGATIONS/FEASIBILITY STUDIES (RI/FS), VOLUME I (SEE AR #231 - VOLUME II)	SITE FILE	PARCEL A PARCEL B PARCEL E-2 SITE 00001 SITE 00002 SITE 00003 SITE 00004 SITE 00005 SITE 00006 SITE 00007 SITE 00008 SITE 00009 SITE 00010 SITE 00011 SITE 00012 SITE 00013 SITE 00014 SITE 00015 SITE 00016 SITE 00017 SITE 00018	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0004 30093199
SF_N00217_000231 2176, 121.02 REPORT NONE 191	**03-03-1988** 11-18-1999 5090.3.C. NONE	 HARDING LAWSON ASSOCIATES NAVFAC - EFA WEST	SCOPING DOCUMENT REMEDIAL INVESTIGATION/FEASIBILITY STUDIES (RI/FS), VOLUME II - APPENDICES A -G (SEE AR #230 - VOLUME I)	SITE FILE	PARCEL A PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0004 30093199
SF_N00217_000930 NONE REPORT NONE 214	**08-04-1989** 11-18-1999 5090.3.C. NONE	MILLER, C. HARDING LAWSON ASSOCIATES NAVFAC - EFA WEST	DRAFT SOLID WASTE AIR QUALITY ASSESSMENT TEST	SITE FILE	PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0032 30093199

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SF_N00217_001215 HLA JOB NO. 02176.247.02 REPORT NONE 184	**03-29-1990** 11-18-1999 5090.3.C. NONE	HOLLINGSWORTH, L. HARDING LAWSON ASSOCIATES NAVFAC - WESTERN DIVISION	FINAL DRAFT REMOVAL ACTION FOR TANK S-505, VOLUME I - WORK PLAN	SITE FILE	PARCEL E SITE 00002	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0036
SF_N00217_001390 HLA JOB NO. 02176,250.02 REPORT NONE 140	**08-09-1990** 11-18-1999 5090.3.C. NONE	J. FENTON HARDING LAWSON ASSOCIATES NAVFAC - SOUTHWEST DIVISION	DRAFT RECONNAISSANCE ACTIVITIES REPORT, REMEDIAL INVESTIGATION (RI)/FEASIBILITY STUDIES (FS) VOLUME I, TEXT (SEE AR #1391 AND 1392 - VOLUMES II AND III)	SITE FILE	PARCEL A PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0034 30093199
SF_N00217_001391 HLA JOB NO. 02176,250.02 REPORT NONE 197	**08-09-1990** 11-18-1999 5090.3.C. NONE	FENTON, J. HARDING LAWSON ASSOCIATES NAVFAC - SOUTHWEST DIVISION	DRAFT RECONNAISSANCE ACTIVITIES REPORT, REMEDIAL INVESTIGATION (RI)/FEASIBILITY STUDIES (FS), VOLUME II, APPENDICES A-D	SITE FILE	PARCEL A PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0034 30093199
SF_N00217_001392 HLA JOB NO. 02176,250.02 REPORT NONE 296	**08-09-1990** 11-18-1999 5090.3.C. NONE	J. FENTON HARDING LAWSON ASSOCIATES NAVFAC - SOUTHWEST DIVISION	DRAFT RECONNAISSANCE ACTIVITIES REPORT, REMEDIAL INVESTIGATION (RI)/FEASIBILITY STUDIES (FS), VOLUME III, APPENDICES E-I (SEE AR #1390 AND 1392 - VOLUMES I AND II)	SITE FILE	PARCEL A PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0034 30093199

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AR_N00217_001543 HLA JOB NO. 2176, 252.02 REPORT NONE 145	**10-19-1990** 11-18-1999 5090.3.A. NONE	M. LUCAS HARDING LAWSON ASSOCIATES NAVFAC - EFA WEST	PRELIMINARY ASSESSMENT (PA) OTHER AREAS/UTILITIES, VOLUME I: TEXT (SEE AR #1544 - VOLUME II)	ADMIN RECORD	PARCEL A PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0035 30093199
AR_N00217_001544 HLA JOB NO. 2176, 252.02 REPORT NONE 192	**10-19-1990** 11-18-1999 5090.3.A. NONE	M. LUCAS HARDING LAWSON ASSOCIATES NAVFAC - EFA WEST	PRELIMINARY ASSESSMENT (PA) OTHER AREAS/UTILITIES, VOLUME 2: APPENDICES (SEE AR #1543 - VOLUME I)	ADMIN RECORD	PARCEL A PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0035 30093199
AR_N00217_001654 NAVFAC WDIV SER 1811JC/00546 REPORT N62474-88-D-5086 768	**12-03-1990** 11-18-1999 5090.3.A. 00025	 PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - WESTERN DIVISION	POST CONSTRUCTION REPORT ON THE CLEAN-UP OF ASBESTOS-CONTAINING MATERIALS AT THE WATER SOFTENING TREATMENT AREA, BUILDING 521 AND VARIOUS REMOTE SITES (INCLUDES WDIV TRANSMITTAL LETTER)	ADMIN RECORD	BLDG 0000521 PARCEL E	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0059
SF_N00217_002813 HLA PROJ NO. 18639,079.02 REPORT NONE 72	**01-02-1992** 11-18-1999 5090.3.C. NONE	P. DAWSON HARDING LAWSON ASSOCIATES NAVFAC - EFA WEST	DRAFT AIR SAMPLING REPORT	SITE FILE	PARCEL A PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0043 30093199
AR_N00217_002534 SER 1811/L2170 REPORT NONE 87	**02-26-1992** 11-18-1999 5090.3.A. NONE	M. MIGUEL NAVFAC - EFA WEST C. FORTNEY BAAQMD	FEDERAL FACILITY AGREEMENT (FFA)	ADMIN RECORD	PARCEL A PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0039 30093199

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AR_N00217_002566 SER 1811WW/L3023 CORRESPONDENCE NONE 17	**10-16-1992** 11-18-1999 5090.3.A. NONE	MIGUEL, M. NAVFAC - EFA WEST TAKATA, K.	SUBMISSION OF PROPOSED SCHEDULES, PARCELS A, B, C, D, E AND ASSUMPTIONS; INTERIM ACTION SCHEDULES FOR OPERABLE UNIT (OU) II AND GROUP V SITES	ADMIN RECORD	GROUP V OU 0000002 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0040 30093199
AR_N00217_002582 EFAW SER 1811WW/L3107 CORRESPONDENCE NONE 21	**12-04-1992** 11-18-1999 5090.3.A. NONE	G. KATZ NAVFAC - EFA WEST K. TAKATA U.S. EPA - SAN FRANCISCO	POINT BY POINT RESPONSE TO AGENCIES' COMMENTS, REVISED SCHEDULING ASSUMPTIONS, REVISED SCHEDULES FOR PARCELS A, B, C, D, E	ADMIN RECORD	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0040 30093199
AR_N00217_002720 NONE CORRESPONDENCE NONE 1	**07-13-1993** 11-18-1999 5090.3.A. NONE	U.S. EPA - SAN FRANCISCO, CA	QUESTIONS ABOUT NAVY'S MEMORANDUM OF 10 JUNE 1993 REGARDING THE PARCEL E CONTAINMENT FEASIBILITY STUDIES (FS)		PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0043 30093199
AR_N00217_003266 EFAW SER T4E1/L3315 CORRESPONDENCE NONE 5	**07-13-1993** 11-18-1999 5090.3.A. NONE	RAMOS, R. NAVFAC - EFA WEST MULTIPLE AGENCIES	TRANSMITTAL OF MAY 1993 AND JUNE 1993 MONTHLY PROGRESS REPORTS (W/ENCLOSURE)	ADMIN RECORD	BLDG 0000816 OU 0000002 OU 0000003 OU 0000004 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E SITE 00003	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0055 30093199

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AR_N00217_000127 NONE CORRESPONDENCE N62474-88-D-5086 74	**11-30-1993** 08-30-2000 5090.3.A. 00276	PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - SOUTHWEST DIVISION	REMEDIAL INVESTIGATION (RI)/FEASIBILITY STUDY (FS) FIELD WORK AND ANALYSIS WORK PLAN	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0002 30093199
AR_N00217_002939 NONE CORRESPONDENCE NONE 4	**01-04-1994** 11-18-1999 5090.3.A. NONE	U.S. EPA - SAN FRANCISCO, CA	COMMENTS ON SITE INSPECTION (SI) DATA PRESENTATION PARCEL E VOLUMES II AND III	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0047 30093199
AR_N00217_002969 NONE CORRESPONDENCE NONE 3	**01-04-1994** 11-18-1999 5090.3.A. NONE	SEID, R. U.S. EPA - SAN FRANCISCO, CA MCCLELLAND, M. NAVFAC - WESTERN DIVISION	COMMENTS ON THE DRAFT SITE INSPECTION (SI) DATA PRESENTATION ON 02 NOVEMBER 1993 (VOLUMES II AND III)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0015
AR_N00217_002942 NONE CORRESPONDENCE NONE 2	**01-31-1994** 11-18-1999 5090.3.A. NONE	U.S. EPA - SAN FRANCISCO, CA	COMMENTS ON SITE INSPECTION (SI) DATA PRESENTATIONS FOR PARCELS D AND E, VOLUME I	ADMIN RECORD	PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0047 30093199
SF_N00217_002921 NONE REPORT NONE 342	**03-22-1994** 11-18-1999 5090.3.C. NONE	HARDING LAWSON ASSOCIATES	DRAFT PARCEL E SITE INSPECTION REPORT (SI)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0047 30093199

UIC No. _ Rec. No. Doc. Control No. Record Type Contract No. Approx. # Pages	Record Date Prc. Date SSIC No. CTO No.	Author Author Affil. Recipient Recipient Affil.	Subject	Distribution	Sites	Location SWDIV Box No(s) CD No.	FRC Accession No. FRC Warehouse FRC Box No(s)
AR_N00217_002975 NONE CORRESPONDENCE NONE 3	**04-15-1994** 11-18-1999 5090.3.A. NONE	NAVY	SUBMISSION OF SITE ASSESSMENT REPORT, POTENTIALLY CONTAMINATED SITES, PARCELS B, C, D AND E	ADMIN RECORD	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0048 30093199
AR_N00217_003027 NONE REPORT NONE 282	**04-15-1994** 11-18-1999 5090.3.A. NONE	PRC ENVIRONMENTAL MANAGEMENT, INC.	FINAL SITE ASSESSMENT REPORT, POTENTIALLY CONTAMINATED SITES, PARCELS B, C, D, AND E	ADMIN RECORD	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0050 30093199
AR_N00217_003019 NONE CORRESPONDENCE NONE 3	**04-19-1994** 11-18-1999 5090.3.A. NONE	U.S. EPA - SAN FRANCISCO, CA	COMMENTS ON DRAFT FINAL TREATABILITY STUDY (TS) WORK PLAN (WP), OPERABLE UNIT (OU) I, SITE IR-3 (PARCEL E OIL RECLAMATION PONDS)	ADMIN RECORD	PARCEL E SITE 00003	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0050 30093199
AR_N00217_003180 NONE CORRESPONDENCE NONE 2	**04-19-1994** 11-18-1999 5090.3.A. NONE	MANGLESDORF, A. U.S. EPA - SAN FRANCISCO, CA RAMOS, R. NAVFAC - EFA WEST	CLARIFICATION OF RADIATION ISSUES	ADMIN RECORD	PARCEL B PARCEL E SITE 00001 SITE 00002	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0053 30093199
AR_N00217_002991 NONE CORRESPONDENCE NONE 18	**05-11-1994** 11-18-1999 5090.3.A. NONE	U.S. EPA - SAN FRANCISCO, CA	COMMENTS ON DRAFT PARCEL E SITE INSPECTION REPORT (SI)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0049 30093199
AR_N00217_003000 NONE CORRESPONDENCE NONE 17	**06-03-1994** 11-18-1999 5090.3.A. NONE	MEYERS, D. ARC - VERIFY AFFILIATION W. RADZEVICH NAVFAC - EFA WEST	COMMENTS ON SITE INVESTIGATION (SI) REPORTS FOR PARCELS C, D, AND E (SITE INVESTIGATION REPORTS FOR PARCELS C, D, AND E WERE NOT SUBMITTED TO THE ADMINISTRATIVE RECORD)	ADMIN RECORD	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0049 30093199

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AR_N00217_003029 NONE CORRESPONDENCE NONE 3	**06-24-1994** 11-18-1999 5090.3.A. NONE	MANGLESDORF, A. U.S. EPA - SAN FRANCISCO, CA POWELL, R. NAVFAC - EFA WEST	COMMENTS ON THE FINAL SITE ASSESSMENT REPORT, POTENTIALLY CONTAMINATED SITES PARCELS B, C, D, AND E	ADMIN RECORD	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0051 30093199
AR_N00217_003030 NONE CORRESPONDENCE NONE 2	**07-05-1994** 11-18-1999 5090.3.A. NONE	SHABAHARI, C. DTSC - BERKELEY, CA R. POWELL NAVFAC - EFA WEST	COMMENTS ON THE FINAL SITE ASSESSMENT REPORT, POTENTIALLY CONTAMINATED SITES PARCELS B, C, D, AND E	ADMIN RECORD	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0051 30093199
AR_N00217_003017 EFAW SER 09ER1DS/L4306 CORRESPONDENCE NONE 3	**07-15-1994** 11-18-1999 5090.3.A. NONE	R. RAMOS NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF DRAFT FINAL PARCEL E SITE INSPECTION REPORT (SI) (W/OUT ENCLOSURE) (SEE AR #3018 - DRAFT FINAL PARCEL SI REPORT)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0050 30093199
AR_N00217_003022 NONE REPORT NONE 93	**07-15-1994** 11-18-1999 5090.3.A. NONE	PRC ENVIRONMENTAL MANAGEMENT, INC.	PHASE IA ECOLOGICAL RISK ASSESSMENT (ERA) TASK SUMMARY REPORT: VOLUME 1; TASKS 1 AND 2 SUMMARY REPORT	ADMIN RECORD	PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0050 30093199
AR_N00217_003023 NONE REPORT NONE 105	**07-15-1994** 11-18-1999 5090.3.A. NONE	PRC ENVIRONMENTAL MANAGEMENT, INC.	PHASE IA ECOLOGICAL RISK ASSESSMENT (ERA) TASK SUMMARY REPORT: VOLUME 2; TASK 3 SUMMARY REPORT	ADMIN RECORD	PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0050 30093199

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AR_N00217_003024 NONE REPORT NONE 113	**07-15-1994** 11-18-1999 5090.3.A. NONE	PRC ENVIRONMENTAL MANAGEMENT, INC.	PHASE IA ECOLOGICAL RISK ASSESSMENT (ERA) TASK SUMMARY REPORT: VOLUME 3; TASKS 4, 5, AND 6 SUMMARY REPORTS	ADMIN RECORD	PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0050 30093199
SF_N00217_003018 EFAW SER 09ER1DS/L4306 & HLA PROJ NO. 11400 090505 REPORT NONE 444	**07-22-1994** 11-18-1999 5090.3.C. 00142	S. PANTTAJA HARDING LAWSON ASSOCIATES NAVFAC - EFA WEST	DRAFT FINAL PUBLIC SUMMARY PARCEL E SITE INSPECTION REPORT	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0050 30093199
AR_N00217_003039 EFAW SER 09ER1WR/L4360 CORRESPONDENCE NONE 2	**08-19-1994** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST D. MEYERS ARMS CONTROL RESEARCH CENTER	RESPONSE TO COMMENTS DRAFT SITE INSPECTION (SI) REPORT, PARCEL C, D, AND E AND DRAFT FINAL SITE INSPECTION REPORT, PARCEL D	ADMIN RECORD	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0051 30093199
AR_N00217_003053 NONE CORRESPONDENCE NONE 9	**08-30-1994** 11-18-1999 5090.3.A. NONE	MANGLESDORF, A. U.S. EPA - SAN FRANCISCO, CA SONG, D. NAVFAC - EFA WEST	COMMENTS ON PARCEL E DRAFT FINAL SITE INSPECTION REPORT (SI)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0051 30093199
AR_N00217_003924 NONE REPORT NONE 45	**09-08-1994** 03-01-2000 5090.3.A. NONE	V. LLOYD SANFORD COHEN AND ASSOCIATES NAVFAC - EFA WEST	USEPA - NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY (NAREL) CONDUCTED A PRELIMINARY STUDY AT THE RADIOLOGICAL AND CHEMICAL TECHNICAL SUPPORT CENTER	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0080 30093199

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AR_N00217_003059 EFAW SER 09ER1DS/L5054 CORRESPONDENCE NONE 8	**11-21-1994** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	RESPONSE TO COMMENTS ON FINAL SITE ASSESSMENT REPORT, POTENTIALLY COMTAMINATED SITES PARCELS B, C, D, AND E	ADMIN RECORD	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0051 30093199
SF_N00217_003080 NONE REPORT N62474-88-D-5086 45	**03-27-1995** 11-18-1999 5090.3.C. NONE	PRESTON, D. PRC ENVIRONMENTAL MANAGEMENT, INC. D. SONG NAVFAC - EFA WEST	DRAFT RESULTS OF SUBSURFACE RADIATION INVESTIGATION, VOLUME I: MAIN REPORT AND APPENDIX A (SEE AR #3081 - VOLUME II)	SITE FILE	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0051 30093199
SF_N00217_003081 NONE REPORT N62474-88-D-5086 66	**03-27-1995** 11-18-1999 5090.3.C. 00155	PRESTON, D. PRC ENVIRONMENTAL MANAGEMENT, INC. D.SONG NAVFAC - EFA WEST	DRAFT RESULTS OF SUBSURFACE RADIATION INVESTIGATION, VOLUME II: APPENDIX B, SPECIAL FIGURES AND TRENCH LOGS (SEE AR #3080 - VOLUME I)	SITE FILE	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0051 30093199
AR_N00217_003079 EFAW SER 09ERIDS/L5102 CORRESPONDENCE NONE 3	**04-06-1995** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF DRAFT RESULTS OF SUBSURFACE RADIATION INVESTIGATION (W/OUT ENCLOSURES) (SEE AR #3080 - VOLUME I AND 3081 - VOLUME II)	ADMIN RECORD	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0051 30093199
AR_N00217_003088 NONE CORRESPONDENCE NONE 4	**04-28-1995** 11-18-1999 5090.3.A. NONE	MEYERS, D. ARC ECOLOGY - VERIFY AFFILIATION R. POWELL NAVFAC - EFA WEST	COMMENTS ON THE RESULTS OF SUBSURFACE RADIATION INVESTIGATION IN PARCELS B AND E	ADMIN RECORD	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0051 30093199

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AR_N00217_003124 NONE CORRESPONDENCE NONE 2	**05-30-1995** 11-18-1999 5090.3.A. NONE	TROMBADORE, C. U.S. EPA - SAN FRANCISCO, CA MCCLELLAND, M. NAVFAC - EFA WEST	REVIEW AND COMMENTS ON RESULTS OF SUBSURFACE RADIATION INVESTIGATION IN PARCELS B AND E, VOLUMES I AND II	ADMIN RECORD	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0052 30093199
AR_N00217_003125 NONE CORRESPONDENCE NONE 7	**06-19-1995** 11-18-1999 5090.3.A. NONE	SHABAHARI, C. DTSC - BERKELEY, CA D. SONG NAVFAC - EFA WEST	COMMENTS ON SUBSURFACE RADIATION INVESTIGATION IN PARCELS B AND E	ADMIN RECORD	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0052 30093199
AR_N00217_003132 EFAW SER 1832.1WM/15201 CORRESPONDENCE NONE 3	**08-07-1995** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF DRAFT ADDENDUM TO THE FACILITY GROUNDWATER MONITORING PLAN FOR PARCELS B, D, AND E (W/OUT ENCLOSURE)	ADMIN RECORD	PARCEL B PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0053 30093199
AR_N00217_003135 NONE CORRESPONDENCE NONE 2	**09-22-1995** 11-18-1999 5090.3.A. NONE	SHABAHARI, C. DTSC - BERKELEY, CA R. POWELL NAVFAC - EFA WEST	CONCERN WITH SEVERAL ISSUES DISCUSSED IN THE 14 SEPTEMBER 1995 REMEDIAL PROJECT MANAGER'S MEETING	ADMIN RECORD	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0053 30093199
AR_N00217_003138 NONE CORRESPONDENCE NONE 2	**10-05-1995** 11-18-1999 5090.3.A. NONE	FARRAND, D. RASO - YORKTOWN - VERIFY AFFILIATION D. SONG NAVFAC - EFA WEST	RESPONSE TO RESPONSE TO COMMENTS ON THE RESULTS OF THE DRAFT SUBSURFACE RADIATION INVESTIGATION IN PARCELS B AND E	ADMIN RECORD	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0053 30093199
AR_N00217_003140 NONE CORRESPONDENCE NONE 4	**10-12-1995** 11-18-1999 5090.3.A. NONE	SHABAHARI, C. DTSC - BERKELEY, CA D. SONG NAVFAC - EFA WEST	COMMENTS ON RADIATION INVESTIGATION OF THE INTERTIDAL AREAS SURROUNDING THE INDUSTRIAL LANDFILL AND BAY LANDFILL AREA, DRAFT SAMPLING AND ANALYSIS PLAN (SAP)	ADMIN RECORD	PARCEL E SITE 00001 SITE 00002	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0053 30093199

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SF_N00217_003141 EFAW SER 1832.3/L6017 CORRESPONDENCE NONE 8	**10-19-1995** 11-18-1999 5090.3.C. NONE	R. POWELL NAVFAC - EFA WEST C. SHABAHARI DTSC - BERKELEY, CA	RESPONSE TO COMMENTS (DATED 22 SEPTEMBER 1995) ON THE 14 SEPTEMBER 1995 REMEDIAL PROJECT MANAGER(RPM)/BASE REALIGNMENT CLOSURE (BRAC) CLEANUP TEAM (BCT) MEETING	SITE FILE	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0053 30093199
AR_N00217_003160 EFAW SER 1832.6076 CORRESPONDENCE NONE 15	**01-11-1996** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	RESPONSES TO COMMENTS ON THE DRAFT RESULTS OF THE SUBSURFACE RADIATION INVESTIGATION IN PARCELS B AND E	ADMIN RECORD	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0053 30093199
AR_N00217_003197 NONE CORRESPONDENCE NONE 1	**01-23-1996** 11-18-1999 5090.3.A. NONE	TROMBADORE, C. U.S. EPA - SAN FRANCISCO, CA SONG, D. NAVFAC - EFA WEST	RESPONSE TO COMMENTS ON THE SUBSURFACE RADIATION INVESTIGATION IN PARCELS B AND E, VOLUMES I AND II	ADMIN RECORD	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0053 30093199
AR_N00217_003200 NONE CORRESPONDENCE NONE 24	**02-08-1996** 11-18-1999 5090.3.A. NONE	SHABAHARI, C. DTSC - BERKELEY, CA D. SONG NAVFAC - EFA WEST	RESPONSE TO RESPONSE TO COMMENTS ON THE RESULTS OF SUBSURFACE RADIATION INVESTIGATION ON PARCELS B AND E	ADMIN RECORD	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0053 30093199
AR_N00217_003252 EFAW SER 1832.3/L6158 REPORT NONE 10	**03-26-1996** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF FEBRUARY 1996 MONTHLY PROGRESS REPORT (MPR) (W/ ENCLOSURE)	ADMIN RECORD	PARCEL B PARCEL C PARCEL E SITE 00002 SITE 00006 SITE 00009	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0055 30093199

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AR_N00217_003234 NONE REPORT N62474-94-D-7609 383	**04-05-1996** 11-18-1999 5090.3.A. 00026	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. R. POWELL NAVFAC - EFA WEST	FINAL FACILITY-WIDE GROUNDWATER MONITORING PLAN [INCLUDES PUBLIC SUMMARY]	ADMIN RECORD	BASEWIDE PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0054 30093199
AR_N00217_003257 EFAW SER 1832.3/L6185 CORRESPONDENCE NONE 12	**04-18-1996** 11-18-1999 5090.3.A. NONE	POWELL, R. NAVFAC - EFA WEST MULTIPLE AGENCIES	TRANSMITTAL OF MARCH 1996 MONTHLY PROGRESS REPORT (W/ ENCLOSURE)	ADMIN RECORD	BLDG 0000364 OU 0000001 OU 0000002 PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F SITE 00001 SITE 00002 SITE 00003 SITE 00006 SITE 00007 SITE 00009 SITE 00018 SITE 00021	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0055 30093199
AR_N00217_003261 NONE CORRESPONDENCE NONE 7	**04-30-1996** 11-18-1999 5090.3.A. NONE	SHABAHARI, C. DTSC - BERKELEY, CA POWELL, R. NAVFAC - EFA WEST	TRANSMITTAL OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) FOR REMOVAL ACTION (W/ENCLOSURE)	ADMIN RECORD	PARCEL E SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0055 30093199

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AR_N00217_003262 NONE REPORT N62474-88-D-5086 26	**04-30-1996** 11-18-1999 5090.3.A. CTO 0310	SICKLES, J. PRC ENVIRONMENTAL MANAGEMENT, INC. SONG, D. NAVFAC - EFA WEST	REVISED TECHNICAL MEMORANDUM, REMEDIATION ALTERNATIVE ANALYSIS	ADMIN RECORD	PARCEL E SITE 00001 SITE 00003 SITE 00021	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0055 30093199
AR_N00217_003267 EFAW SER 1832.4/L6214 CORRESPONDENCE NONE 13	**05-17-1996** 11-18-1999 5090.3.A. NONE	POWELL, R. NAVFAC - EFA WEST MULTIPLE AGENCIES	TRANSMITTAL OF APRIL 1996 MONTHLY PROGRESS REPORT (W/ ENCLOSURE)	ADMIN RECORD	OU 0000001 OU 0000002 PARCEL B PARCEL C PARCEL D PARCEL E SITE 00001 SITE 00002 SITE 00003 SITE 00006 SITE 00007 SITE 00009 SITE 00018 SITE 00021	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0055 30093199
AR_N00217_003281 EFAW SER 1832.4/L6244 CORRESPONDENCE NONE 3	**06-01-1996** 11-18-1999 5090.3.A. NONE	POWELL, R. NAVFAC - EFA WEST MULTIPLE AGENCIES	REQUEST FOR VARIANCE IN BORING LOCATIONS FOR THE FORMERLY USED DEFENSE SITES (FUDS) FIELD SAMPLING (W/ ENCLOSURE)	ADMIN RECORD	BLDG 0000815 BLDG 0000820 PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0055 30093199
AR_N00217_003294 NONE REPORT N62474-88-D-5086 54	**06-05-1996** 11-18-1999 5090.3.A. 00142	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. R. POWELL NAVFAC - EFA WEST	TECHNICAL MEMORANDUM (TM), REVIEW OF POLYCHLORINATED BIPHENYL (PCB) OCCURRENCES IN SOIL AND GROUNDWATER - 31 MAY 1996 (HARDING LAWSON ASSOCIATES)	ADMIN RECORD	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0056 30093199

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AR_N00217_003449 EFAW SER 1832/L6254 CORRESPONDENCE NONE 2	**06-10-1996** 11-18-1999 5090.3.A. NONE	POWELL, R. NAVFAC - EFA WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL DRAFT RESULTS OF SUBSURFACE RADIATION INVESTIGATION REPORT (LETTER RECEIVED IN THE RESTORATION RECORD FILE W/OUT ENCLOSURE)	ADMIN RECORD	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0016
AR_N00217_003293 EFAW SER 1832/L6282 CORRESPONDENCE N62474-88-D-5086 3	**06-26-1996** 11-18-1999 5090.3.A. 00142	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF TECHNICAL MEMORANDUM (TM), REVIEW OF POLYCHLORINATED BIPHENYL (PCB) OCCURRENCES IN SOIL AND GROUNDWATER (SEE AR #3294 - TECHNICAL MEMORANDUM)	ADMIN RECORD	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 30093199 BX 0056
SF_N00217_003333 NONE REPORT N62474-88-D-5086 80	**07-12-1996** 11-18-1999 5090.3.C. CTO 0155	PRESTON, D. PRC ENVIRONMENTAL MANAGEMENT, INC. TETIRICK, L. NAVFAC - EFA WEST	DRAFT FINAL RESULTS OF SUBSURFACE RADIATION INVESTIGATION, VOLUME I OF II	SITE FILE	BLDG 0000130 PARCEL B PARCEL E SITE 00001 SITE 00002 SITE 00003 SITE 00007 SITE 00014 SITE 00015 SITE 00018 WELL IR02MW175A	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0016
AR_N00217_003332 EFAW SER 1832.4/L6298 CORRESPONDENCE N62474-88-D-5086 2	**07-15-1996** 11-18-1999 5090.3.A. 00155	R. POWELL NAVFAC - EFA WEST A. COOK U.S. EPA - SAN FRANCISCO	SUBMISSION OF DRAFT FINAL RESULTS OF SUBSURFACE RADIATION INVESTIGATION, VOLUME I - MAIN REPORT, APPENDICES A, C, AND D (SEE AR #3333 - DRAFT FINAL RESULTS OF SUBSURFACE RADIATION INVESTIGATION)	ADMIN RECORD	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 30093199 BX 0056
AR_N00217_003394 NONE CORRESPONDENCE NONE 1	**09-09-1996** 11-18-1999 5090.3.A. NONE	COOK, A. U.S. EPA - SAN FRANCISCO, CA POWELL, R. NAVFAC - EFA WEST	COMMENTS ON THE DRAFT TECHNICAL MEMORANDUM (TM) FOR THE RADIATION INVESTIGATION OF TIDAL AREA SURROUNDING THE BAY AREA LANDFILL (IR-2)	ADMIN RECORD	PARCEL E SITE 00002	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 30093199 BX 0058

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AR_N00217_003395 NONE CORRESPONDENCE NONE 2	**09-09-1996** 11-18-1999 5090.3.A. NONE	COOK, A. U.S. EPA - SAN FRANCISCO, CA POWELL, R. NAVFAC - EFA WEST	COMMENTS ON THE DRAFT FINAL REPORT FOR RESULTS OF SUBSURFACE RADIATION INVESTIGATION	ADMIN RECORD	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0058 30093199
AR_N00217_003383 NONE REPORT N62474-94-D-7609 23	**09-13-1996** 11-18-1999 5090.3.A. 00007	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. L. TETIRICK NAVFAC - EFA WEST	FINAL ACTION MEMORANDUM (AM), REMOVAL ACTION (RM) DOCUMENTATION, INDUSTRIAL LANDFILL GROUNDWATER PLUME	ADMIN RECORD	PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0057 30093199
SF_N00217_003377 EFAW SER 1832.2/L6387 REPORT N62474-94-D-7609 390	**09-30-1996** 11-18-1999 5090.3.C. 00009	J. BAKER PRC ENVIRONMENTAL MANAGEMENT, INC. W. RADZEVICH NAVFAC - EFA WEST	DRAFT PHASE IB ECOLOGICAL RISK ASSESSMENT (ERA), VOLUME I - PART 1, NATURE AND EXTENT OF CONTAMINATION (SEE AR #3411 - VOLUME 1, PART 2 AND #3378 - VOLUME II) [INCLUDES EFAW TRANSMITTAL LETTER BY R. POWELL]	SITE FILE	PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0057 30093199
SF_N00217_003378 NONE REPORT N62474-94-D-7609 1070	**09-30-1996** 11-18-1999 5090.3.C. 00009	J. BAKER PRC ENVIRONMENTAL MANAGEMENT, INC. W. RADZEVICH NAVFAC - EFA WEST	DRAFT PHASE IB ECOLOGICAL RISK ASSESSMENT (ERA), VOLUME II, CHEMISTRY AND TOXICITY TEST RESULTS (SEE AR #3377 - VOLUME I, PART 1 AND #3411 - VOLUME I, PART 2)	SITE FILE	PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0057 30093199
AR_N00217_003388 EFAW SER 1832.4/L7016 CORRESPONDENCE N62474-94-D-7609 2	**10-16-1996** 11-18-1999 5090.3.A. 00007	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF THE FINAL ACTION MEMORANDUM (AM) AND FINAL ENGINEERING EVALUATION/COST ANALYSIS (EE/CA), SITE 3 REMOVAL ACTIONS, WASTE OIL RECLAMATION PONDS (W/OUT ENCLOSURE) (SEE AR #3389 - FINAL ACTION MEMORANDUM & FINAL EE/CA)	ADMIN RECORD INFO REPOSITORY	PARCEL E SITE 00003	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0057 30093199

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AR_N00217_003389 EFAW SER 1832.4/L7016 REPORT N62474-94-D-7609 298	**10-18-1996** 11-18-1999 5090.3.A. 00007	M. KNOX LEVINE-FRICKE L. TETIRICK NAVFAC - EFA WEST	FINAL ACTION MEMORANDUM (AM) AND FINAL ENGINEERING EVALUATION/COST ANALYSIS (EE/CA), REMOVAL ACTIONS (RM), WASTE OIL RECLAMATION PONDS (INCLUDES EFAW TRANSMITTAL LETTER BY R. POWELL) [SEE AR #3390 - REPLACEMENT SIGNATURE PAGE 18]	ADMIN RECORD	PARCEL E SITE 00003	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0057 30093199
AR_N00217_003390 NONE CORRESPONDENCE NONE 3	**10-25-1996** 11-18-1999 5090.3.A. NONE	POWELL, R. NAVFAC - EFA WEST COOK, A. U.S. EPA - SAN FRANCISCO, CA	SUBMISSION OF REPLACEMENT SIGNATURE PAGE FOR FINAL ACTION MEMORANDUM (AM) AND FINAL ENGINEERING EVALUATION/COST ANALYSIS (EE/CA), REMOVAL ACTIONS (RM), WASTE OIL RECLAMATION PONDS - 18 OCTOBER 1996 (W/ ENCLOSURE)	INFO REPOSITORY	PARCEL E SITE 00003	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0057 30093199
AR_N00217_003401 SER 1832.4/L7029 CORRESPONDENCE NONE 17	**11-12-1996** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	RESPONSE TO COMMENTS ON THE RADIATION INVESTIGATION OF THE TIDAL AREA SURROUNDING IR-02 DRAFT TECHNICAL MEMORANDUM (TM)	INFO REPOSITORY	PARCEL E SITE 00002	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0058 30093199
SF_N00217_003411 EFAW SER 1832.2/L7030 REPORT N62474-94-D-7609 368	**11-15-1996** 11-18-1999 5090.3.C. 00009	J. BAKER PRC ENVIRONMENTAL MANAGEMENT, INC. W. RADZEVICH NAVFAC - EFA WEST	DRAFT PHASE 1B ECOLOGICAL RISK ASSESSMENT (ERA), VOLUME I - PART 2, RISK CHARACTERIZATION TO AQUATIC RECEPTORS (SEE AR #3377 - VOLUME I, PART 1 AND #3378 - VOLUME II) [INCLUDES EFAW TRANSMITTAL LETTER BY R. POWELL]	SITE FILE	PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0058 30093199
AR_N00217_003452 EFAW SER 1832.4/L7059 CORRESPONDENCE NONE 3	**12-17-1996** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	REPONSE TO COMMENTS ON THE RESULTS OF THE DRAFT FINAL REPORT, RESULTS OF SUBSURFACE RADIATION INVESTIGATION	ADMIN RECORD	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0062 30093199

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AR_N00217_003481 NONE CORRESPONDENCE N62474-94-D-7609 3	**05-29-1997** 11-18-1999 5090.3.A. 00005	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF THE DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT (SEE AR #3482 THROUGH 3508 - DRAFT PARCEL E REMEDIAL INVESTIGAITON REPORT, VOLUMES I-XXVII OF XXVII)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0063 30093199
SF_N00217_003482 NONE REPORT N62474-94-D-7609 349	**05-29-1997** 11-18-1999 5090.3.C. 00005	SICKLES, J. PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT REMEDIAL INVESTIGATION (RI) REPORT, VOLUME I OF XXVII - TEXT	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0063 30093199
SF_N00217_003483 NONE REPORT N62474-94-D-7609 990	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME II OF XXVII - TEXT (SEE AR #3482 - VOLUME I AND 3484 THROUGH 3508 - VOLUMES III THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0063 30093199
SF_N00217_003484 NONE REPORT N62474-94-D-7609 937	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME III OF XXVII - TEXT AND TABLES (SEE AR #3482 THROUGH 3483 - VOLUMES I THROUGH II AND 3485 THROUGH 3508 - VOLUMES IV THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0063 30093199
SF_N00217_003485 NONE REPORT N62474-94-D-7609 1222	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME IV OF XXVII - TABLES (SEE AR #3482 THROUGH 3484 - VOLUMES I THROUGH III AND 3486 THROUGH 3508 - VOLUMES V THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0064 30093199

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SF_N00217_003486 NONE REPORT N62474-94-D-7609 1082	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME V OF XXVII - TABLES (SEE AR #3482 THROUGH 3485 - VOLUMES I THROUGH IV AND 3487 THROUGH 3508 - VOLUMES VI THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0064 30093199
SF_N00217_003487 NONE REPORT N62474-94-D-7609 30	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME VI OF XXVII - FIGURES 4.0-1 TO 4.1-5B (SEE AR #3482 THROUGH 3486 - VOLUMES I THROUGH V AND 3488 THROUGH 3508 - VOLUMES VII THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0064 30093199
SF_N00217_003488 NONE REPORT N62474-94-D-7609 25	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME VII OF XXVII - FIGURES 4.1-6A TO 4.1-10B (SEE AR #3482 THROUGH 3487 - VOLUMES I THROUGH VI AND 3489 THROUGH 3508 - VOLUMES VIII THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0064 30093199
SF_N00217_003489 NONE REPORT N62474-94-D-7609 25	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME VIII OF XXVII - FIGURES 4.1-11A TO 4.1-15B (SEE AR #3482 THROUGH 3488 - VOLUMES I THROUGH VII AND 3490 THROUGH 3508 - VOLUMES IX THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0065 30093199

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SF_N00217_003490 NONE REPORT N62474-94-D-7609 25	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME IX OF XXVII - FIGURES 4.1-16A TO 4.1-20B (SEE AR #3482 THROUGH 3489 - VOLUMES I THROUGH VIII AND 3491 THROUGH 3508 - VOLUMES X THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0065 30093199
SF_N00217_003491 NONE REPORT N62474-94-D-7609 59	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME X OF XXVII - 4.1-21A TO 4.1-45 (SEE AR #3482 THROUGH 3490 - VOLUMES I THROUGH IX AND 3492 THROUGH 3508 - VOLUMES XI THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0065 30093199
SF_N00217_003492 NONE REPORT N62474-94-D-7609 39	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XI OF XXVII - 4.2-1 TO 4.8-3 (SEE AR #3482 THROUGH 3491 - VOLUMES I THROUGH X AND 3493 THROUGH 3508 - VOLUMES XII THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0065 30093199
SF_N00217_003493 NONE REPORT N62474-94-D-7609 51	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XII OF XXVII - 4.9-1 TO 4.27-3 (SEE AR #3482 THROUGH 3492 - VOLUMES I THROUGH XI AND 3494 THROUGH 3508 - VOLUMES XIII THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0065 30093199

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SF_N00217_003494 NONE REPORT N62474-94-D-7609 889	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XIII OF XXVII - APPENDICES A TO E (SEE AR #3482 THROUGH 3493 - VOLUMES I THROUGH XII AND 3495 THROUGH 3508 - VOLUMES XIV THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0066 30093199
SF_N00217_003495 NONE REPORT N62474-94-D-7609 1171	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XIV OF XXVII - APPENDICES F TO J (SEE AR #3482 THROUGH 3494 - VOLUMES I THROUGH XIII AND 3496 THROUGH 3508 - VOLUMES XV THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0066 30093199
SF_N00217_003496 NONE REPORT N62474-94-D-7609 949	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XV OF XXVII - APPENDICES J TO L (SEE AR #3482 THROUGH 3495 - VOLUMES I THROUGH XIV AND 3497 THROUGH 3508 - VOLUMES XVI THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0066 30093199
SF_N00217_003497 NONE REPORT N62474-94-D-7609 1355	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XVI OF XXVII - APPENDIX M (SEE AR #3482 THROUGH 3496 - VOLUMES I THROUGH XV AND 3498 THROUGH 3508 - VOLUMES XVII THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0066 30093199

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SF_N00217_003498 NONE REPORT N62474-94-D-7609 1174	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XVII OF XXVII - APPENDIX M (CONTINUED) (SEE AR #3482 THROUGH 3497 - VOLUMES I THROUGH XVI AND 3499 THROUGH 3508 - VOLUMES XVIII THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0067 30093199
SF_N00217_003499 NONE REPORT N62474-94-D-7609 1130	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XVIII OF XXVII - APPENDIX M (CONTINUED) (SEE AR #3482 THROUGH 3498 - VOLUMES I THROUGH XVII AND 3500 THROUGH 3508 - VOLUMES XIX THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0067 30093199
SF_N00217_003500 NONE REPORT N62474-94-D-7609 555	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XIX OF XXVII - APPENDIX N (SEE AR #3482 THROUGH 3499 - VOLUMES I THROUGH XVIII AND 3501 THROUGH 3508 - VOLUMES XX THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0067 30093199
SF_N00217_003501 NONE REPORT N62474-94-D-7609 48	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XX OF XXVII - APPENDIX N (CONTINUED) (SEE AR #3482 THROUGH 3500 - VOLUMES I THROUGH XIX AND 3502 THROUGH 3508 - VOLUMES XXI THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0067 30093199

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SF_N00217_003502 NONE REPORT N62474-94-D-7609 1388	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XXI OF XXVII - APPENDIX N (CONTINUED) (SEE AR #3482 THROUGH 3501 - VOLUMES I THROUGH XX AND 3503 THROUGH 3508 - VOLUMES XXII THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0067 30093199
SF_N00217_003503 NONE REPORT N62474-94-D-7609 1158	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XXII OF XXVII - APPENDIX N (CONTINUED) (SEE AR #3482 THROUGH 3502 - VOLUMES I THROUGH XXI AND 3504 THROUGH 3508 - VOLUMES XXIII THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0068 30093199
SF_N00217_003504 NONE REPORT N62474-94-D-7609 1108	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XXIII OF XXVII - APPENDIX N (CONTINUED) (SEE AR #3482 THROUGH 3503 - VOLUMES I THROUGH XXII AND 3505 THROUGH 3508 - VOLUMES XXIV THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0068 30093199
SF_N00217_003505 NONE REPORT N62474-94-D-7609 1393	**05-29-1997** 11-18-1999 5090.3.C. 00005	SICKLES, J. PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XXIV OF XXVII - APPENDIX N (CONTINUED) (SEE AR #3482 THROUGH 3504 - VOLUMES I THROUGH XXIII AND 3506 THROUGH 3508 - VOLUMES XXV THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0068 30093199

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SF_N00217_003506 NONE REPORT N62474-94-D-7609 1204	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XXV OF XXVII - APPENDIX N (CONTINUED) (SEE AR #3482 THROUGH 3505 - VOLUMES I THROUGH XXIV AND 3507 THROUGH 3508 - VOLUMES XXVI THROUGH XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0068 30093199
SF_N00217_003507 NONE REPORT N62474-94-D-7609 759	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XXVI OF XXVII - APPENDICES N (CONTINUED) TO P (SEE AR #3482 THROUGH 3506 - VOLUMES I THROUGH XXV AND 3508 - VOLUME XXVII)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0068 30093199
SF_N00217_003508 NONE REPORT N62474-94-D-7609 611	**05-29-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT PARCEL E REMEDIAL INVESTIGATION (RI) REPORT, VOLUME XXVII OF XXVII - APPENDIX Q (SEE AR #3482 THROUGH 3507 - VOLUMES I THROUGH VOLUME XXVI)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0069 30093199
AR_N00217_003514 EFAW SER 1832.4/L7206 CORRESPONDENCE NONE 5	**06-24-1997** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF PUBLIC SUMMARY FOR PARCEL E REMEDIAL INVESTIGATION (RI), DRAFT REPORT (W/ ENCLOSURES)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0069 30093199
AR_N00217_003517 EFAW SER 1832.4/L7215 CORRESPONDENCE NONE 4	**07-01-1997** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF PUBLIC SUMMARY FOR PARCEL E REMEDIAL INVESTIGATION (RI), DRAFT REPORT (W/ ENCLOSURES)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0069 30093199

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AR_N00217_003525 NONE CORRESPONDENCE NONE 18	**08-15-1997** 11-18-1999 5090.3.A. NONE	KAO, C. DTSC - BERKELEY, CA R. POWELL NAVFAC - EFA WEST	COMMENTS ON THE PARCEL E DRAFT REMEDIAL INVESTIGATION (RI) REPORT (INCLUDES HERD MEMO DATED 4 AND 7 AUGUST 1997 AND CRWQCB COMMENTS DATE 8 JULY 1997)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0069 30093199
AR_N00217_003526 NONE CORRESPONDENCE NONE 64	**08-15-1997** 11-18-1999 5090.3.A. NONE	LAUTH, S. U.S. EPA - SAN FRANCISCO, CA POWELL, R. NAVFAC - EFA WEST	COMMENTS ON THE PARCEL E DRAFT REMEDIAL INVESTIGATION (RI) REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0069 30093199
AR_N00217_003533 NONE CORRESPONDENCE NONE 3	**08-22-1997** 11-18-1999 5090.3.A. NONE	SHIRLEY, C. ARC ECOLOGY M. MCCLELLAND NAVFAC - EFA WEST	COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION (RI) REPORT FOR PARCEL E	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0069 30093199
AR_N00217_003530 NONE CORRESPONDENCE NONE 7	**09-02-1997** 11-18-1999 5090.3.A. NONE	KAO, C. DTSC - BERKELEY, CA POWELL, R. NAVFAC - EFA WEST	COMMENTS ON THE PARCEL E DRAFT REMEDIAL INVESTIGATION (RI) REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0069 30093199
AR_N00217_003669 EFAW SER 62210LT/L8022 CORRESPONDENCE NONE 64	**10-21-1997** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST C. KAO DTSC - BERKELEY	REQUEST FOR IDENTIFICATION OF STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) FOR PARCEL C, E, AND F STUDIES	ADMIN RECORD	PARCEL C PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0073 30093199
AR_N00217_003662 SER 62210LT/L8028 CORRESPONDENCE N62474-94-D-7609 855	**10-27-1997** 11-18-1999 5090.3.A. 00005	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	ASSEMBLY INSTRUCTIONS & SUBMISSION OF THE DRAFT FINAL REPORT PARCEL E REMEDIAL INVESTIGATION (RI), VOLUMES I TO III AND VARIOUS INSERTS (W/ ENCLOSURES) [SEE AR #3663 TO AR #3665 - VOLUMES I TO III, AR #3666 - VOLUME XXVIII, AR #3672 - REVISED APPENDIX E]	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0072 30093199

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SF_N00217_003663 SER 62210LT/L8028 REPORT N62474-94-D-7609 347	**10-27-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT FINAL REPORT, PARCEL E REMEDIAL INVESTIGATION (RI), VOLUME I - TEXT (SEE AR #3664 - VOLUME II, AR #3665 - VOLUME III, AR #3666 - VOLUME XXVIII, AR #3662 - VARIOUS INSERTS, AR #3672 - REVISED APPENDIX E) [SEE AR #3482 TO AR #3508 - DRAFT REPORT]	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0073 30093199
SF_N00217_003664 NONE REPORT N62474-94-D-7609 1027	**10-27-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT FINAL REPORT, PARCEL E REMEDIAL INVESTIGATION (RI), VOLUME II - TEXT [SEE AR #3663 - VOLUME I, AR #3665 - VOLUME III, AR #3666 - VOLUME XXVIII, AR #3662 - VARIOUS INSERTS AND AR #3672 - REVISED APPENDIX E]	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0073 30093199
SF_N00217_003665 NONE REPORT N62474-94-D-7609 539	**10-27-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. L. TETIRICK NAVFAC - EFA WEST	DRAFT FINAL REPORT, PARCEL E REMEDIAL INVESTIGATION (RI), VOLUME III - TEXT AND TABLES [SEE AR #3663 - VOLUME I, AR #3664 - VOLUME II, AR #3666 - VOLUME XXVIII, AR #3662 - VARIOUS INSERTS AND AR #3672 - REVISED APPENDIX E]	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0073 30093199
SF_N00217_003666 NONE REPORT N62474-94-D-7609 929	**10-27-1997** 11-18-1999 5090.3.C. 00005	J. SICKLES PRC ENVIRONMENTAL MANAGEMENT, INC. NAVFAC - EFA WEST	DRAFT FINAL REPORT, PARCEL E REMEDIAL INVESTIGATION (RI), VOLUME XXVIII - APPENDICES R AND S [SEE AR #3663 TO AR #3665 - VOLUMES I TO III, AR #3662 - VARIOUS INSERTS AND AR #3672 - REVISED APPENDIX E]	SITE FILE	PARCEL E SITE 00036	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0073 30093199

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SF_N00217_000794 EFAW SER 622JT/L8044 REPORT N62474-94-D-7609 61	**11-07-1997** 02-04-2004 5090.3.C. CTO 0174	TOBIAS, S. TETRA TECH EM, INC. NAVFAC - EFA WEST	DRAFT BASEWIDE FINDING OF SUITABILITY TO LEASE (INCLUDES NAVFAC EFA WEST TRANSMITTAL LETTER]	SITE FILE	BLDG 0000007 BLDG 0000140 BLDG 0000204 BLDG 0000205 BLDG 0000364 BLDG 0000520 BLDG 0000707 PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F SITE 00001 SITE 00002 SITE 00003 SITE 00004 SITE 00005 SITE 00006 SITE 00007 SITE 00008 SITE 00009 SITE 00010 SITE 00011 SITE 00012 SITE 00013 SITE 00014 SITE 00015 SITE 00016 SITE 00017 SITE 00018 SITE 00020 SITE 00021 SITE 00022 SITE 00023 SITE 00024	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0003

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					SITE 00025		
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					SITE 00069 SITE 00070 SITE 00071 SITE 00072 SITE 00073		
SF_N00217_003672 SER 62210LT/L8047 REPORT NONE 182	**11-17-1997** 11-18-1999 5090.3.C. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	DRAFT FINAL REPORT, PARCEL E REMEDIAL INVESTIGATION (RI), APPENDIX E -(REVISED APPENDIX E TO THE DRAFT REPORT) [SEE AR #3663 TO AR #3665 - VOLUMES I TO III, AR #3666 - VOLUME XXVIII, AR #3662 - VARIOUS INSERTS]	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0073 30093199
AR_N00217_003692 NONE CORRESPONDENCE NONE 7	**12-22-1997** 11-18-1999 5090.3.A. NONE	LAUTH, S. U.S. EPA - SAN FRANCISCO, CA POWELL, R. NAVFAC - EFA WEST	COMMENTS ON THE DRAFT FINAL PARCEL E REMEDIAL INVESTIGATION (RI) REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0074 30093199
AR_N00217_003693 NONE CORRESPONDENCE NONE 4	**12-29-1997** 11-18-1999 5090.3.A. NONE	MULLINNIX, S. SAN FRANCISCO REDEVELOPMENT AGENCY - SAN FRANCISCO, CA POWELL, R. NAVFAC - EFA WEST	COMMENTS ON THE DRAFT FINAL PARCEL E REMEDIAL INVESTIGATION (RI) REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0074 30093199
AR_N00217_003694 NONE CORRESPONDENCE NONE 9	**12-29-1997** 11-18-1999 5090.3.A. NONE	KAO, C. DTSC - BERKELEY, CA POWELL, R. NAVFAC - EFA WEST	COMMENTS ON THE DRAFT FINAL PARCEL E REMEDIAL INVESTIGATION (RI) REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0074 30093199

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SF_N00217_000793 NONE REPORT N62474-94-D-7609 243	**01-07-1998** 02-04-2004 5090.3.C. 00174	S. TOBIAS TETRA TECH EM, INC. J. TUAN NAVFAC - SOUTHWEST DIVISION	DRAFT FINAL BASEWIDE FINDING OF SUITABILITY TO LEASE (EXCLUDING PARCEL A)	SITE FILE	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0030 30093199
AR_N00217_003695 NONE CORRESPONDENCE NONE 4	**01-08-1998** 11-18-1999 5090.3.A. NONE	LAUTH, S. U.S. EPA - SAN FRANCISCO, CA POWELL, R. NAVFAC - EFA WEST	COMMENTS ON THE ECOLOGICAL PORTION OF THE DRAFT FINAL PARCEL E REMEDIAL INVESTIGATION (RI) REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0074 30093199
AR_N00217_003681 EFAW SER 62210LT/L8079 CORRESPONDENCE NONE 3	**01-15-1998** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF THE PARCEL E FEASIBILITY STUDY (FS) DRAFT REPORT - 15 JANUARY 1998 (W/O ENCLOSURE)(SEE AR #3682 THROUGH 3685 FOR PARCEL E FS)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0073 30093199
SF_N00217_003682 NONE REPORT N62474-94-D-7609 424	**01-15-1998** 11-18-1999 5090.3.C. 00005	TETRA TECH NAVFAC - EFA WEST	DRAFT PARCEL E FEASIBILITY STUDY (FS) REPORT, VOLUME I OF IV; SECTIONS 1.0 - 3.0 (SEE AR #3683 - VOLUME II, 3684 - VOLUME III AND 3685 - VOLUME IV) [SEE AR # 1137- DRAFT REVISED REMEDIAL INVESTIGATION REPORT]	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0073 30093199
SF_N00217_003683 NONE REPORT N62474-94-D-7609 478	**01-15-1998** 11-18-1999 5090.3.C. 00005	TETRA TECH NAVFAC - EFA WEST	DRAFT PARCEL E FEASIBILITY STUDY (FS) REPORT, VOLUME II OF IV; SECTIONS 4.0 - 5.0 AND APPENDICES A - E (SEE AR #3682 - VOLUME I, 3684 - VOLUME III AND 3685 - VOLUME IV) [SEE AR # 1137- DRAFT REVISED REMEDIAL INVESTIGATION REPORT]	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0074 30093199
SF_N00217_003684 NONE REPORT N62474-94-D-7609 270	**01-15-1998** 11-18-1999 5090.3.C. 00005	TETRA TECH NAVFAC - EFA WEST	DRAFT PARCEL E FEASIBILITY STUDY (FS) REPORT, VOLUME III OF IV; APPENDIX F (SEE AR #3682 - VOLUME I, 3683 - VOLUME II AND 3685 - VOLUME IV) [SEE AR # 1137- DRAFT REVISED REMEDIAL INVESTIGATION REPORT]	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0074 30093199

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SF_N00217_003685 NONE REPORT N62474-94-D-7609 218	**01-15-1998** 11-18-1999 5090.3.C. 00005	TETRA TECH NAVFAC - EFA WEST	DRAFT PARCEL E FEASIBILITY STUDY (FS) REPORT, VOLUME IV OF IV; APPENDIX F (CONT.) AND G (SEE AR #3682 - VOLUME I, 3683 - VOLUME II AND 3684 - VOLUME III) [SEE AR # 1137- DRAFT REVISED REMEDIAL INVESTIGATION REPORT]	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0074 30093199
AR_N00217_003697 NONE CORRESPONDENCE NONE 4	**01-26-1998** 11-18-1999 5090.3.A. NONE	KAO, C. DTSC - BERKELEY, CA POWELL, R. NAVFAC - EFA WEST	COMMENTS ON THE DRAFT FINAL PARCEL E REMEDIAL INVESTIGATION (RI) REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0074 30093199
AR_N00217_003698 EFAW SER 622LT/L8097 CORRESPONDENCE NONE 7	**01-29-1998** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF THE PUBLIC SUMMARY FOR THE PARCEL E FEASIBILITY STUDY (FS)(W/ ENCLOSURES)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0074 30093199
AR_N00217_003718 NONE CORRESPONDENCE NONE 5	**03-31-1998** 11-18-1999 5090.3.A. NONE	KAO, C. DTSC - BERKELEY, CA R. POWELL NAVFAC - EFA WEST	COMMENTS ON THE DRAFT PARCEL E FEASIBILITY STUDY (FS) REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0074 30093199
AR_N00217_003725 NONE CORRESPONDENCE NONE 1	**03-31-1998** 11-18-1999 5090.3.A. NONE	BROWN, R. MICROSEARCH POWELL, R. NAVFAC - EFA WEST	COMMENTS ON THE DRAFT PARCEL E FEASIBILITY STUDY (FS)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0075 30093199
AR_N00217_003743 NONE REPORT NONE 16	**04-18-1998** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF APRIL 1998 MONTHLY PROGRESS REPORT (MPR) AND SCHEDULES FOR PARCELS A THROUGH F AND BASEWIDE (W/ ENCLOSURE)	ADMIN RECORD	BASEWIDE PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0076 30093199

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AR_N00217_003731 NONE CORRESPONDENCE NONE 1	**04-29-1998** 11-18-1999 5090.3.A. NONE	SMITH, D. ENVIROCURE - VERIFY AFFILIATION M. MCCLELLAND NAVFAC - EFA WEST	COMMENTS ON THE PARCEL E CLEANUP	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0075 30093199
AR_N00217_003734 NONE CORRESPONDENCE NONE 4	**04-29-1998** 11-18-1999 5090.3.A. NONE	J. MARMER CBWS M. MCCLELLAND NAVFAC - EFA WEST	COMMENTS ON THE DRAFT PARCEL E FEASIBILITY STUDY (FS) REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0075 30093199
AR_N00217_003732 NONE CORRESPONDENCE NONE 2	**04-30-1998** 11-18-1999 5090.3.A. NONE	GAVRICH, D. ECDC - VERIFY AFFILIATION M. MCCLELLAND NAVFAC - EFA WEST	COMMENTS ON THE DRAFT PARCEL E FEASIBILITY STUDY (FS) REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0075 30093199
AR_N00217_003733 NONE CORRESPONDENCE NONE 5	**04-30-1998** 11-18-1999 5090.3.A. NONE	V. HEUSINKVELD DTSC - BERKELEY, CA M. MCCLELLAND NAVFAC - EFA WEST	COMMENTS ON THE DRAFT FEASIBILITY STUDY (FS) REPORT FOR PARCEL E	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0075 30093199
AR_N00217_003735 NONE CORRESPONDENCE NONE 37	**04-30-1998** 11-18-1999 5090.3.A. NONE	LAUTH, S. U.S. EPA - SAN FRANCISCO, CA POWELL, R. NAVFAC - EFA WEST	COMMENTS ON THE DRAFT PARCEL E FEASIBILITY STUDY (FS) REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0075 30093199
AR_N00217_003736 NONE CORRESPONDENCE NONE 5	**04-30-1998** 11-18-1999 5090.3.A. NONE	R. BROWN MICROSEARCH M. MCCLELLAND NAVFAC - EFA WEST	COMMENTS ON THE DRAFT PARCEL E FEASIBILITY STUDY (FS) REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0075 30093199

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AR_N00217_003737 NONE CORRESPONDENCE NONE 14	**05-01-1998** 11-18-1999 5090.3.A. NONE	V. HEUSINKVELD DTSC - BERKELEY, CA M. MCCLELLAND NAVFAC - EFA WEST	SUBMISSION OF SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL BOARD (SFRWQCB) COMMENTS ON THE DRAFT PARCEL E FEASIBILITY STUDY (FS) REPORT (W/ ENCLOSURE)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0075 30093199
AR_N00217_003738 EFAW SER 62210LT/L8199 CORRESPONDENCE NONE 4	**06-05-1998** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST S. LAUTH U.S. EPA - SAN FRANCISCO	SUBMISSION OF PARCEL E FEDERAL FACILITY AGREEMENT (FFA) SCHEDULE EXTENSION REQUEST (W/OUT ENCLOSURES) (ENCLOSURE 1 - REVISED SCHEDULE VALIDATION STUDY AND ENCLOSURE 2 - REVISED FFA SCHEDULE WERE NOT SUBMITTED TO THE ADMINISTRATIVE RECORD)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0075 30093199
AR_N00217_003744 NONE CORRESPONDENCE NONE 2	**06-19-1998** 11-18-1999 5090.3.A. NONE	V. HEUSINKVELD DTSC - BERKELEY, CA R. POWELL NAVFAC - EFA WEST	PARCEL E FEDERAL FACILITY AGREEMENT (FFA) EXTENSION APPROVAL FOR THE DRAFT ECOLOGICAL RISK ASSESSMENT (ERA) VALIDATION WORK PLAN	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0076 30093199
SF_N00217_003753 EFAW SER 62210LT/L8201-1 REPORT N62474-94-D-7609 91	**09-08-1998** 11-18-1999 5090.3.C. CTO 0005	LEVINE FRICKE RECON, INC. NAVFAC - EFA WEST	DRAFT WORK PLAN AND FIELD SAMPLING PLAN, VALIDATION STUDY (INCLUDES EFAW TRANSMITTAL LETTER)	INFO REPOSITORY SITE FILE	PARCEL E	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0017
AR_N00217_003765 NONE CORRESPONDENCE NONE 3	**09-30-1998** 11-18-1999 5090.3.A. NONE	POWELL, R. NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF 1) ANALYSIS OF INTEGRATION OF PARCEL E REMEDIAL ALTERNATIVES AND PARCEL F REMEDIAL ALTERNATIVES AND 2) MAJOR ISSUES FROM AGENCIES COMMENTS ON THE PARCEL F FEASIBILITY STUDY (W/ ENCLOSURE)	ADMIN RECORD	PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0076 30093199

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AR_N00217_003766 NONE REPORT N62474-94-D-7609 69	**09-30-1998** 11-18-1999 5090.3.A. 00191	J. SICKLES TETRA TECH EM, INC. W. RADZEVICH NAVFAC - EFA WEST	ANALYSIS OF INTEGRATION OF PARCEL E REMEDIAL ALTERNATIVES AND PARCEL F REMEDIAL ALTERNATIVES	ADMIN RECORD	PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0076 30093199
AR_N00217_003769 EFAW SER 6221/0LT/L8280-1 CORRESPONDENCE NONE 134	**10-07-1998** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF RESPONSE TO COMMENTS ON THE DRAFT FINAL PARCEL E REMEDIAL INVESTIGATION (RI) REPORT (W/ ENCLOSURE)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0076 30093199
AR_N00217_003755 SER 62210LT/L9287-1 CORRESPONDENCE NONE 3	**10-14-1998** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF THE DRAFT FINAL WORK PLAN (WP) AND FIELD SAMPLING PLAN (FSP), PARCEL E VALIDATION STUDY - 14 OCTOBER 1998 (W/OUT ENCLSOURE) [SEE AR #3756 - DRAFT FINAL WORK PLAN AND FSP, PARCEL E VALIDATION STUDY]	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0076 30093199
SF_N00217_003756 NONE REPORT N62474-94-D-7609 91	**10-14-1998** 11-18-1999 5090.3.C. 00005	POPKIN, B. TETRA TECH EM, INC. NAVFAC - EFA WEST	DRAFT FINAL WORK PLAN (WP) AND FIELD SAMPLING PLAN (FSP), PARCEL E VALIDATION STUDY (SEE AR #3758 - DRAFT QAPP, PARCEL E VALIDATION STUDY)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0076 30093199
AR_N00217_003757 SER 62210LT/L9299-1 CORRESPONDENCE NONE 3	**10-26-1998** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF THE DRAFT QUALITY ASSURANCE PROJECT PLAN (QAPP) ADDENDUM, PARCEL E VALIDATION STUDY - 26 OCTOBER 1998 (W/OUT ENCLOSURE) [SEE AR #3758 - DRAFT QAPP, PARCEL E VALIDATION STUDY]	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0076 30093199
SF_N00217_003758 NONE REPORT N62474-94-D-7609 33	**10-26-1998** 11-18-1999 5090.3.C. 00005	POPKIN, B. TETRA TECH EM, INC. NAVFAC - EFA WEST	DRAFT QUALITY ASSURANCE PROJECT PLAN (QAPP), PARCEL E VALIDATION STUDY (SEE AR #3756 - DRAFT FINAL WP AND FSP, PARCEL E VALIDATION STUDY)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0076 30093199

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AR_N00217_003759 EFAW SER 62210LT/L9303-1 CORRESPONDENCE NONE 3	**10-30-1998** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF THE DRAFT DATA GAPS SAMPLING AND ANALYSIS WORK PLAN FOR PARCEL E (W/OUT ENCLOSURE) (SEE AR #3760 - DRAFT DATA GAPS SAMPLING AND ANALYSIS WORK PLAN)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0076 30093199
SF_N00217_003760 NONE REPORT N62474-94-D-7609 101	**10-30-1998** 11-18-1999 5090.3.C. 00005	POPKIN, B. TETRA TECH L. TETIRICK NAVFAC - EFA WEST	DRAFT DATA GAPS SAMPLING AND ANALYSIS WORK PLAN FOR PARCEL E	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0076 30093199
AR_N00217_003761 EFAW SER 62210LT/L-9307-11 CORRESPONDENCE NONE 3	**11-03-1998** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF THE FINAL EVALUATION OF THE POTENTIAL FOR WETLANDS CREATION, PARCEL E (W/OUT ENCLOSURE) [SEE AR #3762 - FINAL EVALUATION OF THE POTENTIAL FOR WETLANDS CREATION]	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0076 30093199
AR_N00217_003762 NONE REPORT N62474-94-D-7609 39	**11-03-1998** 11-18-1999 5090.3.A. 00005	POPKIN, B. TETRA TECH L. TETIRICK NAVFAC - EFA WEST	FINAL EVALUATION OF THE POTENTIAL FOR WETLANDS CREATION AT PARCEL E	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0076 30093199
AR_N00217_003798 NONE CORRESPONDENCE NONE 4	**11-13-1998** 11-18-1999 5090.3.A. NONE	BAILEY, D. DEPARTMENT OF HEALTH SERVICES - SACRAMENTO, CA C. KAO DTSC - BERKELEY	SUBMISSION OF COMMENTS ON THE RESPONSE TO COMMENTS ON THE DRAFT FINAL PARCEL E REMEDIAL INVESTIGATION (RI) AND DETERMINATION DISCUSSION OF ACCEPTABLE CONCENTRATIONS OF RESIDUAL RADIOACTIVITY CONTAMINATION (W/ ENCLOSURE)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0077 30093199
AR_N00217_003781 EFAW SER 62210LT/L914-1 CORRESPONDENCE NONE 3	**01-14-1999** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF THE DRAFT FINAL PARCEL E ECOLOGICAL RISK ASSESSMENT (ERA) VALIDATION STUDY, QUALITY ASSURANCE PROJECT PLAN (QAPP) ADDENDUM (W/OUT ENCLOSURE) (SEE AR #3782 - DRAFT FINAL ERA)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0076 30093199

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SF_N00217_003782 NONE REPORT N62474-94-D-7609 67	**01-14-1999** 11-18-1999 5090.3.C. CTO 0005	POPKIN, B. TETRA TECH EM, INC. TETIRICK, L. NAVFAC - EFA WEST	DRAFT FINAL ECOLOGICAL RISK ASSESSMENT (ERA) VALIDATION STUDY, QUALITY ASSURANCE PROJECT PLAN (QAPP) ADDENDUM	SITE FILE	PARCEL E	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0017
AR_N00217_003802 EFAW SER 62210L/L9060-1 CORRESPONDENCE NONE 5	**03-01-1999** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST C. KAO DTSC - BERKELEY	SUBMISSION OF RESPONSE TO COMMENTS ON THE DRAFT FINAL REMEDIATION INVESTIGATION (RI), PARCEL E (W/ ENCLOSURE)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0077 30093199
AR_N00217_003825 EFAW SER 62210LT/L9116-1 CORRESPONDENCE N62474-94-D-7609 3	**04-26-1999** 11-18-1999 5090.3.A. 00005	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF THE DRAFT FINAL DATA GAPS, SAMPLING AND ANALYSIS PLAN (SAP), PARCEL E (SEE AR #3826 - DRAFT FINAL SAP)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0077 30093199
SF_N00217_003826 NONE REPORT N62474-94-D-7609 136	**04-26-1999** 11-18-1999 5090.3.C. 00005	POPKIN, B. TETRA TECH L. TETIRICK NAVFAC - EFA WEST	DRAFT FINAL DATA GAPS, SAMPLING AND ANALYSIS PLAN (SAP), PARCEL E (SEE AR #3897 - REVISED DRAFT FINAL)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0077 30093199
AR_N00217_000541 EFAW SER 622/L117-1 CORRESPONDENCE NONE 8	**04-27-1999** 12-20-2001 5090.3.A. NONE	M. MCCLELLAND NAVFAC - EFA WEST C. TROMBADORE U.S. EPA - SAN FRANCISCO	RESPONSE TO VARIOUS COMMENTS REGARDING NAVY'S REQUEST FOR SCHEDULE REVISIONS (WITH ENCLOSURES)	ADMIN RECORD	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0013 30093199

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AR_N00217_003827 NONE CORRESPONDENCE NONE 2	**04-28-1999** 11-18-1999 5090.3.A. NONE	BAILEY, D. DEPARTMENT OF HEALTH SERVICES - SACRAMENTO, CA KAO, C. DTSC - BERKELEY, CA	COMMENTS ON THE RESPONSE TO COMMENTS FOR DRAFT FINAL PARCEL E REMEDIAL INVESTIGATION (RI) - 01 MARCH 1999	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0077 30093199
AR_N00217_003845 NONE CORRESPONDENCE NONE 3	**05-13-1999** 11-18-1999 5090.3.A. NONE	LAUTH, S. U.S. EPA - SAN FRANCISCO, CA POWELL, R. NAVFAC - EFA WEST	COMMENTS ON THE DRAFT FINAL DATA GAPS SAMPLING AND ANALYSIS WORK PLAN (SAP/WP) FOR PARCEL E - 26 APRIL 1999	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0078 30093199
AR_N00217_003835 EFAW SER 62210LT/L9165-1 CORRESPONDENCE N62474-94-D-7609 3	**06-14-1999** 11-18-1999 5090.3.A. 00005	R. POWELL NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF THE DRAFT VALIDATION STUDY REPORT, PARCEL E (W/OUT ENCLOSURE) (SEE AR #3836 - DRAFT VALIDATION STUDY REPORT)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0077 30093199
SF_N00217_003836 NONE REPORT N62474-94-D-7609 337	**06-14-1999** 11-18-1999 5090.3.C. 00005	TETRA TECH NAVFAC - EFA WEST	DRAFT VALIDATION STUDY REPORT, PARCEL E	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0077 30093199
AR_N00217_003880 NONE REPORT N62474-93-D-2151 370	**07-01-1999** 11-18-1999 5090.3.A. DO 0060	IT CORPORATION NAVFAC - EFA WEST	POST CONSTRUCTION REPORT, SITE IR-1/21 INDUSTRIAL LANDFILL, GROUNDWATER EXTRACTION SYSTEM/CONTAINMENT BARRIER, VOLUME 1 OF 2 (SEE AR #3881 - VOLUME 2)	ADMIN RECORD	PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0078 30093199
AR_N00217_003881 NONE REPORT N62474-93-D-2151 773	**07-01-1999** 11-18-1999 5090.3.A. DO 0060	IT CORPORATION NAVFAC - EFA WEST	POST CONSTRUCTION REPORT, SITE IR-1/21 INDUSTRIAL LANDFILL, REMOVAL ACTION, VOLUME 2 OF 2 (SEE AR #3880 - VOLUME 1)	ADMIN RECORD	PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0079 30093199

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AR_N00217_003902 EFAW SER 62210LT/L9183-4 CORRESPONDENCE NONE 4	**07-09-1999** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST S. LAUTH U.S. EPA - SAN FRANCISCO	SUBMISSION OF PARCEL E FEDERAL FACILITY AGREEMENT (FFA) SCHEDULE EXTENSION REQUEST (W/ ENCLOSURES)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0079 30093199
AR_N00217_003903 NONE CORRESPONDENCE NONE 8	**07-15-1999** 11-18-1999 5090.3.A. NONE	KAO, C. DTSC - BERKELEY, CA R. POWELL NAVFAC - EFA WEST	SUBMISSION OF COMMENTS ON THE DRAFT VALIDATION STUDY REPORT, PARCEL E (W/ ENCLOSURE)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0079 30093199
AR_N00217_003904 NONE CORRESPONDENCE NONE 1	**07-15-1999** 11-18-1999 5090.3.A. NONE	LAUTH, S. U.S. EPA - SAN FRANCISCO, CA POWELL, R. NAVFAC - EFA WEST	FEDERAL FACILITY AGREEMENT (FFA) APPROVAL OF SCHEDULE EXTENSION REQUEST FOR PARCEL E	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0079 30093199
AR_N00217_003905 NONE CORRESPONDENCE NONE 7	**07-26-1999** 11-18-1999 5090.3.A. NONE	G. CHERNOFF CALF&G R. POWELL NAVFAC - EFA WEST	COMMENTS ON THE PARCEL E DRAFT VALIDATION STUDY REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0079 30093199
SF_N00217_003910 NONE REPORT N62474-94-D-7609 90	**08-04-1999** 11-18-1999 5090.3.C. CTO 0111	SHOFF, T. TETRA TECH NAVFAC - EFA WEST	DRAFT FINAL TECHNICAL MEMORANDUM NICKEL SCREENING AND IMPLEMENTATION PLAN	SITE FILE	PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0080 30093199
AR_N00217_003906 EFAW SER 62210LT/L9237-2 CORRESPONDENCE NONE 3	**08-25-1999** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST S. LAUTH U.S. EPA - SAN FRANCISCO	SUBMISSION OF PARCEL E FEDERAL FACILITY AGREEMENT (FFA) REVISED SCHEDULE EXTENSION (W/ ENCLOSURE)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0079 30093199

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AR_N00217_003896 EFAW SER 62210LT/L90277-1 CORRESPONDENCE N62474-94-D-7609 3	**10-04-1999** 11-18-1999 5090.3.A. NONE	R. POWELL NAVFAC - EFA WEST S. LAUTH U.S. EPA - SAN FRANCISCO	SUBMISSION OF THE REVISED DRAFT FINAL DATA GAPS SAMPLING AND ANALYSIS WORK PLAN FOR PARCEL E (W/OUT ENCLOSURE) (SEE AR #3897 - REVISED FINAL DATA GAPS SAMPLING AND ANALYSIS PLAN FOR PARCEL E)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0079 30093199
SF_N00217_003897 NONE REPORT N62474-94-D-7609 223	**10-04-1999** 11-18-1999 5090.3.C. 00005	TETRA TECH L. TETIRICK NAVFAC - EFA WEST	REVISED DRAFT FINAL DATA GAPS SAMPLING AND ANALYSIS WORK PLAN, PARCEL E (SEE AR #3826 - DRAFT FINAL)	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0079 30093199
AR_N00217_000245 CTO-007/0178 MINUTES N68711-95-D-7526 71	**02-24-2000** 11-08-2000 5090.3.A. CTO 0007	TAIT, R. BECHTEL NATIONAL, INC. SELBY, R. NAVFAC - SOUTHWEST DIVISION	24 FEBRUARY 2000 RESTORATION ADVISORY BOARD (RAB) MEETING HANDOUTS [INCLUDES AGENDA, RAB LISTING, MEETING MINUTES OF 10/21/99, 12/09/99, 01/18/00 AND 01/27/00 AND VARIOUS HANDOUTS] {PORTION OF MAILING LIST IS SENSITIVE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0005 30093199

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SF_N00217_003928 NONE REPORT N62474-94-D-7609 344	**03-14-2000** 03-27-2000 5090.3.C. 00005	M. WANTA TETRA TECH EM, INC. MULTIPLE AGENCIES	DRAFT FINAL - ECOLOGICAL RISK ASSESSMENT VALIDATION STUDY REPORT (SEE AR #3948 FOR UNDATED ERRATA SHEET)	SITE FILE	BLDG 0000505 BLDG 0000506 BLDG 0000507 BLDG 0000509 BLDG 0000510 BLDG 0000510A BLDG 0000513 BLDG 0000516 BLDG 0000518 BLDG 0000520 BLDG 0000521 BLDG 0000529 BLDG 0000531 PARCEL E SITE 00001 SITE 00002 SITE 00006 SITE 00007 SITE 00011 SITE 00012 SITE 00013 SITE 00014 SITE 00015 SITE 00016 SITE 00018 SITE 00019 SITE 00021	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0080 30093199
SF_N00217_003929 EFAW SER 06CH.MO/166 REPORT N62474-94-D-7609 102	**03-14-2000** 03-27-2000 5090.3.C. CTO 0005	WANTA, M. TETRA TECH EM, INC. MULTIPLE AGENCIES	DRAFT FINAL PROTECTIVE SOIL CONCENTRATIONS TECHNICAL MEMORANDUM [INCLUDES EFAW TRANSMITTAL LETTER BY M. AVERY]	SITE FILE	PARCEL E-1 PARCEL E-2 SITE 00002 SITE 00011 SITE 00014 SITE 00015 SITE 00021	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0080 30093199

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AR_N00217_003938 NONE CORRESPONDENCE NONE 2	**04-05-2000** 04-20-2000 5090.3.A. NONE	MAXWELL, C. CRWQCB - OAKLAND, CA MACH, R. NAVFAC - SOUTHWEST DIVISION	RESPONSE TO DRAFT FINAL PROTECTIVE SOIL CONCENTRATIONS TECHNICAL MEMORANDUM AND ECOLOGICAL RISK ASSESSMENT VALIDATION STUDY REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0081 30093199
AR_N00217_000259 WBB-65622 CORRESPONDENCE NONE 3	**04-21-2000** 11-15-2000 5090.3.A. NONE	MCDANIEL, E. SHEPPARD, MULLIN, RICHTER & HA R. MACH NAVFAC - EFA WEST	COMMENTS ON THE DRAFT FINAL PROTECTIVE SOIL CONCENTRATIONS TECHNICAL MEMORANDUM, PARCEL E	ADMIN RECORD INFO REPOSITORY	PARCEL E SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0005 30093199
SF_N00217_000247 CTO-007/0178 MINUTES N68711-95-D-7526 72	**04-27-2000** 11-08-2000 5090.3.C. CTO 0007	TAIT, R. BECHTEL NATIONAL, INC. SELBY, R. NAVFAC - SOUTHWEST DIVISION	27 APRIL 2000 RESTORATION ADVISORY BOARD (RAB) MEETING HANDOUTS - INCLUDES AGENDA, 23 MARCH 2000 & BRAC CLEANUP TEAM (BCT) 3 MARCH 2000 MEETING MINUTES & DRAFT EXPLANATION OF SIGNIFICANT DIFFERENCES, PARCEL B - (4/10/00)]	SITE FILE	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F SITE 00001	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0005 30093199
AR_N00217_000264 NONE CORRESPONDENCE NONE 4	**04-27-2000** 11-15-2000 5090.3.A. NONE	CALLAHAN, C. U.S. EPA - SAN FRANCISCO, CA LAUTH, S. U.S. EPA - SAN FRANCISCO	COMMENTS BY REGULATOR ON THE NAVY'S RESPONSE TO COMMENTS OF THE DRAFT FINAL VALIDATION STUDY REPORT, PARCEL E	ADMIN RECORD INFO REPOSITORY	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0005 30093199
AR_N00217_003945 NONE CORRESPONDENCE NONE 2	**05-05-2000** 06-06-2000 5090.3.A. NONE	TROMBADORE, C. U.S. EPA - SAN FRANCISCO, CA MACH, R. NAVFAC - EFA WEST	EPA'S REQUEST TO ASSIST IN CALCULATING REALISTIC COST TO COMPLETE ESTIMATE	ADMIN RECORD	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0081 30093199

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SF_N00217_003947 SWDIV SER 06CH.RM/360 MINUTES NONE 13	**05-12-2000** 06-06-2000 5090.3.C. NONE	R. MACH NAVFAC - EFA WEST MULTIPLE AGENCIES	SUBMISSION OF 27 APRIL 2000 BASE REALIGNMENT AND CLOSURE (BRAC) CLEANUP TEAM (BCT) MEETING MINUTES (W/ ENCLOSURE)	SITE FILE	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0081 30093199
SF_N00217_003959 SWDIV SER 06CH.RM/364 REPORT N62474-94-D-7609 99	**05-15-2000** 06-07-2000 5090.3.C. 00128	M. WANTA TETRA TECH EM, INC. MULTIPLE AGENCIES	DRAFT - PHASE IV RADIATION INVESTIGATION REPORT {SEE AR #120, 186 & 3974 - COMMENTS BY EPA, DHS REVIEW OF NAVY'S RESPONSES TO COMMENTS & RESPONSE TO COMMENTS}	SITE FILE	BLDG 0000351A BLDG 0000364 BLDG 0000506 BLDG 0000507 BLDG 0000508 BLDG 0000509 BLDG 0000510 BLDG 0000510A BLDG 0000517 BLDG 0000529 BLDG 0000707 PARCEL E SITE 00001 SITE 00002 SITE 00007 SITE 00018 SITE 00021	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0081 30093199
AR_N00217_003949 SWDIV SER 06CH.MA/392 CORRESPONDENCE NONE 8	**05-24-2000** 06-06-2000 5090.3.A. NONE	AVERY, M. NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	RESPONSE TO COMMENTS ON THE DRAFT FINAL ECOLOGICAL RISK ASSESSMENT VALIDATION STUDY REPORT	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0024

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AR_N00217_000224 CTO-007/0097 MINUTES N68711-95-D-7526 19	**05-25-2000** 10-27-2000 5090.3.A. CTO 0007	BECHTEL NATIONAL, INC. NAVFAC - SOUTHWEST DIVISION	RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES OF 25 MAY 2000	ADMIN RECORD INFO REPOSITORY	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0004 30093199
AR_N00217_000251 CTO-007/0178 MINUTES N68711-95-D-7526 20	**05-25-2000** 11-08-2000 5090.3.A. CTO 0007	BECHTEL NATIONAL, INC. NAVFAC - SOUTHWEST DIVISION	25 MAY 2000 RESTORATION ADVISORY BOARD (RAB) MEETING HANDOUTS [INCLUDES AGENDA, 04/27/00 MEETING MINUTES & VARIOUS HANDOUTS]	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0005 30093199
AR_N00217_000257 NONE MISC NONE 12	**06-01-2000** 11-08-2000 5090.3.A. NONE	NAVFAC - SOUTHWEST DIVISION NAVFAC - SOUTHWEST DIVISION	ENVIRONMENTAL CLEANUP NEWSLETTER: "WHAT IS HUNTERS POINT SHIPYARD?"	ADMIN RECORD INFO REPOSITORY	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E SITE 00001 SITE 00003 SITE 00006 SITE 00021	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0005 30093199
SF_N00217_003955 NONE REPORT N62474-94-D-7609 354	**06-01-2000** 06-07-2000 5090.3.C. 00005 & 00011	BIELSKIS, D. TETRA TECH EM, INC. MULTIPLE AGENCIES	DRAFT FIELD SAMPLING PLAN FOR PHASE I GROUNDWATER DATA GAPS INVESTIGATION	SITE FILE	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0081 30093199
SF_N00217_003956 NONE REPORT N62474-94-D-7609 126	**06-01-2000** 06-07-2000 5090.3.C. 00005 & 00011	BIELSKIS, D. TETRA TECH EM, INC. MULTIPLE AGENCIES	DRAFT QUALITY ASSURANCE PROJECT PLAN FOR PHASE I GROUNDWATER DATA GAPS INVESTIGATION	SITE FILE	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0081 30093199

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AR_N00217_003948 NONE CORRESPONDENCE NONE 5	**06-06-2000** 06-06-2000 5090.3.A. NONE	M. WANTA TETRA TECH EM, INC. MULTIPLE AGENCIES	DISTRIBUTION OF ERRATA SHEET FOR DRAFT FINAL ECOLOGICAL RISK ASSESSMENT (ERA) VALIDATION STUDY (AR #3928 - DRAFT FINAL ERA VALIDATION STUDY)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0081 30093199
AR_N00217_003979 CRWQCB FILE NO. 2169.6032 (LBJ) CORRESPONDENCE NONE 3	**06-16-2000** 07-14-2000 5090.3.A. NONE	JOB, B. CRWQCB - SAN FRANCISCO, CA MACH, R. NAVFAC - EFA WEST	COMMENTS ON DRAFT FIELD SAMPLING PLAN FOR PHASE I DATA GAPS INVESTIGATION	ADMIN RECORD	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0081 30093199
AR_N00217_003962 EFAW SER 06CH.RM/480 CORRESPONDENCE NONE 12	**06-23-2000** 07-14-2000 5090.3.A. NONE	R. MACH NAVFAC - EFA WEST MULTIPLE AGENCIES	TRANSMITTAL OF TREATABILITY STUDY WORK PLAN MODIFICATIONS REGARDING THE PHASE II SOIL VAPOR EXTRACTION (SVE)	ADMIN RECORD	BLDG 0000134 BLDG 0000211 BLDG 0000231 BLDG 0000253 BLDG 0000272 PARCEL B PARCEL C PARCEL E SITE 00010 SITE 00025 SITE 00028 SITE 00036	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0081 30093199
AR_N00217_003976 NONE CORRESPONDENCE NONE 11	**06-23-2000** 07-14-2000 5090.3.A. NONE	KAO, C. DTSC - BERKELEY, CA MACH, R. NAVFAC - EFA WEST	REVIEW AND COMMENTS ON THE DRAFT QUALITY ASSURANCE PROJECT PLAN AND DRAFT FIELD SAMPLING PLAN FOR PHASE I GROUNDWATER DATA GAPS INVESTIGATION	ADMIN RECORD	PARCEL B PARCEL C PARCEL D PARCEL E SITE 00009 SITE 00018 SITE 00025 SITE 00028	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0081 30093199

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SF_N00217_003986 NONE REPORT N62474-94-D-7609 119	**06-26-2000** 07-14-2000 5090.3.C. 00005	M. WANTA TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT RADIOLOGICAL REMOVAL ACTION; ACTION MEMORANDUM	SITE FILE	BLDG 0000364 BLDG 0000509 BLDG 0000529 BLDG 0000707 PARCEL D PARCEL E SITE 00011 SITE 00014 SITE 00015 SITE 00034 SITE 00039	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0081 30093199
SF_N00217_003972 EFAW SER 06CH.RM/478 MINUTES NONE 11	**06-30-2000** 07-14-2000 5090.3.C. NONE	R. MACH NAVFAC - EFA WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE 8 JUNE 2000 FINAL BASE REALIGNMENT AND CLOSURE (BRAC) CLEANUP TEAM (BCT) MEETING MINUTES	SITE FILE	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0081 30093199
AR_N00217_003973 EFAW SER 06CH.RM/477 CORRESPONDENCE NONE 7	**06-30-2000** 07-14-2000 5090.3.A. NONE	R. MACH NAVFAC - EFA WEST MULTIPLE AGENCIES	TRANSMITTAL OF 31 MAY 2000 FINAL PETROLEUM HYDROCARBON PROGRAM	ADMIN RECORD	BLDG 0000439 PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0081 30093199
AR_N00217_000063 NONE CORRESPONDENCE NONE 2	**07-03-2000** 08-09-2000 5090.3.A. NONE	LAUTH, S. U.S. EPA - SAN FRANCISCO, CA MACH, R. NAVFAC - EFA WEST	COMMENTS ON THE PHASE II SOIL VAPOR EXTRACTION (SVE) TREATABILITY STUDY WORK PLAN	ADMIN RECORD	BLDG 0000123 PARCEL B PARCEL C PARCEL E SITE 00010 SITE 00025	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0001 30093199

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AR_N00217_000234 CTO-007/0154 MINUTES N68711-95-D-7526 19	**07-27-2000** 10-27-2000 5090.3.A. CTO 0007	BECHTEL NATIONAL, INC. NAVFAC - SOUTHWEST DIVISION	27 JULY 2000 RESTORATION ADVISORY BOARD MEETING MINUTES REPORTER'S TRANSCRIPT	ADMIN RECORD INFO REPOSITORY	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0004 30093199
AR_N00217_000051 DS.0011.14744 CORRESPONDENCE N62474-94-D-7609 599	**07-31-2000** 08-08-2000 5090.3.A. 00011	BIELSKIS, D. TETRA TECH EM, INC. DEMARS, E. NAVFAC - SOUTHWEST DIVISION	FINAL FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN - PHASE I GROUNDWATER DATA GAPS INVESTIGATION [INCLUDES SWDIV TRANSMITTAL LETTER] {PORTION OF MAILING LIST IS SENSITIVE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E SITE 00001 SITE 00006 SITE 00021 SITE 00022	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0001 30093199
SF_N00217_000114 EFAW SER 06CH.RM/522 MINUTES NONE 15	**08-15-2000** 08-29-2000 5090.3.C. NONE	MACH, R. NAVFAC - EFA WEST MULTIPLE AGENCIES	BRAC CLEANUP TEAM (BCT) MEETING MINUTES OF 13 JULY 2000 (W/ ENCLOSURE)	SITE FILE	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0002 30093199
AR_N00217_000123 DS.005.15135 & EFAW SER 06CH.RM/527 REPORT N62474-94-D-7609 134	**08-17-2000** 08-29-2000 5090.3.A. CTO 0005	CHOW, D. TETRA TECH EM, INC. MACH, R. NAVFAC - SOUTHWEST DIVISION	FINAL RADIOLOGICAL REMOVAL ACTION, ACTION MEMORANDUM (INCLUDES RESPONSE TO AGENCY COMMENTS ON THE DRAFT RADIOLOGICAL REMOVAL ACTION, ACTION MEMORANDUM AND CD COPY)	ADMIN RECORD INFO REPOSITORY	BLDG 0000364 BLDG 0000509 BLDG 0000529 BLDG 0000707 PARCEL B PARCEL D PARCEL E SITE 00011 SITE 00014 SITE 00015 SITE 00034 SITE 00039	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0002 30093199

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AR_N00217_000235 CTO-007/0158 MINUTES N68711-95-D-7526 31	**08-24-2000** 10-27-2000 5090.3.A. CTO 0007	BECHTEL NATIONAL, INC. NAVFAC - SOUTHWEST DIVISION	24 AUGUST 2000 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES REPORTER'S TRANSCRIPT	ADMIN RECORD INFO REPOSITORY	BLDG 0000411 PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0004 30093199
AR_N00217_000399 EFAW SER 06CH.RM/705 CORRESPONDENCE NONE 9	**08-31-2000** 04-13-2001 5090.3.A. NONE	R. MACH NAVFAC - EFA WEST MULTIPLE AGENCIES	NAVY'S ENVIRONMENTAL RESTORATION JULY 2000 MONTHLY PROGRESS REPORT (MPR) (WITH ENCLOSURE) [PORTION OF MAILING LIST IS SENSITIVE]	ADMIN RECORD SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0008 30093199
AR_N00217_000258 NONE MISC NONE 10	**09-01-2000** 11-08-2000 5090.3.A. NONE	NAVFAC - SOUTHWEST DIVISION NAVFAC - SOUTHWEST DIVISION	ENVIRONMENTAL CLEANUP NEWSLETTER: "PARCEL B CLEANUP MOVING FORWARD"	ADMIN RECORD INFO REPOSITORY	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0005 30093199
AR_N00217_000254 CTO-007/0178 MINUTES N68711-95-D-7526 18	**09-28-2000** 11-08-2000 5090.3.A. CTO 0007	BECHTEL NATIONAL, INC. NAVFAC - SOUTHWEST DIVISION	28 SEPTEMBER 2000 RESTORATION ADVISORY BOARD (RAB) MEETING HANDOUTS [INCLUDES AGENDA, 08/24/00 MEETING MINUTES, FACT SHEETS NO. 1 & 2 & RECENT FIRE-RELATED EVENTS]	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0005 30093199
AR_N00217_000240 EFAW SER 06CH.RM/851 REPORT NONE 8	**10-19-2000** 10-27-2000 5090.3.A. NONE	R. MACH NAVFAC - EFA WEST MULTIPLE AGENCIES	TECHNICAL JUSTIFICATION FOR THE PARCEL B THROUGH F INTERFACE, BEACH AMORTIZATION CONCEPTUAL DESIGN {PORTION OF MAILING LIST IS SENSITIVE} (WITH ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0004 30093199

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AR_N00217_000241 EFAW SER 06CH.RM/852 MISC NONE 6	**10-19-2000** 10-27-2000 5090.3.A. NONE	R. MACH NAVFAC - EFA WEST MULTIPLE AGENCIES	DESIGN SUMMARY, PARCEL E LANDFILL CAP (W/ ENCLOSURE) {PORTION OF MAILING LIST IS SENSITIVE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0005 30093199
AR_N00217_000244 EFAW SER 06CH.RM/854 MINUTES NONE 6	**10-24-2000** 10-27-2000 5090.3.A. NONE	MACH, R. NAVFAC - EFA WEST MULTIPLE AGENCIES	26 SEPTEMBER 2000 FINAL PARCEL E SOIL DATA GAPS MEETING MINUTES (W/ ENCLOSURE)	ADMIN RECORD INFO REPOSITORY	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0005 30093199
AR_N00217_000256 CTO-007/0178 MINUTES N68711-95-D-7526 19	**10-26-2000** 11-08-2000 5090.3.A. CTO 0007	 BECHTEL NATIONAL, INC. NAVFAC - SOUTHWEST DIVISION	26 OCTOBER 2000 RESTORATION ADVISORY BOARD (RAB) MEETING HANDOUTS [INCLUDES AGENDA, MEETING MINUTES, VARIOUS HANDOUTS, SEPTEMBER 2000 MONTHLY PROGRESS REPORT AND FACT SHEET NO. 3]	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0005 30093199
AR_N00217_000289 NONE CORRESPONDENCE NONE 2	**10-31-2000** 11-22-2000 5090.3.A. NONE	TROMBADORE, C. U.S. EPA - SAN FRANCISCO, CA MACH, R. NAVFAC - EFA WEST	REVIEW OF NAVY TECHNICAL JUSTIFCATION FOR THE PARCEL B THROUGH F INTERFACE, BEACH AMORIZATION CONCEPTUAL DESIGN {SEE AR #240 & 290 - TECHNICAL JUSTIFICATION & COMMENTS BY SFRA}	ADMIN RECORD	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0005 30093199
AR_N00217_000297 NONE CORRESPONDENCE NONE 2	**10-31-2000** 12-18-2000 5090.3.A. NONE	JOB, B. CRWQCB - SAN FRANCISCO, CA MACH, R. NAVFAC - EFA WEST	COMMENTS ON TECHNICAL JUSTIFICATION FOR THE PARCEL B THROUGH F INTERFACE BEACH ARMORIZATION CONCEPTUAL DESIGN (SEE AR #240 - DOCUMENT)	ADMIN RECORD	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0006 30093199

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AR_N00217_000290 450-04400-190 CORRESPONDENCE NONE 5	**11-02-2000** 11-22-2000 5090.3.A. NONE	RHETT, B. SAN FRANCISCO REDEVELOPMENT AGENCY - SAN FRANCISCO, CA MACH, R. NAVFAC - EFA WEST	COMMENTS ON THE NAVY TECHNICAL JUSTIFICATION FOR THE PARCEL B THROUGH F INTERFACE, BEACH AMORTIZATION CONCEPTUAL DESIGN [PORTION OF MAILING LIST IS SENSITIVE] {SEE AR #240 - TECHNICAL JUSTIFICATION AND #289 - COMMENTS}	ADMIN RECORD SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0005 30093199
AR_N00217_000265 DS.0005.15503 & SWDIV SER 06CH.RM/912 CORRESPONDENCE N62474-94-D-7609 36	**11-07-2000** 11-15-2000 5090.3.A. CTO 0005	TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	ACTION MEMORANDUM, PARCEL E - LANDFILL FIRE EMERGENCY REMOVAL ACTION [INCLUDES TRANSMITTAL LETTER BY R. MACH] {PORTION OF MAILING LIST IS SENSITIVE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0005 30093199
AR_N00217_000302 DS.0011.14441 & SWDIV SER 06CH.RM/860 REPORT N62474-94-D-7609 33	**11-17-2000** 12-18-2000 5090.3.A. CTO 0011	LI, T. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	GROUNDWATER BENEFICIAL USE EVALUATION, PARCELS C, D AND E [INCLUDES TRANSMITTAL LETTER FROM R. MACH (SWDIV), PORTION OF MAILING LIST IS SENSITIVE] (SEE AR #325, 326 & 342 - COMMENTS & #359 - RESPONSE TO COMMENTS)	ADMIN RECORD SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0006 30093199
AR_N00217_000303 EFAW SER 06CH.RM/965 MISC NONE 37	**11-21-2000** 12-18-2000 5090.3.A. NONE	R. MACH NAVFAC - EFA WEST MULTIPLE AGENCIES	LETTER SENT TO REGULATORS FOR REVIEW AND INFORMATION REGARDING PARCEL E LANDFILL FIRE W/ ENCLOSURES	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0006 30093199
AR_N00217_000325 NONE CORRESPONDENCE NONE 2	**11-29-2000** 12-26-2000 5090.3.A. NONE	JOB, B. CRWQCB - SAN FRANCISCO, CA MACH, R. NAVFAC - EFA WEST	REVIEW AND COMMENTS ON GROUNDWATER BENEFICIAL USE EVALUATION, PARCELS C,D, AND E (SEE AR #302 - EVALUATION, #326 & 342 - COMMENTS & #359 - RESPONSE TO COMMENTS)	ADMIN RECORD	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0006 30093199

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AR_N00217_000326 NONE CORRESPONDENCE NONE 4	**12-05-2000** 12-26-2000 5090.3.A. NONE	LAUTH, S. U.S. EPA - SAN FRANCISCO, CA MACH, R. NAVFAC - EFA WEST	REVIEW AND COMMENTS ON GROUNDWATER BENEFICIAL USE EVALUATION PARCELS C,D, AND E (SEE AR #302 - EVALUATION, #325 & 342 - COMMENTS & RESPONSE TO COMMENTS)	ADMIN RECORD	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0006 30093199
AR_N00217_000358 CTO-007/0197 MINUTES N68711-95-D-7526 78	**12-07-2000** 02-07-2001 5090.3.A. CTO 0007	BECHTEL NATIONAL, INC. NAVFAC - SOUTHWEST DIVISION	REPORTER'S TRANSCRIPT OF THE 07 DECEMBER 2000 RESTORATION ADVISORY BOARD (RAB) MEETING - INCLUDES RAB MEETING MINUTES OF 26 OCTOBER 2000, AGENDA, PUBLIC NOTICE, AND HANDOUTS	ADMIN RECORD	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F SITE 00003	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0007 30093199
AR_N00217_000342 WBB-65622 CORRESPONDENCE NONE 3	**12-18-2000** 01-22-2001 5090.3.A. NONE	M. MCDANIEL SHEPPARD, MULLIN, RICHTER & HA R. MACH NAVFAC - EFA WEST	COMMENTS ON THE GROUNDWATER BENEFICIAL USE EVALUATION FOR PARCELS C, D, & E (WITH ENLCOSURE) {SEE AR #302 - EVALUATION, #325 - COMMENTS BY CRWQCB, & #326 - COMMENTS BY EPA & #359 - RESPONSE TO COMMENTS}	ADMIN RECORD	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0007 30093199
AR_N00217_000360 SWDIV SER 06CH.RM/0089 & SWDIV SER 06CH.RM/0157 REPORT NONE 145	**01-01-2001** 02-19-2001 5090.3.A. NONE	NEW WORLD TECHNOLOGY NAVFAC - SOUTHWEST DIVISION	FINAL WORK PLAN FOR SOIL REMOVAL AND PACKAGING, RADIOLOGICAL TIME CRITICAL REMOVAL ACTION, REVISION 4 (INCLUDES RESPONSE TO COMMENTS ON THE DRAFT WORK PLAN, FINAL MARSSIM STATUS SURVEY PLAN, AND SWDIV TRANSMITTAL LETTERS)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0002
AR_N00217_000404 NONE CORRESPONDENCE NONE 2	**01-01-2001** 04-25-2001 5090.3.A. NONE	ATSDR NAVFAC - EFA WEST	AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY - HEALTH CONSULTATION SUMMARY REGARDING THE PARCEL E LANDFILL FIRE	ADMIN RECORD INFO REPOSITORY	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0008 30093199

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AR_N00217_000332 DS.0011.15702; 15702-1 & SWDIV SER 06CH.RM/033&390 CORRESPONDENCE N62474-94-D-7609 249	**01-08-2001** 01-11-2001 5090.3.A. 00011	LI, T. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN ADDENDUM FOR PHASE II GROUNDWATER DATA GAPS INVESTIGATION [INCLUDES SWDIV TRANSMITTAL LETTERS BY R. MACH] {CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D PARCEL E SITE 00001 SITE 00006 SITE 00021 SITE 00022	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0006 30093199
AR_N00217_000363 CTO-007/0203 & 0207 MISC N68711-95-D-7526 64	**01-25-2001** 02-19-2001 5090.3.A. 00007	BECHTEL NATIONAL, INC. NAVFAC - SOUTHWEST DIVISION	PUBLIC INFORMATION MATERIAL PACKAGE FOR THE 25 JANUARY 2001 RESTORATION ADVISORY BOARD (RAB) MEETING - INCLUDES REPORTER'S TRANSCRIPT OF 25 JANUARY 2001 MEETING	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0007 30093199
AR_N00217_000384 NONE MISC NONE 35	**02-07-2001** 04-03-2001 5090.3.A. NONE	KAO, C. DTSC - BERKELEY, CA R. MACH NAVFAC - EFA WEST	DTSC REVIEW OF AND COMMENTS ON THE REVISED INFORMATION PACKAGE FOR THE PHASE I GROUNDWATER DATA GAP INVESTIGATION AND FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN ADDENDA FOR PHASE II GROUNDWATER DATA GAP INVESTIGATION	ADMIN RECORD	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0008 30093199
AR_N00217_000359 TC.0011.10845 & SWDIV SER 06CH.RM/0156 CORRESPONDENCE N62474-94-D-7609 16	**02-08-2001** 02-12-2001 5090.3.A. 00011	NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	RESPONSE TO COMMENTS ON THE GROUNDWATER BENEFICIAL USE EVALUATION FOR PARCELS C, D, AND E [INCLUDES SWDIV TRANSMITTAL LETTER BY R.MACH]	ADMIN RECORD INFO REPOSITORY	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0007 30093199
AR_N00217_000364 CTO-007/0205 MISC N68711-95-D-7526 13	**02-15-2001** 02-19-2001 5090.3.A. 00007	BECHTEL NATIONAL, INC. NAVFAC - SOUTHWEST DIVISION	ENVIRONMENTAL CLEANUP NEWSLETTER: PARCEL E CAPPING AND FIRE UPDATE; OCTOBER THROUGH DECEMBER 2000	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0007 30093199

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AR_N00217_000362 CTO-007/0202 & 0213 MISC N68711-95-D-7526 61	**02-22-2001** 02-19-2001 5090.3.A. 00007	BECHTEL NATIONAL, INC. NAVFAC - SOUTHWEST DIVISION	PUBLIC INFORMATION MATERIAL PACKAGE FOR THE 22 FEBRUARY 2001 RESTORATION ADVISORY BOARD (RAB) MEETING - INCLUDES REPORTER'S TRANSCRIPT OF 22 FEBRUARY 2001 MEETING (MAILING LIST IS SENSITIVE)	ADMIN RECORD SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0007 30093199
AR_N00217_000405 NONE MISC NONE 30	**03-02-2001** 04-25-2001 5090.3.A. NONE	US DEPT. OF HEALTH & HUMAN SER NAVFAC - EFA WEST	HEALTH CONSULTATION - PARCEL E LANDFILL FIRE (EPA FACILITY ID: CA1170090087)	ADMIN RECORD INFO REPOSITORY	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0008 30093199
SF_N00217_000378 DS.0005.16903* & SWDIV SER 06CH.RM/0245 & 0366 CORRESPONDENCE N62474-94-D-7609 168	**03-07-2001** 04-03-2001 5090.3.C. 00005	TALAMANTEZ, A. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT FIELD SAMPLING PLAN/QUALITY ASSURANCE PROJECT PLAN, PARCEL E DATA GAPS INVESTIGATION [INCLUDES SWDIV TRANSMITTAL LETTERS BY R. MACH] {REVISED CD COPY DATED 04/26/01 ENCLOSED}	SITE FILE	PARCEL E SITE 00002 SITE 00003 SITE 00004 SITE 00005 SITE 00011 SITE 00012 SITE 00013 SITE 00014 SITE 00015 SITE 00036 SITE 00038 SITE 00039 SITE 00054 SITE 00056 SITE 00072	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0008 30093199

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AR_N00217_000395 CTO-007/0217 MINUTES N68711-95-D-7526 87	**03-22-2001** 04-12-2001 5090.3.A. CTO 0007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	PUBLIC INFORMATION MATERIALS FOR THE RESTORATION ADVISORY BOARD MEETING FOR 22 MARCH 2001 - INCLUDES AGENDA, MEETING MINUTES FROM 2/22/01, REPORTER'S TRANSCRIPT FROM THE 3/22/01 MEETING, AND VARIOUS HANDOUTS	ADMIN RECORD INFO REPOSITORY	PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0008 30093199
AR_N00217_000430 DS.0011.14442 REPORT N62474-94-D-7609 44	**04-12-2001** 05-04-2001 5090.3.A. 00011	T. LI TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FINAL GROUNDWATER BENEFICIAL USE DETERMINATION FOR A-AQUIFER {SEE AR #493 - REVISED FINAL GROUNDWATER BENEFICIAL USE}	ADMIN RECORD	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0009 30093199
AR_N00217_000446 NONE CORRESPONDENCE NONE 6	**04-18-2001** 06-19-2001 5090.3.A. NONE	KAO, C. DTSC - BERKELEY, CA R. MACH NAVFAC - EFA WEST	RESPONSE TO RESPONSE TO COMMENTS ON THE FIELD SAMPLING PLAN ADDENDUM FOR PHASE II GROUNDWATER DATA GAPS INVESTIGATION {SEE AR #440 - NAVY'S RESPONSE}	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0009 30093199
AR_N00217_000440 EFAW SER 06CH.RM/0426 CORRESPONDENCE NONE 5	**04-23-2001** 06-06-2001 5090.3.A. NONE	R. MACH NAVFAC - EFA WEST C. KAO DTSC - BERKELEY	RESPONSE TO 18 APRIL 2001 LETTER, REGARDING THE NAVY'S RESPONSE TO COMMENTS ON THE FIELD SAMPLING PLAN (FSP) ADDENDUM FOR THE PHASE II GROUNDWATER DATA GAPS INVESTIGATION	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0009 30093199
AR_N00217_000437 CTO-007/0225 MINUTES N68711-95-D-7526 105	**04-26-2001** 06-05-2001 5090.3.A. CTO 0007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	PUBLIC INFORMATION MATERIALS FOR THE 26 APRIL 2001 RESTORATION ADVISORY BOARD MEETING - INCLUDES AGENDA, MEETING TRANSCRIPT FROM THE 4/26/01 MEETING, MINUTES FROM THE 3/22/01 MEETING, HANDOUTS, RAB APPLICATIONS & MAILING LIST	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0009 30093199

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AR_N00217_000456 450-01401-190 CORRESPONDENCE NONE 2	**05-02-2001** 07-26-2001 5090.3.A. NONE	CAPOBRES, A. SAN FRANCISCO REDEVELOPMENT AGENCY - SAN FRANCISCO, CA MACH, R. NAVFAC - EFA WEST	REVIEW AND COMMENTS ON THE DRAFT PETROLEUM HYDROCARBON CORRECTIVE ACTION PLAN FOR PARCELS C, D, AND E {SEE AR #465 - COMMENTS BY CRWQCB}	ADMIN RECORD	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0010 30093199
AR_N00217_000433 CTO-007/0222 MISC N68711-95-D-7526 21	**05-03-2001** 05-04-2001 5090.3.A. 00007	BECHTEL NATIONAL, INC. NAVFAC - SOUTHWEST DIVISION	ENVIRONMENTAL CLEANUP NEWSLETTER: JANUARY-MARCH 2001 - PARCEL E - SMOLDERING AREA AT LANDFILL CAPPED AND EXTINGUISHED {PORTION OF MAILING LIST IS SENSITIVE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0009 30093199
AR_N00217_000459 NONE CORRESPONDENCE NONE 4	**05-16-2001** 07-26-2001 5090.3.A. NONE	KAO, C. DTSC - BERKELEY, CA R. MACH NAVFAC - EFA WEST	DTSC'S RESPONSE TO NAVY'S LETTER DATED 23 APRIL 2001 REGARDING THE FIELD SAMPLING PLAN ADDENDUM FOR THE PHASE II GROUNDWATER DATA GAPS INVESTIGATION {SEE AR #440 - NAVY'S LETTER DATED 04/23/01}	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0010 30093199
AR_N00217_000465 2169.6032 CORRESPONDENCE NONE 3	**06-14-2001** 07-26-2001 5090.3.A. NONE	JOB, B. CRWQCB - OAKLAND, CA MACH, R. NAVFAC - EFA WEST	REVIEW AND COMMENTS ON THE DRAFT PETROLEUM HYDROCARBON CORRECTIVE ACTION PLAN FOR PARCELS C, D, AND E {SEE AR #456 - COMMENTS BY SFRA}	ADMIN RECORD	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0010 30093199
AR_N00217_000725 1606 REPORT N62474-98-D-2076 26	**06-21-2001** 06-19-2003 5090.3.A. 00033	IT CORPORATION NAVFAC - SOUTHWEST DIVISION	PROGRESS REPORT FOR THE SOIL VAPOR EXTRACTION (SVE) PILOT TEST, REVISION 0	ADMIN RECORD	BLDG 0000406 PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0026 30093199

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AR_N00217_000448 SWDIV SER 06CH.RM/0535 CORRESPONDENCE NONE 3	**06-22-2001** 07-06-2001 5090.3.A. NONE	G. ENGLE NAVFAC - SOUTHWEST DIVISION D. MEER U.S. EPA - SAN FRANCISCO	RESPONSE TO THE 7 JUNE 2001 LETTER, REGARDING THE ENVIRONMENTAL PROTECTION AGENCY'S INTENTION TO IMPOSE STIPULATED PENALTIES ON THE NAVY REGARDING THE INCIDENTS RELATED TO THE PARCEL E LANDFILL FIRE	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0009 30093199
AR_N00217_000483 CTO-007/0234 MINUTES N68711-95-D-7526 114	**06-28-2001** 07-26-2001 5090.3.A. CTO 0007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	MEETING MATERIALS FOR THE RESTORATION ADVISORY BOARD MEETING HELD ON 28 JUNE 2001 - INCLUDES AGENDA, PUBLIC NOTICE, REPORTER'S TRANSCRIPT OF 6/28/01 & MEETING MINUTES OF 5/24/01, FACT SHEET DATED 6/19/01 FOR PARCEL B SANDBLAST GRIT & HANDOUTS	ADMIN RECORD SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F SITE 00007	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0010 30093199
AR_N00217_000368 TC.0005.11135 & SWDIV SER 06CH.RM/0537 MISC N62474-94-D-7609 115	**06-29-2001** 08-13-2001 5090.3.A. 00005	TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	REFERENCE MATERIAL FOR THE DRAFT FIELD SAMPLING PLAN/QUALITY ASSURANCE PROJECT PLAN FOR PARCEL E, DATA GAPS INVESTIGATION - INCLUDES SWDIV TRANSMITTAL LETTER BY R. MACH {SEE AR #378 - FSP/QAPP}	ADMIN RECORD	PARCEL E SITE 00002 SITE 00003 SITE 00004 SITE 00005 SITE 00011 SITE 00012 SITE 00013 SITE 00014 SITE 00015 SITE 00036 SITE 00038 SITE 00039 SITE 00054 SITE 00056 SITE 00072	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0007 30093199

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AR_N00217_000449 SWDIV SER 06CH.RM/0538 CORRESPONDENCE NONE 3	**07-05-2001** 07-23-2001 5090.3.A. NONE	G. ENGLE NAVFAC - SOUTHWEST DIVISION D. MEER U.S. EPA - SAN FRANCISCO	RESPONSE TO JUNE 7 AND 26, 2001 LETTERS, REGARDING THE EPA'S INTENTION TO IMPOSE STIPULATED PENALTIES ON THE NAVY REGARDING INCIDENTS RELATED TO THE PARCEL E LANDFILL FIRE	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0009 30093199
AR_N00217_000492 1697 REPORT N62474-98-D-2076 1995	**07-06-2001** 08-13-2001 5090.3.A. 00025	S. KISHNANI IT CORPORATION NAVFAC - SOUTHWEST DIVISION	FINAL 2000-2001 CLOSURE CONSTRUCTION AS-BUILT REPORT, PARCEL E INTERIM LANDFILL CAP, REVISION 0 (VOLUMES I - III OF III)	ADMIN RECORD INFO REPOSITORY	PARCEL E SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0011 30093199
SF_N00217_000451 DS.0005.17231 & SWDIV SER 06CH.RM/0540 REPORT N62474-94-D-7609 188	**07-13-2001** 07-23-2001 5090.3.C. 00005	TALAMANTEZ, A. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT REMOVAL ACTION LANDFILL CAP CLOSE-OUT REPORT, PARCEL E [INCLUDES PUBLIC SUMMARY AND SWDIV TRANSMITTAL LETTER BY R. MACH] {PORTION OF THE MAILING LIST IS SENSITIVE; CD COPY ENCLOSED}	SENSITIVE SITE FILE	PARCEL E SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0009 30093199
AR_N00217_000503 NONE CORRESPONDENCE NONE 18	**08-01-2001** 08-14-2001 5090.3.A. NONE	WORK, M. U.S. EPA - SAN FRANCISCO, CA MACH, R. NAVFAC - EFA WEST	REVIEW AND COMMENTS ON THE DRAFT FIELD SAMPLING PLAN/QUALITY ASSURANCE PROJECT PLAN FOR PARCEL E, DATA GAPS INVESTIGATION	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0012 30093199

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AR_N00217_000493 DS.0011.17266 & SWDIV SER 06CH.RM/0745 REPORT N62474-94-D-7609 42	**08-10-2001** 08-13-2001 5090.3.A. 00011	T. LI TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	REVISED FINAL GROUNDWATER BENEFICIAL USE DETERMINATION FOR A-AQUIFER FOR PARCELS C, D, AND E - INCLUDES SWDIV TRANSMITTAL LETTER BY R. MACH & PUBLIC SUMMARY (PORTION OF MAILING LIST IS SENSITIVE) {SEE AR #430 - FINAL GROUNDWATER BENEFICIAL USE}	ADMIN RECORD SENSITIVE	BLDG 0000217 BLDG 0000241 BLDG 0000258 BLDG 0000275 PARCEL C PARCEL D PARCEL E SITE 00002 SITE 00006 SITE 00008 SITE 00011 SITE 00012 SITE 00025 SITE 00028 SITE 00029 SITE 00030 SITE 00033 SITE 00039 SITE 00058	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0011 30093199
AR_N00217_000494 DS.0011.16328 & SWDIV SER 06CH.RM/0746 REPORT N62474-94-D-7609 579	**08-10-2001** 08-13-2001 5090.3.A. 00011	T. LI TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	PARCEL E INFORMATION PACKAGE - PHASE II GROUNDWATER DATA GAPS INVESTIGATION (VOLUME I-II OF II) [INCLUDES PUBLIC SUMMARY AND SWDIV TRANSMITTAL LETTER BY R. MACH] (VOLUMES I & II OF) (PORTION OF MAILING LIST IS SENSITIVE); CD COPY ENCLOSED}	ADMIN RECORD SENSITIVE	PARCEL E SITE 00001 SITE 00002 SITE 00003 SITE 00012 SITE 00013 SITE 00036	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0011 30093199
AR_N00217_000553 450-03401-190 CORRESPONDENCE NONE 15	**08-31-2001** 04-02-2002 5090.3.A. NONE	CAPOBRES, A. SAN FRANCISCO REDEVELOPMENT AGENCY - SAN FRANCISCO, CA MACH, R. NAVFAC - EFA WEST	COMMENTS ON THE REVISED DRAFT FIELD SAMPLING PLAN/QUALITY ASSURANCE PROJECT PLAN FOR PARCEL E, DATA GAPS INVESTIGATION (WITH ENCLOSURE) {SEE AR #378 - DRAFT FSP/QAPP}	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0014 30093199

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AR_N00217_000514 NONE CORRESPONDENCE NONE 7	**09-18-2001** 10-26-2001 5090.3.A. NONE	KAO, C. DTSC - BERKELEY, CA R. MACH NAVFAC - SOUTHWEST DIVISION	COMMENTS ON THE DRAFT REMOVAL ACTION LANDFILL CAP CLOSE-OUT REPORT, PARCEL E AND DRAFT FIELD SAMPLING PLANQUALITY ASSURANCE PROJECT PLAN (QAPP) FOR DATA GAPS-LIQUEFACTION POTENTIAL AT PARCEL E (SEE AR #451 - DRAFT REMOVAL ACTION)	ADMIN RECORD INFO REPOSITORY	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0012 30093199
AR_N00217_001444 NONE CORRESPONDENCE NONE 4	**10-02-2001** 10-29-2008 5090.3.A. NONE	CAPOBRES, D. SAN FRANCISCO REDEVELOPMENT AGENCY - SAN FRANCISCO, CA MACH, R. NAVFAC - SOUTHWEST DIVISION	REVIEW AND COMMENTS ON THE REVISED DRAFT PETROLEUM HYDROCARBON SOIL AND GROUNDWATER SAMPLING PLAN	ADMIN RECORD	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0012
SF_N00217_000530 TC.0005.11126 REPORT N62474-94-D-7609 54	**11-08-2001** 11-29-2001 5090.3.C. 00005	TALAMANTEZ, A. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT OPERATION AND MAINTENANCE PLAN FOR THE INDUSTRIAL LANDFILL, PARCEL E	SITE FILE	PARCEL E SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0013 30093199
AR_N00217_000529 TC.0005.11236 & SWDIV SER 06CH.RM/0986 REPORT N62474-94-D-7609 34	**11-19-2001** 11-29-2001 5090.3.A. CTO 0005	TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FINAL BASEWIDE RADIOLOGICAL REMOVAL ACTION - ACTION MEMORANDUM (INCLUDES TRANSMITTAL LETTER) {CD COPY IS ENCLOSED}	ADMIN RECORD	PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0012 30093199
AR_N00217_000531 CTO-007/0265 & 0270 MINUTES N68711-95-D-7526 107	**11-29-2001** 11-29-2001 5090.3.A. CTO 0007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	29 NOVEMBER 2001 PUBLIC INFORMATION MATERIAL PACKAGE FOR THE RESTORATION ADVISORY BOARD MEETING - INCLUDES AGENDA, PUBLIC NOTICE, MEETING MINUTES FROM MEETING HELD ON 10/24/01, REPORTERS TRANSCRIPT FROM 11/29/01 MEETING AND HANDOUTS	ADMIN RECORD SENSITIVE	DRY DOCK 4 PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0013 30093199

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AR_N00217_001449 FILE NO. 2169.6032 (MBR) CORRESPONDENCE NONE 2	**12-20-2001** 10-29-2008 5090.3.A. NONE	ROCHETTE, M. CRWQCB - OAKLAND, CA MACH, R. NAVFAC - SOUTHWEST DIVISION	REVIEW AND COMMENTS ON THE REVISED DRAFT PETROLEUM HYDROCARBON SOIL AND GROUNDWATER SAMPLING PLAN	ADMIN RECORD	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0012
SF_N00217_000554 DS.0005.16904* & SWDIV SER 06CH.RM/004 & KF/0285 CORRESPONDENCE N62474-94-D-7609 293	**01-08-2002** 04-02-2002 5090.3.C. 00005	TALAMANTEZ, A. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT FINAL FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN (FSP/QAPP) FOR PARCEL E NON-STANDARD DATA GAPS INVESTIGATION (INDUSTRIAL LANDFILL AND WETLANDS DELINEATION) {PORTION OF MAILING LIST IS CONFIDENTIAL}	SENSITIVE SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 30093199 BX 0014
AR_N00217_000559 EFAW SER 06CH.RM/0006 CORRESPONDENCE NONE 5	**01-15-2002** 04-02-2002 5090.3.A. NONE	R. MACH NAVFAC - EFA WEST M. ZOBACK U.S. GEOLOGICAL SURVEY	TRANSMITTAL OF THE DRAFT FINAL SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN FOR NON-STANDARD DATA GAPS INVESTIGATION (INDUSTRIAL LANDFILL AND WETLANDS DELINEATION), DATED 01/08/02 (SEE AR #554 - DRAFT FINAL FSP/QAPP}	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 30093199 BX 0014
AR_N00217_000557 CTO-007/0275 & 0282 MINUTES N68711-95-D-7526 91	**01-24-2002** 04-02-2002 5090.3.A. CTO 0007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	PUBLIC INFORMATION MATERIALS PACKAGE FOR THE 24 JANUARY 2002 RESTORATION ADVISORY BOARD MEETING - INCLUDES AGENDA, PUBLIC NOTICE, ATTENDANCE LIST, MEETING MINUTES FROM 11/29/01 MEETING, REPORTERS TRANSCRIPT OF 01/24/02 MEETING & HANDOUTS	ADMIN RECORD SENSITIVE	PARCEL B PARCEL C PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 30093199 BX 0014
SF_N00217_000578 DS.0005.17606 & SWDIV SER 06CH.RM/0010 CORRESPONDENCE N62474-94-D-7609 230	**02-05-2002** 04-02-2002 5090.3.C. 00005	M. WANTA TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT FINAL FIELD SAMPLING PLAN/QUALITY ASSURANCE PROJECT PLAN (FSP/QAPP) FOR PARCEL E - STANDARD DATA GAPS INVESTIGATION [INCLUDES SWDIV TRANSMITTAL LETTER BY R. MACH] (SEE AR #632 - REVISED DRAFT FINAL)	SENSITIVE SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 30093199 BX 0014

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AR_N00217_000579 NONE CORRESPONDENCE NONE 5	**02-05-2002** 04-05-2002 5090.3.A. NONE	WORK, M. U.S. EPA - SAN FRANCISCO, CA FORMAN, K. NAVFAC - SOUTHWEST DIVISION	COMMENTS ON THE DRAFT FINAL FIELD SAMPLING PLAN/QUALITY ASSURANCE PROJECT PLAN FOR PARCEL E - NONSTANDARD DATA GAPS INVESTIGATION (INDUSTRIAL LANDFILL AND WETLANDS DELINEATION) [WITH ATTACHMENT] {SEE AR #554 - DRAFT FINAL FSP/QAPP}	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0014 30093199
AR_N00217_000580 DS.0011.17267 & SWDIV SER 06CH.RM/0109 REPORT N62474-94-D-7609 336	**02-05-2002** 04-05-2002 5090.3.A. 00011	LI, T. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN ADDENDUM FOR PHASE III GROUNDWATER DATA GAPS INVESTIGATION (ADDENDUM II) [INCLUDES PUBLIC SUMMARY AND SWDIV TRANSMITTAL LETTER] {PORTION OF MAILING LIST IS CONFIDENTIAL; CD COPY ENCLOSED}	ADMIN RECORD SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E SITE 00001 SITE 00006 SITE 00021 SITE 00022	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0014 30093199
AR_N00217_000589 CTO-007/0285 & 0291 MINUTES N68711-95-D-7526 79	**02-28-2002** 04-09-2002 5090.3.A. CTO 0007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	PUBLIC INFORMATION MATERIAL PACKAGE FOR THE 28 FEBRUARY 2002 RESTORATION ADVISORY BOARD MEETING - INCLUDES AGENDA, PUBLIC NOTICE, MEETING MINUTES FROM 01/24/02 MEETING, REPORTERS TRANSCRIPT OF 02/28/02 MEETING, ATTENDANCE SHEET AND HANDOUTS	ADMIN RECORD SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F SITE 00010	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0015 30093199
AR_N00217_000583 CTO-007/0281 MISC N68711-95-D-7526 11	**03-07-2002** 04-05-2002 5090.3.A. 00007	J. BAILEY BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	ENVIRONMENTAL CLEANUP NEWSLETTER: BAY AREA RAB MEMBERS PARTICIPATE AT WORKSHOP, OCTOBER-DECEMBER 2001 - INCLUDES E-MAIL AND MAILING LIST {PORTION OF MAILING LIST IS CONFIDENTIAL}	ADMIN RECORD SENSITIVE	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F SITE 00010 SITE 00026	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0015 30093199

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AR_N00217_000590 DS.A003.10001 REPORT N68711-00-D-0005 143	**03-21-2002** 04-09-2002 5090.3.A. DO 0003	WANTA, M. TETRA TECH EM, INC. DEMARS, D. NAVFAC - SOUTHWEST DIVISION	BASEWIDE HEALTH AND SAFETY PLAN {CD COPY ENCLOSED}	ADMIN RECORD	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0015 30093199
AR_N00217_000588 CTO-007/0284 MINUTES N68711-95-D-7526 22	**03-28-2002** 04-09-2002 5090.3.A. CTO 0007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	PRE-MEETING MAILER FOR THE 28 MARCH 2002 RESTORATION ADVISORY BOARD MEETING - INCLUDES AGENDA, PUBLIC NOTICE, MEETING MINUTES FROM THE 02/28/02 MEETING, PROPOSED AMENDED RAB BYLAWS, DATED 03/06/02 - E-MAIL TRANSMITTING RAB BYLAWS IS CONFIDENTIAL	ADMIN RECORD SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0015 30093199
SF_N00217_000595 FWSD-RAC-02-0687 & SWDIV SER 06CH.KF/0322 CORRESPONDENCE N68711-98-D-5713 294	**04-03-2002** 04-10-2002 5090.3.C. 00046	G. STARR FOSTER WHEELER NAVFAC - SOUTHWEST DIVISION	DRAFT WORK PLAN - INDUSTRIAL PROCESS EQUIPMENT SURVEY, SAMPLING, DECONTAMINATION, AND WASTE CONSOLIDATION PARCELS C, D, AND E, REV. 0 - INCLUDES SWDIV TRANSMITTAL LETTER BY K. FORMAN [PORTION OF MAILING LIST IS CONFIDENTIAL]	SENSITIVE SITE FILE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0016 30093199
AR_N00217_004089 FWSD-RAC-02-0834 REPORT N68711-98-D-5713 225	**04-19-2002** 01-13-2005 5090.3.A. CTO 0046	MARGOTTO, R. FOSTER WHEELER NAVFAC - SOUTHWEST DIVISION	FINAL HEALTH AND SAFETY PLAN FOR THE INDUSTRIAL PROCESS EQUIPMENT SURVEY, SAMPLING , DECONTAMINATION, AND WASTE CONSOLIDATION	ADMIN RECORD	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0018
AR_N00217_004150 NONE CORRESPONDENCE NONE 13	**04-19-2002** 06-21-2005 5090.3.A. NONE	TYAHLA, S. FOSTER WHEELER NAVFAC - EFA WEST	RESPONSE TO COMMENTS ON THE DRAFT HEALTH AND SAFETY PLAN INDUSTRIAL PROCESS EQUIPMENT SURVEY, SAMPLING, DECONTAMINATION, AND WASTE CONSOLIDATION	ADMIN RECORD	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0021

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AR_N00217_000615 CTO-007/0311 MISC N68711-95-D-7526 77	**04-25-2002** 08-09-2002 5090.3.A. 00007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	PUBLIC INFORMATION MATERIALS FOR THE 25 APRIL 2002 RESTORATION ADVISORY BOARD MEETING WHICH INCLUDES: AGENDA, PUBLIC NOTICE, MINUTES FROM 28 MARCH 2002 MEETING, TRANSCRIPT OF MINUTES FROM 25 APRIL 2002 MEETING, MONTHLY PROGRESS REPORT, AND HANDOUTS	ADMIN RECORD INFO REPOSITORY	BLDG 0000123 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F SITE 00007 SITE 00018 SITE 00029	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0019 30093199
AR_N00217_000605 DS.A011.10011 CORRESPONDENCE N68711-00-D-0005 395	**05-28-2002** 06-27-2002 5090.3.A. DO 0011	WANTA, M. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	REVISED FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN ADDENDA FOR THE PHASE III GROUNDWATER DATA GAPS INVESTIGATION (ADDENDUM II) {SEE AR #580 - ORIGINAL VERSION)	ADMIN RECORD	PARCEL C PARCEL D PARCEL E REMEDIAL UNIT C1 REMEDIAL UNIT C2 REMEDIAL UNIT C5 SITE 00003	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0017 30093199
AR_N00217_000607 TC.0011.11581 & SWDIV SER 06CH.KF/0554 MISC N62474-94-D-7609 39	**05-29-2002** 06-27-2002 5090.3.A. 00011	K. FORMAN NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF COMPILED RESPONSE TO COMMENTS ON THE PARCEL E INFORMATION PACKAGE - PHASE II GROUNDWATER DATA GAPS INVESTIGATION {COMMENTS BY EPA & DTSC} (W/ ENCLOSURE 2) [SEE AR #606 - ENCLOSURE 1 AND #609 - ENCLOSURE 3]	ADMIN RECORD SENSITIVE	PARCEL E SITE 00001 SITE 00002 SITE 00003 SITE 00004 SITE 00036	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0017 30093199

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AR_N00217_000609 TC.0011.11581 & SWDIV SER 06CH.KF/0554 MISC N62474-94-D-7609 9	**05-29-2002** 06-27-2002 5090.3.A. 00011	K. FORMAN NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF COMPILED RESPONSE TO COMMENTS ON THE REVISED FINAL GROUNDWATER BENEFICIAL USE DETERMINATION FOR A-AQUIFER FOR PARCELS C, D, AND E {COMMENTS BY EPA} (W/ ENCLOSURE 3) [SEE AR #606 - ENCLOSURE 1 AND #607 - ENCLOSURE 2]	ADMIN RECORD SENSITIVE	BLDG 0000217 BLDG 0000241 BLDG 0000258 BLDG 0000275 PARCEL C PARCEL D PARCEL E SITE 00002 SITE 00006 SITE 00011 SITE 00012 SITE 00028 SITE 00029 SITE 00030 SITE 00033 SITE 00039 SITE 00058	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0017 30093199
AR_N00217_000620 CTO-007/0305 MISC N68711-95-D-7526 62	**05-30-2002** 08-09-2002 5090.3.A. 00007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	PUBLIC INFORMATION MATERIALS FOR THE 30 MAY 2002 RESTORATION ADVISORY BOARD MEETING WHICH INCLUDES: AGENDA, PUBLIC NOTICE, MINUTES FROM 25 APRIL 2002 MEETING, TRANSCRIPT OF MINUTES FROM 30 MAY 2002 MEETING, MONTHLY PROGRESS REPORT, AND HANDOUTS	ADMIN RECORD INFO REPOSITORY	BLDG 0000815 BLDG 0000830 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F SITE 00001 SITE 00003 SITE 00007 SITE 00012 SITE 00018 SITE 00021 SITE 00059	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0019 30093199

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AR_N00217_000928 450-02302-190 CORRESPONDENCE NONE 7	**05-30-2002** 06-06-2006 5090.3.A. NONE	CAPOBRES, A. SAN FRANCISCO REDEVELOPMENT AGENCY - SAN FRANCISCO, CA FORMAN, K. BRAC PMO WEST	REVIEW AND COMMENTS ON THE DRAFT HISTORICAL RADIOLOGICAL ASSESSMENT (HRA) VOLUME II (INCLUDES ATTACHMENTS)	ADMIN RECORD	BLDG 0000815 BLDG 0000820 BLDG 0000821 BLDG 0000830 BLDG 0000831 PARCEL A PARCEL B PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0007
SF_N00217_000731 2050 REPORT N62474-98-D-2076 427	**06-24-2002** 06-19-2003 5090.3.C. CTO 0033	SCHAAL, W. IT CORPORATION NAVFAC - SOUTHWEST DIVISION	DRAFT PHASE II SOIL VAPOR EXTRACTION (SVE) TREATABILITY STUDY REPORT	SITE FILE	BLDG 0000406 PARCEL E SITE 00036	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0003
AR_N00217_000621 CTO-007/0312 MISC N68711-95-D-7526 82	**06-27-2002** 08-09-2002 5090.3.A. 00007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	PUBLIC INFORMATION MATERIALS FOR THE 27 JUNE 2002 RESTORATION ADVISORY BOARD MEETING WHICH INCLUDES: AGENDA, PUBLIC NOTICE, MINUTES FROM 30 MAY 2002 MEETING, TRANSCRIPT OF MINUTES FROM 27 JUNE 2002 MEETING, MONTHLY PROGRESS REPORT, AND HANDOUTS	ADMIN RECORD INFO REPOSITORY	BLDG 0000123 BLDG 0000816 BLDG 0000821 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F SITE 00007 SITE 00018 SITE 00059	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 30093199 BX 0019
AR_N00217_000612 DS.A003.10012 & SWDIV SER 06CH.KF/0673 REPORT N68711-00-D-0005 211	**07-02-2002** 07-20-2002 5090.3.A. DO 0003	LESHER, R. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	LANDFILL GAS TECHNICAL MEMORANDUM FOR PARCEL E, INDUSTRIAL LANDFILL [INCLUDES SWDIV TRANSMITTAL LETTER BY K. FORMAN] {PORTION OF MAILING LIST IS CONFIDENTIAL; CD COPY ENCLOSED}	ADMIN RECORD SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 30093199 BX 0017

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AR_N00217_000613 TC.0201.11547 & SWDIV SER 06CH.KF/0701 CORRESPONDENCE N62474-94-D-7609 137	**07-12-2002** 07-20-2002 5090.3.A. 00201	T. O'CONNOR TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	SAMPLING AND ANALYSIS PLAN (FIELD SAMPLING PLAN/QUALITY ASSURANCE PROJECT PLAN) FOR BASEWIDE GROUNDWATER SAMPLING FOR PETROLEUM HYDROCARBONS [INCLUDES PUBLIC SUMMARY AND SWDIV TRANSMITTAL LETTER BY K. FORMAN]	ADMIN RECORD SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0018 30093199

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AR_N00217_000641 CTO-007/0317 & 0319 MISC N68711-95-D-7526 104	**07-25-2002** 09-26-2002 5090.3.A. 00007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	PUBLIC INFORMATION MATERIAL PACKAGE FOR THE 25 JULY 2002 RESTORATION ADVISORY BOARD (RAB) MEETING - INCLUDES REPORTER'S TRANSCRIPT OF 25 JULY 2002 MEETING, AGENDA, MINUTES FROM 27 JUNE 2002 MEETING, MONTHLY PROGRESS REPORT, PRESENTATION MATERIALS, ETC.	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000103 BLDG 0000113 BLDG 0000123 BLDG 0000130 BLDG 0000134 BLDG 0000146 BLDG 0000211 BLDG 0000214 BLDG 0000224 BLDG 0000241 BLDG 0000253 BLDG 0000272 BLDG 0000274 BLDG 0000313 BLDG 0000317 BLDG 0000322 BLDG 0000351 BLDG 0000364 BLDG 0000365 BLDG 0000366 BLDG 0000406 BLDG 0000414 BLDG 0000506 BLDG 0000507 BLDG 0000509 BLDG 0000510 BLDG 0000517 BLDG 0000520 BLDG 0000529 BLDG 0000707 BLDG 0000708 BLDG 0000810 BLDG 0000815 BLDG 0000816 BLDG 0000820	NAVFAC - SOUTHWEST SW-20111123-1/2 PULLED FROM FRC BY D. SILVA ON 1 NOV 2011 FOR RESCANNING SELECTED PAGES IMAGED HPNT_010	L181-07-0027 BX 0020 30093199

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					BLDG 0000821 BLDG 0000830 BLDG 0000831 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E SITE 00001 SITE 00002 SITE 00007 SITE 00018 SITE 00021		
SF_N00217_000628 TC.0191.11674 & SER 06CH.KF/0831 REPORT N62474-94-D-7609 42	**08-01-2002** 09-05-2002 5090.3.C. CTO 0191	TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT AIR QUALITY PERMIT SUBMITTAL FOR LANDFILL GAS COLLECTION AND CONTROL SYSTEM AT THE PARCEL E INDUSTRIAL LANDFILL [INCLUDES SWDIV TRANSMITTAL LETTER FROM K. FORMAN AND PORTION OF MAILING LIST IS CONFIDENTIAL]	SENSITIVE SITE FILE	PARCEL E	NAVFAC - SOUTHWEST SW-20111123-1/2 PULLED FROM FRC BY D. SILVA ON 1 NOV 2011 FOR RESCANNING SELECTED PAGES IMAGED HPNT_010	L181-07-0027 BX 0019 30093199
AR_N00217_000639 TC.0191.11680 MISC N62474-94-D-7609 3	**08-01-2002** 09-18-2002 5090.3.A. 00191	TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	UPDATE ON THE PARCEL E - LANDFILL GAS REMOVAL ACTION	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0020 30093199

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AR_N00217_000629 TC.A019.10010 & SWDIV SER 06CH.KF/0801 MISC N68711-00-D-0005 8	**08-07-2002** 09-05-2002 5090.3.A. DO 0019	K. FORMAN NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF RESPONSE TO US EPA COMMENTS ON THE DRAFT PARCEL E DATA QUALITY OBJECTIVES TABLES FOR THE STANDARD DATA GAPS INVESTIGATION (INCLUDES SWDIV TRANSMITTAL LETTER BY K. FORMAN) [PORTION OF THE MAILING LIST IS CONFIDENTIAL]	ADMIN RECORD SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST SW-20111123-1/2 PULLED FROM FRC BY D. SILVA ON 1 NOV 2011 FOR RESCANNING SELECTED PAGES IMAGED HPNT_010	L181-07-0027 BX 0019 30093199
AR_N00217_000630 SWDIV SER 06CH.KF/0769 CORRESPONDENCE NONE 4	**08-08-2002** 09-05-2002 5090.3.A. NONE	K. FORMAN NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF A CONSENSUS STATEMENT BY THE DISPUTE RESOLUTION COMMITTEE FOR RESOLVING HUNTERS POINT DISPUTE ON LANDFILL FIRE STIPULATED PENALTIES - FOR THE MINIMIZATION OF THE FREQUENCY OF AND POTENTIAL IMPACT FROM BRUSH OR DEBRIS FIRES (WITH ENCLOSURES)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0019 30093199
AR_N00217_000631 FWSD-RACIII-02-1273 & SWDIV SER 06CH.KF/0820 CORRESPONDENCE N68711-98-D-5713 328	**08-16-2002** 09-05-2002 5090.3.A. 00046	G. STARR FOSTER WHEELER NAVFAC - SOUTHWEST DIVISION	FINAL WORK PLAN - INDUSTRIAL PROCESS EQUIPMENT SURVEY, SAMPLING, DECONTAMINATION, AND WASTE CONSOLIDATION PARCELS C, D, AND E, REVISION 0 - (SEE AR #702 - ADDENDUM TO THE SAP)	ADMIN RECORD SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0019 30093199

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SF_N00217_000632 DS.A019.10022 & SWDIV SER 06CH.KF/0831 CORRESPONDENCE N68711-00-D-0005 320	**08-22-2002** 09-06-2002 5090.3.C. DO 0019	BRICKNELL, K. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	REVISED DRAFT FINAL SAMPLING AND ANALYSIS PLAN (FIELD SAMPLING PLAN/QUALITY ASSURANCE PROJECT PLAN) FOR PARCEL E STANDARD DATA GAPS INVESTIGATION (SEE AR #578 - DRAFT FINAL)	SENSITIVE SITE FILE	PARCEL E SITE 00001 SITE 00002 SITE 00003 SITE 00004 SITE 00005 SITE 00011 SITE 00012 SITE 00013 SITE 00014 SITE 00015 SITE 00021 SITE 00036 SITE 00038 SITE 00039 SITE 00056 SITE 00072 SITE 00073	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0019 30093199
AR_N00217_000646 CTO-007/0326 MINUTES N68711-95-D-7526 98	**08-22-2002** 11-12-2002 5090.3.A. CTO 0007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	PUBLIC INFORMATION MATERIALS FROM THE 22 AUGUST 2002 PUBLIC MEETING/ RESTORATION ADVISORY BOARD MEETING INCLUDES: AGENDA & PUBLIC NOTICE, MINUTES FROM MEETING OF 25 JULY 2002, PRESENTATION MATERIALS, FACT SHEET, MINUTES FROM VARIOUS OTHER MEETINGS	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000815 BLDG 0000820 BLDG 0000821 PARCEL A PARCEL C PARCEL D PARCEL E SITE 00007 SITE 00018	NAVFAC - SOUTHWEST SW-20111123-1/2 PULLED FROM FRC BY D. SILVA ON 1 NOV 2011 FOR RESCANNING SELECTED PAGES IMAGED HPNT_010	L181-07-0027 BX 0020 30093199

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AR_N00217_000644 DS.0191.17783 & SWDIV SER 06CH.CM/0999 CORRESPONDENCE N62474-94-D-7609 35	**09-23-2002** 10-15-2002 5090.3.A. CTO 0191	TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FINAL PARCEL E LANDFILL GAS TIME-CRITICAL REMOVAL ACTION - ACTION MEMORANDUM [INCLUDES SWDIV TRANSMITTAL LETTER FROM K. FORMAN] (PORTION OF MALING LIST IS CONFIDENTIAL)	ADMIN RECORD SENSITIVE	PARCEL E SITE 00001 SITE 00021	NAVFAC - SOUTHWEST SW-20111123-1/2 PULLED FROM FRC BY D. SILVA ON 1 NOV 2011 FOR RESCANNING SELECTED PAGES IMAGED HPNT_010	L181-07-0027 BX 0020 30093199
AR_N00217_000672 CTO-007/0338 MINUTES N68711-95-D-7526 79	**09-26-2002** 02-07-2003 5090.3.A. CTO 0007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	PUBLIC INFORMATION MATERIALS FOR THE RESTORATION ADVISORY BOARD MEETING FOR 26 SEPTEMBER 2002 - INCLUDES AGENDA, MEETING MINUTES FROM 08/22/02, HANDOUTS, AND REPORTER'S TRANSCRIPT FROM THE 09/26/02 MEETING - INCLUDES TRANSMITTAL LETTER BY J. ARGYRES	ADMIN RECORD INFO REPOSITORY	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0021 30093199
AR_N00217_000642 TC.0191.11779 & SWDIV SER 06CH.CM/0016 CORRESPONDENCE N62474-94-D-7609 287	**10-01-2002** 10-15-2002 5090.3.A. CTO 0191	TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	PROJECT WORK PLAN TIME-CRITICAL LANDFILL GAS REMOVAL ACTION FOR PARCEL E (INCLUDES SWDIV TRANSMITTAL LETTER FROM K. FORMAN) [PORTION OF MAILING LIST IS CONFIDENTIAL]	ADMIN RECORD SENSITIVE	PARCEL E SITE 00001 SITE 00021	NAVFAC - SOUTHWEST SW-20111123-1/2 PULLED FROM FRC BY D. SILVA ON 1 NOV 2011 FOR RESCANNING SELECTED PAGES IMAGED HPNT_010	L181-07-0027 BX 0020 30093199
AR_N00217_000648 TC.A003.10024 & SWDIV SER 06CH.KF/0123 CORRESPONDENCE N68711-00-D-0005 53	**11-01-2002** 11-12-2002 5090.3.A. DO 0003	FORMAN, K. NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF RESPONSES TO COMMENTS ON THE LANDFILL GAS TECHNICAL MEMORANDUM FOR PARCEL E, INDUSTRIAL LANDFILL (W/ ENCLOSURE) [PORTION OF MAILING LIST IS CONFIDENTIAL]	ADMIN RECORD SENSITIVE	PARCEL E SITE 00001 SITE 00021	NAVFAC - SOUTHWEST SW-20111123-1/2 PULLED FROM FRC BY D. SILVA ON 1 NOV 2011 FOR RESCANNING SELECTED PAGES IMAGED HPNT_010	L181-07-0027 BX 0020 30093199

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AR_N00217_000649 TC.A019.10026 & SWDIV SER 06CH.KF/0124 MISC N68711-00-D-0005 91	**11-01-2002** 11-12-2002 5090.3.A. DO 0019	K. FORMAN NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF RESPONSES TO COMMENTS ON THE REVISED DRAFT FINAL SAMPLING AND ANALYSIS PLAN (FIELD SAMPLING PLAN/QUALITY ASSURANCE PROJECT PLAN) FOR PARCEL E STANDARD DATA GAPS INVESTIGATION [W/ ENCLOSURE]	ADMIN RECORD SENSITIVE	BLDG 0000400 PARCEL E SITE 00001 SITE 00002 SITE 00003 SITE 00004 SITE 00012 SITE 00021 SITE 00036 SITE 00040 SITE 00045 SITE 00047 SITE 00050 SITE 00051 SITE 00052 SITE 00054 SITE 00056 SITE 00072 SITE 00073 SITE 00074 SITE 00075 SITE 00076	NAVFAC - SOUTHWEST SW-20111123-1/2 PULLED FROM FRC BY D. SILVA ON 1 NOV 2011 FOR RESCANNING SELECTED PAGES IMAGED HPNT_010	L181-07-0027 BX 0020 30093199
SF_N00217_000652 DS.A004.10117 & SWDIV SER 06CH.JP/0172 CORRESPONDENCE N68711-00-D-0005 644	**11-22-2002** 11-26-2002 5090.3.C. DO 0004	VETROMILE, J. TETRA TECH EM, INC. PAYNE, J. NAVFAC - SOUTHWEST DIVISION	REVISED DRAFT PETROLEUM HYDROCARBONS CORRECTIVE ACTION PLAN, PARCELS C, D, & E (INCLUDES SWDIV TRANSMITTAL LETTER)	SENSITIVE SITE FILE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0002

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AR_N00217_000656 TC.A019.10038 & SWDIV SER 06CH.KF/0209 CORRESPONDENCE N68711-00-D-0005 6	**11-26-2002** 12-04-2002 5090.3.A. DO 0019	FORMAN, K. NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF RESPONSES TO COMMENTS ON THE REVISED DRAFT FINAL SAMPLING AND ANALYSIS PLAN FOR PARCEL E STANDARD DATA GAPS INVESTIGATION {PORTION OF MAILING LIST IS CONFIDENTIAL}	ADMIN RECORD SENSITIVE	BLDG 0000704 PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0021 30093199
AR_N00217_000671 CTO-007-0345 MINUTES N68711-95-D-7526 78	**12-05-2002** 02-07-2003 5090.3.A. CTO 0007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	PUBLIC INFORMATION MATERIALS FOR THE RESTORATION ADVISORY BOARD MEETING FOR 05 DECEMBER 2002 - INCLUDES AGENDA, MEETING MINUTES FROM 10/24/02, HANDOUTS, AND REPORTER'S TRANSCRIPT FROM THE 12/05/02 MEETING - INCLUDES TRANSMITTAL LETTER BY J. ARGYRES	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0021 30093199
AR_N00217_000657 CTO-007/0335 MISC N68711-95-D-7526 15	**12-12-2002** 12-19-2002 5090.3.A. 00007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	ENVIRONMENTAL CLEANUP NEWSLETTER SUMMER/FALL EXPANDED ISSUE: "AMBIENT AIR AND SOIL GAS SURVEYS CONDUCTED AT PARCEL E LANDFILL - REMOVAL ACTION UNDERWAY", APRIL-SEPTEMBER 2002 {PORTION OF MAILING LIST IS CONFIDENTIAL}	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000123 BLDG 0000364 BLDG 0000406 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F SITE 00007 SITE 00018	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0021 30093199
SF_N00217_000679 DS.A003.10643 & SWDIV SER 06CH.KF/0331 CORRESPONDENCE N68711-00-D-0003 88	**01-07-2003** 02-07-2003 5090.3.C. DO 0003	TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT STORM WATER DISCHARGE MANAGEMENT PLAN, INDUSTRIAL LANDFILL (INCLUDES SWDIV TRANSMITTAL LETTER)	SITE FILE	PARCEL E SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0021 30093199

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SF_N00217_000680 DS.A003.10551 CORRESPONDENCE N68711-00-D-0005 53	**01-07-2003** 02-07-2003 5090.3.C. DO 0003	BRICKNELL, K. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT OPERATION AND MAINTENANCE PLAN FOR INSTALLATION RESTORATION 01/21, INDUSTRIAL LANDFILL PARCEL E [INCLUDES SWDIV TRANSMITTAL LETTER BY K. FORMAN]	SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0021 30093199
SF_N00217_000572 DS.A003.10642 & SWDIV SER 06CH.KF/0424 REPORT N68711-00-D-0005 341	**02-04-2003** 03-24-2003 5090.3.C. DO 0003	BRICKNELL, K. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT FINAL REMOVAL ACTION LANDFILL CAP CLOSE-OUT REPORT WITH PUBLIC SUMMARY [INCLUDES SWDIV TRANSMITTAL LETTER BY K. FORMAN] {PORTION OF MAILING LIST IS CONFIDENTIAL; CD COPY ENCLOSED}	SENSITIVE SITE FILE	PARCEL E SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_001	L181-07-0027 BX 0014 30093199
AR_N00217_000689 CTO-007/0363 MINUTES N68711-95-D-7526 73	**04-03-2003** 04-23-2003 5090.3.A. CTO 0007	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	PUBLIC INFORMATION MATERIALS PACKAGE FOR THE 27 FEBRUARY 2003 RESTORATION ADVISORY BOARD (RAB) MEETING [INCLUDES AGENDA, PUBLIC NOTICE, MEETING MINUTES FROM 01/23/03 MEETING, REPORTER'S TRANSCRIPT OF 27 FEBRUARY 2003 MEETING AND VARIOUS HANDOUTS]	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0023 30093199
AR_N00217_000702 FWSD-RAC-1046 & SWDIV SER 06CH.KF/0593 CORRESPONDENCE N68711-98-D-5713 36	**04-08-2003** 05-15-2003 5090.3.A. 00046	M. SCHNEIDER FOSTER WHEELER NAVFAC - SOUTHWEST DIVISION	ADDENDUM TO THE SAMPLING AND ANALYSIS PLAN - INDUSTRIAL PROCESS EQUIPMENT SURVEY, SAMPLING, DECONTAMINATION, AND WASTE CONSOLIDATION PARCELS C, D, AND E, REVISION 0 [SEE AR #631 - SAP (APPENDIX A) OF FINAL WORK PLAN]	ADMIN RECORD SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0024 30093199
AR_N00217_000699 SWDIV SER 06CH.KF/0700 CORRESPONDENCE NONE 14	**04-24-2003** 05-15-2003 5090.3.A. NONE	FORMAN, K. NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF RESPONSE TO COMMENTS ON THE DRAFT STORM WATER DISCHARGE MANAGEMENT PLAN, INDUSTRIAL LANDFILL (W/ ENCLOSURE)	ADMIN RECORD	PARCEL E SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0003

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AR_N00217_000700 SWDIV SER 06CH.KF/0699 MISC NONE 15	**04-24-2003** 05-15-2003 5090.3.A. NONE	K. FORMAN NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	RESPONSE TO DRAFT OPERATION AND MAINTENANCE PLAN FOR INSTALLATION RESTORATION 01/21, INDUSTRIAL LANDFILL PARCEL E	ADMIN RECORD	PARCEL E SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0024 30093199
SF_N00217_000704 DS.A003.10101 REPORT N68711-00-D-0005 99	**05-15-2003** 05-22-2003 5090.3.C. DO 0003	BAKER, J. TETRA TECH EM, INC. MAZOWIECKI, C. NAVFAC - SOUTHWEST DIVISION	DRAFT PARCEL E NONSTANDARD DATA GAPS INVESTIGATION, WETLANDS DELINEATION AND FUNCTIONS AND VALUES ASSESSMENT FOR PARCELS B AND E [INCLUDES PUBLIC SUMMARY] {CD COPY ENCLOSED}	SENSITIVE SITE FILE	PARCEL B PARCEL E	FRC - PERRIS SW-20110629-1/1 IMAGED HPNT_010	L181-07-0027 BX 0024 30093199
SF_N00217_000705 DS.A003.10514 REPORT N68711-00-D-0005 290	**05-15-2003** 05-22-2003 5090.3.C. DO 0003	BRICKNELL, K. TETRA TECH EM, INC. DEMARS, D. NAVFAC - SOUTHWEST DIVISION	DRAFT PARCEL E NONSTANDARD DATA GAPS INVESTIGATION, LANDFILL GAS CHARACTERIZATION [INCLUDES PUBLIC SUMMARY]	SENSITIVE SITE FILE	PARCEL E	FRC - PERRIS SW-20110629-1/1 IMAGED HPNT_010	L181-07-0027 BX 0024 30093199
SF_N00217_000706 DS.A003.10512 REPORT N68711-00-D-0005 127	**05-15-2003** 05-22-2003 5090.3.C. DO 0003	BRICKNELL, K. TETRA TECH EM, INC. DEMARS, D. NAVFAC - SOUTHWEST DIVISION	DRAFT PARCEL E NONSTANDARD DATA GAPS INVESTIGATION, LANDFILL LATERAL EXTENT EVALUATION (INCLUDES PUBLIC SUMMARY)	SENSITIVE SITE FILE	PARCEL E	FRC - PERRIS SW-20110629-1/1 IMAGED HPNT_010	L181-07-0027 BX 0024 30093199
AR_N00217_003195 SWDIV SER 06CH.CM/0786 CORRESPONDENCE NONE 3	**05-15-2003** 06-29-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT NONSTANDARD DATA GAPS INVESTIGATION, LANDFILL LATERAL EXTENT EVALUATION	ADMIN RECORD SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	

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AR_N00217_003196 SWDIV SER 06CH.CM/0787 CORRESPONDENCE NONE 3	**05-15-2003** 06-29-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT NONSTANDARD DATA GAPS INVESTIGATION, LANDFILL GAS CHARACTERIZATION	ADMIN RECORD SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	
AR_N00217_003279 SWDIV SER 06CH.CM/0788 CORRESPONDENCE NONE 3	**05-15-2003** 06-29-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT NONSTANDARD DATA GAPS INVESTIGATION, WETLANDS DELINEATION AND FUNCTIONS AND VALUES ASSESSMENT	ADMIN RECORD SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	
SF_N00217_000708 DS.A011.10109 & SWDIV SER 06CH.KF/0805 REPORT N68711-00-D-0005 4721	**05-21-2003** 05-23-2003 5090.3.C. DO 0011	R. LANZ TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT PARCEL E GROUNDWATER SUMMARY REPORT, PHASE III GROUNDWATER DATA GAPS INVESTIGATION (VOLUMES I-V OF V, FOLDERS 1-3 OF 3) [INCLUDES PUBLIC SUMMARY AND SWDIV TRANSMITTAL LETTER BY K. FORMAN] {PORTION OF MAILING LIST IS CONFIDENTIAL; CD COPY ENCLOSED}	SENSITIVE SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_002	L181-07-0027 BX 0025 30093199
AR_N00217_000737 DS.AO57.10873 & SWDIV SER 06CH.KF/0908 CORRESPONDENCE N68711-00-D-0005 112	**06-12-2003** 06-19-2003 5090.3.A. DO 0003	BRICKNELL, K. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FINAL STORM WATER DISCHARGE MANAGEMENT PLAN FOR THE INDUSTRIAL LANDFILL (INCLUDES SWDIV TRANSMITTAL LETTER AND CD COPY)	ADMIN RECORD	PARCEL E SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0027 30093199
AR_N00217_000739 DS.A057.10874 & SWDIV SER 06CH.KF/0907 CORRESPONDENCE N68711-00-D-0005 65	**06-12-2003** 06-19-2003 5090.3.A. DO 0057	K. BRICKNELL TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FINAL OPERATION AND MAINTENANCE PLAN FOR THE INDUSTRIAL LANDFILL, PARCEL E WITH PUBLIC SUMMARY [INCLUDES SWDIV TRANSMITTAL LETTER BY K. FORMAN] (CD COPY ENCLOSED)	ADMIN RECORD	PARCEL E SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0027 30093199

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AR_N00217_000742 DS.A003.10513 & SWDIV SER 06CH.KF/0971 MISC N68711-00-D-0005 42	**06-25-2003** 07-09-2003 5090.3.A. DO 0003	K. BRICKNELL TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	RESPONSE TO REGULATORY AGENCY COMMENTS ON THE TIME-CRITICAL LANDFILL GAS REMOVAL ACTION PROJECT WORK PLAN AND THE FINAL PARCEL E LANDFILL GAS TIME-CRITICAL REMOVAL ACTION ACTION MEMORANDUM	ADMIN RECORD SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0027 30093199
SF_N00217_000751 DS.A003.10511 & SWDIV SER 06CH.KF/1121 REPORT N68711-00-D-0005 336	**08-01-2003** 08-26-2003 5090.3.C. DO 0003	BRUTON, L. TETRA TECH EM, INC. DEMARS, D. NAVFAC - SOUTHWEST DIVISION	DRAFT PARCEL E NONSTANDARD DATA GAPS INVESTIGATION LANDFILL LIQUEFACTION POTENTIAL [INCLUDES PUBLIC SUMMARY AND SWDIV TRANSMITTAL LETTER] {CD COPY ENCLOSED} [CONTAINS SENSITIVE MAPS]	SENSITIVE SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0028 30093199
AR_N00217_000750 DS.A057.10920 & SWDIV SER 06CH.KF.1188 REPORT N68711-00-D-0005 106	**08-14-2003** 08-26-2003 5090.3.A. DO 0057	J. BAKER TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FINAL PARCEL E NONSTANDARD DATA GAPS INVESTIGATION, WETLANDS DELINEATION AND FUNCTIONS AND VALUES ASSESSMENT, PARCELS B AND E [INCLUDES PUBLIC SUMMARY AND SWDIV TRANSMITTAL LETTER BY K. FORMAN]	ADMIN RECORD SENSITIVE	PARCEL B PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0027 30093199
SF_N00217_000764 DS.A057.10748 & SWDIV SER 06CH.KF/1301 REPORT N68711-00-D-0005 164	**09-22-2003** 10-17-2003 5090.3.C. DO 0057	BIANCHI, D. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT FINAL FIRST FIVE-YEAR REVIEW OF REMEDIAL ACTIONS IMPLEMENTED [INCLUDES PUBLIC SUMMARY AND SWDIV TRANSMITTAL LETTER] (CD COPY ENCLOSED) {CONTAINS SENSITIVE MAPS}	SENSITIVE SITE FILE	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0028 30093199
AR_N00217_001600 SWDIV SER 06CH.KF/1386 CORRESPONDENCE NONE 5	**10-17-2003** 07-27-2009 5090.3.A. NONE	FORMAN, K. NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL PARCEL E GROUNDWATER SUMMARY REPORT FOR PHASE III GROUNDWATER DATA GAPS INVESTIGATION (W/OUT ENCLOSURE)	ADMIN RECORD SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0013

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AR_N00217_004035 02.125.02.29-09 MINUTES NONE 97	**12-04-2003** 07-21-2004 5090.3.A. NONE	INNOVATIVE TECHNICAL SOLUTIONS, INC NAVFAC - SOUTHWEST DIVISION	04 DECEMBER 2003 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA, 23 OCTOBER 2003 MEETING MINUTES, 04 DECEMBER 2003 REPORTER'S TRANSCRIPT, AND VARIOUS HANDOUTS)	ADMIN RECORD	BLDG 0000134 BLDG 0000231 BLDG 0000253 BLDG 0000272 BLDG 0000281 BLDG 0000366 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F SITE 00002	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0017
AR_N00217_000784 DS.A057.10919 & SWDIV SER 06CH.KF/1593 REPORT N68711-00-D-0005 336	**12-23-2003** 01-21-2004 5090.3.A. DO 0057	BRICKNELL, K. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FINAL PARCEL E NONSTANDARD DATA GAPS INVESTIGATION, LANDFILL GAS CHARACTERIZATION [INCLUDES PUBLIC SUMMARY AND SWDIV TRANSMITTAL LETTER BY K. FORMAN] {PORTION OF MAILING LIST IS CONFIDENTIAL; CD COPY ENCLOSED}	ADMIN RECORD SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 30093199 BX 0030
SF_N00217_003616 DS.A500.13701 REPORT N68711-02-D-8213 150	**03-17-2004** 11-25-2011 5090.3.C. DO 0002	VETROMILE, J. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT METALS CONCENTRATIONS IN FRANCISCAN BEDROCK OUTCROPS: THREE SITES IN THE HUNTERS POINT SHEAR ZONE AND MARIN HEADLANDS TERRANE SUBUNITS (CD COPY ENCLOSED)	SENSITIVE SITE FILE	PARCEL E-2	NAVFAC - SOUTHWEST	
SF_N00217_003996 DS.A057.10745 & SWDIV SER 06CH.KF/0300 REPORT N68711-00-D-0005 231	**03-19-2004** 03-29-2004 5090.3.C. DO 0057	ZIELINSKI, T. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT LANDFILL GAS TIME-CRITICAL REMOVAL ACTION CLOSEOUT REPORT [INCLUDES PUBLIC SUMMARY AND SWDIV TRANSMITTAL LETTER BY K. FORMAN] {PORTION OF MAILING LIST IS CONFIDENTIAL; CD COPY ENCLOSED}	INFO REPOSITORY SENSITIVE SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 30093199 BX 0082

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SF_N00217_004001 DS.A500.13824 & SWDIV SER 06CH.KF/0301 REPORT N67811-02-D-8213 336	**03-19-2004** 03-30-2004 5090.3.C. DO 0002	ZIELINSKI, T. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT INTERIM LANDFILL GAS MONITORING AND CONTROL PLAN, INDUSTRIAL LANDFILL [INCLUDES SWDIV TRANSMITTAL LETTER AND CD COPY]	INFO REPOSITORY SENSITIVE SITE FILE	BLDG 0000830 PARCEL E	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0024
SF_N00217_004000 04-1414 & SWDIV SER 06CH.KF/0320 REPORT N68711-98-D-5713 149	**03-24-2004** 03-30-2004 5090.3.C. CTO 0070	STARR, G. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT POST - CONSTRUCTION REPORT REVISION 0 DECONTAMINATE PROCESS EQUIPMENT, CONDUCT WASTE CONSOLIDATION AND PROVIDE ASBESTOS SERVICES IN PARCELS B,C, D	INFO REPOSITORY SENSITIVE SITE FILE	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0083 30093199
SF_N00217_000815 DS.A500.13825 & SER 06CH.KF/0332 REPORT N68711-02-D-8213 53	**03-26-2004** 05-04-2004 5090.3.C. DO 0002	ZIELINSKI, T. TETRA TECH EM, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR FEBRUARY 2004 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL [INCLUDES PUBLIC SUMMARY AND SWDIV TRANSMITTAL LETTER] (CD COPY ENCLOSED) {CONTAINS SENSITIVE MAPS}	INFO REPOSITORY SENSITIVE SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0032 30093199
SF_N00217_000809 SWDIV SER 06CH.KF/0378 REPORT N68711-02-D-8310 323	**04-09-2004** 04-30-2004 5090.3.C. CTO 0003	YU, T. TPA-CKY, JOINT VENTURE NAVFAC - SOUTHWEST DIVISION	DRAFT WORK PLAN FOR THE TOTAL PETROLEUM HYDROCARBON PROGRAM IMPLEMENTATION OF CORRECTIVE ACTION PLAN - SOIL REMOVAL [INCLUDES SAMPLING AND ANALYSIS PLAN AND HEALTH AND SAFETY PLAN] {CONTAINS SENSITIVE MAPS}	INFO REPOSITORY SENSITIVE SITE FILE	"PERCHLORATE " SEARCH PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0031 30093199
AR_N00217_000812 DS.A500.13876 & SWDIV SER 06CH.KF/0385 REPORT N68711-02-D-8213 53	**04-09-2004** 05-04-2004 5090.3.A. DO 0002	ZIELINSKI, T. TETRA TECH EM, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR FEBRUARY 2004 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (INCLUDES PUBLIC SUMMARY, NAVFAC SWDIV TRANSMITTAL LETTER AND CD COPY) {CONTAINS SENSITIVE MAPS}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_003	L181-07-0027 BX 0031 30093199

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SF_N00217_000818 FWSD-RAC-04-0831 & SER 06CH.KF/0432 CORRESPONDENCE N68711-98-D-5713 317	**04-19-2004** 05-04-2004 5090.3.C. CTO 0072	LOAN, A. TETRA TECH FW INC. NAVFAC - SOUTHWEST DIVISION	DRAFT CHARACTERIZATION WORK PLAN FOR THE METAL DEBRIS REEF AND METAL SLAG AREAS, REVISION 0 [INLCUDES SWDIV TRANSMITTAL LETTER BY K. FORMAN] (PORTION OF MAILING LIST IS CONFIDENTIAL) [SEE AR# 4019 - FINAL CHARACTERIZATION WORK PLAN]	INFO REPOSITORY SENSITIVE SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0032 30093199
AR_N00217_004124 FWSD-RAC-04-1623 REPORT N68711-98-D-5713 65	**04-26-2004** 04-28-2005 5090.3.A. CTO 0072	STARR, G. TETRA TECH FW, INC. NAVFAC - SOUTHWEST DIVISION	FINAL BIOLOGICAL ASSESSMENT	ADMIN RECORD INFO REPOSITORY	PARCEL E	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0019
AR_N00217_000926 FILE NO. 2169.6032 (JDP) & PCA NO. 16525 CORRESPONDENCE NONE 4	**05-05-2004** 06-06-2006 5090.3.A. NONE	PONTON, J. CRWQCB - OAKLAND, CA FORMAN, K. NAVFAC - SOUTHWEST DIVISION	REVIEW AND COMMENTS ON THE DRAFT FIRST MONTHLY LANDFILL GAS MONITORING REPORT, POST-REMOVAL ACTION AND ON THE FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR FEBRUARY 2004 (PORTION OF THE DOCUMENT IS SENSITIVE) [W/ ATTACHMENT]	ADMIN RECORD SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0007
AR_N00217_004013 DS.A500.13877 & 06CH.KF/0502 REPORT N68711-02-D-8213 66	**05-06-2004** 06-17-2004 5090.3.A. DO 0002	ZIELINSKI, T. TETRA TECH EM, INC. P. BROOKS NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR MARCH 2004, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL [INCLUDES SWDIV TRANSMITTAL LETTER BY K. FORMAN] {PORTION OF MAILING LIST IS CONFIDENTIAL; CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0083 30093199
AR_N00217_000783 DS.A011.10115 & DS.A057.13692 REPORT N68711-00-D-0005 4894	**05-11-2004** 11-14-2003 5090.3.A. DO 0011 DO 0057	LANTZ, R. TETRA TECH EM, INC. NAVFAC - EFA WEST	REVISED FINAL PARCEL E GROUNDWATER SUMMARY REPORT, PHASE III GROUNDWATER DATA GAPS INVESTIGATION, VOLUMES I-V OF V (INCLUDES PUBLIC SUMMARY, CD COPY, AND REPLACEMENT PAGES CONVERTING THE FINAL DATED 17 OCTOBER 2003 TO REVISED FINAL)	ADMIN RECORD SENSITIVE	"PERCHLORATE" SEARCH PARCEL E	FRC - PERRIS IMAGED HPNT_003	PT-181-2011-0076 BX 0002 BX 0003

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AR_N00217_004014 SWDIV SER 06CH.KF/0500 REPORT NONE 4	**05-11-2004** 06-17-2004 5090.3.A. NONE	FORMAN, K. NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING THE FINAL GROUNDWATER SUMMARY REPORT, PHASE III GROUNDWATER DATA GAPS INVESTIGATION, DATED 17 OCTOBER 2003, TO REVISED FINAL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0017
AR_N00217_004009 FWSD-RAC-04-1781 CORRESPONDENCE N68711-98-D-5713 34	**05-18-2004** 05-19-2004 5090.3.A. CTO 0084	RIVERO, L. TETRA TECH FW INC. NAVFAC - SOUTHWEST DIVISION	TRANSPORTATION AND DISPOSAL PLAN, POLYCHLORINATED BIPHENYL (PCB) HOT SPOTS SOIL EXCAVATION SITE, PARCEL E, REVISION 0 (SEE AR #4120 - FINAL TRANSPORTATION AND DISPOSAL PLAN FOR PCB HOT SPOT SOIL EXCAVATION SITE, REVISION 1] {CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY	PARCEL E	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 30093199 BX 0083
AR_N00217_004020 NONE CORRESPONDENCE NONE 25	**05-25-2004** 06-23-2004 5090.3.A. NONE	 NAVFAC - SOUTHWEST DIVISION	DEPARTMENT OF NAVY (DON) AND REGIONAL WATER QUALITY CONTROL BOARD (RWQCB) COMMENTS ON THE DRAFT CHARACTERIZATION WORK PLAN FOR THE METAL DEBRIS REEF AND METAL SLAG AREAS, REVISION 0 [CD COPY ENCLOSED]	ADMIN RECORD INFO REPOSITORY	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 30093199 BX 0083
AR_N00217_004031 02.125.02.29-14 MINUTES NONE 130	**05-27-2004** 07-16-2004 5090.3.A. NONE	 INNOVATIVE TECHNICAL SOLUTIONS, INC NAVFAC - SOUTHWEST DIVISION	27 MAY 2004 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA, MEETING HANDOUTS, AND PUBLIC INFORMATION MATERIALS PACKAGE FOR 27 MAY 2004 PUBLIC MEETING/RESTORATION ADVISORY BOARD (RAB) MEETING)	ADMIN RECORD INFO REPOSITORY	BLDG 0000322 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL F SITE 00002	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0017
AR_N00217_004021 DS.A500.13878 & SWDIV SER 06CH.KF/0587 REPORT N68711-02-D-8213 50	**06-03-2004** 06-24-2004 5090.3.A. DO 0002	ZIELINSKI, T. TETRA TECH EM, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR APRIL 2004, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL [INCLUDES PUBLIC SUMMARY AND SWDIV TRANSMITTAL LETTER BY K. FORMAN] {PORTION OF MAILING LIST IS CONFIDENTIAL; CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 30093199 BX 0083

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AR_N00217_000932 FILE NO. 2169.6032(JDP) CORRESPONDENCE NONE 5	**06-10-2004** 06-06-2006 5090.3.A. NONE	PONTON, J. CRWQCB - OAKLAND, CA FORMAN, K. NAVFAC - SOUTHWEST DIVISION	COMMENTS ON THE DRAFT WORK PLAN FOR TOTAL PETROLEUM HYDROCARBON PROGRAM - IMPLEMENTATION OR CORRECTIVE ACTION PLAN (CAP) SOIL REMOVAL [W/ ENCLOSURE]	ADMIN RECORD SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0007
AR_N00217_004019 FWSD-RAC-04-1970 & 06CH.KF/0648 REPORT N68711-98-D-5713 321	**06-18-2004** 06-22-2004 5090.3.A. CTO 0072	LOAN, A. TETRA TECH FW INC. NAVFAC - SOUTHWEST DIVISION	FINAL CHARACTERIZATION WORK PLAN FOR THE METAL DEBRIS REEF AND METAL SLAG AREAS, REVISION 0 [INCLUDES SWDIV TRANSMITTAL LETTER BY K. FORMAN] {CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 30093199 BX 0083
SF_N00217_004095 SWDIV SER 06CH.KF/0698 & PROJECT NO. JV-13 REPORT N68711-02-D-8310 333	**06-23-2004** 02-02-2005 5090.3.C. CTO 0003	YU, T. TPA-CKY, JOINT VENTURE NAVFAC - SOUTHWEST DIVISION	DRAFT FINAL WORK PLAN TOTAL PETROLEUM HYDROCARBON PROGRAM CORRECTIVE ACTION IMPLEMENTATION PLAN - SOIL REMOVAL	INFO REPOSITORY SENSITIVE SITE FILE	"PERCHLORATE" SEARCH PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0061
AR_N00217_004029 FWSD-RAC-04-2236 REPORT N68711-98-D-5713 182	**06-29-2004** 07-02-2004 5090.3.A. CTO 0072	MARGOTTO, R. TETRA TECH FW INC. NAVFAC - SOUTHWEST DIVISION	FINAL SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR THE METAL DEBRIS REEF AND METAL SLAG AREAS, REVISION 0	ADMIN RECORD INFO REPOSITORY	"PERCHLORATE" SEARCH PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 30093199 BX 0083
AR_N00217_004069 SWDIV SER 06CH.MKP/0644 CORRESPONDENCE NONE 4	**06-29-2004** 10-28-2004 5090.3.A. NONE	FORMAN, K. NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF FINAL 2003-2004 ANNUAL REPORT FOR STORM WATER DISCHARGE MANAGEMENT, INDUSTRIAL LANDFILL (DOCUMENT RECEIVED IN THE RESTORATION RECORD FILE W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY	PARCEL E SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0018

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AR_N00217_004038 DS.A500.13879 & SER 06CH.KF/0677 REPORT N68711-02-D-8213 55	**07-01-2004** 07-26-2004 5090.3.A. DO 0002	ZIELINSKI, T. TETRA TECH EM, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR MAY 2004 POST-REMOVAL ACTION [INCLUDES PUBLIC SUMMARY AND SWDIV TRANSMITTAL LETTER BY K. FORMAN] {PORTION OF MAILING LIST IS CONFIDENTIAL; CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0084 30093199
AR_N00217_002163 SWDIV SER 06CH.KF/0715 CORRESPONDENCE NONE 4	**07-12-2004** 01-11-2011 5090.3.A. NONE	FORMAN, K. NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL POST CONSTRUCTION REPORT, DECONTAMINATE PROCESS EQUIPMENT, CONDUCT WASTE CONSOLIDATION AND PROVIDE ASBESTOS SERVICES	ADMIN RECORD SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_000849 NONE MINUTES NONE 62	**07-22-2004** 12-05-2005 5090.3.A. NONE	HUNTER, C. TETRA TECH EM, INC. RAB MEMBERS	22 JULY 2004 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA, JUNE 2004 MONTHLY PROGRESS REPORT, 14 JULY 2004 RAB SUBCOMITTEE MEETING MINUTES, 22 JULY 2004 MEETING REPORTER'S TRANSCRIPT AND VARIOUS HANDOUTS)	ADMIN RECORD	BLDG 0000103 BLDG 0000123 BLDG 0000134 BLDG 0000272 BLDG 0000322 BLDG 0000813 BLDG 0000815 BLDG 0000819 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0005
AR_N00217_002165 SWDIV SER 06CH.KF/0834 CORRESPONDENCE NONE 5	**08-13-2004** 01-11-2011 5090.3.A. NONE	BROOKS, G. NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL NONSTANDARD DATA GAPS INVESTIGATION LANDFILL LIQUEFACTION POTENTIAL	ADMIN RECORD SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	

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AR_N00217_002166 SWDIV SER 06CH.KF/0836 CORRESPONDENCE NONE 5	**08-13-2004** 01-11-2011 5090.3.A. NONE	BROOKS, G. NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL INTERIM LANDFILL GAS MONITORING AND CONTROL PLAN INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_004051 DS.A500.13882 REPORT N67811-02-D-8213 347	**08-13-2004** 09-02-2004 5090.3.A. DO 0002	BRUTON, J. TETRA TECH EM, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	FINAL PARCEL E NONSTANDARD DATA GAPS INVESTIGATION LANDFILL LIQUEFACTION POTENTIAL (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0017
AR_N00217_004052 DS.A500.13875 & SWDIV SER 06CH.KF/0833 REPORT N67811-02-D-8213 83	**08-13-2004** 09-02-2004 5090.3.A. DO 0002	ZIELINSKI, T. TETRA TECH EM, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR JANUARY 2004 POST-REMOVAL ACTION INDUSTIAL LANDFILL [INLCUDES SWDIV TRANSMITTAL LETTER BY G. BROOKS] {PORTION OF MAILING LIST IS CONFIDENTIAL; CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0086 30093199
AR_N00217_004053 DS.A500.13880 & SWDIV SER 06CH.KF/0835 REPORT N37811-02-D-8213 56	**08-13-2004** 09-02-2004 5090.3.A. DO 0002	ZIELINSKI, T. TETRA TECH EM, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR JUNE 2004 POST-REMOVAL ACTION INDUSTRIAL LANDFILL [INCLUDES SWDIV TRANSMITTAL LETTER BY G. BROOKS] {PORTION OF MAILING LIST IS CONFIDENTIAL; CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0086 30093199

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AR_N00217_004054 DS.A500.13874 CORRESPONDENCE N67811-02-D-8213 348	**08-13-2004** 09-02-2004 5090.3.A. DO 0002	ZIELINSKI, T. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FINAL INTERIM LANDFILL GAS MONITORING AND CONTROL PLAN INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0017
AR_N00217_004055 DS.A057.10765 & SWDIV SER 06CH.KF/0842 REPORT N68711-00-D-0005 465	**08-20-2004** 09-02-2004 5090.3.A. DO 0057	ADAIR, T. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FINAL SAMPLING AND ANALYSIS PLAN (SAP) (FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN) BASEWIDE GROUNDWATER MONITORING PROGRAM [INCLUDES SWDIV TRANSMITTAL LETTER BY K. FORMAN] {PORTION OF MAILING LIST IS CONFIDENTIAL;CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY SENSITIVE	"PERCHLORATE" SEARCH PARCEL E-2	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 30093199 BX 0086

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AR_N00217_000848 NONE MINUTES NONE 87	**08-26-2004** 12-05-2005 5090.3.A. NONE	HUNTER, C. TETRA TECH EM, INC. RAB MEMBERS	26 AUGUST 2004 RESTORATION ADVISORY BOARD MEETING MINUTES (INCLUDES AGENDA, 22 JULY 2004 MEETING MINUTES, JULY 2004 MONTHLY PROGRESS REPORT, 11 AUGUST 2004 RAB SUBCOMMITTEE MEETING MINUTES, 18 AUGUST 2004 TECHNICAL REVIEW SUBCOMMITTEE MEETING SUMMARY,	ADMIN RECORD	BLDG 0000101 BLDG 0000103 BLDG 0000114 BLDG 0000123 BLDG 0000130 BLDG 0000134 BLDG 0000140 BLDG 0000142 BLDG 0000146 BLDG 0000203 BLDG 0000211 BLDG 0000253 BLDG 0000272 BLDG 0000322 BLDG 0000364 BLDG 0000365 BLDG 0000366 BLDG 0000521 BLDG 0000813 BLDG 0000816 BLDG 0000819 BLDG 0000821 BLDG 0000901 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 SITE 00002 SITE 00004 SITE 00007 SITE 00018	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0005

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AR_N00217_004056 DS.A057.14387 & SWDIV SER 06CH.KF/0870 REPORT N68711-00-D-0005 668	**08-31-2004** 09-02-2004 5090.3.A. DO 0057	TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FINAL HISTORICAL RADIOLOGICAL ASSESSMENT (HRA) - HISTORY OF THE USE OF GENERAL RADIOACTIVE MATERIALS 1939 - 2003, VOLUME II (PORTION OF MAILING LIST IS SENSITIVE) [INCLUDES SWDIV TRANSMITTAL AND CD COPY]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL B PARCEL E-2	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0086 30093199
SF_N00217_004062 SWDIV SER 06CH.KF/0949 REPORT N68711-02-D-8213 55	**09-15-2004** 09-23-2004 5090.3.C. 00013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR JULY 2004 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL [INCLUDES SWDIV TRANSMITTAL LETTER BY G. BROOKS] {PORTION OF MAILING LIST IS CONFIDENTIAL}	INFO REPOSITORY SENSITIVE SITE FILE	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0086 30093199

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AR_N00217_000847 NONE MINUTES NONE 94	**09-23-2004** 12-05-2005 5090.3.A. NONE	HUNTER, C. TETRA TECH EM, INC. RAB MEMBERS	23 SEPTEMBER 2004 RESTORATION ADVISORY BOARD (RAB) MEETING (INCLUDES AGENDA, 26 AUGUST 2004 MEETING MINUTES, AUGUST 2004 MONTHLY PROGRESS REPORT, 15 SEPTEMBER 2004 RAB SUBCOMMITTEE MEETING MINUTES,	ADMIN RECORD	BLDG 0000101 BLDG 0000114 BLDG 0000123 BLDG 0000130 BLDG 0000134 BLDG 0000142 BLDG 0000146 BLDG 0000203 BLDG 0000211 BLDG 0000253 BLDG 0000272 BLDG 0000322 BLDG 0000364 BLDG 0000365 BLDG 0000366 BLDG 0000408 BLDG 0000521 BLDG 0000813 BLDG 0000816 BLDG 0000819 BLDG 0000821 BLDG 0000901 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E SITE 00002 SITE 00007 SITE 00018	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0005

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SF_N00217_004065 DS.A057.14383 & SWDIV SER 06CH.KF/0919 REPORT N68711-00-D-0005 562	**09-30-2004** 10-04-2004 5090.3.C. DO 0057	ZIELINSKI, T. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT (REVISION 1) STORM WATER DISCHARGE MANAGEMENT PLAN FOR THE INDUSTRIAL LANDFILL (INCLUDES SWDIV TRANSMITTAL LETTER AND CD COPY)	INFO REPOSITORY SITE FILE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0087 30093199
AR_N00217_000846 NONE MINUTES NONE 74	**10-21-2004** 12-05-2005 5090.3.A. NONE	HUNTER, C. SULTECH RAB MEMBERS	21 OCTOBER 2004 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA, 23 SEPTEMBER 2004 MEETING MINUTES, ECONOMIC SUBCOMMITTEE MEETING MINUTES, TECHNICAL REVIEW SUBCOMMITTEE SUMMARY, REPORTER'S TRANSCRIPT AND VARIOUS HANDOUTS)	ADMIN RECORD SENSITIVE	BLDG 0000101 BLDG 0000114 BLDG 0000130 BLDG 0000140 BLDG 0000142 BLDG 0000146 BLDG 0000211 BLDG 0000253 BLDG 0000322 BLDG 0000364 BLDG 0000366 BLDG 0000408 BLDG 0000521 BLDG 0000813 BLDG 0000819 BLDG 0000820 BLDG 0000901 PARCEL A PARCEL C PARCEL E-2 SITE 00001 SITE 00002 SITE 00007 SITE 00018 SITE 00021	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0005

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AR_N00217_004072 SWDIV SER BPMOW.ALB/0049 REPORT N68711-02-D-8213 56	**10-25-2004** 11-02-2004 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR JULY 2004, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL [INCLUDES SWDIV TRANSMITTAL LETTER BY M. AVERY] {PORTION OF MAILING LIST IS CONFIDENTIAL; CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0087 30093199
AR_N00217_004076 DS.A057.10922 & SWDIV SER BPMOW.ALB/0050 REPORT N68711-00-D-0005 154	**10-29-2004** 11-18-2004 5090.3.A. DO 0057	BRICKNELL, K. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FINAL PARCEL E NONSTANDARD DATA GAPS INVESTIGATION, LANDFILL LATERAL EXTENT EVALUATION [INCLUDES PUBLIC SUMMARY AND SWDIV TRANSMITTAL LETTER BY M. AVERY] {PORTION OF MAILING LIST IS CONFIDENTIAL; CD COPY ENCLOSED	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0087 30093199
AR_N00217_004059 DS. A057.10744 & SWDIV 06CH.KF/0906 REPORT N68711-00-D-0005 487	**11-01-2004** 09-20-2004 5090.3.A. DO 0057	BROCKWAY, S. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	DATA SUMMARY REPORT STANDARD DATA GAPS INVESTIGATION [INCLUDES SWDIV TRANSMITTAL LETTER BY G. BROOKS] {PORTION OF MAILING LIST IS CONFIDENTIAL, CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0086 30093199
AR_N00217_004030 FWSD-RAC-05-0092 REPORT N68711-98-D-5713 175	**11-02-2004** 07-14-2004 5090.3.A. CTO 0070	SLATTERY, G. TETRA TECH FW INC. NAVFAC - SOUTHWEST DIVISION	FINAL POST-CONSTRUCTION REPORT - DECONTAMINATE PROCESS EQUIPMENT, CONDUCT WASTE CONSOLIDATION AND ASBESTOS SERVICES [INCLUDES REPLACEMENT PAGES CONVERTING DRAFT FINAL DATED 09 JULY 2004 TO FINAL] (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0017
AR_N00217_004077 SWDIV SER PMOW.KSF/0065 MISC NONE 10	**11-02-2004** 11-18-2004 5090.3.A. NONE	AVERY, M. NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	IDENTIFICATION OF STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS), PARCEL E	ADMIN RECORD INFO REPOSITORY	PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0087 30093199

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AR_N00217_004078 FWSD-RAC-05-0092 & BRAC SER BPMOW.KSF/0114 REPORT N68711-98-D-5713 10	**11-02-2004** 11-24-2004 5090.3.A. CTO 0070	TETRA TECH FW, INC. NAVFAC - SOUTHWEST DIVISION	REVIEW OF THE DRAFT FINAL POST-CONSTRUCTION REPORT, REVISION 0, DECONTAMINATE PROCESS EQUIPMENT, CONDUCT WASTE CONSOLIDATION, AND PROVIDE ASBESTOS SERVICES DATED 11/09/04 [INCLUDES SWDIV TRANSMITTAL LETTER BY M. AVERY]	ADMIN RECORD INFO REPOSITORY	BLDG 0000231 BLDG 0000600 PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0087 30093199
AR_N00217_002164 BRAC SER BPMOW.KSF/0075 CORRESPONDENCE NONE 4	**11-03-2004** 01-11-2011 5090.3.A. NONE	AVERY, M. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE REPLACEMENT PAGES FOR THE FINAL POST CONSTRUCTION REPORT, DECONTAMINATE PROCESS EQUIPMENT, CONDUCT WASTE CONSOLIDATION AND PROVIDE ASBESTOS SERVICES [REPLACEMENT PAGES WERE INSERTED IN THE DOCUMENT]	ADMIN RECORD SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
SF_N00217_004084 SWDIV SER BPMOW.KSF/0207 REPORT N68711-02-D-8213 53	**12-07-2004** 01-04-2005 5090.3.C. 00013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR AUGUST 2004 POST-REMOVAL ACTION FOR THE INDUSTRIAL LANDFILL [INCLUDES SWDIV TRANSMITTAL LETTER BY K. FORMAN] {PORTION OF MAILING LIST IS CONFIDENTIAL}	INFO REPOSITORY SENSITIVE SITE FILE	PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0092 30093199

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AR_N00217_000840 NONE MINUTES NONE 84	**12-09-2004** 12-05-2005 5090.3.A. NONE	HUNTER, C. SULTECH RAB MEMBERS	09 DECEMBER 2004 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA, 21 OCTOBER 2004 MONTHLY PROGRESS REPORT, REPORTER'S TRANSCRIPT, TECHNICAL REVIEW SUBCOMMITTEE MEETING MINUTES, AND VARIOUS HANDOUTS)	ADMIN RECORD SENSITIVE	BLDG 0000101 BLDG 0000114 BLDG 0000123 BLDG 0000134 BLDG 0000146 BLDG 0000253 BLDG 0000272 BLDG 0000322 BLDG 0000351A BLDG 0000364 BLDG 0000366 BLDG 0000408 BLDG 0000500 BLDG 0000503 BLDG 0000521 BLDG 0000529 BLDG 0000813 BLDG 0000815 BLDG 0000819 BLDG 0000839 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F SITE 00001 SITE 00002 SITE 00007 SITE 00018 SITE 00021	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0004

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SF_N00217_004083 SWDIV SER BPMOW.KSF/0208 REPORT N68711-02-D-8213 54	**12-13-2004** 01-04-2005 5090.3.C. 00013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR SEPTEMBER 2004 POST-REMOVAL ACTION FOR THE INDUSTRIAL LANDFILL [INCLUDES SWDIV TRANSMITTAL LETTER BY K. FORMAN] {PORTION OF MAILING LIST IS CONFIDENTIAL}	INFO REPOSITORY SENSITIVE SITE FILE	PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_004	L181-07-0027 BX 0092 30093199
AR_N00217_004088 FWSD-RAC-05-0269 REPORT N68711-98-D-5713 5	**12-20-2004** 01-13-2005 5090.3.A. CTO 0072	TETRA TECH FW, INC. PEARCE, R. BRAC PMO WEST	FINAL KLEINFELDER WASTE SOIL TESTING WORK INSTRUCTION	ADMIN RECORD INFO REPOSITORY	BLDG 0000241 BLDG 0000406 PARCEL E	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0018
AR_N00217_002170 BRAC SER BPMOW.KSF/0282 CORRESPONDENCE NONE 5	**01-06-2005** 01-11-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR OCTOBER 2004 POST REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_001681 BRAC SER BPMOW.GWC/0281 CORRESPONDENCE NONE 4	**01-07-2005** 01-27-2010 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE 1) DRAFT APRIL TO JUNE 2004 EIGHTEENTH QUARTERLY GROUNDWATER SAMPLING REPORT, AND THE 2) DRAFT SECOND QUARTER (APRIL-JUNE) 2004 GROUNDWATER SAMPLING REPORT (W/OUT ENCLOSURE)	ADMIN RECORD SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0014
SF_N00217_004087 PROJ NO. 41330-2.09 & BRAC SER BPMOW.GWC/0281 REPORT N68711-00-D-0004 1063	**01-07-2005** 01-13-2005 5090.3.C. DO 0074	VALDOVINOS, M. KLEINFELDER BRAC PMO WEST	DRAFT SECOND QUARTER (APRIL-JUNE) 2004 GROUNDWATER SAMPLING REPORT (CD COPY ENCLOSED)	INFO REPOSITORY SITE FILE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0061

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SF_N00217_004091 NONE REPORT N68711-02-D-8213 53	**01-11-2005** 01-21-2005 5090.3.C. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BAUGHMAN, A. NAVFAC - SOUTHWEST DIVISION	DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR OCTOBER 2004 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	INFO REPOSITORY SITE FILE	PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0018
AR_N00217_002168 BRAC SER BPMOW.KSF/0302 CORRESPONDENCE NONE 4	**01-12-2005** 01-11-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT ACTION MEMORANDUM TIME-CRITICAL REMOVAL ACTION FOR THE POLYCHLORINATED BIPHENYLS (PCB) HOTSPOT AREA	ADMIN RECORD SENSITIVE	PARCEL E PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
SF_N00217_004090 DS.A057.10737 REPORT N68711-00-D-0005 37	**01-12-2005** 01-21-2005 5090.3.C. DO 0057	TETRA TECH, INC. BRAC PMO WEST	DRAFT ACTION MEMORANDUM TIME-CRITICAL REMOVAL ACTION FOR THE PCB HOTSPOT AREA (CD COPY ENCLOSED)	INFO REPOSITORY SITE FILE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0018
AR_N00217_000841 NONE MINUTES NONE 88	**01-27-2005** 12-05-2005 5090.3.A. NONE	HUNTER, C. SULTECH RAB MEMBERS	27 JANUARY 2005 RESTORATION ADVISORY BOARD (RAB) MEETING (INCLUDES AGENDA, 27 JANUARY 2008 MEETING MINUTES, NOVEMBER AND DECEMBER 2004 MONTHLY PROGRESS REPORT, REPORTER'S TRANSCRIPT AND VARIOUS HANDOUTS)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000103 BLDG 0000113 BLDG 0000113A BLDG 0000114 BLDG 0000123 BLDG 0000130 BLDG 0000134 BLDG 0000142 BLDG 0000146 BLDG 0000157 BLDG 0000272 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0004

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AR_N00217_002171 BRAC SER BPMOW.KSF/0362 CORRESPONDENCE NONE 5	**01-31-2005** 01-11-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR SEPTEMBER 2004 POST REMOVAL ACTION FOR THE INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_002172 BRAC SER BPMOW.KSF/0361 CORRESPONDENCE NONE 5	**01-31-2005** 01-11-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR AUGUST 2004 POST-REMOVAL ACTION FOR THE INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_002175 BRAC SER BPMOW.KSF/0360 CORRESPONDENCE NONE 5	**01-31-2005** 01-11-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR NOVEMBER 2004 POST-REMOVAL ACTION AT THE INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_004096 NONE REPORT N68711-02-D-8213 55	**01-31-2005** 02-08-2005 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR SEPTEMBER 2004 POST-REMOVAL ACTION FOR THE INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0018
AR_N00217_004097 NONE REPORT N68711-02-D-8213 55	**01-31-2005** 02-08-2005 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR AUGUST 2004 POST-REMOVAL ACTION FOR THE INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0018

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AR_N00217_004103 DS.A057.14384 & SWDIV SER BPMOW.KSF/0223 REPORT N68711-00-D-0005 606	**02-01-2005** 02-16-2005 5090.3.A. DO 0057	BRICKNELL, K. TETRA TECH EM, INC. BRAC PMO WEST	FINAL (REVISION I) STORM WATER DISCHARGE MANAGEMENT PLAN FOR THE INDUSTRIAL LANDFILL (INCLUDES SWDIV TRANSMITTAL LETTER AND CD COPY)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0092 30093199
AR_N00217_002174 BRAC SER BPMOW.KSF/0324 CORRESPONDENCE NONE 5	**02-07-2005** 01-11-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL REMOVAL ACTION LANDFILL CAP CLOSEOUT REPORT	ADMIN RECORD SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_004104 DS.A057.10743 REPORT N68711-00-D-0005 73	**02-07-2005** 02-16-2005 5090.3.A. DO 0057	ALI, S. TETRA TECH EM, INC. BRAC PMO WEST	FINAL REMOVAL ACTION LANDFILL CAP CLOSEOUT REPORT [INCLUDES PUBLIC SUMMARY AND CD COPY]	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0018
SF_N00217_004105 PROJ NO. 02-125.15 REPORT N68711-02-D-8213 54	**02-08-2005** 02-22-2005 5090.3.C. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR NOVEMBER 2004 POST-REMOVAL ACTION AT THE INDUSTRIAL LANDFILL	INFO REPOSITORY SITE FILE	PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0018
AR_N00217_004109 BRAC SER BPMOW.KSF/0421 CORRESPONDENCE NONE 14	**02-16-2005** 03-07-2005 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF 1) REVISED FIGURES FOR FINAL MONTHLY GAS MONITORING REPORT FOR AUGUST 2004, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL, AND 2) REVISED FIGURES FOR THE FINAL MONTHLY GAS MONITORING REPORT FOR SEPTEMBER 2004 (W/ENCLOSURES)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0019

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AR_N00217_002176 BRAC SER BPMOW.KSF/00429 CORRESPONDENCE NONE 5	**02-18-2005** 01-12-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT REMOVAL ACTION DESIGN AND IMPLEMENTATION WORK PLAN AT THE METAL DEBRIS REEF AND METAL SLAG AREAS	ADMIN RECORD SENSITIVE	PARCEL E PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
SF_N00217_004106 FWSD-RAC-05-0441 REPORT N68711-98-D-5713 697	**02-18-2005** 02-24-2005 5090.3.C. CTO 0072	RIVERO, L. TETRA TECH FW, INC. PAYNE, J. BRAC PMO WEST	DRAFT REMOVAL ACTION DESIGN AND IMPLEMENTATION WORK PLAN AT THE METAL DEBRIS REEF AND METAL SLAG AREAS [CD COPY ENCLOSED]	INFO REPOSITORY SITE FILE	PARCEL E PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0019
AR_N00217_002191 BRAC SER BPMOW.KSF/0440 CORRESPONDENCE NONE 3	**02-23-2005** 01-12-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE 1) FINAL BIOLOGICAL ASSESSMENT, AND 2) DRAFT REMOVAL ACTION DESIGN IMPLEMENTATION WORK PLAN FOR METAL DEBRIS REEF AND METAL SLAG AREAS	ADMIN RECORD SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_002183 BRAC SER BPMOW.KSF/0443 CORRESPONDENCE NONE 5	**02-25-2005** 01-12-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT PROJECT WORK PLAN FOR THE POLYCHLORINATED BIPHENYLS (PCB) HOT SPOT EXCAVATION SITE	ADMIN RECORD SENSITIVE	PARCEL E PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
SF_N00217_004108 FWSD-RAC-05-0551 REPORT N68711-98-D-5713 312	**02-25-2005** 02-28-2005 5090.3.C. CTO 0084	RIVERO, L. TETRA TECH FW, INC. BRAC PMO WEST	DRAFT PROJECT WORK PLAN FOR THE PCB HOT SPOT EXCAVATION SITE [CD COPY ENCLOSED]	INFO REPOSITORY SITE FILE	PARCEL E PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0019

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AR_N00217_002184 BRAC SER BPMOW.KSF/0475 CORRESPONDENCE NONE 5	**03-02-2005** 01-12-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR DECEMBER 2004 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_002185 BRAC SER BPMOW.KSF/0476 CORRESPONDENCE NONE 5	**03-02-2005** 01-12-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR JANUARY 2005 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
SF_N00217_004112 NONE REPORT N68711-02-D-8213 121	**03-04-2005** 03-10-2005 5090.3.C. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR DECEMBER 2004 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	INFO REPOSITORY SITE FILE	PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0019
SF_N00217_004113 NONE REPORT N68711-02-D-8213 56	**03-07-2005** 03-10-2005 5090.3.C. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR JANUARY 2005 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	INFO REPOSITORY SITE FILE	PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0019
AR_N00217_002187 BRAC SER BPMOW.AK/0949 CORRESPONDENCE NONE 5	**03-09-2005** 01-12-2011 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT PROJECT WORK PLAN AT NORTHWEST AND CENTRAL	ADMIN RECORD SENSITIVE	PARCEL E SITE 00002	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	

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SF_N00217_004118 FWSD-RAC-05-0567 REPORT N68711-98-D-5713 303	**03-09-2005** 03-24-2005 5090.3.C. 00072	SLATTERY, G. TETRA TECH FW, INC. BRAC PMO WEST	DRAFT PROJECT WORK PLAN AT NORTHWEST AND CENTRAL (CD COPY ENCLOSED)	INFO REPOSITORY SITE FILE	PARCEL E SITE 00002 WELL IR02MW127B WELL IR02MW141A WELL IR02MWB-3	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0019
SF_N00217_004114 FWSD-RAC-05-0663 REPORT N68711-98-D-5713 177	**03-11-2005** 03-23-2005 5090.3.C. CTO 0084	MARGOTTO, R. TETRA TECH FW, INC. BRAC PMO WEST	DRAFT SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR THE PCB HOT SPOT SOIL EXCAVATION SITE (PORTION OF DOCUMENT IS SENSITIVE)	INFO REPOSITORY SENSITIVE SITE FILE	"PERCHLORATE " SEARCH PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0061
AR_N00217_000842 NONE MINUTES NONE 94	**03-23-2005** 12-05-2005 5090.3.A. NONE	HUNTER, C. SULTECH RAB MEMBERS	23 MARCH 2005 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA, APRIL 2005 MONTHLY PROGRESS REPORT, REPORTER'S TRANSCRIPT AND VARIOUS HANDOUTS)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000123 BLDG 0000134 BLDG 0000272 PARCEL A PARCEL A-1 PARCEL A-2 PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F SITE 00002	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0005
AR_N00217_002200 BRAC SER BPMOW.AK/0551 CORRESPONDENCE NONE 4	**03-24-2005** 01-12-2011 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DATA SUMMARY REPORT FOR THE STANDARD DATA GAPS INVESTIGATION	ADMIN RECORD SENSITIVE	PARCEL E PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	

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AR_N00217_004133 DS.A057.19884 REPORT N68711-00-D-0005 198	**03-24-2005** 05-13-2005 5090.3.A. DO 0057	MICHAELS, J. TETRA TECH EM, INC. BRAC PMO WEST	DATA SUMMARY REPORT FOR THE STANDARD DATA GAPS INVESTIGATION, REVISION 1 [CD COPY ENCLOSED]	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0020
AR_N00217_002188 BRAC SER BPMOW.AK/0560 CORRESPONDENCE NONE 5	**03-28-2005** 01-12-2011 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR FEBRUARY 2005 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
SF_N00217_004121 NONE REPORT N68711-02-D-8213 55	**03-30-2005** 04-28-2005 5090.3.C. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR FEBRUARY 2005 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	INFO REPOSITORY SITE FILE	PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0019
SF_N00217_004127 FWSD-RAC-05-0754 REPORT N68711-98-D-5713 175	**04-04-2005** 04-28-2005 5090.3.C. CTO 0072	SLATTERY, G. TETRA TECH FW, INC. BRAC PMO WEST	DRAFT SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR THE NORTHWEST AND CENTRAL	INFO REPOSITORY SITE FILE	PARCEL E SITE 00002	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0019

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AR_N00217_002193 BRAC SER BPMOW.AK/0640 CORRESPONDENCE NONE 2	**04-18-2005** 01-12-2011 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR DECEMBER 2004 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD	PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_002194 BRAC SER BPMOW.AK/0641 CORRESPONDENCE NONE 5	**04-18-2005** 01-12-2011 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR JANUARY 2005 POST-REMOVAL ACTION FOR INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_004120 FWSD-RAC-04-1781 REPORT N68711-98-D-5713 36	**04-20-2005** 04-26-2005 5090.3.A. 00084	RIVERO, L. TETRA TECH FW, INC. BRAC PMO WEST	FINAL TRANSPORTATION AND DISPOSAL PLAN FOR POLYCHLORINATED BIPHENYL (PCB) HOT SPOT SOIL EXCAVATION SITE, PARCEL E AND E-2, REVISION 1 {CD COPY ENCLOSED} (SEE AR #4009 - TRANSPORTATION AND DISPOSAL PLAN, REVISION 0)	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_005	L181-07-0027 BX 0092 30093199
AR_N00217_004128 NONE REPORT N68711-02-D-8213 131	**04-21-2005** 04-29-2005 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR DECEMBER 2004 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0020
AR_N00217_004129 NONE REPORT N68711-02-D-8213 60	**04-22-2005** 05-02-2005 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR JANUARY 2005 POST-REMOVAL ACTION FOR INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0020

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SF_N00217_004123 FWSD-RAC-05-0712 REPORT N68711-98-D-5713 168	**04-25-2005** 04-28-2005 5090.3.C. 00072	MARGOTTO, R. TETRA TECH FW, INC. BRAC PMO WEST	DRAFT SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR THE REMOVAL ACTION DESIGN AND IMPLEMENTATION PLAN AT METAL DEBRIS REEF AND METAL SLAG AREAS {CD COPY ENCLOSED}	INFO REPOSITORY SITE FILE	PARCEL E PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0019
AR_N00217_000839 NONE MINUTES NONE 75	**04-27-2005** 12-05-2005 5090.3.A. NONE	HUNTER, C. SULTECH RAB MEMBERS	27 APRIL 2005 RESTORATION ADVISORY BOARD (RAB) MEETING (INCLUDES AGENDA, 27 APRIL 2008 MEETING MINUTES, RAB SUB COMMITTEE MEETING MINUTES, MAY 2005 MONTHLY PROGRESS REPORT, REPORTER'S TRANSCRIPT AND VARIOUS HANDOUTS)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F SITE 00002 SITE 00007 SITE 00018	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0004
AR_N00217_002195 BRAC SER BPMOW.REP/0676 CORRESPONDENCE NONE 4	**04-29-2005** 01-12-2011 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DUST CONTROL PLAN	ADMIN RECORD SENSITIVE	PARCEL E PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_004130 FWSD-RAC-05-1095 REPORT N68711-98-D-5713 50	**04-29-2005** 05-03-2005 5090.3.A. CTO 0072	NEUMAN, G TETRA TECH FW INC. NAVFAC - SOUTHWEST DIVISION	DUST CONTROL PLAN (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0020
AR_N00217_002201 BRAC SER BPMOW.AK/0698 CORRESPONDENCE NONE 5	**05-09-2005** 01-12-2011 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR MARCH 2005 POST-REMOVAL ACTION AT THE INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	

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AR_N00217_002202 BRAC SER BPMOW.AK/0697 CORRESPONDENCE NONE 5	**05-09-2005** 01-12-2011 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR NOVEMBER 2004 POST-REMOVAL ACTION AT THE INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_002203 BRAC SER BPMOW.AK/0696 CORRESPONDENCE NONE 5	**05-09-2005** 01-12-2011 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR OCTOBER 2004 POST-REMOVAL ACTION AT THE INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_004135 02.125.15.0035 REPORT N68711-02-D-8213 55	**05-10-2005** 05-18-2005 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR NOVEMBER 2004 POST-REMOVAL ACTION AT THE INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0020
AR_N00217_004136 02.125.15.0033 REPORT N68711-02-D-8213 55	**05-10-2005** 05-19-2005 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BAUGHMAN, A. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR OCTOBER 2004 POST-REMOVAL ACTION AT THE INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0020
SF_N00217_004134 02.125.15.0036 REPORT N68711-02-D-8213 60	**05-11-2005** 05-18-2005 5090.3.C. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BAUGHMAN, A. NAVFAC - SOUTHWEST DIVISION	DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR THE MARCH 2005 POST-REMOVAL ACTION AT THE INDUSTRIAL LANDFILL	INFO REPOSITORY SITE FILE	PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0020

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AR_N00217_001711 BRAC SER BPMOW.AK/0727 CORRESPONDENCE NONE 5	**05-17-2005** 01-28-2010 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT FINAL PROJECT WORK PLAN, PCB HOT SPOT SOIL EXCAVATION (W/OUT ENCLOSURE)	ADMIN RECORD SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0014
AR_N00217_001996 BRAC SER BPMOW.AK/0724 CORRESPONDENCE NONE 4	**05-17-2005** 09-23-2010 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR FEBRUARY 2005 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0015
AR_N00217_004138 FWSD-RAC-05-1163 REPORT N68711-98-D-5713 176	**05-17-2005** 05-24-2005 5090.3.A. CTO 0084	MARGOTTO, R. TETRA TECH FW, INC. BRAC PMO WEST	FINAL SITE-SPECIFIC HEALTH AND SAFETY PLAN AT THE PCB HOT SPOT SOIL EXCAVATION SITE {CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY	"PERCHLORATE " SEARCH PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0061
AR_N00217_001777 BRAC SER BPMOW.AK/0705 CORRESPONDENCE NONE 4	**05-19-2005** 04-23-2010 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL ACTION MEMORANDUM FOR THE TIME-CRITICAL REMOVAL ACTION, PCB HOT SPOT AREA (W/OUT ENCLOSURE)	ADMIN RECORD SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0014
AR_N00217_004140 DS.B110.20038 & SWDIV SER BPMOW.AK/0705 REPORT N68711-03-D-5104 62	**05-19-2005** 06-01-2005 5090.3.A. NONE	 SULTECH BRAC PMO WEST	FINAL ACTION MEMORANDUM FOR THE TIME-CRITICAL REMOVAL ACTION, PCB HOT SPOT AREA [CD COPY ENCLOSED]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0020

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AR_N00217_002204 BRAC SER BPMOW.JEP/0728 CORRESPONDENCE NONE 5	**05-20-2005** 01-12-2011 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT FINAL REMOVAL ACTION DESIGN AND IMPLEMENTATION WORK PLAN FOR METAL DEBRIS AND METAL SLAG AREAS	ADMIN RECORD SENSITIVE	PARCEL E PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_004144 BRAC SER BPMOW.GWC/0763 REPORT N68711-00-D-0004 1012	**05-20-2005** 06-03-2005 5090.3.A. DO 0074	VALDOVINOS, M. KLEINFELDER BRAC PMO WEST	DRAFT THIRD QUARTER (JULY - SEPTEMBER) 2004 GROUNDWATER SAMPLING REPORT [CD COPY OF APPENDIX D ENCLOSED] {PORTION OF MAILING LIST IS SENSITIVE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000134 BLDG 0000156 BLDG 0000228 BLDG 0000253 BLDG 0000406 BLDG 0000413 BLDG 0000414 PARCEL C PARCEL D PARCEL E PARCEL E-2 SITE 00006 SITE 00009 SITE 00025 SITE 00071	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0062
AR_N00217_000837 NONE MINUTES NONE 117	**05-25-2005** 12-05-2005 5090.3.A. NONE	HUNTER, C TETRA TECH EM, INC. RAB MEMBERS	25 MAY 2005 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES [INCLUDES AGENDA, LIST OF ATTENDEES, ACTION ITEMS, 25 MAY 2005 REPORTER'S TRANSCRIPT AND MAY 2005 MONTHLY PROGRESS REPORT]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL A PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0004
AR_N00217_004142 FWSD-RAC-05-1225 REPORT N68711-98-D-5713 167	**05-25-2005** 06-01-2005 5090.3.A. CTO 0072	MARGOTTO, R. TETRA TECH FW INC. NAVFAC - SOUTHWEST DIVISION	FINAL SITE-SPECIFIC HEALTH AND SAFETY PLAN (SHSP) FOR THE REMOVAL ACTION DESIGN AND IMPLEMENTATION PLAN AT THE METAL DEBRIS REEF AND METAL SLAG AREAS (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0020

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AR_N00217_001997 BRAC SER BPMOW.AK/0760 CORRESPONDENCE NONE 4	**05-26-2005** 09-23-2010 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR APRIL 2005 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0015
AR_N00217_004146 02.125.15.0038 REPORT N68711-02-D-8213 58	**05-27-2005** 06-09-2005 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR FEBRUARY 2005 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0020

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SF_N00217_000821 BRAC SER BPMOW.JEP/0955 & PROJ. NO JV-13 REPORT N68711-02-D-8310 184	**06-01-2005** 07-20-2005 5090.3.C. CTO 0003	TPA-CKY, JOINT VENTURE NAVFAC - SOUTHWEST DIVISION	DRAFT, FINAL SITE CLOSE OUT REPORT, FOR THE TOTAL PETROLEUM HYDROCARBON PROGRAM CORRECTIVE ACTION IMPLEMENTATION SOIL REMOVAL [PORTION OF MAILING LIST IS SENSITIVE] (INCLUDES BRAC PMO WEST TRANSMITTAL LETTER)	INFO REPOSITORY SENSITIVE SITE FILE	CAA 000001 CAA 000002 CAA 000002R CAA 000003 CAA 000003A CAA 000004 CAA 000006 CAA 000008 CAA 000008R CAA 000009 CAA 000009R CAA 000011 CAA 000012 CAA 000013 CAA 000014 CAA 000015 CAA 000016 CAA 000019 CAA 000021 CAA 000022 PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0004
AR_N00217_004145 FWSD-RAC-05-1240 REPORT N68711-98-D-5713 176	**06-01-2005** 06-03-2005 5090.3.A. CTO 0072	SLATTERY, G. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FINAL SITE-SPECIFIC HEALTH AND SAFETY PLAN (SHSP) FOR NORTHWEST AND CENTRAL PARCEL E {CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E SITE 00002	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_010	PT-181-2011-0076 BX 0020

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AR_N00217_004153 05-1370 CORRESPONDENCE N68711-98-D-5713 7	**06-01-2005** 06-24-2005 5090.3.A. CTO 0072	FORMAN, K. TETRA TECH FW, INC. NAVFAC - SOUTHWEST DIVISION	FACT SHEET NO. 7 - FINAL REMOVAL ACTIONS AT THE SHORELINE (RADIOLOGICAL COMMUNICATION SUPPORT)	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0021
SF_N00217_004147 02.125.15.0039 REPORT N68711-02-D-8213 58	**06-03-2005** 06-09-2005 5090.3.C. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR APRIL 2005 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	INFO REPOSITORY SENSITIVE SITE FILE	PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_010	PT-181-2011-0076 BX 0020
AR_N00217_004149 FWSD-RAC-05-1279 REPORT N68711-98-D-5713 52	**06-09-2005** 06-20-2005 5090.3.A. 00072	NEUMAN, G. TETRA TECH FW INC. NAVFAC - SOUTHWEST DIVISION	DUST CONTROL AND ASBESTOS MITIGATION PLAN	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0021
AR_N00217_001998 BRAC SER BPMOW.REP/0810 CORRESPONDENCE NONE 5	**06-17-2005** 09-23-2010 5090.3.A. NONE	DUCHNAK, L. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DUST CONTROL AND ASBESTOS MITIGATION PLAN	ADMIN RECORD SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0015

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AR_N00217_000838 NONE MINUTES NONE 152	**06-22-2005** 12-05-2005 5090.3.A. NONE	HUNTERS POINT, CA RAB MEMBERS	22 JUNE 2005 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES [INCLUDES AGENDA, LIST OF ATTENDEES, ACTION ITEMS, 22 JUNE 2005 NAVY MONTHLY PROGRESS REPORT, AND 22 JUNE 2005 REPORTER'S TRANSCRIPT]	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000103 BLDG 0000113 BLDG 0000113A BLDG 0000114 BLDG 0000123 BLDG 0000128 BLDG 0000130 BLDG 0000131A BLDG 0000134 BLDG 0000140 BLDG 0000142 BLDG 0000146 BLDG 0000157 BLDG 0000203 BLDG 0000211 BLDG 0000214 BLDG 0000224 BLDG 0000231 BLDG 0000241 BLDG 0000251 BLDG 0000253 BLDG 0000271 BLDG 0000272 BLDG 0000274 BLDG 0000313 BLDG 0000317 BLDG 0000322 BLDG 0000351 BLDG 0000351A BLDG 0000364 BLDG 0000365 BLDG 0000366 BLDG 0000383 BLDG 0000406 BLDG 0000408	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0004

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					BLDG 0000411			
					BLDG 0000414			
					BLDG 0000500			
					BLDG 0000503			
					BLDG 0000523			
					BLDG 0000701			
					BLDG 0000707			
					BLDG 0000708			
					BLDG 0000709			
					BLDG 0000808			
					BLDG 0000813			
					BLDG 0000819			
					DRY DOCK 2			
					DRY DOCK 3			
					DRY DOCK 4			
					DRY DOCK 5			
					DRY DOCK 6			
					DRY DOCK 7			
					PARCEL A			
					PARCEL B			
					PARCEL C			
					PARCEL D			
					PARCEL E			
					PARCEL F			
					SHACK 79			
					SHACK 80			
					SITE 00001			
					SITE 00007			
					SITE 00010			
					SITE 00018			
					SITE 00021			
					SITE 00506			
					SITE 00507			
					SITE 00508			
					SITE 00509			

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					SITE 00510		
					SITE 00510A		
					SITE 00517		
					SITE 00520		
					SITE 00529		
					SITE 00707		
					WELL EW01		
					WELL IR01MW366A		
					WELL IR01MW38A		
					WELL IR01MW43A		
					WELL IR03MW218A2		
					WELL IR03MW342A		
					WELL IR03MW373B		
					WELL IR04MW13A		
					WELL IR09MW61A		
					WELL IR09MW62A		
					WELL IR09MW63A		
					WELL IR10MW13A1		
					WELL IR25MW02A		
					WELL IR25MW53A		
					WELL IR25MW54A		
					WELL IR28MW136A		
					WELL IR28MW140F		

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Contract No.	CTO No.	Recipient						
Approx. # Pages		Recipient Affil.	Subject	Distribution	Sites		CD No.	FRC Box No(s)
					WELL IR28MW150A			
					WELL IR28MW151A			
					WELL IR28MW211F			
					WELL IR28MW221A			
					WELL IR28MW221B			
					WELL IR28MW270A			
					WELL IR28MW341F			
					WELL IR28MW396B			
					WELL IR28MW397B			
					WELL IR28MW403A			
					WELL IR28MW407A			
					WELL IR28MW408A			
					WELL IR28MW409A			
					WELL IR28MW410A			
					WELL IR28MW412A			
					WELL IR58MW31A			
					WELL IR58MW33B			
					WELL IR70MW07A			
					WELL IR71MW03A			
					WELL IR71MW12B			

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					WELL IR91MW04A WELL IW02 WELL MW33A WELL MW53A WELL MW54A WELL MW61A WELL MW62A WELL PA50MW07A		
AR_N00217_001999 BRAC SER BPMOW.AK/0859 CORRESPONDENCE NONE 4	**06-22-2005** 09-23-2010 5090.3.A. NONE	KLIMEK, A. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR MAY 2005 POST-REMOVAL ACTION	ADMIN RECORD SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0015
SF_N00217_004154 NONE REPORT N68711-02-D-8213 59	**06-24-2005** 06-29-2005 5090.3.C. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR MAY 2005 POST-REMOVAL ACTION	INFO REPOSITORY SENSITIVE SITE FILE	PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_010	PT-181-2011-0076 BX 0021
AR_N00217_004155 FWSD-RAC-05-1386 & SWDIV SER BPMOW.REP/0895 CORRESPONDENCE N68711-98-D-5713 11	**06-28-2005** 06-30-2005 5090.3.A. CTO 0072	NAVFAC - SOUTHWEST DIVISION MULTIPLE AGENCIES	TRANSMITTAL OF RESPONSES TO COMMENTS ON THE DUST CONTROL PLAN (W/ ENCLOSURE) {CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0021

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AR_N00217_000819 BRAC SER BPMOW.GWC/0904 REPORT N68711-05-C-6001 193	**06-30-2005** 07-18-2005 5090.3.A. NONE	HODGE, R. AFA CONTRUCTION GROUP/EEC BRAC PMO WEST	FINAL 2004-2005 ANNUAL REPORT FOR STORM WATER DISCHARGE AND MANAGEMENT, INDUSTRIAL LANDFILL (INCLUDES BRAC PMO WEST TRANSMITTAL LETTER]	ADMIN RECORD INFO REPOSITORY	PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0003
AR_N00217_000820 BRAC SER BPMOW.ALB/0943 REPORT N68711-02-D-8213 62	**07-12-2005** 07-20-2005 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR MARCH 2005 POST REMOVAL ACTION, INDUSTRIAL LANDFILL (INCLUDES BRAC PMO WEST TRANSMITTAL LETTER) [PORTION OF MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000830 PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0004
SF_N00217_000829 BRAC SER BPMOW.DG/0986 & 02.125.15.0044 REPORT N68711-02-D-8213 62	**07-25-2005** 08-01-2005 5090.3.C. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BROOKS, G. BRAC PMO WEST	DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR JUNE 2008 POST-REMOVAL ACTION AT THE INDUSTRIAL LANDFILL (INCLUDES BRAC PMO WEST TRANSMITTAL LETTER) {PORTION OF MAILING LIST IS SENSITIVE}	INFO REPOSITORY SENSITIVE SITE FILE	BLDG 0000830 PARCEL A PARCEL D PARCEL E PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0004
AR_N00217_004165 DS.B110.20282 & SWDIVSER BPMOW.DG/1003 CORRESPONDENCE N68711-03-D-5104 7	**07-27-2005** 09-20-2005 5090.3.A. CTO 0110	SULTECH NAVFAC - SOUTHWEST DIVISION	TRANSMITTAL OF RESPONSE TO COMMENTS ON FINAL ACTION MEMORANDUM TIME CRITICAL REMOVAL ACTION FOR THE PCB HOT SPOT AREA (W/ ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0021
AR_N00217_000835 NONE MINUTES NONE 64	**07-28-2005** 12-05-2005 5090.3.A. NONE	HUNTER, C. SULTECH RAB MEMBERS	28 JULY 2005 RESTORATION ADVISORY BOARD (RAB) MEETING (INCLUDES AGENDA, 20 JULY 2005 MEETING MINUTES, JUNE 2005 MONTHLY PROGRESS REPORT, REPORTER'S TRANSCRIPT AND VARIOUS HANDOUTS)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000366 PARCEL B PARCEL C PARCEL E PARCEL E-2 PARCEL F SITE 00002	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0004

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AR_N00217_002003 BRAC SER BPMOW.DG/1028 CORRESPONDENCE NONE 4	**08-04-2005** 09-23-2010 5090.3.A. NONE	GILKEY, D. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR MAY 2005 POST-REMOVAL ACTION AT INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0015
AR_N00217_002004 BRAC SER BPMOW.DG/1027 CORRESPONDENCE NONE 4	**08-04-2005** 09-23-2010 5090.3.A. NONE	GILKEY, D. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR APRIL 2005 POST REMOVAL ACTION AT INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0015
AR_N00217_004158 NONE REPORT N68711-02-D-8213 57	**08-04-2005** 08-11-2005 5090.3.A. CTO 0013	INNOVATIVE TECHNICAL SOLUTIONS, INC. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR APRIL 2005 POST REMOVAL ACTION AT INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0021
AR_N00217_004157 NONE REPORT N68711-02-D-8213 59	**08-05-2005** 08-11-2005 5090.3.A. CTO 0013	INNOVATIVE TECHNICAL SOLUTIONS, INC. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR MAY 2005 POST-REMOVAL ACTION AT INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0021

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AR_N00217_000834 NONE MINUTES NONE 59	**08-25-2005** 12-05-2005 5090.3.A. NONE	HUNTER, C. SULTECH RAB MEMBERS	25 AUGUST 2005 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA, AUGUST 2005 MONTHLY PROGRESS REPORT, REPORTER'S TRANSCRIPT AND VARIOUS HANDOUTS)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000103 BLDG 0000104 BLDG 0000115 BLDG 0000116 BLDG 0000600 PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F SITE 00002	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0004
AR_N00217_000832 02-125-15-0048 & BRAC SER BPMOW.MK/1172 REPORT N68711-02-D-8213 62	**08-31-2005** 09-08-2005 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL JUNE 2005 MONTHLY LANDFILL GAS MONITORING REPORT FOR POST-REMOVAL ACTION AT THE INDUSTRIAL LANDFILL (INCLUDES BRACPMO WEST TRANSMITTAL LETTER)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000830 PARCEL D PARCEL E PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0004
AR_N00217_002005 BRAC SER BPMOW.MRK/1207 CORRESPONDENCE NONE 4	**09-09-2005** 09-23-2010 5090.3.A. NONE	GILKEY, D. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR JULY 2005 POST REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0015
SF_N00217_004164 NONE REPORT N68711-02-D-8213 59	**09-09-2005** 09-19-2005 5090.3.C. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BROOKS, G. NAVFAC - SOUTHWEST DIVISION	DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR JULY 2005 POST REMOVAL ACTION, INDUSTRIAL LANDFILL	INFO REPOSITORY SENSITIVE SITE FILE	PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_010	PT-181-2011-0076 BX 0021

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SF_N00217_004169 FWSD-RAC-05-1787 REPORT N68711-98-D-5713 13	**09-21-2005** 10-12-2005 5090.3.C. CTO 0084	SCHNEIDER, M. TETRA TECH EC, INC. NAVFAC - SOUTHWEST DIVISION	DRAFT ADDENDUM 1 TO THE DRAFT FINAL SAMPLING AND ANALYSIS PLAN (FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN), PCB HOT SPOT SOIL EXCAVATION SITE	INFO REPOSITORY SITE FILE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0062
AR_N00217_000851 NONE MINUTES NONE 85	**09-22-2005** 12-05-2005 5090.3.A. NONE	HUNTER, C TETRA TECH EM, INC. RAB MEMBERS	22 SEPTEMBER 2005 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA, 22 SEP 2005 REPORTER'S TRANSCRIPT, SEP 2005 MONTHLY PROGRESS REPORT, 16 SEP 2005 SUBCOMMITTEE MEETING MINUTES, AND VARIOUS HANDOUTS)	ADMIN RECORD INFO REPOSITORY	BLDG 0000134 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E-2 PARCEL F SITE 00007 SITE 00018 WELL EW01 WELL IW02A WELL MW53A WELL MW54A WELL MW902A	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0005
AR_N00217_001710 BRAC SER BPMOW.MA/1229 CORRESPONDENCE NONE 5	**09-23-2005** 01-28-2010 5090.3.A. NONE	GILKEY, D. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT FOURTH QUARTER (OCTOBER-DECEMBER) 2004 GROUNDWATER SAMPLING REPORT [W/OUT ENCLOSURE]	ADMIN RECORD SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0014
SF_N00217_004167 NONE REPORT N68711-00-D-0004 884	**09-23-2005** 10-12-2005 5090.3.C. DO 0074	JOHNSON, C. KLEINFELDER BRAC PMO WEST	DRAFT FOURTH QUARTER (OCTOBER-DECEMBER) 2004 GROUNDWATER SAMPLING REPORT (CD COPY ENCLOSED)	INFO REPOSITORY SITE FILE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0062

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AR_N00217_004179 BRAC SER BPMOW.JEP/1242 REPORT N68711-02-D-8310 203	**09-23-2005** 11-30-2005 5090.3.A. CTO 0003	TPA-CKY, JOINT VENTURE GILKEY, D. BRAC PMO WEST	FINAL SITE CLOSE OUT REPORT, TOTAL PETROLEUM HYDROCARBON PROGRAM CORRECTIVE ACTION IMPLEMENTATION SOIL REMOVAL (INCLUDES RESPONSES TO AGENCY COMMENTS ON DRAFT FINAL REPORT AND BRAC PMO WEST TRANSMITTAL LETTER) [PORTION OF THE MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0062
AR_N00217_004170 FWSD-RAC-05-1802 REPORT N68711-98-D-5713 13	**10-03-2005** 10-12-2005 5090.3.A. CTO 0084	SCHNEIDER, M. TETRA TECH EC, INC. BRAC PMO WEST	FINAL ADDENDUM 1 TO THE DRAFT FINAL SAMPLING AND ANALYSIS PLAN (FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN), PCB HOT SPOT SOIL EXCAVATION SITE	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0062
AR_N00217_002008 BRAC SER BPMOW.MK/1301 CORRESPONDENCE NONE 4	**10-19-2005** 09-23-2010 5090.3.A. NONE	GILKEY, D. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR AUGUST 2005, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0015
AR_N00217_002010 BRAC SER BPMOW.MK/1316 CORRESPONDENCE NONE 4	**10-25-2005** 09-23-2010 5090.3.A. NONE	GILKEY, D. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR JULY 2005 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0015
AR_N00217_004173 02.125.15.30053 REPORT N68711-02-D-8213 59	**10-25-2005** 11-01-2005 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR JULY 2005 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0021

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AR_N00217_002011 BRAC SER BPMOW.MK/1315 CORRESPONDENCE NONE 4	**10-27-2005** 09-23-2010 5090.3.A. NONE	GILKEY, D. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR SEPTEMBER 2005, POST REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0015
AR_N00217_001876 BRAC SER BPMOW.DG/1341 CORRESPONDENCE NONE 4	**11-01-2005** 06-25-2010 5090.3.A. NONE	GILKEY, D. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT SHORELINE CHARACTERIZATION TECHNICAL MEMORANDUM (W/OUT ENCLOSURE)	ADMIN RECORD SENSITIVE	PARCEL E PARCEL E-2	NAVFAC - SOUTHWEST	
SF_N00217_004175 FWSD-RAC-06-0071 & BRAC SER BPMOW.REP/1350 REPORT N68711-98-D-5713 125	**11-01-2005** 11-03-2005 5090.3.C. CTO 0072	SLATTERY, G. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT DESIGN PLAN, STORM DRAIN AND SANITARY SEWER REMOVAL, REVISION 0 (CD COPY ENCLOSED) [PORTION OF MAILING LIST IS SENSITIVE] (INCLUDES BRAC PMO WEST TRANSMITTAL LETTER)	INFO REPOSITORY SENSITIVE SITE FILE	BLDG 0000103 BLDG 0000104 BLDG 0000113 BLDG 0000113A BLDG 0000115 BLDG 0000116 BLDG 0000117 BLDG 0000125 BLDG 0000130 BLDG 0000134 BLDG 0000140 BLDG 0000142 BLDG 0000146 BLDG 0000157 DRY DOCK 5 DRY DOCK 6 DRY DOCK 7 PARCEL B PARCEL C PARCEL E PARCEL E-2 SITE 00007	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0024

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SF_N00217_004176 FWSD-RAC-06-0070 & BRAC SER BPMOW.REP/1355 REPORT N68711-98-D-5713 283	**11-01-2005** 11-03-2005 5090.3.C. CTO 0072	SLATTERY, G. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT PROJECT WORK PLAN, BASE-WIDE STORM DRAIN AND SANITARY SEWER REMOVAL (CD COPY ENCLOSED) [PORTION OF MAILING LIST IS SENSITIVE] {INCLUDE BRAC PMO WEST TRANSMITTAL LETTER}	INFO REPOSITORY SENSITIVE SITE FILE	BLDG 0000113A BLDG 0000114 BLDG 0000130 BLDG 0000134 BLDG 0000364 BLDG 0000815 BLDG 0000816 BLDG 0000819 DRY DOCK 2 DRY DOCK 3 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0024

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AR_N00217_004178 BRAC SER BPMOW.MA/1404 REPORT N68711-05-C-6406 238	**11-01-2005** 11-30-2005 5090.3.A. NONE	FERRY, R. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	FINAL WORK PLAN FOR CONTAMINATION DELINEATION AT (INCLUDES BRAC PMO WEST TRANSMITTAL LETTER AND REVISED FIGURE A-14) [CD COPY ENCLOSED] (PORTION OF THE MAILING LIST IS SENSITIVE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000108 BLDG 0000130 BLDG 0000134 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F REMEDIAL UNIT C5 SITE 00006 SITE 00025 WELL IR06MW34A WELL IR06MW46A WELL IR25MW37B WELL IR25MW38B WELL IR25MW39B	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0062
AR_N00217_001712 BRAC SER BPMOW.REP/1379 CORRESPONDENCE NONE 5	**11-10-2005** 01-28-2010 5090.3.A. NONE	GILKEY, D. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING DRAFT FINAL DATED 17 MAY 2005 TO FINAL PROJECT WORK PLAN, PCB HOT SPOT SOIL EXCAVATION (W/OUT ENCLOSURE) [REPLACEMENT PAGES WERE INSERTED IN THE DOCUMENT]	ADMIN RECORD SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0014
AR_N00217_002205 BRAC SER BPMOW.REP/1378 CORRESPONDENCE NONE 5	**11-10-2005** 01-12-2011 5090.3.A. NONE	GILKEY, D. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE REPLACEMENT PAGES CONVERTING THE DRAFT FINAL, DATED 20 MAY 2005, TO FINAL REMOVAL ACTION DESIGN AND IMPLEMENTATION WORK PLAN FOR METAL DEBRIS REEF AND METAL SLAG AREAS (REPLACEMENT PAGES WERE INSERTED IN THE DOCUMENT)	ADMIN RECORD SENSITIVE	PARCEL E PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	

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AR_N00217_004137 FWSD-RAC-05-0992, 05-1442 & 06-0282 REPORT N68711-98-D-5713 357	**11-10-2005** 05-19-2005 5090.3.A. CTO 0084	MESSER, U. TETRA TECH EM, INC. NAVFAC - SOUTHWEST DIVISION	FINAL PROJECT WORK PLAN, POLYCHLORINATED BIPHENYL HOT SPOT SOIL EXCAVATION SITE (INCLUDES REPLACEMENT PAGES CONVERTING DRAFT FINAL DATED 17 MAY 2005 TO A FINAL AND CD COPY)]	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0061
AR_N00217_004139 FWSD-RAC-05-0991, 05-1443 & 06-0281 REPORT N68711-98-D-5713 746	**11-10-2005** 05-25-2005 5090.3.A. CTO 0072	SLATTERY, G. TETRA TECH FW, INC. BRAC PMO WEST	FINAL REMOVAL ACTION DESIGN AND IMPLEMENTATION WORK PLAN AT THE METAL DEBRIS REEF AND METAL SLAG AREAS (INCLUDES REPLACEMENT PAGES CONVERTING DRAFT FINAL DATED 20 MAY 2005 TO FINAL, SUPPLEMENTAL REPLACEMENT PAGES, AND CD COPY)	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0020
AR_N00217_004143 FWSD-RAC-05-0990, 05-1441 & 06-0283 REPORT N68711-98-D-5713 359	**11-10-2005** 06-01-2005 5090.3.A. CTO 0072	SLATTERY, G. TETRA TECH EC, INC. NAVFAC - SOUTHWEST DIVISION	FINAL PROJECT WORK PLAN, TIME-CRITICAL REMOVAL ACTION (TCRA) FOR NORTHWEST AND CENTRAL (INCLUDES REPLACEMENT PAGES CONVERTING DRAFT FINAL DATED 27 MAY 2005 TO A FINAL) [CD COPY ENCLOSED]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E SITE 00002	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0020
AR_N00217_004171 NONE REPORT N68711-02-D-8213 62	**11-16-2005** 10-26-2005 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. NAVFAC - SOUTHWEST DIVISION	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR AUGUST 2005, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL [INCLUDES REPLACEMENT PAGES CONVERTING DRAFT DATED 19 OCTOBER 2005 TO FINAL] {REPLACEMENT PAGES ISSUED 16 NOVEMBER 2005}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0021
AR_N00217_000830 BRAC SER BPMOW.RNA/0984 & PROJECT NO. 41330-2.09 REPORT N68711-00-D-0004 1221	**12-01-2005** 08-01-2005 5090.3.A. DO 0074	SKELTON, C. KLEINFELDER BRAC PMO WEST	REVISED FINAL SECOND QUARTER (APRIL - JUNE) 2004 GROUNDWATER SAMPLING REPORT (INCLUDES REPLACEMENT PAGES REVISING THE DATE OF 29 JULY 2005 TO 01 DECEMBER 2005, CD COPY, AND BRAC PMO WEST TRANSMITTAL LETTER) [PORTION OF MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0004

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AR_N00217_001457 BRAC SER BPMOW.MA/1431 CORRESPONDENCE NONE 8	**12-01-2005** 11-06-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE RESPONSES TO COMMENTS ON THE 1) FINAL APRIL - JUNE 2004, EIGHTEENTH QUARTERLY GROUNDWATER SAMPLING REPORT, 2) FINAL JULY - SEPTEMBER 2004, NINETEENTH QUARTERLY GROUNDWATER SAMPLING REPORT, (***SEE COMMENTS)	ADMIN RECORD SENSITIVE	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0053
AR_N00217_000871 NONE REPORT NONE 241	**12-05-2005** 03-13-2006 5090.3.A. NONE	STANFORD UNIVERSITY BRAC PMO WEST	FINAL DEMONSTRATION PLAN FOR FIELD TESTING OF ACTIVATED CARBON MIXING AND IN SITU STABILIZATION OF PCBS IN SEDIMENT [SEE RECORD # 872 - BRAC PMO WEST TRANSMITTAL LETTER] {PORTION OF THE MAILING LIST IS SENSITIVE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0005

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SF_N00217_004180 BRAC SER BPMOW.MA/1451 REPORT N68711-00-D-0004 344	**12-06-2005** 12-12-2005 5090.3.C. DO 0074	KLINEFELDER BRAC PMO WEST	DRAFT 0CTOBER - DECEMBER 2004 TWENTIETH QUARTERLY/FIFTH ANNUAL GROUNDWATER SAMPLING REPORT (INCLUDES BRAC TRANSMITTAL LETTER) [PORTION OF THE MAILING LIST IS SENSITIVE]	INFO REPOSITORY SENSITIVE SITE FILE	BLDG 0000123 PARCEL B PARCEL C PARCEL D PARCEL E SITE 00006 SITE 00007 SITE 00010 SITE 00018 SITE 00024 SITE 00026 WELL IR03MW11A WELL IR06MW45A WELL IR07MW19A WELL IR07MW20A1 WELL IR07MW21A1 WELL IR07MW23A WELL IR07MW24A WELL IR07MW25A WELL IR07MW26A WELL IR07MW27A WELL IR07MWS-4 WELL IR10MW12A WELL IR10MW28A WELL IR10MW61A	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0063

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					WELL IR10MW62A WELL IR10MW71A WELL IR10MW76A WELL IR10MW79A WELL IR10MW80A WELL IR25MW17A WELL IR26MW46A WELL IR26MW47A WELL IR26MW48A WELL IR61MW05A WELL PA05MW01A		
AR_N00217_002012 BRAC SER BPMOW.MRK/1436 CORRESPONDENCE NONE 4	**12-08-2005** 09-23-2010 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING THE DRAFT, DATED 27 OCTOBER 2005, TO FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR SEPTEMBER 2005, POST REMOVAL ACTION, INDUSTRIAL LANDFILL [REPLACEMENT PAGES WERE INSERTED IN THE DOCUMENT]	ADMIN RECORD SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0015
AR_N00217_004174 02.125.15.0054 & 02.125.15.0058 REPORT N68711-02-D-8213 60	**12-08-2005** 11-02-2005 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR SEPTEMBER 2005, POST REMOVAL ACTION, INDUSTRIAL LANDFILL (INCLUDES REPLACEMENT PAGES CONVERTING DRAFT DATED 27 OCTOBER 2005 TO FINAL) [CD COPY ENCLOSED]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0021

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AR_N00217_001713 BRAC SER BPMOW.JEP/1458 CORRESPONDENCE NONE 5	**12-12-2005** 01-28-2010 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF SUPPLEMENTAL REPLACEMENT PAGES FOR FINAL PROJECT WORK PLAN, PCB HOT SPOT SOIL EXCAVATION (W/OUT ENCLOSURE) [REPLACEMENT PAGES WERE INSERTED IN THE DOCUMENT]	ADMIN RECORD SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0014
AR_N00217_002206 BRAC SER BPMOW.JEP/1459 CORRESPONDENCE NONE 5	**12-12-2005** 01-12-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE SUPPLEMENTAL REPLACEMENT PAGES FOR THE FINAL REMOVAL ACTION DESIGN AND IMPLEMENTATION WORK PLAN AT THE METAL DEBRIS REEF AND METAL SLAG AREAS (REPLACEMENT PAGES WERE INSERTED IN THE DOCUMENT)	ADMIN RECORD SENSITIVE	PARCEL E PARCEL E-2	NAVFAC - SOUTHWEST SW-20110114-1/6 IMAGED HPNT_009	
AR_N00217_001459 BRAC SER BPMOW.MA/1468 CORRESPONDENCE NONE 4	**12-14-2005** 11-06-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL FOURTH QUARTER (OCTOBER - DECEMBER) 2004 GROUNDWATER SAMPLING REPORT (W/OUT ENCLOSURE)	ADMIN RECORD SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0053

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AR_N00217_004181 PROJECT NO. 41330-2.09 REPORT N68711-00-D-0004 920	**12-14-2005** 12-16-2005 5090.3.A. DO 0074	KLEINFELDER BRAC PMO WEST	FINAL FOURTH QUARTER (OCTOBER - DECEMBER) 2004 GROUNDWATER SAMPLING REPORT (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	BLDG 0000134 BLDG 0000156 BLDG 0000228 BLDG 0000253 BLDG 0000400 BLDG 0000405 BLDG 0000406 BLDG 0000411 BLDG 0000413 BLDG 0000414 DRY DOCK 2 PARCEL C PARCEL D PARCEL E WELL IR02MW114A2 WELL IR06MW45A WELL IR06MW54F WELL IR06MW55F WELL IR06MW57F WELL IR-09 WELL IR-71 VOC WELL RU-C1 VOC WELL RU-C2 VOC WELL RU-C4 VOC	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0063

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AR_N00217_000852 02.125.15.0062 REPORT N68711-02-D-8213 68	**01-16-2006** 12-05-2005 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR OCTOBER 2005 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (INCLUDES REPLACEMENT PAGES CONVERTING DRAFT DATED 29 NOVEMBER 2005 TO FINAL) {CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000830 PARCEL A PARCEL D PARCEL E PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0005
AR_N00217_000937 BAI.TC.016.00012 MINUTES NONE 11	**01-26-2006** 06-21-2006 5090.3.A. NONE	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	26 JANUARY 2006 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES LIST OF ATTENDEES AND ACTION ITEMS)	ADMIN RECORD INFO REPOSITORY	BLDG 0000211 BLDG 0000231 BLDG 0000253 PARCEL B PARCEL C PARCEL E-2 REMEDIAL UNIT C1 REMEDIAL UNIT C5	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0008
AR_N00217_000875 BRAC SER BPMOW.MRK/0095 CORRESPONDENCE NONE 6	**02-03-2006** 03-28-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD	TRANSMITTAL OF THE 1) METHANE CONCENTRATIONS AT GAS MONITORING PROBES 01A AND 07A, AND 2) LANDFILL GAS MONITORING LOGS (W/ ENCLOSURE)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0005
AR_N00217_000864 BRAC SER BPMOW.MRK/0129 CORRESPONDENCE NONE 4	**02-13-2006** 02-21-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES FOR THE FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR NOVEMBER 2005, POST-REMOVAL ACTION AT INDUSTRIAL LANDFILL (PORTION OF THE MAILING LIST IS SENSITIVE) [W/OUT ENCLOSURE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0005

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AR_N00217_004182 02.125.15.0064 & BRAC SER BPMOW.MK/1511 REPORT N68711-02-D-8213 63	**02-13-2006** 12-16-2005 5090.3.A. CTO 0013	INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR NOVEMBER 2005 POST-REMOVAL ACTION INDUSTRIAL LANDFILL (INCLUDES BRAC PMO WEST TRANSMITTAL LETTER, REPLACEMENT PAGES CONVERTING THE DRAFT DATED 26 DECEMBER 2005 TO FINAL, RESPONSE TO COMMENTS, AND CD COPY]	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000830 PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0063
SF_N00217_000857 FWSD-RAC-06-0355 REPORT N68711-98-D-5713 343	**02-14-2006** 02-14-2006 5090.3.C. 00072	SLATTERY, G. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT FINAL PROJECT WORK PLAN, BASE-WIDE STORM DRAIN AND SANITARY SEWER REMOVAL (CD COPY ENCLOSED)	INFO REPOSITORY SITE FILE	BLDG 0000113A BLDG 0000130 BLDG 0000134 BLDG 0000271 BLDG 0000406 BLDG 0000819 DRY DOCK 2 DRY DOCK 3 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0005

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SF_N00217_000859 FWSD-RAC-06-0356 REPORT N68711-98-D-5713 147	**02-14-2006** 02-14-2006 5090.3.C. CTO 0072	TETRA TECH EC, INC. BRAC PMO WEST	DRAFT FINAL PARCEL B DESIGN PLAN, STORM DRAIN AND SANITARY SEWER REMOVAL (CD COPY ENCLOSED)	INFO REPOSITORY SITE FILE	BLDG 0000103 BLDG 0000104 BLDG 0000113 BLDG 0000113A BLDG 0000115 BLDG 0000116 BLDG 0000117 BLDG 0000125 BLDG 0000130 BLDG 0000134 BLDG 0000140 BLDG 0000142 BLDG 0000146 BLDG 0000157 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 SITE 00007	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0005

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AR_N00217_000865 06-0506 REPORT N68711-98-D-5713 50	**02-14-2006** 02-22-2006 5090.3.A. CTO 0072	TETRA TECH EC, INC NAVFAC - SOUTHWEST DIVISION	REVISED FINAL BASEWIDE RADIOLOGICAL REMOVAL ACTION, ACTION MEMORANDUM (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	BASEWIDE BLDG 0000114 BLDG 0000146 BLDG 0000322 BLDG 0000364 BLDG 0000509 BLDG 0000517 BLDG 0000529 BLDG 0000707 BLDG 0000819 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F SITE 00001 SITE 00003 SITE 00011 SITE 00014 SITE 00015 SITE 00021	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0005

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AR_N00217_000942 BAI.TC.016.00016 MINUTES NONE 14	**02-23-2006** 06-21-2006 5090.3.A. NONE	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	23 FEBRUARY 2006 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES LIST OF ATTENDEES AND ACTION ITEMS)	ADMIN RECORD INFO REPOSITORY	BLDG 0000103 BLDG 0000113 BLDG 0000113A BLDG 0000114 BLDG 0000130 BLDG 0000142 BLDG 0000146 BLDG 0000157 BLDG 0000211 BLDG 0000406 BLDG 0000813 BLDG 0000819 PARCEL B PARCEL D PARCEL E PARCEL F SITE 00007 SITE 00018	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0008
AR_N00217_004185 NONE MINUTES NONE 24	**02-23-2006** 06-21-2006 5090.3.A. NONE	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	23 FEBRUARY 2006 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING REPORTER'S TRANSCRIPT	ADMIN RECORD INFO REPOSITORY	BLDG 0000103 BLDG 0000113 BLDG 0000113A BLDG 0000114 BLDG 0000142 BLDG 0000146 BLDG 0000157 BLDG 0000211 BLDG 0000406 BLDG 0000813 BLDG 0000819 PARCEL B PARCEL D PARCEL E PARCEL F	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0024

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AR_N00217_000869 BRAC SER BPMOW.MK/0192 CORRESPONDENCE NONE 5	**03-02-2006** 03-07-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR JANUARY 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL [W/OUT ENCLOSURE] (PORTION OF THE MAILING LIST IS SENSITIVE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0005
AR_N00217_000952 FWSD-RAC-06-0300 CORRESPONDENCE N68711-98-D-5713 30	**03-02-2006** 06-27-2006 5090.3.A. CTO 0084	TETRA TECH EC, INC. NAVFAC - SOUTHWEST	ADDITIONAL RESPONSE TO COMMENTS ON DRAFT FINAL PROJECT WORK PLAN FOR PCB HOT SPOT SOIL EXCAVATION SITE AND RESPONSE TO COMMENTS ON FIELD CHANGE REQUEST 035 (FCR-PCBHS-035) [CD COPY ENCLOSED]	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0008
AR_N00217_000923 BRAC SER BPMOW.REP/0197 CORRESPONDENCE NONE 5	**03-06-2006** 06-06-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF 1) ADDITIONAL COMMENTS ON THE RESPONSE TO COMMENTS ON DRAFT FINAL PROJECT WORK PLAN FOR PCB HOT SPOT SOIL EXCAVATION SITE, AND 2) RESPONSE TO COMMENTS ON FIELD CHANGE REQUEST 035 (FCR-PCBHS-035) [W/OUT ENCLOSURE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0007
AR_N00217_000890 BRAC SER BPMOW.MTK/0220 CORRESPONDENCE NONE 4	**03-13-2006** 04-13-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR DECEMBER 2005 POST-REMOVAL ACTION [PORTION OF THE MAILING LIST IS SENSITIVE] (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0005

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AR_N00217_004184 02.125.15.0061 & BRAC SER BPMOW.MRK/0056 REPORT N68711-02-D-8213 63	**03-13-2006** 01-09-2006 5090.3.A. CTO 0013	INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR DECEMBER 2005 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (INCLUDES BRAC PMO WEST TRANSMITTAL LETTER) [CD COPY ENCLOSED] (PORTION OF THE MAILING LIST IS SENSITIVE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000830 PARCEL A PARCEL E PARCEL E-2 SITE 00010 SITE 00021 WELL EW108A WELL EW108B WELL EW122A WELL EW122B WELL EW134A WELL EW134B WELL EW138A WELL EW138B WELL EW142A WELL EW142B WELL EW146A WELL EW146B WELL EW150A WELL EW150B WELL EW154A WELL EW154B WELL EW158A WELL EW158B	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0063
AR_N00217_000885 FWSD-RAC-06-0651 REPORT N68711-98-D-5713 37	**03-20-2006** 04-05-2006 5090.3.A. CTO 0084	CALRK, G. TETRA TECH EC, INC. PAYNE, J. BRAC PMO WEST	WASTE CONSOLIDATION FINAL STATUS REPORT (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	BLDG 0000115 BLDG 0000704 PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0005

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SF_N00217_000873 NONE REPORT N68711-00-D-0004 13036	**03-22-2006** 03-23-2006 5090.3.C. DO 0074	KLEINFELDER BRAC PMO WEST	DRAFT JANUARY TO MARCH 2005 FIFTH QUARTERLY/FIRST ANNUAL GROUNDWATER SAMPLING REPORT, VOLUMES I AND II OF II [CD COPY ENCLOSED] (INCLUDES ANALYTICAL DATA - PAPER ONLY)	INFO REPOSITORY SITE FILE	"PERCHLORATE " SEARCH BLDG 0000211 BLDG 0000231 BLDG 0000251 BLDG 0000253 BLDG 0000351A BLDG 0000400 BLDG 0000402 BLDG 0000406 BLDG 0000408 BLDG 0000411 BLDG 0000437 BLDG 0000438 BLDG 0000439 BLDG 0000505 BLDG 0000521 PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 SITE 00009 SITE 00022 SITE 00028 SITE 00033 SITE 00058 SITE 00078 WELL IR01MW09B WELL IR01MW1-9 WELL IR01MW366B WELL IR01MW403A	FRC - PERRIS IMAGED HPNT_005	PT-181-2009-4128 BX 0001 BX 0002 BX 0003

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Approx. # Pages		Recipient Affil.	Subject		Distribution	Sites	CD No.	FRC Box No(s)
						WELL IR01MW403B		
						WELL IR01MW42A		
						WELL IR01MWLF1A		
						WELL IR01MWLF2B		
						WELL IR01MWLF4A		
						WELL IR01MWLF4B		
						WELL IR02MW101A1		
						WELL IR02MW101A2		
						WELL IR02MW114A1		
						WELL IR02MW114A2		
						WELL IR02MW114A3		
						WELL IR02MW209A		
						WELL IR06MW32A		
						WELL IR06MW35A		
						WELL IR06MW41A		
						WELL IR06MW44A		
						WELL IR06MW45A		
						WELL IR06MW46A		
						WELL IR06MW50F		
						WELL IR06MW54F		

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Contract No.	CTO No.	Recipient						
Approx. # Pages		Recipient Affil.	Subject	Distribution	Sites		CD No.	FRC Box No(s)
					WELL IR06MW55F			
					WELL IR06MW58F			
					WELL IR06MW59A1			
					WELL IR09MW31A			
					WELL IR09MW36A			
					WELL IR09MW44A			
					WELL IR09MW52A			
					WELL IR09MW55F			
					WELL IR09P040A			
					WELL IR09PPY1			
					WELL IR11MW26A			
					WELL IR11MW27A			
					WELL IR12MW14A			
					WELL IR12MW16A			
					WELL IR15MW10F			
					WELL IR25MW11A			
					WELL IR25MW16A			
					WELL IR25MW17A			
					WELL IR25MW37B			
					WELL IR25MW38B			
					WELL IR25MW39A			

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Doc. Control No.	Prc. Date	Author						
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Contract No.	CTO No.	Recipient						
Approx. # Pages		Recipient Affil.	Subject		Distribution	Sites	CD No.	FRC Box No(s)
						WELL IR25MW39B		
						WELL IR25MW42B		
						WELL IR25MW52A		
						WELL IR25MW60A1		
						WELL IR25MW60A2		
						WELL IR25MW611A2		
						WELL IR28MW126A		
						WELL IR28MW127A		
						WELL IR28MW133A		
						WELL IR28MW136A		
						WELL IR28MW140F		
						WELL IR28MW151A		
						WELL IR28MW155A		
						WELL IR28MW170A		
						WELL IR28MW188F		
						WELL IR28MW189F		
						WELL IR28MW201F		
						WELL IR28MW211F		
						WELL IR28MW216F		
						WELL IR28MW221B		

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Contract No.	CTO No.	Recipient							
Approx. # Pages		Recipient Affil.		Subject		Distribution	Sites		
							WELL IR28MW255F		
							WELL IR28MW270A		
							WELL IR28MW272A		
							WELL IR28MW272F		
							WELL IR28MW298A		
							WELL IR28MW300F		
							WELL IR28MW309B		
							WELL IR28MW311A-R1		
							WELL IR28MW312F		
							WELL IR28MW334A		
							WELL IR28MW350F		
							WELL IR28MW353B		
							WELL IR28MW355F		
							WELL IR28MW398B		
							WELL IR28MW401B		
							WELL IR28MW406		
							WELL IR28MW407		
							WELL IR29MW57A		
							WELL IR29MW58F		
							WELL IR29MW85F		

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Contract No.	CTO No.	Recipient						
Approx. # Pages		Recipient Affil.	Subject		Distribution	Sites	CD No.	FRC Box No(s)
						WELL IR33MW116A		
						WELL IR33MW62A		
						WELL IR33MW64A		
						WELL IR33MW66A		
						WELL IR33MWU5A		
						WELL IR34MW36A		
						WELL IR34MW36B		
						WELL IR36MW09A		
						WELL IR36MW11A		
						WELL IR36MW125A		
						WELL IR36MW127A		
						WELL IR36MW97A		
						WELL IR58MW25F		
						WELL IR58MW31A		
						WELL IR58MW32B		
						WELL IR58MW33B		
						WELL IR76MW13A		
						WELL PA36MW01A		
						WELL PA38MW51A		
						WELL PA50MW11A		

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AR_N00217_000874 BRAC SER BPMOW.MA/0271 CORRESPONDENCE NONE 5	**03-22-2006** 03-23-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST BCT MEMBERS	TRANSMITTAL OF DRAFT JANUARY TO MARCH 2005 FIFTH QUARTERLY/FIRST ANNUAL GROUNDWATER MONITORING REPORT (W/OUT ENCLOSURE) [PORTION OF THE MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_005	PT-181-2009-4128 BX 0003
AR_N00217_000943 NONE MINUTES NONE 25	**03-23-2006** 06-21-2006 5090.3.A. NONE	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	23 MARCH 2006 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING REPORTER'S TRANSCRIPT	ADMIN RECORD INFO REPOSITORY	BLDG 0000123 BLDG 0000134 PARCEL B PARCEL C PARCEL D PARCEL E SITE 00010 SITE 00026	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0008
AR_N00217_004186 BAI.TC.016.0019 MINUTES NONE 11	**03-23-2006** 06-21-2006 5090.3.A. NONE	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	23 MARCH 2006 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES LIST OF ATTENDEES & ACTION ITEMS)	ADMIN RECORD INFO REPOSITORY	BLDG 0000153 PARCEL B PARCEL C PARCEL E SITE 00007 SITE 00010 SITE 00026 WELL IR26MW47A	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0024
AR_N00217_000877 BRAC SER BPMOW.MRK/0298 CORRESPONDENCE NONE 4	**03-29-2006** 04-05-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR FEBRUARY 2006, POST REMOVAL ACTION, INDUSTRIAL LANDFILL [W/OUT ENCLOSURE] (PORTION OF THE MAILING LIST IS SENSITIVE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0005
AR_N00217_000889 BRAC SER BPMOW.KF/0313 CORRESPONDENCE NONE 62	**03-31-2006** 04-07-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST BCT MEMBERS	TRANSMITTAL OF 1) FEDERAL FACILITY AGREEMENT (FFA) SCHEDULE, 2) PROJECT SCHEDULE, AND RESPONSE TO COMMENTS ON THE FFA SCHEDULE, DATED 23 SEPTEMBER 2005 (W/ENCLOSURES)	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0003

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AR_N00217_000947 BRAC SER BPMOW.GB/0297 CORRESPONDENCE NONE 14	**03-31-2006** 06-26-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF ADDITIONAL RESPONSE TO COMMENTS AND REPLACEMENT PAGES FOR 1) FINAL Q18 (APRIL TO JUNE 2004) PARCEL B; 2) FINAL Q19 (JULY TO SEPT. 2004) PARCEL B; & 3) FINAL Q3 (JULY TO SEPT. 2004) PARCELS C, D & E GROUNDWATER MONITORING REPORTS	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0008

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AR_N00217_004161 BRAC SER BPMOW.RNA/1201 & PROJECT NO. 41330-2.09 REPORT N68711-00-D-0004 964	**03-31-2006** 09-12-2005 5090.3.A. DO 0074	JOHNSON, C. KLEINFELDER BRAC PMO WEST	REVISED FINAL THIRD QUARTER (JULY - SEPTEMBER) 2004 GROUNDWATER SAMPLING REPORT (INCLUDES REPLACEMENT PAGES, REVISED CD COPY, AND BRAC PMO WEST TRANSMITTAL LETTERS)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000134 BLDG 0000156 BLDG 0000228 BLDG 0000253 BLDG 0000406 BLDG 0000408 BLDG 0000413 BLDG 0000414 BLDG 0000439 PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 SITE 00006 SITE 00007 SITE 00018 SITE 00025 SITE 00071 WELL IR01MW12A WELL IR02MW114A2 WELL IR06MW50F WELL IR06MW57F WELL IR06P54F WELL IR25MW39A WELL IR26MW41A WELL IR28MW155A WELL IR28MW311A WELL IR30MW01F	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0062

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					WELL PA50MW06A		
SF_N00217_000909 NONE REPORT N62473-06-C-2001 889	**04-01-2006** 05-02-2006 5090.3.C. NONE	KILDUFF, E. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	DRAFT QUARTERLY GROUNDWATER MONITORING REPORT (OCTOBER TO DECEMBER 2005)	INFO REPOSITORY SITE FILE	BLDG 0000819 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F REMEDIAL UNIT C1 REMEDIAL UNIT C2 REMEDIAL UNIT C4 REMEDIAL UNIT C5 WELL IR02MW114A1 WELL IR02MW126A WELL IR02MW294A WELL IR02MW373A	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0003

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SF_N00217_000913 NONE REPORT N62473-06-C-2001 420	**04-01-2006** 05-22-2006 5090.3.C. NONE	CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	DRAFT QUARTERLY GROUNDWATER MONITORING REPORT, OCTOBER - DECEMBER 2005, AND ANNUAL REPORT (2005)	INFO REPOSITORY SITE FILE	BLDG 0000109 BLDG 0000113 BLDG 0000113A BLDG 0000114 BLDG 0000115 BLDG 0000116 BLDG 0000122 BLDG 0000124 BLDG 0000125 BLDG 0000128 BLDG 0000130 BLDG 0000134 BLDG 0000141 BLDG 0000145 BLDG 0000156 BLDG 0000157 BLDG 0000161 BLDG 0000162 PARCEL B PARCEL D PARCEL E PARCEL E-2 PARCEL F SITE 00007 SITE 00010 SITE 00018 SITE 00020 SITE 00023 SITE 00024 SITE 00026 SITE 00031 SITE 00042 SITE 00060 SITE 00061 SITE 00062	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0006

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					WELL IR 07MWS-3 WELL IR06MW14A WELL IR06MW54A WELL IR07MWS-2 WELL IR10MW12A WELL IR10MW13A1 WELL IR10MW28A WELL IR10MW33A WELL IR10MW59A WELL IR10MW61A WELL IR10MW71A WELL IR10MW79A WELL IR26MW48A WELL IR26MW54A WELL PA24MW02A		

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SF_N00217_000899 KLEINFELDER PROJECT NO. 41330-2.10 REPORT N68711-00-D-0004 404	**04-05-2006** 04-20-2006 5090.3.C. DO 0074	SRINIVASAN, L. KLEINFELDER BRAC PMO WEST	DRAFT APRIL TO JUNE 2005 TWENTY-SECOND QUARTERLY GROUNDWATER SAMPLING REPORT	INFO REPOSITORY SITE FILE	BLDG 0000123 DRY DOCK 3 PARCEL B PARCEL C PARCEL D PARCEL E SITE 00007 WELL IR06MW42A WELL IR06MW46A WELL IR07MW19A WELL IR07MW24A WELL IR07MWS-3 WELL IR10MW12A WELL IR10MW13A1 WELL IR10MW28A WELL IR10MW33A WELL IR10MW59A WELL IR10MW61A WELL IR10MW62A WELL IR10MW71A WELL IR10MW76A WELL IR10MW79A WELL IR10MW80A	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0006

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					WELL IR25EW01A WELL IR26MW46A WELL IR26MW47A WELL IR26MW48A WELL IR46MW39A WELL PA24MW02A WELL PA50MW01A		
AR_N00217_000867 02.125.15.0070 REPORT N68711-02-D-8213 85	**04-17-2006** 03-07-2006 5090.3.A. CTO 0013	INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR JANUARY 2006 POST REMOVAL ACTION INDUSTRIAL LANDFILL (INCLUDES REPLACEMENT PAGES CONVERTING DRAFT FINAL DATED 02 MARCH 2006 TO FINAL AND CD COPY ENCLOSED) {REPLACEMENT PAGES ISSUED ON 17 APRIL 2006}	ADMIN RECORD INFO REPOSITORY	BLDG 0000830 PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0005

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SF_N00217_000901 PROJECT NO. 41330-2.10 REPORT N68711-00-D-0004 1006	**04-17-2006** 04-20-2006 5090.3.C. DO 0074	KLEINFELDER BRAC PMO WEST	DRAFT SIXTH QUARTER APRIL TO JUNE 2005 GROUNDWATER SAMPLING REPORT	INFO REPOSITORY SITE FILE	BLDG 0000134 BLDG 0000270 BLDG 0000307 BLDG 0000383 BLDG 0000400 BLDG 0000401 BLDG 0000406 BLDG 0000408 BLDG 0000437 BLDG 0000438 BLDG 0000500 BLDG 0000505 BLDG 0000521 PARCEL C PARCEL D PARCEL E PARCEL E-2 SITE 00009 SITE 00022 SITE 00033 SITE 00071 WELL IR01MW114A1 WELL IR02MW114A1 WELL IR06MW34A WELL IR06MW42A WELL IR06MW54F WELL IR06MW55F WELL IR06MW57F WELL IR11MW27A	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0006

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					WELL IR36MW125A WELL IR38MW02A WELL IR38MW03A WELL IR38MW37A WELL IR38MW52A WELL IR38MW62A WELL IR38MW63A WELL IR55MW01A WELL PA16MW17A WELL PA33MW37A WELL PA50MW06A WELL PA50MW09A WELL PA50MW10A		
AR_N00217_000902 BRAC SER BPMOW.MA/0356 CORRESPONDENCE NONE 5	**04-17-2006** 04-20-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT APRIL TO JUNE 2005 SIXTH QUARTER GROUNDWATER MONITORING REPORT (W/OUT ENCLOSURE) [PORTION OF THE MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0006
AR_N00217_000912 BRAC SER BPMOW.MK/0359 CORRESPONDENCE NONE 4	**04-17-2006** 05-15-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING DRAFT FINAL DATED 02 MARCH 2006 TO FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR JANUARY 2006 {INCLUDES RESPONSE TO COMMENTS} (PORTION OF THE MAILING LIST IS SENSITIVE)	ADMIN RECORD BASE READY INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0006

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AR_N00217_000904 BRAC SER BPMOW.RNA/0357 CORRESPONDENCE NONE 5	**04-19-2006** 04-20-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT JULY TO SEPTEMBER 2005 SEVENTH QUARTER GROUNDWATER MONITORING REPORT (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0006
AR_N00217_000974 PROJECT NO. 06-0676 REPORT N68711-98-D-5713 51	**04-21-2006** 08-08-2006 5090.3.A. CTO 0072	TETRA TECH EC, INC. NAVFAC - SOUTHWEST	FINAL BASEWIDE RADIOLOGICAL REMOVAL ACTION, ACTION MEMORANDUM - REVISION 2006 (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	BLDG 0000114 BLDG 0000146 BLDG 0000322 BLDG 0000364 BLDG 0000506 BLDG 0000509 BLDG 0000517 BLDG 0000529 BLDG 0000707 BLDG 0000819 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0008
AR_N00217_000908 BRAC SER BPMOW.MK/0376 CORRESPONDENCE NONE 4	**04-26-2006** 04-27-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR MARCH 2006, POST REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0006
SF_N00217_000910 BRAC SER BPMOW.KF\0394 CORRESPONDENCE NONE 4	**04-27-2006** 05-02-2006 5090.3.C. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT OCTOBER TO DECEMBER 2005 GROUNDWATER MONITORING REPORT (PORTION OF THE MAILING LIST IS SENSITIVE)	INFO REPOSITORY SENSITIVE SITE FILE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0003

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AR_N00217_000944 BAI.TC.016.00022 MINUTES NONE 11	**04-27-2006** 06-21-2006 5090.3.A. NONE	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	27 APRIL 2006 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES LIST OF ATTENDEES AND ACTION ITEMS)	ADMIN RECORD INFO REPOSITORY	BLDG 0000272 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E REMEDIAL UNIT C1 REMEDIAL UNIT C4 REMEDIAL UNIT C5 SITE 00010 WELL IR10MW71A WELL IR25MW544	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0008
AR_N00217_000945 NONE MINUTES NONE 23	**04-27-2006** 06-21-2006 5090.3.A. NONE	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	27 APRIL 2006 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING REPORTER'S TRANSCRIPT	ADMIN RECORD INFO REPOSITORY	BLDG 0000123 BLDG 0000134 BLDG 0000272 DRY DOCK 4 PARCEL B PARCEL C PARCEL D PARCEL E REMEDIAL UNIT C4 REMEDIAL UNIT C5 REMEDIAL UNIT CA WELL 00054A WELL 00071A WELL 00211F	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0008

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SF_N00217_000903 KLEINFELDER PROJECT NO. 41330-2.10 REPORT N68711-00-D-0004 1027	**05-01-2006** 04-20-2006 5090.3.C. DO 0074	SRINIVASAN, L. KLEINFELDER BRAC PMO WEST	DRAFT JULY TO SEPTEMBER 2005 SEVENTH QUARTER GROUNDWATER MONITORING REPORT (INCLUDES REPLACEMENT REVISING THE DATE FROM 19 APRIL 2006 TO 01 MAY 2006) [REPLACEMENT PAGES ISSUED ON 01 MAY 2006]	INFO REPOSITORY SITE FILE	BLDG 0000134 BLDG 0000270 BLDG 0000400 BLDG 0000401 BLDG 0000402 BLDG 0000406 BLDG 0000408 BLDG 0000437 BLDG 0000438 DRY DOCK 2 DRY DOCK 4 PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 WELL IR01MW02B WELL IR01MW42A WELL IR01MWLF4A WELL IR02MW114A1 WELL IR02MW179A WELL IR06MW34A WELL IR06MW42A WELL IR06MW54F WELL IR06MW55F WELL IR06MW56F WELL IR06MW58F	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0006

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					WELL IR07MWS-2 WELL IR09MW45F WELL IR09MW62A WELL IR09PPY1 WELL IR12MW11A WELL IR17MW12A WELL IR25MW62F WELL IR28MW155A WELL IR29MW59F WELL IR38MW02A WELL IR38MW03A WELL IR58MW34A WELL IR71MW12B WELL IR76MW13A WELL PA50MW09A		
AR_N00217_000917 BRAC SER BPMOW.PB/0413 CORRESPONDENCE NONE 4	**05-08-2006** 05-31-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REVISED FINAL FOURTH QUARTER (OCTOBER - DECEMBER) 2004 GROUNDWATER SAMPLING REPORT	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0007

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AR_N00217_000876 02.125.15.0073 REPORT N68711-02-D-8213 75	**05-10-2006** 04-05-2006 5090.3.A. CTO 0013	INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL FEBRUARY 2006 MONTHLY LANDFILL GAS MONITORING REPORT, POST-REMOVAL ACTION [INCLUDES REPLACEMENT PAGES CONVERTING DRAFT FINAL DATED 29 MARCH 2006 TO FINAL, AND CD COPY]	ADMIN RECORD INFO REPOSITORY	BLDG 0000830 PARCEL A PARCEL D PARCEL E PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0005
AR_N00217_000911 BRAC SER BPMOW.MRK0419/ CORRESPONDENCE NONE 4	**05-10-2006** 05-15-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING DRAFT FINAL DATED 29 MARCH 2006 TO FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR FEBRUARY 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (PORTION OF THE MAILING LIST IS SENSITIVE) {W/OUT ENCLOSURE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0006
AR_N00217_000924 BRAC SER BPMOW.KEO/427 CORRESPONDENCE NONE 7	**05-10-2006** 06-06-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF RESPONSES TO COMMENTS ON THE FINAL STORM WATER DISCHARGE MANAGEMENT (PORTION OF THE MAILING LIST IS SENSITIVE) [W/ENCLOSURE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0007
AR_N00217_000948 FWSD-RAC-06-0922 REPORT N68711-98-D-5713 8	**05-18-2006** 06-26-2006 5090.3.A. CTO 0084	SCHNEIDER, M. TETRA TECH EC, INC. BRAC PMO WEST	FINAL ADDENDUM 1 TO THE FINAL SAMPLING AND ANALYSIS PLAN (SAP) [FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN {FSP/QAPP}] PCB HOT SPOT SOIL EXCAVATION [CD COPY ENCLOSED]	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0008
AR_N00217_001015 BAI.TC.016.00027 MINUTES N68711-03-D-5106 14	**05-25-2006** 10-31-2006 5090.3.A. CTO 0016	SARAVANAN, V. BARAJAS & ASSOCIATES, INC. NAVFAC - SOUTHWEST	25 MAY 2006 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES LIST OF ATTENDEES AND ACTION ITEMS)	ADMIN RECORD INFO REPOSITORY	BLDG 0000813 PARCEL B PARCEL C PARCEL D PARCEL E SITE 00007 SITE 00018	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0014

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AR_N00217_000921 BRAC SER BPMOW.MK/0472 CORRESPONDENCE NONE 5	**05-31-2006** 06-06-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR APRIL 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (PORTION OF THE MAILING LIST IS SENSITIVE) [W/OUT ENCLOSURE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0007
AR_N00217_000950 BRAC SER BPMOW.JEP/0484 CORRESPONDENCE NONE 5	**05-31-2006** 06-26-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL ADDENDUM 1 TO THE FINAL SAMPLING AND ANALYSIS PLAN (SAP) [FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN {FSP/QAPP}] PCB HOT SPOT SOIL EXCAVATION SITE (W/OUT ENCLOSURE) [PORTION OF THE MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0008
AR_N00217_000905 02-125-15-0076 REPORT N68711-02-D-8213 61	**06-08-2006** 04-27-2006 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR MARCH 2006, POST REMOVAL ACTION, INDUSTRIAL LANDFILL (INCLUDES REPLACEMENT PAGES CONVERTING DRAFT DATED 26 APRIL 2006 TO FINAL) [CD COPY ENCLOSED]	ADMIN RECORD INFO REPOSITORY	BLDG 0000830 PARCEL D PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0006
AR_N00217_000951 BRAC SER BPMOW.MRK/0509 CORRESPONDENCE NONE 8	**06-12-2006** 06-26-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING DRAFT DATED 26 APRIL 2006 TO FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR MARCH 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE) [INCLUDES RESPONSE TO COMMENTS ON DRAFT MONITORING REPORT]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0008
AR_N00217_000965 BRAC SER BPMOW.MRK/0546 CORRESPONDENCE NONE 5	**06-28-2006** 07-13-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT MONTHLY LANDFILL GAS MONITORING REPORT, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0008

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AR_N00217_004226 BRAC SER BPMOW.MW/0566 CORRESPONDENCE N68711-03-D-5104 35	**06-30-2006** 05-17-2007 5090.3.A. CTO 0110	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF NAVY RESPONSE TO COMMENTS ON THE DRAFT SHORELINE CHARACTERIZATION TECHNICAL MEMORANDUM (W/ ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0022
AR_N00217_001356 NAV001-114-H REPORT N68711-01-D-6011 57	**07-01-2006** 07-16-2008 5090.3.A. CTO 0001	CACCIATORE, D. SHAW ENVIRONMENTAL, INC. BRAC PMO WEST	FINAL REPORT MECHANOCHEMICAL DESTRUCTION TREATABILITY STUDY PCB CONTAMINATED SOILS PARCEL SHORELINE (CD COPY ENCLOSED)	ADMIN RECORD	PARCEL E	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0009
AR_N00217_001355 BRAC SER BPMOW.JEP/0602 CORRESPONDENCE NONE 4	**07-10-2006** 07-16-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL REPORT MECHANOCHEMICAL DESTRUCTION TREATABILITY STUDY PCB CONTAMINATED SOILS REPORT, SHORELINE (W/OUT ENCLOSURE) [PORTION OF MAILING LIST IS SENSITIVE]	ADMIN RECORD SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0009
AR_N00217_000920 02.125.15.0080 REPORT N68711-02-D-8213 57	**07-17-2006** 06-06-2006 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR APRIL 2006, POST REMOVAL ACTION, INDUSTRIAL LANDFILL (INCLUDES REPLACEMENT PAGES CONVERTING THE DRAFT DATED 30 MAY 2006 TO FINAL AND CD COPY)	ADMIN RECORD INFO REPOSITORY	BLDG 0000830 PARCEL D PARCEL E PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0007
AR_N00217_000981 BRAC SER BPMOW.MRK/0617 CORRESPONDENCE NONE 4	**07-17-2006** 08-09-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT ANNUAL LANDFILL CAP OPERATION AND MAINTENANCE REPORT FOR 2005-2006, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE) {SEE COMMENTS}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0008

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AR_N00217_001037 BRAC SER BPMOW.MRK/0610 CORRESPONDENCE NONE 4	**07-17-2006** 11-06-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE REPLACEMENT PAGES CONVERTING DRAFT DATED 30 MAY 2006 TO FINAL MONTHLY LANDFILL GAS MONITORING REPORT, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE) [REPLACEMENT PAGES WERE INSERTED IN THE DOCUMENT] {***SEE COMMENTS}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0015
AR_N00217_001019 BAI.TC.016.00031 MINUTES N68711-03-D-5106 14	**07-27-2006** 10-31-2006 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. NAVFAC - SOUTHWEST	27 JULY 2006 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES LIST OF ATTENDEES AND ACTION ITEMS)	ADMIN RECORD INFO REPOSITORY	BLDG 0000142 BLDG 0000157 BLDG 0000813 PARCEL A PARCEL B PARCEL D PARCEL E-2 SITE 00002 SITE 00007 SITE 00018	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0014
AR_N00217_000979 BRAC SER BPMOW.MRK/0668 CORRESPONDENCE NONE 4	**07-31-2006** 08-09-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT MONTHLY GAS MONITORING REPORT FOR JUNE 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0008
AR_N00217_000991 NONE REPORT N62473-06-C-2001 2904	**08-01-2006** 09-07-2006 5090.3.A. NONE	KILDUFF, E. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	QUARTERLY GROUNDWATER MONITORING REPORT (OCTOBER-DECEMBER 2005), REVISION 1	ADMIN RECORD INFO REPOSITORY	"PERCHLORATE " SEARCH BLDG 0000819 PARCEL C PARCEL D PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0004 BX 0005
SF_N00217_001198 BAI.5106.0005.0001 CORRESPONDENCE N68711-03-D-5106 14	**08-02-2006** 11-05-2007 5090.3.C. NONE	BARAJAS & ASSOCIATES, INC NAVFAC - SOUTHWEST	DRAFT RESPONSES TO COMMENTS ON THE DRAFT SHORELINE CHARACTERIZATION TECHNICAL MEMORANDUM	INFO REPOSITORY SITE FILE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0004

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AR_N00217_000966 02.125.15.0083 REPORT N68711-02-D-8213 58	**08-14-2006** 07-13-2006 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR MAY 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (INCLUDES REPLACEMENT PAGES CONVERTING DRAFT DATED 26 JUNE 2006 TO FINAL, AND RESPONSE TO REGULATORY AGENCY COMMENTS ON THE DRAFT REPORT)	ADMIN RECORD INFO REPOSITORY	BLDG 0000830 PARCEL A PARCEL E PARCEL E-2 SITE 00001 SITE 00021 WELL IR74MW01A	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0008
AR_N00217_001035 BRAC SER BPMOW.MRK/0702 CORRESPONDENCE NONE 4	**08-15-2006** 11-06-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR MAY 2006 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL TO FINAL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0015
AR_N00217_001021 BAI.TC.016.00036 MINUTES N68711-03-D-5106 12	**08-24-2006** 10-31-2006 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. NAVFAC - SOUTHWEST	24 AUGUST 2006 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES LIST OF ATTENDEES AND ACTION ITEMS)	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0014
AR_N00217_000983 BRAC SER BPMOW.MRK/0738 CORRESPONDENCE NONE 4	**08-28-2006** 09-01-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR JULY 2006, POST-REMOVAL ACTION (RA), INDUSTRIAL LANDFILL (PORTION OF THE MAILING LIST IS SENSITIVE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0008
AR_N00217_000990 BRAC SER BPMOW.MLW/0726 CORRESPONDENCE NONE 4	**08-31-2006** 09-07-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE QUARTERLY GROUNDWATER MONITORING REPORT, (OCTOBER-DECEMBER 2005), REVISION 1 [W/OUT ENCLOSURE] {PORTION OF THE MAILING LIST IS SENSITIVE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0004

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AR_N00217_000992 BRAC SER BPMOW.KF/0772 & BAI.TC.016.00037 CORRESPONDENCE NONE 52	**09-08-2006** 09-11-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF 1) FEDERAL FACILITY AGREEMENT (FFA) SCHEDULE, AND 2) PROJECT SCHEDULE (W/ENCLOSURES)	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0005
AR_N00217_000980 02.125.15.0082 REPORT N68711-02-D-8213 62	**09-18-2006** 08-09-2006 5090.3.A. CTO 0013	INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR JUNE 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (INCLUDES REPLACEMENT PAGES CONVERTING DRAFT DATED 02 AUGUST 2006 TO FINAL) {REPLACEMENT PAGES ISSUED ON 18 SEPTEMBER 2006}	ADMIN RECORD INFO REPOSITORY	BLDG 0000830 PARCEL A PARCEL E PARCEL E-2 WELL MW01A	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0008
AR_N00217_001036 BRAC SER BPMOW.MRK/0789 CORRESPONDENCE NONE 2	**09-18-2006** 11-06-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING DRAFT DATED 03 AUGUST 2006 TO FINAL MONTHLY LANDFILL GAS MONITORING REPORT, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE) [REPLACEMENT PAGES WERE INSERTED IN THE DOCUMENT] {SEE COMMENTS}	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0015
AR_N00217_000999 BRAC SER BPMOW.MLW/0806 CORRESPONDENCE NONE 4	**09-27-2006** 09-28-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF QUARTERLY GROUNDWATER MONITORING REPORT, JANUARY - MARCH 2006 AND ANNUAL REPORT (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0010
AR_N00217_000916 PROJECT NO. 41330-2.10 REPORT N68711-00-D-0004 3794	**09-29-2006** 05-31-2006 5090.3.A. DO 0074	KLEINFELDER BRAC PMO WEST	REVISED FINAL FOURTH QUARTER (OCTOBER - DECEMBER) 2004 GROUNDWATER SAMPLING REPORT (INCLUDES REPLACEMENT PAGES REVISING THE DATE OF 28 APRIL 2006 TO 29 SEPTEMBER 2006 AND CD COPY) [***SEE COMMENTS]	ADMIN RECORD INFO REPOSITORY	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0007

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AR_N00217_000982 05-350.01.001 REPORT N68711-02-D-8303 39	**09-29-2006** 08-09-2006 5090.3.A. CTO 0005	INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL ANNUAL LANDFILL CAP OPERATIONS AND MAINTENANCE REPORT FOR 2005-2006, INDUSTRIAL LANDFILL (INCLUDES REPLACEMENT PAGES CONVERTING DRAFT DATED 17 JULY 2006 TO FINAL) [CD COPY ENCLOSED] {SEE COMMENTS.}	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0008
AR_N00217_001029 BRAC SER BPMOW.MK/0825 CORRESPONDENCE NONE 5	**09-29-2006** 11-06-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR AUGUST 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE) {PORTION OF THE MAILING LIST IS SENSITIVE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0014
AR_N00217_001336 BRAC SER BPMOW.MK/0826 CORRESPONDENCE NONE 5	**09-29-2006** 06-24-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING DRAFT DATED 17 JULY 2006 TO FINAL ANNUAL LANDFILL CAP OPERATIONS AND MAINTENANCE REPORT FOR 2005-2006, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0008
AR_N00217_001458 BRAC SER BPMOW.MLW/0819 CORRESPONDENCE NONE 5	**09-29-2006** 11-06-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES REVISING THE DATE ON THE FINAL FOURTH QUARTER (OCTOBER-DECEMBER) 2004 GROUNDWATER SAMPLING REPORT (W/OUT ENCLOSURE)	ADMIN RECORD SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0053

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AR_N00217_000989 NONE REPORT N62473-06-C-2001 3362	**10-01-2006** 09-07-2006 5090.3.A. NONE	KILDUFF, E. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	QUARTERLY GROUNDWATER MONITORING REPORT, OCTOBER - DECEMBER 2005, AND ANNUAL REPORT 2005, REVISION 2 (CD COPY ENCLOSED) [INCLUDES REPLACEMENT PAGES CONVERTING REVISION 1 DATED 01 JULY 2006 TO REVISION 2] {SEE COMMENTS.}	ADMIN RECORD INFO REPOSITORY	BLDG 0000123 BLDG 0000134 BLDG 0000141 PARCEL A PARCEL B PARCEL D PARCEL E PARCEL E-2 PARCEL F WELL IR06MW14A WELL IR06MW54A WELL IR07MWS-2 WELL IR07MWS-3 WELL IR10MW12A WELL IR10MW13A1 WELL IR10MW28A WELL IR10MW59A WELL IR10MW61A WELL IR10MW71A WELL IR26MW46A WELL IR26MW47A WELL IR26MW48A WELL PA24MW02A	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0008 BX 0009

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AR_N00217_001004 KLEINFELDER PROJECT NO. 41330-2.10 REPORT N68711-00-D-0004 3474	**10-06-2006** 10-10-2006 5090.3.A. DO 0074	SRINIVASAN, L. KLEINFELDER BRAC PMO WEST	FINAL JANUARY TO MARCH 2005, TWENTY-FIRST QUARTERLY GROUNDWATER SAMPLING REPORT	ADMIN RECORD INFO REPOSITORY	BLDG 0000123 BLDG 0000134 PARCEL B PARCEL C PARCEL D PARCEL E SITE 00007 WELL IR06MW42A WELL IR06MW46A WELL IR07MW19A WELL IR07MW23A WELL IR07MW24A WELL IR07MW25A WELL IR07MWMW5-4 WELL IR07MWWS-3 WELL IR10MW12A WELL IR10MW13A1 WELL IR10MW28A WELL IR10MW33A WELL IR10MW61A WELL IR10MW62A WELL IR10MW71A WELL IR10MW74A	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0012

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					WELL IR10MW76A WELL IR10MW79A WELL IR10MW80A WELL IR23MW14A WELL IR25EW01A WELL IR25MW37A WELL IR25MW63A2 WELL IR26MW41A WELL IR26MW47A WELL IR46MW37A WELL IR46MW40A WELL IR46MW42A WELL IR46MW47A WELL IR46MW48A WELL IR60MW04A WELL IRMW39A WELL PA24MW02A WELL PA50MW01A WELL UT03MW11A		

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AR_N00217_001010 BRAC SER BPMOW.MLW/0046 CORRESPONDENCE NONE 4	**10-11-2006** 10-26-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF FINAL (APRIL - JUNE) 2005, SIXTH QUARTER GROUNDWATER MONITORING REPORT, PARCELS C, D, AND E (W/OUT ENCLOSURE) [PORTION OF THE MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0012
AR_N00217_001011 PROJECT NO. 41330-2.10 REPORT N68711-00-D-0004 3538	**10-11-2006** 10-26-2006 5090.3.A. DO 0074	SRINIVASAN, L. KLEINFELDER BRAC PMO WEST	FINAL (APRIL - JUNE) 2005, SIXTH QUARTER GROUNDWATER MONITORING REPORT (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0013
AR_N00217_001012 BRAC SER BPMOW.MLW/0047 CORRESPONDENCE NONE 4	**10-17-2006** 10-26-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF FINAL (JULY - SEPTEMBER) 2005, SEVENTH QUARTER GROUNDWATER MONITORING REPORT, PARCELS C, D, AND E (W/OUT ENCLOSURE) [PORTION OF THE MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0013
AR_N00217_001013 KLEINFELDER PROJECT NO. 41330-2.10 REPORT N68711-00-D-0004 1025	**10-17-2006** 10-26-2006 5090.3.A. DO 0074	SRINIVASAN, L. KLEINFELDER BRAC PMO WEST	FINAL JULY TO SEPTEMBER 2005, SEVENTH QUARTER, GROUNDWATER MONITORING REPORT (CD COPY ENCLOSED) {SEE COMMENTS}	ADMIN RECORD INFO REPOSITORY	PARCEL C PARCEL D PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0014
AR_N00217_000984 02.125.15.0089 REPORT N68711-02-D-8213 62	**10-18-2006** 09-01-2006 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR JULY 2006, POST-REMOVAL ACTION (RA), INDUSTRIAL LANDFILL (INCLUDES REPLACEMENT PAGES CONVERTING DRAFT DATED 28 AUGUST 2006 TO FINAL)	ADMIN RECORD INFO REPOSITORY	BLDG 0000830 PARCEL A PARCEL D PARCEL E PARCEL E-2 WELL IR74MW01A	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0008

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AR_N00217_001038 BRAC SER BPMOW.MRK/0042 CORRESPONDENCE NONE 4	**10-18-2006** 11-06-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING THE DRAFT DATED 28 AUGUST 2006 TO FINAL MONTHLY LANDFILL GAS MONITORING REPORT, FOR JULY 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE) {***SEE COMMENTS}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0015
AR_N00217_001028 ECSD-RACIV-07-0006 REPORT N62473-06-D-2201 26	**10-23-2006** 11-02-2006 5090.3.A. CTO 0006	DOUGHERTY, W. TETRA TECH EC, INC. BRAC PMO WEST	AIR MONITORING PLAN (AMP), BASE-WIDE STORM DRAIN AND SANITARY SEWER REMOVAL	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0014
AR_N00217_004206 BAI.TC.016.00046 MINUTES N68711-03-D-5106 11	**10-26-2006** 04-12-2007 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. NAVFAC - SOUTHWEST	26 OCTOBER 2006 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA AND ATTACHMENTS A AND B)	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL E-2 SITE 00002	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0022
AR_N00217_001031 BRAC SER BPMOW.MRK/0098 CORRESPONDENCE NONE 4	**11-01-2006** 11-06-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR SEPTEMBER 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0015
AR_N00217_001030 02.125.15.0093 REPORT N68711-02-D-8213 61	**11-15-2006** 11-06-2006 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR AUGUST 2006, POST REMOVAL ACTION, INDUSTRIAL LANDFILL (INCLUDES REPLACEMENT PAGES CONVERTING THE DRAFT DATED 29 SEPTEMBER 06 TO FINAL AND RESPONSE TO COMMENTS ON THE DRAFT, AND CD COPY)	ADMIN RECORD INFO REPOSITORY	BLDG 0000830 PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0014

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AR_N00217_001046 BRAC SER BPMOW.MRK/0132 CORRESPONDENCE NONE 4	**11-15-2006** 11-20-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING DRAFT DATED 29 SEPTEMBER 2006 TO FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR 2006, POST REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE) [PORTION OF MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0017
AR_N00217_001065 BRAC SER BPMOW.MLW/0139 CORRESPONDENCE NONE 5	**11-17-2006** 12-20-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL JANUARY TO MARCH 2005 FIFTH QUARTERLY/FIRST ANNUAL GROUNDWATER MONITORING REPORT, VOLUMES I - II OF II (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0019
AR_N00217_001066 NONE REPORT N68711-00-D-0004 15662	**11-17-2006** 12-20-2006 5090.3.A. DO 0074	SRINIVASAN, L. KLEINFELDER BRAC PMO WEST	FINAL JANUARY TO MARCH 2005, FIFTH QUARTERLY/FIRST ANNUAL GROUNDWATER SAMPLING REPORT, VOLUMES I AND II OF II(CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	"PERCHLORATE " SEARCH BLDG 0000231 BLDG 0000251 BLDG 0000253 BLDG 0000272 BLDG 0000406 PARCEL C PARCEL D PARCEL E PARCEL E-2 SITE 00028	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0019 BX 0020 BX 0021 BX 0022
AR_N00217_001055 BRAC SER BPMOW.MLW/0125 CORRESPONDENCE NONE 4	**11-21-2006** 11-30-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE QUARTERLY GROUNDWATER MONITORING REPORT (APRIL - JUNE 2006) (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0018

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AR_N00217_001067 BRAC SER BPMOW.MK/0156 CORRESPONDENCE NONE 4	**11-28-2006** 12-21-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT WETLANDS MITIGATION AND MONITORING PLAN, METAL DEBRIS REEF AND METAL SLAG AREAS (W/OUT ENCLOSURE) {PORTION OF MAILING LIST IS SENSITIVE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0022
SF_N00217_001069 FWSD-RAC-07-0208 REPORT N68711-98-D-5713 50	**11-28-2006** 12-21-2006 5090.3.C. 00072	AHLERSMEYER, R. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT WETLANDS MITIGATION AND MONITORING PLAN, METAL DEBRIS REEF AND METAL SLAG AREAS (CD COPY ENCLOSED)	INFO REPOSITORY SITE FILE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0022
AR_N00217_001071 BRAC SER BPMOW.MRK/0179 CORRESPONDENCE NONE 4	**12-04-2006** 12-22-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR OCTOBER 2006, REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0001
AR_N00217_004208 BAI.TC.016.00050 MINUTES N68711-03-D-5106 15	**12-07-2006** 04-16-2007 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. NAVFAC - SOUTHWEST	07 DECEMBER 2006 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA AND ATTACHMENTS A AND B)	ADMIN RECORD INFO REPOSITORY	BLDG 0000123 BLDG 0000157 BLDG 0000164 BLDG 0000813 BLDG 0000819 PARCEL A PARCEL B PARCEL D PARCEL E-2 SITE 00002 SITE 00003	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0022

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AR_N00217_001034 02.125.15.0096 REPORT N68711-02-D-8213 60	**12-19-2006** 11-06-2006 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR SEPTEMBER 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL {CD COPY ENCLOSED} (INCLUDES REPLACEMENT PAGES CONVERTING THE DRAFT DATED 01 NOVEMBER 2006 TO FINAL) {SEE COMMENTS}	ADMIN RECORD INFO REPOSITORY	BLDG 0000830 PARCEL D PARCEL E PARCEL E-2 SITE 00001 SITE 00021 WELL IR74MW01A	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0015
AR_N00217_001077 BRAC SER BPMOW.MRK/0205 CORRESPONDENCE NONE 4	**12-19-2006** 12-29-2006 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING DRAFT DATED 01 NOVEMBER 2006 TO FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR SEPTEMBER 2006 POST REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURES)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0022
AR_N00217_004188 BRAC SER BPMOW.MRK/O227 CORRESPONDENCE NONE 4	**01-03-2007** 01-17-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR NOVEMBER 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0021
AR_N00217_001070 NONE REPORT N68711-02-D-8213 61	**01-23-2007** 12-22-2006 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR OCTOBER 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0022

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AR_N00217_004210 BAI.TC.016.00055 MINUTES N68711-03-D-5106 18	**01-25-2007** 04-16-2007 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. NAVFAC - SOUTHWEST	25 JANUARY 2007 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA AND ATTACHMENTS A AND B)	ADMIN RECORD INFO REPOSITORY	BLDG 0000113 BLDG 0000113A BLDG 0000130 BLDG 0000133 BLDG 0000142 BLDG 0000144 BLDG 0000146 BLDG 0000157 PARCEL A PARCEL B PARCEL D PARCEL E SITE 00002	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0022
AR_N00217_004228 BRAC SER BPMOW.MRK/0299 CORRESPONDENCE NONE 4	**01-30-2007** 06-25-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING THE DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR OCTOBER 2006 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL, DATED 04 DECEMBER 2006, TO FINAL (W/OUT ENCLOSURES)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0024
AR_N00217_004191 BRAC SER BPMOW.MLW/0312 CORRESPONDENCE NONE 4	**01-31-2007** 03-21-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF QUARTERLY GROUNDWATER MONITORING REPORT, JULY-SEPTEMBER 2006 (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0021
AR_N00217_004227 BRAC SER BPMOW.MRK/0306 CORRESPONDENCE NONE 4	**01-31-2007** 06-22-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR DECEMBER 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0064

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AR_N00217_004187 02.125.15.0097 & 02.125.15.0101 REPORT N68711-02-D-8213 64	**02-19-2007** 01-17-2007 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR NOVEMBER 2006, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (INCLUDES CD COPY, RESPONSE TO COMMENTS ON THE DRAFT, AND REPLACEMENT PAGES CONVERTING DRAFT DATED 03 JANUARY 2007 TO FINAL)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0024
AR_N00217_004212 BAI.TC.016.00058 MINUTES N68711-03-D-5106 17	**02-22-2007** 04-16-2007 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. NAVFAC - SOUTHWEST	22 FEBRUARY 2007 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA AND ATTACHMENTS A AND B)	ADMIN RECORD INFO REPOSITORY	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 REMEDIAL UNIT C1 REMEDIAL UNIT C5 SITE 00009	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0022
AR_N00217_001000 NONE REPORT N62473-06-C-2001 4500	**03-01-2007** 09-28-2006 5090.3.A. NONE	KILDUFF, E. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	QUARTERLY GROUNDWATER MONITORING REPORT AND ANNUAL REPORT, JANUARY - MARCH 2006, REVISION 1 (INCLUDES REPLACEMENT PAGES CONVERTING REPORT DATED 01 AUGUST 2006 TO REVISION 1)	ADMIN RECORD INFO REPOSITORY	"PERCHLORATE " SEARCH PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0010
AR_N00217_001396 BRAC SER BPMOW.MRK/0427 CORRESPONDENCE NONE 4	**03-19-2007** 08-12-2008 5090.3.A. NONE	GILKEY, D. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING DRAFT DATED 31 JANUARY 2007 TO FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR DECEMBER 2006 POST REMOVAL ACTION INDUSTRIAL LANDFILL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0053

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AR_N00217_004229 02.125.15.0103 REPORT N68711-02-D-8213 63	**03-19-2007** 06-25-2007 5090.3.A. CTO 0013	SCHOOLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING REPORT DECEMBER 2006 POST REMOVAL ACTION INDUSTRIAL LANDFILL (INCLUDES REPLACEMENT PAGES CONVERTING DRAFT DATED 31 JANUARY 2007 TO FINAL, AND CD COPY] {***SEE COMMENTS.}	ADMIN RECORD INFO REPOSITORY	BLDG 0000830 PARCEL D PARCEL E PARCEL E-2 SITE 00001 SITE 00021 WELL IR74MW01A	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0064
AR_N00217_001125 BAI.TC.016.00062 MINUTES NONE 18	**03-22-2007** 08-20-2007 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	22 MARCH 2007 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA, LIST OF ATTENDEES, AND VARIOUS HANDOUTS)	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0003
AR_N00217_001085 BRAC SER BPMOW.MRK/0444 CORRESPONDENCE NONE 4	**03-26-2007** 06-25-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING THE DRAFT DATED 31 JANUARY 2007 TO FINAL MONTHLY LANDFILL GAS MONITORING REPORT FOR DECEMBER 2006 POST REMOVAL ACTION INDUSTRIAL LANDFILL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0022
AR_N00217_001315 BRAC SER BPMOW.MRK/0454 CORRESPONDENCE NONE 6	**03-30-2007** 05-12-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT REMEDIAL INVESTIGATION/FEASIBILITY STUDY (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0051
SF_N00217_001316 NONE REPORT N68711-05-C-6011 6910	**03-30-2007** 05-12-2008 5090.3.C. CTO 0001	BIELSKIS, D. ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	DRAFT REMEDIAL INVESTIGATION/FEASIBILITY STUDY {INCLUDES ANALYTICAL DATA} (CD COPY ENCLOSED)	INFO REPOSITORY SITE FILE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0051 BX 0052 BX 0053

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AR_N00217_004232 BRAC SER BPMOW.MLW/0425 CORRESPONDENCE NONE 4	**03-30-2007** 08-31-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING THE QUARTERLY GROUNDWATER MONITORING REPORT (JANUARY-MARCH 2006) DATED 01 AUGUST 2006 TO REVISION 1 (W/OUT ENCLOSURE) {SEE COMMENTS}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0022
AR_N00217_001056 NONE REPORT N62473-06-C-2001 4014	**04-01-2007** 11-30-2006 5090.3.A. NONE	KILDUFF, E. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	QUARTERLY GROUNDWATER MONITORING REPORT (APRIL - JUNE 2006), REVISION 1 [CD COPY ENCLOSED] (INCLUDES REPLACEMENT PAGES CONVERTING ORIGINAL DATED 01 OCTOBER 2006 TO REVISION 1) (REPLACEMENT PAGES ISSUED ON 05 MAY 2007)	ADMIN RECORD INFO REPOSITORY	"PERCHLORATE " SEARCH PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0018 BX 0019
AR_N00217_001112 BRAC SER BPMOW.MRK/0489 CORRESPONDENCE NONE 4	**04-25-2007** 01-15-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT LANDFILL GAS MONITORING REPORT FOR JANUARY - MARCH 2007, POST REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE) {PORTION OF MAILING LIST IS SENSITIVE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0003

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AR_N00217_001126 BAI.TC.016.00069 MINUTES NONE 17	**04-26-2007** 08-20-2007 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	26 APRIL 2007 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA, LIST OF ATTENDEES, AND VARIOUS HANDOUTS)	ADMIN RECORD INFO REPOSITORY	LANDFILL 001 LANDFILL 002 LANDFILL 003 LANDFILL 004 LANDFILL 005 LANDFILL 006 LANDFILL 007 LANDFILL 008 LANDFILL 009 LANDFILL 010 LANDFILL 011 LANDFILL 012 LANDFILL 013 LANDFILL 014 LANDFILL 015 LANDFILL 016 LANDFILL 017 LANDFILL 018 LANDFILL 019 LANDFILL 020 LANDFILL 021 LANDFILL 022 LANDFILL 023 LANDFILL 024 LANDFILL H1 PARCEL B PARCEL E PARCEL E-2 PARCEL E-3 SITE 00001 SITE 00002 SITE 00026	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0003

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AR_N00217_004219 BRAC SER BPMOW.MRK/0489 CORRESPONDENCE NONE 4	**04-30-2007** 05-08-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT LANDFILL GAS MONITORING REPORT FOR JANUARY - MARCH 2007, POST REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0022

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AR_N00217_004190 NONE REPORT N62473-06-C-2001 3450	**05-01-2007** 03-21-2007 5090.3.A. NONE	KILDUFF, E. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	QUARTERLY GROUNDWATER MONITORING REPORT, JULY-SEPTEMBER 2006, REVISION 1 (INCLUDES REPLACEMENT PAGES CONVERTING THE DOCUMENT, DATED 01 JANUARY 2007, TO REVISION 1, AND CD COPY) [***SEE COMMENTS]	ADMIN RECORD INFO REPOSITORY	BLDG 0000123 BLDG 0000134 BLDG 0000141 PARCEL A PARCEL B PARCEL C PARCEL E PARCEL E-2 PARCEL F SITE 00010 SITE 00026 WELL IR05MW50A WELL IR06MW49A WELL IR07MW19A WELL IR07MW20A1 WELL IR10MW12A WELL IR10MW82A WELL IR26MW46A WELL IR26MW47A WELL IR26MW48A WELL IR26MW49A WELL IR26MW50A WELL IR60MW08A	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0063

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AR_N00217_004192 NONE REPORT N62473-06-C-2001 4120	**05-01-2007** 03-21-2007 5090.3.A. NONE	KILDUFF, E. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	QUARTERLY GROUNDWATER MONITORING REPORT, JULY-SEPTEMBER 2006, REVISION 1 [INCLUDES REPLACEMENT PAGES CONVERTING REVISION 0 DATED 01 JANUARY 2007 TO REVISION 1, ANALYTICLA DATA - PAPER ONLY, AND CD COPY] {***SEE COMMENTS}	ADMIN RECORD INFO REPOSITORY	BLDG 0000058 BLDG 0000134 BLDG 0000211 BLDG 0000231 BLDG 0000251 BLDG 0000253 BLDG 0000272 BLDG 0000281 BLDG 0000600 PARCEL C PARCEL D PARCEL E PARCEL E-2 SITE 00001 SITE 00002 SITE 00003 SITE 00006 SITE 00009 SITE 00012 SITE 00025 SITE 00033 SITE 00036 SITE 00056 SITE 00072 WELL IR09PPY1 WELL IR12MW21A WELL IR28MW151A WELL IR33MW61A WELL IR39MW21A WELL PA36MW08A	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0064

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AR_N00217_001565 BRAC SER BPMOW.MLW/0536 CORRESPONDENCE NONE 4	**05-08-2007** 05-12-2009 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING THE QUARTERLY GROUNDWATER MONITORING REPORT, APRIL - JUNE 2006, TO REVISION 1 (W/OUT ENCLOSURE) [PORTION OF THE MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0023
AR_N00217_001129 BAI.TC.016.00073 MINUTES NONE 17	**05-24-2007** 08-20-2007 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	24 MAY 2007 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA, LIST OF ATTENDEES, AND VARIOUS HANDOUTS)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0003
AR_N00217_001080 02.125.27.02 REPORT N68711-02-D-8213 39	**05-31-2007** 06-11-2007 5090.3.A. CTO 0022	ACHARYA, A. INNOVATIVE TECHNICAL SOLUTIONS, INC. KITO, M. BRAC PMO WEST	ANNUAL LANDFILL CAP OPERATION AND MAINTENANCE REPORT FOR 2006-2007, INDUSTRIAL LANDFILL [CD COPY ENCLOSED]	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0022
AR_N00217_001079 BRAC SER BPMOW.MRK/0594 CORRESPONDENCE NONE 4	**06-01-2007** 06-11-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF ANNUAL LANDFILL CAP OPERATION AND MAINTENANCE REPORT FOR 2006 - 2007, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0022
AR_N00217_001099 BRAC SER BPMOW.MLW/0663 CORRESPONDENCE NONE 4	**06-03-2007** 07-12-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF QUARTERLY GROUNDWATER MONITORING REPORT (JANUARY - MARCH 2007) AND ANNUAL REPORT {PORTION OF MAILING LIST IS SENSITIVE} (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0001
AR_N00217_001104 BRAC SER BPMOW.MRK/0598 CORRESPONDENCE NONE 4	**06-06-2007** 07-18-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING THE DRAFT, DATED 25 APRIL 2007, TO FINAL LANDFILL GAS MONITORING REPORT FOR JANUARY - MARCH 2007 POST REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0002

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AR_N00217_001082 BRAC SER BPMOW.MLW/0599 CORRESPONDENCE NONE 4	**06-07-2007** 06-21-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING REVISION 0 TO REVISION 1 FOR PARCELS C, D, AND E QUARTERLY GROUNDWATER MONITORING REPORT, JULY-SEPTEMBER 2006 (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0022
AR_N00217_001088 BRAC SER BPMOW.MLW/0605 CORRESPONDENCE NONE 4	**06-07-2007** 07-10-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE QUARTERLY GROUNDWATER MONITORING REPORT (OCTOBER - DECEMBER 2006) {PORTION OF MAILING LIST IS SENSITIVE} (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0022
AR_N00217_004220 02.125.15.0106 REPORT N68711-02-D-8213 78	**06-14-2007** 05-08-2007 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT FOR JANUARY - MARCH 2007, POST REMOVAL ACTION, INDUSTRIAL LANDFILL (INCLUDES CD COPY, RESPONSE TO COMMENTS ON THE DRAFT REPORT, AND REPLACEMENT PAGES CONVERTING THE DRAFT, DATED 24 APRIL 2007 TO FINAL)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0024
AR_N00217_001130 BAI.5106.0016.0003 MINUTES NONE 17	**06-28-2007** 08-20-2007 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	28 JUNE 2007 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES AGENDA, LIST OF ATTENDEES, AND VARIOUS HANDOUTS)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0003
AR_N00217_001194 BRAC SER BPMOW.DCJ/0648 CORRESPONDENCE NONE 5	**06-29-2007** 11-05-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF 1) RESPONSES TO COMMENTS ON THE DRAFT SHORELINE CHARACTERIZATION TECHNICAL MEMORANDUM AND 2) REPLACEMENT PAGES FOR THE DRAFT SHORELINE CHARACTERIZATION TECHNICAL MEMORANDUM (W/ OUT ENCLOSURES) [PORTION OF THE MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0004

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AR_N00217_001195 BAI.5106.0005.0001 CORRESPONDENCE N68711-03-D-5106 9	**06-29-2007** 11-05-2007 5090.3.A. NONE	BARAJAS & ASSOCIATES, INC NAVFAC - SOUTHWEST	DRAFT RESPONSES TO COMMENTS ON THE DRAFT SHORELINE CHARACTERIZATION TECHNICAL MEMORANDUM	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0004
SF_N00217_004177 DS.B110.20036 & BRAC SER BPMOW.DG/1341 REPORT N68711-03-D-5104 382	**06-29-2007** 11-17-2005 5090.3.C. CTO 0110	LUNDGREN, L. SULTECH BRAC PMO WEST	DRAFT SHORELINE CHARACTERIZATION TECHNICAL MEMORANDUM (INCLUDES BRAC PMO WEST TRANSMITTAL LETTER, CD COPY, AND REPLACEMENT PAGES CONVERTING DRAFT DATED 1 NOVEMBER TO DRAFT DATED 29 JUNE 2007) [PORTION OF THE MAILING LIST IS SENSITIVE]	INFO REPOSITORY SENSITIVE SITE FILE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0024
AR_N00217_001106 BAI-5106-0016-0001 REPORT N68711-03-D-5106 19	**07-06-2007** 07-25-2007 5090.3.A. CTO 0016	VEDAGIRI, S. BARAJAS & ASSOCIATES, INC. FORMAN, K. BRAC PMO WEST	FEDERAL FACILITIES AGREEMENT (FFA) SCHEDULE	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0005

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SF_N00217_001132 SULT-5104-0019-0002 REPORT N68711-03-D-5104 12208	**07-06-2007** 08-22-2007 5090.3.C. CTO 0019	KNIGHT, J. SULTECH BRAC PMO WEST	DRAFT FINAL REVISED FEASIBILITY STUDY (FS) {PORTION OF THE DOCUMENT IS SENSITIVE	INFO REPOSITORY SITE FILE	BLDG 0000274 BLDG 0000304 BLDG 0000313 BLDG 0000313A BLDG 0000317 BLDG 0000322 BLDG 0000351 BLDG 0000351A BLDG 0000364 BLDG 0000365 BLDG 0000366 BLDG 0000383 BLDG 0000408 BLDG 0000411 BLDG 0000436 BLDG 0000813 BLDG 0000819 DRY DOCK 4 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F SITE 00008 SITE 00016 SITE 00017 SITE 00022 SITE 00032 SITE 00033 SITE 00034 SITE 00035 SITE 00036 SITE 00037	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0024 BX 0025 BX 0026

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					SITE 00038		
					SITE 00039		
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					SITE 00048		
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					SITE 00055		
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					SITE 00066		
					SITE 00067		
					SITE 00068		
					SITE 00069		
					SITE 00070		
					SITE 00071		
					SITE EE-12		
					SITE EE-14		
					SITE EE-15		
					SITE EE-16		
					SITE EE-17		
					V09		
					WELL IR09MW35A		
					WELL IR09MW63A		
					WELL IR09PO43A		
					WELL IR09PPY1		
					WELL IR33MW61A		

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AR_N00217_001135 BRAC SER BPMOW.KSF/0713 CORRESPONDENCE NONE 7	**07-27-2007** 08-24-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST BCT MEMBERS	TRANSMITTAL OF THE DRAFT REVISED REMEDIAL INVESTIGATION REPORT (W/OUT ENCLOSURE) {PORTION OF MAILING LIST IS SENSITIVE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0026

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SF_N00217_001137 BAI-5106-0005-0002 REPORT N68711-03-D-5106 23306	**07-27-2007** 08-24-2007 5090.3.C. CTO 0005	VEDAGIRI, S. BARAJAS & ASSOCIATES, INC. BRAC PMO WEST	DRAFT REVISED REMEDIAL INVESTIGATION REPORT (CD COPY ENCLOSED)	INFO REPOSITORY SITE FILE	BLDG 0000130 BLDG 0000241 BLDG 0000371 BLDG 0000400 BLDG 0000404A BLDG 0000405 BLDG 0000406 BLDG 0000408 BLDG 0000413 BLDG 0000414 BLDG 0000500 BLDG 0000503 BLDG 0000505 BLDG 0000506 BLDG 0000507 BLDG 0000508 BLDG 0000509 BLDG 0000510 BLDG 0000510A BLDG 0000511A BLDG 0000514 BLDG 0000518 BLDG 0000521 BLDG 0000524 BLDG 0000527 BLDG 0000529 BLDG 0000600 BLDG 0000606 BLDG 0000704 BLDG 0000707 BLDG 0000708 BLDG 0000709 BLDG 0000803 BLDG 0000809 BLDG 0000810	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0027 BX 0028 BX 0029 BX 0030 BX 0031

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Doc. Control No.	Prc. Date	Author							
Record Type	SSIC No.	Author Affil.						SWDIV Box No(s)	FRC Warehouse
Contract No.	CTO No.	Recipient							
Approx. # Pages		Recipient Affil.		Subject		Distribution	Sites	CD No.	FRC Box No(s)
							BLDG 0000811		
							BLDG 0000815		
							CAA 000005		
							CAA 000006		
							CAA 000007		
							CAA 000008		
							CAA 000008A		
							CAA 000009		
							CAA 000009A		
							CAA 000010		
							CAA 000011		
							CAA 000012		
							CAA 000015		
							CAA 000016		
							CAA 000019		
							PARCEL A		
							PARCEL B		
							PARCEL C		
							PARCEL D		
							PARCEL E		
							PARCEL E-2		
							PARCEL F		
							SITE 00001		
							SITE 00002		
							SITE 00003		
							SITE 00004		
							SITE 00005		
							SITE 00006		
							SITE 00007		
							SITE 00008		
							SITE 00009		
							SITE 00010		
							SITE 00011		
							SITE 00012		
							SITE 00013		

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Doc. Control No.	Prc. Date	Author						
Record Type	SSIC No.	Author Affil.					SWDIV Box No(s)	FRC Warehouse
Contract No.	CTO No.	Recipient						
Approx. # Pages		Recipient Affil.	Subject		Distribution	Sites	CD No.	FRC Box No(s)
						SITE 00014		
						SITE 00015		
						SITE 00017		
						SITE 00018		
						SITE 00036		
						SITE 00038		
						SITE 00039		
						SITE 00040		
						SITE 00045		
						SITE 00050		
						SITE 00051		
						SITE 00054		
						SITE 00056		
						SITE 00072		
						SITE 00073		
						UST 0S-505		
						UST 0S-508		
						UST 0S-711		
						UST 0S-712		
						UST 0S-713		
						UST 0S-714		
						UST 0S-715		
						UST 0S-801		
						UST 0S-802		
						WELL IR02MW101A1		
						WELL IR02MW101A2		
						WELL IR02MW114A1		
						WELL IR02MW114A2		
						WELL IR02MW114A3		
						WELL IR02MW126A		

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Doc. Control No.	Prc. Date	Author					SWDIV Box No(s)	FRC Warehouse
Record Type	SSIC No.	Author Affil.					CD No.	FRC Box No(s)
Contract No.	CTO No.	Recipient						
Approx. # Pages		Recipient Affil.	Subject		Distribution	Sites		
						WELL IR02MW127B		
						WELL IR02MW141A		
						WELL IR02MW146A		
						WELL IR02MW149A		
						WELL IR02MW173A		
						WELL IR02MW175A		
						WELL IR02MW183A		
						WELL IR02MW18A		
						WELL IR02MW196A		
						WELL IR02MW206A1		
						WELL IR02MW206A2		
						WELL IR02MW210B		
						WELL IR02MW298A		
						WELL IR02MW300A		
						WELL IR02MW372A		
						WELL IR02MW373A		
						WELL IR02MW93A		
						WELL IR02MW97A		
						WELL IR02MW98A		
						WELL IR02MWB-1		

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					WELL IR02MWB-2 WELL IR02MWB-3 WELL IR02MWB-5 WELL IR03MW218A1 WELL IR03MW218A2 WELL IR03MW224A WELL IR03MW225A WELL IR03MW226A WELL IR03MW228B WELL IR03MW342A WELL IR03MW371A WELL IR03MW372A WELL IR03MW373B WELL IR03MWO-1 WELL IR04MW37A WELL IR04MW39A WELL IR04MW40A WELL IR05MW73A WELL IR05MW76A WELL IR05MW77A		

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Doc. Control No.	Prc. Date	Author					SWDIV Box No(s)	FRC Warehouse
Record Type	SSIC No.	Author Affil.					CD No.	FRC Box No(s)
Contract No.	CTO No.	Recipient						
Approx. # Pages		Recipient Affil.	Subject		Distribution	Sites		
						WELL IR05MW85A		
						WELL IR08MW37A		
						WELL IR08MW38A		
						WELL IR08MW42A		
						WELL IR11MW25A		
						WELL IR11MW26A		
						WELL IR11MW27A		
						WELL IR12MW13A		
						WELL IR12MW14A		
						WELL IR12MW15A		
						WELL IR12MW17A		
						WELL IR12MW18A		
						WELL IR12MW19A		
						WELL IR12MW20A		
						WELL IR12MW21A		
						WELL IR14MW09A		
						WELL IR14MW10A		
						WELL IR14MW12A		
						WELL IR14MW13A		
						WELL IR15MW06A		

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IR15MW07A
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IR15MW08A
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IR15MW09F
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IR15MW10F
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IR36MW11A
WELL
IR36MW120B
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IR36MW122A
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IR36MW1239B
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IR36MW123B
WELL
IR36MW125A
WELL
IR36MW127A
WELL
IR36MW129B
WELL
IR36MW12A
WELL
IR36MW135A
WELL
IR36MW17A
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IR38MW02A
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IR39MW21A
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IR39MW23A
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IR39MW33A
WELL
IR39MW35A

UIC No. _ Rec. No. Doc. Control No. Record Type Contract No. Approx. # Pages	Record Date Prc. Date SSIC No. CTO No.	Author Author Affil. Recipient Recipient Affil.	Subject	Distribution	Sites	Location SWDIV Box No(s) CD No.	FRC Accession No. FRC Warehouse FRC Box No(s)
					WELL IR39MW36A WELL IR56MW39A WELL IR72MW32A WELL IR74MW01A WELL PA36MW03A WELL PA36MW04A WELL PA36MW06A WELL PA36MW07A WELL PA50MW05A WELL PA50MW09A WELL PA50MW10A		
AR_N00217_001108 BRAC SER BPMOW.KSF/0726 CORRESPONDENCE NONE 5	**07-31-2007** 08-06-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF DRAFT REMOVAL ACTION COMPLETION REPORT, PCB HOT SPOT SOIL EXCAVATION SITE (W/ OUT ENCLOSURE) {PORTION OF THE MAILING LIST IS SENSITIVE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0002
SF_N00217_001109 ECSD-5713-0084-0001 REPORT N68711-98-D-5713 953	**07-31-2007** 08-06-2007 5090.3.C. CTO 0084	MESSER, U. TETRA TECH EM, INC. BRAC PMO WEST	DRAFT REMOVAL ACTION COMPLETION REPORT, PCB HOT SPOT SOIL EXCAVATION (CD COPY OF COMPLETE REPORT AND APPENDICES G, F, H, AND L ARE ENCLOSED)	INFO REPOSITORY SITE FILE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0003

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AR_N00217_001089 NONE REPORT N62473-06-C-2001 4710	**08-01-2007** 07-10-2007 5090.3.A. NONE	KILDUFF, E. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	QUARTERLY GROUNDWATER MONITORING REPORT (OCTOBER - DECEMBER 2006) REVISION 1 (INCLUDES REPLACEMENT PAGES CONVERTING APRIL 2007 REPORT TO REVISION 1)	ADMIN RECORD INFO REPOSITORY	BLDG 0000134 BLDG 0000211 BLDG 0000231N BLDG 0000231S BLDG 0000251 BLDG 0000253 BLDG 0000258 BLDG 0000272 BLDG 0000281 BLDG 0000600 PARCEL C PARCEL D PARCEL E PARCEL E-2 SITE 00001 SITE 00002 SITE 00003 SITE 00009 SITE 00012 SITE 00025 SITE 00028 SITE 00032 SITE 00033 SITE 00036 SITE 00056 SITE 00071 SITE 00072 WELL IR02MW179A WELL IR02MW209A WELL IR06MW35A1 WELL IR06MW40A WELL IR06MW59A1	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0023

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					WELL IR09MW51F		
					WELL IR09MWPPY1		
					WELL IR12MW21A		
					WELL IR25MW11A		
					WELL IR25MW16A		
					WELL IR25MW54A		
					WELL IR25MW902B		
					WELL IR28MW136A		
					WELL IR28MW151A		
					WELL IR28MW169A		
					WELL IR28MW188F		
					WELL IR28MW211F		
					WELL IR28MW300F		
					WELL IR28MW406A		
					WELL IR28MW407		
					WELL IR28MW407A		
					WELL IR33MW61A		
					WELL IR36MW08A		
					WELL IR39MW21A		
					WELL IR50MW07A		

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					WELL IR58MW31A WELL IR58MW33B WELL IR71MW03A		
AR_N00217_001113 ITSI-8213-0013-1113 REPORT N68711-02-D-8213 78	**08-03-2007** 01-15-2008 5090.3.A. CTO 0013	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT, FOR APRIL - JUNE 2007, POST REMOVAL ACTION, INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0003
AR_N00217_001265 BRAC SER BPMOW.MRK/0730 CORRESPONDENCE NONE 5	**08-03-2007** 02-07-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL LANDFILL GAS MONITORING REPORT FOR APRIL-JUNE 2007, POST REMOVAL ACTION (W/OUT ENCLOSURE) [PORTION OF MAILING LIST IS SENSITIVE]	ADMIN RECORD SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0006
AR_N00217_001133 BRAC SER BPMOW.SAK/0771 CORRESPONDENCE NONE 5	**08-17-2007** 08-24-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT REMOVAL ACTION COMPLETION REPORT, METAL DEBRIS REEF AND METAL SLAG AREA EXCAVATION SITES (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0003
SF_N00217_001134 ECSD-5713-0072-0002 REPORT N68711-98-D-5713 302	**08-17-2007** 08-24-2007 5090.3.C. CTO 0072	AHLERSMEYER, R. TETRA TECH EM, INC. BRAC PMO WEST	DRAFT REMOVAL ACTION COMPLETION REPORT METAL DEBRIS REEF AND METAL SLAG AREA EXCAVATION SITES (CD COPY ENCLOSED)	INFO REPOSITORY SITE FILE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0003
AR_N00217_001436 BAI.5106.0016.0007 MINUTES N68711-03-D-5106 46	**08-23-2007** 10-28-2008 5090.3.A. CTO 0016	 BARAJAS & ASSOCIATES, INC. RAB MEMBERS	23 AUGUST 2007 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES LIST OF ATTENDEES, VARIOUS HANDOUTS, TRANSCRIPT, AND CD COPY)	ADMIN RECORD INFO REPOSITORY	PARCEL A PARCEL B PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0012

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SF_N00217_001147 ECSD-5713-0072-0003 REPORT N68711-98-D-5713 742	**09-12-2007** 09-19-2007 5090.3.C. CTO 0072	AHLERSMEYER, R. TETRA TECH EM, INC. BRAC PMO WEST	DRAFT REMOVAL ACTION COMPLETION REPORT, NORTHWEST AND CENTRAL PARCEL E (CD COPY IS ENCLOSED)	INFO REPOSITORY SITE FILE	PARCEL E SITE 00002	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0004
AR_N00217_001317 BRAC SER BPMOW.REP/0838 CORRESPONDENCE NONE 3	**09-12-2007** 05-12-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE RADIOLOGICAL ADDENDUM TO THE DRAFT REMEDIAL INVESTIGATION/FEASIBILITY STUDY (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0053
SF_N00217_001318 ECSD-2201-0003-0002 REPORT N62473-06-D-2201 164	**09-14-2007** 05-12-2008 5090.3.C. CTO 0003	STEPHAN, C. TETRA TECH EM, INC. BRAC PMO WEST	DRAFT RADIOLOGICAL ADDENDUM TO THE DRAFT REMEDIAL INVESTIGATION / FEASIBILITY STUDY (CD COPY ENCLOSED)	INFO REPOSITORY SITE FILE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0053
AR_N00217_001439 BAI.5106.0016.0009 MINUTES N68711-03-D-5106 47	**09-27-2007** 10-28-2008 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	27 SEPTEMBER 2007 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES LIST OF ATTENDEES, VARIOUS HANDOUTS, TRANSCRIPT, AND CD COPY)	ADMIN RECORD INFO REPOSITORY	PARCEL A PARCEL D PARCEL D-2 PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0012

UIC No. _ Rec. No. Doc. Control No. Record Type Contract No. Approx. # Pages	Record Date Prc. Date SSIC No. CTO No.	Author Author Affil. Recipient Recipient Affil.	Subject	Distribution	Sites	Location SWDIV Box No(s) CD No.	FRC Accession No. FRC Warehouse FRC Box No(s)
AR_N00217_001160 ECSD-2201-0003-0003 REPORT N62473-06-D-2201 219	**09-28-2007** 10-02-2007 5090.3.A. CTO 0003	STEPHAN, C. TETRA TECH EC, INC. BRAC PMO WEST	RADIOLOGICAL ADDENDUM TO THE DRAFT REVISED FEASIBILITY STUDY (FS) [CD COPY ENCLOSED]	ADMIN RECORD INFO REPOSITORY	BLDG 0000114 BLDG 0000274 BLDG 0000351 BLDG 0000351A BLDG 0000351B BLDG 0000364 BLDG 0000365 BLDG 0000366 BLDG 0000401 BLDG 0000408 BLDG 0000411 BLDG 0000813 BLDG 0000815 BLDG 0000819 PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F SITE 00313 SITE 00313A SITE 00317 SITE 00317A SITE 00322 SITE 00364 SITE 00365 SITE 00383 SITE 00408	FRC - PERRIS IMAGED HPNT_006	PT-181-2010-0237 BX 0032

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AR_N00217_001091 NONE REPORT N62473-06-C-2001 4118	**10-01-2007** 07-10-2007 5090.3.A. NONE	KILDUFF, E. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	QUARTERLY GROUNDWATER MONITORING REPORT (OCTOBER - DECEMBER 2006) AND ANNUAL REPORT, REVISION 1 (***SEE COMMENTS)	ADMIN RECORD INFO REPOSITORY	BLDG 0000123 BLDG 0000130 BLDG 0000141 PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 SITE 00010 SITE 00025 SITE 00026 WELL IR07MW22A1 WELL IR10MW12A WELL IR10MW13A1 WELL IR10MW33A WELL IR10MW59A WELL IR10MW61A WELL IR10MW62A WELL IR10MW71A WELL IR24MW06A WELL IR26MW47A WELL IR26MW48A WELL IR26MW49A WELL IR26MW50A	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0024

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AR_N00217_001191 BRAC SER BPMOW.MLW/0038 CORRESPONDENCE NONE 4	**10-18-2007** 11-01-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING THE QUARTERLY GROUNDWATER MONITORING REPORT (OCTOBER - DECEMBER 2006) TO REVISION 1 [W/OUT ENCLOSURE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0237 BX 0032
AR_N00217_001440 BAI.5106.0016.0011 MINUTES N68711-03-D-5106 46	**10-25-2007** 10-28-2008 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	25 OCTOBER 2007 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (INCLUDES LIST OF ATTENDEES, VARIOUS HANDOUTS, TRANSCRIPT, AND CD COPY)	ADMIN RECORD INFO REPOSITORY	BLDG 0000813 PARCEL 0049 PARCEL A PARCEL B PARCEL D PARCEL D-2 PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0012
AR_N00217_001192 BRAC SER BPMOW.MLW/0063 CORRESPONDENCE NONE 5	**10-31-2007** 11-02-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF FINAL REMOVAL ACTION COMPLETION REPORT (RACR), PCB HOT SPOT SOIL EXCAVATION SITE (W/OUT ENCLOSURE) [PORTION OF THE MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0004

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PF_N00217_001193 ECSD-5713-0084-0002 REPORT N68711-98-D-5713 84334	**10-31-2007** 11-02-2007 5090.3.B. CTO 0084	MESSER, U. TETRA TECH EC, INC. BRAC PMO WEST	FINAL REMOVAL ACTION COMPLETION REPORT (RACR), PCB HOT SPOT SOIL EXCAVATION SITE (INCLUDES RESPONSE TO COMMENTS ON THE DRAFT, CD COPY AND ANALYTICAL DATA)	INFO REPOSITORY POST DECISION FILE	BLDG 0000704 PARCEL E PARCEL E-2 SITE 00001 SITE 00024	FRC - PERRIS IMAGED HPNT_006	PT-181-2009-4381 BX 0001 BX 0002 BX 0003 BX 0004 BX 0005 BX 0006 BX 0007 BX 0008 BX 0009 BX 0010 BX 0011 BX 0012 BX 0013 BX 0014 BX 0015 BX 0016 BX 0017 BX 0018 BX 0019 BX 0020 BX 0021 BX 0022 BX 0023 BX 0024 BX 0025 BX 0026 BX 0027 BX 0028 BX 0029 BX 0030

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AR_N00217_001100 CEKA-3001-0000-0002.R1 REPORT N62473-07-C-3001 4990	**11-01-2007** 07-12-2007 5090.3.A. NONE	RUCKER, B. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	QUARTERLY GROUNDWATER MONITORING REPORT (JANUARY - MARCH 2007) AND ANNUAL REPORT, REVISION 1 (INCLUDES REPLACEMENT PAGES CONVERTING DOCUMENT, DATED 01 JUNE 2007, TO REVISION 1, AND CD COPY)	ADMIN RECORD INFO REPOSITORY	PARCEL C PARCEL D PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0001 BX 0002
AR_N00217_001253 BRAC SER BPMOW.SAK/0067 CORRESPONDENCE NONE 5	**11-02-2007** 01-09-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF FINAL LANDFILL GAS MONITORING REPORT FOR JULY - SEPTEMBER 2007, POST REMOVAL ACTION INDUSTRIAL LANDFILL {PORTION OF MAILING LIST IS SENSITIVE} (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0006
AR_N00217_001254 ITSI-6403-0012-0004 REPORT N68711-05-D-6403 79	**11-02-2007** 01-09-2008 5090.3.A. CTO 0012	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT FOR JULY - SEPTEMBER 2007, POST REMOVAL ACTION INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	BLDG 0000830 PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0006
AR_N00217_001231 BRAC SER BPMOW.MLW/0096 CORRESPONDENCE NONE 4	**11-15-2007** 11-29-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING QUARTERLY GROUNDWATER MONITORING REPORT (JANUARY - MARCH 2007) AND ANNUAL REPORT, DATED 1 JUNE 2007, TO REVISION 1 (PORTION OF THE MAILING LIST IS SENSITIVE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL C PARCEL D PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0005
AR_N00217_001255 BRAC SER BPMOW.SAK/0132 CORRESPONDENCE NONE 5	**11-30-2007** 01-17-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF FINAL REMOVAL ACTION COMPLETION REPORT, METAL DEBRIS REEF AND METAL SLAG AREA EXCAVATION SITES (W/OUT ENCLOSURE) {PORTION OF MAILING LIST IS SENSITIVE}	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_005	PT-181-2010-0237 BX 0041

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AR_N00217_001256 ECSD-5713-0072-0004 REPORT N68711-98-D-5713 5686	**11-30-2007** 01-17-2008 5090.3.A. CTO 0072	AHLERSMEYER, R. TETRA TECH EC, INC. BRAC PMO WEST	FINAL REMOVAL ACTION COMPLETION REPORT, METAL DEBRIS REEF AND METAL SLAG AREA EXCAVATION SITES (INCLUDES PARTIAL ANALYTICAL DATA - ALSO SEE AR # 1328 FOR ADDITIONAL DATA) (CD COPY ENCLOSED) [SEE AR # 1255 - BRAC PMO WEST TRANSMITTAL LETTER)	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_005	L181-08-0081 40095200 SAI BX 0008 BX 0009 BX 0010 BX 0011 BX 0012 BX 0013 BX 0014 BX 0015 BX 0016 BX 0017 BX 0018 BX 0019 BX 0020 BX 0021 BX 0022 BX 0023 BX 0024 BX 0025 BX 0026 BX 0027 BX 0028 BX 0029 BX 0030
AR_N00217_001247 ECSD-5713-0072-0005 REPORT N68711-98-D-5713 5570	**12-12-2007** 12-31-2007 5090.3.A. CTO 0072	AHLERSMEYER, R. TETRA TECH EC, INC. BRAC PMO WEST	FINAL REMOVAL ACTION COMPLETION REPORT, NORTHWEST AND CENTRAL {INCLUDES PARTIAL ANALYTICAL DATA - ALSO SEE AR # 1328 FOR ADDITIONAL DATA} (CD COPY ENCLOSED) (SEE AR # 1246 - BRAC PMO WEST TRANSMITTAL LETTER)	ADMIN RECORD INFO REPOSITORY	PARCEL E SITE 00002	FRC - PERRIS IMAGED HPNT_005	L181-08-0081 40095200 SAI BX 0001 BX 0002 BX 0003 BX 0004 BX 0005 BX 0006 BX 0007

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AR_N00217_001246 BRAC SER BPMOW.SP/0147 CORRESPONDENCE NONE 5	**12-31-2007** 12-31-2007 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF FINAL REMOVAL ACTION COMPLETION REPORT (W/OUT ENCLOSURE) {PORTION OF THE MAILING LIST IS SENSITIVE} [***SEE COMMENTS***]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E SITE 00002	FRC - PERRIS IMAGED HPNT_005	PT-181-2010-0237 BX 0036
AR_N00217_001264 BAI.5106.0005.0006 REPORT N68711-03-D-5106 99	**01-18-2008** 02-07-2008 5090.3.A. CTO 0005	ONO, Y. BARAJAS & ASSOCIATES, INC. BRAC PMO WEST	FINAL TECHNICAL MEMORANDUM: NONREPRESENTATIVE GROUNDWATER SAMPLES AND INFLUENCES ON RESULTS OF HUMAN HEALTH, RISK ASSESSMENTS (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0006
AR_N00217_001487 BAI.5106.0016.0015 MINUTES N68711-03-D-5106 45	**01-24-2008** 12-24-2008 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	24 JANUARY 2008 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES AND TRANSCRIPT (INCLUDES LIST OF ATTENDEES, ACTION ITEMS, AND CD COPY)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000117 BLDG 0000140 BLDG 0000813 BLDG 0000819 PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F SITE 00007 SITE 00009 SITE 00018 SITE 00026 SITE 00033 SITE 00071 WELL 00046A WELL 00047A WELL 00048A WELL 00049A	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0022

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AR_N00217_001268 BRAC SER BPMOW.SAP/0217 CORRESPONDENCE NONE 5	**01-30-2008** 02-22-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL LANDFILL GAS MONITORING REPORT FOR OCTOBER - DECEMBER 2007, POST REMOVAL ACTION {PORTION OF MAILING LIST IS SENSITIVE} (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0008
AR_N00217_001272 ITSI-6403-0012-0009 REPORT N68711-05-D-6403 79	**01-30-2008** 02-22-2008 5090.3.A. CTO 0012	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT FOR OCTOBER - DECEMBER 2007, POST REMOVAL ACTION (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0008
AR_N00217_001278 BRAC SER BPMOW.DCJ/0230 CORRESPONDENCE NONE 7	**02-04-2008** 03-17-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT FINAL REVISED REMEDIAL INVESTIGATION REPORT (PORTION OF THE MAILING LIST IS SENSITIVE) [W/OUT ENCLOSURE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_005	PT-181-2009-4128 BX 0013
AR_N00217_001289 CEKA-3001-0000-0003 REPORT N62473-07-C-3001 163	**02-05-2008** 03-28-2008 5090.3.A. NONE	FERRY, R. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	WORK PLAN FOR GROUNDWATER INVESTIGATION (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0008
AR_N00217_001287 BRAC SER BPMOW.MLW/0269 CORRESPONDENCE NONE 4	**02-14-2008** 03-28-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT WORK PLAN FOR GROUNDWATER INVESTIGATION (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0008
AR_N00217_001488 BAI.5106.0016.0017 MINUTES N68711-03-D-5106 40	**02-28-2008** 12-24-2008 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	28 FEBRUARY 2008 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES AND TRANSCRIPT (INCLUDES LIST OF ATTENDEES, ACTION ITEMS, AND CD COPY)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0022

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AR_N00217_001489 BAI.5106.0016.0018 MINUTES N68711-03-D-5106 38	**03-27-2008** 12-24-2008 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC RAB MEMBERS	27 MARCH 2008 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES AND TRANSCRIPT (INCLUDES LIST OF ATTENDEES, ACTION ITEMS, AND CD COPY)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL A PARCEL E PARCEL E-2 SITE 00002	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0022
AR_N00217_001490 BAI.5106.0016.0020 MINUTES N68711-03-D-5106 44	**04-24-2008** 12-24-2008 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	24 APRIL 2008 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES AND TRANSCRIPT (INCLUDES LIST OF ATTENDEES, ACTION ITEMS, AND CD COPY)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000819 PARCEL 0049 PARCEL B PARCEL C PARCEL D PARCEL E-2 SITE 00009 SITE 00033 SITE 00071	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0022
AR_N00217_001312 BRAC SER BPMOW.SP/0411 CORRESPONDENCE NONE 5	**04-28-2008** 05-06-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL LANDFILL GAS MONITORING REPORT FOR JANUARY-MARCH 2008, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL {PORTION OF THE MAILING LIST IS SENSITIVE} (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0008
AR_N00217_001314 ITSI-6403-0012-0010 REPORT N68711-05-D-6403 78	**04-28-2008** 05-06-2008 5090.3.A. DO 0012	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT FOR JANUARY-MARCH 2008, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0008

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AR_N00217_001328 ECSD-5713-0072-0004 & ECSD-5713-0072-0005 ANALYTICAL DATA N68711-98-D-5713 99999	**04-30-2008** 05-29-2008 5090.3.A. CTO 0072	TETRA TECH EC, INC. NAVFAC - SOUTHWEST	COMBINED ANALYTICAL DATA FOR FINAL REMOVAL ACTION COMPLETION REPORT DATED 12 DECEMBER 2007 [SEE AR #1247], AND FOR FINAL REMOVAL ACTION COMPLETION REPORT DATED 30 NOVEMBER 2007 [SEE AR # 1256] (PAGE COUNT ESTIMATED AT 300,000)	ADMIN RECORD	PARCEL E PARCEL E-2 SITE 00002	FRC - PERRIS	L181-08-0081 BX 0031 40095200 SAI BX 0032 BX 0033 BX 0034 BX 0035 BX 0036 BX 0037 BX 0038 BX 0039 BX 0040 BX 0041 BX 0042 BX 0043 BX 0044 BX 0045 BX 0046 BX 0047 BX 0048 BX 0049 BX 0050 BX 0051 BX 0052 BX 0053 BX 0054 BX 0055 BX 0056 BX 0057 BX 0058 BX 0059 BX 0060 BX 0061 BX 0062 BX 0063 BX 0064 BX 0065

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									BX 0101
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									BX 0106

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AR_N00217_001281 BAI.5106.0005.0007.R1 REPORT N68711-03-D-5106 232814	**05-02-2008** 03-17-2008 5090.3.A. CTO 0005	SARAVANAN, V. BARAJAS & ASSOCIATES, INC. BRAC PMO WEST	FINAL REVISED REMEDIAL INVESTIGATION REPORT (INCLUDES REPLACEMENT PAGES CONVERTING THE DRAFT FINAL DATED 04 FEBRUARY 2008 TO FINAL, CD COPY, AND INCLUDES ANALYTICAL DATA - PAPER ONLY)	ADMIN RECORD INFO REPOSITORY	PARCEL E	FRC - PERRIS IMAGED HPNT_005	PT-181-2009-4128

BX 0013
BX 0014
BX 0015
BX 0016
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								BX 0048 BX 0049 BX 0050 BX 0051 BX 0052 BX 0053 BX 0054 BX 0055 BX 0056 BX 0057 BX 0058 BX 0059 BX 0060 BX 0061
AR_N00217_001344 BRAC SER BPMOW.REP/0405 CORRESPONDENCE NONE 6	**05-02-2008** 06-25-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING THE DRAFT FINAL REVISED REMEDIAL INVESTIGATION REPORT, DATED 04 FEBRUARY 2008 TO THE FINAL REVISED REMEDIAL INVESTIGATION REPORT {PORTION OF THE MAILING LIST IS SENSITIVE} (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_005	PT-181-2009-4128	BX 0061
AR_N00217_001491 BAI.5106.0016.0022 MINUTES N68711-03-D-5106 45	**05-22-2008** 12-24-2008 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	22 MAY 2008 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES AND TRANSCRIPT (INCLUDES LIST OF ATTENDEES, ACTION ITEMS, AND CD COPY)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000813 BLDG 0000815 BLDG 0000819 PARCEL 0049 PARCEL B PARCEL C PARCEL D PARCEL E-2 SITE 00001 SITE 00002 SITE 00007 SITE 00009 SITE 00010 SITE 00018	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452	BX 0023

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SF_N00217_001333 JNS-7417-0004-0172 REPORT N68711-05-G-7417 269	**06-18-2008** 06-23-2008 5090.3.C. CTO 0004	MALAEB, S. JONAS AND ASSOCIATES, INC. URIZAR, L. BRAC PMO WEST	DRAFT SECOND FIVE-YEAR REVIEW OF REMEDIAL ACTIONS (CD COPY ENCLOSED) [PORTION OF MAILING LIST IS SENSITIVE]	SENSITIVE SITE FILE	BLDG 0000123 BLDG 0000134 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F SITE 00007 SITE 00018 SITE 00026 WELL IR07MW12A WELL IR07MW21 WELL IR07MW24A WELL IR07MWS-4 WELL IR10MW13A1 WELL IR10MW23A WELL IR10MW33A WELL IR10MW59A WELL IR10MW61A WELL IR10MW71A WELL IR26MW47A WELL IR26MW49A	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0006

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AR_N00217_001377 CEKA-3001-0000-0003.A1 REPORT N62473-07-C-3001 94	**06-23-2008** 07-29-2008 5090.3.A. NONE	BERRY, T. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	ADDENDUM 1 TO THE WORK PLAN FOR GROUNDWATER INVESTIGATION (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2 WELL IR01MWI-7 WELL TW056 WELL TW057B WELL TW058 WELL TW059 WELL TW060 WELL TW061	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0009
AR_N00217_001492 BAI.5106.0016.0025 MINUTES N68711-03-D-5106 44	**06-26-2008** 12-24-2008 5090.3.A. CTO 0016	BARAJAS & ASSOCIATES, INC. RAB MEMBERS	26 JUNE 2008 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES AND TRANSCRIPT (INCLUDES LIST OF ATTENDEES, ACTION ITEMS, AND CD COPY)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000140 BLDG 0000144 BLDG 0000317 BLDG 0000351 BLDG 0000351A BLDG 0000364 BLDG 0000365 BLDG 0000366 BLDG 0000401 BLDG 0000408 PARCEL B PARCEL C PARCEL D PARCEL D-2 PARCEL E PARCEL E-2 PARCEL G SITE 00007 SITE 00317	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0023
AR_N00217_001412 CEKA-3001-0000-0008 REPORT N62473-07-C-3001 2261	**07-01-2008** 09-10-2008 5090.3.A. NONE	RUCKER, B. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	SEMI-ANNUAL GROUNDWATER MONITORING REPORT (OCTOBER 2007 - MARCH 2008) [INCLUDES ANALYTICAL DATA AND CD COPY] {SEE RECORD # 1408 - BRAC PMO WEST TRANSMITTAL LETTER}	ADMIN RECORD INFO REPOSITORY	BASEWIDE PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0010 BX 0011

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AR_N00217_001376 BRAC SER BPMOW.HK\0581 CORRESPONDENCE NONE 3	**07-16-2008** 07-29-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE ADDENDUM 1 TO THE WORK PLAN FOR GROUNDWATER INVESTIGATION (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0009
AR_N00217_001378 BRAC SER BPMOW.SAP/0599 CORRESPONDENCE NONE 5	**07-31-2008** 08-04-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL LANDFILL GAS MONITORING REPORT FOR APRIL - JUNE 2008, POST REMOVAL ACTION, INDUSTRIAL LANDFILL (PORTION OF THE MAILING LIST IS SENSITIVE) [W/OUT ENCLOSURE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0007
AR_N00217_001380 ITSI-6403-0012-0025 REPORT N68711-05-D-6403 81	**07-31-2008** 08-04-2008 5090.3.A. CTO 0012	SCHOLLARD, J. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT FOR APRIL - JUNE 2008, POST REMOVAL ACTION, INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0007
AR_N00217_001405 ITSI-6403-0012-0029 REPORT N68711-05-D-6403 47	**08-29-2008** 09-03-2008 5090.3.A. CTO 0012	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL ANNUAL LANDFILL CAP OPERATION AND MAINTENANCE REPORT FOR 2007-2008, INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0010
AR_N00217_001404 BRAC SER BPMOW.SAK/0778 CORRESPONDENCE NONE 5	**08-31-2008** 09-03-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL ANNUAL LANDFILL CAP OPERATION AND MAINTENANCE REPORT FOR 2007-2008, INDUSTRIAL LANDFILL (PORTION OF THE MAILING LIST IS SENSITIVE) [W/OUT ENCLOSURE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E PARCEL E-2 SITE 00001 SITE 00021	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0010

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SF_N00217_001431 CEKA-3001-0000-0009 REPORT N62473-07-C-3001 1123	**09-01-2008** 10-14-2008 5090.3.C. NONE	BERRY, T. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	DRAFT FINAL TECHNICAL MEMORANDUM FOR GROUNDWATER INVESTIGATION (INCLUDES ANALYTICAL DATA AND CD COPY)	INFO REPOSITORY SITE FILE	PARCEL E-2	FRC - PERRIS PULLED FROM FRC FOR M. VUKANOVIC ON 6/21/2011 - INSERT REVISED SLIP SHEETS IN DOCUMENT IMAGED HPNT_009	PT-181-2011-0076 BX 0012
AR_N00217_001430 BRAC SER BPMOW.GHK/0870 CORRESPONDENCE NONE 3	**09-26-2008** 10-14-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT FINAL TECHNICAL MEMORANDUM OF GROUNDWATER INVESTIGATION (W/OUT ENCLOSURE) [SEE RECORD # 1431 - DRAFT FINAL TECHNICAL MEMORANDUM]	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0012
AR_N00217_001434 ERRG-6011-0001-0003 CORRESPONDENCE N68711-05-C-6011 163	**10-01-2008** 10-20-2008 5090.3.A. CTO 0001	ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	NAVY RESPONSES TO REGULATORY AGENCY COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION (RI) / FEASIBILITY STUDY (FS) REPORT (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0053
AR_N00217_001433 BRAC SER BPMOW.LLU/1000 CORRESPONDENCE NONE 5	**10-17-2008** 10-20-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE NAVY RESPONSES TO REGULATORY AGENCY COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION (RI) / FEASIBILITY STUDY (FS) REPORT [W/OUT ENCLOSURE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0053
AR_N00217_001480 BRAC SER BPMOW.SAK/1030 CORRESPONDENCE NONE 5	**10-27-2008** 12-12-2008 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL LANDFILL GAS MONITORING REPORT FOR JULY - SEPTEMBER 2008, POST REMOVAL ACTION , INDUSTRIAL LANDFILL (PORTION OF THE MAILING LIST IS SENSITIVE) [W/OUT ENCLOSURE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0022

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PF_N00217_001481 ITSI-6403-0012-0037 REPORT N68711-05-D-6403 83	**10-27-2008** 12-12-2008 5090.3.B. CTO 0012	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT FOR JULY - SEPTEMBER 2008, POST REMOVAL ACTION , INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	POST DECISION FILE	BLDG 0000830 PARCEL E-2 SITE 00001 SITE 00021 WELL IR74MW01A	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0053
PF_N00217_001467 JNS-7417-0004-0324 REPORT N68711-05-G-7417 325	**11-11-2008** 11-14-2008 5090.3.B. CTO 0004	MALAEB, S. JONAS AND ASSOCIATES, INC. BRAC PMO WEST	FINAL SECOND FIVE-YEAR REVIEW OF REMEDIAL ACTIONS (CD COPY ENCLOSED)	POST DECISION FILE	BLDG 0000134 BLDG 0000140 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2 PARCEL F SITE 00007 SITE 00010 SITE 00018 SITE 00026	FRC - PERRIS IMAGED HPNT_009	PT-181-2011-0076 BX 0013
PF_N00217_001624 ITSI-6403-0012-0049 REPORT N68711-05-D-6403 72	**01-01-2009** 08-03-2009 5090.3.B. CTO 0012	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT FOP OCTOBER - DECEMBER 2008 POST REMOVAL ACTION, INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	PARCEL E-2 SITE 00001 SITE 00021	NAVFAC - SOUTHWEST	
SF_N00217_001499 SHAW-6011-0001-0138 REPORT N68711-01-D-6011 86	**01-28-2009** 02-10-2009 5090.3.C. CTO 0001	SHAW ENVIRONMENTAL, INC. BRAC PMO WEST	DRAFT FINAL WETLANDS MITIGATION AND MONITORING PLAN (CD COPY ENCLOSED)	INFO REPOSITORY SITE FILE	PARCEL B PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0054

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AR_N00217_001498 BRAC SER BPMOW.LLU/0046 CORRESPONDENCE NONE 6	**01-29-2009** 02-10-2009 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT FINAL WETLANDS MITIGATION AND MONITORING PLAN (W/ENCLOSURE) [PORTION OF THE MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL B PARCEL E PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0023
AR_N00217_001623 BRAC SER BPMOW.SAK/0050 CORRESPONDENCE NONE 3	**01-30-2009** 08-03-2009 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL LANDFILL GAS MONITORING REPORT FOP OCTOBER - DECEMBER 2008 POST REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	

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AR_N00217_001509 CEKA-3001-0000-0011 REPORT N62473-07-C-3001 1508	**02-01-2009** 03-02-2009 5090.3.A. NONE	BERRY, T. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	FINAL TECHNICAL MEMORANDUM FOR GROUNDWATER INVESTIGATION (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2 WELL TW001 WELL TW002 WELL TW003 WELL TW004 WELL TW005 WELL TW006 WELL TW007 WELL TW008 WELL TW009 WELL TW010 WELL TW011 WELL TW012 WELL TW013 WELL TW014 WELL TW015 WELL TW016 WELL TW017 WELL TW018 WELL TW019 WELL TW020 WELL TW021 WELL TW022 WELL TW023 WELL TW024 WELL TW025 WELL TW026B WELL TW027B WELL TW028B WELL TW029 WELL TW030B WELL TW031 WELL TW032 WELL TW033 WELL TW034	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0054

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					WELL TW035 WELL TW036 WELL TW037 WELL TW038 WELL TW039 WELL TW040 WELL TW041 WELL TW042 WELL TW043 WELL TW044 WELL TW045 WELL TW046 WELL TW047 WELL TW048 WELL TW049 WELL TW050 WELL TW051 WELL TW052 WELL TW053 WELL TW054 WELL TW055 WELL TW056 WELL TW057B WELL TW058 WELL TW059 WELL TW060 WELL TW061			
PF_N00217_001519 CEKA-3001-0000-0012 REPORT N62473-07-C-3001 4086	**02-01-2009** 03-02-2009 5090.3.B. NONE	RUCKER, B. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	SEMI-ANNUAL GROUNDWATER MONITORING REPORT (APRIL - SEPTEMBER 2008) [INCLUDES ANALYTICAL DATA AND CD COPY]	POST DECISION FILE	"PERCHLORATE " SEARCH BASEWIDE PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237	BX 0055 BX 0056

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SF_N00217_001636 ERRG-6011-0000-0002 REPORT N68711-05-C-6011 21414	**02-01-2009** 08-31-2009 5090.3.C. NONE	BIELSKIS, D. ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	DRAFT FINAL REMEDIAL INVESTIGATION / FEASIBILITY STUDY REPORT (CD COPY ENCLOSED)	INFO REPOSITORY SENSITIVE SITE FILE	BLDG 0000400 BLDG 0000704 BLDG 0000707 BLDG 0000808 BLDG 0000809 BLDG 0000810 BLDG 0000811 BLDG 0000815 BLDG 0000816 BLDG 0000817A BLDG 0000818 BLDG 0000820 BLDG 0000821 BLDG 0000830 BLDG 0000830B BLDG 0000831 OU 0000001 PARCEL A PARCEL B PARCEL C PARCEL D PARCEL D-1 PARCEL D-2 PARCEL E PARCEL E-2 PARCEL F PARCEL G PARCEL UC-1 SITE 00001 SITE 00003 SITE 00004 SITE 00012 SITE 00021 SITE 00036 NORTH	FRC - PERRIS IMAGED HPNT_010	PT-181-2010-0597 BX 0005 BX 0006 BX 0007 BX 0008 BX 0009

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					SITE 00036 WEST SITE 00039 SITE 00056 SITE 00072 SITE 00074 SITE 00075 SITE 00076		
AR_N00217_001508 BRAC SER BPMOW.HK/0083 CORRESPONDENCE NONE 3	**02-13-2009** 03-02-2009 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL TECHNICAL MEMORANDUM FOR GROUNDWATER INVESTIGATION (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0023
AR_N00217_001635 BRAC SER BPMOW.LLU/0108 CORRESPONDENCE NONE 5	**02-27-2009** 08-31-2009 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT FINAL REMEDIAL INVESTIGATION (RI) / FEASIBILITY STUDY (FS) REPORT (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0013
AR_N00217_001643 CEKA-3001-0000-0013 REPORT N62473-07-C-3001 283	**03-01-2009** 09-08-2009 5090.3.A. NONE	ABRI, M. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	FINAL SAMPLING AND ANALYSIS PLAN (FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN) FOR BASEWIDE GROUNDWATER MONITORING PROGRAM (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BASEWIDE PARCEL E-2	NAVFAC - SOUTHWEST	
SF_N00217_001567 SHAW-6011-0001-0137 REPORT N68711-01-D-6011 321	**04-15-2009** 05-13-2009 5090.3.C. CTO 0001	SHAW ENVIRONMENTAL, INC. BRAC PMO WEST	DRAFT WORK PLAN, METHANE GAS SURVEY, PANHANDLE AREA (CD COPY ENCLOSED)	INFO REPOSITORY SENSITIVE SITE FILE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_007	PT-181-2010-0237 BX 0058

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AR_N00217_001566 BRAC SER BPMOW.DK/0217 CORRESPONDENCE NONE 5	**04-16-2009** 05-13-2009 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT WORK PLAN, METHANE GAS SURVEY, PANHANDLE AREA (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	FRC - PERRIS IMAGED HPNT_008	PT-181-2010-0452 BX 0023
AR_N00217_001568 BRAC SER BPMOW.HK/0272 CORRESPONDENCE NONE 2	**05-05-2009** 05-19-2009 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT WORK PLAN FOR THE GROUNDWATER TREATABILITY STUDY (W/OUT ENCLOSURE) [PORTION OF THE MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	
SF_N00217_001569 SHAW-8822-0003-0022 REPORT N62473-08-D-8822 592	**05-05-2009** 05-19-2009 5090.3.C. CTO 0003	SHAW ENVIRONMENTAL, INC. BRAC PMO WEST	DRAFT WORK PLAN FOR THE GROUNDWATER TREATABILITY STUDY (CD COPY ENCLOSED) {CONTAINS SENSITIVE MAPS}	INFO REPOSITORY SENSITIVE SITE FILE	BLDG 0000406 BLDG 0000810 PARCEL E PARCEL E-2 SITE 00004 SITE 00005 SITE 00012A SITE 00012B SITE 00012C SITE 00036 SITE 00039 SITE 00056	NAVFAC - SOUTHWEST	
AR_N00217_001625 BRAC SER BPMOW.SL/0319 CORRESPONDENCE NONE 3	**05-22-2009** 08-03-2009 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST STEENSON, R. CRWQCB - OAKLAND, CA	TRANSMITTAL OF THE DRAFT PETROLEUM CORRECTIVE ACTION PLAN (CAP) REVISION 2009 (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	

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SF_N00217_001626 SHAW-3260-FZN3-0037 REPORT N62470-02-D-3260 694	**05-22-2009** 08-03-2009 5090.3.C. CTO FZN3	HEY, N. SHAW ENVIRONMENTAL, INC. BRAC PMO WEST	DRAFT PETROLEUM CORRECTIVE ACTION PLAN (CAP) REVISION 2009 (CD COPY ENCLOSED)	INFO REPOSITORY SENSITIVE SITE FILE	CAA 000006 CAA 000007 CAA 000008 CAA 000008A CAA 000009 CAA 000009A CAA 000010 CAA 000012 CAA 000015 CAA 000016 CAA 000019 PARCEL E	NAVFAC - SOUTHWEST	

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SF_N00217_001653 ERRG-6011-0000-0003 REPORT N68711-05-C-6011 1040	**07-01-2009** 09-30-2009 5090.3.C. NONE	BIELSKIS, D. ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	DRAFT FEASIBILITY STUDY REPORT (INCLUDES PUBLIC SUMMARY AND CD COPY)	INFO REPOSITORY SENSITIVE SITE FILE	AOC 000004A BLDG 0000406 BLDG 0000414 BLDG 0000500 BLDG 0000503 BLDG 0000506 BLDG 0000507 BLDG 0000508 BLDG 0000509 BLDG 0000510 BLDG 0000510A BLDG 0000517 BLDG 0000520 BLDG 0000521 BLDG 0000529 BLDG 0000701 BLDG 0000704 BLDG 0000707 BLDG 0000707B BLDG 0000707C BLDG 0000708 BLDG 0000807 BLDG 0000810 PARCEL E SITE 00002N SITE 00002S SITE 00003 SITE 00004 SITE 00005 SITE 00008 SITE 00011 SITE 00012 SITE 00013 SITE 00014 SITE 00015	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0013

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					SITE 00036N		
					SITE 00036S		
					SITE 00036W		
					SITE 00038		
					SITE 00039		
					SITE 00040		
					SITE 00045		
					SITE 00047		
					SITE 00050		
					SITE 00051		
					SITE 00052		
					SITE 00054		
					SITE 00056		
					SITE 00072		
					SITE 00073		

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PF_N00217_001673 CEKA-3001-0000-0014 REPORT N62473-07-C-3001 5263	**07-01-2009** 12-01-2009 5090.3.B. NONE	RUCKER, B. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	SEMI-ANNUAL GROUNDWATER MONITORING REPORT (OCTOBER 2008 - MARCH 2009) [CD COPY ENCLOSED]	POST DECISION FILE SENSITIVE	PARCEL B PARCEL C PARCEL D-1 PARCEL D-2 PARCEL E PARCEL E-2 PARCEL G PARCEL UC-1 WELL IR01MW65A WELL IR02MW183A WELL IR02MW206A1 WELL IR02MW206A2 WELL IR02MW24A WELL IR02MW374A WELL IR02MW375A WELL IR04MW31A WELL IR07MW20A1 WELL IR07MW21A1 WELL IR07MW25A WELL IR07MW26A WELL IR07MW93A WELL IR12MW11A WELL IR25MW60A1 WELL IR26MW49A	FRC - PERRIS IMAGED HPNT_010	PT-181-2010-0597 BX 0010

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					WELL IR26MW51A WELL IR28MW394B WELL IR28MW914A WELL IR33MW02A WELL IR34MW36B WELL IR46MW49A WELL IR46MW50A WELL IR46MW51A WELL IR46MW52A WELL IR73MW04A WELL IR-7MWS-4 WELL PA36MW04A WELL UT03MW11A		
AR_N00217_001652 BRAC SER BPMOW.CNY/0433 CORRESPONDENCE NONE 5	**07-02-2009** 09-30-2009 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT FEASIBILITY STUDY REPORT (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0013
AR_N00217_001706 BRAC SER BPMOW.HK/0494 CORRESPONDENCE NONE 3	**07-27-2009** 01-26-2010 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL WORK PLAN FOR THE GROUNDWATER TREATABILITY STUDY (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY	PARCEL E	NAVFAC - SOUTHWEST	

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AR_N00217_001709 SHAW-8822-0003-0048 REPORT N62473-08-D-8822 1590	**07-27-2009** 01-26-2010 5090.3.A. CTO 0003	AKIYAMA, W. SHAW ENVIRONMENTAL, INC. BRAC PMO WEST	FINAL WORK PLAN FOR THE GROUNDWATER TREATABILITY STUDY (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	
AR_N00217_001638 BRAC SER BPMOW.SL/0511 CORRESPONDENCE NONE 3	**07-31-2009** 09-08-2009 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST STEENSON, R. CRWQCB - OAKLAND, CA	TRANSMITTAL OF THE FINAL PETROLEUM HYDROCARBONS CORRECTIVE ACTION PLAN (CAP), REVISION 2009 (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	
AR_N00217_001639 SHAW-3260-FZN3-0044 REPORT N62470-02-D-3260 705	**07-31-2009** 09-08-2009 5090.3.A. CTO FZN3	MCCULLAR, D. SHAW ENVIRONMENTAL, INC. BRAC PMO WEST	FINAL PETROLEUM HYDROCARBONS CORRECTIVE ACTION PLAN (CAP), REVISION 2009 (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	CAA 000006 CAA 000007 CAA 000008 CAA 000008A CAA 000009 CAA 000009A CAA 000010 CAA 000012 CAA 000015 CAA 000016 CAA 000019 PARCEL E	NAVFAC - SOUTHWEST	
AR_N00217_001668 BRAC SER BPMOW.SAK/0044 CORRESPONDENCE NONE 2	**10-30-2009** 11-12-2009 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL LANDFILL GAS MONITORING REPORT FOR JULY - SEPTEMBER 2009 POST REMOVAL ACTION, INDUSTRIAL LANDFILL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	

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PF_N00217_001669 ITSI-6403-0012-0084 REPORT N68711-05-D-6403 73	**10-30-2009** 11-12-2009 5090.3.B. DO 0012	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT FOR JULY - SEPTEMBER 2009 POST REMOVAL ACTION, INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	PARCEL E PARCEL E-2 SITE 00001 SITE 00021	NAVFAC - SOUTHWEST	
AR_N00217_001703 BRAC SER BPMOW.LLU/0192 CORRESPONDENCE NONE 3	**12-30-2009** 01-13-2010 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL WETLANDS MITIGATION AND MONITORING PLAN (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL B PARCEL E PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_001704 SHAW-6011-0001-0142 REPORT N68711-01-D-6011 149	**12-30-2009** 01-13-2010 5090.3.A. CTO 0001	NEWELL, N. SHAW ENVIRONMENTAL, INC. BRAC PMO WEST	FINAL WETLANDS MITIGATION AND MONITORING PLAN (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL B PARCEL E PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_001732 BRAC SER BPMOW.CNY/0242 CORRESPONDENCE NONE 3	**01-25-2010** 02-11-2010 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL EXECUTION PLAN, CRISP ROAD SANITARY SEWER AND STORM DRAIN REMOVAL (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	
AR_N00217_000415 CEKA-3001-0000-0016 REPORT N62473-07-C-3001 3536	**02-01-2010** 03-31-2010 5090.3.A. NONE	RUCKER, B. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	SEMI-ANNUAL GROUNDWATER MONITORING REPORT (APRIL - SEPTEMBER 2009) [CD COPY ENCLOSED]	ADMIN RECORD SENSITIVE	PARCEL B PARCEL C PARCEL D-1 PARCEL E PARCEL E-2 PARCEL G PARCEL UC-2	NAVFAC - SOUTHWEST	

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AR_N00217_001176 BRAC SER BPMOW.LLU/0266 CORRESPONDENCE NONE 3	**02-05-2010** 04-16-2010 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL AMENDED ACTION MEMORANDUM TIME-CRITICAL REMOVAL ACTION FOR THE POLYCHLORINATED BIPHENYL HOT SPOT AREA - REVISION 2010 (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_001178 SHAW-8822-0005-0093 REPORT N62473-08-D-8822 154	**02-05-2010** 04-16-2010 5090.3.A. CTO 0005	SHAW ENVIRONMENTAL, INC. BRAC PMO WEST	FINAL AMENDED ACTION MEMORANDUM TIME-CRITICAL REMOVAL ACTION FOR THE POLYCHLORINATED BIPHENYL HOT SPOT AREA - REVISION 2010 (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2 SITE 00001 SITE 00002 SITE 00021	NAVFAC - SOUTHWEST	
AR_N00217_001792 BRAC SER BPMOW.LLU/0322 CORRESPONDENCE NONE 4	**02-25-2010** 05-18-2010 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT WORK PLAN ADDENDUM TIME-CRITICAL REMOVAL ACTION FOR THE POLYCHLORINATED BIPHENYL HOT SPOT AREA (W/ OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_001793 SHAW-8822-0005-0057.A1/D REPORT N62473-08-D-8822 881	**02-25-2010** 05-18-2010 5090.3.A. CTO 0005	EASTER, D. SHAW ENVIRONMENTAL, INC. BRAC PMO WEST	DRAFT WORK PLAN ADDENDUM TIME-CRITICAL REMOVAL ACTION FOR THE POLYCHLORINATED BIPHENYL HOT SPOT AREA (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_001174 CHAD-3213-0039-0016 REPORT N62473-07-D-3213 51	**02-26-2010** 04-14-2010 5090.3.A. CTO 0039	MOWER, T. CHADUX TT, JOINT VENTURE BRAC PMO WEST	DRAFT FINAL MEMORANDUM: APPROACH FOR DEVELOPING SOIL GAS ACTION LEVELS FOR VAPOR INTRUSION EXPOSURE (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D-1 PARCEL D-2 PARCEL E PARCEL E-2 PARCEL F PARCEL G PARCEL UC-1 PARCEL UC-2	NAVFAC - SOUTHWEST	

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AR_N00217_000306 ERRG-6011-0000-0007 REPORT N68711-05-C-6011 850	**03-01-2010** 03-22-2010 5090.3.A. NONE	BIELSKIS, D. ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	DRAFT FINAL RADIOLOGICAL ADDENDUM TO THE REMEDIAL INVESTIGATION / FEASIBILITY STUDY REPORT (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2 SITE 00001 SITE 00002 SITE 00021	NAVFAC - SOUTHWEST	
AR_N00217_000169 BRAC SER BPMOW.LLU/0321 CORRESPONDENCE NONE 4	**03-02-2010** 03-22-2010 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT FINAL RADIOLOGICAL ADDENDUM TO THE REMEDIAL INVESTIGATION / FEASIBILITY STUDY REPORT (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_001859 ERRG-6011-0000-0003.A1 REPORT N68711-05-C-6011 4957	**04-01-2010** 06-22-2010 5090.3.A. NONE	BIELSKIS, D. ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	DRAFT RADIOLOGICAL ADDENDUM TO THE FEASIBILITY STUDY REPORT (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000509 BLDG 0000701 BLDG 0000707 PARCEL E SITE 00002 SITE 00003 WELL IR12MW14A	FRC - PERRIS IMAGED HPNT_010	PT-181-2010-0597 BX 0012
AR_N00217_001875 ITSI-8813-0006-0001 REPORT N62473-08-D-8813 711	**04-01-2010** 06-24-2010 5090.3.A. DO 0006	ACHARYA, A. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	DRAFT PROJECT WORK PLAN PETROLEUM HYDROCARBON CORRECTIVE ACTION IMPLEMENTATION REPORT (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	

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AR_N00217_001981 NONE CORRESPONDENCE NONE 11	**04-19-2010** 09-21-2010 5090.3.A. NONE	STEENSON, R. CRWQCB - OAKLAND, CA FORMAN, K. BRAC PMO WEST	REVIEW AND COMMENTS ON THE DRAFT REMEDIAL DESIGN PACKAGE (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	BLDG 0000140 PARCEL B PARCEL E-2 PARCEL UC-1 PARCEL UC-2 SITE 00007 SITE 00018 SITE 00025 WELL IR10MW12A WELL IR10MW82A WELL IR24MW07A WELL IR26MW45A	NAVFAC - SOUTHWEST	
AR_N00217_001874 BRAC SER BPMOW.SL/0473 CORRESPONDENCE NONE 3	**04-21-2010** 06-24-2010 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST SEENSON, R. CRWQCB - OAKLAND, CA	TRANSMITTAL OF THE DRAFT PROJECT WORK PLAN PETROLEUM HYDROCARBON CORRECTIVE ACTION IMPLEMENTATION REPORT	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	
AR_N00217_001858 BRAC SER BPMOW.CNY/0472 CORRESPONDENCE NONE 6	**04-23-2010** 06-22-2010 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT RADIOLOGICAL ADDENDUM TO THE FEASIBILITY STUDY REPORT (W/OUT ENCLOSURE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	FRC - PERRIS IMAGED HPNT_010	PT-181-2011-0076 BX 0014

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AR_N00217_001821 CHAD-3213-0039-0017 REPORT N62473-07-D-3213 54	**04-30-2010** 05-26-2010 5090.3.A. CTO 0039	MOWER, T. CHADUX TT, JOINT VENTURE BRAC PMO WEST	FINAL MEMORANDUM: APPROACH FOR DEVELOPING SOIL GAS ACTION LEVELS FOR VAPOR INTRUSION EXPOSURE (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D-1 PARCEL D-2 PARCEL E PARCEL E-2 PARCEL F PARCEL G PARCEL UC-1 PARCEL UC-2	NAVFAC - SOUTHWEST	
PF_N00217_001879 BRAC SER BPMOW.SAK/0502 CORRESPONDENCE NONE 3	**04-30-2010** 07-01-2010 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL LANDFILL GAS MONITORING REPORT FOR JANUARY-MARCH 2010, POST-REMOVAL ACTION (W/OUT ENCLOSURE)	POST DECISION FILE SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
PF_N00217_001881 ITSI-6403-0012-0108 REPORT N68711-05-D-6403 69	**04-30-2010** 07-01-2010 5090.3.B. CTO 0012	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC.. BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT FOR JANUARY-MARCH 2010, POST-REMOVAL ACTION	POST DECISION FILE SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	

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PF_N00217_001946 ECSD-5713-0072-0072 REPORT N68711-98-D-5713 3634	**06-01-2010** 07-26-2010 5090.3.B. CTO 0072	DOUGHERTY, B. TETRA TECH EC, INC. BRAC PMO WEST	FINAL - FINAL STATUS SURVEY RESULTS (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	BLDG 0000103 BLDG 0000104 BLDG 0000116 BLDG 0000128 BLDG 0000313 BLDG 0000313A BLDG 0000322 BLDG 0000351 BLDG 0000351B BLDG 0000366 BLDG 0000400 BLDG 0000506 BLDG 0000507 BLDG 0000508 BLDG 0000510 BLDG 0000815 PARCEL B PARCEL E SITE 00018 SURVEY UNIT 0001 SURVEY UNIT 0002 SURVEY UNIT 0003 SURVEY UNIT 0004 SURVEY UNIT 0005 SURVEY UNIT 0006 SURVEY UNIT 0007 SURVEY UNIT 0008 SURVEY UNIT 0009	NAVFAC - SOUTHWEST	

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						SURVEY UNIT 0010		
						SURVEY UNIT 0011		
						SURVEY UNIT 0012		
						SURVEY UNIT 0013		
						SURVEY UNIT 0014		
						SURVEY UNIT 0015		
						SURVEY UNIT 0016		
						SURVEY UNIT 0017		
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						SURVEY UNIT 0028		
						SURVEY UNIT 0029		

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					SURVEY UNIT 0030 SURVEY UNIT 0031 SURVEY UNIT 0032 SURVEY UNIT 0033 SURVEY UNIT A SURVEY UNIT B SURVEY UNIT C SURVEY UNIT D SURVEY UNIT E SURVEY UNIT F SURVEY UNIT G		

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PF_N00217_002020 CEKA-3001-0000-0019 REPORT N62473-07-C-3001 4172	**06-01-2010** 09-29-2010 5090.3.B. NONE	RUCKER, B. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	SEMIANNUAL GROUNDWATER MONITORING REPORT (OCTOBER 2009 - MARCH 2010) [CD COPY ENCLOSED]	POST DECISION FILE SENSITIVE	PARCEL B PARCEL C PARCEL D-1 PARCEL E PARCEL E-2 PARCEL G PARCEL UC-1 PARCEL UC-2 SITE 00007 SITE 00018 WELL IR01MW66A WELL IR03MW369A WELL IR07B96 WELL IR07B97 WELL IR07B98 WELL IR24B17 WELL IR24B18 WELL IR26MW51A WELL IR28MW475A WELL IR28MW476A WELL IR46B53 WELL IR46B54 WELL IR46B55	NAVFAC - SOUTHWEST	

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SF_N00217_002125 ECSD-5713-0084-0007 REPORT N68711-98-D-5713 1881	**06-01-2010** 12-20-2010 5090.3.C. CTO 0084	DOUGHERTY, B. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT MATERIAL POTENTIALLY PRESENTING AN EXPLOSIVE HAZARD PROCESSING AND REMOVAL COMPLETION REPORT, MATERIAL POTENTIALLY PRESENTING AN EXPLOSIVE HAZARD PROCESSING, SHIPPING, AND DEMILITARIZATION (CD COPY ENCLOSED)	SENSITIVE SITE FILE	PARCEL B PARCEL C PARCEL D-1 PARCEL D-2 PARCEL E PARCEL E-2 PARCEL F PARCEL G SITE 00001 SITE 00002	NAVFAC - SOUTHWEST	
AR_N00217_002141 ECSD-5713-0084-0008 REPORT N68711-98-D-5713 3199	**06-01-2010** 12-27-2010 5090.3.A. CTO 0084	DOUGHERTY, B. TETRA TECH EC, INC. BRAC PMO WEST	FINAL MATERIAL POTENTIALLY PRESENTING AN EXPLOSIVE HAZARD PROCESSING AND REMOVAL COMPLETION REPORT, MATERIAL POTENTIALLY PRESENTING AN EXPLOSIVE HAZARD PROCESSING, SHIPPING, AND DEMILITARIZATION (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000281 PARCEL B PARCEL C PARCEL D-1 PARCEL D-2 PARCEL E PARCEL E-2 PARCEL F PARCEL G PARCEL UC-1 PARCEL UC-2 PARCEL UC-3 SITE 00001 SITE 00002 SITE 00021	NAVFAC - SOUTHWEST	
AR_N00217_002057 SHAW-8822-0005-0057.A1/F, .R1, .R2, AND .R3 REPORT N62473-08-D-8822 2525	**06-17-2010** 10-25-2010 5090.3.A. CTO 0005	MESSER, U. SHAW ENVIRONMENTAL, INC. BRAC PMO WEST	FINAL WORK PLAN ADDENDUM TIME-CRITICAL REMOVAL ACTION FOR THE POLYCHLORINATED BIPHENYL (PCB) HOT SPOT AREA **SEE COMMENTS**	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E PARCEL E-2	NAVFAC - SOUTHWEST	

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AR_N00217_002056 BRAC SER BPMOW.LLU/0592 CORRESPONDENCE NONE 4	**06-21-2010** 10-25-2010 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL WORK PLAN ADDENDUM TIME-CRITICAL REMOVAL ACTION FOR THE POLYCHLORINATED BIPHENYL (PCB) HOT SPOT AREA	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_001961 CEKA-3001-0000-0015 REPORT N62473-07-C-3001 1514	**07-01-2010** 08-23-2010 5090.3.A. NONE	RUCKER, B. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	TECHNICAL MEMORANDUM FOR NON-BASEWIDE GROUNDWATER MONITORING PROGRAM GROUNDWATER SAMPLING (JULY 2008 - MARCH 2009) [CD COPY ENCLOSED]	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL D-1 PARCEL E PARCEL G WELL IR07MW24A WELL IR07MW26A WELL IR18MW100B WELL IR24MW05A WELL IR26MW47A WELL IR26MW49A WELL IR46MW48A WELL IR46MW49A WELL IR46MW50A WELL IR46MW51A WELL IR46MW52A	NAVFAC - SOUTHWEST	
PF_N00217_001962 BRAC SER BPMOW.LLU/0671 CORRESPONDENCE NONE 4	**07-30-2010** 09-02-2010 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL LANDFILL GAS MONITORING REPORT FOR APRIL-JUNE 2010, POST-REMOVAL ACTION	POST DECISION FILE SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	

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PF_N00217_001963 ITSI-6403-0012-0118 REPORT N68711-05-D-6403 70	**07-30-2010** 09-02-2010 5090.3.B. CTO 0012	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT FOR APRIL-JUNE 2010, POST-REMOVAL ACTION (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_001985 CHAD-3213-0019-0054 CORRESPONDENCE N62473-07-D-3213 90	**07-30-2010** 09-21-2010 5090.3.A. CTO 0019	BRADLEY, S. CHADUX TT, JOINT VENTURE BRAC PMO WEST	RESPONSES TO COMMENTS ON THE DRAFT REMEDIAL DESIGN PACKAGE (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL E PARCEL F SITE 00007 SITE 00018	NAVFAC - SOUTHWEST	
AR_N00217_001987 FWSD-RAC-06-0675.R4 REPORT N62473-07-D-3211 507	**07-30-2010** 09-21-2010 5090.3.A. CTO 0018	DOUGHERTY, B. TETRA TECH EC, INC. BRAC PMO WEST	FINAL PROJECT WORK PLAN, BASE-WIDE STORM DRAIN AND SANITARY SEWER REMOVAL, REVISION 4 (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BASEWIDE BLDG 0000364 BLDG 0000815 BLDG 0000816 BLDG 0000819 PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2	NAVFAC - SOUTHWEST	
SF_N00217_002027 RMAC-0809-0002-0003 REPORT N62473-10-D-0809 211	**08-17-2010** 09-30-2010 5090.3.C. CTO 0002	LAI, T. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT STORMWATER POLLUTION PREVENTION PLAN SANITARY SEWER AND STORM DRAIN REMOVAL (CD COPY ENCLOSED)	SENSITIVE SITE FILE	PARCEL A PARCEL B PARCEL C PARCEL D-1 PARCEL D-2 PARCEL E PARCEL E-2 PARCEL F PARCEL G PARCEL UC-1 PARCEL UC-2 PARCEL UC-3	NAVFAC - SOUTHWEST	

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AR_N00217_001964 BRAC SER BPMOW.LLU/0724 CORRESPONDENCE NONE 4	**08-31-2010** 09-13-2010 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF 1) FINAL ANNUAL LANDFILL CAP OPERATION AND MAINTENANCE REPORT FOR 2008-2009, AND 2) FINAL ANNUAL LANDFILL CAP OPERATION AND MAINTENANCE REPORT FOR 2009-2010	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2 SITE 00001 SITE 00021	NAVFAC - SOUTHWEST	
AR_N00217_001965 ITSI-6403-0012-0072 REPORT N68711-05-D-6403 30	**08-31-2010** 09-13-2010 5090.3.A. CTO 0012	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL ANNUAL LANDFILL CAP OPERATION AND MAINTENANCE REPORT FOR 2008-2009, INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000830 PARCEL E-2 SITE 00001 SITE 00021 WELL IR01MW02B WELL IR01MW03A WELL IR01MW05A WELL IR01MW10A WELL IR01MW11A WELL IR01MW12A WELL IR01MW16A WELL IR01MW18A WELL IR01MW366A WELL IR01MWI-5 WELL IR74MW01A	NAVFAC - SOUTHWEST	

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AR_N00217_001969 ITSI-6403-0012-0123 REPORT N68711-05-D-6403 30	**08-31-2010** 09-13-2010 5090.3.A. CTO 0012	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL ANNUAL LANDFILL CAP OPERATION AND MAINTENANCE REPORT FOR 2009-2010, INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000830 PARCEL E-2 SITE 00001 SITE 00021 WELL IR01MW02B WELL IR01MW03A WELL IR01MW10A WELL IR01MW11A WELL IR01MW12A WELL IR01MW16A WELL IR01MW18A WELL IR01MW366A WELL IR01MWI-5 WELL IR74MW01A WELL IR76MW13A	NAVFAC - SOUTHWEST	

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AR_N00217_002055 CEKA-3001-0000-0023 REPORT N62473-07-C-3001 404	**09-01-2010** 10-25-2010 5090.3.A. NONE	RUCKER, B. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	TECHNICAL MEMORANDUM FOR NON-BASEWIDE GROUNDWATER MONITORING PROGRAM SAMPLING (APRIL 2009 - FEBRUARY 2010) [CD COPY ENCLOSED]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL B PARCEL C PARCEL D-1 PARCEL D-2 PARCEL E PARCEL E-2 PARCEL G PARCEL UC-1 PARCEL UC-2 WELL IR05MW85A WELL IR09MW38A WELL IR10MW28A WELL IR12B069 WELL IR12MW13A WELL IR12MW14A WELL IR12MW18A WELL IR12MW19A WELL IR33MW02A WELL IR36MW04A WELL IR36MW125A WELL IR36MW127A WELL IR36MW128A WELL IR56MW39A WELL IR72MW32A	NAVFAC - SOUTHWEST	

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					WELL PA36MW03A WELL PA36MW04A		
PF_N00217_002286 ERRG-6011-0000-0013 REPORT N68711-05-C-6011 39	**10-01-2010** 02-01-2011 5090.3.B. NONE	COTA, R. ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	FINAL INDEPENDENT 3RD PARTY QUALITY ASSESSMENT QUALITY ASSURANCE PROJECT PLAN FOR MATERIALS POTENTIALLY PRESENTING AN EXPLOSIVE HAZARD ENCOUNTERED DURING THE TIME-CRITICAL REMOVAL ACTIONS AT PCB HOT SPOT AREA AND EXPERIMENTAL SHIP SHIELDING RANGE	POST DECISION FILE SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
PF_N00217_002595 ITSI-6403-0012-0131 REPORT N68711-05-D-6403 1427	**10-08-2010** 04-21-2011 5090.3.B. DO 0012	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL POST-EXCAVATION SOIL GAS MONITORING REPORT FOR 2009-2010 (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	PARCEL B PARCEL E-2 SITE 00007	NAVFAC - SOUTHWEST	
PF_N00217_002346 BRAC SER BPMOW.CNY/0007 CORRESPONDENCE NONE 3	**10-11-2010** 03-02-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT - FINAL STATUS SURVEY RESULTS	POST DECISION FILE SENSITIVE	BLDG 0000810 PARCEL E SITE 00001 SITE 00002 SITE 00004 SITE 00007 SITE 00018	NAVFAC - SOUTHWEST	

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PF_N00217_002275 EMAC-8823-0003-0021 REPORT N62473-08-D-8823 2982	**10-15-2010** 01-27-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL - FINAL STATUS SURVEY RESULTS (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	BLDG 0000406 PARCEL E SURVEY UNIT 0001 SURVEY UNIT 0002 SURVEY UNIT 0003 SURVEY UNIT 0004 SURVEY UNIT 0005 SURVEY UNIT 0006 SURVEY UNIT 0007 SURVEY UNIT 0008 SURVEY UNIT 0009 SURVEY UNIT 0010 SURVEY UNIT 0011 SURVEY UNIT 0012 SURVEY UNIT 0013 SURVEY UNIT 0014 SURVEY UNIT 0015 SURVEY UNIT 0016 SURVEY UNIT 0017 SURVEY UNIT 0018 SURVEY UNIT 0019	NAVFAC - SOUTHWEST	

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						SURVEY UNIT 0020		
						SURVEY UNIT 0021		
						SURVEY UNIT 0022		
						SURVEY UNIT 0023		
						SURVEY UNIT 0024		
						SURVEY UNIT 0025		
						SURVEY UNIT 0026		
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						SURVEY UNIT 0038		
						SURVEY UNIT 0039		

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					SURVEY UNIT 0040 SURVEY UNIT 0041 SURVEY UNIT 0042 SURVEY UNIT 0043		

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AR_N00217_002124 ITSI-6403-0012-0134 REPORT N68711-05-D-6403 75	**10-29-2010** 12-14-2010 5090.3.A. CTO 0012	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT FOR JULY-SEPTEMBER 2010 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000830 PARCEL E-2 SITE 00001 SITE 00021 WELL DP1 WELL DP2 WELL GMP01A WELL GMP07A WELL GMP08A WELL GMP10 WELL GMP11A WELL GMP13 WELL GMP14 WELL GMP15 WELL GMP16 WELL GMP17 WELL GMP18 WELL GMP19 WELL GMP20 WELL GMP21 WELL GMP22 WELL GMP23 WELL GMP24 WELL GMP27 WELL GMP28 WELL GMP29 WELL GMP30 WELL GMP31 WELL GMP32 WELL PV-01 WELL PV-02 WELL PV-03 WELL PV-04 WELL PV-05	NAVFAC - SOUTHWEST	

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AR_N00217_002123 BRAC SER BPMOW.LLU/0081 CORRESPONDENCE NONE 3	**11-05-2010** 12-14-2010 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL LANDFILL GAS MONITORING REPORT FOR JULY-SEPTEMBER 2010 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	

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AR_N00217_002539 CEKA-2627-0003-0006 CORRESPONDENCE N62473-09-D-2627 10	**11-10-2010** 04-19-2011 5090.3.A. CTO 0003	CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	MEMORANDUM: GROUNDWATER ANALYTICAL RESULTS EXCEEDING REMEDIATION GOALS OR TRIGGER LEVELS, THIRD QUARTER 2010 (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL E PARCEL E-2 PARCEL G PARCEL UC-2 SITE 00007 SITE 00018 WELL IR01MW366B WELL IR01MW38A WELL IR01MW403B WELL IR01MW48A WELL IR01MW60A WELL IR01MW62A WELL IR01MW63A WELL IR02MW373A WELL IR02MWB-2 WELL IR03MW218A1 WELL IR03MW218A2 WELL IR03MWO-1 WELL IR06MW22A WELL IR06MW32A WELL IR06MW40A WELL IR06MW54A	NAVFAC - SOUTHWEST	

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						WELL IR06MW59A1		
						WELL IR09MW51A		
						WELL IR10MW13A1		
						WELL IR10MW59A		
						WELL IR10MW61A		
						WELL IR12MW17A		
						WELL IR12MW19A		
						WELL IR20MW17A		
						WELL IR25MW16A		
						WELL IR26MW49A		
						WELL IR26MW51A		
						WELL IR28MW125A		
						WELL IR28MW151A		
						WELL IR28MW188F		
						WELL IR28MW190F		
						WELL IR28MW211F		
						WELL IR28MW355F		
						WELL IR28MW407		
						WELL IR33MW64A		
						WELL IR58MW31A		

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					WELL IR71MW03A		

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AR_N00217_002336 RMAC-0809-0002-0007 REPORT N62473-10-D-0809 219	**11-19-2010** 03-01-2011 5090.3.A. CTO 0002	LAI, T. TETRA TECH EC, INC. BRAC PMO WEST	FINAL STORMWATER POLLUTION PREVENTION PLAN (CD COPY ENCLOSED)	ADMIN RECORD SENSITIVE	PARCEL C PARCEL D-1 PARCEL E PARCEL UC-3 SITE 00002 SITE 00003 SITE 00004 SITE 00005 SITE 00006 SITE 00008 SITE 00011 SITE 00012 SITE 00013 SITE 00014 SITE 00015 SITE 00016 SITE 00017 SITE 00025 SITE 00027 SITE 00028 SITE 00029 SITE 00030 SITE 00032 SITE 00035 SITE 00036 SITE 00038 SITE 00039 SITE 00053 SITE 00054 SITE 00055 SITE 00056 SITE 00058 SITE 00063 SITE 00064 SITE 00068	NAVFAC - SOUTHWEST	

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					SITE 00069 SITE 00070 SITE 00072 SITE 00073		

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SF_N00217_002413 CEKA-2627-0003-0001 REPORT N62473-09-D-2627 362	**12-01-2010** 03-24-2011 5090.3.C. CTO 0003	ABRI, M. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	DRAFT AMENDED FINAL SAMPLING AND ANALYSIS PLAN (FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN) FOR BASEWIDE GROUNDWATER MONITORING PROGRAM (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BASEWIDE PARCEL B PARCEL C PARCEL D-1 PARCEL D-2 PARCEL E PARCEL E-2 PARCEL G PARCEL UC-1 PARCEL UC-2 WELL IR02MW126A WELL IR02MW373A WELL IR02MW375A WELL IR02MW400A WELL IR02MW401A WELL IR02MW402A WELL IR02MW404A WELL IR02MW87A WELL IR02MWB-2 WELL IR03MW218A1 WELL IR03MW218A2 WELL IR03MW224A WELL IR03MW226A WELL IR03MW228B	NAVFAC - SOUTHWEST	

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					WELL IR03MW269A WELL IR03MW371A WELL IR03MWO-1 WELL IR03MWO-2 WELL IR04MW09A WELL IR04MW31A WELL IR04MW37A WELL IR04MW39A WELL IR06MW22A WELL IR06MW32A WELL IR06MW35A WELL IR06MW40A WELL IR06MW42A WELL IR06MW59A1 WELL IR12MW044A WELL IR12MW045A WELL IR12MW046A WELL IR12MW11A WELL IR12MW13A WELL IR12MW14A		

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							WELL IR12MW17A		
							WELL IR12MW18A		
							WELL IR12MW19A		
							WELL IR12MW30A		
							WELL IR25MW16A		
							WELL IR25MW17A		
							WELL IR25MW55A		
							WELL IR25MW60A1		
							WELL IR25MW902B		
							WELL IR28MW151A		
							WELL IR28MW170A		
							WELL IR28MW188F		
							WELL IR28MW190F		
							WELL IR28MW200A		
							WELL IR28MW211F		
							WELL IR28MW268A		
							WELL IR28MW298A		
							WELL IR28MW352A		
							WELL IR28MW355F		
							WELL IR28MW407		

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						WELL IR36MW122A		
						WELL IR36MW123B		
						WELL IR36MW127A		
						WELL IR36MW128A		
						WELL IR36MW129B		
						WELL IR36MW137A		
						WELL IR36MW17A		
						WELL IR36MW232A		
						WELL IR36MW236B		
						WELL IR36MW237A		
						WELL IR36MW239A		
						WELL IR36MW39A		
						WELL IR58MW31A		
						WELL IR72MW32A		
						WELL IR74MW01A		
						WELL IR74MW10A		
						WELL IR74MW11A		
						WELL PA28MW52A		
						WELL PA36MW04A		
						WELL PA36MW07A		

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SF_N00217_002451 ITSI-8813-0004-0007.R1 REPORT N62473-08-D-8813 21288	**12-01-2010** 03-31-2011 5090.3.C. CTO 0004	LEONARD, K. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	DRAFT FINAL PETROLEUM HYDROCARBON SITE CLOSEOUT REPORT, VOLUMES I AND II OF II (CD COPY ENCLOSED)	SENSITIVE SITE FILE	AOC 000007A AOC 000007B AOC 000007C AOC 000007D AOC 000007E AOC 000007F AOC 000010A AOC 000010B AOC 000010C AOC 000018A AOC 000018B AOC 000020A AOC 000023A AOC 000023B AOC 000024A AOC 000024B AOC 000024C AOC 000024D AOC 000024E AOC 000024F AOC 000026A AOC 000026B AOC 000026C AOC 000046A AOC 000046B AOC 000046C AOC 000046D AOC 000046E1 AOC 000046E2 AOC 000060A AOC 000060B AOC 000061A AOC 000061B CAA 000021 CAA 000022	NAVFAC - SOUTHWEST	

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					PARCEL B PARCEL D-1 PARCEL E PARCEL G		
PF_N00217_002302 BRAC SER BPMOW.CNY/0139 CORRESPONDENCE NONE 3	**12-08-2010** 02-17-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT PROJECT REPORTS FOR SURVEY UNITS 152, 154, 155, AND 156, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	PARCEL E SURVEY UNIT 0152 SURVEY UNIT 0154 SURVEY UNIT 0155 SURVEY UNIT 0156	NAVFAC - SOUTHWEST	
SF_N00217_002304 EMAC-8823-0003-0028 REPORT N62473-08-D-8823 160	**12-08-2010** 02-17-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 154 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BLDG 0000406 PARCEL E SITE 00036 SURVEY UNIT 0154	NAVFAC - SOUTHWEST	
SF_N00217_002306 EMAC-8823-0003-0029 REPORT N62473-08-D-8823 207	**12-08-2010** 02-17-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 155 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BLDG 0000414 PARCEL E SITE 00036 SURVEY UNIT 0155	NAVFAC - SOUTHWEST	
SF_N00217_002307 EMAC-8823-0003-0030 REPORT N62473-08-D-8823 277	**12-08-2010** 02-17-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 156 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BLDG 0000500 BLDG 0000709 PARCEL E SITE 00013 SURVEY UNIT 0156	NAVFAC - SOUTHWEST	

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AR_N00217_002326 RMAC-0809-0007-0003 REPORT N62473-10-D-0809 517	**12-29-2010** 02-28-2011 5090.3.A. CTO 0007	BOLT, A. TETRA TECH EC, INC. BRAC PMO WEST	FINAL ACCIDENT PREVENTION PLAN/SITE SAFETY AND HEALTH PLAN, 500 SERIES AREA RADIOLOGICAL REMEDIATION AND SUPPORT (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	
SF_N00217_002345 ERRG-6011-0000-0008 REPORT N68711-05-C-6011 112	**01-01-2011** 03-01-2011 5090.3.C. NONE	BIELSKIS, D. ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	DRAFT WORK PLAN FOR GEOTECHNICAL INVESTIGATION (CD COPY ENCLOSED)	SENSITIVE SITE FILE	PARCEL B PARCEL E-2 SITE 00001 SITE 00021 SITE 00026	NAVFAC - SOUTHWEST	
AR_N00217_002344 BRAC SER BPMOW.LLU/0196 CORRESPONDENCE NONE 4	**01-06-2011** 03-01-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT WORK PLAN FOR GEOTECHNICAL INVESTIGATION	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL B PARCEL E-2 SITE 00001 SITE 00021 SITE 00026	NAVFAC - SOUTHWEST	
SF_N00217_003626 BRAC SER BPMOW.LLU/0212 CORRESPONDENCE NONE 63	**01-14-2011** 11-29-2011 5090.3.C. NONE	FORMAN, K. BRAC PMO WEST NAVAL ORDNANCE SAFETY AND SECURITY ACTIVITY (NOSSA) - INDIAN HEAD, MD	RESPONSES TO AUDIT REPORT FINDINGS OF THE TIME-CRITICAL REMOVAL ACTION FOR POLYCHLORINATED BIPHENYLS (PCB) HOT SPOT AREA AND THE EXPERIMENTAL SHIP SHIELDING RANGE AND RADIOLOGICAL SURVEY FOR THE PANHANDLE AREAS (INCLUDES AUDIT REPORT FINDINGS AND CD COPY)	SENSITIVE SITE FILE	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_002531 BRAC SER BPMOW.CNY/0220 CORRESPONDENCE NONE 3	**01-20-2011** 04-18-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL EXECUTION PLAN, 500 SERIES AREA RADIOLOGICAL REMEDIATION AND SUPPORT	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	

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AR_N00217_002535 RMAC-0809-0007-0005 REPORT N62473-10-D-0809 453	**01-20-2011** 04-18-2011 5090.3.A. CTO 0007	DOUGHERTY, B. TETRA TECH EC, INC. BRAC PMO WEST	FINAL EXECUTION PLAN, 500 SERIES AREA RADIOLOGICAL REMEDIATION AND SUPPORT (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	
AR_N00217_002422 ITSI-6403-0012-0140 REPORT N68711-05-D-6403 72	**01-31-2011** 03-24-2011 5090.3.A. CTO 0012	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT FOR OCTOBER-DECEMBER 2010 POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000830 PARCEL E-2 SITE 00001 SITE 00021 WELL IR76MW13A	NAVFAC - SOUTHWEST	
PF_N00217_002347 EMAC-8823-0003-0016 AND EMAC-8823-0003-0016.R1 REPORT N62473-08-D-8823 1936	**02-01-2011** 03-02-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL - FINAL STATUS SURVEY RESULTS (INCLUDES REPLACEMENT PAGES CONVERTING THE DRAFT - FINAL STATUS SURVEY RESULTS DATED 11 OCTOBER 2010 TO FINAL, AND CD COPY)	POST DECISION FILE SENSITIVE	BLDG 0000810 PARCEL E SITE 00001 SITE 00002 SITE 00004 SITE 00007 SITE 00018	NAVFAC - SOUTHWEST	
AR_N00217_002421 BRAC SER BPMOW.LLU/0350 CORRESPONDENCE NONE 3	**02-01-2011** 03-24-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL LANDFILL GAS MONITORING REPORT FOR OCTOBER-DECEMBER 2010 POST-REMOVAL ACTION INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	

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SF_N00217_002437 SHAW-8822-0003-0161 REPORT N62473-08-D-8822 1246	**02-01-2011** 03-28-2011 5090.3.C. CTO 0003	PIERCE, S. SHAW ENVIRONMENTAL, INC. BRAC PMO WEST	DRAFT GROUNDWATER TREATABILITY STUDY TECHNICAL REPORT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	PARCEL E WELL IR01MW366A WELL IR01MW42A WELL IR04MW13A WELL IR04MW31A WELL IR12MW014A WELL IR12MW018A WELL IR12MW043A WELL IR12MW044A WELL IR12MW045A WELL IR12MW046A WELL IR12MW13A WELL IR12MW19A WELL IR36MW125A WELL IR36MW127A WELL IR36MW230A WELL IR36MW231A WELL IR36MW232A WELL IR36MW233A WELL IR36MW234A WELL IR36MW235A	NAVFAC - SOUTHWEST	

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					WELL IR36MW236B WELL IR36MW237A WELL IR36MW238A WELL IR36MW239A WELL IR36MW240A WELL IR36MW241A WELL IR36MW242A		

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PF_N00217_002744 CEKA-2627-0003-0005 REPORT N62473-09-D-2627 4526	**02-01-2011** 05-12-2011 5090.3.B. CTO 0003	RUCKER, B. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	SEMIANNUAL GROUNDWATER MONITORING REPORT (APRIL - SEPTEMBER 2010) [CD COPY ENCLOSED]	POST DECISION FILE SENSITIVE	BASEWIDE PARCEL B PARCEL C PARCEL D-1 PARCEL D-2 PARCEL E PARCEL E-2 PARCEL G PARCEL UC-1 PARCEL UC-2 SITE 00007 SITE 00018 WELL IR01MW02B WELL IR01MW03A WELL IR01MW05A WELL IR01MW07A WELL IR01MW09B WELL IR01MW10A WELL IR01MW11A WELL IR01MW12A WELL IR01MW16A WELL IR01MW17B WELL IR01MW18A WELL IR01MW26B WELL IR01MW31A	NAVFAC - SOUTHWEST	

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Contract No.	CTO No.	Recipient						
Approx. # Pages		Recipient Affil.	Subject		Distribution	Sites	CD No.	FRC Box No(s)
						WELL IR01MW366A		
						WELL IR01MW366B		
						WELL IR01MW367A		
						WELL IR01MW38A		
						WELL IR01MW400A		
						WELL IR01MW401A		
						WELL IR01MW402A		
						WELL IR01MW403A		
						WELL IR01MW403B		
						WELL IR01MW42A		
						WELL IR01MW43A		
						WELL IR01MW44A		
						WELL IR01MW47B		
						WELL IR01MW48A		
						WELL IR01MW53B		
						WELL IR01MW58A		
						WELL IR01MW60A		
						WELL IR01MW62A		
						WELL IR01MW63A		
						WELL IR01MW64A		

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Contract No.	CTO No.	Recipient						
Approx. # Pages		Recipient Affil.	Subject	Distribution	Sites		CD No.	FRC Box No(s)
					WELL IR01MW65A			
					WELL IR01MW66A			
					WELL IR01MWI-2			
					WELL IR01MWI-3			
					WELL IR01MWI-5			
					WELL IR01MWI-6			
					WELL IR01MWI-7			
					WELL IR01MWI-8			
					WELL IR01MWI-9			
					WELL IR01MWLF1A			
					WELL IR01MWLF2A			
					WELL IR01MWLF4B			
					WELL IR01P03A			
					WELL IR01P03AA			
					WELL IR01P03AB			
					WELL IR01P04A			
					WELL IR01P18AB			
					WELL IR02MW101A1			
					WELL IR02MW101A2			
					WELL IR02MW114A1			
					WELL IR02MW114A2			
					WELL IR02MW114A3			
					WELL IR02MW126A			
					WELL IR02MW127B			

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					WELL IR02MW141A		
					WELL IR02MW146A		
					WELL IR02MW147A		
					WELL IR02MW149A		
					WELL IR02MW173A		
					WELL IR02MW175A		
					WELL IR02MW179A		
					WELL IR02MW183A		
					WELL IR02MW196A		
					WELL IR02MW206A1		
					WELL IR02MW206A2		
					WELL IR02MW209A		
					WELL IR02MW210B		
					WELL IR02MW298A		
					WELL IR02MW299A		
					WELL IR02MW300A		
					WELL IR02MW301A		
					WELL IR02MW372A		
					WELL IR02MW373A		
					WELL IR02MW374A		

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					WELL IR02MW375A WELL IR02MW87A WELL IR02MW89A WELL IR02MW93A WELL IR02MW97A WELL IR02MWB-1 WELL IR02MWB-2 WELL IR02MWB-3 WELL IR02MWB-5		
PF_N00217_002460 BRAC SER BPMOW.CNY/0352 CORRESPONDENCE NONE 3	**02-03-2011** 04-01-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT PROJECT REPORTS FOR SURVEY UNITS 157, 158, 159, AND 160, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	PARCEL E SURVEY UNIT 0157 SURVEY UNIT 0158 SURVEY UNIT 0159 SURVEY UNIT 0160	NAVFAC - SOUTHWEST	
SF_N00217_002461 EMAC-8823-0003-0031 REPORT N62473-08-D-8823 120	**02-03-2011** 04-01-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 157 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BLDG 0000709 PARCEL E SITE 00039 SURVEY UNIT 0157	NAVFAC - SOUTHWEST	

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SF_N00217_002462 EMAC-8823-0003-0032 REPORT N62473-08-D-8823 186	**02-03-2011** 04-01-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 158 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BLDG 0000371 BLDG 0000707 PARCEL E SITE 00036 SURVEY UNIT 0158	NAVFAC - SOUTHWEST	
SF_N00217_002464 EMAC-8823-0003-0033 REPORT N62473-08-D-8823 208	**02-03-2011** 04-01-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 159 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BLDG 0000704 BLDG 0000709 PARCEL E SITE 00036 SURVEY UNIT 0159	NAVFAC - SOUTHWEST	
SF_N00217_002465 EMAC-8823-0003-0034 REPORT N62473-08-D-8823 135	**02-03-2011** 04-01-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 160 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BLDG 0000704 PARCEL E SITE 00036 SURVEY UNIT 0160	NAVFAC - SOUTHWEST	
PF_N00217_002467 BRAC SER BPMOW.CY/0354 CORRESPONDENCE NONE 2	**02-08-2011** 04-01-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT PROJECT REPORTS FOR SURVEY UNITS 161, 162, 163, AND 165, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	BLDG 0000810 PARCEL E SURVEY UNIT 0161 SURVEY UNIT 0162 SURVEY UNIT 0163 SURVEY UNIT 0165	NAVFAC - SOUTHWEST	
SF_N00217_002468 EMAC-8823-0003-0035 REPORT N62473-08-D-8823 145	**02-08-2011** 04-01-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 161 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	PARCEL E SURVEY UNIT 0161	NAVFAC - SOUTHWEST	

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SF_N00217_002470 EMAC-8823-0003-0036 REPORT N62473-08-D-8823 189	**02-08-2011** 04-01-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 162 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BLDG 0000701 BLDG 0000704 PARCEL E SITE 00036 SURVEY UNIT 0162	NAVFAC - SOUTHWEST	
SF_N00217_002471 EMAC-8823-0003-0037 REPORT N62473-08-D-8823 246	**02-08-2011** 04-01-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 163 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BLDG 0000704 PARCEL E SITE 00036 SURVEY UNIT 0163	NAVFAC - SOUTHWEST	
SF_N00217_002472 EMAC-8823-0003-0038 REPORT N62473-08-D-8823 115	**02-08-2011** 04-01-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 165 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BLDG 0000810 PARCEL E SITE 00072 SURVEY UNIT 0165	NAVFAC - SOUTHWEST	
AR_N00217_002743 NONE CORRESPONDENCE NONE 6	**02-11-2011** 05-11-2011 5090.3.A. NONE	MORGAN, L. CALIFORNIA DEPARTMENT OF PUBLIC HEALTH - SACRAMENTO, CA MIYA, R. DTSC - BERKELEY, CA	REVIEW AND COMMENTS ON THE DRAFT FINAL RADIOLOGICAL ADDENDUM TO THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY REPORT (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	NAVFAC - SOUTHWEST	
PF_N00217_002458 BRAC SER BPMOW.CNY/0371 CORRESPONDENCE NONE 2	**02-15-2011** 04-01-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT - FINAL STATUS SURVEY RESULTS	POST DECISION FILE SENSITIVE	BLDG 0000414 PARCEL E	NAVFAC - SOUTHWEST	

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AR_N00217_002436 BRAC SER BPMOW.HK/0369 CORRESPONDENCE NONE 3	**02-16-2011** 03-28-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT GROUNDWATER TREATABILITY STUDY TECHNICAL REPORT	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	
PF_N00217_002569 BRAC SER BPMOW.CNY/0380 CORRESPONDENCE NONE 3	**02-18-2011** 04-20-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL DESIGN PLAN, 500 SERIES AREA RADIOLOGICAL REMEDIATION AND SUPPORT	POST DECISION FILE SENSITIVE	PARCEL E WORK AREA 36	NAVFAC - SOUTHWEST	
PF_N00217_002571 RMAC-0809-0007-0006 REPORT N62473-10-D-0809 61	**02-18-2011** 04-20-2011 5090.3.B. CTO 0007	DOUGHERTY, B. TETRA TECH EC, INC. BRAC PMO WEST	FINAL DESIGN PLAN, 500 SERIES AREA RADIOLOGICAL REMEDIATION AND SUPPORT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	PARCEL E WORK AREA 36	NAVFAC - SOUTHWEST	
SF_N00217_002562 KCH-2622-0004-0035 REPORT N62473-09-D-2622 138	**03-01-2011** 04-20-2011 5090.3.C. CTO 0004	CH2M HILL - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	DRAFT COMMUNITY INVOLVEMENT PLAN (CD COPY ENCLOSED)	SENSITIVE SITE FILE	PARCEL A PARCEL B PARCEL C PARCEL D-1 PARCEL D-2 PARCEL E PARCEL E-2 PARCEL F PARCEL G PARCEL UC-1 PARCEL UC-2	NAVFAC - SOUTHWEST	

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AR_N00217_002541 CEKA-2627-0003-0008 CORRESPONDENCE N62473-09-D-2627 9	**03-04-2011** 04-19-2011 5090.3.A. CTO 0003	CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	MEMORANDUM: GROUNDWATER ANALYTICAL RESULTS EXCEEDING REMEDIATION GOALS OR TRIGGER LEVELS, FOURTH QUARTER 2010 (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL C PARCEL D-1 PARCEL E PARCEL E-2 PARCEL G PARCEL UC-1 PARCEL UC-2 WELL IR01MW38A WELL IR01MW60A WELL IR02MW373A WELL IR02MWB-2 WELL IR03MW218A1 WELL IR03MW218A2 WELL IR03MW371A WELL IR03MWO-1 WELL IR04MW39A WELL IR06MW22A WELL IR06MW40A WELL IR06MW59A1 WELL IR12MW19A WELL IR25MW16A WELL IR28MW125A WELL IR28MW211F	NAVFAC - SOUTHWEST	

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					WELL IR28MW355F WELL IR28MW407 WELL IR36MW237A WELL IR36MW239A WELL IR58MW31A WELL IRMW17A		
AR_N00217_004259 BRAC SER BPMOW.LLU/0401 CORRESPONDENCE NONE 4	**03-04-2011** 03-08-2012 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL RADIOLOGICAL ADDENDUM TO THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY REPORT (ENCLOSURE IS RECORD # 4260)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
PF_N00217_002792 BRAC SER BPMOW.CNY/0466 CORRESPONDENCE NONE 2	**03-29-2011** 06-01-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT PROJECT REPORTS FOR SURVEY UNITS 180, 181, 185, AND 188, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3 SURVEY UNIT 0180 SURVEY UNIT 0181 SURVEY UNIT 0185 SURVEY UNIT 0188	NAVFAC - SOUTHWEST	
PF_N00217_002801 BRAC SER BPMOW.CNY/0470 CORRESPONDENCE NONE 2	**03-31-2011** 06-02-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT PROJECT REPORTS FOR SURVEY UNITS 173, 174, 175, AND 176, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3 SURVEY UNIT 0173 SURVEY UNIT 0174 SURVEY UNIT 0175 SURVEY UNIT 0176	NAVFAC - SOUTHWEST	

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SF_N00217_002803 EMAC-8823-0003-0048 REPORT N62473-08-D-8823 420	**03-31-2011** 06-02-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 173 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	AREA 00016 BLDG 0000831 PARCEL E PARCEL UC-3 SURVEY UNIT 0173	NAVFAC - SOUTHWEST	
SF_N00217_002805 EMAC-8823-0003-0049 REPORT N62473-08-D-8823 385	**03-31-2011** 06-02-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 174 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	AREA 00016 BLDG 0000815 PARCEL E PARCEL UC-3 SITE 00074 SURVEY UNIT 0174	NAVFAC - SOUTHWEST	
SF_N00217_002807 EMAC-8823-0003-0050 REPORT N62473-08-D-8823 315	**03-31-2011** 06-02-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 175 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	AREA 00016 BLDG 0000830 BLDG 0000831 PARCEL E PARCEL UC-3 SURVEY UNIT 0175	NAVFAC - SOUTHWEST	
SF_N00217_002808 EMAC-8823-0003-0051 REPORT N62473-08-D-8823 480	**03-31-2011** 06-02-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 176 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	AREA 00016 BLDG 0000815 PARCEL E PARCEL UC-3 SURVEY UNIT 0176	NAVFAC - SOUTHWEST	

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PF_N00217_002705 BRAC SER BPMOW.CNY/0481 CORRESPONDENCE NONE 2	**04-06-2011** 05-05-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT PROJECT REPORTS FOR SURVEY UNITS 177, 178, 179, 182, AND 183, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3 SURVEY UNIT 0177 SURVEY UNIT 0178 SURVEY UNIT 0179 SURVEY UNIT 0182 SURVEY UNIT 0183	NAVFAC - SOUTHWEST	
SF_N00217_002706 EMAC-8823-0003-0053 REPORT N62473-08-D-8823 371	**04-06-2011** 05-05-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 177 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	PARCEL E PARCEL UC-3 SURVEY UNIT 0177	NAVFAC - SOUTHWEST	
SF_N00217_002707 EMAC-8823-0003-0054 REPORT N62473-08-D-8823 421	**04-06-2011** 05-05-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 178 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BLDG 0000820 PARCEL E PARCEL UC-3 SURVEY UNIT 0178	NAVFAC - SOUTHWEST	
SF_N00217_002708 EMAC-8823-0003-0055 REPORT N62473-08-D-8823 286	**04-06-2011** 05-05-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 179 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	PARCEL E PARCEL UC-3 SURVEY UNIT 0179	NAVFAC - SOUTHWEST	
SF_N00217_002709 EMAC-8823-0003-0056 REPORT N62473-08-D-8823 212	**04-06-2011** 05-05-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 182 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BLDG 0000830 BLDG 0000831 PARCEL E PARCEL UC-3 SURVEY UNIT 0182	NAVFAC - SOUTHWEST	

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SF_N00217_002710 EMAC-8823-0003-0057 REPORT N62473-08-D-8823 352	**04-06-2011** 05-05-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 183 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BLDG 0000815 PARCEL E PARCEL UC-3 SITE 00074 SURVEY UNIT 0183	NAVFAC - SOUTHWEST	
PF_N00217_002819 BRAC SER BPMOW.CNY/0503 CORRESPONDENCE NONE 2	**04-20-2011** 06-02-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT PROJECT REPORTS FOR SURVEY UNITS 184, 187, 189, AND 190, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3 SURVEY UNIT 0184 SURVEY UNIT 0187 SURVEY UNIT 0189 SURVEY UNIT 0190	NAVFAC - SOUTHWEST	
SF_N00217_002822 EMAC-8823-0003-0058 REPORT N62473-08-D-8823 504	**04-20-2011** 06-02-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 184 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	AREA 00016 AREA 00020 BLDG 0000815 PARCEL E PARCEL UC-3 SITE 00056 SITE 00074 SURVEY UNIT 0184	NAVFAC - SOUTHWEST	
SF_N00217_002823 EMAC-8823-0003-0059 REPORT N62473-08-D-8823 343	**04-20-2011** 06-02-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 187 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	AREA 00016 BLDG 0000815 BLDG 0000821 PARCEL E PARCEL UC-3 SURVEY UNIT 0187	NAVFAC - SOUTHWEST	

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SF_N00217_002828 EMAC-8823-0003-0060 REPORT N62473-08-D-8823 210	**04-20-2011** 06-02-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 189 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	AREA 00016 BLDG 0000815 PARCEL E PARCEL UC-3 SURVEY UNIT 0189	NAVFAC - SOUTHWEST	
SF_N00217_002829 EMAC-8823-0003-0061 REPORT N62473-08-D-8823 252	**04-20-2011** 06-02-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT SURVEY UNIT 190 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	SENSITIVE SITE FILE	AREA 00016 BLDG 0000808 PARCEL E PARCEL UC-3 SURVEY UNIT 0190	NAVFAC - SOUTHWEST	
AR_N00217_002973 CEKA-2627-0003-0007.A1/F REPORT N62473-09-D-2627 366	**04-20-2011** 06-22-2011 5090.3.A. CTO 0003	ABRI, M. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	FINAL AMENDED SAMPLING AND ANALYSIS PLAN (FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN) FOR BASEWIDE GROUNDWATER MONITORING PROGRAM (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BASEWIDE PARCEL B PARCEL C PARCEL D-1 PARCEL E PARCEL E-2 PARCEL G PARCEL UC-2	NAVFAC - SOUTHWEST	
PF_N00217_002751 BRAC SER BPMOW.CNY/0506 CORRESPONDENCE NONE 2	**04-22-2011** 05-18-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL PROJECT REPORTS FOR SURVEY UNITS 152, 154, 155, AND 156, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	PARCEL E SURVEY UNIT 0152 SURVEY UNIT 0154 SURVEY UNIT 0155 SURVEY UNIT 0156	NAVFAC - SOUTHWEST	
PF_N00217_002752 EMAC-8823-0003-0062 REPORT N62473-08-D-8823 340	**04-22-2011** 05-18-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 152 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00022 BLDG 0000707 PARCEL E SITE 00039 SURVEY UNIT 0152	NAVFAC - SOUTHWEST	

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PF_N00217_002753 EMAC-8823-0003-0063 REPORT N62473-08-D-8823 163	**04-22-2011** 05-18-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 154 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00023 BLDG 0000406 PARCEL E SITE 00036 SURVEY UNIT 0154	NAVFAC - SOUTHWEST	
PF_N00217_002754 EMAC-8823-0003-0064 REPORT N62473-08-D-8823 210	**04-22-2011** 05-18-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 155 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00023 BLDG 0000414 PARCEL E SITE 00036 SURVEY UNIT 0155	NAVFAC - SOUTHWEST	
PF_N00217_002755 EMAC-8823-0003-0065 REPORT N62473-08-D-8823 280	**04-22-2011** 05-18-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 156 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00022 BLDG 0000500 BLDG 0000709 PARCEL E SITE 00013 SURVEY UNIT 0156	NAVFAC - SOUTHWEST	
PF_N00217_002777 EMAC-8823-0003-0066 REPORT N62473-08-D-8823 169	**04-26-2011** 05-27-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 157 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00022 BLDG 0000709 PARCEL E SITE 00013 SITE 00039 SURVEY UNIT 0157	NAVFAC - SOUTHWEST	
PF_N00217_002778 EMAC-8823-0003-0067 REPORT N62473-08-D-8823 392	**04-26-2011** 05-27-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 158 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00022 BLDG 0000371 BLDG 0000707 PARCEL E SITE 00036 SITE 00039 SURVEY UNIT 0158	NAVFAC - SOUTHWEST	

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PF_N00217_002780 EMAC-8823-0003-0068 REPORT N62473-08-D-8823 245	**04-26-2011** 05-27-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 159 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00022 BLDG 0000704 BLDG 0000709 PARCEL E SITE 00036 SURVEY UNIT 0159	NAVFAC - SOUTHWEST	
PF_N00217_002781 EMAC-8823-0003-0069 REPORT N62473-08-D-8823 172	**04-26-2011** 05-27-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 160 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00022 BLDG 0000704 PARCEL E SITE 00036 SURVEY UNIT 0160	NAVFAC - SOUTHWEST	
PF_N00217_002775 BRAC SER BPMOW.CNY/0516 CORRESPONDENCE NONE 2	**04-27-2011** 05-27-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL PROJECT REPORTS FOR SURVEY UNITS 157, 158, 159, AND 160, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	PARCEL E SURVEY UNIT 0157 SURVEY UNIT 0158 SURVEY UNIT 0159 SURVEY UNIT 0160	NAVFAC - SOUTHWEST	
PF_N00217_002760 BRAC SER BPMOW.CNY/0517 CORRESPONDENCE NONE 2	**04-28-2011** 05-24-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL PROJECT REPORTS FOR SURVEY UNITS 161, 162, 163, AND 165, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	PARCEL E SURVEY UNIT 0161 SURVEY UNIT 0162 SURVEY UNIT 0163 SURVEY UNIT 0165	NAVFAC - SOUTHWEST	
PF_N00217_002762 EMAC-8823-0003-0070 REPORT N62473-08-D-8823 222	**04-28-2011** 05-24-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 161 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00022 PARCEL E SURVEY UNIT 0161	NAVFAC - SOUTHWEST	

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PF_N00217_002763 EMAC-8823-0003-0071 REPORT N62473-08-D-8823 335	**04-28-2011** 05-24-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 162 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED	POST DECISION FILE SENSITIVE	AREA 00022 BLDG 0000701 BLDG 0000704 PARCEL E SITE 00036 SURVEY UNIT 0162	NAVFAC - SOUTHWEST	
PF_N00217_002764 EMAC-8823-0003-0072 REPORT N62473-08-D-8823 361	**04-28-2011** 05-24-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 163 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00022 BLDG 0000704 PARCEL E SITE 00036 SURVEY UNIT 0163	NAVFAC - SOUTHWEST	
PF_N00217_002765 EMAC-8823-0003-0073 REPORT N62473-08-D-8823 164	**04-28-2011** 05-24-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 165 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00020 BLDG 0000810 PARCEL E SITE 00072 SURVEY UNIT 0165	NAVFAC - SOUTHWEST	
AR_N00217_002910 KCH-2622-0004-0043 REPORT N62473-09-D-2622 184	**05-01-2011** 06-14-2011 5090.3.A. CTO 0004	CH2M HILL - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	FINAL COMMUNITY INVOLVEMENT PLAN (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL A PARCEL B PARCEL C PARCEL D-1 PARCEL D-2 PARCEL E PARCEL E-2 PARCEL G PARCEL UC-1 PARCEL UC-2	NAVFAC - SOUTHWEST	

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SF_N00217_003299 ITSI-0808-0002-0005 REPORT N62473-10-D-0808 419	**05-01-2011** 07-06-2011 5090.3.C. CTO 0002	BAUGH, K. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	DRAFT WORK PLAN SITE CHARACTERIZATION AND BENCH-SCALE TREATABILITY STUDY (CD COPY ENCLOSED)	SENSITIVE SITE FILE	PARCEL E SITE 00003 WELL IR02MW146A WELL IR02MW210B WELL IR02MWO-1 WELL IR02MWO-2 WELL IR02MWO-3 WELL IR03MW173A WELL IR03MW218A3 WELL IR03MW224A WELL IR03MW225A WELL IR03MW226A WELL IR03MW342A WELL IR03MW369A WELL IR03MW370A WELL IR03MW371A	NAVFAC - SOUTHWEST	
AR_N00217_004237 ERRG-6011-0000-0004 REPORT N68711-05-C-6011 21853	**05-01-2011** 01-18-2012 5090.3.A. NONE	BIELSKIS, D. ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	FINAL REMEDIAL INVESTIGATION /FEASIBILITY STUDY REPORT, VOLUMES I THROUGH III OF III (INCLUDES PUBLIC SUMMARY ON THE DRAFT FINAL FEASIBILITY STUDY REPORT, AND CD COPY)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	

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AR_N00217_002774 CEKA-2627-0003-0010 CORRESPONDENCE N62473-09-D-2627 6	**05-03-2011** 05-26-2011 5090.3.A. CTO 0003	CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	MEMORANDUM: GROUNDWATER ANALYTICAL RESULTS EXCEEDING REMEDIATION GOALS OR TRIGGER LEVELS, FIRST QUARTER 2011 (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D-1 PARCEL E PARCEL E-2 PARCEL G PARCEL UC-1 PARCEL UC-2 SITE 00007 SITE 00018 WELL IR01MW38A WELL IR01MW403B WELL IR01MW48A WELL IR01MW60A WELL IR01MW63A WELL IR01MW64A WELL IR02MW373A WELL IR02MWB-2 WELL IR03MW218A1 WELL IR03MW218A2 WELL IR03MW371A WELL IR03MWO-1 WELL IR04MW39A WELL IR06MW22A	NAVFAC - SOUTHWEST	

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Contract No.	CTO No.	Recipient						
Approx. # Pages		Recipient Affil.	Subject		Distribution	Sites	CD No.	FRC Box No(s)
						WELL IR06MW32A		
						WELL IR06MW40A		
						WELL IR06MW54F		
						WELL IR06MW59A1		
						WELL IR09MW07A		
						WELL IR10MW13A1		
						WELL IR10MW59A		
						WELL IR10MW61A		
						WELL IR10MW71A		
						WELL IR12MW19A		
						WELL IR20MW17A		
						WELL IR25MW16A		
						WELL IR26MW49A		
						WELL IR28MW125A		
						WELL IR28MW151A		
						WELL IR28MW190F		
						WELL IR28MW200A		
						WELL IR28MW211F		
						WELL IR28MW355F		
						WELL IR28MW407		

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					WELL IR36MW236A WELL IR36MW239A WELL IR71MW03A WELL PA28MW52A		
AR_N00217_004110 BRAC SER BPMOW.LLU/0521 CORRESPONDENCE NONE 4	**05-05-2011** 01-18-2012 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL REMEDIAL INVESTIGATION/FEASIBILITY STUDY REPORT (ENCLOSURE IS RECORD # 4237)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_004260 ERRG-6011-0000-0004.A1 AND .A1/R1 REPORT N68711-05-C-6011 2163	**05-05-2011** 03-08-2012 5090.3.A. NONE	BIELSKIS, D. ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	FINAL RADIOLOGICAL ADDENDUM TO THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY REPORT (INCLUDES REPLACEMENT PAGES TO THE RADIOLOGICAL ADDENDUM DATED 04 MARCH 2011, AND CD COPY)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2 SITE 00001 SITE 00002 SITE 00021	NAVFAC - SOUTHWEST	
AR_N00217_004261 BRAC SER BPMOW.LLU/0531 CORRESPONDENCE NONE 4	**05-05-2011** 03-08-2012 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE REPLACEMENT PAGES FOR THE FINAL RADIOLOGICAL ADDENDUM TO THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY REPORT DATED 04 MARCH 2011 (ENCLOSURE IS RECORD # 4260)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_002789 BRAC SER BPMOW.CMD/0548 CORRESPONDENCE NONE 3	**05-12-2011** 05-31-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL LANDFILL GAS MONITORING REPORT FOR JANUARY-MARCH 2011, POST-REMOVAL ACTION INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	

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AR_N00217_002790 ITSI-6403-0012-0151 REPORT N68711-05-D-6403 102	**05-12-2011** 05-31-2011 5090.3.A. CTO 0012	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT FOR JANUARY-MARCH 2011, POST-REMOVAL ACTION INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	BLDG 0000830 PARCEL E-2 SITE 00001 SITE 00021	NAVFAC - SOUTHWEST	
AR_N00217_002905 BRAC SER BPMOW.HGK/0557 CORRESPONDENCE NONE 3	**05-16-2011** 06-09-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL GROUNDWATER TREATABILITY STUDY TECHNICAL REPORT	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	

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AR_N00217_002907 SHAW-8822-0003-0272 REPORT N62473-08-D-8822 8260	**05-16-2011** 06-09-2011 5090.3.A. CTO 0003	PIERCE, S. SHAW ENVIRONMENTAL, INC. BRAC PMO WEST	FINAL GROUNDWATER TREATABILITY STUDY TECHNICAL REPORT (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E SITE 00004 SITE 00005 SITE 00012A SITE 00012B SITE 00012C SITE 00036 SITE 00039 SITE 00056 WELL IR12MW043A WELL IR12MW044A WELL IR12MW045A WELL IR12MW046A WELL IR36MW230A WELL IR36MW231A WELL IR36MW232A WELL IR36MW233A WELL IR36MW234A WELL IR36MW235A WELL IR36MW236B WELL IR36MW237A WELL IR36MW238A WELL IR36MW239A WELL IR36MW240A	NAVFAC - SOUTHWEST	

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					WELL IR36MW241A WELL IR36MW242A		
AR_N00217_003298 BRAC SER BPMOW.JED/0554 CORRESPONDENCE NONE 3	**05-16-2011** 07-06-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT WORK PLAN SITE CHARACTERIZATION AND BENCH-SCALE TREATABILITY STUDY	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E SITE 00003	NAVFAC - SOUTHWEST	
PF_N00217_002837 BRAC SER BPMOW.CY/0608 CORRESPONDENCE NONE 2	**05-19-2011** 06-02-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL PROJECT REPORTS FOR SURVEY UNITS 166, 169, 170, AND 172, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3 SURVEY UNIT 0166 SURVEY UNIT 0169 SURVEY UNIT 0170 SURVEY UNIT 0172	NAVFAC - SOUTHWEST	
PF_N00217_002841 EMAC-8823-0003-0077 REPORT N62473-08-D-8823 177	**05-19-2011** 06-02-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 166 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00016 PARCEL E PARCEL UC-3 SITE 00056 SURVEY UNIT 0166	NAVFAC - SOUTHWEST	
PF_N00217_002842 EMAC-8823-0003-0078 REPORT N62473-08-D-8823 355	**05-19-2011** 06-02-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 169 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00016 PARCEL E PARCEL UC-3 SURVEY UNIT 0169	NAVFAC - SOUTHWEST	

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PF_N00217_002856 EMAC-8823-0003-0079 REPORT N62473-08-D-8823 178	**05-19-2011** 06-02-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 170 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00016 BLDG 0000830 BLDG 0000831 PARCEL E PARCEL UC-3 SURVEY UNIT 0170	NAVFAC - SOUTHWEST	
PF_N00217_002857 EMAC-8823-0003-0080 REPORT N62473-08-D-8823 165	**05-19-2011** 06-02-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 172 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00016 BLDG 0000820 BLDG 0000831 PARCEL E PARCEL UC-3 SURVEY UNIT 0172	NAVFAC - SOUTHWEST	
AR_N00217_002770 BRAC SER BPMOW.LLU/0611 CORRESPONDENCE NONE 2	**05-24-2011** 05-26-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT PROPOSED PLAN	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	NAVFAC - SOUTHWEST	
PF_N00217_002860 BRAC SER BPMOW.CY/0608 CORRESPONDENCE NONE 3	**05-24-2011** 06-06-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL PROJECT REPORTS FOR SURVEY UNITS 180, 181, 185, AND 188, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3 SURVEY UNIT 0180 SURVEY UNIT 0181 SURVEY UNIT 0185 SURVEY UNIT 0188	NAVFAC - SOUTHWEST	

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PF_N00217_002865 EMAC-8823-0003-0081 REPORT N62473-08-D-8823 257	**05-24-2011** 06-06-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 180 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00016 BLDG 0000820 BLDG 0000831 PARCEL E PARCEL UC-3 SURVEY UNIT 0180	NAVFAC - SOUTHWEST	
PF_N00217_002870 EMAC-8823-0003-0082 REPORT N62473-08-D-8823 237	**05-24-2011** 06-06-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 181 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00016 BLDG 0000831 PARCEL E PARCEL UC-3 SURVEY UNIT 0181	NAVFAC - SOUTHWEST	
PF_N00217_002871 EMAC-8823-0003-0083 REPORT N62473-08-D-8823 437	**05-24-2011** 06-06-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 185 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00016 PARCEL E PARCEL UC-3 SITE 00004 SURVEY UNIT 0185	NAVFAC - SOUTHWEST	
PF_N00217_002885 EMAC-8823-0003-0084 REPORT N62473-08-D-8823 402	**05-24-2011** 06-06-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 188 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00016 PARCEL E PARCEL UC-3 SURVEY UNIT 0188	NAVFAC - SOUTHWEST	
PF_N00217_002783 BRAC SER BPMOW.CNY/0614 CORRESPONDENCE NONE 2	**05-25-2011** 05-31-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT - FINAL STATUS SURVEY RESULTS	POST DECISION FILE SENSITIVE	BLDG 0000704 PARCEL E	NAVFAC - SOUTHWEST	

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SF_N00217_002784 EMAC-8823-0003-0089 REPORT N62473-08-D-8823 328	**05-25-2011** 05-31-2011 5090.3.C. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	DRAFT - FINAL STATUS SURVEY RESULTS (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BLDG 0000526 BLDG 0000704 PARCEL D-1 PARCEL E SURVEY UNIT 0001 SURVEY UNIT 0003 SURVEY UNIT 0004	NAVFAC - SOUTHWEST	
SF_N00217_002771 ERRG-6011-0000-0012 REPORT N68711-05-C-6011 43	**05-26-2011** 05-26-2011 5090.3.C. NONE	BIELSKIS, D. ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	DRAFT PROPOSED PLAN (CD COPY ENCLOSED)	SENSITIVE SITE FILE	PARCEL E-2	NAVFAC - SOUTHWEST	
PF_N00217_002889 EMAC-8823-0003-0085 REPORT N62473-08-D-8823 425	**05-26-2011** 06-06-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 173 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00016 PARCEL E PARCEL UC-3 SURVEY UNIT 0173	NAVFAC - SOUTHWEST	
PF_N00217_002893 EMAC-8823-0003-0086 REPORT N62473-08-D-8823 309	**05-26-2011** 06-06-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 174 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00016 PARCEL E PARCEL UC-3 SITE 00074 SURVEY UNIT 0174	NAVFAC - SOUTHWEST	
PF_N00217_002894 EMAC-8823-0003-0087 REPORT N62473-08-D-8823 340	**05-26-2011** 06-06-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 175 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00016 PARCEL E PARCEL UC-3 SURVEY UNIT 0175	NAVFAC - SOUTHWEST	

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PF_N00217_002900 EMAC-8823-0003-0088 REPORT N62473-08-D-8823 454	**05-26-2011** 06-06-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 176 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00016 PARCEL E PARCEL UC-3 SURVEY UNIT 0176	NAVFAC - SOUTHWEST	
PF_N00217_002888 BRAC SER BPMOW.CY/0622 CORRESPONDENCE NONE 2	**05-27-2011** 06-06-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL PROJECT REPORTS FOR SURVEY UNITS 173, 174, 175, AND 176, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3 SURVEY UNIT 0173 SURVEY UNIT 0174 SURVEY UNIT 0175 SURVEY UNIT 0176	NAVFAC - SOUTHWEST	
PF_N00217_002800 BRAC SER BPMOW.CNY/0634 CORRESPONDENCE NONE 2	**06-01-2011** 06-02-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	LETTER CLARIFYING THAT PARCEL UC-3 IS PART OF PARCEL E FOR THE DRAFT PROJECT REPORTS FOR SURVEY UNITS 177, 178, 179, 182, AND 183, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3 SURVEY UNIT 0177 SURVEY UNIT 0178 SURVEY UNIT 0179 SURVEY UNIT 0182 SURVEY UNIT 0183	NAVFAC - SOUTHWEST	
PF_N00217_002818 BRAC SER BPMOW.CNY/0631 CORRESPONDENCE NONE 2	**06-01-2011** 06-02-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	LETTER CLARIFYING THAT PARCEL UC-3 IS PART OF PARCEL E FOR THE DRAFT PROJECT REPORTS FOR SURVEY UNITS 173, 174, 175, AND 176, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (PER TRANSMITTAL, THE ENCLOSURES WERE INCORRECTLY NAMED AS FINAL)	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3 SURVEY UNIT 0173 SURVEY UNIT 0174 SURVEY UNIT 0175 SURVEY UNIT 0176	NAVFAC - SOUTHWEST	

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PF_N00217_002832 BRAC SER BPMOW.CNY/0635 CORRESPONDENCE NONE 2	**06-01-2011** 06-02-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	LETTER CLARIFYING THAT PARCEL UC-3 IS PART OF PARCEL E FOR THE DRAFT PROJECT REPORTS FOR SURVEY UNITS 184, 187, 189, AND 190, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (PER TRANSMITTAL, THE ENCLOSURES WERE INCORRECTLY NAMED AS FINAL)	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3 SURVEY UNIT 0184 SURVEY UNIT 0187 SURVEY UNIT 0189 SURVEY UNIT 0190	NAVFAC - SOUTHWEST	
PF_N00217_002833 BRAC SER BPMOW.CNY/0633 CORRESPONDENCE NONE 2	**06-01-2011** 06-02-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	LETTER CLARIFYING THAT PARCEL UC-3 IS PART OF PARCEL E FOR THE DRAFT PROJECT REPORTS FOR SURVEY UNITS 180, 181, 185, AND 188, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (PER TRANSMITTAL, THE ENCLOSURES WERE INCORRECTLY NAMED AS FINAL)	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3 SURVEY UNIT 0180 SURVEY UNIT 0181 SURVEY UNIT 0185 SURVEY UNIT 0188	NAVFAC - SOUTHWEST	
PF_N00217_002836 BRAC SER BPMOW.CNY/0632 CORRESPONDENCE NONE 2	**06-01-2011** 06-02-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	LETTER CLARIFYING THAT PARCEL UC-3 IS PART OF PARCEL E FOR THE DRAFT PROJECT REPORTS FOR SURVEY UNITS 166, 169, 170, AND 172, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (PER TRANSMITTAL, THE ENCLOSURES WERE INCORRECTLY NAMED AS FINAL)	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3 SURVEY UNIT 0166 SURVEY UNIT 0169 SURVEY UNIT 0170 SURVEY UNIT 0172	NAVFAC - SOUTHWEST	

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PF_N00217_003297 CEKA-2627-0003-0009 REPORT N62473-09-D-2627 4752	**06-21-2011** 06-30-2011 5090.3.B. CTO 0003	RUCKER, B. CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	SEMIANNUAL GROUNDWATER MONITORING REPORT (OCTOBER 2010 - MARCH 2011) [CD COPY ENCLOSED]	POST DECISION FILE SENSITIVE	PARCEL B PARCEL C PARCEL D-1 PARCEL E PARCEL E-2 PARCEL UC-2 REMEDIAL UNIT C1 REMEDIAL UNIT C2 REMEDIAL UNIT C4 REMEDIAL UNIT C5 SITE 00004 SITE 00007 SITE 00012 SITE 00018 WELL IR01MW02B WELL IR01MW03A WELL IR01MW05A WELL IR01MW07A WELL IR01MW09B WELL IR01MW10A WELL IR01MW11A WELL IR01MW12A WELL IR01MW16A WELL IR01MW17B	NAVFAC - SOUTHWEST	

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Approx. # Pages		Recipient Affil.	Subject		Distribution	Sites	CD No.	FRC Box No(s)
						WELL IR01MW18A		
						WELL IR01MW26B		
						WELL IR01MW31A		
						WELL IR01MW366A		
						WELL IR01MW366B		
						WELL IR01MW367A		
						WELL IR01MW38A		
						WELL IR01MW400A		
						WELL IR01MW401A		
						WELL IR01MW402A		
						WELL IR01MW403A		
						WELL IR01MW403B		
						WELL IR01MW42A		
						WELL IR01MW43A		
						WELL IR01MW44A		
						WELL IR01MW47B		
						WELL IR01MW48A		
						WELL IR01MW53B		
						WELL IR01MW58A		
						WELL IR01MW60A		

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Contract No.	CTO No.	Recipient						
Approx. # Pages		Recipient Affil.	Subject	Distribution	Sites		CD No.	FRC Box No(s)
					WELL IR01MW62A			
					WELL IR01MW63A			
					WELL IR01MW64A			
					WELL IR01MW65A			
					WELL IR01MW66A			
					WELL IR01MWI-2			
					WELL IR01MWI-3			
					WELL IR01MWI-5			
					WELL IR01MWI-6			
					WELL IR01MWI-7			
					WELL IR01MWI-8			
					WELL IR01MWI-9			
					WELL IR01MWLF1A			
					WELL IR01MWLF2A			
					WELL IR01MWLF4A			
					WELL IR01MWLF4B			
					WELL IR01P03A			
					WELL IR01P03AA			
					WELL IR01P03AB			
					WELL IR01P04A			
					WELL IR01P18AB			
					WELL IR02MW101A1			
					WELL IR02MW101A2			
					WELL IR02MW114A1			

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Contract No.	CTO No.	Recipient						
Approx. # Pages		Recipient Affil.	Subject		Distribution	Sites	CD No.	FRC Box No(s)
						WELL IR02MW114A2		
						WELL IR02MW114A3		
						WELL IR02MW126A		
						WELL IR02MW127B		
						WELL IR02MW141A		
						WELL IR02MW147A		
						WELL IR02MW149A		
						WELL IR02MW173A		
						WELL IR02MW175A		
						WELL IR02MW179A		
						WELL IR02MW183A		
						WELL IR02MW196A		
						WELL IR02MW206A1		
						WELL IR02MW206A2		
						WELL IR02MW209A		
						WELL IR02MW210B		
						WELL IR02MW298A		
						WELL IR02MW299A		
						WELL IR02MW300A		
						WELL IR02MW301A		

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Contract No.	CTO No.	Recipient						
Approx. # Pages		Recipient Affil.	Subject		Distribution	Sites		
						WELL IR02MW372A		
						WELL IR02MW373A		
						WELL IR02MW374A		
						WELL IR02MW375A		
						WELL IR02MW87A		
						WELL IR02MW89A		
						WELL IR02MW93A		
						WELL IR02MW97A		
						WELL IR02MWB-1		
						WELL IR02MWB-2		
						WELL IR02MWB-3		
						WELL IR02MWB-5		
						WELL IR02MWC5-W		
						WELL IR02P126AA		
						WELL IR02P126AB		
						WELL IR02P97AA		
						WELL IR02P97AB		
						WELL IR03MW218A1		
						WELL IR03MW218A2		
						WELL IR03MW218A3		

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					WELL IR03MW224A WELL IR03MW225A WELL IR03MW226A WELL IR03MW228B WELL IR03MW342A WELL IR03MW369A WELL IR03MW370A WELL IR03MW371A WELL IR03MW372A WELL IR03MW373B WELL IR03MWO-1 WELL IR03MWO-2 WELL IR03MWO-3 WELL IR04MW09A WELL IR04MW39A WELL IR06MW59A1 WELL IR12MW19A WELL IR58MW31A		

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PF_N00217_003303 EMAC-8823-0003-0076 REPORT N62473-08-D-8823 62	**06-22-2011** 07-18-2011 5090.3.B. CTO 0003	WEINGARZ, R. TETRA TECH EC, INC. BRAC PMO WEST	FINAL CRISP ROAD UTILITIES COMPLETION REPORT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	BLDG 0000606 BLDG 0000808 BLDG 0000813 BLDG 0000815 BLDG 0000820 BLDG 0000830 PARCEL E-2 PARCEL UC-3	NAVFAC - SOUTHWEST	
PF_N00217_003317 BRAC SER BPMOW.CNY/0682 CORRESPONDENCE NONE 2	**06-24-2011** 07-21-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL PROJECT REPORTS FOR SURVEY UNITS 177, 178, 179, 182, AND 183, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3 SURVEY UNIT 0177 SURVEY UNIT 0178 SURVEY UNIT 0179 SURVEY UNIT 0182 SURVEY UNIT 0183	NAVFAC - SOUTHWEST	
PF_N00217_003441 BRAC SER BPMOW.CNY/0683 CORRESPONDENCE NONE 2	**06-28-2011** 07-25-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL PROJECT REPORTS FOR SURVEY UNITS 184, 187, 189, AND 190, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3 SURVEY UNIT 0184 SURVEY UNIT 0187 SURVEY UNIT 0189 SURVEY UNIT 0190	NAVFAC - SOUTHWEST	

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PF_N00217_003442 EMAC-8823-0003-0096 REPORT N62473-08-D-8823 510	**06-28-2011** 07-25-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL SURVEY UNIT 184 PROJECT REPORT, SANITARY SEWER AND STORM DRAIN REMOVAL PROJECT (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	AREA 00016 AREA 00020 BLDG 0000815 PARCEL E PARCEL UC-3 SITE 00074 SURVEY UNIT 0184	NAVFAC - SOUTHWEST	
AR_N00217_003633 BRAC SER BPMOW.LLU/0688 CORRESPONDENCE NONE 4	**06-28-2011** 12-13-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE APPENDIX H - FINAL MATERIAL POTENTIALLY PRESENTING AN EXPLOSIVE HAZARD (MPPEH) PROCEDURES, REVISION 1 TO THE FINAL WORK PLAN ADDENDUM TIME-CRITICAL REMOVAL ACTION FOR THE POLYCHLORINATED BIPHENYL (PCB) HOT SPOT AREA	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	NAVFAC - SOUTHWEST	
SF_N00217_003316 ERRG-6011-0000-0005 REPORT N68711-05-C-6011 1349	**07-01-2011** 07-20-2011 5090.3.C. NONE	BIELSKIS, D. ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	DRAFT FINAL FEASIBILITY STUDY REPORT (INCLUDES PUBLIC SUMMARY AND CD COPY)	SENSITIVE SITE FILE	PARCEL E	NAVFAC - SOUTHWEST	
AR_N00217_003440 ERRG-6011-0000-0010 REPORT N68711-05-C-6011 258	**07-01-2011** 07-21-2011 5090.3.A. NONE	BIELSKIS, D. ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	FINAL WORK PLAN FOR GEOTECHNICAL INVESTIGATION (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL B PARCEL E-2 SITE 00001 SITE 00021 SITE 00026	NAVFAC - SOUTHWEST	
AR_N00217_003315 BRAC SER BPMOW.JED/0701 CORRESPONDENCE NONE 3	**07-08-2011** 07-20-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT FINAL FEASIBILITY STUDY REPORT	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	

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AR_N00217_003412 BRAC SER BPMOW.LLU/0695 CORRESPONDENCE NONE 4	**07-08-2011** 07-21-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL WORK PLAN FOR GEOTECHNICAL INVESTIGATION	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL E-2 SITE 00001 SITE 00021 SITE 00026	NAVFAC - SOUTHWEST	
SF_N00217_003553 CKY-2626-0002-0001 REPORT N62473-09-D-2626 146	**07-29-2011** 08-12-2011 5090.3.C. CTO 0002	WITTENBERG, H. CKY INC. NAVFAC - SOUTHWEST	DRAFT ACCIDENT PREVENTION PLAN/SITE SAFETY AND HEALTH PLAN, INTERIM MONITORING AND MAINTENANCE PROGRAM FOR THE LANDFILL GAS CONTROL SYSTEM AND OPERATION AND MAINTENANCE SERVICES FOR CLOSED INDUSTRIAL LANDFILL CAP (CD COPY ENCLOSED)	SENSITIVE SITE FILE	PARCEL E-2 SITE 00001 SITE 00021	NAVFAC - SOUTHWEST	
SF_N00217_003613 CKY-2626-0002-0001 REPORT N62473-09-D-2626 146	**07-29-2011** 11-23-2011 5090.3.C. CTO 0002	PENNOCK, L. CKY, INC. NAVFAC - SOUTHWEST	DRAFT ACCIDENT PREVENTION PLAN/SITE SAFETY AND HEALTH PLAN, INTERIM MONITORING AND MAINTENANCE PROGRAM FOR THE LANDFILL GAS CONTROL SYSTEM AND OPERATION AND MAINTENANCE SERVICES FOR CLOSED INDUSTRIAL LANDFILL CAP (CD COPY ENCLOSED)	SENSITIVE SITE FILE	PARCEL E-2 SITE 00001 SITE 00021	NAVFAC - SOUTHWEST	
SF_N00217_003879 ITSI-2625-0004-0001 REPORT N62473-09-D-2625 292	**08-01-2011** 01-12-2012 5090.3.C. CTO 0004	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	DRAFT PROJECT WORK PLAN LOADING, TRANSPORTATION, AND REMOVAL OF CONTAMINATED SOIL (CD COPY ENCLOSED)	SENSITIVE SITE FILE	PARCEL B PARCEL C PARCEL D PARCEL E PARCEL E-2	NAVFAC - SOUTHWEST	

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AR_N00217_003554 CEKA-2627-0003-0011 CORRESPONDENCE N62473-09-D-2627 6	**08-05-2011** 08-16-2011 5090.3.A. CTO 0003	CE2 - KLEINFELDER, JOINT VENTURE BRAC PMO WEST	MEMORANDUM: GROUNDWATER ANALYTICAL RESULTS EXCEEDING REMEDIATION GOALS OR TRIGGER LEVELS, SECOND QUARTER 2011 (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D-1 PARCEL E PARCEL E-2 PARCEL G PARCEL UC-1 PARCEL UC-2 SITE 00007 SITE 00018 WELL IR0160A WELL IR01MW38A WELL IR01MW48A WELL IR01MW64A WELL IR02MW373A WELL IR02MWB-2 WELL IR03MW218A1 WELL IR03MW218A2 WELL IR03MWO-1 WELL IR06MW22A WELL IR06MW32A WELL IR06MW35A WELL IR06MW40A WELL IR06MW59A1 WELL IR25MW16A	NAVFAC - SOUTHWEST	

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					WELL IR28MW125A WELL IR28MW200A WELL IR28MW211F WELL IR28MW298A WELL IR28MW355F WELL IR28MW407 WELL PA28MW52A		
AR_N00217_003564 ITSI-6403-0012-0165 REPORT N68711-05-D-6403 105	**08-10-2011** 09-06-2011 5090.3.A. CTO 0012	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL LANDFILL GAS MONITORING REPORT FOR APRIL-JUNE 2011, POST-REMOVAL ACTION INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2 WELL IR01MW02B WELL IR01MW03A WELL IR01MW05A WELL IR01MW10A WELL IR01MW11A WELL IR01MW12A WELL IR01MW16A WELL IR01MW18A WELL IR01MW366A WELL IR01MWI-5 WELL IR01P04A WELL IR76MW13A	NAVFAC - SOUTHWEST	

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AR_N00217_003563 BRAC SER BPMOW.CD/0790 CORRESPONDENCE NONE 3	**08-11-2011** 09-06-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL LANDFILL GAS MONITORING REPORT FOR APRIL-JUNE 2011, POST-REMOVAL ACTION INDUSTRIAL LANDFILL	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
PF_N00217_003565 BRAC SER BPMOW.CD/0798 CORRESPONDENCE NONE 3	**08-17-2011** 09-06-2011 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL ANNUAL LANDFILL CORRECTIVE ACTION PLAN OPERATION AND MAINTENANCE REPORT FOR 2010-2011, INDUSTRIAL LANDFILL	POST DECISION FILE SENSITIVE	PARCEL E-2 SITE 00001 SITE 00021	NAVFAC - SOUTHWEST	
PF_N00217_003566 ITSI-6403-0012-0167 REPORT N68711-05-D-6403 38	**08-17-2011** 09-06-2011 5090.3.B. CTO 0012	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL ANNUAL LANDFILL CORRECTIVE ACTION PLAN OPERATION AND MAINTENANCE REPORT FOR 2010-2011, INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	PARCEL E-2 SITE 00001 SITE 00021 WELL IR01MW02B WELL IR01MW05A WELL IR01MW12A WELL IR01MW16A WELL IR01MW366A WELL IR01MWI-5 WELL IR76MW13A	NAVFAC - SOUTHWEST	

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SF_N00217_004246 NONE CORRESPONDENCE NONE 15	**08-18-2011** 01-23-2012 5090.3.C. NONE	HAYES, B. NAVY AND MARINE CORPS PUBLIC HEALTH CENTER ENVIRONMENTAL PROGRAMS DEPARTMENT - PORTSMOUTH, VA HUNT, R. BRAC PMO WEST	REVIEW AND COMMENTS ON THE DRAFT SITE SAFETY AND HEALTH PLAN, ACTIVITY HAZARD ANALYSES AND ACCIDENT PREVENTION PLAN (SEE RECORD # 3879 - DRAFT PROJECT WORK PLAN LOADING, TRANSPORTATION, AND REMOVAL OF CONTAMINATED SOIL)	SITE FILE	PARCEL B PARCEL C PARCEL D PARCEL E	NAVFAC - SOUTHWEST	
AR_N00217_003631 BRAC SER BPMOW.JED/0801 CORRESPONDENCE NONE 3	**08-19-2011** 12-06-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE FINAL WORK PLAN SITE CHARACTERIZATION AND BENCH-SCALE TREATABILITY STUDY (ENCLOSURE IS RECORD # 3632)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E SITE 00003	NAVFAC - SOUTHWEST	
AR_N00217_003632 ITSI-0808-0002-0006 REPORT N62473-10-D-0808 910	**08-22-2011** 12-06-2011 5090.3.A. CTO 0002	BAUGH, K. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL WORK PLAN SITE CHARACTERIZATION AND BENCH-SCALE TREATABILITY STUDY (CD COPY ENCLOSED) [SEE RECORD # 3631 - BRAC PMO WEST TRANSMITTAL LETTER]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E SITE 00003	NAVFAC - SOUTHWEST	
PF_N00217_003667 CKY-2626-0002-0002 REPORT N62473-09-D-2626 127	**08-29-2011** 12-16-2011 5090.3.B. CTO 0002	WITTENBERG, H. CKY, INC. NAVFAC - SOUTHWEST	FINAL ACCIDENT PREVENTION PLAN/SITE SAFETY AND HEALTH PLAN INTERIM MONITORING AND MAINTENANCE PROGRAM FOR THE LANDFILL GAS CONTROL SYSTEM AND OPERATION AND MAINTENANCE SERVICES FOR CLOSED INDUSTRIAL LANDFILL CAP AT INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	PARCEL E-2 SITE 00001 SITE 00021	NAVFAC - SOUTHWEST	
AR_N00217_003580 ERRG-6011-0000-0014 REPORT N68711-05-C-6011 42	**09-01-2011** 10-25-2011 5090.3.A. NONE	ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	1) ANNOUNCEMENT OF THE PROPOSED PLAN FOR CLEANUP; 2) FACT SHEET, SUMMARY OF THE PROPOSED CLEANUP; AND 3) FREQUENTLY ASKED QUESTIONS ABOUT THE SHIPYARD LANDFILL (CD COPY ENCLOSED) [SEE RECORD # 3579 - BRAC PMO WEST TRANSMITTAL LETTER]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	

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AR_N00217_003599 NONE PUBLIC NOTICE NONE 2	**09-01-2011** 10-27-2011 5090.3.A. NONE	SAN FRANCISCO BAY VIEW - SAN FRANCISCO, CA PUBLIC	PUBLIC NOTICE OF THE AVAILABILITY AND PUBLIC COMMENT PERIOD ON THE PROPOSED PLAN (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_003618 ERRG-6011-0000-0016 PUBLIC NOTICE N68711-05-C-6011 2	**09-01-2011** 11-28-2011 5090.3.A. NONE	SAN FRANCISCO BAY VIEW PUBLIC	PUBLIC NOTICE OF THE AVAILABILITY AND PUBLIC COMMENT PERIOD ON THE PROPOSED PLAN (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_003619 ERRG-6011-0000-0018 PUBLIC NOTICE N68711-05-C-6011 2	**09-01-2011** 11-28-2011 5090.3.A. NONE	SUN-REPORTER PUBLIC	PUBLIC NOTICE OF THE AVAILABILITY AND PUBLIC COMMENT PERIOD ON THE PROPOSED PLAN (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_003597 NONE PUBLIC NOTICE NONE 1	**09-02-2011** 10-27-2011 5090.3.A. NONE	BRAC PMO WEST PUBLIC	NOTICE OF PUBLIC COMMENT PERIOD ON THE PROPOSED PLAN (CD COPY ENCLOSED) [SEE RECORD # 3598 - NOTICE OF EXTENSION OF PROPOSED PLAN PUBLIC COMMENT PERIOD]	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_003617 ERRG-6011-0000-0015 PUBLIC NOTICE N68711-05-C-6011 2	**09-04-2011** 11-28-2011 5090.3.A. NONE	SAN FRANCISCO CHRONICLE PUBLIC	PUBLIC NOTICE OF THE AVAILABILITY AND PUBLIC COMMENT PERIOD ON THE PROPOSED PLAN (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_003579 BRAC SER BPMOW.LLU/0831 CORRESPONDENCE NONE 4	**09-06-2011** 10-25-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE 1) PROPOSED PLAN FOR CLEANUP; 2) FACT SHEET, SUMMARY OF THE PROPOSED CLEANUP; AND 3) FREQUENTLY ASKED QUESTIONS ABOUT THE SHIPYARD LANDFILL (ENCLOSURES 1 THROUGH 3 ARE RECORD # 3580)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	

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PF_N00217_003882 CKY-2626-0002-0003 CORRESPONDENCE N62473-09-D-2626 5	**09-07-2011** 01-12-2012 5090.3.B. CTO 0002	WITTENBERG, H. CKY, INC. DIRSCHERYL, C. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING LETTER REPORT FOR AUGUST 2011, POST-REMOVAL ACTION INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
SF_N00217_004247 ITSI-2625-0004-0005 REPORT N62473-09-D-2625 288	**09-15-2011** 01-23-2012 5090.3.C. CTO 0004	WOMACK, B. INNOVATIVE TECHNICAL SOLUTIONS, INC. BRAC PMO WEST	FINAL PROJECT WORK PLAN LOADING, TRANSPORTATION, AND REMOVAL OF CONTAMINATED SOIL (CD COPY ENCLOSED)	SENSITIVE SITE FILE	BASEWIDE PARCEL B PARCEL C PARCEL D PARCEL E	NAVFAC - SOUTHWEST	
SF_N00217_003578 SHAW-4009-0006-0615 MINUTES N62473-10-D-4009 4	**09-19-2011** 10-21-2011 5090.3.C. CTO 0006	SHAW ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST	19 SEPTEMBER 2011 PROJECT KICK-OFF MEETING MINUTES FOR THE GROUNDWATER TREATABILITY STUDY ADDENDUM (CD COPY ENCLOSED)	SITE FILE	BLDG 0000406 BLDG 0000414 BLDG 0000810 PARCEL E SITE 00004 SITE 00036	NAVFAC - SOUTHWEST	
AR_N00217_003634 BRAC SER BPMOW.LLU/0869 CORRESPONDENCE NONE 2	**09-27-2011** 12-13-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST DEPARTMENT OF DEFENSE EXPLOSIVES SAFETY BOARD	TRANSMITTAL OF THE FINAL CORRECTION 2 EXPLOSIVES SAFETY SUBMISSION (ESS) TIME CRITICAL REMOVAL ACTION FOR THE POLYCHLORINATED BIPHENYL (PCB) HOT SPOT AREA AND FOR THE EXPERIMENTAL SHIP SHIELDING RANGE, REVISION 2 TO THE FINAL WORK PLAN **SEE COMMENTS**	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_003604 KCH-2622-0004-0064 PUBLIC NOTICE N62473-09-D-2622 2	**09-29-2011** 11-08-2011 5090.3.A. CTO 0004	SUN-REPORTER - SAN FRANCISCO, CA PUBLIC	PUBLIC NOTICE OF EXTENSION OF THE PROPOSED PLAN PUBLIC COMMENT PERIOD, COMMENT PERIOD EXTENDED TO 21 NOVEMBER 2011 (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_003606 KCH-2622-0004-0067 PUBLIC NOTICE N62473-09-D-2622 2	**10-01-2011** 11-09-2011 5090.3.A. CTO 0004	SAN FRANCISCO BAY VIEW - SAN FRANCISCO, CA PUBLIC	PUBLIC NOTICE OF EXTENSION OF THE PROPOSED PLAN PUBLIC COMMENT PERIOD, COMMENT PERIOD EXTENDED TO 21 NOVEMBER 2011 (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	NAVFAC - SOUTHWEST	

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AR_N00217_003605 KCH-2622-0004-0066 PUBLIC NOTICE N62473-09-D-2622 2	**10-02-2011** 11-08-2011 5090.3.A. CTO 0004	SAN FRANCISCO CHRONICLE - SAN FRANCISCO, CA PUBLIC	PUBLIC NOTICE OF EXTENSION OF THE PROPOSED PLAN PUBLIC COMMENT PERIOD, COMMENT PERIOD EXTENDED TO 21 NOVEMBER 2011 (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	NAVFAC - SOUTHWEST	
PF_N00217_003621 EMAC-8823-0003-0102 REPORT N62473-08-D-8823 671	**10-13-2011** 11-28-2011 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL - FINAL STATUS SURVEY RESULTS (CD COPY ENCLOSED) [SEE RECORD # 3620 - BRAC PMO WEST TRANSMITTAL LETTER]	POST DECISION FILE SENSITIVE	BLDG 0000704 PARCEL E	NAVFAC - SOUTHWEST	
AR_N00217_003598 NONE PUBLIC NOTICE NONE 1	**10-27-2011** 10-27-2011 5090.3.A. NONE	BRAC PMO WEST PUBLIC	NOTICE OF EXTENSION OF PROPOSED PLAN PUBLIC COMMENT PERIOD (CD COPY ENCLOSED) [SEE RECORD # 3597 - NOTICE OF PUBLIC COMMENT PERIOD ON THE PROPOSED PLAN]	ADMIN RECORD INFO REPOSITORY	PARCEL E-2	NAVFAC - SOUTHWEST	

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SF_N00217_003628 ERRG-6011-0000-0005.A1 REPORT NONE 4435	**11-01-2011** 11-30-2011 5090.3.C. NONE	BIELSKIS, D. ENGINEERING/REMEDIATION RESOURCES GROUP, INC. BRAC PMO WEST	DRAFT FINAL RADIOLOGICAL ADDENDUM TO THE FEASIBILITY STUDY REPORT (CD COPY ENCLOSED) [SEE RECORD # 3627 - BRAC PMO WEST TRANSMITTAL LETTER, AND RECORD # 3316 - DRAFT FINAL FEASIBILITY STUDY REPORT]	SENSITIVE SITE FILE	BLDG 0000406 BLDG 0000414 BLDG 0000500 BLDG 0000503 BLDG 0000506 BLDG 0000507 BLDG 0000508 BLDG 0000509 BLDG 0000510 BLDG 0000510A BLDG 0000517 BLDG 0000520 BLDG 0000521 BLDG 0000529 BLDG 0000701 BLDG 0000704 BLDG 0000707 BLDG 0000707B BLDG 0000707C BLDG 0000708 BLDG 0000807 BLDG 0000810 BLDG S-719 PARCEL E SITE 00002 SITE 00003 SITE 00004	NAVFAC - SOUTHWEST	

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AR_N00217_003615 CEKA-2627-0003-0013 CORRESPONDENCE N62473-09-D-2627 9	**11-04-2011** 11-25-2011 5090.3.A. CTO 0003	COOK, N. CE2 - KLEINFELDER, JOINT VENTURE NAVFAC - SOUTHWEST	MEMORANDUM: GROUNDWATER ANALYTICAL RESULTS EXCEEDING REMEDIATION GOALS OR TRIGGER LEVELS, THIRD QUARTER 2011 (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL E PARCEL E-2 PARCEL G PARCEL UC-2 WELL IR01MW26B WELL IR01MW38A WELL IR01MW48A WELL IR01MW60A WELL IR01MW62A WELL IR01MW63A WELL IR01MW64A WELL IR02MW126A WELL IR02MW218A2 WELL IR02MW373A WELL IR02MW403B WELL IR02MWB-2 WELL IR03MWO-1 WELL IR04MW39A WELL IR06MW22A WELL IR06MW32A WELL IR06MW54F	NAVFAC - SOUTHWEST	

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Contract No.	CTO No.	Recipient						
Approx. # Pages		Recipient Affil.	Subject		Distribution	Sites	CD No.	FRC Box No(s)
						WELL IR06MW59A1		
						WELL IR09MW07A		
						WELL IR10MW13A1		
						WELL IR10MW59A		
						WELL IR10MW61A		
						WELL IR12MW19A		
						WELL IR19MW40A		
						WELL IR20MW17A		
						WELL IR25MW16A		
						WELL IR26MW49A		
						WELL IR26MW51A		
						WELL IR28EW01A		
						WELL IR28IW901A		
						WELL IR28IW902A		
						WELL IR28IW903A		
						WELL IR28MW125A		
						WELL IR28MW151A		
						WELL IR28MW200A		
						WELL IR28MW211F		
						WELL IR28MW298A		

UIC No. _ Rec. No. Doc. Control No. Record Type Contract No. Approx. # Pages	Record Date Prc. Date SSIC No. CTO No.	Author Author Affil. Recipient Recipient Affil.	Subject	Distribution	Sites	Location SWDIV Box No(s) CD No.	FRC Accession No. FRC Warehouse FRC Box No(s)
					WELL IR28MW354A WELL IR28MW355F WELL IR28MW407 WELL IR28MW475A WELL IR28MW476A WELL IR28MW916A WELL IR28MW919A WELL IR28MW920A WELL IR28MW921A WELL IR28MW932A WELL IR28MW933A WELL IR28MW934A WELL IR28MW936A WELL IR36MW237A WELL IR71MW03A		
AR_N00217_003623 CKY-2626-0002-0005 REPORT N62473-09-D-2626 89	**11-08-2011** 11-29-2011 5090.3.A. CTO 0002	WITTENBERG, H. CKY, INC. BRAC PMO WEST	LANDFILL GAS MONITORING REPORT FOR JULY-SEPTEMBER 2011, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (CD COPY ENCLOSED) [SEE RECORD # 3622 - BRAC PMO WEST TRANSMITTAL LETTER]	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2 SITE 00001 SITE 00021	NAVFAC - SOUTHWEST	

UIC No. _ Rec. No. Doc. Control No. Record Type Contract No. Approx. # Pages	Record Date Prc. Date SSIC No. CTO No.	Author Author Affil. Recipient Recipient Affil.	Subject	Distribution	Sites	Location SWDIV Box No(s) CD No.	FRC Accession No. FRC Warehouse FRC Box No(s)
AR_N00217_003622 BRAC SER BPMOW.LLU/0052 CORRESPONDENCE NONE 3	**11-09-2011** 11-29-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE LANDFILL GAS MONITORING REPORT FOR JULY-SEPTEMBER 2011, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (ENCLOSURE IS RECORD # 3623)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
AR_N00217_003627 BRAC SER BPMOW.HK/0062 CORRESPONDENCE NONE 3	**11-17-2011** 11-30-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT FINAL RADIOLOGICAL ADDENDUM TO THE FEASIBILITY STUDY REPORT (ENCLOSURE IS RECORD # 3628)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E	NAVFAC - SOUTHWEST	
PF_N00217_003529 BRAC SER BPMOW.CY/0068 CORRESPONDENCE NONE 2	**11-18-2011** 02-03-2012 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT REMOVAL ACTION COMPLETION REPORT (ENCLOSURE IS RECORD # 3638)	POST DECISION FILE SENSITIVE	PARCEL E PARCEL UC-3	NAVFAC - SOUTHWEST	
PF_N00217_003940 CKY-2626-0002-0008 CORRESPONDENCE N62473-09-D-2626 4	**11-18-2011** 01-12-2012 5090.3.B. CTO 0002	WITTENBERG, H. CKY, INC. URIZAR, L. BRAC PMO WEST	FINAL MONTHLY LANDFILL GAS MONITORING LETTER REPORT FOR NOVEMBER 2011, POST-REMOVAL ACTION INDUSTRIAL LANDFILL (CD COPY ENCLOSED)	POST DECISION FILE SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
SF_N00217_003636 CKY-2626-0002-0004 REPORT N62473-09-D-2626 245	**11-21-2011** 12-13-2011 5090.3.C. CTO 0002	MOLDOVEANU, C. CKY, INC. NAVFAC - SOUTHWEST	DRAFT SAMPLING AND ANALYSIS PLAN, INTERIM MONITORING AND MAINTENANCE PROGRAM FOR THE LANDFILL GAS CONTROL SYSTEM, INDUSTRIAL LANDFILL (CD COPY ENCLOSED) [DOCUMENT ALSO CONTAINS SENSITIVE STREET LEVEL MAPS]	SENSITIVE SITE FILE	PARCEL E-2 SITE 00001 SITE 00021	NAVFAC - SOUTHWEST	
SF_N00217_004245 SHAW-0807-0002-0110 REPORT N62473-10-D-0807 85	**12-01-2011** 01-23-2012 5090.3.C. CTO 0002	SHAW ENVIRONMENTAL, INC. BRAC PMO WEST	DRAFT ACTION MEMORANDUM TIME-CRITICAL REMOVAL ACTION FOR THE EXPERIMENTAL SHIP SHIELDING RANGE (CD COPY ENCLOSED) [SEE RECORD # 4244 - BRAC PMO WEST TRANSMITTAL LETTER]	SENSITIVE SITE FILE	PARCEL E-2	NAVFAC - SOUTHWEST	

UIC No. _ Rec. No. Doc. Control No. Record Type Contract No. Approx. # Pages	Record Date Prc. Date SSIC No. CTO No.	Author Author Affil. Recipient Recipient Affil.	Subject	Distribution	Sites	Location SWDIV Box No(s) CD No.	FRC Accession No. FRC Warehouse FRC Box No(s)
AR_N00217_004241 CHAD-3213-0039-0017.R1 REPORT N62473-07-D-3213 59	**12-02-2011** 01-20-2012 5090.3.A. CTO 0039	MOWER, T. CHADUX TT, JOINT VENTURE BRAC PMO WEST	REVISED FINAL MEMORANDUM: APPROACH FOR DEVELOPING SOIL GAS ACTION LEVELS FOR VAPOR INTRUSION EXPOSURE (CD COPY ENCLOSED)	ADMIN RECORD INFO REPOSITORY	PARCEL B PARCEL C PARCEL D-1 PARCEL D-2 PARCEL E PARCEL E-2 PARCEL F PARCEL G PARCEL UC-1 PARCEL UC-2	NAVFAC - SOUTHWEST	
AR_N00217_003635 BRAC SER BPMOW.SB/0100 CORRESPONDENCE NONE 3	**12-08-2011** 12-13-2011 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT SAMPLING AND ANALYSIS PLAN, INTERIM MONITORING AND MAINTENANCE PROGRAM FOR THE LANDFILL GAS CONTROL SYSTEM, INDUSTRIAL LANDFILL (ENCLOSURE IS RECORD # 3636)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2 SITE 00001 SITE 00021	NAVFAC - SOUTHWEST	
AR_N00217_004244 BRAC SER BPMOW.LLU/0140 CORRESPONDENCE NONE 4	**12-29-2011** 01-23-2012 5090.3.A. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE DRAFT ACTION MEMORANDUM TIME-CRITICAL REMOVAL ACTION FOR THE EXPERIMENTAL SHIP SHIELDING RANGE (ENCLOSURE IS RECORD # 4245)	ADMIN RECORD INFO REPOSITORY SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
PF_N00217_003614 CKY-2626-0002-0007 REPORT N62473-09-D-2626 76	**01-20-2012** 11-25-2011 5090.3.B. CTO 0002	WITTENBERG, H. CKY, INC. NAVFAC - SOUTHWEST	LANDFILL GAS MONITORING REPORT FOR JULY-SEPTEMBER 2011, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (CD COPY ENCLOSED) [SEE RECORD # 4251 - BRAC PMO WEST TRANSMITTAL LETTER]	POST DECISION FILE SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	
PF_N00217_004251 BRAC SER BPMOW.SDB/0005 CORRESPONDENCE NONE 3	**01-20-2012** 03-01-2012 5090.3.B. NONE	FORMAN, K. BRAC PMO WEST MULTIPLE AGENCIES	TRANSMITTAL OF THE LANDFILL GAS MONITORING REPORT FOR OCTOBER-DECEMBER 2011, POST-REMOVAL ACTION, INDUSTRIAL LANDFILL (ENCLOSURE IS RECORD # 3614)	POST DECISION FILE SENSITIVE	PARCEL E-2	NAVFAC - SOUTHWEST	

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PF_N00217_004250 EMAC-8823-0003-0107 REPORT N62473-08-D-8823 2075	**02-10-2012** 02-22-2012 5090.3.B. CTO 0003	WEINGARDT, K. TETRA TECH EC, INC. BRAC PMO WEST	FINAL - FINAL STATUS SURVEY RESULTS, FORMER SCRAP YARD SITE (CD COPY ENCLOSED) [SEE RECORD # 4249 - BRAC PMO WEST TRANSMITTAL LETTER]	POST DECISION FILE SENSITIVE	BLDG 0000807 BLDG 0000810 BLDG 0000812 PARCEL E SITE 00004	NAVFAC - SOUTHWEST	

Total Estimated Record Page Count: 813,001

Total Records: 906

[UIC NUMBER]='N00217'
No Keywords
Sites=PARCEL E;PARCEL E-2
No Classification

Attachment 2. References

(Reference documents provided on CD only)

Item	Reference or Phrase in ROD	Location in ROD	Identification of the Referenced Document Available in the Administrative Record[1]
1	**Parcel E-2**	Section 2.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 2.1, pages 2-1 through 2-3. Record No. 4237. Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Department of the Navy. September 2011. Page 1. Record No. 3580.
2	**Parcel E-2 Landfill**	Section 2.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Sections 8.2.1.1 and 8.2.1.2, pages 8-5 through 8-7. Record No. 4237.
3	**Fill materials in the East Adjacent, Panhandle, and Shoreline Areas of Parcel E-2**	Section 2.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 8.4.1, pages 8-22 through 8-24. Record No. 4237.
4	**Areas where low-level radiological material may be located**	Section 2.2	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. March 2011. Section 2.3, pages 2-5 through 2-8. Record No. 4260.
5	**Radiological operations**	Section 2.2	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. March 2011. Section 4.2, pages 4-3 through 4-6. Record No. 4260.
6	**Hydrostratigraphy**	Section 2.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 2.2.1, pages 2-4 through 2-6. Record No. 4237.
7	**Drinking water**	Section 2.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 2.2.6, pages 2-9 through 2-11. Record No. 4237.
8	**Groundwater flow patterns**	Section 2.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 2.2.2, pages 2-9 through 2-11. Record No. 4237.
9	**Parcel E-2 ecology**	Section 2.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 2.4, page 2-18. Record No. 4237.
10	**Environmental investigations**	Section 2.3	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 3, pages 3-1 and 3-2. Record No. 4237.
11	**EPA guidance for CERCLA landfills**	Section 2.3	"Presumptive Remedy for CERCLA Municipal Landfill Sites." Quick Reference Fact Sheet. EPA OSWER Directive 9355.0-49FS. EPA/540/F-93/035. September 1993. Pages 1 through 3. *(note: this guidance document was provided as Appendix H to the Final Remedial Investigation/Feasibility Study Report for Parcel E-2; Record No. 4237)* Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 8.2.3.1, pages 8-13 through 8-15. Record No. 4237.
12	**Concentrations exceeding evaluation criteria**	Sections 2.3.1 and 2.3.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Table 4-24. Record No. 4237
13	**Potential source of contamination to Parcel F**	Section 2.3.3	Draft Parcels E and E-2 Shoreline Characterization Technical Memorandum, Hunters Point Shipyard, San Francisco, California. SulTech. June 2007. Pages 24 and 25. *(note: this document was accepted as final and was provided as Appendix G to the Final Remedial Investigation/Feasibility Study Report for Parcel E-2; Record No. 4237)*

Item	Reference or Phrase in ROD	Location in ROD	Identification of the Referenced Document Available in the Administrative Record[1]
14	**Landfill gas characterization**	Section 2.3.4	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 4.2.3, pages 4-16 through 4-22. Record No. 4237
15	**Groundwater contaminants**	Section 2.3.5	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 5.8.1, pages 5-38 through 5-40. Record No. 4237
16	**Radiological investigations**	Section 2.3.6	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. March 2011. Section 3.1, pages 3-1 through 3-10. Record No. 4260.
17	**ROCs in surface soil**	Section 2.3.6	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. March 2011. Section 4.3, pages 4-7 and 4-8. Record No. 4260.
18	**Radionuclide groundwater data**	Section 2.3.6	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. March 2011. Sections 5.1 through 5.3, pages 5-1 through 5-4. Record No. 4260.
19	**Future reuse**	Section 2.4	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 1.15, page 1-17. Record No. 4237.
20	**2010 amended redevelopment plan**	Section 2.4	Hunters Point Shipyard Redevelopment Plan. City and County of San Francisco. Map 2, titled "Land Use Districts Map." August 3, 2010 (amendment to July 14, 1997 plan). http://www.sfredevelopment.org/index.aspx?page=160
21	**CSM for human health**	Section 2.5.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix K, Figure K-1. Record No. 4237. Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. March 2011. Appendix B, Figure B-1. Record No. 4260.
22	**Quantitative HHRA**	Section 2.5.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix K, Section K5.0, pages K-12 through K-18. Record No. 4237. Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. Appendix B, Section B5, pages B-10 through B-13. Record No. 4260.
23	**Cancer risks and noncancer hazards**	Section 2.5.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix K, Section K7.0, pages K-23 through K-27. Record No. 4237.
24	**Total and incremental risks**	Section 2.5.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Sections 7.1.2.1 and 7.1.2.2, pages 7-5 through 7-8. Record No. 4237. Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. Section 7.2, pages 7-2 through 7-4. Record No. 4260.
25	**HHRA results for nonradioactive chemicals in soil and groundwater**	Section 2.5.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Tables 7-4 and 7-5; Tables 7-8 through 7-12. Record No. 4237.

Item	Reference or Phrase in ROD	Location in ROD	Identification of the Referenced Document Available in the Administrative Record[1]
26	**Cancer risks from exposure to radionuclides in soil**	Section 2.5.1	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. Table 7 and Appendix B1. Record No. 4260.
27	**NMOCs in landfill gas**	Section 2.5.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 4.1.2.2, pages 4-6 and 4-7. Record No. 4237. Final Parcel E Nonstandard Data Gaps Investigation, Landfill Gas Characterization, Hunters Point Shipyard, San Francisco, California. TtEMI. December 2003. Appendix D, Attachment D-1. *(note: this document was provided as Appendix A to the Final Remedial Investigation/Feasibility Study Report for Parcel E-2; Record No. 4237)* Draft Removal Action Closeout Report, Parcel E Landfill Gas Time-Critical Removal Action, Hunters Point Shipyard, San Francisco, California. TtEMI. March 2004. Appendix G, Attachments G-1 through G-4. *(note: this document was accepted as final and was provided as Appendix F to the Final Remedial Investigation/Feasibility Study Report for Parcel E-2; Record No. 4237)*
28	**Assumptions and uncertainties**	Section 2.5.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix K, Section K9.0, pages K-34 through K-36. Record No. 4237. Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. Appendix B, Section B6, pages B-14 and B-15. Record No. 4260.
29	**Screening-level ecological risk assessment**	Section 2.5.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 7.2, pages 7-11 through 7-15; Appendix L, Table L-7. Record No. 4237. Draft Parcels E and E-2 Shoreline Characterization Technical Memorandum, Hunters Point Shipyard, San Francisco, California. SulTech. June 2007. Appendix G, Table G-18. *(note: this document was accepted as final and was provided as Appendix G to the Final Remedial Investigation/Feasibility Study Report for Parcel E-2; Record No. 4237)*
30	**Risks to aquatic wildlife**	Section 2.5.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 7.3, pages 7-15 and 7-16; Table 7-18. Record No. 4237.
31	**Trigger levels**	Section 2.5.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix M, Section M2.5, pages M-2-5 through M-2-8. Record No. 4237.
32	**Nonradioactive chemicals in soil**	Section 2.5.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Figures 4-4, 4-5, 4-6, 4-7, 4-17, 4-19, 4-22, 4-23, 4-24, 4-38, 4-43, 4-44, 4-56, and 4-69. Record No. 4237.
33	**Groundwater**	Section 2.5.3	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Figures 5-1, 5-5, 5-6, 5-16, 5-17, 5-24, 5-29, and 5-53. Record No. 4237.
34	**Radionuclides in soil**	Section 2.5.3	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. Figures 6, 7, and 8. Record No. 4260.

Item	Reference or Phrase in ROD	Location in ROD	Identification of the Referenced Document Available in the Administrative Record[1]
35	**Landfill gas**	Section 2.5.3	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Figure 4-3. Record No. 4237.
36	**SLERA results**	Section 2.5.3	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Figures 7-5 and 7-6. Record No. 4237. Draft Parcels E and E-2 Shoreline Characterization Technical Memorandum, Hunters Point Shipyard, San Francisco, California. SulTech. June 2007. Figures 11 through 13. *(note: this document was accepted as final and was provided as Appendix G to the Final Remedial Investigation/Feasibility Study Report for Parcel E-2; Record No. 4237)*
37	**Remediation goals**	Section 2.5.3	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 7.1.3.1, page 7-10; Table 7-13. Record No. 4237.
38	**Hot spots**	Section 2.5.3	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.1.6, pages 12-10 through 12-13; Figures 12-7 through 12-9. Record No. 4237.
39	**Potential hot spots within the Parcel E-2 Landfill**	Section 2.6	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 4.5.3.1, page 4-73; Section 8.2.3.2, pages 8-15 and 8-16. Record No. 4237.
40	**Remedial action objectives**	Section 2.7	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 9, page 9-1. Record No. 4237.
41	**Point of compliance**	Section 2.7	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix N, Figure N-1. Record No. 4237.
42	**Water quality criteria**	Section 2.7	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix M, Tables M-1 through M-3. Record No. 4237.
43	**General response actions and remedial technologies**	Section 2.8	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Sections 11.1 and 11.2, pages 11-3 through 11-6; Figure 11-1. Record No. 4237.
44	**Presumptive remedy guidance**	Section 2.8	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 8.2.3.4, pages 8-17 through 8-19. Record No. 4237.
45	**Capital Cost: $363.2M**	Table 8	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix R, Tables R-1, R-3, R-4, R-6, and R-7. Record No. 4237.
46	**$5.5M for radiological actions**	Table 8	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. Appendix D, Section D4, pages D-4 and D-5. Record No. 4260.
47	**Capital Cost: $62.4M**	Table 8	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix R, Tables R-17, R-19, R-20, R-23, and R-24. Record No. 4237.

Item	Reference or Phrase in ROD	Location in ROD	Identification of the Referenced Document Available in the Administrative Record[1]
48	**Capital Cost: $70.8M**	Table 8	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix R, Tables R-33, R-35, R-36, R-39, and R-40. Record No. 4237.
49	**Capital Cost: $70.9M**	Table 8	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix R, Tables R-49, R-51, R-52, R-55, and R-56. Record No. 4237.
50	**Nine evaluation criteria**	Section 2.8.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 13, pages 13-1 through 13-3. Record No. 4237.
51	**New wetlands**	Section 2.9.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.2.3.11, pages 12-30 and 12-31. Record No. 4237.
52	**Landfill gas controls**	Section 2.9.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.2.3.9, pages 12-28 and 12-29. Record No. 4237.
53	**Below-ground barrier and drain along western boundary**	Section 2.9.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.2.3.7, pages 12-27 and 12-28. Record No. 4237.
54	**Below-ground barrier would be installed near the shoreline**	Section 2.9.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.2.4.2, pages 12-33 and 12-34. Record No. 4237.
55	**Groundwater would be pumped and treated if necessary**	Section 2.9.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.2.3.8, page 12-28. Record No. 4237.
56	**Control soil movement during maximum probable earthquake**	Section 2.9.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.2.3.1, page 12-23. Record No. 4237.
57	**Potential rise in sea level**	Section 2.9.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.1.3, pages 12-5 through 12-7. Record No. 4237.
58	**Community Involvement Plan**	Section 2.10	Final Community Involvement Plan, Hunters Point Shipyard, San Francisco, California. Department of Navy. May 2011. Record No. 2910.
59	**IR Program website**	Section 2.10	http://www.bracpmo.navy.mil/
60	**Two associated fact sheets**	Section 2.10	Fact Sheet, Summary of the Navy's Proposed Cleanup of Parcel E-2, Hunters Point Naval Shipyard. BRAC PMO West. September 2011. Record No. 3580. Fact Sheet, Frequently Asked Questions About the Shipyard Landfill, Hunters Point Naval Shipyard. BRAC PMO West. September 2011. Record No. 3580.
61	**Transcript of the public meeting**	Section 2.10	*(note: this document is being published as part of this Record of Decision for Parcel E-2)*

[1] Bold blue text indicates hyperlinks available on reference CD to detailed site information contained in the publically available Administrative Record.

For access to information contained in the Administrative Record for Hunters Point Naval Shipyard, please contact:

Naval Facilities Engineering Command Southwest
Attention: Diane Silva, Command Records Manager
2965 Mole Road, Building 3519
San Diego, CA 92136
Phone: (619) 556-1280

Item	Reference or Phrase in ROD	Location in ROD	Identification of the Referenced Document Available in the Administrative Record[1]
1	**Parcel E-2**	Section 2.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 2.1, pages 2-1 through 2-3. Record No. 4237. Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Department of the Navy. September 2011. Page 1. Record No. 3580.

This section describes the site characteristics associated with Parcel E-2, including the site features; geologic, hydrogeologic, and hydrologic conditions; and ecologic conditions, such as terrestrial, wetland, and intertidal habitats[2]. According to EPA guidance, characterization of a landfill's contents is not necessary or generally appropriate for selecting a response action for these sites when applying the presumptive remedy methodology for remedial alternatives evaluation (EPA, 1993a; Appendix H to this report). However, because Parcel E-2 is composed of a landfill, as well as adjacent areas (the Panhandle Area, East Adjacent Area, and Shoreline Area) containing noncontiguous waste deposits outside the primary landfill area, characterization data collected through March 2008 were used in the remedy evaluation process.

2.1. SITE FEATURES

Parcel E-2 encompasses approximately 47.4 acres at HPS. As described in Section 1, the parcel was divided into the following four areas:

- The "Landfill Area," which comprises the entire Parcel E-2 Landfill and its immediate perimeter
- The "Panhandle Area," located west and southwest of the Landfill Area
- The "East Adjacent Area," located to the east of the Landfill Area
- The "Shoreline Area," located at the interface with San Francisco Bay

The following subsections describe the surface features for each of the four areas listed above, including information about the types of solid waste believed to be present at each area. Numerous areas within Parcel E-2 are considered "radiologically impacted," which is discussed in further detail in Section 3.6.

2.1.1. Landfill Area

The 22-acre Landfill Area consists of two subareas: (1) a 14.5-acre interim landfill cap and (2) a 7.5-acre area that is covered with a 2-foot-thick soil layer. The interim cap, originally constructed to smother remnants of a waste layer fire that occurred in August 2000, consists of a multilayer system of sub-base soil, an HDPE membrane, a synthetic drainage layer, and topsoil (TtEMI, 2005b; Appendix E to this

[2] In September 2004, the Navy divided Parcel E into two parcels (E and E-2). Discussions within this report that reference documents published prior to September 2004 refer to the portion of Parcel E that became Parcel E-2.

report). The remaining 7.5 acres that were unaffected by the fire are covered by a 2-foot-thick soil layer that was placed in 1974 during a preliminary closure action.

Based on data from 26 soil borings, 12 monitoring wells, and 25 test pits extended within the Landfill Area, solid waste in the landfill is primarily municipal-type waste and construction debris. The solid waste includes wood, paper, plastic, metal, glass, asphalt, concrete, and bricks that are mixed with sand, clay, and gravel fill. Historic information indicates that industrial wastes, including sandblast waste, radioluminescent devices, asbestos-containing debris, paint sludge, solvents, and waste oils, were also disposed of in or around the Landfill Area (NEESA, 1984; NAVSEA, 2004). For simplicity, the debris and waste that make up the landfill are referred to as "solid waste" throughout the remainder of this report. The lateral and vertical extents of solid waste within the landfill were evaluated during previous investigations, as discussed in Section 3.2 of this RI/FS Report. The types of solid waste within the Landfill Area are discussed in more detail in Section 4.2.1.

The 14.5-acre interim landfill cap limits precipitation from percolating into portions of the solid waste, and the entire Landfill Area is sloped sufficiently for surface drainage that avoids ponding (drainage patterns are discussed in Section 2.3). The Navy performs inspection and maintenance of the interim landfill cap in accordance with a site-specific operation and maintenance (O&M) plan (TtEMI, 2003b).

In 2002, a landfill gas characterization study revealed that landfill gas had migrated north of the solid waste extent and onto the adjacent Navy and UCSF property. In response to this finding, a time-critical removal action (TCRA) was conducted to (1) reduce concentrations of subsurface methane north of the Parcel E-2 Landfill (under both Navy and UCSF property) to below 5 percent, and (2) prevent future landfill gas migration. The TCRA included installation and operation of a gas control, extraction, and treatment system; the TCRA is discussed in more detail in Section 3.8.5 of this RI/FS Report.

From 1997 to 1998, a 614-foot-long sheet-pile wall was constructed along the southern portion of the Landfill Area, to a depth ranging from 12 to 55 feet bgs, to reduce the potential for release of chemicals from the landfill into the bay. To reduce groundwater mounding behind the sheet-pile wall, a groundwater extraction system (GES) was installed at the same time to intercept, treat, and discharge groundwater to the municipal sewer system (IT, 1999); both features are shown on Figure 1-3 and are discussed in more detail in Section 3.8.3 of this RI/FS Report. These features targeted A-aquifer groundwater. The GES was deactivated in April 2005 to excavate contaminated soil adjacent to the sheet-pile wall and remains offline following implementation of the removal action in the PCB Hot Spot Area (TtFW, 2005a) (discussed in Section 3.8.8).

2.1.2. Panhandle Area

The Panhandle Area has a relatively flat topography and is covered by fill soil that contains noncontiguous pockets of solid waste. Waste at these locations is not contiguous with the Landfill Area and consists primarily of construction debris, with lesser quantities of industrial waste (discussed further in Section 4.3.1). The presence of isolated solid waste locations is largely because the Panhandle Area was reclaimed from the bay by filling using a combination of fill soil and waste materials (with larger proportions of fill soil as compared to the fill material within the Landfill Area). The interim landfill cap, that covers much of the Landfill Area, does not extend onto the Panhandle Area.

The Panhandle Area includes a drainage channel just outside the extent of landfill waste along the western perimeter of Parcel E-2 (see Figure 1-4). The drainage channel directs runoff south and discharges indirectly to the bay through low-lying seasonal wetlands southwest of the Parcel E-2 Landfill. The wetland areas are discussed in more detail in Section 2.4.2.

The Panhandle Area contains areas of potential low-level radioactivity, including a former experimental ship-shielding area and the metal slag area. The metal slag area, which is in the southern peninsula of the Panhandle Area and extends into the Shoreline Area, was excavated under an interim removal action (see Figure 1-3; TtECI, 2007b).

2.1.3. East Adjacent Area

Like the Panhandle Area, the East Adjacent Area has a relatively flat topography and includes solid waste locations intermixed with fill soil that are not contiguous with the Parcel E-2 Landfill. Waste at these locations is not contiguous with the Landfill Area and consists primarily of construction debris, with lesser quantities of industrial waste (discussed further in Section 4.4.1). The East Adjacent Area also includes an area containing potential low-level radioactive debris. The East Adjacent Area contains an area with PCB contamination, a portion of which was excavated under an interim removal action (see Figure 1-3; TtECI, 2007a). The sheet-pile wall and associated GES extends from the Landfill Area into the East Adjacent Area (Figure 1-3). The interim gas control system also extends into the East Adjacent Area.

2.1.4. Shoreline Area

The Shoreline Area is the intertidal zone that contains areas covered with concrete riprap and other exposed shoreline containing sediments and emergent saline wetlands. The intertidal sediments present in the Shoreline Area were characterized during the SDGI, and the results are summarized in the Shoreline Characterization Technical Memorandum (SulTech, 2007; Appendix G to this report). The metal slag area, discussed in the subsection above, also extends into the Shoreline Area and was previously excavated under an interim removal action (Figure 1-3; TtECI, 2007b).

Hunters Point Naval Shipyard Parcel E-2

San Francisco, California ***September 2011***

NAVY ANNOUNCES PROPOSED PLAN

The U.S. Navy encourages the public to comment on its ***Proposed Plan**** for cleanup of Parcel E-2 at Hunters Point Naval Shipyard (HPNS) in San Francisco, California. Parcel E-2 includes an unlined ***solid waste*** landfill along the shoreline in the southwest portion of the Shipyard (see Figure 1).

This Proposed Plan presents several remedial (cleanup) alternatives and identifies the Navy's ***Preferred Alternative***. The Navy, in consultation with the U.S. Environmental Protection Agency (EPA), the California EPA Department of Toxic Substances Control (DTSC), and the San Francisco Bay Regional Water Quality Control Board (Water Board), will select a ***remedial action*** for the site in the ***Record of Decision (ROD)*** after reviewing and considering all information submitted during the public comment period. The Navy may modify the Preferred Alternative or select another remedial alternative presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives presented in this Proposed Plan. A final decision will not be made until all comments submitted during the review period are considered. See how to comment in the box below.

This Proposed Plan summarizes the remedial (cleanup) alternatives evaluated by the Navy and explains the basis for identifying the preferred alternative to address contamination at Parcel E-2 at HPNS (Figure 1). The Navy proposes the following actions to address hazardous substances in soil, shoreline sediment, ***landfill gas***, and groundwater at Parcel E-2:

- Remove and dispose of contaminated soil in selected areas.
- Separate and dispose of materials and soil with ***radiological contamination***.
- Install a ***protective liner*** and soil cover over all of Parcel E-2.
- Install a ***below-ground barrier*** to limit groundwater flow from the landfill to San Francisco Bay.
- Remove and treat landfill gas to prevent it from moving beyond the Parcel E-2 boundary.
- Build a shoreline ***revetment***.
- Build new ***wetlands***.
- Monitor and maintain the different parts of the preferred alternative (soil cover, shoreline revetment, wetlands, etc.) to ensure they are working properly.
- Use ***institutional controls (IC)*** to restrict specific land uses and activities on parcel E-2 (see page 21 for more details on ICs).

Public comments will be accepted from September 7 through October 24, 2011, and public comments can be submitted via mail, fax, or e-mail throughout the comment period. A public meeting will be held from 6:00 p.m. to 8:00 p.m. on September 20, 2011, at the Southeast Community Facility Commission Building in the Alex L. Pitcher, Jr. Room, located at 1800 Oakdale Avenue in San Francisco. Members of the public may submit written and oral comments on this Proposed Plan at the public meeting. Written comments can be provided any time during the comment period but must be received no later than October 24, 2011. Please refer to page 20 for further information on how to provide comments.

How to Comment on the Proposed Plan for Parcel E-2

- **Provide written comments no later than October 24, 2011, by one of the following methods:**
  E-mail: keith.s.forman@navy.mil
  Fax: (619) 532-0995
  Mail: See address on page 20
- **Attend the public meeting and provide verbal or written comments:**
  September 20, 2011, from 6:00 p.m. to 8:00 p.m.
  Southeast Community Facility Commission Building, Alex L. Pitcher, Jr. Room
  1800 Oakdale Avenue in San Francisco

Figure 1. Location of HPNS.

*Words in ***bold italic*** type are defined in the glossary on page 22

2	Parcel E-2 Landfill	Section 2.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Sections 8.2.1.1 and 8.2.1.2, pages 8-5 through 8-7. Record No. 4237.

from the previous investigations and removal actions described in Section 3. The EPA's presumptive remedy guidance states that "characterization of a landfill's contents is not necessary or appropriate for selecting a response action for these sites except in limited cases; rather, existing data are used to determine whether the containment presumption is appropriate" (EPA, 1993a). EPA guidance provides a framework for determining whether the containment presumptive remedy applies to a specific military landfill (EPA, 1996). The first step is to evaluate the available information to determine the sources, types, and volumes of landfill wastes. The following subsections outline the available information for the Parcel E-2 Landfill to support this evaluation. The remaining steps in the decision framework are discussed in Section 8.2.3.

8.2.1.1. Waste Types Encountered During Field Activities

Based on data from 28 soil borings, 18 monitoring wells, and 25 test pits extended within the Landfill Area (Figures 3-1 and 3-2), the contiguous solid waste is composed primarily of municipal-type waste and construction debris. The solid waste includes wood, paper, plastic, metal, glass, asphalt, concrete, and bricks that are mixed with sand, clay, and gravel fill. Construction debris (such as asphalt, concrete, and brick) is typically inert. Inert waste does not contain significant quantities of putrescible (i.e., decomposable) waste, and is not expected to generate leachate that would create potential risks to human health or the environment. The presence of construction debris, although typically considered an inert waste, was evaluated in conjunction with municipal-type waste because certain types of construction debris (most notably wood) and most municipal-type wastes readily biodegrade and may be considered putrescible.

In addition to municipal-type waste and construction debris, historic information indicates that industrial wastes were also disposed of in or around the Landfill Area, including sandblast waste, radioluminescent devices, asbestos-containing debris, paint sludge, solvents, and waste oils (NEESA, 1984; NAVSEA, 2004). The presence of some of these industrial wastes has been confirmed during the removal action at the PCB Hot Spot Area, which extends into a small portion the Landfill Area (Figure 1-3). Small quantities of LLRW from the disposal of radioluminescent devices and potentially radioactive sandblast waste have been encountered during implementation of the removal actions at the PCB Hot Spot Area (Navy, 2005b through 2005f; TtECI, 2007a). Out of a total excavated volume of 44,500 cubic yards, 533 cubic yards of soil and fire brick (1.2% by volume) was segregated as radiologically impacted. Also, 40 radiological devices, 78 cubic yards of metal debris, and 19 pieces of other radioactively contaminated debris were identified within the removal area (TtECI, 2007a). In addition, 41 pieces of MPPEH were encountered in the excavation area, consisting primarily of expended cartridge casings of various calibers and protective caps, but also included an empty 5-inch practice projectile and a 3-pound practice bomb (TtECI, 2010). Of the 41 MPPEH items discovered in the

removal area, 20 items were verified to not present an explosive hazard and were reclassified as MDAS. The remaining 21 MPPEH items appeared to have been subject to previous demilitarization actions and could not be completely inspected by UXO technicians for possible explosive hazards. Although the type, age, and condition of these 21 MPPEH items did not suggest a high potential for residual energetic material, the Navy, as a precautionary measure, properly handled, transported, and disposed of these items as either material documented as an explosive hazard (MDEH) (20 items consisting of expended cartridge casings of various calibers) or munitions and explosives of concern (MEC) (1 item. 3-pound practice bomb) (TtECI, 2010). The characterization data suggest that the quantity of industrial waste within the Landfill Area is less than the quantity of municipal-type waste and construction debris.

Additional information on subsurface conditions in the Landfill Area was obtained during installation of the sheet-pile wall in the southeast portion of Parcel E-2 (Figure 1-3). In September 1997, an obstruction was encountered at a depth of approximately 20 feet bgs, accompanied by a release of pressurized gas to the surface. The atmosphere in this area was monitored for health and safety purposes, specifically for explosive conditions (using an LEL meter) and various compounds, including natural gas, chlorine, and hydrogen sulfide (using colorimetric indicator tubes). Sporadic detections of atmospheric conditions above 10 percent of the LEL and chlorine gas above 5 ppm were encountered during health and safety monitoring. Approximately 80 feet of the sheet-pile wall (as originally designed) was realigned to avoid the subsurface obstructions. The alternate alignment consisted of an approximate 50-foot-long section that was off-set approximately 20 feet from the design alignment, with the remaining portion gradually angling back to the design alignment. The remainder of the sheet-pile wall was completed with no additional releases of subsurface gas (IT, 1999). These subsurface conditions may be indicative of solid waste at this location, and the sporadic detections of chlorine gas are a health and safety concern because they are above the permissible exposure limit (established by the Occupational Health and Safety Administration) of 1 ppm. However, no definitive conclusions on the nature of the potential waste at this depth can be drawn from the observed conditions.

8.2.1.2. Operating History

Overall, the operating history of the Parcel E-2 Landfill is not well documented (TtEMI, LFR, and U&A, 1997). The following items summarize the available historic information:

- The IAS indicated that, between 1958 and 1974, the Navy created the Parcel E-2 Landfill by placement of a variety of shipyard wastes, including construction debris, municipal-type solid waste, and industrial waste (including sandblast waste, paint sludge, solvents, and waste oils) (NEESA, 1984).
- The HRA indicated that the Parcel E-2 Landfill, along with other areas within Parcels E and E-2, was a disposal area for radioluminescent devices (primarily containing radium-226), and that the landfill was a potential disposal area for wastes from decontamination of ships used in atomic testing (NAVSEA, 2004)

- An oily waste area was identified on Navy drawings along the western perimeter of the Landfill Area (Navy, 1974). During preliminary closure activities in 1974, ponded liquid was removed and the top 6 inches of soil at the oily waste area was scarified before the soil cover was placed. Based on borings and exploratory trenches, this area also was partially filled with solid waste during closure; therefore, this area is included within the boundaries of solid waste at the Parcel E-2 Landfill (TtEMI, 2004f).
- Triple A allegedly disposed of industrial debris, sandblast waste, oily industrial sand, and asphalt over an area of approximately 5 acres along the shoreline of Parcel E-2. In addition, Triple A allegedly stored unlabeled, deteriorating, uncovered drums with their contents exposed to the elements in the southeast corner of Parcel E-2 (Figure 1-11; SFDA, 1986).
- Waste fuel and waste oil containing PCBs were used at the Parcel E-2 Landfill as dust suppressants (TtEMI, LFR, and U&A, 1997).

8.2.1.3. Nature and Extent of Chemicals in Soil

The soil data set within the Landfill Area was derived from 333 soil samples (26 soil borings, 27 excavation grids within the PCB Hot Spot Area, 12 monitoring wells, and 25 test pits) collected from the intermittent soil fill mixed within the solid waste. As discussed in Section 4.2.4, soil characterization data are used to assess the approximate lateral and vertical extent (relative to the landfill waste volume) of hazardous substances above the RIECs, and to provide a basis for determining whether lesser quantities of hazardous wastes are present in the landfill as compared with municipal wastes. In addition, the characterization data are used to identify potential hot spots (defined as locations containing chemical concentrations 100 times greater than the corresponding RIEC) within the Landfill Area and, based on criteria established by EPA, to determine whether these hot spots require more extensive characterization and development of remedial alternatives.

Metals, pesticides, PCBs, SVOCs, VOCs, and petroleum hydrocarbons were detected at concentrations exceeding the RIEC in soil samples collected at the Landfill Area. These exceedances are summarized below.

- Eight metals (antimony, arsenic, cadmium, chromium, copper, iron, lead, and vanadium) were detected at concentrations exceeding the RIECs at depths greater than 2 feet bgs. Only lead exceeded the RIEC at samples collected from 0 to 2 feet bgs. None of these exceedances were indicative of hot spots.
- Total high risk PCBs (consisting of all Aroclor compounds except Aroclor-1016) were detected at concentrations exceeding the RIEC in more than 30 percent of the samples collected within each depth range evaluated (0 to 2 feet bgs, 2 to 10 feet bgs, and greater than 10 feet bgs). Most of these exceedances were not indicative of hot spots; however, several samples contained PCBs at concentrations that were greater than 100 times the RIEC (0.74 mg/kg) and may be considered potential hot spots within the landfill (described further below).

3	**Fill materials in the East Adjacent, Panhandle, and Shoreline Areas of Parcel E-2**	Section 2.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 8.4.1, pages 8-22 through 8-24. Record No. 4237.

above 25 percent of the LEL. An investigation of this possible preferential pathway will be scoped, performed, and summarized as part of the RD process. This investigation may involve geophysical techniques and exploratory test pits.

Based on evaluation of available data from January 2004 through June 2010, the gas control system is functioning to control the migration of hazardous levels of methane beyond the northern fence line of the Parcel E-2 Landfill. In January and February 2006, hazardous levels of methane were detected at the fence line of the landfill. The Navy promptly performed active extraction to control the migration of hazardous levels of methane beyond the fence line of the landfill. The efficacy of the gas control system along the northern landfill boundary, as well as gas monitoring data (for both methane and NMOCs) from around the remainder of the landfill, supports the nature and extent of landfill gas as presented in this report.

The potential exists for methane, if not properly controlled, to migrate beyond the Parcel E-2 Landfill boundary at concentrations that may be hazardous to human health. Therefore, continued monitoring and control (through either passive or active methods) of methane should be included as part of any remedial alternative that leaves Landfill Area solid waste in place. Additional studies are planned, in conjunction with the RD, to more thoroughly evaluate soil gas concentrations in the Panhandle Area and East Adjacent Area and to assess whether methane or NMOCs are present in the areas at concentrations that may be hazardous to human health.

8.4. SOIL AND ISOLATED SOLID WASTE IN THE PANHANDLE AND EAST ADJACENT AREAS

The following subsections summarize the nature and extent of isolated solid waste locations (Section 8.4.1) and chemicals in soil (Section 8.4.2) found in the Panhandle and East Adjacent Areas. The risk assessments conducted in the adjacent areas are summarized in Section 8.4.3, and an overview of the RI conclusions for the adjacent areas is presented in Section 8.4.4.

8.4.1. Nature and Extent of Isolated Solid Waste Locations

The nature and extent of solid waste in the Panhandle and East Adjacent Areas is distinct from the solid waste defined in the Landfill Area. Specifically, fill material in the Panhandle and East Adjacent Areas consists primarily of soil and rock, with isolated solid waste locations that are not contiguous with solid waste in the Landfill Area. In addition, solid waste within the adjacent areas consists of inert construction debris, with isolated locations of industrial wastes (such as sandblast waste, metal slag, radioluminescent devices, and oily waste) and putrescible construction debris (such as wood). Although these waste types are also found in the Landfill Area, the municipal-type waste found in the Landfill Area is not found in the Panhandle and East Adjacent Areas.

The Navy reviewed aerial photographs and logs from more than 280 test pits, soil borings, monitoring wells, and GMPs from various investigations at and adjacent to Parcel E-2 to identify locations outside the landfill that contain industrial wastes, municipal-type wastes, or construction debris. Results of the evaluation are summarized in the table below and depicted on Figure 4-1.

Waste Type	Number of Waste Locations in Panhandle Area [a]	Number of Waste Locations in East Adjacent Area [a]
Nonputrescible construction debris	28	10
Putrescible construction debris	20	21
Sandblast waste	0	9
Sandblast waste and putrescible construction debris	0	3
Total:	**48 (87 total borings and test pits)**	**43 (117 total borings and test pits)**

Notes:

a Includes borings in the Shoreline Area in close proximity to the Panhandle and East Adjacent Areas, and also includes borings and test pits installed only to identify soil lithology (i.e., no soil samples were collected for chemical analysis).

Construction debris encountered in both the Panhandle and East Adjacent Areas include concrete, brick, wood, and asphalt, with limited amounts of ceramic, glass, and metals (primarily as wire or rebar in concrete). With the exception of wood, the remaining types of construction debris are considered inert and are not expected to generate methane gas or leachate that would create potential risks to human health or the environment.

Industrial wastes have been encountered in the Panhandle and East Adjacent Areas during the Metal Slag Area and PCB Hot Spot Area removal actions. Industrial wastes encountered within the Metal Slag Area (in the Panhandle Area) include metal slag and debris containing low-level radiological material and devices (TtECI, 2007b). All excavated soil and waste removed from the Metal Slag Area was handled and screened as potential LLRW based on the findings of the HRA (NAVSEA, 2004). Out of a total excavated volume of 8,200 cubic yards, approximately 74 cubic yards of soil and sediment was segregated as radiologically impacted. In addition, 32 radiological devices, 15 cubic yards of radiological debris (primarily fire bricks), and approximately 30 cubic yards of metal debris were identified within the removal area (Navy, 2006a and 2006b; TtECI, 2007b). In addition to this radiologically impacted debris, six waste drums were recovered from the removal area and were characterized prior to off-site disposal. The drums, which were discovered in varying degrees of deterioration, contained grease, soil, plastic, metal, and wood. Waste characterization data indicated that five of the six drums contained various chemicals, including PCBs and petroleum hydrocarbons; the sixth drum contained elevated activities of radium-226 (TtECI, 2007b).

Industrial wastes encountered within the PCB Hot Spot Area (in the East Adjacent Area) include oily wastes, radioluminescent devices, and sandblast waste (Navy, 2005b through 2005f). All excavated soil

and waste from the PCB Hot Spot Area removal action was handled and screened as potential LLRW based on the findings of the HRA (NAVSEA, 2004). Out of a total excavated volume of 44,500 cubic yards, 533 cubic yards of soil and fire brick was segregated as radiologically impacted. Also, 40 radiological devices, 78 cubic yards of metal debris, and 19 pieces of other radioactively contaminated debris were identified within the removal area (TtECI, 2007a).

Also, 110 drums and 537 assorted waste containers were recovered from the central portion of the PCB Hot Spot Area excavation and were characterized prior to off-site disposal. The drums, which were discovered in varying degrees of deterioration, contained grease, oil, soil, asphalt, and tar substances. Waste characterization data indicated that the drums contained various chemicals, including PCBs and pesticides. Two of the drums contained mixed waste with radiological contamination. The small containers contained various laboratory chemicals, ranging from strong acids and bases to solvents, alcohols, and inorganic salts (TtECI, 2007a). In addition, 41 pieces of MPPEH were encountered in the excavation area, consisting primarily of expended cartridge casings of various calibers and protective caps, but also included an empty 5-inch practice projectile and a 3-pound practice bomb (TtECI, 2010). Of the 41 MPPEH items discovered in the removal area, 20 items were verified to not present an explosive hazard and were reclassified as MDAS. The remaining 21 MPPEH items appeared to have been subject to previous demilitarization actions and could not be completely inspected by UXO technicians for possible explosive hazards. Although the type, age, and condition of these 21 MPPEH items did not suggest a high potential for residual energetic material, the Navy, as a precautionary measure, properly handled, transported, and disposed of these items as either material documented as an explosive hazard (MDEH) (20 items consisting of expended cartridge casings of various calibers) or munitions and explosives of concern (MEC) (1 item. 3-pound practice bomb) (TtECI, 2010).

The noncontiguous and heterogeneous nature of the fill material within the Panhandle and East Adjacent Areas results in a high degree of uncertainty that this fill and the chemicals in soil can be delineated into discrete zones for remediation activities.

8.4.2. Nature and Extent of Chemicals in Soil

The soil data set within the Panhandle and East Adjacent Areas was derived from 754 soil samples (113 soil borings, 113 excavation grids within the PCB Hot Spot Area and Metal Slag Area, and 14 test pits) collected within these areas. Metals, pesticides, PCBs, dioxins and furans, SVOCs, and petroleum hydrocarbons were detected at concentrations exceeding RIECs in soil samples collected in the Panhandle and East Adjacent Areas. A summary of these chemical detections above the RIECs is presented below.

4	**Areas where low-level radiological material may be located**	Section 2.2	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. March 2011. Section 2.3, pages 2-5 through 2-8. Record No. 4260.

The HRA concluded that low levels of radiological contamination exist within the confines of HPS. The review of previous radiological activities, cleanup actions, and release surveys identified no imminent threat or substantial risk to tenants or the environment of HPS or the local community (NAVSEA, 2004).

The HRA identified the following radiologically impacted areas at Parcel E-2 (Figure 3):

- Experimental Ship-Shielding Area
- IR Site 01/21 (which encompasses most of the land area at Parcel E-2)
- IR Site 02 (located partially within Parcel E-2)
- Metal Slag Area
- Parcel E-2 shoreline
- Sanitary sewer system
- Storm drain lines
- Septic sewer lines

Each radiologically impacted area is described in the sections below, and key information is provided on Table 1. As shown on Figure 3, most of the land area within Parcel E-2, except for small portions of the East Adjacent Area, is considered radiologically impacted.

2.3.1. Experimental Ship-Shielding Area

The Experimental Ship-Shielding Area is an open field area located in the Panhandle Area. Radioactive material was used in the area to conduct shielding experimentation for ships; more specifically, radiological experiments were performed to evaluate the shielding effectiveness of various construction materials (Atomic Energy Commission [AEC] 1960, 1961, and 1963). The former range comprises three parts: (1) a fan-shaped, post-exposure reflection/refraction field measuring 150 feet in radius; (2) a 60- by 35-foot site designated as Area A; and (3) a 60- by 50-foot area designated as Area B. The former range was enclosed on the west side by a soil berm. Documents reviewed during preparation of the HRA identified the following information regarding historic operations at the Experimental Ship-Shielding Area:

- The 1959 AEC Compliance Inspection Report states that one of the planned experiments would consist of a cobalt-60 (^{60}Co) source being "passed through a plastic tube laid just beneath the surface of the ground" (AEC, 1960).

- The 1961 AEC Compliance Inspection Report states that to simulate spread source radiation fields, an 100 curie ^{60}Co source was "pumped through plastic tubing laid in varying patterns on an asphalt-covered area" (AEC, 1961).
- The 1962 inspection report states that at the time of inspection, the tube "device was not in use," and the tubing and ^{60}Co source were properly stored (AEC, 1963).

The ROCs at the ship-shielding area are ^{60}Co, cesium-137 (^{137}Cs), and radium-226 (^{226}Ra). The HRA concluded that potential contamination is likely in this area and recommended remediation of areas of elevated radioactivity (as identified during previous characterization surveys) and conducting a final status survey (NAVSEA, 2004). The Navy is planning to perform these actions under an interim removal action, currently scheduled to be implemented in 2011.

2.3.2. IR Site 01/21

IR Site 01/21 is the investigation area established in and around the Landfill Area during the early stages of the site characterization process. This site boundary was established prior to the Navy completing the site investigations that distinguished the Landfill Area from the Panhandle Area, East Adjacent Area, and Shoreline Area. As a result, the IR Site 01/21 boundary extends beyond the Landfill Area into adjoining portions of the Panhandle Area, East Adjacent Area, and Shoreline Area. The most common source of potential radioactive contamination at IR Site 01/21 is historic waste disposal activities. Documented disposal of low-level radiological waste at IR Site 01/21 includes disposal of radioluminescent commodity items (such as dials, gauges, and deck markers). Disposal of radioluminescent commodity items was not controlled by specific procedures until the late 1960s. Prior to that time, it was common practice to dispose of such items on-site, including at IR Site 01/21 (NAVSEA, 2004). Other suspected disposal of low-level radiological waste at IR Site 01/21 includes: (1) potential disposal of wastes from decontamination of ships used in atomic weapons testing (i.e., sandblast waste); (2) potential disposal of building debris from demolition of radiologically impacted buildings used by the Naval Radiological Defense Laboratory (NRDL); and (3) potential disposal of materials used in radiological experiments by NRDL. Available information regarding the quantities and types of materials potentially disposed of at IR Site 01/21 is discussed in the Sections 4.2.1 and 4.2.2.

The ROCs at IR Site 01/21 are ^{137}Cs, ^{226}Ra, and strontium-90 (^{90}Sr). The HRA concluded that contamination is known to exist in this area and recommended remediation of areas of elevated radioactivity (as identified during previous characterization surveys) and conducting a final status survey (NAVSEA, 2004).

2.3.3. IR Site 02

IR Site 02, which extends partially into the East Adjacent Area, is the investigation area established along the margin of San Francisco Bay during the early stages of the site characterization process. This site boundary was established prior to the Navy completing the site investigations that initially delineated

the PCB Hot Spot Area. When the Navy divided Parcel E into two parcels (E and E-2) in 2004, the Parcel E-2 boundary was drawn to include the portion of IR Site 02 containing the initial boundary of the PCB Hot Spot Area. Historical radiological operations at IR Site 02 included disposal of radioluminescent commodity items (such as dials, gauges, and deck markers), and potential disposal of wastes from decontamination of ships used in atomic weapons testing (i.e., sandblast waste).

An area containing a concentration of radioluminescent commodity items was discovered in IR Site 02 and removed during an interim removal action (TtECI, 2007c); however, this area is located entirely within the current boundary of Parcel E. The ROCs at IR Site 02 are ^{137}Cs, ^{226}Ra, and ^{90}Sr. The HRA concluded that contamination is known to exist in this area and recommended a characterization survey, remediation of areas of elevated radioactivity, and conducting a final status survey (NAVSEA, 2004).

From 2005 to 2007, the Navy conducted a removal action at the PCB Hot Spot Area, which is discussed in detail in Section 3.2.2. Additional excavation along the western and southwestern sidewalls of the excavation (referred to as the shoreline portion of the PCB Hot Spot Area) was initiated in 2010 (Navy, 2010; Shaw, 2010), with work anticipated to be completed in 2011.

2.3.4. Metal Slag Area

The Metal Slag Area is an open field located in the Panhandle Area and Shoreline Area southwest of the Experimental Ship-Shielding Area. The Metal Slag Area contains wastes suspected to have originated from the metal foundry (Building 241 in Parcel C) and the smelter (Building 408 in Parcel D) when the shipyard was active. Waste in the Metal Slag Area includes industrial debris and metal slag with radioactive anomalies. The ROCs at the Metal Slag Area are ^{137}Cs, ^{226}Ra, and ^{90}Sr. The Metal Slag Area was excavated under an interim removal action that is described in further detail in Section 3.2.1 (TtECI, 2007b).

2.3.5. Parcel E-2 Shoreline

The intertidal shoreline area in Parcels E and E-2 was surveyed for gamma radiation in 2001. This survey identified several areas of elevated radioactivity; as a result, the HRA concluded that contamination is known to exist in this area and recommended a characterization survey, remediation of areas of elevated radioactivity, and conducting a final status survey (NAVSEA, 2004). The ROCs at the Parcel E-2 shoreline are ^{137}Cs, ^{226}Ra, and ^{90}Sr. As discussed in the section above, the Navy removed metal slag with radioactive anomalies from the Metal Slag Area under an interim removal action (TtECI, 2007b). Additional excavation along the shoreline portion of the PCB Hot Spot Area was initiated in 2010 (Navy, 2010; Shaw, 2010), with work anticipated to be completed in 2011.

2.3.6. Sanitary Sewer System

Consistent with regulations at the time the NRDL operated at HPS, small amounts of low-level radioactive liquids may have been released into drains at NRDL buildings that discharged into the sanitary sewer system (NAVSEA, 2004). Evidence of such releases was initially found at Buildings 351A and 364 located in Parcel G, which prompted the Navy to initiate an interim removal action to remove and remediate potentially contaminated sanitary sewer lines throughout various HPS parcels (B, C, D-1, D-2, E, E-2, G, UC-1, and UC-2). The ROCs for the sanitary sewer system are ^{137}Cs, ^{226}Ra, and ^{90}Sr. As of October 2009, the Navy had removed sanitary sewer lines throughout Parcels B, D-2, G, UC-1, and UC-2. The portion of the sanitary sewer system that extends into Parcel E-2 has not yet been removed, but is considered by the HRA to likely be contaminated and is recommended for a characterization survey, followed by remediation of areas of elevated radioactivity and a final status survey (NAVSEA, 2004).

2.3.7. Storm Drain Lines

The original sanitary sewer system at HPS was combined with the storm drain system and used the same conveyance piping and 40 separate discharge outfalls into the bay. Three separate projects, beginning in 1958, were completed to separate the sanitary sewer and storm drain systems, but complete separation of the two systems was never achieved. Based on this history and the potential discharge of small amounts of low-level radioactive liquids into drains at NRDL buildings, the storm drain lines at HPS Parcels B, C, D-1, D-2, E, E-2, G, UC-1, and UC-2 are considered radiologically impacted and are being removed under an interim removal action concurrent with the sanitary sewer system. The ROCs for the storm drain lines are ^{137}Cs, ^{226}Ra, and ^{90}Sr. As of October 2009, the Navy had removed storm drain lines throughout Parcels B, D-2, G, UC-1, and UC-2. The storm drain lines that extend into Parcel E-2 have not yet been removed, but are considered by the HRA to likely be contaminated and are recommended for a characterization survey, followed by remediation of areas of elevated radioactivity and a final status survey (NAVSEA, 2004).

2.3.8. Septic Sewer Lines

Prior to construction of the sanitary sewer and storm drain system, individual buildings may have used septic drain fields to dispose of liquid wastes, including potentially small amounts of low-level radioactive liquids. Construction documentation for septic sewer lines does not exist; however, septic sewer lines were discovered during a radiological survey at the Building 707 “triangle area” (located in Parcel E) and sewer lines may be present at other radiologically impacted buildings. Although no radiologically impacted buildings are present at Parcel E-2, Building 810 is radiologically impacted and is located within an adjacent portion of Parcel E. Potential septic drain lines emanating from Building 810, if present, may extend onto Parcel E-2. The ROCs for the septic sewer lines are ^{137}Cs, ^{226}Ra, and ^{90}Sr. The septic sewer lines are considered by the HRA to likely be contaminated and are recommended for a characterization survey, followed by remediation of areas of elevated radioactivity and a final status survey (NAVSEA, 2004).

5	Radiological operations	Section 2.2	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. March 2011. Section 4.2, pages 4-3 through 4-6. Record No. 4260.

All soil samples were collected within the upper 6 inches of the ground surface. Although the surface soil data do not provide information on potential subsurface radioactive contamination, the existing data are considered adequate to (1) determine the extent of radioactive contamination in surface soil at Parcel E-2, and (2) support a screening-level HHRA based on the planned open space reuse of Parcel E-2. Based on the established HHRA methodology for HPS, future recreational users of open space areas are exposed only to surface soil from 0 to 2 feet bgs.

Limited subsurface soil data exist at the Metal Slag Area and PCB Hot Spot Area; however, as discussed in Sections 3.2.1 and 3.2.2, these data were collected after the completion of excavation activities that successfully removed LLRW from the area. Therefore, the subsurface data are of limited use in determining the extent of subsurface contamination at other Parcel E-2 locations and are not discussed in detail within this addendum. Post-excavation soil data from the two removal action areas are presented in the final RACRs (TtECI, 2007a and 2007b).

Uncertainties related to the nature and extent evaluation are discussed in Section 8. Section 8 discusses the extent to which these uncertainties affect the risk management decisions for Parcel E-2 and provides recommendations for the remedial option analysis.

4.2. POTENTIAL SOURCES OF RADIOACTIVE CONTAMINATION AND IMPACTED MEDIA

Table 1 identifies each of the radiologically impacted areas at Parcel E-2 and the radionuclides of interest at each area. Section 2.3 discussed the radiological operations at each impacted area and identified the potential sources of radioactive contamination. The most common source of potential radioactive contamination is historic waste disposal activities that occurred at various locations in Parcel E-2. Documented disposal of low-level radiological waste at Parcel E-2 includes:

- Disposal of radioluminescent commodity items (such as dials, gauges, and deck markers) within IR Sites 01/21 and 02
- Disposal of industrial debris and metal slag with radioactive anomalies at the Metal Slag Area (removed in 2005 and 2006 under an interim cleanup action, see Section 3.2.1)
- Potential discharge of small amounts of low-level radioactive liquids into drains at NRDL buildings (potentially leading to sanitary sewer, storm drain, and septic sewer lines)

Disposal of radioluminescent commodity items was not controlled by specific procedures until the late 1960s. Prior to that time, it was common practice to dispose of such items on-site, including at IR Sites 01/21 and 02 (NAVSEA, 2004).

The HRA evaluated the potential for residual radioactive contamination at each impacted site based on historical information, previous radiological survey results, and site reconnaissance (NAVSEA, 2004). Table 3, as excerpted from the HRA, identifies the potential for various media (e.g., surface soil, subsurface soil, groundwater, etc.) to contain radioactive contamination. As shown in Table 3, surface and subsurface soil are the most likely media to contain radioactive contamination at Parcel E-2.

In addition to the documented disposal activities discussed above, other suspected disposal of low-level radiological waste includes:

- Potential disposal of wastes from decontamination of ships used in atomic weapons testing (i.e., sandblast waste) within IR Sites 01/21 and 02;
- Potential disposal of building debris from demolition of radiologically impacted buildings used by the NRDL within IR Site 01/21; and
- Potential disposal of materials used in radiological experiments by NRDL within IR Site 01/21.

Available information regarding the quantities and types of materials potentially disposed of at IR Site 01/21 is discussed in the sections below.

4.2.1. Disposal of Sandblast Waste Within IR Sites 01/21 and 02

Based on the information presented in the HRA (NAVSEA, 2004), sandblasting was performed to decontaminate ships that participated in atomic weapons testing and spent sandblast material (referred to as sandblast waste) may have been disposed of at the Landfill Area (as well as elsewhere at IR Site 01/21). Such sandblast waste may contain ^{137}Cs and ^{90}Sr (fission products from the detonation of atomic weapons). In addition, most sandblast material contains naturally occurring ^{226}Ra.

OPERATION CROSSROADS was an atomic weapons test conducted in 1946 that, following testing at Bikini Atoll in the Marshall Islands, returned ships to HPS for decontamination. As discussed in the HRA (NAVSEA, 2004), the most highly contaminated ships from OPERATION CROSSROADS were either sunk at Bikini Atoll (as a result of the detonation) or at the nearby Kwajalein Atoll.

Following initial decontamination at Kwajalein Atoll, the remaining ships were brought to HPS for decontamination (NAVSEA, 2004). Navy ships continued to participate in atomic weapons testing and return to HPS for decontamination sporadically in the 1950s and early 1960s (NAVSEA, 2004). The half-lives of both ^{137}Cs and ^{90}Sr are about 30 years, so these potential contaminants from atomic testing decontamination would have undergone approximately a 75 percent reduction by 2011.

The HRA includes the following additional information regarding sandblast waste (all information from the HRA [NAVSEA, 2004] unless otherwise noted):

- Sandblast waste from the decontamination of OPERATION CROSSROADS ships was disposed of at sea until December 1946. After that time, the Navy directed that biological growth (the most significant areas of radiologic contamination) be removed manually and disposed of at sea before general sandblasting. The sandblast waste was then deemed acceptable for unregulated disposal and may have been buried at HPS, including at the Landfill Area (as well as elsewhere at IR Site 01/21).
- The USS INDEPENDENCE, the last OPERATION CROSSROADS ship at HPS, was used for experimentation until it was loaded with radiologic waste and sunk at sea in January 1951.
- Aerial photographs indicate that most of the Landfill Area was filled after 1955 (see Figures 1-6 through 1-9 in the RI/FS Report) and therefore after decontamination of OPERATION CROSSROADS ships had ceased (in 1951).
- From 1952 to 1955, two ex-Liberty ships were modified to support the study of the effects of atomic weapons. The ships were used to provide support for research during weapons tests in the Pacific through the early 1960s. Following participation in the test, the ships would return to HPS for decontamination. For these ships, the HRA indicates that "sandblast material was to be controlled (collected and drummed as radioactive waste) during removal of 'hot spots' (not further defined). Once the hot spots were removed, the remaining sand could be disposed of in the Bay."
- The HRA further indicates that "by 1956, a new directive regarding the disposal of liquids and sandblast material into the Bay stated that decontamination was to be '*witnessed by shipyard personnel to prevent runoff of contaminated liquids or dumping of contaminated wastes into bay waters at dockside. All contaminated wastes shall be disposed of in accordance with existing regulations.*'" The disposal regulations are not defined in the HRA or supporting documents, so it not known whether radiologically contaminated sandblast waste was disposed at the Landfill Area (or elsewhere at IR Site 01/21) after 1955. The HRA did not identify records indicating the number of ships potentially decontaminated at HPS after 1955; only three atomic tests were performed in the Pacific Ocean from 1956 to 1962, at which point the United States ceased atmospheric atomic testing (Radiochemistry Society, 2011).

This information suggests that, while sandblast waste was probably disposed of at the Landfill Area (as well as elsewhere at IR Site 01/21), the sandblast waste with the highest levels of radioactivity from atomic testing was likely controlled and not disposed of at Parcel E-2.

Because of the potential for sandblast waste to contain radiological contamination, the Navy has implemented a field protocol to sample and analyze any sandblast waste encountered during intrusive activities at HPS. The protocol involves an initial analysis for ^{137}Cs and, if ^{137}Cs is identified, the waste is analyzed for ^{90}Sr. If both ^{137}Cs and ^{90}Sr are identified, then the waste is analyzed for alpha emitters (most notably, plutonium-239 and ^{235}U). This protocol was followed for sandblast waste found during previous removal actions at Parcels E and E-2 and neither ^{137}Cs nor ^{90}Sr were identified in sandblast waste at activity levels exceeding background levels. This finding is consistent with the operational history of the shipyard in that throughout shipyard operations (early 1940s through the early 1970s), abrasive sandblast material was commonly used to clean ships not associated with radiological operations.

4.2.2. Potential Disposal of NRDL Materials at IR Site 01/21

The NRDL maintained strict accountability and control of radioactive materials for which they were responsible under the direction of the Radiation Safety Committee. The use of radionuclides at HPS was controlled by the Navy, who first instituted a radiological controls program in 1946, and the AEC, which issued licenses starting in 1954 authorizing the use of radionuclides at HPS (although radium was exempt from AEC licensing requirements). For example, the HRA documents that many NRDL buildings had specific features (e.g., sumps, vaults, tanks, etc.) to control the storage of radiological materials prior to off-site disposal. In addition, the HRA documents that animal carcasses used in radiological tests were disposed of using two distinct methods (1) animals that had been dosed with radioactive material (e.g., through injection) were considered radioactive waste and were disposed of off-site and (2) animals exposed to ionizing radiation (e.g., through x-rays) were not considered radioactive waste and may have been disposed of at the Landfill Area (NAVSEA, 2004). However, it is possible that some radionuclides and radiological materials not controlled under the licenses were disposed of at the Landfill Area, particularly prior to the AEC licensing in 1954.

Review of historical aerial photographs (as presented on Figures 1-6 through 1-11 of the RI/FS Report) indicated that the volume of fill material placed in the Landfill Area prior to 1955 was relatively low, and that most of the fill was placed after 1955 (at which point radioactive materials at HPS were subject to AEC licensing requirements). This information suggests that the volume of NRDL waste potentially disposed of in the Landfill Area was relatively low.

The various radionuclides used at HPS, including those used by NRDL, are provided in Table 4-2 of the HRA (NAVSEA, 2004). The ROCs at HPS are identified in Table 4-3 of the HRA, along with their associated half-lives. Table 4-3 does not include many short-lived radionuclides, which have undergone more than 10 half-lives and are no longer ROCs. The HRA identified ROCs for each radiologically impacted site at HPS based on its operational history and available historic documentation; the list of site-specific ROCs are a subset of the comprehensive list of ROCs provided in Table 4-3 of the HRA (NAVSEA, 2004). Table 4 provides a comprehensive list of all current and former buildings at HPS formerly occupied by NRDL, the historic use and ROCs at each site, potential waste disposal activities, and the potential for residual radioactive contamination (as presented in the HRA). Based upon the available information provided in Table 4, the potential disposal volumes at IR Site 01/21 would have been small because (1) many NRDL buildings had specific features (e.g., sumps, vaults, tanks, etc.) to control the storage of radiological materials prior to off-site disposal and (2) review of aerial photographs indicated that most of the Landfill Area was filled after 1955 (see Figures 1-6 through 1-9 in the RI/FS Report). Accordingly, the ROCs for IR Site 01/21 are limited to ^{137}Cs, ^{226}Ra, and ^{90}Sr and do not include other ROCs potentially used by the NRDL.

6	Hydrostratigraphy	Section 2.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 2.2.1, pages 2-4 through 2-6. Record No. 4237.

Numerous field investigations have been performed to characterize and define the geology and hydrogeology at HPS. This subsection discusses the geologic and hydrogeologic conditions at Parcel E-2 based on the information derived from those investigations. The geologic descriptions presented in this subsection are interpreted from lithologic cross sections presented in the Landfill Lateral Extent Evaluation Report (TtEMI, 2004f). Hydrogeologic descriptions related to hydrostratigraphy, groundwater flow patterns, hydraulic characteristics, tidal effects, and total dissolved solids (TDS) are also presented in this subsection and are based primarily on information included in the Parcel E Groundwater Summary Report prepared following the Phase III GDGI (TtEMI, 2004c). This subsection also summarizes the evaluation of potential beneficial uses of groundwater at Parcel E-2.

2.2.1. Geologic and Hydrogeologic Units

The peninsula forming HPS is within a northwest-trending belt of the Franciscan Complex bedrock known as the Hunters Point Shear zone. The natural geology at HPS consists of unconsolidated Holocene sediments of estuarine and alluvial origin (Quaternary age) deposited on an uneven, eroded bedrock surface composed primarily of serpentinite (Jurassic-Cretaceous age). Artificial fill was deposited extensively over the natural sediments and bedrock during expansion of the shipyard in the early 1940s. Six individual geologic units have been identified at HPS. In general, the stratigraphic sequence of these geologic units, from youngest (shallowest) to oldest (deepest), is as follows: (1) Artificial Fill; (2) Slope Debris and Ravine Fill; (3) Undifferentiated Upper Sand Deposits; (4) Bay Mud; (5) Undifferentiated Sedimentary Deposits; and (6) Franciscan Complex Bedrock (TtEMI, 2004c). Figure 2-1 shows the surficial geologic units present at HPS, including the various subdivisions within the Franciscan Complex Bedrock. With the exception of Slope Debris and Ravine Fill, all other geologic units are present at Parcel E-2.

The hydrostratigraphy of Parcel E-2 consists of four distinct units, including three water-bearing units and one aquitard. The shallowest water-bearing unit is referred to as the A-aquifer. The A-aquifer is essentially manmade and consists primarily of Artificial Fill material, but also includes Undifferentiated Upper Sand Deposits. The A-aquifer is separated from the deeper water-bearing unit, referred to as the B-aquifer, by the Bay Mud in most locations across HPS. The B-aquifer consists of Undifferentiated Sedimentary Deposits underlying the Bay Mud. The upper weathered portions of the Franciscan Complex bedrock that directly underlie permeable Artificial Fill, Undifferentiated Upper Sand, and Undifferentiated Sedimentary deposits are considered part of the overlying aquifer (TtEMI, 2004c). The portions of saturated bedrock that are not in direct contact with the A- or B-aquifers are hydrostratigraphically classified as the bedrock water-bearing zone (WBZ) (TtEMI, 2004c). Flow in the bedrock WBZ generally occurs in localized, discontinuous fractures located below the upper portions of

bedrock (TtEMI, LFR, and U&A, 1997). The relationships between the stratigraphic and hydrostratigraphic units at Parcel E-2 are presented below.

Stratigraphic Unit	Corresponding Hydrostratigraphic Unit
Artificial Fill (Qaf)	A-aquifer [a]
Undifferentiated Upper Sand Deposits (Quus)	A-aquifer [a]
Bay Mud (Qbm)	Aquitard [b]
Undifferentiated Sedimentary Deposits (Qu)	B-aquifer [c]
Franciscan Complex Bedrock (KJfm)	Bedrock WBZ [d]

Notes:

a Hydrostratigraphic unit comprises permeable portions of the Artificial Fill and Undifferentiated Upper Sand deposits, and includes weathered portions of the bedrock that directly underlie saturated Artificial Fill or Undifferentiated Upper Sand deposits and localized areas where Undifferentiated Upper Sand deposits are interbedded with Bay Mud deposits.

b Hydrostratigraphic unit also includes low-permeability Artificial Fill deposits.

c Unit comprises the permeable portions of the Undifferentiated Sedimentary deposits.

d Unit consists of portions of saturated bedrock that are not in direct contact with the A- or B-aquifers.

Numerous field investigations at Parcel E-2 have provided geologic information that was used to define the subsurface stratigraphy and depth to bedrock at Parcel E-2. Figure 2-2 is a map showing cross-section locations across Parcel E-2. Figures 2-3 through 2-8 are the geologic cross-section diagrams of the Landfill Area that were presented in the Landfill Lateral Extent Evaluation Report (TtEMI, 2004f). Figures 2-9, 2-10, and 2-11 are hydrogeologic cross-section diagrams that were originally presented in the Parcel E Groundwater Summary Report (TtEMI, 2004c). The hydrogeologic cross sections cover the Landfill Area, Panhandle Area, and East Adjacent Area, and depict the lithologic units and the relative permeabilities of these sediments to portray the hydrostratigraphy at Parcel E-2.

Because of the different purposes for each set of cross sections, the data set used to construct the hydrogeologic cross sections does not provide the same level of detail for the heterogeneous artificial fill as compared to the geologic cross sections. The geologic cross sections were originally prepared to depict the subsurface conditions in and immediately surrounding the landfill waste and, as such, focused on providing the greatest level of detail within the heterogeneous artificial fill. In contrast, the hydrogeologic cross sections were prepared to depict the overall hydrostratigraphy at Parcel E-2, with a focus on identifying permeable zones within the A- and B-aquifers.

An important geologic feature at Parcel E-2 is the bedrock surface that declines steeply from the northern portion to the southern portion of Parcel E-2 (cross section G-G', Figure 2-9). The bedrock within the Hunters Point Shear Zone has been subjected to intense tectonic activity resulting in a high degree of folding, faulting, and metamorphism. As a result, the top surface of the bedrock ranges from approximately 55 feet below ground surface (bgs) in the northern part of Parcel E-2 to greater than 280 feet bgs in the southern part of Parcel E-2. This is a decline of approximately 225 feet over the length

of the site, which corresponds to a horizontal distance of approximately 1,100 feet. Based on the bedrock depths reported above, overburden sediments and fill above the bedrock at Parcel E-2 vary from about 55 feet thick in the northeast portion of Parcel E-2 to greater than 280 feet thick in the southern portion. Figure 2-12 shows the bedrock surface elevations at and adjacent to Parcel E-2.

Another important geologic feature at Parcel E-2 is the distribution of the Bay Mud Aquitard. The Bay Mud is present over most of Parcel E-2, except in the northwest corner. In this location, saturated Artificial Fill material and Undifferentiated Upper Sand Deposits (the A-aquifer) directly overlie the Undifferentiated Sediments (the B-aquifer); as a result, the A- and B-aquifers are in hydraulic communication at this location. However, as discussed in Section 2.2.2.2, where the Bay Mud aquitard is present, potentiometric data indicate an upward flow potential between the A- and B-aquifers. Further, as shown in cross section G-G' (Figure 2-9), the presence of laterally continuous layers of silt and clay within the B-aquifer sediments serves to hydraulically isolate the uppermost portions of the B-aquifer (that are interconnected with the A-aquifer) from the lower portions of the B-aquifer. The Bay Mud Aquitard thickens away from upland areas in the northern portion of Parcel E-2, as shown on Figure 2-13.

As part of the subsurface investigations that were conducted to gather the geologic and hydrogeologic data for Parcel E-2, monitoring wells were installed across the parcel in the A-aquifer and uppermost B-aquifer zones, and the well identifications are designated by "A" and "B" suffixes, respectively. These well identifications are consistent with the hydrostratigraphic interpretations made on Figures 2-9, 2-10, and 2-11 (TtEMI, 2004c). The Navy is monitoring groundwater in the A-aquifer and uppermost B-aquifer under the BGMP. Groundwater monitoring has not been required in the lower B-aquifer zone because (1) the degree of contamination in the uppermost B-aquifer is much lower than that in the A-aquifer (see Section 5); (2) the uppermost portions of the B-aquifer (that are interconnected with the A-aquifer) are hydraulically isolated from the lower portions of the B-aquifer; and (3) there is an upward vertical flow potential from the uppermost B-aquifer to the A-aquifer (see Section 2.2.2.2). Groundwater monitoring has not been required in the Parcel E-2 bedrock WBZ because the bedrock is relatively deep (greater than 55 feet bgs in the northern portion of Parcel E-2 to greater than 200 feet bgs in the southeast portion of Parcel E-2). In addition, the potential for downward migration of contamination into the bedrock WBZ is low because site stratigraphy within the B-aquifer limits hydraulic communication between the uppermost B-aquifer zone and the lower B-aquifer zone.

The following subsections provide more detail on each of the geologic units at Parcel E-2 and their relationships to their corresponding hydrogeologic units.

7	Drinking water	Section 2.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 2.2.6, pages 2-9 through 2-11. Record No. 4237.

2.2.6. Groundwater Beneficial Reuse

According to the RWQCB Basin Plan, groundwater at Parcel E-2 has the following potential beneficial uses (RWQCB, 2007a):

- Agricultural water supply
- Industrial service and process water supply
- Municipal and domestic drinking water supply

Groundwater at Parcel E-2 is unlikely to be used for agricultural and industrial purposes due to generally high TDS, chloride, salinity, specific conductance, and hardness values in the A-aquifer and uppermost B-aquifer (see data in Appendix G of TtEMI, 2004c). According to the Basin Plan, site-by-site determinations of the freshwater replenishment beneficial use will be made. Freshwater replenishment has been determined to be a beneficial use of the groundwater at Parcel E-2; Appendix M evaluates the potential for chemicals in groundwater to pose a risk to aquatic life in the bay. Appendix I evaluates the beneficial uses of groundwater at Parcel E-2, with a specific focus on evaluating use of the A- and B-aquifers at Parcel E-2 as potential drinking water sources. The following subsections summarize the findings of this evaluation.

2.2.6.1. A-Aquifer Evaluation for Federal Criteria

Federal groundwater classification criteria identify three classes of groundwater (EPA, 1986). Class I groundwater is an irreplaceable source of drinking water or is ecologically vital. Class II groundwater is a current or potential source of drinking water that has other beneficial uses. Class III groundwater is not a potential source of drinking water and is of limited beneficial use. EPA considers groundwater to be Class I or Class II if the following criteria are met:

- The TDS concentration is less than 10,000 mg/L
- A minimum well yield of 150 gallons per day (gpd) or 0.104 gallon per minute is achievable

Transmissivities measured at Parcel E-2 during the RI (Table 2-2) suggest that the minimum well yield of 150 gpd would be met for the A-aquifer. Therefore, the classification of the A-aquifer relative to federal criteria focuses on measured TDS concentrations. Figure 2-20 presents the maximum historical TDS concentrations (from data collected through October 2002) detected in A-aquifer groundwater monitoring wells at Parcel E-2, along with contours for the federal TDS criteria. As shown on Figure 2-20, Class II groundwater exists throughout most of Parcel E-2 A-aquifer.

Appendix I evaluates various site-specific factors (SSF) to determine if conditions other than TDS concentrations affect the potential for Class II A-aquifer groundwater at Parcel E-2 to be used as a drinking water source. The NCP preamble allows for the application of SSFs to determine appropriate

remediation goals for Class I and II groundwater. As outlined in Appendix I, a range of other SSFs make use of A-aquifer groundwater for water supply extremely unlikely. Principal among these are:

- Insufficient aquifer thickness to provide adequate supply
- Depth to groundwater too shallow to support a sanitary seal and adequate screened interval
- Lack of historical and current precedents for use of HPS groundwater for public water supply
- Existence of local and state institutional controls that prohibit or severely restrict locations where new potable wells can be installed
- Poor quality of underlying B-aquifer relative to drinking water standards

Considering these factors together, the weight of evidence indicates that the Class II A-aquifer at Parcel E-2 is not a potential source of water for municipal or domestic water supply.

2.2.6.2. A-Aquifer Evaluation for State Criteria

Under State Water Resources Control Board (SWRCB) Resolution No. 88-63, all groundwater is considered potentially suitable for municipal or domestic supply unless at least one of the following conditions applies (SWRCB, 1988):

- The TDS concentration exceeds 3,000 mg/L and the groundwater is not reasonably expected by RWQCB to supply a public water system
- The groundwater is contaminated, either by natural processes or by human activity, to the degree that it cannot reasonably be treated for domestic use
- The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gpd

In response to a request by the Navy (2003), the RWQCB determined that the A-aquifer at HPS is not suitable or potentially suitable as a municipal or domestic water supply, and meets exemption criteria in SWRCB Resolution 88-63 and RWQCB Resolution 89-39 (RWQCB, 2003c). This determination is based on the following factors:

- TDS concentrations in A-aquifer groundwater exceed 3,000 mg/L
- Artificial fill composes most of the A-aquifer
- Naturally occurring dissolved metals concentrations have been estimated (Hunters Point groundwater ambient levels [HGAL]), and some of these metals concentrations exceed maximum contaminant levels (MCLs) for drinking water when the metal is at or below its HGAL
- There is no historical, present, or planned future use of groundwater at HPS
- Well construction requirements prohibit water supply wells in most parts of HPS
- Pumping would cause saltwater intrusion in areas where potable wells could conceivably be installed

2.2.6.3. B-Aquifer Evaluation

TDS data are available for the six wells installed in the uppermost B-aquifer in Parcel E-2, and maximum TDS concentrations in these wells ranged from 1,600 to 5,120 mg/L. Based on available TDS data, the B-aquifer at Parcel E-2 would be considered suitable as a potential drinking water source, and the evaluation of SSFs in Appendix I reveals that the B-aquifer in Parcel E-2 has moderate potential to be used as a drinking water source. Considering this conclusion and past agreements with the BCT on the HHRA, the groundwater ingestion pathway is included in the risk assessment for the B-aquifer. This assumption provides an additional layer of conservatism with respect to the protection of human health at Parcel E-2.

2.2.6.4. Bedrock Water-Bearing Zone Evaluation

As discussed in Section 2.2.1, groundwater monitoring has not been required in the Parcel E-2 bedrock WBZ because the bedrock is relatively deep (greater than 55 feet bgs in the northern portion of Parcel E-2 to greater than 200 feet bgs in the southeast portion of Parcel E-2). Therefore, no direct data are available to assess the water quality or yield of the bedrock WBZ underlying Parcel E-2 relative to federal and state criteria.

2.3. HYDROLOGY

Precipitation is the main source of surface water runoff at HPS. Surface water runoff at HPS is greatest in the winter months (November through April), when rainfall often exceeds 4 inches per month. Precipitation is less than 0.1 inch per month from June through September, resulting in minimal runoff. Precipitation data from an on-site meteorological station are shown on Figure 2-21. In addition to rainfall, the irrigation system for the interim landfill cap at Parcel E-2 is another potential source of surface water runoff. The irrigation system could potentially generate runoff if used excessively during dry months to maintain vegetation; however, the system is operated and maintained so that excessive watering does not occur (ITSI, 2006h, 2007d, 2008d, 2010d, and 2010e).

As discussed in Section 1.6.2, surface water runoff at the landfill is managed in accordance with the SWDMP (MARRS and MACTEC, 2009b), which complies with the General Permit of the National Pollutant Discharge Elimination System (NPDES), as administered by the SWRCB. Monitoring is performed in accordance with the SWDMP, and various BMPs described in the SWDMP are used to limit erosion or unwanted discharges from the site (MARRS and MACTEC, 2009b). Surface water drainage patterns at Parcel E-2 and engineered BMPs are shown on Figure 2-22 and described below.

In the western and northwestern portion of Parcel E-2, runoff is controlled by drainage channels constructed along the western perimeter of Parcel E-2. The channels direct runoff south and discharge indirectly to the bay through low-lying seasonal wetlands in the Panhandle Area southwest of the landfill.

8	Groundwater flow patterns	Section 2.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 2.2.2, pages 2-9 through 2-11. Record No. 4237.

2.2.1.4. Franciscan Complex Bedrock – The Bedrock Water-Bearing Zone

Bedrock in Parcel E-2 consists of the Franciscan Complex, with serpentinite as the most common component. Serpentine bedrock is often associated with metamorphic basalt called "greenstone," which has a distinctive green color. Pockets of greywacke sandstones occur in some areas (TtEMI, 2004c). Figure 2-12 shows where serpentinite bedrock outcrops north of Parcel E-2. From the northern part of Parcel E-2, the bedrock plunges to the west and south. The depth to bedrock ranges from approximately 55 feet bgs in the northern part of Parcel E-2 to greater than 280 feet bgs in the southern part of Parcel E-2.

As discussed in Section 2.2.1, the upper weathered portions of the bedrock that directly underlie A- or B-aquifer sediments are considered part of the overlying aquifer. The highly weathered bedrock has low hardness, and has been described as both crumbling easily to sand-sized grains and as having weathered to clay (TtEMI, LFR, and U&A 1997; TtEMI, 2004c). Borings logs for gas monitoring probes (GMPs) installed in the upper weathered bedrock underlying Crisp Avenue (located approximately 150 feet north of Parcel E-2) demonstrate this variability. The portions of saturated bedrock that are not in direct contact with the A- or B-aquifers are hydrostratigraphically classified as the bedrock WBZ (TtEMI, 2004c). Flow in the bedrock WBZ generally occurs in localized, discontinuous fractures located below the upper portions of bedrock (TtEMI, LFR, and U&A, 1997).

2.2.2. Groundwater Flow

Groundwater flow patterns in the A-aquifer are regularly evaluated by collecting water level measurements at monitoring wells installed throughout Parcel E-2 and generating groundwater elevation maps as part of the BGMP. Construction details for the Parcel E-2 monitoring wells are summarized in Appendix J3. Historic groundwater elevations are presented in Appendix J4. A-aquifer groundwater elevations are measured using a methodology designed to reduce the influence of tidal effects on the general definition of the potentiometric surface; the methodology is described in the sampling and analysis plan for the BGMP (CE2-Kleinfelder Joint Venture, 2009c). Additionally, groundwater flow patterns within the uppermost B-aquifer and tidal influenced zone (TIZ) of the A-aquifer have been evaluated during previous investigations at the parcel. The following subsections discuss the groundwater flow patterns of these aquifers, as well as groundwater recharge and discharge for the A-aquifer and uppermost B-aquifer.

2.2.2.1. Horizontal Groundwater Flow

Across most of Parcel E-2, groundwater in the A-aquifer flows south toward the bay; however, flow in the northeast portion of Parcel E-2 flows east toward a groundwater depression that is east of the landfill, near the boundary between Parcels G and E (CE2-Kleinfelder Joint Venture, 2007f, 2008a, and 2008d). This groundwater depression is most likely the residual effect of groundwater infiltrating damaged sanitary sewer lines during pumping at a nearby lift station. The sanitary sewer lift station, located at the former Parcel A, ceased operation in May 2007. The lateral extent of the groundwater depression had decreased from approximately 73 acres in May 2007 to less than 0.1 acre in March 2009 (CE2-Kleinfelder Joint Venture, 2009d). The potentiometric surfaces shown on Figures 2-14 and 2-15 (CE2-Kleinfelder Joint Venture, 2007f and 2008a) do not incorporate removal of tidal effects; however, past tidal studies have shown that the general geometry of the potentiometric surface within the TIZ can be accurately represented without filtering out tidal effects (TtEMI, 2004c). Section 2.2.4 presents a more thorough discussion of tidal effects.

Other buried utility lines located below the groundwater table may also act as preferential groundwater flow pathways. As shown on Figures 2-14 and 2-15, sections of the storm drain system in adjacent Parcel E are submerged below the groundwater table and appear to be affecting A-aquifer flow patterns south of Building 810. The Navy is in the process of removing the existing sanitary sewer and storm drain lines across HPS. The potentiometric surface of the A-aquifer continues to be monitored quarterly under the BGMP to track possible changes in flow patterns of the A-aquifer.

Groundwater elevations in the uppermost B-aquifer, as measured in August 2007, are presented on Figure 2-16 (CE2-Kleinfelder Joint Venture, 2008a). Based on the groundwater elevations in the limited number of wells shown on Figure 2-16, groundwater in the uppermost B-aquifer flows to the southeast across most of Parcel E-2. B-aquifer groundwater elevations are monitored under the BGMP on a quarterly basis (CE2-Kleinfelder Joint Venture, 2008a and 2008d).

2.2.2.2. Vertical Groundwater Flow Potential

Figure 2-17 illustrates vertical flow potential by presenting hydrographs for well pairs screened in the A-aquifer and uppermost B-aquifer. Based on available water level data from 2004 to 2008, the vertical component of groundwater flow potential between the A-aquifer and the uppermost B-aquifer is upward at these well pairs (Figure 2-17). The available data suggest that, in addition to the presence of the Bay Mud aquitard, potential downward migration of contaminated groundwater from the A- to B-aquifer is limited by the upward groundwater flow potential (from the B- to A-aquifer).

2.2.2.3. Groundwater Recharge and Discharge

Groundwater recharge to the A-aquifer at Parcel E-2 is affected by vertical and lateral infiltration from within Parcel E-2, as well as groundwater flow from land upgradient of Parcel E-2. Recharge may also be contributed by leaking utility lines. Higher groundwater levels exist during the rainy season. Groundwater elevations measured in Parcel E-2 wells in March 2007 were on average 0.9 foot higher than in August 2007. A-aquifer groundwater discharge over the northeast portion of Parcel E-2 is directed eastward across Parcel E toward a groundwater depression near the Parcel E and Parcel G boundary. As discussed in Section 2.2.2.1, deactivation of the sanitary sewer lift station has decreased the lateral extent of the groundwater depression from approximately 73 acres to 0.1 acre over a 21-month period (CE2-Kleinfelder Joint Venture, 2009d). The Navy continues to remove the existing sanitary sewer and storm drain lines across HPS, and the effect of this activity is being evaluated as part of the BGMP quarterly water level measurements. Groundwater near the Parcel E-2 shoreline discharges toward the bay.

The area hydraulically upgradient of Parcel E-2 is the primary source of recharge to the B-aquifer. This area consists of non-Navy industrial property to the west and northwest. The recharge source is groundwater flowing horizontally into the B-aquifer. The B-aquifer is hydraulically connected to and discharges to permeable zones underlying the bay.

2.2.2.4. Seasonal Groundwater Effects

Recent groundwater data for Parcel E-2 (four quarters from 2007 and the first quarter 2008) were evaluated as part of this RI/FS Report to assess seasonal effects in groundwater flow patterns or gradients (CE2-Kleinfelder Joint Venture, 2007f, 2008a, and 2008d). A-aquifer groundwater levels were highest in March 2007 (Figure 2-14), following the wet winter season, and lowest in August 2007, representing dry season conditions (Figure 2-15). Groundwater gradients measured across Parcel E-2 were somewhat lower in March 2007 (average of 0.014) than they were in August 2007 (average of 0.021). The overall direction of groundwater flow was consistent from season to season, with the primary seasonal difference being the somewhat shallower gradients across the landfill mass, with steeper gradients along the boundaries of the landfill area during the dry season (June and August) than during the wet season (March). Groundwater gradients are steepest on the south side of the landfill mass (toward the bay) and shallowest on the eastern side (toward Parcel E). Groundwater levels in the B-aquifer are slightly higher during the wet season as compared with the dry season (Figure 2-17); however, B-aquifer groundwater flow patterns and gradients do not appear to be significantly affected by the wet and dry seasons.

9	Parcel E-2 ecology	Section 2.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 2.4, page 2-18. Record No. 4237.

In the northeastern portion of Parcel E-2 (and portions of the UCSF property), runoff is controlled by drainage channels that direct runoff into one of two catch basins (Figure 2-22). Stormwater then flows east through a 12-inch-diameter polyvinyl chloride (PVC) pipe and discharges into the HPS storm sewer system, which ultimately discharges into the bay. Stormwater discharge is monitored at both catch basins (MARRS and MACTEC, 2009b).

In the eastern portion of Parcel E-2 (including the eastern portion of the interim landfill cap), runoff flows south into a low-lying area south of the interim landfill cap (Figure 2-22). This area was excavated and revegetated following the removal action at the PCB Hot Spot Area (TtECI, 2007a), as discussed in Section 3.8.8. The vegetation helps limit sediment runoff. In addition, the drainage swale at the southeast portion of the landfill, which diverts runoff from the eastern portion of the cap to the bay, was restored following the removal action (Figure 2-22).

In the central portion of Parcel E-2, most runoff flows to a riprap-lined swale in the center of the interim landfill cap and then discharges into the bay at the southern edge of the interim cap. The drainage structures in Parcel E-2 are presently capable of handling runoff from the 100-year, 24-hour storm event (estimated at 4 inches). To limit erosion, vegetation and other BMPs (such as silt fences, hay bales, fiber rolls, gravel or sandbags, and berms) have been established at Parcel E-2. Surface water runoff from Parcel E-2 will be controlled and monitored in accordance with the existing SWDMP until implementation of the final remedy for Parcel E-2 (MARRS and MACTEC, 2009b).

2.4. ECOLOGY

The ecology of Parcel E includes terrestrial habitat, aquatic environments, and transitional wetlands. All of these ecological areas have been disturbed by human activities such as excavation, filling, and development (Harding Lawson Associates [HLA], 1991). Habitat data from the Phase 1A ecological risk assessment (ERA) were used with data from a resurvey of Parcels E and E-2 in February 1997. The field survey results delineated the terrestrial habitats (industrial, ruderal, and non-native annual grassland) and the wetland and intertidal habitats (TtEMI, LFR, and U&A, 1997). In 2001 and 2002, ecological surveys were performed in the wetland and intertidal habitats at Parcel E-2 (TtEMI, 2003d; SulTech, 2007, Appendix G to this report), and are discussed in Sections 2.4.2 and 2.4.3 below. In 2004, a biological assessment was performed to support the removal actions at the Metal Slag Area and PCB Hot Spot Area (TtFW, 2004a).

10	**Environmental investigations**	Section 2.3	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 3, pages 3-1 and 3-2. Record No. 4237.

Section 3. Remedial Investigation Activities and Removal Actions

Multiple environmental investigations have been conducted at Parcel E-2[4], beginning in 1984. These investigations included basewide investigations (such as the IAS), investigations performed throughout Parcel E (which was later subdivided into Parcels E and E-2), and landfill-specific investigations within Parcel E-2. The environmental investigations can be categorized into the following time frames:

Pre-Remedial Investigation Activities (1984 to 1988): The Parcel E-2 Landfill was initially identified as IAS Site 3 during the IAS conducted in 1984 under the NACIP program (NEESA, 1984). Additional investigations performed following the IAS included installation of nine monitoring wells (IR01MWI-1 through IR01MW-9) during the 1987 confirmation study and verification step.

Remedial Investigation Activities (1988 to 1996): The Parcel E-2 Landfill progressed to the RI stage as IR Site 1 and was grouped (along with IR Sites 02 and 03 in Parcel E) into Operable Unit (OU)-I. The first phase of the OU-I RI (from 1988 to 1989) consisted of reconnaissance activities, including a geophysical survey and test pit excavation to delineate the extent of landfill waste, a soil gas survey to evaluate the presence of VOCs in soil and groundwater, and installation of deep soil borings to define subsurface stratigraphy. Subsequent phases of the OU-I RI involved primary and contingency sampling of soil and groundwater from October 1990 to June 1992. Following the 1992 decision to align the HPS IR sites into parcels, the RI at the landfill was completed in conjunction with other Parcel E IR sites and involved additional field investigations performed from October 1995 to June 1996 (TtEMI, LFR, and U&A, 1997). In 1993, IR Site 1 was combined with IR Site 21. IR Site 21 was initially identified as a separate site during the RI/FS scoping process, but was later determined to be part of the landfill and thus was combined with IR Site 1.

Data Gaps Investigations (2000 to 2003): During preparation of the Parcel E RI and FS reports in 1997 and 1998, the Navy and regulatory agencies identified additional tasks to support the RD for Parcel E, most of which were specific to the Parcel E-2 Landfill. These tasks were performed during the NDGI, from October 2001 to September 2002, and included defining the nature and extent of landfill gas, refining the lateral extent of solid waste, evaluating liquefaction potential of the landfill, and delineating wetlands areas adjacent to the landfill. In addition, the Navy and the regulatory agencies decided that

[4] In September 2004, the Navy divided Parcel E into two parcels (E and E-2). Discussions within this report that reference documents published prior to September 2004 refer to the portion of Parcel E that became Parcel E-2.

additional data for Parcel E were needed, including data from the area now referred to as Parcel E-2, to better define the nature and extent of chemicals in soil and groundwater. As discussed in Section 1, these investigations included the GDGI, performed from July 2000 to October 2002, and the SDGI, performed from September 2002 to February 2003.

Landfill Compliance Monitoring (2003 to present): The Navy has implemented several environmental monitoring programs to help satisfy regulatory requirements (as outlined in 27 CCR) for Parcel E-2 until a final remedy is selected. As discussed in Section 1.1.2, these programs include landfill gas control and monitoring, groundwater monitoring, landfill cover integrity monitoring and maintenance, and stormwater management and monitoring. Data from the ongoing monitoring provides information on current site conditions that is helpful in verifying the nature and extent conclusions from previous site investigations.

This RI/FS Report is based on information compiled from these past investigations and ongoing monitoring, rather than from a single RI field investigation. Analytical data from pre-RI investigations are not included in the RI data set; however, the results of these investigations were incorporated into the RI field program (TtEMI, LFR, and U&A, 1997). Table 3-1 summarizes the field activities performed during the RI and subsequent data gaps investigations and compliance monitoring.

In addition, this RI/FS Report also includes information from several interim removal actions that were performed in Parcel E-2. This section includes brief summaries of the methods, actions performed, and relevant results of the investigations and removal actions conducted at Parcel E-2.

Many of the previous investigations were summarized in reports that are drawn upon and either referenced or included as appendices to this report. Previous investigations and other IR Program activities were divided into the following categories to simplify their presentation in this section: pre-RI activities (Section 3.1); landfill investigations (Section 3.2); soil investigations in non-landfill areas, including the East Adjacent Area and the Panhandle Area (Section 3.3); groundwater investigations (Section 3.4); ecological assessments (Section 3.5); radiological assessments (Section 3.6); outdoor air monitoring (Section 3.7); previous removal actions (Section 3.8); and ongoing monitoring programs (Section 3.9). Table 1-3 presents a chronology of all previous environmental investigations, as well as previous and ongoing remedial actions conducted at Parcel E-2.

3.1. PRE-REMEDIAL INVESTIGATION ACTIVITIES

The pre-RI activities are summarized in the following documents:

- "Geotechnical Investigation, Waste Disposal Sites" (Lowney-Kaldveer Associates, 1973)
- "As-Built Drawings for Storm Sewer Interceptor Phase II, MILCON Project P-261B" (Navy, 1974)

United States Environmental Protection Agency
Office of Solid Waste and Emergency Response
Directive No. 9355.0-49FS
EPA 540-F-93-035
PB 93-963339
September 1993

Presumptive Remedy for CERCLA Municipal Landfill Sites

Office o Hazard

11	**EPA guidance for CERCLA landfills**	Section 2.3	"Presumptive Remedy for CERCLA Municipal Landfill Sites." Quick Reference Fact Sheet. EPA OSWER Directive 9355.0-49FS. EPA/540/F-93/035. September 1993. Pages 1 through 3. *(note: this guidance document was provided as Appendix H to the Final Remedial Investigation/Feasibility Study Report for Parcel E-2; Record No. 4237)* Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 8.2.3.1, pages 8-13 through 8-15. Record No. 4237.

Sheet

Presumptive remedies are preferred technologies for common categories of sites, based on historical patterns of remedy selection and EPA's scientific and engineering evaluation of performance data on technology implementation. The objective of the presumptive remedies initiative is to use the program's past experience to streamline site investigation and speed up selection of cleanup actions. Over time presumptive remedies are expected to ensure consistency in remedy selection and reduce the cost and time required to clean up similar types of sites. Presumptive remedies are expected to be used at all appropriate sites except under unusual site-specific circumstances.

This directive establishes **containment** as the presumptive remedy for CERCLA municipal landfills. The framework for the presumptive remedy for these sites is presented in a streamlining manual entitled *Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites,* February 1991 (OSWER Directive 9355. 3-11). This directive highlights and emphasizes the importance of certain streamlining principles related to the scoping (planning) stages of the remedial investigation/feasibility study (RI/FS) that were identified in the manual. The directive also provides clarification of and additional guidance in the following areas: (1) the level of detail appropriate for risk assessment of source areas at municipal landfills and (2) the characterization of hot spots.

BACKGROUND

Superfund has conducted pilot projects at four municipal landfill sites[1] on the National Priorities List (NPL) to evaluate the effectiveness of the manual *Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites* (hereafter referred to as "the manual") as a streamlining tool and as the framework for the municipal landfill presumptive remedy. Consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (or NCP), EPA's expectation was that containment technologies generally would be appropriate for municipal landfill waste because the volume and heterogeneity of the waste generally make treatment impracticable. The results of the pilots support this expectation and demonstrate that the manual is an effective tool for streamlining the RI/FS process for municipal landfills.

Since the manual's development, the expectation to contain wastes at municipal landfills has evolved into a presumptive remedy for these sites.[2] Implementation of the streamlining principles outlined in the manual at the four pilot sites helped to highlight issues requiring further clarification, such as the degree to which risk assessments can be streamlined for source areas and the characterization and remediation of hot spots. The pilots also demonstrated the value of focusing streamlining efforts at the scoping stage, recognizing that the biggest savings in time and money can be realized if streamlining is incorporated at the beginning of the RI/FS process. Accordingly, this directive addresses those issues identified during the pilots and highlights streamlining opportunities to be considered during the scoping component of the RI/FS.

[1] Municipal landfill sites typically contain a combination of principally municipal and to a lesser extent hazardous wastes.

[2] See EPA Publication 9203.1-02I, SACM Bulletins, *Presumptive Remedies for Municipal Landfill Sites,* April 1992, Vol. 1, No. 1, and February 1993, Vol. 2, No. 1, and SACM Bulletin *Presumptive Remedies,* August 1992, Vol. 1, No. 3.

Finally, while the primary focus of the municipal landfill manual is on streamlining the RI/FS, Superfund's goal under SACM is to accelerate the entire clean-up process. Other guidance issued under the municipal landfill presumptive remedy initiative identifies design data that may be collected during the RI/FS to streamline the overall response process for these sites (see Publication No. 9355.3-18FS, *Presumptive Remedies:* CERCLA *Landfill Caps Data Collection Guide,* to be published in October 1993).

CONTAINMENT AS A PRESUMPTIVE REMEDY

Section 300.430(a)(iii)(B) of the NCP contains the expectation that engineering controls, such as containment, will be used for waste that poses a relatively low long-term threat where treatment is impracticable. The preamble to the NCP identifies municipal landfills as a type of site where treatment of the waste may be impracticable because of the size and heterogeneity of the contents (55 FR 8704). Waste in CERCLA landfills usually is present in large volumes and is a heterogeneous mixture of municipal waste frequently co-disposed with industrial and/or hazardous waste. Because treatment usually is impracticable, EPA generally considers containment to be the appropriate response action, or the "presumptive remedy," for the source areas of municipal landfill sites.

The presumptive remedy for CERCLA municipal landfill sites relates primarily to containment of the landfill mass and collection and/or treatment of landfill gas. In addition, measures to control landfill leachate, affected ground water at the perimeter of the landfill, and/or upgradient ground-water that is causing saturation of the landfill mass may be implemented as part of the presumptive remedy.

The presumptive remedy does not address exposure pathways outside the source area (landfill), nor does it include the long-term ground-water response action. Additional RI/FS activities, including a risk assessment, will need to be performed, as appropriate, to address those exposure pathways outside the source area. It is expected that RI/FS activities addressing exposure pathways outside the source generally will reconducted concurrently with the streamlined RI/FS for the landfill source presumptive remedy. A response action for exposure pathways outside the source (if any) may be selected together with the presumptive remedy (thereby developing a comprehensive site response), or as an operable unit separate from the presumptive remedy.

Highlight 1 identifies the components of the presumptive remedy. Response actions selected for individual sites will include only those components that are necessary, based on site-specific conditions.

Highlight 1: Components of the Presumptive Remedy: Source Containment

- Landfill cap;
- Source area ground-water control to contain plume;
- Leachate collection and treatment;
- Landfill gas collection and treatment; and/or
- Institutional controls to supplement engineering controls.

The EPA (or State) site manager will make the initial decision of whether a particular municipal landfill site is suitable for the presumptive remedy or whether a more comprehensive RI/FS is required. Generally, this determination will depend on whether the site is suitable for a streamlined risk evaluation, as described on page 4. The community, state, and potentially responsible parties (PRPs) should be notified that a presumptive remedy is being considered for the site before work on the RI/FS work plan is initiated. The notification may take the form of a fact sheet, a notoice in a local newspaper, and/or a public meeting.

Use of the presumptive remedy eliminates the need for the initial identification and screening of alternatives during the feasibility study (FS). Section 300.430(e)(1) of the NCP states that, "... the lead agency shall include art alternatives screening step, when needed, (emphasis added) to select a reasonable number of alternatives for detailed analysis."

EPA conducted an analysis of potentially available technologies for municipal landfills and found that certain technologies are routinely and appropriately screened out on the basis of effectiveness, feasibility, or cost (NCP Section 300.430(e)(7)). (See Appendix A to this directive and "Feasibility Study Analysis for CERCLA Municipal Landfills," September 1993 available at EPA Headquarters and Regional Offices.) Based on this analysis, the universe of alternatives that will be analyzed in detail may be limited to the components of the containment remedy identified in Highlight 1, unless site-specific conditions dictate otherwise or alternatives are considered that were not addressed in the FS analysis. The FS analysis document, together with this directive, must be included in the administrative record for each municipal landfill presumptive remedy site to support elimination of the initial identification and screening of site-specific alternatives. Further detailed and comprehensive

supporting materials (e.g., FS reports included in analysis, technical reports) can be provided by Headquarters, as needed.

While the universe of alternatives to address the landfill source will be limited to those components identified in Highlight 1, potential alternatives that may exist for each component or combinations of components may be evaluated in the detailed analysis. For example, one component of the presumptive remedy is source area ground-water control. If appropriate, this component may be accomplished in a number of ways, including pump and treat, slurry walls, etc. These potential alternatives may then be combined with other components of the presumptive remedy to develop a range of containment alternatives suitable for site-specific conditions. Response alternatives must then be evaluated in detail against the nine criteria identified in Section 300.430(e)(g) of the NCP. The detailed analysis will identify site-specific ARARs and develop costs on the basis of the particular size and volume of the landfill.

EARLY ACTION AT MUNICIPAL LANDFILLS

EPA has identifies the presumptive remedy site categories as good candidates for early action under SACM. At municipal landfills, the upfront knowledge that the source area will be contained may facilitate such early actions as installation of a landfill cap or a ground-water containment system. Depending on the circumstances, early actions may be accomplished using either removal authority (e.g., non-time-critical removal actions) or remedial authority. In some cases, it may be appropriate for an Engineering Evaluation/Cost Analysis to replace part or all of the RI/FS if the source control component will be a non-time-critical removal action. Some factors may affect whether a specific response action would be better accomplished as a removal or remedial action including the size of the action, the associated state cost share, and/or the scope of O&M. A discussion of these factors is contained in *Early Action and Long-term Action Under SACM - Interim Guidance,* Publication No. 9203.1-05I, December 1992.

SCOPING A STREAMLINED RI/FS UNDER THE PRESUMPTIVE REMEDY FRAMEWORK

The goal of an RI/FS is to provide the information necessary to: (1) adequately characterize the site; (2) define site dynamics; (3) define risks; and (4) develop the response action. As discussed in the following sections, the process for achieving each of these goals can be streamlined for CERCLA municipal landfill sites because of the upfront presumption that landfill contents will be contained. The strategy for streamlining each of these areas should be developed early (i.e., during the scoping phase of the RI/FS).

1. Characterizing the Site

The use of existing data is especially important in conducting a streamlined RI/FS for municipal landfills. Characterization of a landfill's contents is not necessary or appropriate for selecting a response action for these sites except in limited cases; rather, existing data are used to determine whether the containment presumption is appropriate. Subsequent sampling efforts should focus on characterizing areas where contaminant migration is suspected, such as leachate discharge areas or areas where surface water runoff has caused erosion. It is important to note that the decision to characterize hot spots should also be based on existing information, such as reliable anecdotal information, documentation, and/or physical evidence (see page 6).

In those limited cases where no information is available for a site, it may not be advisable to initiate use of the presumptive remedy until some data are collected. For example, if there is extensive migration of contaminants from a site located in an area with several sources, it will be necessary to have some information about the landfill source in order to make an association between on-site and off-site contamination.

Sources of information of particular interest during scoping include records of previous ownership, state files, closure plans, etc., which may help to determine types and sources of hazardous materials present. In addition, a site visit is appropriate for several reasons, including the verification of existing data, the identification of existing site remediation systems, and to visually characterize wastes (e.g., leachate seeps). Specific information to be collected is provided in Sections 2.1 through 2.4 of the municipal landfill manual.

2. Defining Site Dynamics

The collected data are used to develop a conceptual site model, which is the key component of a streamlined RI/FS. The conceptual site model is an effective tool for defining the site dynamics, streamlining the risk evaluation, and developing the response action. Highlight 2 presents a generic conceptual site model for municipal landfill. The model is developed before any RI field activities are conducted, and its purpose is to aid in understanding and describing the site and to present hypotheses regarding:

- The suspected sources and types of contaminants present;
- Contaminant release and transport mechanisms;

exceedances were located with the portion of the PCB Hot Spot Area that extends into the Landfill Area. This finding is expected because potential risk at these locations was driven by samples collected either at 2 feet bgs (at the interface between the soil cover and underlying solid waste) or deeper than 2 feet bgs (into the solid waste). Similar to the HHRA conclusions, the data distribution within the Landfill Area is considered adequate to evaluate potential ecological risks, and areas with no data may contain chemical concentrations that would result in risks of the same relative magnitude as found elsewhere in the Landfill Area.

8.2.3. Conclusions for Solid Waste and Soil in Landfill Area

As discussed in Section 1.4, the EPA has developed a specialized RI/FS process for municipal landfill sites (EPA, 1991a, 1993a, 1993b, and 1994) that, provided that certain conditions are met, supports selection of a containment presumptive remedy. Use of the specialized process is intended to improve and accelerate the site characterization and remedy evaluation process and to ensure consistent evaluation of remedial actions at similar sites. Use of this specialized process is considered appropriate for the Landfill Area. Therefore, the following conclusions about the site characterization efforts (Sections 8.2.3.1 and 8.2.3.2) and risk evaluations (Section 8.2.3.3) are discussed in the context of the presumptive remedy framework for CERCLA landfills. The validity of applying the presumptive remedy to the solid waste and soil in the Landfill Area is discussed in Section 8.2.3.4.

8.2.3.1. Conclusions for Overall Landfill Characterization

The nature and extent of solid waste and chemicals in soil within the Landfill Area is adequately characterized to evaluate a focused set of remedial alternatives in the FS. This determination is based in large part on EPA presumptive remedy guidance for CERCLA landfills (EPA, 1993a, 1993b, 1994 and 1996). As discussed in Section 8.2.1, characterization of solid waste is not necessary or appropriate for selecting a response action for the Landfill Area. Instead, existing data were used to answer two questions outlined in EPA guidance for military landfills (EPA, 1996):

- Do landfill contents meet municipal landfill-type waste definition?
- Are military-specific wastes present?

Adequate data exist to answer these questions, as presented in the following paragraphs.

Do landfill contents meet municipal-type waste definition?

The landfill contents meet the municipal-type waste definition, as outlined in EPA guidance, based on the following lines of evidence:

- Risks are low-level (except for potential hot spots): Results of the HHRA indicated that, for both the recreational user and construction worker exposure scenarios, cancer risks are within the acceptable risk range of 10^{-6} to 10^{-4} specified in the NCP (55 Federal Register 8848, March 8, 1990).
- Treatment is impractical due to the volume and heterogeneity of the waste: The landfill covers 22 acres and has an estimated solid waste volume of 473,000 cubic yards (excluding the surrounding soil fill). The solid waste is a heterogeneous mixture of municipal-type waste, construction debris, and industrial waste.
- Waste types include household, commercial, nonhazardous sludge, and industrial solid waste: The predominant constituents of the solid waste are household and commercial refuse and construction debris. Other waste types, found in lower proportion, include industrial solid waste (such as sandblast waste) and waste oils and may include asbestos-containing debris, paint sludge, and solvents.
- Lesser quantities of hazardous wastes are present as compared with municipal wastes: Based on an evaluation of 333 soil samples collected from the intermittent soil fill mixed within the solid waste, nearly all of the hazardous substances detected in Landfill Area soil were of a limited extent relative to the overall waste volume. Several chemicals, such as SVOCs and PCBs, were detected throughout the Landfill Area at concentrations above the RIEC but were not indicative of hot spots.
- Land application units, surface impoundments, injection wells, and waste piles are not included: None of these features are present at the Parcel E-2 Landfill.

Are military-specific wastes present?

Based on the findings of the HRA (NAVSEA, 2004), LLRW may be present in and around the Parcel E-2 Landfill. These wastes consist primarily of buried radioluminescent devices (i.e., devices or instruments covered with paint containing radium-226), but may also include sandblast waste used to decontaminate ships used in atomic testing. As discussed in the radiological addendum to this RI/FS Report, historical records suggest that the volume and activity of LLRW potentially disposed of in the Landfill Area were relatively low (ERRG and Radiological Survey and Remedial Services, LLC, 2011). Information from the removal action at the PCB Hot Spot Area (which extends partially into the Landfill Area) confirmed that LLRW is found in low proportion relative to other waste types. According to EPA guidance, LLRW is considered "low-hazard military-specific wastes" and "generally are no more hazardous than some wastes found in municipal landfills" (EPA, 1996).

Other types of "low-hazard" military-specific wastes include decontamination kits and munitions hardware[8]. Forty-one pieces of MPPEH were encountered in the PCB Hot Spot Area excavation, out of a total excavation volume of 44,500 cubic yards, consisting primarily of expended cartridge casings of various calibers and protective caps, but also included an empty 5-inch practice projectile and a 3-pound

[8] Munitions hardware, as identified in the EPA 1996 guidance, is considered part of the broader munitions debris category used by the U.S. Department of Defense.

practice bomb (TtECI, 2010). Of the 41 MPPEH items discovered in the removal area, 20 items were verified to not present an explosive hazard and were reclassified as MDAS. The remaining 21 MPPEH items appeared to have been subject to previous demilitarization actions and could not be completely inspected by UXO technicians for possible explosive hazards. Although the type, age, and condition of these 21 MPPEH items did not suggest a high potential for residual energetic material, the Navy, as a precautionary measure, properly handled, transported, and disposed of these items as either material documented as an explosive hazard (MDEH) (20 items consisting of expended cartridge casings of various calibers) or munitions and explosives of concern (MEC) (1 item. 3-pound practice bomb) (TtECI, 2010). The only reported munitions storage was at Building S-807 (located in the former Parcel A). This building was a bunker like concrete structure approximately 10 feet wide, 3 feet deep, and 5 feet high that was reportedly used by the Navy to store small caliber munitions for hand-held weapons (AFA and Golder, 1996). Based on this information, decontamination kits and munitions hardware, if present at all, likely would only be found in low proportion relative to other waste types and would be no more hazardous than some wastes found in municipal landfills.

The "low-hazard" military-specific wastes discussed above are distinct from "high-hazard" military-specific wastes, which include chemical warfare agents, artillery, bombs, and other military chemicals. Such high-hazard military-specific wastes may possess unique safety, risk, and toxicity characteristics that require special consideration (EPA, 1996). No anecdotal information, documentation, or physical evidence has been identified that such high-hazard military-specific wastes were ever used at HPS. Further, the shipyard's primary mission of fleet repair and maintenance did not include weapons storage.

8.2.3.2. Conclusions for Characterization of Potential Hot Spots

Existing data are used to identify hot spots within a landfill and to determine if additional characterization and treatment of these hot spots is warranted. EPA guidance poses four specific questions for determining whether or not hot spots require characterization and treatment. If all of the questions can be answered in the affirmative, it is likely that characterization and treatment of hot spots is warranted (EPA, 1993a). The four questions outlined below include the Navy's answers on the potential hot spots in the northern and central portions of the Landfill Area.

Does evidence exist to indicate the presence and approximate location of waste?: Yes. PCBs, 1,4-DCB, and naphthalene have been detected at concentrations greater than 100 times the RIEC at several locations within the Landfill Area.

Is the hot spot known to be a principal threat waste?: No. According to EPA guidance entitled "A Guide to Principal Threat and Low Level Threat Wastes" (EPA, 1991b), principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. The potential

Table 4-24. Exceedance Frequency of Soil Evaluation Criteria

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

	Landfill Area			Panhandle Area			East Adjacent Area		
Chemical	**0-2**	**2-10**	**10+**	**0-2**	**2-10**	**10+**	**0-2**	**2-10**	**10+**
Maximum depth (feet bgs)	1.91	10	52.66	2	10	42.75	2	10	46.82
Metals									
Antimony		4 / 113		**1 / 77**			1 / 55	**2 / 126**	
Arsenic		5 / 113	21 / 97	**12 / 77**	**12 / 64**	**6 / 40**	**5 / 55**	**14 / 126**	**12 / 60**
Cadmium		8 / 113	2 / 97	**3 / 77**	**4 / 64**		2 / 55		
Chromium		8 / 113	17 / 97			**1 / 40**	2 / 55	**1 / 126**	**1 / 60**
Copper		3 / 113							
Iron		4 / 87	2 / 96	**3 / 68**	**2 / 38**		**2 / 42**		
Lead	1 / 22	16 / 113	7 / 97	**16 / 77**	**13 / 64**	**5 / 40**	**9 / 55**	**11 / 126**	1 / 60
Mercury				1 / 77					
Vanadium		1 / 113		1 / 77					
Zinc					**1 / 64**				
Pesticides									
4,4'-DDE				**1 / 77**				**1 / 128**	
4,4'-DDT								**3 / 128**	
Dieldrin		7 / 112		**2 / 77**			**4 / 52**	**9 / 128**	
Heptachlor epoxide	1 / 22	5 / 112					**2 / 52**	**11 / 128**	
Polychlorinated Biphenyls									
Total PCBs (high risk)	2 / 23	45 / 122	31 / 103	**8 / 70**	**7 / 64**		**30 / 55**	**81 / 232**	**3 / 55**
Total PCBs (low risk)		2 / 122	1 / 103						
Dioxins and Furans									
1,2,3,4,7,8-HxCDF					**1 / 10**	**1 / 2**			
1,2,3,7,8,9-HxCDF					**1 / 10**	**1 / 2**			
1,2,3,7,8-PeCDD					**1 / 10**	**1 / 2**			
2,3,4,6,7,8-HxCDF					**1 / 10**	**1 / 2**			
2,3,4,7,8-PeCDF					**8 / 10**	**2 / 2**			
2,3,7,8-TCDD					**1 / 10**	**1 / 2**			
2,3,7,8-TCDF						**1 / 2**			
Semivolatile Organic Compounds									
1,4-Dichlorobenzene		8 / 62	9 / 81		**1 / 50**			**1 / 76**	
1,2,4-Trichlorobenzene								**1 / 76**	
2-Methylnapthalene		1 / 61							
Anthracene		1 / 113							
Benzo(a)anthracene	2 / 24	5 / 113	1 / 97	**5 / 61**		**1 / 40**	**2 / 52**	**7 / 127**	
Benzo(a)pyrene	9 / 24	10 / 113	6 / 97	**10 / 61**	**6 / 52**	**1 / 40**	**10 / 52**	**14 / 127**	
Benzo(b)fluoranthene	2 / 24	7 / 113	1 / 97	**7 / 61**		**1 / 40**	**5 / 52**	**13 / 127**	
Benzo(k)fluoranthene		6 / 113		**9 / 61**			**2 / 52**	**5 / 127**	
Bis(2-ethylhexyl)phthalate				**1 / 61**					
Chrysene		2 / 113		**1 / 61**				1 / 127	
Dibenz(a,h)anthracene		2 / 113		**1 / 61**				**2 / 127**	
Indeno(1,2,3-cd)pyrene	2 / 24	4 / 113		**4 / 61**		**1 / 40**		**2 / 127**	
Naphthalene	1 / 24	11 / 113	13 / 98	**2 / 62**	**7 / 52**	**3 / 40**		**3 / 127**	
n-Nitroso-di-n-propylamine			1 / 97						
Volatile Organic Compounds									
1,1,2,2-Tetrachloroethane							**2 / 22**	**7 / 76**	
Carbon tetrachloride			1 / 78						
Tetrachloroethene			1 / 78						
Total xylenes			1 / 77						
Petroleum Hydrocarbons									
Total TPH		13 / 107	9 / 89	**3 / 16**		**1 / 33**	**7 / 51**	**27 / 231**	

Table 4-24. Exceedance Frequency of Soil Evaluation Criteria *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Notes: Text denotes the number of samples above the RIEC over the total number of samples analyzed (e.g., 2 / 26 = 2 exceedances out of 26 analys
Bold text (in shaded cells) denotes chemicals that are not fully delineated.

bgs below ground surface
DDE dichlorodiphenyldichloroethene
DDT dichlorodiphenyltrichloroethane
HxCDD hexachlorodibenzo-p-dioxin
HxCDF hexachlorodibenzofuran
PCB polychlorinated biphenyl
PeCDD pentachlorodibenzo-p-dioxin
PeCDF pentachlorodibenzofuran
RIEC remedial investigation evaluation criteria
TPH total petroleum hydrocarbons
TCDD tetrachlorodibenzo-p-dioxin
TCDF tetrachlorodibenzofuran

13	**Potential source of contamination to Parcel F**	Section 2.3.3	Draft Parcels E and E-2 Shoreline Characterization Technical Memorandum, Hunters Point Shipyard, San Francisco, California. SulTech. June 2007. Pages 24 and 25. *(note: this document was accepted as final and was provided as Appendix G to the Final Remedial Investigation/Feasibility Study Report for Parcel E-2; Record No. 4237)*

6.0 CONCLUSIONS AND RECOMMENDATIONS

The purpose of the shoreline investigation was to evaluate if contamination along the Parcels E and E-2 shoreline has migrated (or has the potential to migrate) to sediments in adjacent Parcel F (offshore) and to identify areas within the shoreline that pose an unacceptable ecological risk.

Concentrations of copper and lead in sediments along the Parcels E and E-2 shoreline are a potential source of contamination to Parcel F in all areas except the Panhandle Area and IR-02 Southeast. Aroclors should be evaluated as a potential source of contamination in the Landfill Area and IR-02-Northwest, where the average concentrations of Aroclors exceeded the ambient concentration for nearshore sediment in San Francisco Bay (Water Board 2003).

Evaluation of PCB data showed that a definitive connection between onshore sources and offshore sediments could not be established, even though the congener patterns in onshore and offshore sediments were consistent. The geochemical assessment to evaluate the inter-element correlations between metals located in sediments of the shoreline and offshore area was not particularly diagnostic for linking contaminant sources and sinks, although contaminant distribution patterns in Parcel F are highly suggestive of contaminants originating from the shoreline along Area X of the South Basin. Additionally, although erosion and overland transport of contaminants from Parcels E and E-2 may be minor compared with the sediment load from San Francisco Bay, some influx of metals from the Parcels E and E-2 shoreline to Parcel F is likely.

Groundwater discharge was evaluated as a potential pathway for migration of metals and PCBs from Parcels E and E-2 to Parcel F. However, groundwater in contact with contaminated soils at depth in Parcels E and E-2 is unlikely to contribute to metals contamination in offshore sediments because of the limited solubility of metals in site groundwater. Review of metals data for groundwater samples collected from nearshore wells confirmed the low concentrations (10 micrograms per liter) of dissolved metals in site groundwater. Likewise, transport of PCBs by the groundwater pathway is severely limited by their chemical and physical properties.

Benthic invertebrates, birds, and mammals are at risk from exposure to PCBs in surface and subsurface sediment along the Parcels E and E-2 shoreline. Benthic invertebrates in surface and subsurface sediment may be adversely affected by exposure to copper, lead, zinc, and DDTs. In subsurface sediment, mercury may pose an additional risk to benthic invertebrates. Ingestion of sediment and prey that contain cadmium, copper, molybdenum, zinc, and PCBs may pose a risk to the house mouse.

Based on the results of the technical memorandum, the following recommendations are made for the Parcels E and E-2 shoreline:

- Source control measures are warranted along the Parcels E and E-2 shoreline, particularly in the metal slag area of the Panhandle Area, the Landfill Area, and IR-02 Northwest.

- Ecological risk to invertebrates, birds, and mammals in the shoreline warrants the evaluation of remedial alternatives for the intertidal sediments along the entire Parcels E and E-2 shoreline.

14	**Landfill gas characterization**	Section 2.3.4	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 4.2.3, pages 4-16 through 4-22. Record No. 4237

4.2.2.2. Vertical Extent of Solid Waste

Figures 2-3 through 2-8 show the vertical extent of solid waste at the Parcel E-2 Landfill, along with the locations of the test pits and soil borings used in the extent evaluation. The vertical boundaries of the solid waste are discussed below.

Soil boring data confirm that the bottom of the solid waste is usually deeper than the test pit excavation depths. As a result, soil borings were drilled at most test pit locations to determine the depth of solid waste. Data from the test pits and historic soil borings were used to construct geologic cross sections that show the depth and extent of waste at the landfill (Figures 2-3 through 2-8).

The waste is generally located between 21 feet above and 14 feet below msl. The waste generally varies from 10 to 25 feet thick. The solid waste lies atop Bay Mud clays in the southern and eastern portions of the landfill and atop B-aquifer sands in the northwestern area of the landfill. In other areas, solid waste is bounded by fill (construction debris, sand, and gravel). In most borings, solid waste is located both above and below the water table. The only area where solid waste is located above the water table is in the northwest corner of the landfill.

4.2.3. Landfill Gas

This subsection discusses the nature and extent of landfill gas at Parcel E-2. The evaluation methods were discussed in Section 4.1.2. The results of relevant landfill gas investigations are summarized below, including those related to the landfill gas characterization study (Appendix A) and the landfill gas TCRA (Appendix F). This subsection also presents a description of the ongoing landfill gas activities, based on the Interim Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c).

4.2.3.1. Landfill Gas Characterization

As discussed in Sections 3.2 and 4.1.2, the landfill gas characterization investigation was conducted in 2002 as part of the NDGI to define the nature and extent of landfill gas within and immediately adjacent to the Parcel E-2 Landfill. Section 3.2 discusses field activities and the report associated with this investigation. Data evaluation and results for the main components of the investigation are described below and include (1) outdoor air monitoring and building atmosphere surveys, (2) a subsurface soil gas survey, and (3) GMP installation and monitoring. Unless otherwise indicated, all information in this subsection is from the Landfill Gas Characterization Report (provided in Appendix A of this report). Figure 3-1 shows the locations of the soil gas survey locations and GMPs at Parcel E-2. Outdoor air and building surveys locations are shown on Figure 3-4.

Outdoor Air Monitoring and Building Atmosphere Surveys

Data from outdoor air monitoring and building atmosphere surveys were evaluated to assess whether methane (the main component of landfill gas) was present in outdoor air, buildings, or subterranean structures within 300 feet of the Parcel E-2 Landfill at concentrations exceeding the 27 CCR regulatory limit of 1.25 percent by volume in air (25 percent of the LEL). Figure 4-2 shows the air monitoring locations within 300 feet of the landfill. Air monitoring data were also evaluated to assess whether NMOCs were present at concentrations exceeding EPA Region 9 PRGs for ambient air (EPA, 2004).

Results of the outdoor air survey indicated that landfill gas is not present in the breathing zone within the Landfill Area; in building atmospheres within 300 feet of the Landfill Area; or within surveyed, accessible buildings outside the 300-foot perimeter. Methane was not detected at locations to the east, south, or west of the landfill during the outdoor air survey. Methane was detected at several locations north of the landfill as summarized below.

- Methane exceeded the LEL at the ground surface around the light pole near the southwestern corner of the UCSF compound (Location F, subsequently referred to as simply the "light pole").
- Methane detections were between 5 and 18 percent of the LEL at two locations along a suspected utility corridor along the fence between the landfill and the UCSF compound (Locations A and C).
- Methane exceeded 25 percent of the LEL at a location on the basketball court on the UCSF compound, just west of the Building 830 crawlspace (Location B).

During additional outdoor air monitoring performed using field instruments within a month of the initial outdoor air survey during spring 2002, methane was not detected at Locations A, B, C, or F. Air samples were collected and analyzed at three locations around the light pole and four locations within the Building 830 crawlspace. Methane was detected at a maximum concentration of 0.6 percent of the LEL in one light pole sample; all gas samples from within the Building 830 crawlspace were less than 1 percent of the LEL. Based on these results, the concentrations of methane in outdoor air around the landfill were considered negligible. Outdoor air at the light pole and Locations A and B were monitored on a monthly basis for more than 2 years following the removal action to verify that methane concentrations remained less than 1 percent (TtEMI and ITSI, 2004c). Monitoring at these locations was discontinued in August 2006 after methane and NMOC concentrations were shown to consistently be less than action levels. The Navy's decision to discontinue monitoring at these locations was consistent with the rationale presented in the Interim Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c).

Outdoor air monitoring performed on the landfill surface (consisting of breathing zone measurements at cap penetrations and a surface transect over and around the cap surface) did not detect methane at concentrations exceeding 25 percent of the LEL. Methane was detected at concentrations exceeding 25 percent or more of the LEL at several wells (shown on Figure 4-2); however, these measurements were

taken at the top of the well casing, with the wells open to the atmosphere, and were not representative of outdoor air within the Landfill Area. Based on these results, the amount of landfill gas in outdoor air within the landfill limits was considered to be negligible. Methane results from the outdoor air survey are shown on Figure 4-2, and the outdoor air field data are presented in Table 3 in Appendix A.

Laboratory results (presented in Table 4 in Appendix A) indicated that certain NMOCs were present in outdoor air at concentrations exceeding their respective PRGs at two locations, as summarized below.

- At the light pole near the southwestern corner of the UCSF compound (Figure 4-2), 1,1,2,2-tetrachloroethane, 1,3,5-trimethylbenzene, benzene, and PCE exceeded the 2004 PRGs for ambient air. Chloromethane and ethylbenzene concentrations exceeded the 2002 PRGs for ambient air; however, changes reflected in the 2004 PRGs resulted in these compounds no longer exceeding the established risk-based criteria.
- In the Building 830 crawlspace, benzene and PCE exceeded the 2004 PRGs for ambient air. Chloromethane concentrations exceeded the 2002 PRGs for ambient air; however, changes reflected in the 2004 PRGs resulted in chloromethane no longer exceeding the established risk-based criteria.

No NMOCs were detected at concentrations greater than PRGs in samples collected at these locations in November 2002. The November 2002 monitoring was performed after the gas control system was installed and active gas extraction was initiated from the extraction wells within the UCSF compound, as part of the landfill gas TCRA.

Subsurface Soil Gas Survey

Data from the subsurface soil gas survey were evaluated to assess the nature and extent of methane and other landfill gas components (such as NMOCs) in the vadose zone at the Parcel E-2 Landfill. Data were evaluated to identify subsurface locations where methane exceeded 25 percent of the LEL (1.25 percent by volume) and where NMOCs exceeded a screening criterion of 5 ppmv above background concentrations, as measured at a location upwind from the sampling locations. Field screening data and laboratory results corresponded well to one another. The main findings of the data evaluation are summarized below.

- Methane was detected at concentrations exceeding 25 percent of the LEL along the northern side of the landfill, where solid waste extends up to the boundary of the UCSF compound. NMOCs were also detected in this area at concentrations exceeding 5 ppmv above background.
- Methane was detected on the UCSF compound at concentrations exceeding the LEL, indicating that methane had migrated north of the landfill beneath the UCSF compound.
- No methane was detected north of the UCSF compound on Crisp Avenue. Thus, methane had not migrated beyond the UCSF compound beneath non-Navy property north of Crisp Avenue (former Parcel A).

- Methane concentrations were not detected at levels exceeding 25 percent of the LEL along the east, south, and west sides of the landfill. Thus, methane dissipated quickly with distance from the landfill in these directions.
- During field screening, NMOCs were detected at 11 soil gas locations at concentrations exceeding 5 ppmv above background.
- At one location (SG12) east of the delineated extent of waste, near IR04MW13A, laboratory analysis detected PCE, TCE, and their degradation products at concentrations above the shallow soil gas screening levels for evaluation of potential vapor intrusions.

Figure 4-3 shows the extent of landfill gas based on the results of the subsurface soil gas survey. Tables 5 and 7 in Appendix A present field screening and laboratory analytical results of the soil gas survey, respectively. As discussed in Section 3.9, the Navy performed an interim removal action to remove landfill gas that had migrated beneath the UCSF compound and to control future migration north of the solid waste boundary.

The soil gas survey identified the nature and approximate lateral extent of landfill gas prior to the landfill gas removal action. The nature and extent delineation was further refined during several rounds of sampling conducted at GMPs installed in 2002, as discussed in the following subsection. The landfill gas barrier wall installed to control landfill gas migration is shown on Figure 4-3 and represents the current northern extent of landfill gas above 25 percent of the LEL.

Gas Monitoring Probe Installation and Monitoring

Data from GMPs installed in 2002 were evaluated to monitor the presence of landfill gas at Parcel E-2, the UCSF compound, and along Crisp Avenue. Monitoring was conducted on a weekly basis using field instruments. Four rounds of sampling were conducted between April and November 2002. Methane concentrations were compared with 27 CCR limits. NMOC concentrations were not compared with any specific criteria; rather, their concentrations were monitored over time during four rounds of sampling conducted in 2002. Table 4-2 lists the detection frequencies and range of results for NMOCs collected from GMPs during this time period. Findings of the data evaluation are summarized below.

During the first three rounds of monitoring from April to July 2002, methane concentrations exceeded the LEL (5 percent by volume) in GMP01A through GMP12; these GMPs are all located along the fence line on the northern edge of the Parcel E-2 Landfill. Methane was not detected in any of the GMPs located along Crisp Avenue (GMP13 through GMP19). Methane was also not detected in GMPs 20 and 21 located on the western edge of the landfill.

The fourth round of monitoring was conducted in November 2002, after the initiation of active gas extraction within the UCSF compound. Methane concentrations decreased to less than the LEL in all GMPs along the northern edge of the Parcel E-2 Landfill except at GMP08A, which is located on the northeastern side of the landfill. Results measured during this round also indicated that methane

concentrations in the UCSF compound GMPs were all less than the LEL for methane. As during previous sampling rounds, methane was not detected in the GMPs on Crisp Avenue (GMP13 through GMP19). This finding further supported the conclusion that methane had not migrated beyond the UCSF compound beneath non-Navy property north of Crisp Avenue (former Parcel A).

Several NMOCs were detected during GMP monitoring, with the highest concentrations detected in GMPs around the perimeter of the Parcel E-2 Landfill and within the UCSF compound. NMOC concentrations were detected in the GMPs located along Crisp Avenue, but at lower concentrations than concentrations detected at the GMPs along the fence line and within the UCSF compound. NMOC concentrations at all GMPs decreased after the landfill gas extraction system became operational in October 2002.

A risk assessment was conducted prior to operation of the gas extraction system to evaluate potential human health risks resulting from the low levels of NMOCs detected in GMPs along Crisp Avenue. An additional risk assessment was performed on NMOC data from GMPs within the UCSF compound. As discussed in Section 4.1.2.2, the assessments concluded that NMOC concentrations do not pose an unacceptable risk to human health.

4.2.3.2. Landfill Gas Removal Action

Based on the results of the landfill gas characterization investigation, the Navy initiated a TCRA to (1) remove landfill gas and reduce subsurface methane concentrations at the UCSF compound to less than the LEL (5 percent by volume in air); and (2) control future landfill gas migration to off-site areas. The TCRA consisted of active landfill gas extraction, post-extraction monitoring, and a response action to address potential methane migration pathways through the landfill gas control system. The results of each of these TCRA components are described in the following paragraphs. Unless otherwise indicated, all information in this subsection was derived from the Landfill Gas TCRA Closeout Report (TtEMI, 2004a; Appendix F).

Active Landfill Gas Extraction

The goals of the active extraction phase of the TCRA were to (1) reduce methane to concentrations equal to or less than 0.5 percent by volume in air in all extraction wells (EX-1 through EX-10); and (2) to reduce methane to concentrations equal to or less than 1 percent by volume in air in all GMPs within the UCSF compound (GMP22 through GMP26). Two cycles of active extraction were planned but not needed at all wells to achieve these goals. The active extraction phase of the TCRA was conducted from October 4, 2002, to January 20, 2003, when the TCRA goals for reducing the concentrations of methane were achieved. From January 2003 to present, active landfill gas extraction is conducted as necessary to ensure landfill gas concentrations do not exceed action levels.

Post-Extraction Monitoring

The landfill gas control system consists of an HDPE barrier wall, a gas collection trench sealed (on top) with bentonite, a horizontal perforated gas collection pipe, five gas vents, and a mobile active extraction unit to assist venting when necessary. Construction of the landfill gas control system was completed on October 3, 2002. After active gas extraction was halted on January 20, 2003, methane concentrations were monitored in extraction wells and GMPs, weekly for 4 weeks and then monthly for 4 months. At the end of each monitoring period (weekly and monthly), gas samples were collected in Summa™ canisters from GMP22 through GMP26 (located within the UCSF compound) and analyzed at an off-site stationary laboratory to confirm the field monitoring results. GMP analytical results are shown in Appendix J1.

During the first 2 weeks of monitoring, the landfill gas control system was operated passively. However, methane levels at GMP01A began to rise within 1 week after extraction was halted, with corresponding increases in adjacent GMPs to the east (GMP02A) and west (GMP12). To address these methane increases, the landfill gas control system was switched from passive to active mode on February 5, 2003, by extracting gas through passive vent (PV)-01 at a low-flow rate. Laboratory analysis of GMPs (Appendix J1) demonstrates that gas migration is effectively controlled through operation of the landfill gas control system. The activities of the TCRA have successfully controlled the migration of landfill gas beneath non-Navy property.

Methane Migration Response Action

During active gas extraction and subsequent monitoring, increases in methane concentrations were observed that were consistent with a physical problem with the landfill gas control system that allowed methane to migrate beyond the barrier wall. A detailed evaluation was conducted to determine the cause of the methane increases and to identify appropriate mitigative measures; the evaluation is documented in Appendix K to the Landfill Gas Removal Action Closeout Report (provided in Appendix F to this report) and briefly summarized below.

Data collected from temporary gas probes installed along the gas collection trench indicated that methane was migrating in two locations either through a tear in the barrier or over the barrier through the bentonite seal.

The following response actions were taken to address methane migration:

- A grout curtain was installed in the gas collection trench on the north (UCSF) side of the HDPE barrier wall to control the migration of methane gas through the barrier wall. The grout curtain was installed in June 2003 using pressure grouting to fill voids in gravel and soil along the northern side of the barrier wall and to seal any tears or separated seams. Figure 1-3 shows the grout curtain location.

- The bentonite cover was rehydrated to control the migration of methane gas above the barrier wall. Trenches were excavated to the top of the barrier wall in areas where temporary gas probe monitoring results indicated methane migration was occurring. Inspection of these trenches indicated several areas of inadequate hydration of the bentonite cover, with bentonite pellets clearly visible. The entire length of the bentonite cover was rehydrated by injecting water into the cover using a water jet constructed of perforated PVC pipe.
- A fifth PV (-05) was added to increase the venting capability of the trench. The vent was created by converting one of the risers connected to the main pipe of the barrier trench to a vent and connecting it to a treatment unit. The new passive vent was connected between PV-01 and PV-02, in the area of the observed methane increases. Figure 3-6 shows all the passive vent locations.

Based on subsequent monitoring, these response actions have reduced gas migration beneath the UCSF compound. Ongoing landfill gas monitoring and control system operation, in accordance with the Interim Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c), is performed to control gas migration beneath the UCSF compound.

4.2.3.3. Ongoing Landfill Gas Activities

The ongoing landfill gas monitoring and control system operation is based on the Interim Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c). Monitoring is conducted to verify that hazardous levels of landfill gas are not migrating beyond the fence line of the landfill and onto the UCSF compound. The monitoring locations include 32 GMPs and 5 PVs, 4 groundwater wells on the landfill cap, and outdoor air and subterranean structure locations both on Parcel E-2 and within the UCSF compound (Figure 3-6). As discussed in Section 3.9, regular monitoring is being conducted at GMPs and along the gas control system. In addition, the gas control system is inspected and maintained on a regular basis. The gas monitoring reports present results of the landfill gas monitoring, the status of the gas extraction system (active operation and passive operation), maintenance observations on the gas control system, and meteorological data (ITSI, 2004a through 2004g, 2005a through 2005n, 2006a through 2006g, 2006i through 2006m, 2007a through 2007c, 2007e through 2007g, 2008a through 2008c, 2008e, 2009a through 2009d, and 2010a through 2010c).

4.2.4. Chemicals Detected in Soil

Soil data within the Landfill Area is presented in a similar manner as for the Panhandle Area and East Adjacent Area for consistency purposes. However, as discussed in Section 4.1.3.4, chemical data in Landfill Area soil are used only to assess (1) the general magnitude of chemical concentrations relative to the RIEC and (2) the general extent of RIEC exceedances relative to the landfill waste volume. In addition, potential soil hot spots are identified at locations containing chemical concentrations 100 times greater than the corresponding RIEC. EPA recommends that hot spots in municipal landfills be identified and evaluated to decide if more extensive characterization and development of remedial alternatives is

15	**Groundwater contaminants**	Section 2.3.5	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 5.8.1, pages 5-38 through 5-40. Record No. 4237

5.8. SUMMARY OF FINDINGS

All groundwater data collected to date (from early 1990 to October 2007) were included to accurately evaluate the nature and extent of groundwater contamination in Parcel E-2. Concentrations of metals in groundwater were compared with ambient concentrations (HGALs) to eliminate those metals not introduced by the landfill or its surrounding source areas. The data were then evaluated by comparing detected chemicals with evaluation criteria (RIECs) to establish whether they are likely to be present at concentrations that could negatively affect human health or the environment. To identify the subset of detected chemicals on which to focus the evaluation, the data were compared with the selected RIECs for each aquifer. The RIECs are composed of regulatory groundwater and drinking water limits and standards and aquatic criteria, as well as background levels (in the case of metals only). To identify and select the criteria that apply to each aquifer at Parcel E-2, a beneficial use evaluation was conducted, followed by a criteria selection process based on the results of that evaluation.

Further evaluation was performed for chemicals found to exceed the selected RIECs. Data maps were created to depict the spatial and temporal distribution and magnitude of the detections and the samples that exceeded the RIEC for each chemical in each aquifer.

The information presented above was used to determine if the problem statements defined for Parcel E-2 groundwater have been answered and if the DQOs have been met. The following subsections summarize the results of the nature and extent evaluation and address the resolution of DQOs and the responses to the problem statements guiding the data collection at Parcel E-2.

5.8.1. Summary of Lateral and Vertical Extent

As stated in Section 5.1, the goal of this section is to present an evaluation of all existing groundwater data to support the risk assessment and remedial alternatives portions of the RI/FS process. This nature and extent evaluation is meant to document that an adequate amount of data, of sufficient quality, exist to support the HHRA and SLERA, to provide a strong basis for the RAOs, and to support the evaluation of a focused set of remedial alternatives for Parcel E-2.

The findings and the areas of concern with respect to groundwater contamination at Parcel E-2 are summarized below.

- Cyanide was detected at elevated concentrations throughout the A- and B-aquifer perimeter wells in Parcel E-2; however, the highest concentrations of cyanide were in samples collected from wells within the Landfill Area. Recent elevated concentrations (exceeding RIEC) and, in some cases, persistent concentrations of cyanide in groundwater wells located along the perimeter of the parcel indicate that the extent of cyanide is not adequately delineated.
- Ammonia was detected at elevated concentrations throughout the A- and B-aquifers in the Landfill Area. These concentrations are indicative of the decomposition of natural organic matter and organic waste material in the landfill. Elevated concentrations (exceeding the RIEC) of un-ionized ammonia are also present in wells located along the bay shoreline and further inland in the northern portion of the Panhandle Area, adjacent to the Landfill Area. Upon contact with bay water, un-ionized ammonia is oxidized to nitrite, then nitrate. The oxidation of ammonia reduces the dissolved oxygen in the bay water and may be harmful to aquatic life.
- Nitrate concentrations exceeding the RIEC are persistent at well IR01MW53B, located along the northern shoreline of the Panhandle Area. The extent of nitrate is not adequately delineated in the B-aquifer at this shoreline location.
- Sulfide was detected at elevated concentrations in monitoring wells throughout Parcel E-2. In particular, wells near the shoreline display elevated and persistent concentrations of sulfide in groundwater that may migrate to San Francisco Bay. The extent of sulfide is not adequately delineated.
- Recently detected concentrations of antimony, chromium, lead, and zinc exceeded their respective RIECs in groundwater where the Landfill Area meets the PCB Hot Spot Area. Concentrations in groundwater may be attenuating as a result of the removal action at the PCB Hot Spot Area, but this hypothesis can only be confirmed through ongoing monitoring in this area. Until this data gap is addressed, the extent of these metals is not considered adequately delineated in the northern portion of the PCB Hot Spot Area, along the shoreline.
- Persistent barium concentrations exceeding the RIEC (504 µg/L) exist in A-aquifer groundwater in the southern portion of the Panhandle Area and along the Landfill Area shoreline. Because the extent of barium beyond the Parcel E-2 shoreline is unknown, groundwater with barium concentrations exceeding the RIEC is potentially migrating toward San Francisco Bay.
- Recently detected concentrations of copper, lead, and zinc exceeded the A-aquifer RIEC in groundwater along the northern shoreline of the Panhandle Area, where these dissolved metals are potentially migrating to San Francisco Bay. Ongoing monitoring in this area may be used to further delineate the extent of metals in groundwater at this location and may be used to make recommendations on future remedial actions.
- For metals in groundwater, ambient concentrations are a contributing factor for the wide variety of detections in the A-aquifer; however, past site activities at Parcel E-2, which include disposal of industrial wastes, also contribute to the metals reported in groundwater. Metals concentrations slightly exceeding HGALs were treated and delineated as RIEC exceedances in this evaluation, but they may be due to natural variations in background concentrations.

- Concentrations of total PCBs consistently exceed the RIEC in A-aquifer wells located near the sheet-pile wall, along the shoreline in the Landfill Area. Historical data indicated that PCB concentrations generally decreased over time at the site. In addition, the removal action that was performed in the PCB Hot Spot Area along the Parcel E-2 shoreline removed the soil source and is likely to result in reduced dissolved concentrations in Parcel E-2 aquifers. The removal action performed at the PCB Hot Spot Area will also probably reduce source concentrations of other chemicals (e.g., SVOCs) detected in the area. Data collected from temporary and replacement wells in the vicinity of the PCB Hot Spot Area, although not extensive, suggest that attenuation is occurring.
- Historical total TPH concentrations in groundwater in wells IR01MW43A and IR01MWI-3 exceeded the TPH criterion in samples collected between 1991 and 2005. Total TPH concentrations in IR01MW43A and IR01MWI-3 continued to exceed their respective RIECs (4,839 µg/L and 2,092 µg/L) through 2005. Total TPH, as well as other chemical concentrations, in soil will likely be reduced as a result of the soil removal action that was conducted in the collocated PCB Hot Spot Area; however additional monitoring is required to confirm whether the removal action has reduced TPH concentrations in groundwater. Concentrations of total TPH in samples collected from temporary monitoring wells within 150 feet of the Parcel E-2 shoreline in the Landfill Area and northern Panhandle Area exceed A-aquifer RIECs. Total TPH is not adequately delineated in these areas.

Table 5-15 includes a list of all the wells from which the extent of certain chemicals could not be adequately delineated based on the available data. Although these are potential areas of concern and may not have all been identified as such in the bulleted list above, the information available is adequate for the evaluation of remedial alternatives for Parcel E-2. Section 5.8.4 provides more information on how the nature and extent analysis presented in this section will be strengthened by future data.

5.8.2. Resolution of Data Quality Objectives

A DQO question was presented in the BGMP SAP (TtEMI, 2004e) that directly addressed the nature and extent of contamination in basewide groundwater, including groundwater affected by the landfill at Parcel E-2. The problem statements, decision question, and answer to the decision question are presented below.

5.8.2.1. Problem Statements

The BGMP SAP (TtEMI, 2004e) lists the following two problem statements for groundwater monitoring at the landfill at Parcel E-2:

Historical groundwater data show that chemicals have been detected in groundwater downgradient of the Parcel E-2 Landfill. Additional monitoring is necessary to determine trends in chemical concentrations and to help evaluate potential remedial alternatives.

16	**Radiological investigations**	Section 2.3.6	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. March 2011. Section 3.1, pages 3-1 through 3-10. Record No. 4260.

Section 3. Radiological Investigations and Removal Actions

Multiple radiological investigations have been conducted at Parcel E-2[4], beginning in 1988. The investigations included basewide investigations (such as the site reconnaissance), investigations performed throughout Parcel E (which was later subdivided into Parcels E and E-2), and focused investigations within Parcel E-2. In addition, the Navy has performed several interim removal actions at Parcel E-2 that have involved excavation and off-site disposal of LLRW. The following sections describe the previous radiological investigations and removal actions performed at Parcel E-2.

3.1. RADIOLOGICAL INVESTIGATIONS

Numerous investigations of potential radiological contamination have been performed throughout HPS, including Parcel E-2. Radiological investigations performed at Parcel E-2 include:

- Site Reconnaissance (1988 to 1989)
- Phase I Radiological Investigation (1991)
- Phase II Radiological Investigation (1993)
- Interim Parcel E Radiation Risk Assessment (1997)
- Interim Investigation between Phase IV and Phase V Radiological Investigations (2001)
- Phase V Radiological Investigation (2002 to 2003)
- Radiological Groundwater Investigation (2002)
- Characterization of the Metal Slag Area (2004)
- Radiological Groundwater Investigation (2008)

A brief summary of radiological investigations performed at Parcel E-2 is provided in the following sections. For each investigation, the methods used to evaluate the ROCs and associated release criteria were current at the time of the survey. Unless otherwise indicated, the information presented in each section is derived from the HRA (NAVSEA, 2004). Specific soil and groundwater characterization data from these investigations are presented in Sections 4 and 5, respectively.

[4] In September 2004, the Navy divided Parcel E into two parcels (E and E-2). Discussions within this report that reference documents published prior to September 2004 refer to the portion of Parcel E that became Parcel E-2.

3.1.1. Site Reconnaissance (1988 to 1989)

In 1988, Harding Lawson Associates conducted a preliminary surface radiation survey to determine if radioactivity levels at HPS posed unacceptable exposure risks to RI fieldworkers. Project activities included a scintillation survey for radiation at surface locations at Parcel E-2. The surface gamma survey was conducted at grid points over the entire Landfill Area. The average gamma count rate was determined to be significantly below the mean of the background values measured at HPS in conjunction with this survey (6,411 counts per minute [cpm]). Surface gamma counts at one location in the landfill exceeded the average level at the landfill, but were close to the mean of the HPS background values (Harding Lawson Associates, 1990).

3.1.2. Phase I Radiological Investigation (1991)

In 1991, the Navy began radiation investigations at HPS in four main phases as part of the RI program. Phases I and II involved field investigations at several HPS locations, including Parcel E-2, while Phases III and IV were performed elsewhere at HPS (outside of Parcel E-2). Also during this period, an interim radiation risk assessment and a shoreline characterization survey were performed at Parcels E and E-2.

The portion of the Phase I radiological investigation at Parcel E-2 included air monitoring and a surface confirmation radiation survey (SCRS). Phase I particulate air monitoring was conducted in 1991 to determine the background airborne particulate alpha and beta radioactivity levels at several locations, including Parcel E-2. The gross alpha and gross beta airborne particulate concentrations were well within safety standards for airborne concentrations of general radioactive materials in outdoor air (PRC Environmental Management, Inc. [PRC], 1992).

The Phase I SCRS was initiated in 1992 to determine and confirm the nature and surficial extent of radium-bearing devices in several disposal areas at HPS, including Parcel E-2. A local grid coordinate system was developed for the Phase I SCRS to map and relocate radioactive material detected during the surface walkover survey. Each grid section was 300 feet by 300 feet square, with each section further subdivided into 30-foot by 30-foot subgrids. During the Phase I SCRS, gamma readings exceeding two times the background level were considered potential radioactive point source anomalies associated with buried radium-containing devices (PRC, 1992).

When elevated gamma readings were observed, the location, gamma measurements, and exposure measurements were recorded and a “biased” soil sample was collected to identify the radioisotopes (PRC, 1992). To provide additional characterization information, “systematic” soil samples were also collected at random, “unbiased” locations at a frequency of one sample per 2 acres. All soil samples were analyzed at an off-site laboratory using gamma spectroscopy to identify and quantify gamma-emitting radioisotopes. During the surface walkover survey in Parcel E-2, a cluster of seven radioactive point

source anomalies associated with radium-containing devices were observed in the vicinity of the Metal Slag Area; two additional anomalies were observed in the Panhandle Area northeast of the Metal Slag Area (PRC, 1992). The locations of the point source anomalies and where soil samples (both biased and systematic) were collected are shown on Figure 4. The point source anomalies were removed in 2005 and 2006 as part of an interim cleanup that targeted metal slag and debris within the area (see Section 3.2.1). Soil sample results from the Phase I SCRS are discussed further in Section 4. Based on the results of the Phase I SCRS, a recommendation was made for further investigation.

In addition to the soil sampling, a total of 207 radon flux canister samples was collected at ground surface locations at or near selected radioactive anomalies and other areas with elevated gamma activity. Flux canister samples were analyzed for radon gas, a radioactive gas emitted into soil from the decay of ^{226}Ra. The analytical results were quantified as a radon flux rate value in picocuries per square meter per second (pCi/m^2-s). Analytical results for the 207 radon flux canister samples collected at Parcel E-2 are summarized below.

- Nineteen samples had no detectable levels of radon gas, with radon flux rates quantified as zero pCi/m^2-s
- One hundred-twenty samples exhibited very low levels of radon gas at or below the average background radon flux rate (0.17 pCi/m^2-s)
- Fifty-five samples exhibited low levels of radon gas within twice the average background flux rate, with radon flux rates ranging from 0.18 to 0.34 pCi/m^2-s
- Nine samples exhibited slightly elevated levels of radon gas within three times the average background flux rate, with radon flux rates ranging from 0.35 to 0.45 pCi/m^2-s
- Three samples exhibited elevated levels of radon gas greater than three times the average background flux rate, with radon flux rates ranging from 0.57 to 8.97 pCi/m^2-s

The three samples with elevated levels of radon gas were collected directly above areas with elevated gamma activity and were surrounded by nearby canister samples with very low or low levels of radon gas. The average radon flux rate (0.19 pCi/m^2-s) measured at Parcel E-2 during the Phase I investigation is comparable with the measured background flux rate (0.17 pCi/m^2-s). In addition, the range of measured radon flux rates are well below the threshold for radon emissions (20 pCi/m^2-s) specified in the Uranium Mill Tailings Radiation Control Act (40 CFR Section § 192.02[b][1]).

3.1.3. Phase II Radiological Investigation (1993)

The Phase II radiological investigation was conducted in 1993 in an attempt to delineate the subsurface distribution of radium-containing devices at several locations, including Parcel E-2 (PRC, 1996). Six 15-foot-long test pits were excavated in the Panhandle Area at locations where point source anomalies were found during the Phase I SCRS. The test pits were excavated until Bay Mud or groundwater was

encountered, or until the walls of the excavation became unstable. Trench and test pit depths ranged from 2.5 to 10.5 feet below ground surface (bgs), with an average depth of about 8 feet bgs.

The walls of each test pit, as well as the excavated soil, were scanned for gamma-emitting radioactive material. If elevated gamma readings were observed, the location, gamma measurements, and exposure measurements were recorded. During the Phase II investigation, gamma count rates exceeding one and one-half times the background level were considered radioactive point source anomalies associated with buried radium-containing devices (PRC, 1996). If radioactive point source anomalies were found, they were further investigated by excavation and soil samples were collected for analysis at an off-site laboratory using gamma spectroscopy to identify the radioisotopes (PRC, 1996).

No elevated gamma count rates were measured in the test pits or trenches installed within Parcel E-2; as a result, no additional soil samples were collected at Parcel E-2 for gamma spectroscopy analysis. However, test pits and trenches installed at IR Site 02, in close proximity to Parcel E-2, contained gamma-emitting anomalies associated with radium-containing devices and firebrick. Soil samples collected in IR Site 02 assisted in delineating an area containing a concentration of radium-containing devices that was subsequently removed during an interim removal action (TtECI, 2007c). As discussed in Section 2.3.3, this area is located entirely within the current boundary of Parcel E.

3.1.4. Interim Parcel E Radiation Risk Assessment (1997)

As part of the Parcel E RI, TtEMI performed a radiation risk assessment to evaluate potential risks associated with human exposure (for residential and industrial scenarios) to radionuclides detected in what is now Parcels E and E-2 (TtEMI, LFR, and U&A, 1997). ^{226}Ra and its radioactive daughter products (lead-210 [^{210}Pb] and radon-222 [^{222}Rn]) were identified as radionuclides of potential concern. Risks were quantified for exposure to ^{226}Ra in soil and to ^{222}Rn in indoor air because there is only risk from ^{222}Rn if buildings are constructed in a radiologically impacted area. The planned reuse for Parcel E-2 is open space. Therefore, an industrial exposure scenario was considered a more conservative risk assessment that likely over estimated the risk to future site occupants. For exposure to ^{226}Ra in the industrial exposure scenario, several exposure areas identified in the risk assessment had calculated excess lifetime cancer risks between 1E-06 and 1E-05 for the reasonable maximum exposure (RME) case. Risks to ^{222}Rn were not considered relevant for the Parcel E-2 area because no buildings were constructed in the area. The assessment report concluded that health risks for exposure to ^{226}Ra in soil were not considered significant (TtEMI, LFR, and U&A, 1997). Please refer to additional information presented in Sections 4 and 7 regarding updated soil characterization and risk analyses.

3.1.5. Interim Investigation between Phase IV and Phase V Radiological Investigations (2001)

A characterization survey of the shoreline of what is now Parcels E and E-2 was performed in 2001. Gamma scans were conducted over pre-positioned grids within approximately 50 feet of the mean tide

line. Approximately 900 areas in Parcel E and E-2 were noted during the survey that exceeded twice the background gamma radiation levels; the highest measurements were identified in the area known as the "metal reef" within Parcel E. Samples collected from those locations identified ^{226}Ra as the contaminant.

3.1.6. Phase V Radiological Investigation (2002 to 2003)

The Phase V radiological investigation began in January 2002 prior to issuance of the HRA. The purpose was to support the release of buildings or areas that had been identified as areas where radioactive materials had been used or areas where previous removal actions to remove known contamination had occurred. The Phase V investigation of what is now Parcel E-2 was performed in 2002 and 2003, and the results were not available for inclusion in the HPS HRA (NAVSEA, 2004); therefore, the Phase V investigation results are presented for the first time in this radiological addendum. The scoping survey was of the surface only and was designed to meet the requirements of a Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) Class 1 Final Status Survey if contamination was not found (U.S. Department of Defense et al., 2000). The object of the Phase V investigation at Parcel E-2 was to demonstrate whether residual radioactivity on the surface met the predetermined release criterion as summarized below.

- ^{226}Ra: 1 picocurie per gram (pCi/g) greater than background not to exceed 2 pCi/g[5]
- ^{90}Sr: 10.8 pCi/g
- ^{137}Cs: 0.13 pCi/g[6]
- ^{60}Co: 0.060 pCi/g

These release criteria were considered equivalent to EPA preliminary remediation goals (PRGs) for outdoor worker exposure to soil, based on agreements with EPA. For ^{226}Ra and ^{137}Cs, the outdoor worker release criteria are identical to the release criteria for future residents. In contrast, the outdoor worker release criterion for ^{90}Sr (10.8 pCi/g) is greater than the residential release criterion (0.331 pCi/g). Similarly, the outdoor worker release criterion for ^{60}Co (0.0602 pCi/g) is greater than the residential release criterion (0.0361 pCi/g).

The investigation area was divided into 73 Class 1 survey units measuring 40 by 50 meters (2,000 square meters, or 21,528 square feet) each. Each survey unit was assigned an alphabetic designation. Sixteen systematic sample locations were established in each grid approximately 11 meters apart. Figure 5 provides a layout of the survey units and the systematic sample locations. Reference (background) readings consisted of 16 1-minute static gamma readings taken on the hillside of Parcel A and 16 samples collected at various areas within Parcels B, C, D, and E.

[5] The ^{226}Ra release criterion was 5 pCi/g when the Phase V investigation was started but was subsequently reduced to 1 pCi/g above background; the uncertainty related to this change in criterion is discussed in Section 7.3.

[6] The ^{137}Cs release criterion applied to this survey when conducted in 2002 is slightly higher than the one used today (0.113 pCi/g); however, this change does not directly impact the results of this survey.

The Phase V investigation consisted of the following steps:

- Gamma scans of 100 percent of the surface area
- Sixteen systematic static gamma measurements in each survey unit
- Biased static measurements in areas where high gamma readings were measured
- Exposure rate measurements from the systematic static measurement locations
- Collection of soil samples at static and biased measurement locations
- Analysis of the soil samples by gamma spectroscopy at the on-site laboratory to quantify activity levels of a suite of 17 radionuclides, including ^{137}Cs and ^{226}Ra

A total of 1,168 systematic and 24 biased soil samples were collected during the Phase V investigation. Gamma scan measurements typically ranged from 4,500 to 8,000 cpm, with occasional scan measurements identified as being in excess of 10,000 cpm. Sample results identified residual radioactivity exceeding the release criteria for ^{137}Cs and ^{226}Ra in each survey unit. The elevated levels appeared to be consistent over the surface of the area, including the landfill cap, and there is a direct correlation between gamma static readings and gamma spectroscopy results. Results for samples from the reference areas indicated mean background activity level of 0.049 pCi/g for ^{137}Cs and 0.82 pCi/g for ^{226}Ra. These background activity levels are consistent with the background activity levels used for the interim removal actions at Parcels E and E-2 (TtECI, 2007a, 2007b, and 2007c). The analytical results from the systematic and biased soil samples are provided in Table A-2 of Appendix A, and the complete laboratory reports for the Phase V investigation are provided as an attachment to Appendix A. Figures 6 and 7 show the sample locations across Parcel E-2 where ^{226}Ra and ^{137}Cs exceeded the release criteria (1.82 pCi/g for ^{226}Ra and 0.113 pCi/g for ^{137}Cs; as stated previously, these release criteria are identical for outdoor worker and residential exposure scenarios). Figure 8 shows the sample locations where ^{60}Co exceeded the residential release criterion (0.0361 pCi/g; the outdoor worker release criterion is 0.0602 pCi/g). Only the Phase V survey units in the vicinity of the Experimental Ship-Shielding Area are presented on Figure 8, because ^{60}Co was the only ROC in this area of Parcel E-2.

Based on the sample results, every survey unit had activity levels of ^{226}Ra exceeding the release criterion and 46 of the survey units had activity levels of ^{137}Cs exceeding the release criterion. All of the eight survey units within the vicinity of the Experimental Ship-Shielding Area had activity levels of ^{60}Co exceeding the residential release criterion; however, only three of the eight survey units had activity levels of ^{60}Co exceeding the outdoor worker release criterion. Ten percent of the samples were sent to an off-site laboratory for quality assurance and ^{90}Sr analysis because the on-site laboratory did not analyze directly for ^{90}Sr. Results from the quality assurance laboratory were within the range of results from the on-site laboratory (based on a normal distribution of results). The average ratio of ^{90}Sr to ^{137}Cs results

from the off-site laboratory (3.626) was used to estimate ^{90}Sr activity levels. The estimated ^{90}Sr activity levels for each sample were calculated by multiplying the corresponding ^{137}Cs activity level by 3.626. This methodology was used to estimate potential ^{90}Sr activity levels for all samples collected during the Phase V investigation in Parcel E-2, and to compare the calculated ^{90}Sr activity levels with the outdoor worker release criterion. Although the correlation of ^{90}Sr and ^{137}Cs activity levels may not account for potential radiological devices containing ^{90}Sr, which could contain higher ^{90}Sr activity levels, the comparison using the calculated ^{90}Sr activity levels is adequately conservative because: (1) available direct measurements of ^{90}Sr (10 percent of the systematic samples, with a maximum activity level 0.908 pCi/g; presented in Table A-3 in Appendix A) did not report any ^{90}Sr activity levels within or close to the outdoor worker release criterion (10.8 pCi/g); and (2) the maximum ^{90}Sr activity level reported from the off-site laboratory (0.908 pCi/g) was much less than the maximum ^{90}Sr activity level calculated based on the correlation with ^{137}Cs (9.09 pCi/g). None of the survey units had calculated activity levels of ^{90}Sr exceeding the outdoor worker release criterion (10.8 pCi/g); however, 66 of the survey units had calculated activity levels of ^{90}Sr exceeding the residential release criterion (0.331 pCi/g). Soil sample results from the Phase V investigation are discussed further in Section 4.

The Phase V investigation of Parcel E-2 was conducted as a scoping survey to determine what additional action, if any, would be required. Based on the results of the Phase V investigation, in particular the consistent low activity levels of ^{226}Ra (3 to 4 pCi/g) throughout the survey units, this radiological addendum recommends development and evaluation of remedial alternatives for soil throughout the radiologically impacted portions of Parcel E-2. In addition, the results of the Phase V investigation were not used to eliminate further evaluation of ROCs identified in the HRA. For example, the relative lack of ^{90}Sr exceeding the outdoor worker release criterion is not adequate to eliminate consideration of this ROC, and ^{90}Sr will remain an ROC throughout the cleanup process at Parcel E-2 to ensure that potential ^{90}Sr contamination is addressed. The conclusions and recommendations are further detailed in Section 8. The remedial alternatives are developed and evaluated in Sections 11 through 14.

3.1.7. Radiological Groundwater Investigation (2002)

In 2002, a groundwater data gaps investigation was performed at various sites in Parcels E, E-2, and G to collect isotope-specific data for "radionuclides of interest," defined as species that may be site-related or may be present in the environment as natural or anthropogenic background as known at the time (prior to issuance of the HRA). The investigation was intended to supplement data collected during previous investigations for radiological indicator parameters (gross alpha and gross beta) because the nonspecific results for gross alpha and gross beta did not allow the Navy to distinguish between natural and potentially site-related components of radioactivity in shallow groundwater (within what is referred to as the "A-aquifer"). ^{226}Ra was considered the primary radionuclide of interest at Parcel E-2 because debris disposed of at the landfill may have contained radium dials; however, groundwater samples collected from seven A-aquifer monitoring wells within and immediately adjacent to the Landfill Area were

analyzed for 47 specific isotopes. Figure 9 identifies the A-aquifer monitoring wells sampled during the 2002 groundwater investigation. Wells were sampled twice between July and October 2002. Well IR01MW07A was sampled in July 2002, but was decommissioned shortly thereafter during construction of the landfill gas control system for the Landfill Area. Replacement well IR01MW10A was subsequently installed and sampled in October 2002.

The analytical data were evaluated by simple (non-statistical) threshold comparisons to a fixed standard (such as drinking water standards[7]) and by statistical tests comparing the site data with background data (two-sample statistical tests) and with fixed standards (one-sample statistical tests). Statistical testing comparing A-aquifer groundwater data from Parcel E-2 for radionuclides with drinking water or other standards (one-sample t-test) showed that no standards were statistically exceeded at the 95 percent confidence level. Statistical testing comparing A-aquifer groundwater data from Parcel E-2 and background areas (parametric and nonparametric two-sample tests) indicated that differences between background and site data sets for potassium-40 (^{40}K), ^{226}Ra, and ^{90}Sr are statistically significant in at least one of the tests. Other radionuclides that were detected infrequently in A-aquifer groundwater samples from Parcel E-2 did not exceed background activity levels (TtEMI, 2004).

The investigation concluded that naturally occurring ^{40}K in seawater was the main contributor to beta emissions measured in A-aquifer groundwater samples from nearshore monitoring wells. The gross beta values historically reported for samples collected from nearshore wells were dominated by beta emissions from natural ^{40}K in seawater, not beta emissions from radium isotopes. Background seawater contains the highest average activity level of ^{40}K (280 picocuries per liter [pCi/L], beta) of all data groups, followed by nearshore IR sites where saltwater intrusion has resulted in brackish groundwater conditions. This intrusion has altered the composition of nearshore groundwater, with corresponding changes in the radiological quality (especially gross beta emissions). The results of the radiological groundwater investigation are detailed in the Parcel E Groundwater Summary Report (TtEMI, 2004). Section 5 of this addendum further discusses the groundwater data for the ROCs at IR Site 01/21 (^{137}Cs, ^{226}Ra, and ^{90}Sr).

3.1.8. Characterization of the Metal Slag Area (2004)

In support of the removal action at the Metal Slag Area, site characterization was performed to further define the vertical and horizontal extent of metal slag. The characterization activities were conducted from June through September 2004 and included (1) topographic and bathymetric surveys, (2) marine geophysics surveys, (3) landside geophysics surveys, (4) environmental resources surveys, (5) vibracoring and sonic drilling, and (6) sampling activities. The metal slag layer was found to range from 1.5 to 6 feet thick over an area of approximately 0.9 acre. Site characterization activities involved collecting samples from offshore and onshore borings and analyzing the samples for radioactive and nonradioactive

[7] Maximum contaminant levels, as outlined in Title 40 Code of Federal Regulations Part 141, were used as drinking water standards in the evaluation. For radionuclides other than radium and uranium, the drinking water comparison standard was calculated from the dose standard of 4 millirems per year.

chemicals. Elevated activity levels of ^{137}Cs and elevated concentrations of metals, PCBs, and pesticides were identified at the Metal Slag Area (Tetra Tech FW, Inc., 2005). The metal slag and debris within the area were removed in 2005 and 2006 (see Section 3.2.1).

3.1.9. Radiological Groundwater Investigation (2008)

As part of a groundwater investigation at Parcel E-2, groundwater samples were collected in June 2008 from 61 temporary wells and 7 existing piezometers and submitted to an off-site laboratory for radionuclide analyses. The sampling event provided data to evaluate whether A-aquifer groundwater within and hydraulically downgradient of radiologically impacted sites at Parcel E-2 contained elevated activity levels of ROCs. Samples were collected and submitted to the on-site laboratory, where they were subsequently filtered, acidified, and submitted to an off-site laboratory, TestAmerica, for analysis of ^{226}Ra and ^{90}Sr. In addition, a subset of samples from seven sampling locations was submitted to an off-site laboratory, Eberline Services, for confirmation analysis of ^{137}Cs, ^{226}Ra, and ^{90}Sr. Figure 9 identifies the A-aquifer monitoring wells sampled during the 2008 groundwater investigation. Sampling information from the groundwater investigation is presented in Appendix J of the Final Technical Memorandum for Groundwater Investigation at Parcel E-2 (CE2-Kleinfelder JV, 2009a).

Also in June 2008, groundwater samples were collected from six existing monitoring wells (five in the A -aquifer and one in the deeper B-aquifer; all within or in close proximity to the Landfill Area) and submitted to an off-site laboratory for radionuclide analyses. These wells are regularly sampled for nonradioactive chemical analysis under the basewide groundwater monitoring program (BGMP). The analyses for radioactive chemicals (^{137}Cs, ^{226}Ra, and ^{90}Sr) at these wells was performed as a one-time supplement to the BGMP, to provide additional data to evaluate whether the groundwater within and hydraulically downgradient of the Landfill Area contain elevated activity levels of ROCs. Figure 9 identifies the A-aquifer monitoring wells sampled during the 2008 supplemental BGMP monitoring. Sampling information from the supplemental BGMP monitoring is presented in the Semiannual Groundwater Monitoring Report for April to September 2008 (CE2-Kleinfelder JV, 2009b).

The radionuclide groundwater data collected in June 2008 were compiled as part of this radiological addendum and were evaluated, similar to the 2002 investigation, by simple (non-statistical) threshold comparisons of the maximum reported activity level to a fixed standard (such as drinking water standards) and by statistical tests comparing the site mean data to fixed standards (one-sample statistical tests), in the event the maximum activity level exceeds the fixed standard. The simple threshold comparison with drinking water standards revealed no exceedances for ^{137}Cs out of 13 samples analyzed, or for ^{90}Sr out of 74 samples analyzed. For ^{226}Ra, the drinking water standard (5 pCi/L, combined for ^{226}Ra and radium-228 [^{228}Ra]) was exceeded in 2 out of 74 samples analyzed. The two ^{226}Ra exceedances were reported at temporary wells TW004 and TW011, with ^{226}Ra activity levels of 11.0 pCi/L and 6.08 pCi/L, respectively.

As shown on Figure 9, temporary wells TW004 and TW011 are surrounded by numerous other temporary wells that were also sampled in June 2008 and did not contain ^{226}Ra activity levels exceeding the drinking water standard. In addition, statistical testing comparing the 2008 groundwater data with drinking water standards (one-sample t-test) showed that the mean ^{226}Ra activity level did not exceed the drinking water standard, nor did the 95th percent upper confidence limit on the mean (95 UCL) exceed the drinking water standard. Section 5 of this addendum further discusses the radionuclide groundwater data collected in June 2008.

3.2. RADIOLOGICAL REMOVAL ACTIONS

The Navy has performed two interim removal actions at Parcel E-2 that have involved excavation and off-site disposal of LLRW. The following sections briefly describe these two removal actions.

3.2.1. Metal Slag Area (2005 to 2007)

The removal action at the Metal Slag Area was performed in conjunction with the removal of the Metal Debris Reef located in the southeast portion of Parcel E. The removal action was designed to remove metal slag and debris containing LLRW, as well as nonradiological contamination incidental to removal of the area. Site characterization was performed to delineate the vertical and lateral extents of the metal debris and slag prior to excavation (as discussed in Section 3.1.8). The excavation was performed in a series of 12-inch lifts to maximum depths ranging between 3 and 6 feet bgs. After the initial excavation was completed, trenches were extended beyond the excavation perimeter to confirm the extent of metal debris and slag. Additional metal debris was found at the northern, southern, and southwestern edges of the excavation; as a result, the excavation boundaries were extended to remove this material (TtECI, 2007b).

Approximately 8,200 cubic yards of soil, metal slag, and debris was removed and disposed of off site as part of this removal action (TtECI, 2007b). Out of this total volume, approximately 74 cubic yards of soil and sediment was segregated as radiologically impacted. Also, 32 radiological devices, 15 cubic yards of radiological debris (primarily fire bricks), and approximately 30 cubic yards of metal debris were identified within the removal area (Navy, 2006b and 2006c; TtECI, 2007b). In addition to this radiologically impacted debris, six waste drums were recovered from the removal area and were characterized prior to off-site disposal. Five of the six drums contained soil and debris contaminated with PCBs; the sixth drum contained soil and debris with elevated activity levels of ^{226}Ra (TtECI, 2007b).

Post-excavation soil samples were collected from the removal area and analyzed at the on-site laboratory for ^{137}Cs and ^{226}Ra. Ten percent of the samples were sent to an off-site laboratory for quality assurance and ^{90}Sr analysis because the on-site laboratory did not analyze directly for ^{90}Sr. Analytical results for 174 of the 185 post-excavation soil samples met the specified radiological remedial objectives (RROs) of 0.113 pCi/g for ^{137}Cs and 1.8 pCi/g for ^{226}Ra. The RRO for ^{137}Cs was exceeded in 11 of the

4.3. RADIONUCLIDES DETECTED IN SURFACE SOIL

The following paragraphs briefly discuss the detections of ^{137}Cs, ^{226}Ra, ^{90}Sr, and ^{60}Co in surface soil at Parcel E-2. Table 2 presents a statistical summary for the ROCs reported within surface soil at Parcel E-2. For evaluation purposes, the 95 UCL of the mean activity level (95 UCL activity level) within each survey unit is compared against the release criteria for a resident and outdoor worker. For ^{137}Cs and ^{226}Ra, the release criteria are identical for the residential and outdoor worker scenarios. The 95 UCL activity level represents the RME within each survey unit, and a comparison of the 95 UCL with the release criteria provides a general assessment of the distribution of the ROCs in surface soil at Parcel E-2. Because of the lack of subsurface soil data, this general assessment is not intended to eliminate consideration of individual ROCs identified in radiologically impacted portions of Parcel E-2. The HRA determined that, based on historical information, subsurface soil is likely to contain radioactive contamination (Table 5; NAVSEA, 2004). Uncertainties related to the nature and extent evaluation are discussed in Section 8. Section 8 discusses the extent to which these uncertainties affect the risk management decisions for Parcel E-2 and provides recommendations for the remedial option analysis.

^{137}Cs was reported in 1,109 of the 1,140 samples in the current post-excavation data set. As shown in Table 2, the 95 UCL activity level exceeded the release criterion (0.113 pCi/g) in 16 out of 72 survey units. The maximum activity level for ^{137}Cs (2.51 pCi/g) was detected in a biased sample collected in Phase V survey unit ACH, and was associated with a radioactive point source anomaly that was subsequently removed. For systematic samples collected during the Phase V investigation, the maximum activity level for ^{137}Cs was 0.988 pCi/g, which was reported in Phase V survey unit ABG. Based on this information, the extent of ^{137}Cs in surface soil exceeding the release criterion is moderately extensive. The widespread ^{137}Cs activity levels exceeding the release criterion are most likely attributed to site contamination and are consistent with the conclusions of the HRA, which identified the potential presence of LLRW throughout IR Site 01/21 (NAVSEA, 2004).

^{226}Ra was reported in 1,133 of the 1,140 samples in the current post-excavation data set. As shown in Table 2, the 95 UCL activity level exceeded the release criterion (1.82 pCi/g) in 69 out of 73 survey units. The maximum activity level for ^{226}Ra (1,024 pCi/g) was detected in a biased sample collected in Phase V survey unit AKL and was associated with a radioactive point source anomaly that was subsequently removed. For systematic samples collected during the Phase V investigation, the maximum activity level for ^{226}Ra was 57.6 pCi/g, which was reported in Phase V survey unit ABD. The portion of survey unit ABD containing the systematic sample with the highest activity levels for ^{226}Ra was subsequently excavated in its entirety during the removal action at the Metal Slag Area (Figure 5). Based on this information, the extent of ^{226}Ra in surface soil exceeding the release criterion is widespread. The widespread ^{226}Ra activity levels exceeding the release criterion are most likely attributed to site contamination and are consistent with the conclusions of the HRA, which identified the potential presence of LLRW throughout IR Site 01/21 (NAVSEA, 2004).

^{90}Sr was reported in 1,101 of 1,116 samples in the Phase V data set, which is calculated based upon a correlation with ^{137}Cs results (see Section 4.1); ^{90}Sr was not analyzed during the Phase I SCRS investigation. As shown in Table 2, the 95 UCL activity level did not exceed the release criterion for outdoor workers (10.8 pCi/g) in any of 72 survey units; the 95 UCL activity level exceeded the release criterion for residents (0.331 pCi/g) in 37 of the survey units. The maximum activity level for ^{90}Sr (9.09 pCi/g) was detected in a biased sample collected in Phase V survey unit ACH and was associated with a radioactive point source anomaly that was subsequently removed. For systematic samples collected during the Phase V investigation, the maximum activity level for ^{90}Sr was 3.58 pCi/g, which was reported in Phase V survey unit ABG. Based on this information, ^{90}Sr is not present in surface soil at activity levels exceeding the release criterion for an outdoor worker, but the extent of ^{90}Sr in surface soil at activity levels exceeding the residential release criterion is moderately extensive.

^{60}Co was reported in 102 of the 124 samples collected within the vicinity of the Experimental Ship-Shielding Area. As shown in Table 2, the 95 UCL exceeded the release criterion for an outdoor worker (0.0602 pCi/g) in three of the eight survey units located in the vicinity of the Experimental Ship-Shielding Area; the 95 UCL activity level exceeded the release criterion for residents (0.0361 pCi/g) in all eight of the survey units. The maximum activity level for ^{60}Co was 0.0933 pCi/g, which was reported in Phase V survey unit AAE. Based on this information, the extent of ^{60}Co in surface soil at activity levels exceeding the residential release criterion is extensive in the vicinity of the Experimental Ship-Shielding Area.

4.4. FATE AND TRANSPORT OF RADIOACTIVE CHEMICALS

Radioactive chemicals, also referred to as radionuclides, are unstable and undergo spontaneous transformations at a constant rate by releasing energy until a stable state is reached. This transformation process is known as radioactive decay and is accompanied by the emission of at least one or more charged particles (e.g., alpha and beta particles) or gamma rays. Alpha particles can travel only short distances and cannot penetrate human skin; the risks from alpha particles are from internal exposure of the particle from either inhalation or ingestion. Beta particles are generally absorbed in the skin and do not pass through the entire body, but in high enough quantities can cause cataracts to the lens of the eye. Gamma ray radiation can penetrate the human body with enough energy for the photon to interact with the body's cells. The table below lists the ROCs, their half-lives, and major radiations emitted when decaying (NAVSEA, 2004). The radionuclides potentially present in Parcel E-2 were either (1) buried along with excavated fill materials while increasing the footprint of HPS; (2) residue from decontamination of ships or workers; (3) residual contamination as a result of NRDL experiments or tests in structures or land areas; (4) residual contamination from shipyard operations; or (5) released into the sanitary sewers and storm drains.

18	**Radionuclide groundwater data**	Section 2.3.6	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. March 2011. Sections 5.1 through 5.3, pages 5-1 through 5-4. Record No. 4260.

Section 5. Nature and Extent of Radionuclides in Groundwater

The groundwater data derived from the 2002 and 2008 radiological investigations, as discussed in Section 3, was used to evaluate the nature and extent of ROCs in groundwater at Parcel E-2. The nature and extent evaluation presented in this section documents that an adequate amount of data exist to determine whether or not groundwater contains radionuclides at activity levels that warrant further analysis in this radiological addendum. Additional information on the nature and extent of nonradioactive chemicals in groundwater at Parcel E-2 is presented in the Final RI/FS Report (ERRG and Shaw, 2011).

5.1. SUMMARY OF 2002 GROUNDWATER INVESTIGATION

The radiological groundwater investigation performed in 2002 collected isotope-specific data from seven A-aquifer monitoring wells within and immediately adjacent to the Landfill Area. The investigation was intended to supplement data collected during previous investigations for radiological indicator parameters (gross alpha and gross beta) because the nonspecific results for gross alpha and gross beta did not allow the Navy to distinguish between natural and potentially site-related components of radioactivity in shallow groundwater (within what is referred to as the "A-aquifer"). Figure 9 identifies the A-aquifer monitoring wells sampled during the 2002 groundwater investigation. Table A-4 in Appendix A summarizes the radiological data from the 2002 groundwater investigation.

The analytical data were evaluated by simple (nonstatistical) threshold comparisons to a fixed standard and by statistical tests comparing the site data with background data (two-sample statistical tests) and with fixed standards (one-sample statistical tests) (TtEMI, 2004). The statistical test results are presented in the Parcel E Groundwater Summary Report (TtEMI, 2004), and are briefly summarized as follows:

- Statistical testing comparing groundwater data from the Landfill Area for radionuclides with drinking water[10] or other standards (one-sample t-test) showed that no standards were statistically exceeded at the 95 percent confidence level.
- Statistical testing comparing groundwater data from the Landfill Area and background areas, excluding bay samples, indicated that the site data sets for ^{40}K and ^{226}Ra statistically exceeded the background data sets using a parametric statistical test (two-sample t-test).

[10] Maximum contaminant levels, as outlined in Title 40 Code of Federal Regulations Part 141, were used as drinking water standards in the evaluation. For radionuclides other than radium and uranium, the drinking water comparison standard was calculated from the dose standard of 4 millirems per year.

- Statistical testing comparing groundwater data from the Landfill Area and background areas, excluding bay samples, indicated that the site data sets for ^{226}Ra and ^{90}Sr statistically exceeded the background data sets using a nonparametric statistical test (Wilcoxon rank sum test).
- The site mean activity level of 0.472 pCi/L for ^{226}Ra is far below the drinking water standard of 5 pCi/L.
- Beta emissions from naturally occurring ^{40}K exceeded the screening criterion of 50 pCi/L for gross beta activity. ^{40}K activity occurs naturally in seawater at about 300 pCi/L, as beta emissions. Bay water samples collected for this investigation produced an average of 280 pCi/L for ^{40}K.
- Other radionuclides that were detected infrequently in groundwater samples from the Landfill Area monitoring wells did not exceed background activity levels. These data included two results for actinium-228 (a naturally occurring radioisotope) near the detection limit, one qualified result at the detection limit for americium-241 (alpha scan result), one result for lead-214 near the detection limit, four detections of uranium-234, and three detections of uranium-238.

The investigation concluded that naturally occurring ^{40}K in seawater is the main contributor to beta emissions measured in groundwater samples from nearshore monitoring wells within Parcel E-2. The gross beta values historically reported for samples collected from nearshore wells were dominated by beta emissions from natural ^{40}K in seawater, not beta emissions from radium isotopes. Background seawater contains the highest average activity level of ^{40}K (280 pCi/L, beta) of all data groups, followed by nearshore IR sites where saltwater intrusion has resulted in brackish groundwater conditions. This intrusion has altered the composition of nearshore groundwater, with corresponding changes in the radiological quality (especially gross beta emissions). The results of the radiological groundwater investigation are detailed in the Parcel E Groundwater Summary Report (TtEMI, 2004).

5.2. SUMMARY OF 2008 GROUNDWATER INVESTIGATION

Groundwater samples were collected in June 2008 from 61 temporary wells and 7 existing piezometers to evaluate whether A-aquifer groundwater within and hydraulically downgradient of radiologically impacted sites at Parcel E-2 contain elevated activity levels of ROCs. In addition to these 68 samples, groundwater samples were collected from six existing monitoring wells in June 2008 (five in the A-aquifer and one in the deeper B-aquifer; all within or in close proximity to the Landfill Area) as a one-time supplement to the BGMP. Figure 9 identifies the A-aquifer monitoring wells sampled during the 2008 groundwater investigation.

The radionuclide groundwater data collected in June 2008 were compiled as part of this radiological addendum and were evaluated, similar to the 2002 investigation, by simple (non-statistical) threshold comparisons to a fixed standard (such as drinking water standards) and by statistical tests comparing the site data to fixed standards (one-sample statistical tests). The 2008 data is evaluated for the first time in this radiological addendum; therefore, the evaluation methodology, although similar to the 2002 investigation, is detailed within this section. To evaluate whether radionuclide activity levels exceeded

drinking water standards, a tiered approach was used. Initially, the data were compiled and compared against drinking water standards using a simple threshold comparison. If the maximum activity level in any of the samples exceeded the drinking water standard, a one-sample statistical test (t-test) was conducted to evaluate if the mean radionuclide activity levels statistically exceeded the drinking water standard.

The data set used for the analysis consisted of all of the ^{226}Ra, and ^{90}Sr data collected during both of the 2008 investigations, as well as the confirmation samples collected from the temporary groundwater monitoring wells, which were analyzed at an off-site laboratory because they were the only samples analyzed using EPA-approved methods and validated accordingly. As a result, the data set consisted of 74 samples analyzed for ^{90}Sr and ^{226}Ra and 13 samples analyzed for ^{137}Cs. For cases where duplicate samples were collected to evaluate laboratory precision, the following decision rules were applied to determine which value was used in the data set:

- If one result was detected and the other was not detected (below the MDA), the detected value was used.
- If both results were detected, the higher of the two detected results was used.
- If both results were not detected, the higher of the MDA reporting limit was used.

The simple threshold comparison with drinking water standards revealed no exceedances for ^{90}Sr and ^{137}Cs of the drinking water standards of 8 and 80 pCi/L, respectively. For ^{226}Ra, the drinking water standard (5 pCi/L, combined for ^{226}Ra and ^{228}Ra) was exceeded in 2 of 74 samples analyzed. The two ^{226}Ra exceedances were reported at temporary wells TW004 and TW011, with ^{226}Ra activity levels of 11.0 pCi/L and 6.08 pCi/L, respectively. As shown on Figure 9, temporary wells TW004 and TW011 are surrounded by numerous other temporary wells that were also sampled in June 2008 and did not contain ^{226}Ra activity levels exceeding the drinking water standard.

Because ^{226}Ra exceeded the drinking water standard, the one-sample t-test was conducted to evaluate whether the mean activity level for ^{226}Ra exceeded the drinking water standard of 5 pCi/L. Based upon the one-sample t-test, the mean activity level of ^{226}Ra in groundwater does not statistically exceed the standard at the 95 percent confidence level. The summary statistics and results of the t-test are presented in Table 6.

5.3. CONCLUSIONS FROM GROUNDWATER INVESTIGATIONS

The reported activity levels for radionuclides from the 2002 and 2008 groundwater sampling events do not exceed drinking water standards at a statistically significant level (95 percent confidence level). In addition, the comparison of radionuclide data from A-aquifer groundwater with drinking water standards is a conservative evaluation performed because of the lack of alternative comparison criteria. This conservative evaluation is not representative of potential exposures to future site users because, as

documented in Section 2 and Appendix I of the RI/FS Report, A-aquifer groundwater is not a potential source of drinking water.

As a result, groundwater does not appear to have been impacted by radionuclides at activity levels that warrant further evaluation in this radiological addendum. This finding is consistent with the HRA that, as summarized in Table 3, determined that there was a low potential for radioactive contamination in Parcel E-2 groundwater based on historical information (NAVSEA, 2004). However, the RI/FS Report concluded that nonradioactive chemicals in groundwater within and in close proximity to the Landfill Area require remedial option analysis. The RI/FS Report evaluates remedial alternatives for groundwater that include monitoring, institutional controls, source removal, and containment.

19	Future reuse	Section 2.4	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 1.15, page 1-17. Record No. 4237.

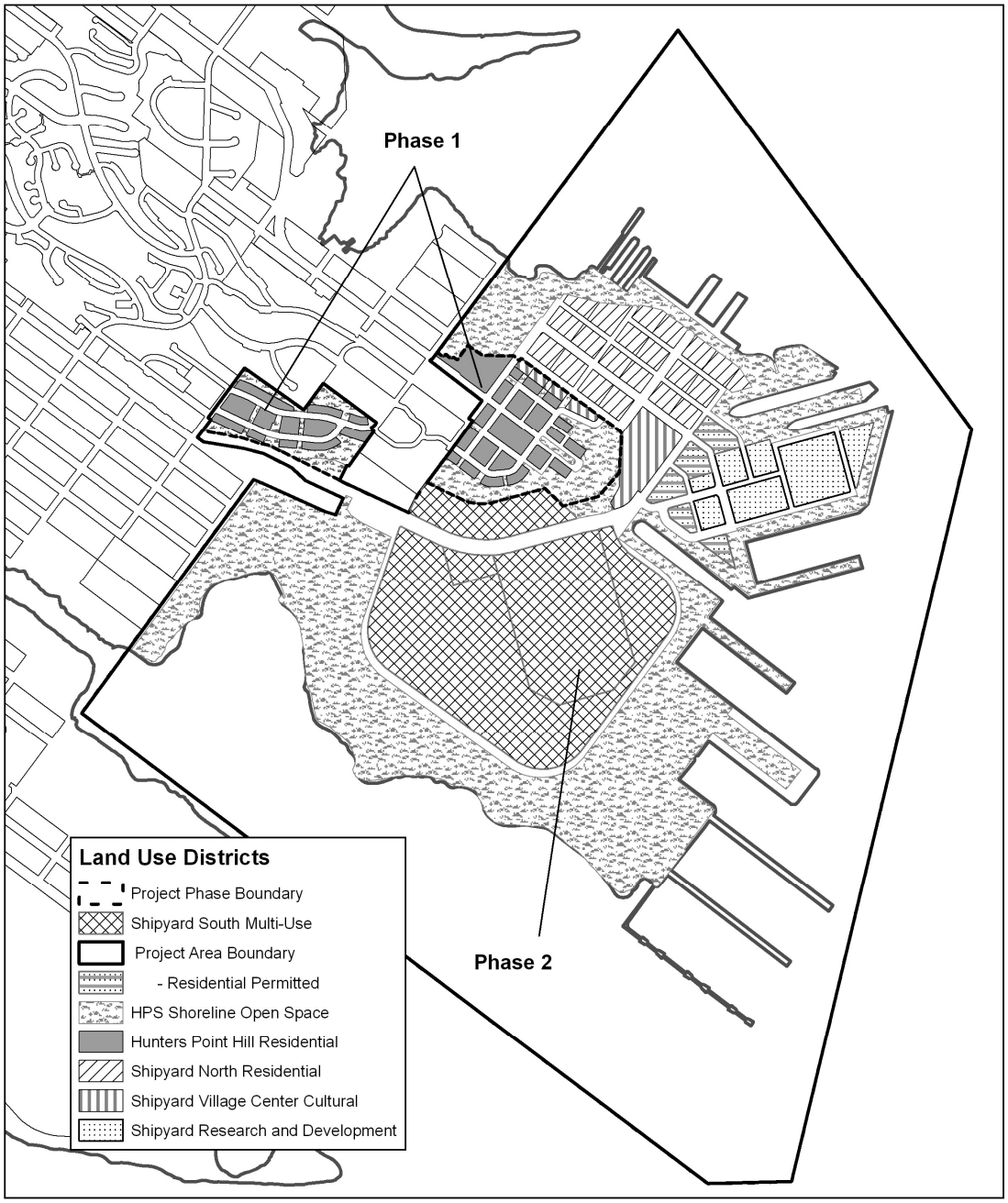
1.8. FUTURE SITE REUSE

The data analysis, risk evaluations, and remedial alternatives presented in this RI/FS Report assume that the future reuse of Parcel E-2 will be open space. This assumption was developed in consultation with the City and County of San Francisco (CCSF) based on the 1997 "Hunters Point Shipyard Redevelopment Plan," and was documented in the previous versions of the RI/FS Report published in 2007 and 2009. Pursuant to the CCSF's 2010 amended "Hunters Point Shipyard Redevelopment Plan," a small area (about 0.42 acres) in the East Adjacent Area is part of the "Shipyard South Multi-Use District," and may be used for recreational, industrial, and residential purposes (SFRA, 2010). The proposed remedial alternatives will allow for potential residential use in this 0.42-acre area if it is demonstrated that soil contaminants do not exceed levels established elsewhere at HPS for residential reuse, or if any contaminants that exceed those established levels are addressed by the remedial alternatives.

Figure 1-15 shows the designated reuse of Parcel E-2 according to the SFRA Redevelopment Plan (SFRA, 2010).

20	**2010 amended redevelopment plan**	Section 2.4	Hunters Point Shipyard Redevelopment Plan. City and County of San Francisco. Map 2, titled "Land Use Districts Map." August 3, 2010 (amendment to July 14, 1997 plan). http://www.sfredevelopment.org/index.aspx?page=160

Map 2: Land Use Districts Map



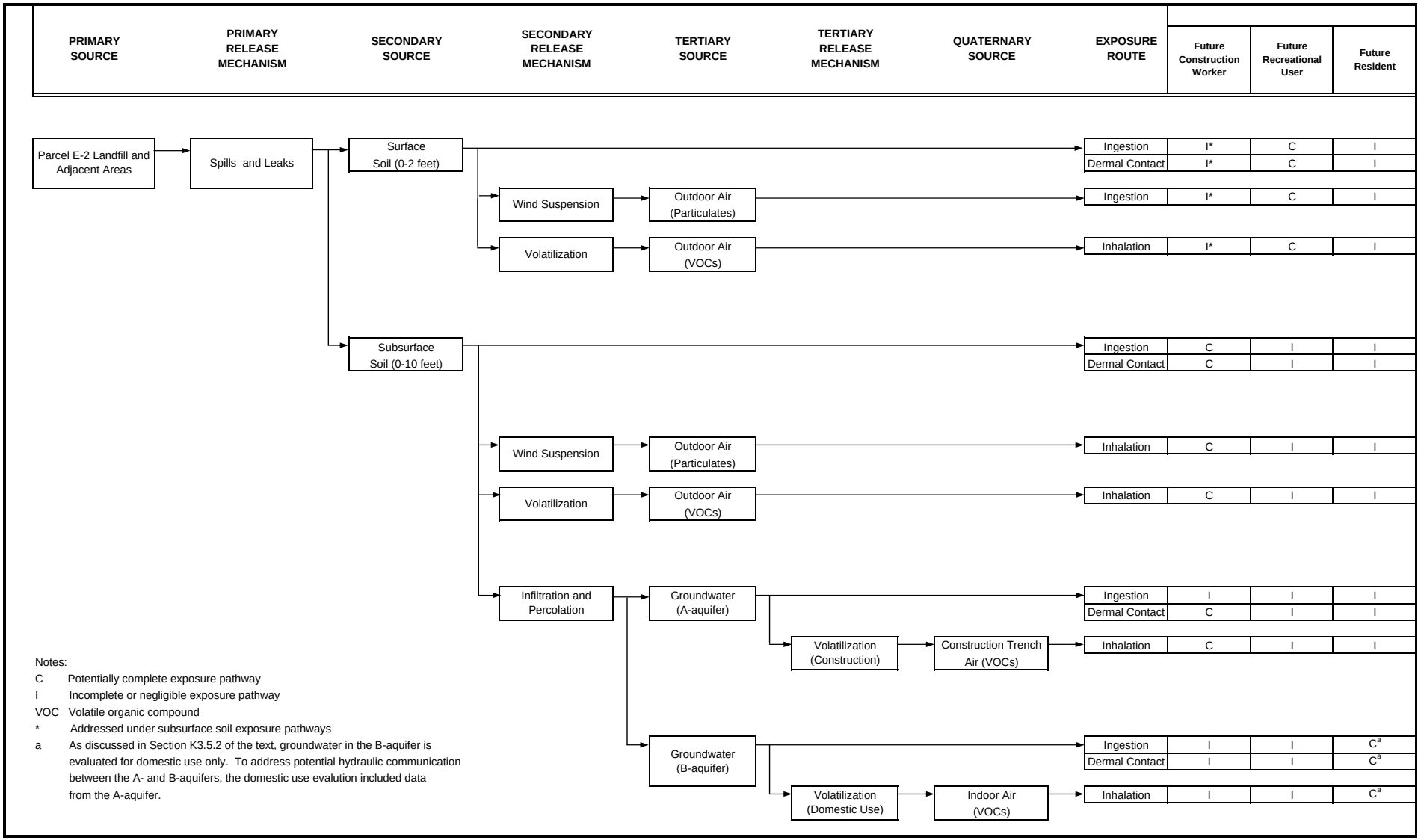
Map 2: Land Use Districts Map
Hunters Point Shipyard Redevelopment Plan
San Francisco Redevelopment Agency
2010

1,000 500 0 1,000 Feet

N W E S

21	**CSM for human health**	Section 2.5.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix K, Figure K-1. Record No. 4237. Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. March 2011. Appendix B, Figure B-1. Record No. 4260.

FIGURE K-1: CONCEPTUAL SITE MODEL
PARCEL E-2 HUMAN HEALTH RISK ASSESSMENT
HUNTERS POINT SHIPYARD, CALIFORNIA



Notes:

C Potentially complete exposure pathway

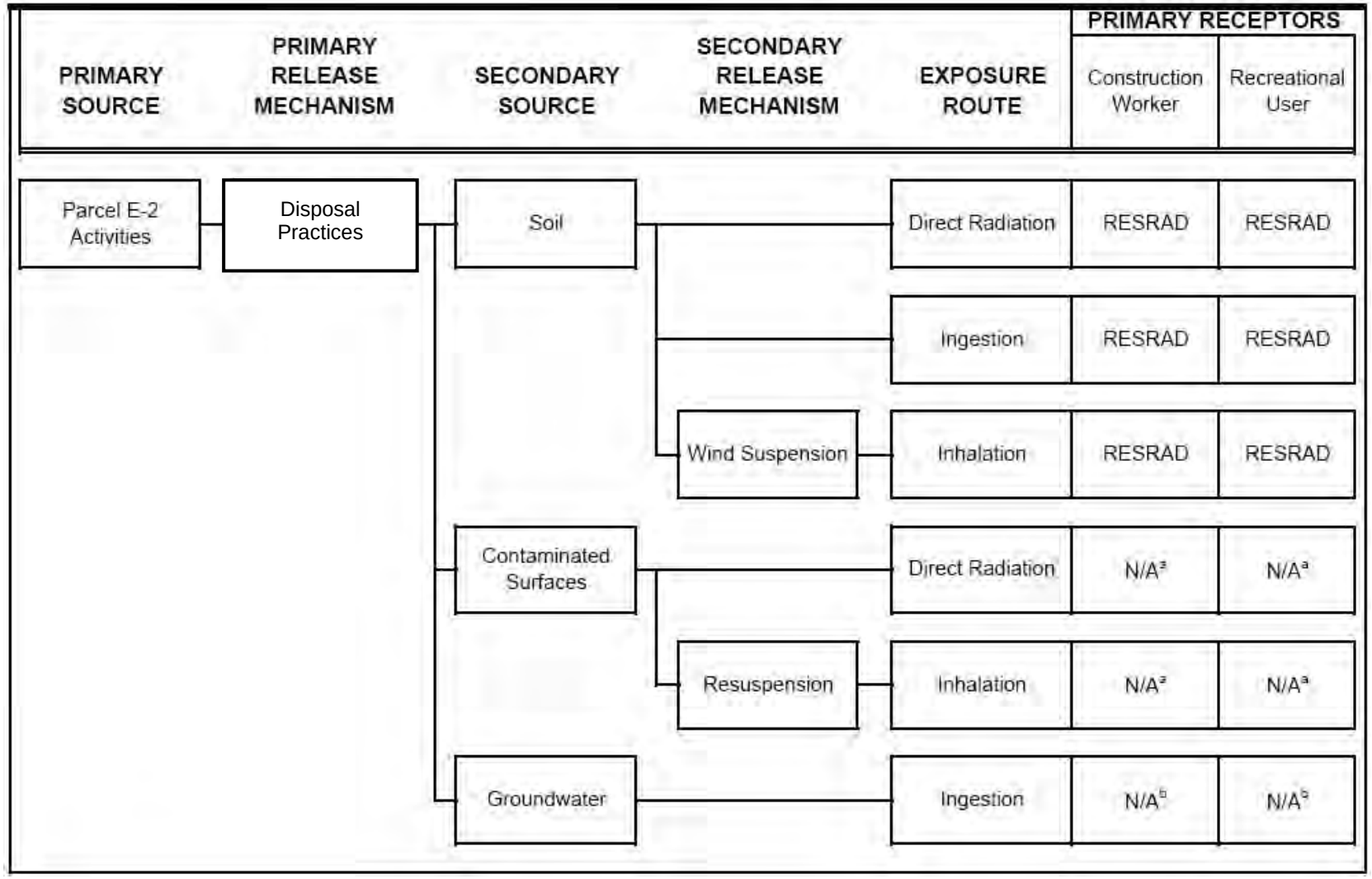
I Incomplete or negligible exposure pathway

VOC Volatile organic compound

* Addressed under subsurface soil exposure pathways

a As discussed in Section K3.5.2 of the text, groundwater in the B-aquifer is evaluated for domestic use only. To address potential hydraulic communication between the A- and B-aquifers, the domestic use evalution included data from the A-aquifer.

Figure B-1. Conceptual Site Model



Notes:

a No buildings in Parcel E-2.

b Groundwater pathway not considered viable in these analyses.

N/A = not applicable RESRAD = Residual Radioactivity (Model)

22	**Quantitative HHRA**	Section 2.5.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix K, Section K5.0, pages K-12 through K-18. Record No. 4237. Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. Appendix B, Section B5, pages B-10 through B-13. Record No. 4260.

As recommended by Cal/EPA (1993), data for specific total petroleum hydrocarbon (TPH) indicator chemicals (for example, benzene, toluene, and benzo[a]pyrene) were used to assess potential human health risk from TPH contamination. Non-chemical-specific data for TPH should be excluded from evaluation in the risk assessment because they are considered to be inadequate and insufficient to evaluate risk from TPH contamination (Cal/EPA 1993); therefore, non-specific TPH compounds were not identified as COPCs for this HHRA.

Tables K1-1 and K1-2 of Attachment K1 present analytical data summary statistics for each total risk COPC. Tables K2-1 and K2-2 of Attachment K2 present analytical data summary statistics for each incremental risk COPC. In these tables, statistics are developed separately for each grid with analytical data. Tables K3-1 through K3-3 of Attachment K3 lists the COPCs for groundwater and present analytical data summary statistics for each groundwater COPC.

K5.0 EXPOSURE ASSESSMENT

An exposure assessment identifies potential human receptors that could be exposed to site-related chemicals, as well as the routes, magnitude, frequency, and duration of the potential exposures. The principal objective of this evaluation is to identify reasonable maximum exposures (RME). As defined by EPA (1989), the RME is the maximum exposure that is reasonably expected to occur at a site. The potential human receptors and potentially complete exposure pathways for the identified receptors were presented in Section K3.0, Conceptual Site Model. The remainder of this section describes the process used to estimate EPCs and to quantify pathway-specific RME chemical intakes for each receptor. Central tendency exposures were not evaluated in this revised baseline HHRA.

K5.1 EXPOSURE POINTS AND EXPOSURE POINT CONCENTRATIONS

Potential exposure points are identified based on anticipated population activity patterns and the relationship of the activities to the presence of contaminated media. A location is identified as an exposure point if a human might contact (for example, ingest) a contaminated medium (for example, soil) at that location. For evaluation of exposures to soil, each open space grid was considered a separate exposure point for this baseline HHRA. For evaluation of exposure to groundwater, the entirety each aquifer at Parcel E-2 (that is, A-aquifer and B-aquifer) was considered a single groundwater exposure point. As discussed in Section K3.5.2, for the domestic use evaluation, the B-aquifer included data from the A-aquifer to address potential hydraulic communication between the two aquifers. Potential exposure to COPCs is assumed to occur uniformly throughout each exposure point. Exposure from domestic use was also evaluated solely using B-aquifer data, to reflect current groundwater conditions.

The concentration in the medium (for example, subsurface soil) that a receptor may be exposed to is called the EPC. EPCs were calculated for all COPCs in all media sampled: surface soils (0 to 2 feet bgs), subsurface soils (0 to 10 feet bgs), A-aquifer groundwater, B-aquifer groundwater combined with A-aquifer data, and B-aquifer groundwater. The methods used to calculate EPCs for soil and groundwater are described below in Sections K5.1.1 and K5.1.2.

As shown in the conceptual site model (see Figure K-1), chemicals in soil may be transferred to outdoor air from wind erosion or volatilization. Chemicals in groundwater may be transferred to outdoor air in a construction trench from volatilization, or indoor air from volatilization of groundwater during domestic use. Sample data for outdoor and indoor air were not available for Parcel E-2. EPCs in outdoor air (from volatile and particulate chemicals in soil), outdoor air in a construction trench (from volatile chemicals in groundwater), and indoor air (from volatilization during domestic use) were estimated using the methods described in Section K5.1.3.

K5.1.1 EPCs for Soil

The 95 percent upper confidence limit (95 UCL) of the arithmetic mean was used as the EPC for each soil COPC, unless the maximum value was less than the 95 UCL, in which case, the maximum concentration was used as the EPC. The 95 UCL for each soil COPC in each grid was calculated using the following methodology. This methodology is consistent with the approach used for the soil HHRA in the draft final RI report for Parcel E (PRC, LFR, and U&A 1997), and follows the methodology recently reestablished for soil HHRAs for HPS (Tetra Tech 2003; Navy 2004):

- Statistical testing was conducted to determine data distribution for sample sizes with a minimum of four samples and four detections. For samples sizes less than 50 with at least four detections, the Shapiro-Wilk W-test was used to determine the distribution of the data. For sample sizes greater than or equal to 50 with at least four detections, the D'Agostino test was used to determine the distribution of the data.

- For data found to be normally or lognormally distributed, 95 UCLs were calculated using EPA (1992) guidance.

- If distribution testing showed that data follow a non-parametric distribution, then a 95 UCL was calculated for both a normal and lognormal distribution following EPA guidance (EPA 1992) and the higher of the two 95 UCL values was selected as the representative 95 UCL. Nondetected results for COPCs were incorporated into the calculation of 95 UCL concentrations by using one-half of the sample quantitation limit as a proxy concentration for nondetected results (EPA 1989).

- For samples sizes with less than four samples, distribution testing was not conducted and the maximum concentration was used as the EPC.

EPCs for each total risk assessment COPC in surface soil and subsurface soil are shown in Tables K1-1, K1-2, K1-3, and K1-4 of Attachment K1. EPCs for each incremental risk assessment COPC in surface soil and subsurface soil are shown in Tables K2-1, K2-2, K2-3, and K2-4 of Attachment K2. These tables also present the results of the distribution testing for each COPC and the calculated 95 UCLs.

Although more recent guidance regarding calculation of EPCs is available (see Section K5.1.2), the previous guidance provided by EPA (1992) was used to calculate EPCs for soil in this HHRA in accordance with the recent methodology established for soil HHRAs for HPS (Tetra Tech 2003; Navy 2004). In many cases, because of the relatively few sample points and detections for each grid (that is, less than four samples and four detected results), the maximum concentration is used as the EPC, resulting in a conservative estimate of potential risks.

K5.1.2 EPCs for Groundwater

EPCs were calculated for COPCs in the A-aquifer (to evaluate construction worker trench exposure), B-aquifer (to evaluate domestic use exposure), and for both aquifers combined (to evaluate domestic use exposure based on hydraulic communication between the two aquifers). EPCs were calculated following methods recommended in EPA guidance (EPA 2002a, 2006, 2007a, 2007b), as well as standard texts on environmental statistics (Gilbert 1987) and more specialized sources dealing with the treatment of censored (nondetected or below detection limit) data (Helsel 2005a, 2005b).

EPA's approach for selecting an optimal method for calculating a one-sided 95 UCL of the mean is based on evaluation of the relative sample size, detection frequency, degree of skewness, and underlying distribution for individual chemicals (EPA 2006, 2007a). Decision rules for selecting distribution-specific UCL methods follow recommendations in the technical documentation for EPA's ProUCL 4 software package (EPA 2007b); summaries of the decision rules for gamma, lognormal, and nonparametric distributions are provided in Tables K3-1 through K3-3 of Attachment K3. Calculations for normal distributions were performed using Student's *t* statistic for detected data, and the Kaplan-Meier product limit method with Student's *t* cutoff for chemicals with one or more censored results (EPA 2006, 2007a, 2007b).

The steps used to calculate EPCs for groundwater are summarized below.

1. Detection frequencies were calculated for each chemical; chemicals with no detected results were excluded from analysis. For chemicals with fewer than six detected results, the EPC defaulted to the maximum detected result.

2. Censored results in each data set that exceeded the maximum detected result were excluded from the calculations. The number of excluded censored results is shown in Tables K3-1 through K3-3.

3. Formal goodness-of-fit (GOF) tests were used to determine the underlying distribution for each chemical. The Shapiro-Wilk W test was used for normal and lognormal distributions, and the Cramer von Mises W^2 test was used for gamma distributions. GOF testing was only performed for chemicals with at least six detected results. For chemicals with censored results, testing was conducted using the detected data only. Distributions for chemicals not following a normal, lognormal, or gamma distribution, or having fewer than six detected results, were treated as nonparametric. All GOF tests were evaluated at the 0.05 (5 percent) significance level.

4. For chemicals with all detected results, 95 UCLs were calculated using one of the following parametric or nonparametric methods, following the decision rules summarized in Tables K3-1 through K3-3.

Parametric Methods	Nonparametric Methods
Student's *t* UCL	Chebyshev inequality UCL
Approximate gamma UCL	Bootstrap *t* UCL
Adjusted gamma UCL	Hall's bootstrap UCL
Land's H-UCL	
MVUE Chebyshev UCL	

Notes:

MVUE Minimum variance unbiased estimator
UCL Upper confidence limit

5. For chemicals with one or more censored results, mean concentrations were calculated using the nonparametric Kaplan-Meier product limit estimator. The 95 UCL was estimated using the Kaplan-Meier mean and one of the methods listed below, following the decision rules summarized in Tables K3-1 through K3-3:

   - Student's *t* cutoff
   - Chebyshev theorem
   - Percentile bootstrap
   - Bias corrected accelerated bootstrap

The EPC selected was the lesser of the 95 UCL and the maximum detected result. It should be noted that in accordance with EPA (2002, 2004b, 2006, 2007a, 2007b), the 95 UCL will not provide 95 percent coverage for the mean in all cases (that is, especially for small sample sizes or highly skewed distributions). For this reason, the 97.5 UCL or 99 UCL was used instead of the 95 UCL in selected cases to ensure coverage is at least 95 percent (EPA 2002, 2004b, 2006, 2007a, 2007b).

K5.1.3 Exposure Point Concentrations for Media Not Sampled

As discussed in Sections K3.0 and K5.1, COPCs in soil and groundwater may be transferred to outdoor air and indoor air from the following transfer mechanisms:

- Wind erosion of particulate chemicals from soil to outdoor air
- Volatilization from soil to outdoor air
- Volatilization from groundwater to indoor air during domestic use
- Volatilization from groundwater to outdoor air in a construction trench

As discussed in Subsection 3.7 and 6.2.3 of the RI/FS Report, previous outdoor air monitoring activities performed at Parcel E-2 have indicated that air contaminant concentrations at Parcel E-2 are similar to Bay Area regional air quality monitoring results, with only minor differences observed for most analytes investigated. The most notable exceptions are past detections of PCBs in the southeast portion of Parcel E-2. These detections of PCBs were associated with dust generated during past construction activities; specifically, the sandblast waste fixation project and landfill cap construction. As an additional precaution, the HHRA methodology evaluates potential outdoor air exposure via several transfer mechanisms. Models were used to estimate EPCs in outdoor air as a result of the above transfer mechanisms. These models are discussed below. EPCs for indoor air as a result of volatilization from domestic use of groundwater were not calculated because a risk-based screening assessment was used to quantify risks from exposure to COPCs in groundwater (see Section K7.2).

K5.1.3.1 Outdoor Air – Particulate COPCs Released from Soil

EPCs of particulates released from soil to outdoor air were estimated using soil EPCs as the source term and the methodology provided by EPA Region 9 in its memorandum describing the derivation of PRGs (EPA 2004a). To derive the EPCs in outdoor air, the EPC for soil was multiplied by the reciprocal of the EPA (2004a) default particulate emission factor of 1.316E+09 cubic meters per kilogram, which is a non-chemical-specific value that relates chemical concentrations in soil to airborne concentrations that may be inhaled.

K5.1.3.2 Outdoor Air – Volatile COPCs Released from Soil

Chemical-specific volatilization factors, which relate concentrations of volatile chemicals in soil to airborne concentrations that may be inhaled, were used to estimate concentrations in outdoor air from volatile COPCs in soil. Volatilization factors were taken from the EPA Region 9 guidance (EPA 2004a) and are summarized in Table K-2. To estimate EPCs in outdoor air, the soil EPC was multiplied by the reciprocal of the volatilization factor.

K5.1.3.3 Indoor Air – Volatilization of COPCs in Groundwater during Domestic Use

Volatilization of volatile COPCs in groundwater into household air during domestic use of groundwater was evaluated for the residential exposure scenario, based on groundwater EPCs developed for the B-aquifer. A risk-based screening assessment was used to calculate risks from domestic use of groundwater, based on groundwater EPCs and PRGs for tap water developed by EPA Region 9 (EPA 2004a). Section K7.2 provides further details on this approach. Because a risk-based screening assessment approach was used to evaluate risks from domestic use of groundwater, EPCs were not developed for indoor air based on volatilization of COPCs in groundwater during domestic use.

K5.1.3.4 Outdoor Air – Volatile COPCs Released from Groundwater in a Construction Trench

Chemical-specific volatilization factors that relate concentrations of volatile chemicals in groundwater accumulated in a construction trench to airborne concentrations that may be inhaled by construction workers were used to estimate EPCs from volatile COPCs in groundwater. Calculation of the volatilization factors for this scenario were based on guidance from Virginia Department of Environmental Quality (2005), which provides a combination of a vadose zone model to estimate volatilization of gaseous COPCs from groundwater into a trench, and a box model to estimate dispersion of the COPCs from the air inside the trench into aboveground air. A full description of the models used to estimate volatilization into a construction trench is provided in Attachment K4 to this appendix.

K5.2 CHEMICAL INTAKE ESTIMATES

Estimates of exposure are based on the EPCs (as described in Section K5.1) and scenario-specific assumptions and intake parameters. Consistent with EPA guidance (EPA 1995), exposure estimates (intakes) were calculated for an RME scenario for each receptor and exposure pathway and are expressed in terms of milligrams of chemical per kilogram body weight per day (mg/kg-day). The RME represents the highest exposure reasonably expected to occur and is calculated using the 95 UCL and the RME exposure parameters.

EPA-derived exposure algorithms were used to estimate the chemical intakes for each route of exposure. Equation K-1 is a generic equation for calculating chemical intake as follows (EPA 1989):

$$I = \frac{C \times CR \times EF \times ED}{BW \times AT} \qquad \text{(K-1)}$$

where

I	=	Intake: the amount of chemical at the exchange boundary (mg/kg-day)
C	=	Chemical concentration: the EPC (for example, mg/kg for soil)
CR	=	Contact rate: the amount of contaminated medium contacted per unit of time or event; may be the ingestion rate, inhalation rate, or dermal contact rate (for example, milligram per day for the ingestion rate of soil)
EF	=	Exposure frequency: how often the exposure occurs (days per year)
ED	=	Exposure duration: the number of years in which a receptor comes in contact with the contaminated medium (years)
BW	=	Body weight: the average body weight of the receptor over the exposure period (kilograms)
AT	=	Averaging time: the period over which exposure is averaged (days); for carcinogens, the averaging time is 25,550 days on the basis of a lifetime exposure of 70 years (average life expectancy), and for noncarcinogens, the averaging time is equal to the exposure duration multiplied by the number of days in a year (365 days)

Pathway-specific variations of Equation K-1 were used to calculate intakes of COPCs in soil for recreational and construction worker receptors, and COPCs in groundwater for construction worker receptors. Tables K-3 through K-7 present the pathway-specific equations and receptor-specific exposure assumptions used to calculate intakes. The calculation of chemical intake for the dermal contact with soil exposure pathway (all receptors) requires chemical-specific dermal absorption factors; these factors are shown in Table K-2. The calculation of chemical intake for the dermal contact with groundwater exposure pathway (construction worker) requires chemical-specific permeability constants; these factors are shown in Table K-8.

Chemical intakes from groundwater exposure pathways for residential receptors (ingestion and inhalation during household use) were not calculated because a risk-based screening assessment was used to quantify risks from exposure to COPCs in groundwater for these receptors (see Section K7.2).

K6.0 TOXICITY ASSESSMENT

The toxicity assessment identifies toxicity values used to quantify potential adverse health effects associated with exposure to COPCs at Parcel E-2. These toxicity values include references doses (RfD) for noncancer health effects and slope factors (SF) for estimating cancer risks. An RfD represents an estimated daily intake of a COPC that is expected to pose no appreciable risk of harmful effects to human health, including sensitive populations, over a lifetime. RfDs are specific to each chemical and exposure route such as inhalation or ingestion.

Section B5. Exposure Assessment

An exposure assessment identified potential human receptors that could come into contact with radiologically impacted areas, as well as the exposure routes, magnitude, frequency, and duration of the potential exposures. The principal objective of this evaluation is to identify reasonable maximum exposures (RMEs). As defined by EPA (1989), the RME is the maximum exposure that is reasonably expected to occur at a site. The potential human receptors and potentially complete exposure pathways for the identified receptors were presented in Section B3, Conceptual Site Model. The remainder of this section describes the process used to estimate exposure point concentrations (EPCs) and to quantify pathway-specific RME radiological exposures for each receptor.

The nonradiological HHRA provides both total and incremental risk associated with nonradioactive chemical constituents (ERRG and Shaw, 2011). To combine nonradiological risk and radiological risk, the same approach used in the RI/FS to calculate nonradiological risk must be taken; namely, calculating total risk from ROCs inclusive of background and calculating incremental risk from the ROCs present at levels that do not include background. Consistent with EPA and Navy guidance, both total and incremental radiological risk were evaluated.

B5.1 EXPOSURE POINTS AND EXPOSURE POINT CONCENTRATIONS

Similar to the nonradiological HHRA, exposure points are identified based on anticipated population activity patterns and the relationship of the activities to the presence of contaminated media. For this radiological HHRA, each of the 73 Class I survey units evaluated during the Phase V investigation was considered a separate exposure point. Soil radiological data from each of the survey units collected during the Phase V investigation, along with data collected during the Phase I investigation, were grouped into individual data sets.

A statistical summary of the combined Phase I and V investigation data set is presented in Table B-4. The statistical summary presented in Table B-4 includes separate rows for survey units containing either biased samples, which are typically associated with radioactive point source anomalies that were removed, or sample locations that were physically removed during the removal actions at the Metal Slag Area and PCB Hot Spot Area. The first set of summary statistics is presented for samples that remain at the parcel (excluding biased samples and samples located in the Metal Slag Area and PCB Hot Spot Area excavation boundaries). The second set of summary statistics is presented for all samples collected and provides information to document conditions prior to the removal actions at the Metal Slag Area and PCB

Hot Spot Area. The current post-excavation data set consists of 1,098 systematic samples and 18 biased samples from the Phase V investigation and 24 samples from the Phase I investigation. One entire Phase V survey unit was removed during the removal actions, resulting in data from 72 of the original 73 Phase V survey units remaining.

As discussed in Section 7.2 of the Radiological Addendum, the biased soil samples with elevated activities at Phase V survey units ACH and AKL were collocated with radioactive point source anomalies that were subsequently removed. Therefore, the Navy believes that the systematic samples collected within survey units ACH and AKL (exclusive of the biased sample results) are most representative of current site conditions.

Once the data sets were compiled, statistical testing was conducted to determine the data distribution for the survey units and to calculate the 95 percent upper confidence limit (95 UCL) of the arithmetic mean. The 95 UCL was used as the EPC for each radionuclide for data sets with greater than four samples. The 95 UCL for each radionuclide in each survey unit was calculated using the following methodology, which is consistent with the approach used for the nonradiological HHRA (ERRG and Shaw, 2011).

The one-sided UCL on the mean were calculated for radionuclide data sets with at least six samples. Recommendations in Singh, Singh, and Maichle (2009) are based on three properties measured for individual samples: (1) best-fit distribution, (2) relative degree of skewness, and (3) relative sample size. The recommendations for calculating an EPC for normal, gamma, lognormal, and nonparametric distributions are provided by the ProUCL software (EPA, 2009). The 95 UCLs were then calculated based upon the method recommended by the ProUCL software. For data sets with six or fewer samples, the maximum detected activity was used as the EPC. The summary statistics for the individual data sets are presented in Table B-4.

B5.2. RESRAD

Radiological dose and risk were estimated for each of the 72 Class I survey units identified in the Phase V investigation. Given the large number of survey units, it was not feasible to conduct RESRAD modeling runs for each individual survey unit and for each receptor evaluated. Rather, dose and risk estimates were calculated using a ratiometric approach. Using a ratiometric approach, dose and risk were initially calculated using RESRAD for the individual ROCs at the proposed remediation goals listed in Table B-3. Table B-5 presents the initial modeled dose and risk estimates for the receptors at the release criteria. The RESRAD modeling runs are presented in Attachment B1.

After dose and risk were estimated for the three ROCs at the cleanup goals, dose and risk estimates were back calculated for the survey units based upon the ratio of the measured activity and the associated risk. This approach greatly reduces the time and effort required to estimate dose and risk for a large number of survey units, with a precision comparable to that of using RESRAD for each survey unit. Table B-6

presents the dose and risk estimates for all the survey units on the site, using the ratiometric approach. The dose and risk calculations, detailing the contribution from each ROC and each individual exposure pathway, are presented in Attachment B1.

To estimate the incremental risk from impacted soil areas, background concentrations of the ROCs were subtracted from the calculated 95 UCL values. As indicated in Section B4, sample results from the reference areas indicated mean background levels of 0.049 pCi/g for ^{137}Cs, 0.82 pCi/g for ^{226}Ra, and 0.18 pCi/g for ^{90}Sr. To estimate the total radiological risk, the calculated 95 UCL values were used as the EPC, without subtracting the background values. Background values were not calculated for ^{60}Co; therefore, the incremental radiological risk is the same as the total radiological risk.

Table B-7 presents the combined nonradiological and radiological risk at the three primary study areas at Parcel E-2 (Landfill Area, Panhandle Area, and East Adjacent Area; these study areas are impacted by both radioactive and nonradioactive chemicals). The nonradiological and radiological risk presented in Table B-7 represents the maximum risk associated with an exposure area within the Landfill Area, Panhandle Area, and East Adjacent Area. Since the exposure areas and associated grids used in the nonradiological and radiological risk analyses were different, the grids with the maximum nonradiological and radiological risk may not necessarily be collocated. Accordingly, the total risk presented in Table B-7 is an upper-bound estimate of risk.

The combined risk from the residential exposure scenario is not included in Table B-7 because this exposure scenario was not evaluated in the RI/FS. The combined risk from the Shoreline Area was not included in Table B-7 because limited soil samples were collected from the Shoreline Area and the resulting data were inadequate to estimate potential radiological risks.

B5.2.1. Critical Exposure Scenario Evaluation

An evaluation was performed to identify the critical exposure scenario based on the exposure scenarios identified in Section B2. The critical exposure scenario results presented in Table B-8 represent the range of radiological risks estimated for each receptor. Modeling results indicated that the residential exposure scenario is the critical exposure scenario (Table B-8). As indicated in Section B2, the residential exposure scenario is not anticipated in the future at Parcel E-2; however, the residential exposure scenario was evaluated because it represents the highest potential for exposure and resulting radiological risk.

An evaluation was performed to identify the critical exposure pathway based on the pathways (external radiation, soil ingestion, and inhalation) identified in Section B3. Evaluation results are shown in Table B-8. The critical exposure pathway results presented in Table B-8 are based upon the range of radiological risks estimated for each receptor. As indicated in Table B-8, external exposure accounts for over 99 percent of all radiological risks, which is nearly all of the radiological risk for each receptor.

B5.2.2. Critical Isotope Evaluation

An evaluation was performed to identify the critical isotopes based on the exposure scenarios identified in Section B2. The critical isotope results presented in Table B-9 represent the range of the contribution of each individual isotope to the overall risk for each receptor. As indicated in Table B-9, ^{226}Ra accounts for 95 to 99 percent of all radiological risk, which is nearly all of the radiological risk.

B5.2.3. Cover Depth

Because the external radiation pathway is the critical pathway, an analysis of the cover depth was performed. The cover depth is the thickness of nonimpacted material (e.g., soil, asphalt, etc.) that is placed over the impacted soil area. The RESRAD default cover depth is zero, meaning that the receptor is directly exposed to impacted soil. As the cover depth increases, the resulting risk to the receptor is reduced. For the purpose of this analysis, a soil cover depth was modeled at thicknesses of 0 inches and 24 inches. The 24-inch cover thickness was selected based on information in the Parcel E-2 RI/FS Report (ERRG and Shaw, 2011). Additionally, the RESRAD default cover erosion rate was set to zero (e.g., cover depth maintained) to account for the institutional controls, consisting of land use and activity restrictions, that would be utilized to prevent exposure to potential residual radioactivity in the soil left in place and preserve the integrity of the soil cap.

The modeling results are presented in Table B-10 and show that, at a cover depth of 2 feet, both the total and incremental radiological risks are reduced by approximately two orders of magnitude. For the reasonably anticipated future receptors (recreational and construction worker), the overall radiological risk is reduced to below the 1E-06 level.

The RESRAD modeling output reports are provided in Attachment B1.

23	**Cancer risks and noncancer hazards**	Section 2.5.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix K, Section K7.0, pages K-23 through K-27. Record No. 4237.

K7.0 RISK CHARACTERIZATION METHODS

The final step in this revised baseline HHRA is the characterization of the potential risks associated with exposure to COPCs. Risks from exposure to soil for all receptors and from construction worker exposure to groundwater were characterized using the methodology provided in EPA (1989); Section K7.1 details this methodology. Risks from domestic use of groundwater were characterized using a risk-based screening assessment approach; Section K7.2 presents this methodology. Section K7.3 discusses interpretation of hazard and risk levels. Section K7.4 discusses the risk characterization approach for lead. The results of the risk characterization for Parcel E-2 are presented in Section K8.0.

K7.1 RISK CHARACTERIZATION FOR SOIL EXPOSURES AND CONSTRUCTION WORKER EXPOSURE TO GROUNDWATER

The general methodology for estimating cancer risks and HIs for soil exposures for all receptors and construction worker exposure to groundwater follows the methodology provided in EPA (1989) and is presented in Section K7.1.1 for cancer risks and in Section K7.1.2 for noncancer health hazards. This methodology is applicable to both the total and incremental risk evaluations for soil and the total risk evaluation for groundwater. As discussed in Section K4.4, incremental risks were not evaluated for exposure to groundwater.

K7.1.1 Characterization of Cancer Risks

Risks associated with exposure to chemicals classified as carcinogens are estimated as the incremental probability that an individual will develop cancer over a lifetime as a direct result of an exposure (EPA 1989). The estimated risk is expressed as a unitless probability.

Three steps are used in estimating cancer risks for chemicals classified as carcinogens. First, the chemical intake is multiplied by the chemical-specific SF to derive a cancer risk estimate for a single chemical and pathway. The calculation is based on the following relationship:

$$\textit{Chemical-Specific Cancer Risk} = \textit{Intake (mg/kg-day)} \times \textit{SF (mg/kg-day)}^{-1} \qquad \text{(K-2)}$$

Second, the individual chemical cancer risks are assumed to be additive to estimate the cancer risk associated with exposure to multiple carcinogens for a single exposure pathway, as follows:

$$\textit{Pathway-Specific Cancer Risk} = \sum \textit{Chemical-Specific Cancer Risk} \qquad \text{(K-3)}$$

Third, pathway-specific risks are summed for each receptor to estimate the total cancer risk. For exposures scenarios for which both an adult and child receptor are evaluated (that is, recreational), the estimated cancer risk is based on the sum of the risk estimated for the adult receptor plus the child receptor. Hence, for the recreational receptor, the estimated cancer risk is

based on the sum of the risk estimated for the adult recreational user and the child recreational user.

K7.1.2 Characterization of Noncancer Hazards

The potential for exposure that may result in adverse health effects other than cancer is evaluated by comparing the intake with an RfD for chemicals that are not classified as carcinogens and for those carcinogens known to cause adverse health effects other than cancer. A three-step approach is used as described below:

Calculate a chemical-specific hazard quotient (HQ) based on the following equation:

$$Hazard\ Quotient = \frac{Intake\ (mg/kg\text{-}day)}{RfD\ (mg/kg\text{-}day)} \quad \text{(K-4)}$$

Next, sum the HQs for all chemicals to evaluate the potential for noncancer health effects from simultaneous exposure to multiple chemicals, yielding an HI as follows:

$$Hazard\ Index = \sum HQ \quad \text{(K-5)}$$

Third, sum pathway-specific HIs to estimate a total HI for each receptor.

The total noncancer HI for the recreational receptor is based on the total HI estimated for the child receptor because the intake for children of soil, groundwater, and air per unit body mass is higher (hence, noncancer HIs for a child receptor are always higher than noncancer HIs for an adult receptor for similar exposures).

K7.2 Risk Characterization for Domestic Use of Groundwater

The risks from domestic use of groundwater were evaluated in this baseline HHRA. Based on meetings between EPA, DTSC, and the Navy in 2003 and 2004, the assessment of risks from these exposure pathways is based on a risk-based screening assessment.

The risk-based screening assessment is a streamlined approach that uses the ratio of EPCs to risk-based screening levels (RBSL). For this baseline HHRA, the EPA Region 9 PRGs for tap water were used as RBSLs to calculate cancer risks and noncancer HIs from domestic use of B-aquifer groundwater (EPA 2004a). The EPA tap water PRGs are risk-based concentrations that correspond to a cancer risk of 1×10^{-6} or an HI of 1 based on standardized equations that combine standard exposure assumptions and EPA toxicity values.

The risk estimates developed using the risk-based screening approach represent the risk for all exposure pathways evaluated by the RBSLs (that is, the tap water PRGs). These risk estimates

are numerically equivalent to risk estimates obtained using the EPA (1989) "forward calculation methodology," which involves calculating risks using contaminant concentrations, exposure assumptions, and toxicity values (see Section K6.0), if the exposure pathways and assumptions used to derive the RBSLs are the same as those used in the forward calculations.

The EPA tap water PRGs were used as RBSLs in this HHRA to evaluate domestic use of groundwater (EPA 2004a). The tap water PRGs are used to evaluate ingestion of groundwater and from inhalation of VOCs released from groundwater to indoor air during household use. The PRGs do not account for exposure from dermal contact with groundwater; Section K9.3 addresses the uncertainties associated with exclusion of this exposure pathway on the risk results.

Section K6.0 discusses the hierarchy toxicity criteria used in the HHRA; Tables K-9 and K-10 list the toxicity criteria for each COPC. The EPA (2004a) Region 9 PRGs for tap water were recalculated for this HHRA to be based on the same toxicity criteria listed in these tables; methodologies provided by EPA (2004a) were used for the calculations. Table K-11 lists the groundwater RBSLs used for this HHRA.

Cancer risks and noncancer hazards were calculated by comparing site EPCs of each COPC to the corresponding RBSL, as detailed in the following text.

K7.2.1 Characterization of Cancer Risks

For COPCs that are carcinogens, the cancer risk associated with exposure to a single chemical is calculated as follows:

$$Cancer\ risk = (EPC/RBSL) \times 10^{-6} \qquad \text{(K-6)}$$

where:

EPC = Exposure point concentration (µg/L)

RBSL = Risk-based screening level (µg/L)

At a given site, individuals may be exposed to more than one chemical. The total risk from exposure to multiple chemicals is calculated using the following equation:

$$Total\ risk = 10^{-6} \times \{EPC_1/RBSL_1 + EPC_2/RBSL_2 + \ldots EPC_n/RBSL_n\} \qquad \text{(K-7)}$$

where:

Total risk = Total carcinogenic risk from exposure to all chemicals (unitless)

EPC_n = Exposure point concentration of chemical *n* (µg/L)

$RBSL_n$ = RBSL for chemical *n* (µg/L)

K7.2.2 Characterization of Noncancer Hazards

For COPCs not classified as carcinogens and for carcinogens known to cause adverse health effects other than cancer, the potential for receptors to develop adverse health effects is evaluated by comparing EPCs with noncancer RBSLs as follows:

$$Hazard\ quotient = EPC/RBSL \quad \text{(K-8)}$$

where

EPC = Exposure point concentration (µg/L)

RBSL = Risk-based screening level (µg/L)

To evaluate the potential for noncancer effects from exposure to multiple chemicals, the HQs for all chemicals are summed, yielding an HI as follows:

$$Hazard\ index = EPC_1/RBSL_1 + EPC_2/RBSL_2 + \ldots + EPC_n/RBSL_n \quad \text{(K-9)}$$

where:

EPC_n = Exposure point concentration of chemical *n* (µg/L)

$RBSL_n$ = RBSL for chemical *n* (µg/L)

K7.3 Interpretation of Hazard and Risk Levels

EPA guidance on exposure levels considered protective of human health is presented to aid in the interpretation of the results of the risk assessment. In the National Oil and Hazardous Substances Pollution Contingency Plan, EPA defined general remedial action goals for sites on the National Priorities List (Title 40 of the *Code of Federal Regulations* Part 300.430). The goals include a range for residual cancer risk, which is "an excess upper-bound lifetime cancer risk to an individual of between 10^{-4} and 10^{-6}," or 1 in 10,000 to 1 in 1,000,000. The goals set out in the National Oil and Hazardous Substances Pollution Contingency Plan are applied once a decision to remediate a site has been made. A more recent EPA directive provides additional guidance on the role of the HHRA in supporting risk management decisions, and in particular, determining if remedial action is necessary (EPA 1991). Specifically, the guidance states: "Where cumulative carcinogenic risk to an individual based on reasonable maximum exposure for both current and future land use is less than 10^{-4}, and the noncancer HQ is less than 1, action generally is not warranted unless there are adverse environmental impacts." EPA Region 9 has stated, however, that action may be taken to address risks between 10^{-4} and 10^{-6}. In addition, DTSC has stated that it considers 1×10^{-6} as the point of departure for risk management decisions. To be protective of human health, the BCT has chosen to use 10^{-6}, the lower end of

the residual 10^{-4} to 10^{-6} risk range set out in the National Oil and Hazardous Substances Pollution Contingency Plan, as a threshold level for cancer risks for HPS.

An HI of less than 1 indicates that adverse noncancer health effects are not expected. In accordance with EPA guidance (EPA 1989), the HHRA further evaluated exposure areas with total HIs that exceeded 1. Noncancer health effects associated with exposure to multiple COPCs may not be cumulative if the COPCs affect different target organs or systems within the body. Therefore, for exposure areas with HI results that exceeded 1 based on the summed HIs from multiple COPCs, the HHRA segregates the HI by target organ or system and assumes that the potential for noncancer health effects exists only if the highest total segregated HI for a target organ or system exceeded 1. Table K-12 identifies the target organs affected by each COPC for Parcel E-2; this information was used, as necessary, to segregate HIs by target organ. Information on target organs was obtained from Integrated Risk Information System (EPA 2008), Health Effects Assessment Summary Tables (EPA 1997), Provisional Peer Reviewed Toxicity Values for Superfund database (EPA 2004c), and the Agency for Toxic Substances and Disease Registry (2005). Tables in this appendix that summarize the HHRA results show both the total HI (summed for all COPCs associated with noncancer effects, regardless of target organ or system) and the highest segregated HI (segregated by target organ or system) for each exposure area.

K7.4 EVALUATION OF LEAD

The HHRA evaluated the potential for human health effects from exposure to lead in soil by comparing EPCs for lead with an HPS-specific risk-based concentration for lead (155 mg/kg) for recreational receptors and the EPA (2004a) Region 9 industrial PRG for lead (800 mg/kg) for construction worker receptors. The HPS risk-based concentration for lead was developed using the Cal/EPA (1999b) LeadSpread model and EPA's Integrated Exposure Uptake Biokinetic model. The methodology for development of the HPS risk-based concentration for lead is presented in Attachment K5 to this appendix. The Region 9 industrial PRG for lead was developed by EPA using EPA's adult lead model (EPA 1996). These models are designed to predict the soil lead concentration associated with a target blood lead level of 10 micrograms per deciliter, the EPA threshold level of concern (EPA 1994a). Adverse health effects are not expected to occur from exposure to lead below the risk-based concentration or PRG.

The HHRA evaluated exposure lead in groundwater by comparing EPCs for lead in groundwater with the California Regulatory Action Level of 15 µg/L. The regulatory action level is not a risk-based concentration, but rather the concentration which, if exceeded, triggers treatment or other requirements (see Section K6.4). The evaluation of lead in groundwater is presented in Table K3-7 of Attachment K3.

24	**Total and incremental risks**	Section 2.5.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Sections 7.1.2.1 and 7.1.2.2, pages 7-5 through 7-8. Record No. 4237. Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. Section 7.2, pages 7-2 through 7-4. Record No. 4260.

Both total and incremental risks were evaluated for exposure to surface and subsurface soil at Parcel E-2. For the total risk evaluation, all chemicals detected or estimated (J-qualified) in one or more samples of surface and subsurface soil were included as COPCs regardless of concentration, except for the essential nutrients calcium, magnesium, potassium, and sodium. The total risk evaluation provides an estimate of the risks posed by all chemicals at the site, including those present at concentrations at or below background levels. For the incremental risk evaluation, the essential nutrients and metals with maximum measured concentrations below HPALs were excluded as COPCs. The incremental risk evaluation provides an estimate of risks posed by all chemicals at the site, except those that do not exceed background levels.

Nondetected results for COPCs in soil were incorporated in the total and incremental risk evaluations by use of a proxy concentration. Details on this approach are provided in Section K4.0 of Appendix K. Appendix K also discusses the potential effect on the HHRA of the methods used to treat nondetected results.

7.1.2. Human Health Risk Assessment Results

This subsection summarizes the results of the total and incremental risk evaluations for soil.

7.1.2.1. HHRA Results for Recreational Exposure Scenario

For the recreational exposure scenario, risks from exposure to COPCs in soil were assessed for surface soil (0 to 2 feet bgs). Figure 7-1 summarizes the grid-specific total risk results for surface soil, based on the reasonably anticipated reuse of Parcel E-2 as open space. Figure 7-2 summarizes the grid-specific incremental risk results for surface soil. In both Figures 7-1 and 7-2, the results for each grid are shown relative to the cancer risk threshold of 1E-06, highest "segregated" noncancer hazard index (HI) threshold of 1, and HPS RBC for lead (155 mg/kg) for recreational receptors. The "segregated" HI identifies the value as it relates to a specific target organ or systems. For the recreational exposure scenario (0 to 2 feet bgs), the specific calculated total and incremental cancer risk and noncancer HI results for each grid are listed in Tables 7-2 and 7-3, respectively.

Sixty-seven grids at Parcel E-2 have sampling data for surface soil. Of these 67 grids, the total recreational risk for 63 of the grids exceeds the cancer risk threshold of 1E-06, and the highest segregated HI for 16 of the grids exceeds the threshold HI of 1. Based on the results of the incremental risk evaluation for recreational visitors, 39 grids at Parcel E-2 exceed the cancer risk threshold of 1E-06, and 16 grids exceed the noncancer threshold HI of 1. Under both the total and incremental risk evaluations, 26 grids exceed the RBC for lead for recreational visitors.

Tables 7-4 and 7-5 present a risk characterization analysis of total and incremental risk for the recreational scenario, respectively, of the grids for which the cancer risk exceeds 1E-06, the highest segregated HI exceeds 1, or the exposure point concentration (EPC) for lead exceeds the recreational RBC for lead. For each of these grids, the tables identify the COCs and present their contribution to the calculated total risks and hazards for each potentially complete exposure pathway.

Grids AK29 and AK30 are located in the 0.42-acre area in the East Adjacent Area designated as part of the Shipyard South Multi-Use District. As shown on Figures 7-1 and 7-2, the total and incremental risk estimates at grids AK29 and AK30 (1) exceed the cancer risk threshold of 1E-06, (2) exceed the noncancer threshold HI of 1, and (3) exceed the RBC for lead for recreational visitors. Accordingly, the FS portion of this report evaluates remedial actions to address this potential risk to future recreational users. Because a risk evaluation using more conservative exposure factors associated with potential residential reuse would have reached the same conclusion, no updates to the risk assessment were required to make an informed risk management decision in the 0.42-acre area in the East Adjacent Area designated as part of the Shipyard South Multi-Use District.

Both total and segregated noncancer HI results are shown in Tables 7-2 through 7-5. The total HI represents the cumulative HI, regardless of the specific target organs or systems within the body affected by the COPCs. However, noncancer health effects may not be cumulative if the COPCs affect different target organs or systems within the body. Therefore, the HHRA segregates the HI by target organ or system; the potential for noncancer health effects exists only if the highest total segregated HI for a target organ or system exceeds 1. For each exposure area, the highest calculated segregated HI is shown in Tables 7-2 through 7-5.

The chemicals listed in the table on the following page were identified as COCs in at least one grid, based on the results of the total and incremental risk evaluation for soil for the recreational exposure scenario. As shown in the table on the following page, the COCs for the recreational scenario are the same between the total and incremental risk evaluations.

7.1.2.2. HHRA Results for Construction Worker Exposure Scenario

For the construction worker exposure scenario, risks from exposure to COPCs in soil were assessed for subsurface soil (0 to 10 feet bgs). Figure 7-3 summarizes the grid-specific total risk results for subsurface soil for the construction worker. Figure 7-4 summarizes the grid-specific incremental risk results for subsurface soil. The results for each grid are shown relative to the cancer risk threshold of 1E-06, highest segregated noncancer HI threshold of 1, and HPS RBC for lead (800 mg/kg) for construction workers. For the construction worker exposure scenario (0 to 10 feet bgs), Tables 7-6 and 7-7, respectively, present the specific calculated total and incremental cancer risk and noncancer HI results for each grid.

Exposure Scenario	Chemicals of Concern	
	Surface Soil (0 to 2 feet bgs), Total Risk	Surface Soil (0 to 2 feet bgs), Incremental Risk
Recreational [a]	Antimony	Antimony
	Aroclor-1242	Aroclor-1242
	Aroclor-1248	Aroclor-1248
	Aroclor-1254	Aroclor-1254
	Aroclor-1260	Aroclor-1260
	Arsenic	Arsenic
	Benzo(a)anthracene	Benzo(a)anthracene
	Benzo(a)pyrene	Benzo(a)pyrene
	Benzo(b)fluoranthene	Benzo(b)fluoranthene
	Benzo(k)fluoranthene	Benzo(k)fluoranthene
	Dieldrin	Dieldrin
	Heptachlor epoxide	Heptachlor epoxide
	Indeno(1,2,3-cd)pyrene	Indeno(1,2,3-cd)pyrene
	Lead	Lead
	Total PCBs (non-dioxin)	Total PCBs (non-dioxin)

Note:
a COCs identified for this exposure scenario are based on the reasonably anticipated reuse for Parcel E-2 as open space.

Eighty-two grids at Parcel E-2 have sampling data for subsurface soil. Of these 82 grids, the total construction worker risk for 78 of the grids exceeds the cancer risk threshold of 1E-06, and the highest segregated HI for 37 of the grids exceeds the threshold HI of 1. Based on the results of the incremental risk evaluation, 49 grids at Parcel E-2 exceed the cancer risk threshold of 1E-06, and 36 grids exceed the noncancer threshold HI of 1. Under both the total and incremental risk evaluations, 20 grids exceed the RBC for lead for the construction worker.

Table 7-8 summarizes the risk analysis results from exposure to A-aquifer groundwater for construction workers in a trench. Incremental risks were not assessed for groundwater for the construction worker scenario because this scenario is not associated with a specific planned reuse for Parcel E-2. For the construction worker exposure scenario (0 to 10 feet bgs), Tables 7-9 and 7-10 present the total and incremental risk characterization analyses, respectively, for the grids in which the cancer risk exceeds 1E-06, the highest segregated HI exceeds 1, or the EPC for lead exceeds the construction worker RBC for lead. For each of these grids, the tables identify the COCs and present their contribution to the calculated total risks and hazards for each potentially complete exposure pathway.

Similar to the approach used to assess noncancer hazards for the recreational scenario (see Section 7.1.2.1), Tables 7-6 through 7-10 present both total and segregated noncancer HI results for the construction worker scenario for each exposure area. These tables show the highest segregated HI by

target organ or system; the potential for noncancer health effects exists only if the highest total segregated HI for a target organ or system exceeds 1.

The chemicals listed in the table below were identified as COCs for soil in at least one grid, based on the results of the total and incremental risk evaluation for soil for the construction worker exposure scenario or were identified as COCs for the A-aquifer. As shown in the table on the following page, the soil COCs for the construction worker scenario are the same between the total and incremental risk evaluations.

Exposure Scenario	Chemicals of Concern		
	Subsurface Soil (0 to 10 feet bgs), Total Risk	Subsurface Soil (0 to 10 feet bgs), Incremental Risk	Groundwater, A-aquifer
Construction Worker[a]	4,4-DDT Antimony Aroclor-1016 Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260 Arsenic Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(k)fluoranthene Cadmium Copper Dibenz(a,h)anthracene Dieldrin Dioxin (TEQ) Heptachlor epoxide Indeno(1,2,3-cd)pyrene Iron Lead Manganese Naphthalene Total PCBs (non-dioxin) Vanadium	4,4-DDT Antimony Aroclor-1016 Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260 Arsenic Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(k)fluoranthene Cadmium Copper Dibenz(a,h)anthracene Dieldrin Dioxin (TEQ) Heptachlor epoxide Indeno(1,2,3-cd)pyrene Iron Lead Manganese Naphthalene Total PCBs (non-dioxin) Vanadium	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(k)fluoranthene Dibenz(a,h)anthracene Indeno(1,2,3-cd)pyrene Lead

Notes:

a The construction worker exposure scenario is not associated with a specific planned reuse for Parcel E-2.

TEQ Toxicity equivalent quotient

7.1.2.3. HHRA Results for Domestic Use of Groundwater

As discussed in Section 7.1.1.1, domestic use of groundwater was evaluated for the B-aquifer. As a conservative approach, only total risks were assessed for exposure to groundwater. Similar to the approach used for the total risk evaluation for soil, all chemicals detected or estimated (J-qualified) in one

For this reason, the following receptors were selected for evaluation based on the planned reuse for Parcel E-2.

- Recreational User (adult and child)
- Construction Worker (adult)

These receptors are consistent with those evaluated in the nonradiological HHRA in the RI/FS Report. To evaluate future unrestricted reuse and to evaluate the highest potential for exposure at the parcel, a residential scenario was also evaluated. While residential reuse of Parcel E-2 is not anticipated, the residential exposure scenario presents an upper-bound estimation of risk from exposure to ROCs at the parcel.

Both direct exposure pathways (external radiation) and indirect exposure pathways (inhalation and soil ingestion) are evaluated.

The goal of the RESRAD risk modeling approach was to be as consistent as possible with assumptions and inputs used in the nonradiological HHRA in the RI/FS Report. To achieve this goal, development of representative parameters for receptor scenarios other than the RESRAD default was required. This development was achieved by following guidance from EPA; specifically, "Exposure Factors Handbook" and the "Risk Assessment Guidance for Superfund" (EPA, 1989 and 1997b). The guidance was also used to develop input parameters for the RI/FS nonradiological HHRA. Receptor-specific RESRAD values were selected from the guidance for residents, recreational users, and construction workers. To achieve the best correlation with site-specific agreements, it was necessary to adjust each of the parameters based on receptor-specific information. The parameters used in the RESRAD modeling, along with the basis for each, are discussed in detail in Appendix B.

7.2. TOTAL AND INCREMENTAL DOSE AND RISK CALCULATION METHODOLOGY AND RESULTS

Radiological dose and risk were estimated for each of the 72 2,000-square meter Class I survey units identified in the Phase V investigation, as discussed in Section 4. Given the large number of survey units, it was not feasible to conduct RESRAD modeling runs for each individual survey unit and for each receptor evaluated. Rather, dose and risk estimates were calculated using a ratiometric approach, since radiological dose and risk estimates are linear based upon activity. Using a ratiometric approach, dose and risk were initially calculated using RESRAD for the individual ROCs at the proposed residential RGs (see Section 9). The ratiometric risk calculation was performed using the following formula:

$$Risk_{UCL} = \frac{Risk_{RG}}{RG} \times UCL$$

where:

RG = remediation goal (in picocuries per gram, pCi/g; as noted below, both outdoor worker and residential RGs are used)

$Risk_{RG}$ = human health risk for the individual ROCs at the proposed RGs[11] (as noted below both outdoor worker and residential RGs are used)

$Risk_{UCL}$ = human health risk, specific to the given exposure scenario (i.e., recreational, residential, or construction worker), associated with upper confidence limit of mean (in pCi/g)

UCL = 95th percentile upper confidence limit of mean (in pCi/g) in an individual Phase V survey unit (see Table 2)

After dose and risk were estimated for the four ROCs (^{60}Co, ^{137}Cs, ^{226}Ra, and ^{90}Sr) at the proposed RGs, dose and risk estimates were back calculated for the survey units based upon the ratio of the measured activity level and the associated risk. This approach greatly reduces the time and effort required to estimate dose and risk for a large number of survey units, with a precision comparable to that of using RESRAD for each survey unit.

To estimate the incremental radiological risk from impacted soil areas, background activity levels of the ROCs were subtracted from the calculated 95 UCL values. As indicated in Section 3.1.6, sample results from the reference areas indicated mean background activity levels of 0.049 pCi/g for ^{137}Cs, 0.82 pCi/g for ^{226}Ra, and 0.18 pCi/g for ^{90}Sr. Background activity levels were not calculated for ^{60}Co. A mean background activity level of 0.18 was calculated for ^{90}Sr based upon the average ratio of ^{90}Sr to ^{137}Cs results from the off-site laboratory; this value was used to calculate the EPCs for ^{90}Sr. To estimate the total radiological risk, the calculated 95 UCL values were used as the exposure point concentration, without subtracting the background values.

RESRAD incremental risk estimates for radionuclides exceed 1E-05 for future recreational users and exceed 1E-06 for future construction workers. In addition, RESRAD incremental risk estimates for a residential exposure scenario exceed 1E-04; as stated in Section 7.1, the residential exposure scenario is not associated with the reasonably anticipated reuse but provides an upper-bound estimation of risk from exposure to ROCs at the parcel. These results indicate that concentrations of radioactive chemicals in soil pose a potential unacceptable risk to future site users and remedial alternatives should be evaluated to address these potential risks. Although the extent of radioactive contamination in subsurface soil has not been defined, this radiological addendum conservatively assumes, consistent with the findings of the HRA (Table 3; NAVSEA, 2004), that potential radioactive chemicals (specifically, ^{60}Co, ^{137}Cs, ^{226}Ra, and

[11] The residential RG is used to estimate risk for the recreational and residential exposure scenarios, and the outdoor worker RG is used to estimate risk for the construction worker exposure scenario.

^{90}Sr) may be present in subsurface soil at Parcel E-2 and will therefore require analysis of remedial alternatives. In addition, the RI/FS Report concluded that subsurface soil throughout Parcel E-2 contains nonradioactive chemicals that require analysis of remedial alternatives. As a result, the remedial alternatives evaluated in the RI/FS Report and this radiological addendum address the potential radioactive and nonradioactive chemicals in subsurface soil at Parcel E-2.

The highest total and incremental risk results for the primary Parcel E-2 study areas (Landfill Area, Panhandle Area, and East Adjacent Area) are presented in Table 7. As noted in Table 7, RESRAD incremental risk estimates at Phase V survey units ACH and AKL were affected by anomalous biased samples with reported activity levels that were two to three orders of magnitude greater than the activity levels reported in the 16 systematic samples collected within the same survey unit. The biased soil samples at survey units ACH and AKL were collocated with radioactive point source anomalies that were subsequently removed. Therefore, the Navy believes that the RESRAD risk estimates using only the systematic samples collected within survey units ACH and AKL (exclusive of the biased sample results) are most representative of current site conditions. However, the anomalous biased sample results were retained in separate RESRAD risk estimates for survey units ACH and AKL to conservatively account for the possibility of residual contamination left at the individual survey unit.

7.3. COMBINED RADIOLOGICAL AND NONRADIOLOGICAL RISK

Estimates of the lifetime risk of cancer to exposed individuals resulting from radiological and nonradiological risk assessments may be summed to determine the overall potential human health hazard associated with a site (EPA, 1989). To combine the nonradiological risk and radiological risk, the same approach used in the Parcel E-2 RI/FS to calculate nonradiological risk must be taken; namely, calculating total risk from ROCs inclusive of background and calculating incremental risk from the ROCs present at activity levels that do not include background.

Table 7 presents the combined nonradiological and radiological risk at the primary Parcel E-2 study areas (Landfill Area, Panhandle Area, and East Adjacent Area). The nonradiological and radiological risk presented in Table 7 represents the maximum risk associated with an exposure area within the Landfill Area, Panhandle Area, and East Adjacent Area. Since the exposure areas and associated grids used in the nonradiological and radiological risk analyses were different, the grids with the maximum nonradiological and radiological risk may not necessarily be collocated. Accordingly, the total risk presented in Table 7 is an upper-bound estimate of risk. The combined risk from the Shoreline Area was not included in Table 7 because limited soil samples were collected from the Shoreline Area and the resulting data were inadequate to estimate potential radiological risks; however, as discussed in Section 3.1.5, gamma scans performed along the shoreline identified potential anomalies that require analysis of remedial alternatives in the FS.

Table 7-4. Total Risk -- Risk Characterization Analysis for Surface Soil (0 to 2 feet bgs) for Recreational Exposure Scenario [a]
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

25	HHRA results for nonradioactive chemicals in soil and groundwater	Section 2.5.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Tables 7-4 and 7-5; Tables 7-8 through 7-12. Record No. 4237.

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI	COC		Basis for COC	Range of Detected Concentrations	RME EPC	DF	Chemical-Specific Cancer Risk	Percent Contribution by Exposure Pathway to Total RME Cancer Risk: Incidental Ingestion	Dermal Contact	Inhalation (Releases to Ambient Air)	Chemical-specific HI	Percent Contribution by Exposure Pathway to Total RME HI: Incidental Ingestion	Dermal Contact	Inhalation (Releases to Ambient Air)	Metals: HPAL	RME EPC Exceeds HPAL?
AA32	1E-05	<1	<1	Metal	Arsenic	C	4.1 - 4.6	4.60E+00	2/2	1.24E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AA34	1E-05	<1	<1	Metal	Arsenic	C	4.3 - 4.3	4.30E+00	1/1	1.16E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AA38	1E-05	<1	<1	Metal	Arsenic	C	4.6 - 4.6	4.60E+00	1/1	1.24E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	186 - 186	1.86E+02	1/1	--	--	--	--	--	--	--	--	8.99	Yes
AA39	6E-04	5E+00	2E+00	Metal	Antimony	NC	85 - 530	5.30E+02	2/5	--	--	--	--	1.94E+00	100.0%	0.0%	0.0%	9.05	Yes
					Arsenic	C,NC	3.3 - 215	2.15E+02	3/5	5.79E-04	62.8%	37.2%	0.0%	1.60E+00	65.5%	34.4%	0.1%	11.1	Yes
					Lead	--	36 - 4900	4.90E+03	4/5	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.31 - 0.31	3.10E-01	1/5	2.37E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
AA40	6E-06	<1	<1	Metal	Arsenic	C	2.1 - 2.1	2.10E+00	1/1	5.65E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AA41	7E-06	<1	<1	Metal	Arsenic	C	2.5 - 2.5	2.50E+00	1/1	6.73E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AB29	1E-05	<1	<1	Metal	Arsenic	C	2 - 2.9	2.90E+00	2/2	7.81E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
				PAH	Benzo(a)pyrene	C	0.26 - 0.26	2.60E-01	1/2	1.99E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
AB30	6E-06	<1	<1	Metal	Arsenic	C	1.5 - 2.1	2.10E+00	2/2	5.65E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AB32	1E-05	<1	<1	Metal	Arsenic	C	3.9 - 3.9	3.90E+00	1/1	1.05E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AB35	6E-06	<1	<1	Metal	Arsenic	C	1.9 - 2.1	2.10E+00	2/2	5.65E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AB36	4E-05	6E+00	6E+00	Metal	Arsenic	C	1.8 - 3	3.00E+00	3/6	8.08E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	54 - 6270	6.27E+03	6/6	--	--	--	--	--	--	--	--	8.99	Yes
				Pest/PCB	Aroclor-1260	C,NC	0.023 - 20	2.00E+01	2/4	2.69E-05	26.6%	73.4%	0.0%	5.04E+00	29.0%	71.0%	0.0%	--	--
					Total PCBs (Non-Dioxin)	C	4.09 - 4.14	4.14E+00	2/2	5.58E-06	26.6%	73.4%	0.0%	<1	--	--	--	--	--
AB38	8E-06	<1	<1	Metal	Arsenic	C	3.1 - 3.1	3.10E+00	1/1	8.34E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AB39	1E-05	<1	<1	Metal	Arsenic	C	3.4 - 5.1	5.10E+00	3/3	1.37E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	39.7 - 222	2.22E+02	3/3	--	--	--	--	--	--	--	--	8.99	Yes
AB41	1E-05	<1	<1	Metal	Arsenic	C	4.8 - 4.8	4.80E+00	1/1	1.29E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AC29	2E-05	<1	<1	Metal	Arsenic	C	4.4 - 4.4	4.40E+00	1/1	1.18E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
				PAH	Benzo(a)pyrene	C	0.51 - 0.51	5.10E-01	1/1	3.90E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
AC30	4E-05	<1	<1	Metal	Arsenic	C	5.3 - 5.3	5.30E+00	1/1	1.43E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
				PAH	Benzo(a)pyrene	C	2.4 - 2.4	2.40E+00	1/1	1.84E-05	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(b)fluoranthene	C	3.1 - 3.1	3.10E+00	1/1	2.37E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Indeno(1,2,3-cd)pyrene	C	2.9 - 2.9	2.90E+00	1/1	2.22E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
AC32	2E-05	<1	<1	Metal	Arsenic	C	7.6 - 7.6	7.60E+00	1/1	2.05E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
				PAH	Benzo(a)pyrene	C	0.43 - 0.43	4.30E-01	1/1	3.29E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
AC33	4E-05	<1	<1	Metal	Arsenic	C	3.2 - 6	6.00E+00	4/4	1.62E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
				PAH	Benzo(a)anthracene	C	0.16 - 6.1	6.10E+00	3/4	4.67E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(a)pyrene	C	0.25 - 1.9	1.90E+00	3/4	1.45E-05	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(b)fluoranthene	C	0.35 - 4.9	4.90E+00	3/4	3.75E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(k)fluoranthene	C	0.16 - 4	4.00E+00	3/4	3.06E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
AC34	5E-05	<1	<1	Metal	Arsenic	C	4.7 - 8.2	8.20E+00	3/3	2.21E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	110 - 302	3.02E+02	3/3	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.09 - 3.1	3.10E+00	3/3	2.37E-05	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(b)fluoranthene	C	0.16 - 3.7	3.70E+00	3/3	2.83E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(k)fluoranthene	C	0.52 - 4.3	4.30E+00	2/3	3.29E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
AC35	2E-05	<1	<1	Metal	Arsenic	C	7.5 - 7.5	7.50E+00	1/1	2.02E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AC39	6E-05	2E+00	<1	Metal	Arsenic	C	14 - 23	2.30E+01	2/2	6.19E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	Yes
					Lead	--	1000 - 2000	2.00E+03	2/2	--	--	--	--	--	--	--	--	8.99	Yes

Table 7-4. Total Risk -- Risk Characterization Analysis for Surface Soil (0 to 2 feet bgs) for Recreational Exposure Scenario [a] *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI	COC		Basis for COC	Range of Detected Concentrations	RME EPC	DF	Chemical-Specific Cancer Risk	Percent Contribution by Exposure Pathway to Total RME Cancer Risk			Chemical-specific HI	Percent Contribution by Exposure Pathway to Total RME HI			Metals	
											Incidental Ingestion	Dermal Contact	Inhalation (Releases to Ambient Air)		Incidental Ingestion	Dermal Contact	Inhalation (Releases to Ambient Air)	HPAL	RME EPC Exceeds HPAL?
AC40	5E-05	2E+00	2E+00	Metal	Arsenic	C	6.09 - 16	1.51E+01	4/4	4.05E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	Yes
					Lead	--	211 - 8600	7.42E+03	4/4	--	--	--	--	--	--	--	--	8.99	Yes
				Pest/PCB	Aroclor-1254	C	0.021 - 1.85	1.85E+00	2/4	2.49E-06	26.6%	73.4%	0.0%	<1	--	--	--	--	--
AC41	5E-05	2E+00	<1	Metal	Arsenic	C	6.3 - 18	1.73E+01	4/4	4.65E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	Yes
					Lead	--	1000 - 1800	1.80E+03	4/4	--	--	--	--	--	--	--	--	8.99	Yes
AC42	2E-05	<1	<1	Metal	Arsenic	C	4.3 - 6.3	5.80E+00	5/5	1.56E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	100 - 310	2.57E+02	5/5	--	--	--	--	--	--	--	--	8.99	Yes
AD29	2E-05	<1	<1	Metal	Arsenic	C	4.8 - 4.8	4.80E+00	1/1	1.29E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
				PAH	Benzo(a)pyrene	C	0.3 - 0.3	3.00E-01	1/1	2.30E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
AD32	2E-05	<1	<1	Metal	Arsenic	C	4.8 - 4.8	4.80E+00	1/1	1.29E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
				PAH	Benzo(a)pyrene	C	1.1 - 1.1	1.10E+00	1/1	8.42E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
AD33	2E-04	4E+00	3E+00	Metal	Arsenic	C	4.8 - 11	1.04E+01	4/4	2.81E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	64 - 730	6.84E+02	4/4	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)anthracene	C	0.27 - 5.3	5.30E+00	3/4	4.06E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(a)pyrene	C	0.23 - 8.6	8.04E+00	4/4	6.15E-05	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(b)fluoranthene	C	0.25 - 12	1.11E+01	4/4	8.48E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(k)fluoranthene	C	0.27 - 4.5	4.50E+00	4/4	3.44E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Indeno(1,2,3-cd)pyrene	C	0.22 - 8.3	8.03E+00	4/4	6.14E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
				Pest/PCB	Aroclor-1248	C,NC	0.12 - 12	1.20E+01	2/4	1.62E-05	26.6%	73.4%	0.0%	3.02E+00	29.0%	71.0%	0.0%	--	--
					Dieldrin	C	6.4 - 6.4	6.40E+00	1/4	5.45E-05	33.6%	66.4%	0.0%	<1	--	--	--	--	--
AD34	6E-05	4E+00	4E+00	Metal	Arsenic	C	2.8 - 13	1.30E+01	3/3	3.50E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	Yes
					Lead	--	20 - 530	5.30E+02	3/3	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.1 - 0.54	5.40E-01	3/3	4.13E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	0.098 - 14	1.40E+01	2/3	1.88E-05	26.6%	73.4%	0.0%	3.53E+00	29.0%	71.0%	0.0%	--	--
AD35	2E-05	<1	<1	Metal	Arsenic	C	6.5 - 6.6	6.60E+00	2/2	1.78E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AD41	3E-05	<1	<1	Metal	Arsenic	C	9.1 - 9.1	9.10E+00	1/1	2.45E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	370 - 370	3.70E+02	1/1	--	--	--	--	--	--	--	--	8.99	Yes
AE31	1E-05	<1	<1	Metal	Arsenic	C	3.1 - 3.1	3.10E+00	1/1	8.34E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
				PAH	Benzo(a)pyrene	C	0.56 - 0.56	5.60E-01	1/1	4.29E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
AE33	9E-06	<1	<1	Metal	Arsenic	C	3.2 - 3.2	3.20E+00	1/1	8.61E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AF32	2E-05	<1	<1	Metal	Arsenic	C	5.2 - 5.2	5.20E+00	1/1	1.40E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
				PAH	Benzo(a)pyrene	C	0.86 - 0.86	8.60E-01	1/1	6.58E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
AG27	2E-05	<1	<1	Metal	Arsenic	C	3.9 - 6.1	6.10E+00	2/2	1.64E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AG28	2E-05	<1	<1	Metal	Arsenic	C	1.3 - 5.6	5.60E+00	3/4	1.51E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AG31	1E-05	<1	<1	Metal	Arsenic	C	5.2 - 5.2	5.20E+00	1/1	1.40E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AG32	2E-05	<1	<1	Metal	Arsenic	C	4 - 4	4.00E+00	1/1	1.08E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
				PAH	Benzo(a)pyrene	C	1.1 - 1.1	1.10E+00	1/1	8.42E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
AG34	5E-05	2E+00	<1	Metal	Arsenic	C	3.9 - 4.5	4.50E+00	2/2	1.21E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
				PAH	Benzo(a)anthracene	C	2.3 - 2.3	2.30E+00	1/2	1.76E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(a)pyrene	C	3.1 - 3.1	3.10E+00	1/2	2.37E-05	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(b)fluoranthene	C	4.1 - 4.1	4.10E+00	1/2	3.14E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Indeno(1,2,3-cd)pyrene	C	3.1 - 3.1	3.10E+00	1/2	2.37E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C	0.23 - 4.4	4.40E+00	4/5	5.92E-06	26.6%	73.4%	0.0%	<1	--	--	--	--	--
AH28	9E-06	<1	<1	Metal	Arsenic	C	1.5 - 3.4	3.40E+00	3/3	9.15E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No

Table 7-4. Total Risk -- Risk Characterization Analysis for Surface Soil (0 to 2 feet bgs) for Recreational Exposure Scenario [a] *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI	COC		Basis for COC	Range of Detected Concentrations	RME EPC	DF	Chemical-Specific Cancer Risk	Percent Contribution by Exposure Pathway to Total RME Cancer Risk			Chemical-specific HI	Percent Contribution by Exposure Pathway to Total RME HI			Metals	
											Incidental Ingestion	Dermal Contact	Inhalation (Releases to Ambient Air)		Incidental Ingestion	Dermal Contact	Inhalation (Releases to Ambient Air)	HPAL	RME EPC Exceeds HPAL?
AH29	2E-05	<1	<1	Metal	Arsenic	C	4.5 - 4.5	4.50E+00	1/1	1.21E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
				PAH	Benzo(a)pyrene	C	1.1 - 1.1	1.10E+00	1/1	8.42E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
AH32	9E-06	<1	<1	Metal	Arsenic	C	3.2 - 3.2	3.20E+00	1/1	8.61E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AH33	7E-06	<1	<1	Metal	Arsenic	C	2.5 - 2.5	2.50E+00	1/1	6.73E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AH34	9E-05	2E+01	2E+01	Pest/PCB	Aroclor-1242	C	2.9 - 2.9	2.90E+00	1/5	3.90E-06	26.6%	73.4%	0.0%	<1	--	--	--	--	--
					Aroclor-1254	C	1.8 - 1.8	1.80E+00	1/5	2.42E-06	26.6%	73.4%	0.0%	<1	--	--	--	--	--
					Aroclor-1260	C,NC	1.8 - 94	5.99E+01	5/5	8.07E-05	26.6%	73.4%	0.0%	1.51E+01	29.0%	71.0%	0.0%	--	--
AI28	1E-05	<1	<1	Metal	Arsenic	C	1.8 - 4.5	4.50E+00	2/2	1.21E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AI34	3E-05	2E+00	<1	Metal	Arsenic	C	3.1 - 7.3	6.56E+00	4/5	1.77E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	10 - 210	1.67E+02	5/5	--	--	--	--	--	--	--	--	8.99	Yes
				Pest/PCB	Aroclor-1260	C	0.23 - 5.3	5.30E+00	6/6	7.14E-06	26.6%	73.4%	0.0%	<1	--	--	--	--	--
AI35	1E-04	2E+01	1E+01	Metal	Arsenic	C	5.5 - 6.7	6.70E+00	2/2	1.80E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	370 - 9700	9.70E+03	2/2	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.77 - 0.77	7.70E-01	1/2	5.89E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	48 - 59	5.90E+01	2/2	7.94E-05	26.6%	73.4%	0.0%	1.49E+01	29.0%	71.0%	0.0%	--	--
					Heptachlor epoxide	C	0.39 - 0.55	5.50E-01	2/2	2.66E-06	33.6%	66.4%	0.0%	<1	--	--	--	--	--
AJ28	9E-06	<1	<1	Metal	Arsenic	C	3.1 - 3.1	3.10E+00	1/1	8.34E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AJ29	1E-05	<1	<1	Metal	Arsenic	C	3.5 - 3.5	3.50E+00	1/1	9.42E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AJ30	5E-05	<1	<1	Metal	Arsenic	C	6.4 - 6.4	6.40E+00	1/1	1.72E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	5760 - 5760	5.76E+03	1/1	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)anthracene	C	2.3 - 2.3	2.30E+00	1/1	1.76E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(a)pyrene	C	3.4 - 3.4	3.40E+00	1/1	2.60E-05	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(b)fluoranthene	C	6.6 - 6.6	6.60E+00	1/1	5.05E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(k)fluoranthene	C	2.1 - 2.1	2.10E+00	1/1	1.61E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
AJ31	3E-05	<1	<1	Metal	Arsenic	C	10.9 - 10.9	1.09E+01	1/1	2.93E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
AJ34	3E-05	4E+00	4E+00	Metal	Arsenic	C	1.85 - 2.8	2.80E+00	3/3	7.54E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
				Pest/PCB	Aroclor-1260	C,NC	1.12 - 14	1.40E+01	3/3	1.88E-05	26.6%	73.4%	0.0%	3.53E+00	29.0%	71.0%	0.0%	--	--
AJ35	7E-04	1E+02	1E+02	Metal	Arsenic	C	2.9 - 5.1	5.10E+00	2/2	1.37E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	470 - 770	7.70E+02	2/2	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)anthracene	C	3.3 - 3.3	3.30E+00	1/2	2.53E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(a)pyrene	C	2.2 - 2.2	2.20E+00	1/2	1.68E-05	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(b)fluoranthene	C	2 - 2	2.00E+00	1/2	1.53E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(k)fluoranthene	C	3.5 - 3.5	3.50E+00	1/2	2.68E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	120 - 450	4.50E+02	2/2	6.06E-04	26.6%	73.4%	0.0%	1.13E+02	29.0%	71.0%	0.0%	--	--
					Heptachlor epoxide	C	0.93 - 3.2	3.20E+00	2/2	1.55E-05	33.6%	66.4%	0.0%	<1	--	--	--	--	--
AJ36	2E-04	3E+01	3E+01	Metal	Arsenic	C	6.4 - 17	1.70E+01	2/2	4.58E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	Yes
					Lead	--	230 - 610	6.10E+02	2/2	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.33 - 0.53	5.30E-01	2/2	4.06E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	1.9 - 120	1.20E+02	2/2	1.62E-04	26.6%	73.4%	0.0%	3.02E+01	29.0%	71.0%	0.0%	--	--
					Heptachlor epoxide	C	0.0032 - 0.83	8.30E-01	2/2	4.02E-06	33.6%	66.4%	0.0%	<1	--	--	--	--	--
AK29	5E-05	5E+00	2E+00	Metal	Arsenic	C	6.5 - 12.6	1.26E+01	4/4	3.39E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	Yes
					Lead	--	74.3 - 6920	6.92E+03	4/4	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.2 - 0.2	2.00E-01	1/4	1.53E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	0.21 - 8.9	8.90E+00	3/4	1.20E-05	26.6%	73.4%	0.0%	2.24E+00	29.0%	71.0%	0.0%	--	--

Table 7-4. Total Risk -- Risk Characterization Analysis for Surface Soil (0 to 2 feet bgs) for Recreational Exposure Scenario [a] *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI	COC		Basis for COC	Range of Detected Concentrations	RME EPC	DF	Chemical-Specific Cancer Risk	Percent Contribution by Exposure Pathway to Total RME Cancer Risk			Chemical-specific HI	Percent Contribution by Exposure Pathway to Total RME HI			Metals	
											Incidental Ingestion	Dermal Contact	Inhalation (Releases to Ambient Air)		Incidental Ingestion	Dermal Contact	Inhalation (Releases to Ambient Air)	HPAL	RME EPC Exceeds HPAL?
AK30	5E-05	5E+00	4E+00	Metal	Arsenic	C	4.3 - 9.9	9.90E+00	3/3	2.66E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	3170 - 11200	1.12E+04	3/3	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.24 - 0.24	2.40E-01	1/3	1.84E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	2.6 - 14	1.40E+01	3/3	1.88E-05	26.6%	73.4%	0.0%	3.53E+00	29.0%	71.0%	0.0%	--	--
AK31	5E-05	7E+00	6E+00	Metal	Arsenic	C	3.7 - 7	7.00E+00	3/4	1.88E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	307 - 9000	8.56E+03	4/4	--	--	--	--	--	--	--	--	8.99	Yes
				Pest/PCB	Aroclor-1260	C,NC	0.15 - 25	2.50E+01	4/4	3.37E-05	26.6%	73.4%	0.0%	6.30E+00	29.0%	71.0%	0.0%	--	--
AK32	7E-05	1E+01	9E+00	Metal	Arsenic	C	4.2 - 5.6	5.60E+00	2/2	1.51E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	503 - 1500	1.50E+03	2/2	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.091 - 0.23	2.30E-01	2/2	1.76E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	26 - 37	3.70E+01	2/2	4.98E-05	26.6%	73.4%	0.0%	9.33E+00	29.0%	71.0%	0.0%	--	--
					Dieldrin	C	0.25 - 0.25	2.50E-01	1/2	2.13E-06	33.6%	66.4%	0.0%	<1	--	--	--	--	--
AK34	6E-05	5E+00	4E+00	Metal	Arsenic	C	1.88 - 12.7	1.27E+01	3/3	3.41E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	Yes
					Lead	--	24.5 - 182	1.82E+02	3/3	--	--	--	--	--	--	--	--	8.99	Yes
				Pest/PCB	Aroclor-1260	C,NC	1.7 - 17.5	1.75E+01	3/3	2.36E-05	26.6%	73.4%	0.0%	4.41E+00	29.0%	71.0%	0.0%	--	--
AK36	1E-05	2E+00	<1	Metal	Lead	--	450 - 450	4.50E+02	1/1	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.58 - 0.58	5.80E-01	1/1	4.44E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C	2 - 3.9	3.90E+00	2/2	5.25E-06	26.6%	73.4%	0.0%	<1	--	--	--	--	--
AK37	3E-05	2E+00	2E+00	Metal	Arsenic	C	3.1 - 3.1	3.10E+00	1/1	8.34E-06	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	500 - 500	5.00E+02	1/1	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	1.2 - 1.2	1.20E+00	1/1	9.19E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(k)fluoranthene	C	2 - 2	2.00E+00	1/1	1.53E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
				Pest/PCB	Aroclor-1248	C	3.8 - 3.8	3.80E+00	1/1	5.12E-06	26.6%	73.4%	0.0%	<1	--	--	--	--	--
					Aroclor-1254	C	1.5 - 1.5	1.50E+00	1/1	2.02E-06	26.6%	73.4%	0.0%	<1	--	--	--	--	--
					Aroclor-1260	C	3.6 - 3.6	3.60E+00	1/1	4.85E-06	26.6%	73.4%	0.0%	<1	--	--	--	--	--
AL33	3E-05	<1	<1	Metal	Arsenic	C	2.9 - 6.5	6.50E+00	3/3	1.75E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	59.6 - 227	2.27E+02	3/3	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.19 - 0.61	6.10E-01	2/3	4.67E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C	0.59 - 1.9	1.90E+00	2/3	2.56E-06	26.6%	73.4%	0.0%	<1	--	--	--	--	--
AL34	3E-05	<1	<1	Metal	Arsenic	C	2 - 6.3	6.30E+00	3/3	1.70E-05	62.8%	37.2%	0.0%	<1	--	--	--	11.1	No
					Lead	--	11.6 - 160	1.60E+02	3/3	--	--	--	--	--	--	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.31 - 1.1	1.10E+00	3/3	8.42E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
					Benzo(b)fluoranthene	C	0.67 - 2.7	2.70E+00	3/3	2.07E-06	28.0%	71.9%	0.0%	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C	1.3 - 1.4	1.40E+00	3/3	1.88E-06	26.6%	73.4%	0.0%	<1	--	--	--	--	--
AL36	4E-06	<1	<1	Pest/PCB	Aroclor-1260	C	2.6 - 2.6	2.60E+00	1/1	3.50E-06	26.6%	73.4%	0.0%	<1	--	--	--	--	--

Notes: All concentrations shown in mg/kg.

a Open space is the only reasonably anticipated reuse for Parcel E-2.

<1 Less than 1
-- Not applicable or chemical is not a COC for this endpoint
C Cancer effect
COC Chemical of concern
CR Cancer risk
DF Detection frequency
EPC Exposure point concentration
HI Hazard index
HPAL Hunters Point ambient level
mg/kg Milligram per kilogram
NC Noncancer effect
PAH Polycyclic aromatic hydrocarbon
PCB Polychlorinated biphenyl
Pest Pesticide
RME Reasonable maximum exposure

Table 7-5. Incremental Risk -- Risk Characterization Analysis for Surface Soil (0 to 2 feet bgs) for Recreational Exposure Scenario[a]
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI	COC		Basis for COC	Range of Detected Concentrations	RME EPC	DF	Chemical-Specific Cancer Risk	Percent Contribution by Exposure Pathway to Total RME Cancer Risk			Chemical-specific HI	Percent Contribution by Exposure Pathway to Total RME HI		
											Incidental Ingestion	Dermal Contact	Inhalation (Releases to Ambient Air)		Incidental Ingestion	Dermal Contact	Inhalation (Releases to Ambient Air)
AA38	9E-08	<1	<1	Metal	Lead	--	186 - 186	1.86E+02	1/1	--	--	--	--	--	--	--	--
AA39	6E-04	5E+00	2E+00	Metal	Antimony	NC	85 - 530	5.30E+02	2/5	--	--	--	--	1.94E+00	100.0%	0.0%	0.0%
					Arsenic	C,NC	3.3 - 215	2.15E+02	3/5	5.79E-04	62.8%	37.2%	0.0%	1.60E+00	65.5%	34.4%	0.1%
					Lead	--	36 - 4900	4.90E+03	4/5	--	--	--	--	--	--	--	--
				PAH	Benzo(a)pyrene	C	0.31 - 0.31	3.10E-01	1/5	2.37E-06	28.0%	71.9%	0.0%	--	--	--	--
AB29	3E-06	<1	<1	PAH	Benzo(a)pyrene	C	0.26 - 0.26	2.60E-01	1/2	1.99E-06	28.0%	71.9%	0.0%	--	--	--	--
AB36	3E-05	6E+00	6E+00	Metal	Lead	--	54 - 6270	6.27E+03	6/6	--	--	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	0.023 - 20	2.00E+01	2/4	2.69E-05	26.6%	73.4%	0.0%	5.04E+00	29.0%	71.0%	0.0%
					Total PCBs (Non-Dioxin)	C	4.09 - 4.14	4.14E+00	2/2	5.58E-06	26.6%	73.4%	0.0%	<1	--	--	--
AB39	4E-08	<1	<1	Metal	Lead	--	39.7 - 222	2.22E+02	3/3	--	--	--	--	--	--	--	--
AC29	5E-06	<1	<1	PAH	Benzo(a)pyrene	C	0.51 - 0.51	5.10E-01	1/1	3.90E-06	28.0%	71.9%	0.0%	--	--	--	--
AC30	3E-05	<1	<1	PAH	Benzo(a)pyrene	C	2.4 - 2.4	2.40E+00	1/1	1.84E-05	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(b)fluoranthene	C	3.1 - 3.1	3.10E+00	1/1	2.37E-06	28.0%	71.9%	0.0%	--	--	--	--
					Indeno(1,2,3-cd)pyrene	C	2.9 - 2.9	2.90E+00	1/1	2.22E-06	28.0%	71.9%	0.0%	--	--	--	--
AC32	4E-06	<1	<1	PAH	Benzo(a)pyrene	C	0.43 - 0.43	4.30E-01	1/1	3.29E-06	28.0%	71.9%	0.0%	--	--	--	--
AC33	3E-05	<1	<1	PAH	Benzo(a)anthracene	C	0.16 - 6.1	6.10E+00	3/4	4.67E-06	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(a)pyrene	C	0.25 - 1.9	1.90E+00	3/4	1.45E-05	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(b)fluoranthene	C	0.35 - 4.9	4.90E+00	3/4	3.75E-06	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(k)fluoranthene	C	0.16 - 4	4.00E+00	3/4	3.06E-06	28.0%	71.9%	0.0%	--	--	--	--
AC34	3E-05	<1	<1	Metal	Lead	--	110 - 302	3.02E+02	3/3	--	--	--	--	--	--	--	--
				PAH	Benzo(a)pyrene	C	0.09 - 3.1	3.10E+00	3/3	2.37E-05	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(b)fluoranthene	C	0.16 - 3.7	3.70E+00	3/3	2.83E-06	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(k)fluoranthene	C	0.52 - 4.3	4.30E+00	2/3	3.29E-06	28.0%	71.9%	0.0%	--	--	--	--
AC35	2E-06	<1	<1		No COCs Identified												
AC39	6E-05	2E+00	<1	Metal	Arsenic	C	14 - 23	2.30E+01	2/2	6.19E-05	62.8%	37.2%	0.0%	<1	--	--	--
					Lead	--	1000 - 2000	2.00E+03	2/2	--	--	--	--	--	--	--	--
AC40	5E-05	2E+00	2E+00	Metal	Arsenic	C	6.09 - 16	1.51E+01	4/4	4.05E-05	62.8%	37.2%	0.0%	<1	--	--	--
					Lead	--	211 - 8600	7.42E+03	4/4	--	--	--	--	--	--	--	--
				Pest/PCB	Aroclor-1254	C	0.19 - 0.49	1.85E+00	2/4	2.49E-06	26.6%	73.4%	0.0%	<1	--	--	--
AC41	5E-05	2E+00	<1	Metal	Arsenic	C	6.3 - 18	1.73E+01	4/4	4.65E-05	62.8%	37.2%	0.0%	<1	--	--	--
					Lead	--	1000 - 1800	1.80E+03	4/4	--	--	--	--	--	--	--	--
AC42	6E-07	<1	<1	Metal	Lead	--	100 - 310	2.57E+02	5/5	--	--	--	--	--	--	--	--
AD29	3E-06	<1	<1	PAH	Benzo(a)pyrene	C	0.3 - 0.3	3.00E-01	1/1	2.30E-06	28.0%	71.9%	0.0%	--	--	--	--
AD32	1E-05	<1	<1	PAH	Benzo(a)pyrene	C	1.1 - 1.1	1.10E+00	1/1	8.42E-06	28.0%	71.9%	0.0%	--	--	--	--
AD33	2E-04	4E+00	3E+00	Metal	Lead	--	64 - 730	6.84E+02	4/4	--	--	--	--	--	--	--	--
				PAH	Benzo(a)anthracene	C	0.27 - 5.3	5.30E+00	3/4	4.06E-06	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(a)pyrene	C	0.23 - 8.6	8.04E+00	4/4	6.15E-05	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(b)fluoranthene	C	0.25 - 12	1.11E+01	4/4	8.48E-06	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(k)fluoranthene	C	0.27 - 4.5	4.50E+00	4/4	3.44E-06	28.0%	71.9%	0.0%	--	--	--	--
					Indeno(1,2,3-cd)pyrene	C	0.22 - 8.3	8.03E+00	4/4	6.14E-06	28.0%	71.9%	0.0%	--	--	--	--
				Pest/PCB	Aroclor-1248	C,NC	0.12 - 12	1.20E+01	2/4	1.62E-05	26.6%	73.4%	0.0%	3.02E+00	29.0%	71.0%	0.0%
					Dieldrin	C	6.4 - 6.4	6.40E+00	1/4	5.45E-05	33.6%	66.4%	0.0%	<1	--	--	--

Table 7-5. Incremental Risk -- Risk Characterization Analysis for Surface Soil (0 to 2 feet bgs) for Recreational Exposure Scenario[a] *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI	COC		Basis for COC	Range of Detected Concentrations	RME EPC	DF	Chemical-Specific Cancer Risk	Percent Contribution by Exposure Pathway to Total RME Cancer Risk			Chemical-specific HI	Percent Contribution by Exposure Pathway to Total RME HI		
											Incidental Ingestion	Dermal Contact	Inhalation (Releases to Ambient Air)		Incidental Ingestion	Dermal Contact	Inhalation (Releases to Ambient Air)
AD34	6E-05	4E+00	4E+00	Metal	Arsenic	C	2.8 - 13	1.30E+01	3/3	3.50E-05	62.8%	37.2%	0.0%	<1	--	--	--
					Lead	--	20 - 530	5.30E+02	3/3	--	--	--	--	--	--	--	--
				PAH	Benzo(a)pyrene	C	0.1 - 0.54	5.40E-01	3/3	4.13E-06	28.0%	71.9%	0.0%	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	0.098 - 14	1.40E+01	2/3	1.88E-05	26.6%	73.4%	0.0%	3.53E+00	29.0%	71.0%	0.0%
AD41	1E-06	<1	<1	Metal	Lead	--	370 - 370	3.70E+02	1/1	--	--	--	--	--	--	--	--
AE31	6E-06	<1	<1	PAH	Benzo(a)pyrene	C	0.56 - 0.56	5.60E-01	1/1	4.29E-06	28.0%	71.9%	0.0%	--	--	--	--
AF32	9E-06	<1	<1	PAH	Benzo(a)pyrene	C	0.86 - 0.86	8.60E-01	1/1	6.58E-06	28.0%	71.9%	0.0%	--	--	--	--
AG32	1E-05	<1	<1	PAH	Benzo(a)pyrene	C	1.1 - 1.1	1.10E+00	1/1	8.42E-06	28.0%	71.9%	0.0%	--	--	--	--
AG34	4E-05	<1	<1	PAH	Benzo(a)anthracene	C	2.3 - 2.3	2.30E+00	1/2	1.76E-06	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(a)pyrene	C	3.1 - 3.1	3.10E+00	1/2	2.37E-05	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(b)fluoranthene	C	4.1 - 4.1	4.10E+00	1/2	3.14E-06	28.0%	71.9%	0.0%	--	--	--	--
					Indeno(1,2,3-cd)pyrene	C	3.1 - 3.1	3.10E+00	1/2	2.37E-06	28.0%	71.9%	0.0%	--	--	--	--
				Pest/PCB	Aroclor-1260	C	0.23 - 4.4	4.40E+00	4/5	5.92E-06	26.6%	73.4%	0.0%	<1	--	--	--
AH29	1E-05	<1	<1	PAH	Benzo(a)pyrene	C	1.1 - 1.1	1.10E+00	1/1	8.42E-06	28.0%	71.9%	0.0%	--	--	--	--
AH34	9E-05	2E+01	2E+01	Pest/PCB	Aroclor-1242	C	2.9 - 2.9	2.90E+00	1/5	3.90E-06	26.6%	73.4%	0.0%	<1	--	--	--
					Aroclor-1254	C	1.8 - 1.8	1.80E+00	1/5	2.42E-06	26.6%	73.4%	0.0%	<1	--	--	--
					Aroclor-1260	C,NC	1.8 - 94	5.99E+01	5/5	8.07E-05	26.6%	73.4%	0.0%	1.51E+01	29.0%	71.0%	0.0%
AI34	7E-06	<1	<1	Metal	Lead	--	10 - 210	1.67E+02	5/5	--	--	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C	0.23 - 5.3	5.30E+00	6/6	7.14E-06	26.6%	73.4%	0.0%	<1	--	--	--
AI35	9E-05	2E+01	1E+01	Metal	Lead	--	370 - 9700	9.70E+03	2/2	--	--	--	--	--	--	--	--
				PAH	Benzo(a)pyrene	C	0.77 - 0.77	7.70E-01	1/2	5.89E-06	28.0%	71.9%	0.0%	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	48 - 59	5.90E+01	2/2	7.94E-05	26.6%	73.4%	0.0%	1.49E+01	29.0%	71.0%	0.0%
					Heptachlor epoxide	C	0.39 - 0.55	5.50E-01	2/2	2.66E-06	33.6%	66.4%	0.0%	<1	--	--	--
AJ29	2E-06	<1	<1		No COCs Identified												
AJ30	3E-05	<1	<1	Metal	Lead	--	5760 - 5760	5.76E+03	1/1	--	--	--	--	--	--	--	--
				PAH	Benzo(a)anthracene	C	2.3 - 2.3	2.30E+00	1/1	1.76E-06	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(a)pyrene	C	3.4 - 3.4	3.40E+00	1/1	2.60E-05	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(b)fluoranthene	C	6.6 - 6.6	6.60E+00	1/1	5.05E-06	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(k)fluoranthene	C	2.1 - 2.1	2.10E+00	1/1	1.61E-06	28.0%	71.9%	0.0%	--	--	--	--
AJ34	2E-05	4E+00	4E+00	Pest/PCB	Aroclor-1260	C,NC	1.12 - 14	1.40E+01	3/3	1.88E-05	26.6%	73.4%	0.0%	3.53E+00	29.0%	71.0%	0.0%
AJ35	6E-04	1E+02	1E+02	Metal	Lead	--	470 - 770	7.70E+02	2/2	--	--	--	--	--	--	--	--
				PAH	Benzo(a)anthracene	C	3.3 - 3.3	3.30E+00	1/2	2.53E-06	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(a)pyrene	C	2.2 - 2.2	2.20E+00	1/2	1.68E-05	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(b)fluoranthene	C	2 - 2	2.00E+00	1/2	1.53E-06	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(k)fluoranthene	C	3.5 - 3.5	3.50E+00	1/2	2.68E-06	28.0%	71.9%	0.0%	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	120 - 450	4.50E+02	2/2	6.06E-04	26.6%	73.4%	0.0%	1.13E+02	29.0%	71.0%	0.0%
					Heptachlor epoxide	C	0.93 - 3.2	3.20E+00	2/2	1.55E-05	33.6%	66.4%	0.0%	<1	--	--	--
AJ36	2E-04	3E+01	3E+01	Metal	Arsenic	C	6.4 - 17	1.70E+01	2/2	4.58E-05	62.8%	37.2%	0.0%	<1	--	--	--
					Lead	--	230 - 610	6.10E+02	2/2	--	--	--	--	--	--	--	--
				PAH	Benzo(a)pyrene	C	0.33 - 0.53	5.30E-01	2/2	4.06E-06	28.0%	71.9%	0.0%	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	1.9 - 120	1.20E+02	2/2	1.62E-04	26.6%	73.4%	0.0%	3.02E+01	29.0%	71.0%	0.0%
					Heptachlor epoxide	C	0.0032 - 0.83	8.30E-01	2/2	4.02E-06	33.6%	66.4%	0.0%	<1	--	--	--

Table 7-5. Incremental Risk -- Risk Characterization Analysis for Surface Soil (0 to 2 feet bgs) for Recreational Exposure Scenario[a] *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI	COC		Basis for COC	Range of Detected Concentrations	RME EPC	DF	Chemical-Specific Cancer Risk	Percent Contribution by Exposure Pathway to Total RME Cancer Risk			Chemical-specific HI	Percent Contribution by Exposure Pathway to Total RME HI		
											Incidental Ingestion	Dermal Contact	Inhalation (Releases to Ambient Air)		Incidental Ingestion	Dermal Contact	Inhalation (Releases to Ambient Air)
AK29	5E-05	5E+00	2E+00	Metal	Arsenic	C	6.5 - 12.6	1.26E+01	4/4	3.39E-05	62.8%	37.2%	0.0%	<1	--	--	--
					Lead	--	74.3 - 6920	6.92E+03	4/4	--	--	--	--	--	--	--	--
				PAH	Benzo(a)pyrene	C	0.2 - 0.2	2.00E-01	1/4	1.53E-06	28.0%	71.9%	0.0%	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	0.21 - 8.9	8.90E+00	3/4	1.20E-05	26.6%	73.4%	0.0%	2.24E+00	29.0%	71.0%	0.0%
AK30	2E-05	4E+00	4E+00	Metal	Lead	--	3170 - 11200	1.12E+04	3/3	--	--	--	--	--	--	--	--
				PAH	Benzo(a)pyrene	C	0.24 - 0.24	2.40E-01	1/3	1.84E-06	28.0%	71.9%	0.0%	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	2.6 - 14	1.40E+01	3/3	1.88E-05	26.6%	73.4%	0.0%	3.53E+00	29.0%	71.0%	0.0%
AK31	3E-05	7E+00	6E+00	Metal	Lead	--	307 - 9000	8.56E+03	4/4	--	--	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	0.15 - 25	2.50E+01	4/4	3.37E-05	26.6%	73.4%	0.0%	6.30E+00	29.0%	71.0%	0.0%
AK32	5E-05	9E+00	9E+00	Metal	Lead	--	503 - 1500	1.50E+03	2/2	--	--	--	--	--	--	--	--
				PAH	Benzo(a)pyrene	C	0.091 - 0.23	2.30E-01	2/2	1.76E-06	28.0%	71.9%	0.0%	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	26 - 37	3.70E+01	2/2	4.98E-05	26.6%	73.4%	0.0%	9.33E+00	29.0%	71.0%	0.0%
					Dieldrin	C	0.25 - 0.25	2.50E-01	1/2	2.13E-06	33.6%	66.4%	0.0%	<1	--	--	--
AK34	6E-05	5E+00	4E+00	Metal	Arsenic	C	1.88 - 12.7	1.27E+01	3/3	3.41E-05	62.8%	37.2%	0.0%	<1	--	--	--
					Lead	--	24.5 - 182	1.82E+02	3/3	--	--	--	--	--	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	1.7 - 17.5	1.75E+01	3/3	2.36E-05	26.6%	73.4%	0.0%	4.41E+00	29.0%	71.0%	0.0%
AK36	1E-05	2E+00	<1	Metal	Lead	--	450 - 450	4.50E+02	1/1	--	--	--	--	--	--	--	--
				PAH	Benzo(a)pyrene	C	0.58 - 0.58	5.80E-01	1/1	4.44E-06	28.0%	71.9%	0.0%	--	--	--	--
				Pest/PCB	Aroclor-1260	C	2 - 3.9	3.90E+00	2/2	5.25E-06	26.6%	73.4%	0.0%	<1	--	--	--
AK37	3E-05	2E+00	2E+00	Metal	Lead	--	500 - 500	5.00E+02	1/1	--	--	--	--	--	--	--	--
				PAH	Benzo(a)pyrene	C	1.2 - 1.2	1.20E+00	1/1	9.19E-06	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(k)fluoranthene	C	2 - 2	2.00E+00	1/1	1.53E-06	28.0%	71.9%	0.0%	--	--	--	--
				Pest/PCB	Aroclor-1248	C	3.8 - 3.8	3.80E+00	1/1	5.12E-06	26.6%	73.4%	0.0%	<1	--	--	--
					Aroclor-1254	C	1.5 - 1.5	1.50E+00	1/1	2.02E-06	26.6%	73.4%	0.0%	<1	--	--	--
					Aroclor-1260	C	3.6 - 3.6	3.60E+00	1/1	4.85E-06	26.6%	73.4%	0.0%	<1	--	--	--
AL33	1E-05	<1	<1	Metal	Lead	--	59.6 - 227	2.27E+02	3/3	--	--	--	--	--	--	--	--
				PAH	Benzo(a)pyrene	C	0.19 - 0.61	6.10E-01	2/3	4.67E-06	28.0%	71.9%	0.0%	--	--	--	--
				Pest/PCB	Aroclor-1260	C	0.59 - 1.9	1.90E+00	2/3	2.56E-06	26.6%	73.4%	0.0%	<1	--	--	--
AL34	2E-05	<1	<1	Metal	Lead	--	11.6 - 160	1.60E+02	3/3	--	--	--	--	--	--	--	--
				PAH	Benzo(a)pyrene	C	0.31 - 1.1	1.10E+00	3/3	8.42E-06	28.0%	71.9%	0.0%	--	--	--	--
					Benzo(b)fluoranthene	C	0.67 - 2.7	2.70E+00	3/3	2.07E-06	28.0%	71.9%	0.0%	--	--	--	--
				Pest/PCB	Aroclor-1260	C	1.3 - 1.4	1.40E+00	3/3	1.88E-06	26.6%	73.4%	0.0%	<1	--	--	--
AL36	4E-06	<1	<1	Pest/PCB	Aroclor-1260	C	2.6 - 2.6	2.60E+00	1/1	3.50E-06	26.6%	73.4%	0.0%	<1	--	--	--

Notes:
All concentrations shown in mg/kg.

1 Open space is the only reasonably anticipated reuse for Parcel E-2.

<1 Less than 1
-- Not applicable or chemical is not a COC for this endpoint
C Cancer effect
COC Chemical of concern
CR Cancer risk
DF Detection frequency
EPC Exposure point concentration
HI Hazard index
HPAL Hunters Point ambient level
HPS Hunters Point Shipyard
mg/kg Milligram per kilogram
NC Noncancer effect
PAH Polycyclic aromatic hydrocarbon
PCB Polychlorinated biphenyl
Pest Pesticide
RME Reasonable maximum exposure

Table 7-8. Risk Characterization Summary for A-Aquifer Groundwater, Construction Worker Scenario
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Exposure Area	Total RME Cancer Risk	Total RME HI	RME Segregated HI	Exposure Pathway	Source Aquifer for Exposure Pathway	Total RME Cancer Risk for Exposure Pathway	Total RME HI for Exposure Pathway	RME Segregated HI for Exposure Pathway	Chemicals of Concern		Basis for Chemical of Concern	Detection Frequency	RME Concentration	Chemical-Specific Cancer Risk	Percent Contribution to Total RME Cancer Risk for Exposure Pathway	Chemical-Specific HI	Percent Contribution to Total RME HI for Exposure Pathway
Parcel E-2	1E-04	6E-01	<1	Trench Vapor Inhalation	A	6E-07	4E-01	<1		No Chemicals of Concern Identified	--	--	--	--	--	--	--
				Trench Dermal Contact	A	1E-04	2E-01	<1	PAH	Benzo(a)anthracene	C	7 / 277	4.0E+00	6.0E-06	4.01%	--	--
										Benzo(a)pyrene	C	4 / 275	3.5E+00	7.8E-05	52.46%	--	--
										Benzo(b)fluoranthene	C	4 / 275	6.0E+00	1.3E-05	8.99%	--	--
										Benzo(k)fluoranthene	C	1 / 275	1.1E+00	2.4E-06	1.65%	--	--
										Dibenz(a,h)anthracene	C	1 / 275	1.3E+00	3.8E-05	25.40%	--	--
										Indeno(1,2,3-cd)pyrene	C	3 / 275	3.0E+00	9.5E-06	6.42%	--	--

Notes: All concentrations shown in micrograms per liter.

-- Not applicable or chemical is not a chemical of concern for this endpoint
<1 Less than 1
A A-aquifer
C Cancer effect
HI Hazard index
PAH Polycyclic aromatic hydrocarbon
RME Reasonable maximum exposure

Table 7-9. Total Risk: Risk Characterization Analysis for Subsurface Soil (0 to 10 feet bgs), Construction Worker Scenario
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI	Chemicals of Concern		Basis for Chemical of Concern	Range of Detected Concentrations	RME EPC	Detection Frequency	Chemical-Specific Cancer Risk	Chemical-specific HI	Metals	
												HPAL	Maximum Concentration Exceeds HPAL?
AA30	2E-06	<1	<1	Metal	Arsenic	C	3.8 - 3.8	3.80E+00	1/1	2.34E-06	<1	11.1	No
AA31	2E-06	<1	<1	Metal	Arsenic	C	3.6 - 3.7	3.70E+00	2/2	2.28E-06	<1	11.1	No
AA32	3E-06	2E+00	<1	Metal	Arsenic	C	3.9 - 4.6	4.39E+00	5/5	2.71E-06	<1	11.1	No
AA34	3E-06	<1	<1	Metal	Arsenic	C	2.5 - 4.3	4.30E+00	4/4	2.65E-06	<1	11.1	No
AA35	4E-06	<1	<1	Metal	Arsenic	C	3.4 - 6.6	6.60E+00	3/4	4.07E-06	<1	11.1	No
AA38	3E-06	<1	<1	Metal	Arsenic	C	3.1 - 4.6	4.60E+00	2/4	2.84E-06	<1	11.1	No
AA39	2E-04	2E+01	6E+00	Metal	Antimony	NC	10.4 - 530	5.30E+02	6/12	--	4E+00	9.05	Yes
					Arsenic	C,NC	3.3 - 315	3.15E+02	10/12	1.94E-04	5E+00	11.1	Yes
					Iron	NC	14000 - 217000	1.77E+05	12/12	--	2E+00	58000	Yes
					Lead	--	24.7 - 9300	9.30E+03	11/12	--	--	8.99	Yes
					Vanadium	NC	17 - 620	6.20E+02	12/12	--	2E+00	117.17	Yes
				PAH	Naphthalene	C	1.2 - 120	1.20E+02	6/12	1.59E-06	<1	--	--
AA41	4E-06	<1	<1	Metal	Arsenic	C	2.5 - 5.8	5.64E+00	4/4	3.48E-06	<1	11.1	No
AB29	5E-06	7E+00	3E+00	Metal	Antimony	NC	0.12 - 350	3.50E+02	5/10	--	3E+00	9.05	Yes
					Arsenic	C	1.6 - 7.6	4.65E+00	10/10	2.87E-06	<1	11.1	No
				Pest/PCB	Aroclor-1016	NC	13 - 13	1.30E+01	1/10	1.23E-07	2E+00	--	--
AB30	4E-06	<1	<1	Metal	Arsenic	C	1.5 - 6.5	6.36E+00	4/4	3.92E-06	<1	11.1	No
AB31	4E-06	2E+00	<1	Metal	Arsenic	C	3.9 - 5.9	5.90E+00	3/3	3.64E-06	<1	11.1	No
AB32	4E-06	2E+00	<1	Metal	Arsenic	C	3.7 - 5.9	5.35E+00	6/6	3.30E-06	<1	11.1	No
AB33	2E-05	<1	<1	Metal	Arsenic	C	1.2 - 4.9	4.90E+00	3/3	3.02E-06	<1	11.1	No
				PAH	Benzo(a)pyrene	C	6.9 - 6.9	6.90E+00	1/3	1.07E-05	--	--	--
AB36	8E-06	1E+01	1E+01	Metal	Arsenic	C	0.2 - 3	2.98E+00	5/11	1.84E-06	<1	11.1	No
					Lead	--	3.4 - 6270	2.55E+03	11/11	--	--	8.99	Yes
				Pest/PCB	Aroclor-1260	C,NC	0.023 - 20	2.00E+01	2/9	5.41E-06	9E+00	--	--
					Total PCBs (Non-Dioxin)	NC	4.09 - 4.14	4.14E+00	2/2	1.12E-06	2E+00	--	--
AB38	2E-06	<1	<1	Metal	Arsenic	C	2.5 - 3.9	3.90E+00	4/4	2.40E-06	<1	11.1	No
AB39	2E-05	5E+00	2E+00	Metal	Antimony	NC	2.1 - 300	3.00E+02	5/6	--	2E+00	9.05	Yes
					Arsenic	C	3.4 - 30	2.38E+01	6/6	1.47E-05	<1	11.1	Yes
					Lead	--	39.7 - 5400	3.29E+03	6/6	--	--	8.99	Yes
				Dioxin	Dioxin (TEQ)	C	0.00000004 - 0.000523	4.38E-04	4/4	4.29E-06	--	--	--

Table 7-9. Total Risk: Risk Characterization Analysis for Subsurface Soil (0 to 10 feet bgs), Construction Worker Scenario *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI	Chemicals of Concern		Basis for Chemical of Concern	Range of Detected Concentrations	RME EPC	Detection Frequency	Chemical-Specific Cancer Risk	Chemical-specific HI	Metals	
												HPAL	Maximum Concentration Exceeds HPAL?
AB41	3E-06	<1	<1	Metal	Arsenic	C	4.8 - 5.5	5.50E+00	2/2	3.39E-06	<1	11.1	No
AC29	1E-05	3E+01	2E+01	Metal	Arsenic	C	3.3 - 4.6	4.60E+00	3/3	2.84E-06	<1	11.1	No
				Pest/PCB	Aroclor-1016	NC	130 - 130	1.30E+02	1/3	1.23E-06	2E+01	--	--
					Aroclor-1260	C,NC	24 - 24	2.40E+01	1/3	6.50E-06	1E+01	--	--
AC30	2E-05	1E+02	1E+02	Metal	Arsenic	C	3.7 - 5.6	5.60E+00	4/4	3.45E-06	<1	11.1	No
					Lead	--	5.3 - 1020	1.02E+03	4/4	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.05 - 2.4	2.40E+00	2/4	3.71E-06	--	--	--
				Pest/PCB	Aroclor-1016	C,NC	740 - 740	7.40E+02	1/4	7.01E-06	1E+02	--	--
AC32	5E-06	<1	<1	Metal	Arsenic	C	3.1 - 7.6	7.60E+00	2/4	4.69E-06	<1	11.1	No
AC33	9E-06	<1	<1	Metal	Arsenic	C	3.2 - 6	5.32E+00	8/8	3.28E-06	<1	11.1	No
				PAH	Benzo(a)pyrene	C	0.051 - 1.9	1.90E+00	5/8	2.94E-06	--	--	--
AC34	1E-05	5E+00	3E+00	Metal	Arsenic	C	3 - 10	8.13E+00	8/8	5.01E-06	<1	11.1	No
					Iron	NC	16000 - 471000	2.63E+05	8/8	--	3E+00	58000	Yes
				PAH	Benzo(a)pyrene	C	0.072 - 3.1	3.10E+00	6/8	4.80E-06	--	--	--
AC35	5E-06	<1	<1	Metal	Arsenic	C	6.6 - 7.5	7.50E+00	2/2	4.62E-06	<1	11.1	No
AC39	2E-05	5E+00	2E+00	Metal	Arsenic	C	14 - 23	2.11E+01	5/5	1.30E-05	<1	11.1	Yes
					Lead	--	420 - 2000	1.97E+03	5/5	--	--	8.99	Yes
					Manganese	NC	650 - 12000	1.20E+04	5/5	--	2E+00	1431.18	Yes
AC40	1E-05	4E+00	2E+00	Metal	Arsenic	C	6.09 - 25	1.74E+01	9/9	1.08E-05	<1	11.1	Yes
					Lead	--	211 - 8600	4.68E+03	9/9	--	--	8.99	Yes
AC41	9E-06	4E+00	2E+00	Metal	Arsenic	C	3.06 - 18	1.15E+01	8/8	7.12E-06	<1	11.1	Yes
					Copper	NC	50 - 27000	2.70E+04	8/8	--	2E+00	124.31	Yes
					Lead	--	87 - 1800	1.38E+03	8/8	--	--	8.99	Yes
AC42	4E-06	<1	<1	Metal	Arsenic	C	4.3 - 6.3	5.80E+00	5/5	3.57E-06	<1	11.1	No
AD28	4E-06	<1	<1	Metal	Arsenic	C	4 - 6.1	6.10E+00	2/2	3.76E-06	<1	11.1	No
AD29	1E-04	2E+02	2E+02	Metal	Arsenic	C	4.2 - 12.6	1.14E+01	4/4	7.02E-06	<1	11.1	Yes
				Pest/PCB	Aroclor-1254	C,NC	7.1 - 7.1	7.10E+00	1/2	1.92E-06	3E+00	--	--
					Aroclor-1260	C,NC	8.6 - 370	3.70E+02	2/2	1.00E-04	2E+02	--	--
AD30	5E-06	<1	<1	Metal	Arsenic	C	8.8 - 8.8	8.80E+00	1/2	5.43E-06	<1	11.1	No

Table 7-9. Total Risk: Risk Characterization Analysis for Subsurface Soil (0 to 10 feet bgs), Construction Worker Scenario *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI	Chemicals of Concern		Basis for Chemical of Concern	Range of Detected Concentrations	RME EPC	Detection Frequency	Chemical-Specific Cancer Risk	Chemical-specific HI	Metals	
												HPAL	Maximum Concentration Exceeds HPAL?
AD32	7E-06	5E+00	2E+00	Metal	Arsenic	C	3.9 - 6.2	6.06E+00	4/4	3.74E-06	<1	11.1	No
					Lead	--	58 - 3840	3.36E+03	4/4	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.052 - 1.1	1.10E+00	2/4	1.70E-06	--	--	--
AD33	9E-05	2E+01	1E+01	Metal	Arsenic	C	4.1 - 11	8.66E+00	7/8	5.34E-06	<1	11.1	No
				PAH	Benzo(a)anthracene	C	0.058 - 51	5.10E+01	6/8	7.89E-06	--	--	--
					Benzo(a)pyrene	C	0.059 - 16	1.60E+01	6/8	2.48E-05	--	--	--
					Benzo(b)fluoranthene	C	0.064 - 64	6.40E+01	7/8	9.91E-06	--	--	--
					Benzo(k)fluoranthene	C	0.058 - 53	5.30E+01	6/8	8.20E-06	--	--	--
					Dibenz(a,h)anthracene	C	5.3 - 5.3	5.30E+00	1/8	4.99E-06	--	--	--
					Indeno(1,2,3-cd)pyrene	C	0.053 - 17	1.70E+01	7/8	2.63E-06	--	--	--
				Pest/PCB	Aroclor-1248	C,NC	0.12 - 12	1.20E+01	2/8	3.25E-06	6E+00	--	--
					Aroclor-1254	C,NC	0.037 - 17	1.70E+01	2/8	4.60E-06	8E+00	--	--
					Dieldrin	C	3.2 - 6.4	6.40E+00	2/8	1.13E-05	<1	--	--
AD34	1E-05	1E+01	7E+00	Metal	Arsenic	C	2.8 - 13	1.06E+01	6/6	6.52E-06	<1	11.1	No
					Vanadium	NC	31 - 2100	1.08E+03	6/6	--	3E+00	117.17	Yes
				Pest/PCB	Aroclor-1260	C,NC	0.072 - 14	1.40E+01	5/6	3.79E-06	7E+00	--	--
AD35	4E-06	<1	<1	Metal	Arsenic	C	3.8 - 6.6	6.60E+00	4/4	4.07E-06	<1	11.1	No
AD41	6E-06	<1	<1	Metal	Arsenic	C	9.1 - 9.1	9.10E+00	1/1	5.61E-06	<1	11.1	No
AE28	4E-06	2E+00	<1	Metal	Arsenic	C	3.2 - 6.7	5.77E+00	5/6	3.56E-06	<1	11.1	No
AE29	5E-06	2E+00	<1	Metal	Arsenic	C	6.4 - 8.7	8.70E+00	3/3	5.36E-06	<1	11.1	No
AE31	3E-05	4E+01	2E+01	Metal	Antimony	NC	42.5 - 1930	1.93E+03	2/2	--	2E+01	9.05	Yes
					Arsenic	C	3 - 47.8	4.78E+01	4/4	2.95E-05	<1	11.1	Yes
					Copper	NC	42 - 167000	1.67E+05	4/4	--	1E+01	124.31	Yes
				Pest/PCB	Aroclor-1242	C,NC	0.024 - 7.2	6.20E+00	4/4	1.68E-06	3E+00	--	--
AE33	4E-06	<1	<1	Metal	Arsenic	C	3.2 - 6.4	6.02E+00	6/6	3.71E-06	<1	11.1	No
AF27	3E-06	<1	<1	Metal	Arsenic	C	5.1 - 5.1	5.10E+00	1/2	3.14E-06	<1	11.1	No
AF28	5E-06	5E+00	3E+00	Metal	Arsenic	C	1.4 - 5.1	5.10E+00	2/2	3.14E-06	<1	11.1	No
				Pest/PCB	Aroclor-1260	C,NC	0.056 - 7.2	7.20E+00	2/2	1.95E-06	3E+00	--	--
AF29	4E-06	2E+00	<1	Metal	Arsenic	C	4.3 - 6.8	6.47E+00	4/4	3.99E-06	<1	11.1	No
AF32	5E-06	<1	<1	Metal	Arsenic	C	4.1 - 5.2	5.20E+00	2/2	3.21E-06	<1	11.1	No

Table 7-9. Total Risk: Risk Characterization Analysis for Subsurface Soil (0 to 10 feet bgs), Construction Worker Scenario *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI	Chemicals of Concern		Basis for Chemical of Concern	Range of Detected Concentrations	RME EPC	Detection Frequency	Chemical-Specific Cancer Risk	Chemical-specific HI	Metals	
												HPAL	Maximum Concentration Exceeds HPAL?
AF33	8E-06	<1	<1	Metal	Arsenic	C	11.3 - 12.2	1.22E+01	2/2	7.52E-06	<1	11.1	Yes
AG27	6E-06	<1	<1	Metal	Arsenic	C	3.9 - 9.3	9.30E+00	3/6	5.73E-06	<1	11.1	No
AG28	2E-06	<1	<1	Metal	Arsenic	C	1.3 - 5.6	3.90E+00	9/10	2.40E-06	<1	11.1	No
AG29	3E-06	<1	<1	Metal	Arsenic	C	2.1 - 5.6	5.60E+00	3/3	3.45E-06	<1	11.1	No
AG31	7E-06	2E+00	<1	Metal	Arsenic	C	2.7 - 5.5	5.50E+00	4/4	3.39E-06	<1	11.1	No
				PAH	Benzo(a)pyrene	C	1.3 - 1.3	1.30E+00	1/4	2.01E-06	--	--	--
AG32	1E-05	2E+00	<1	Metal	Arsenic	C	4 - 17.4	1.57E+01	4/4	9.67E-06	<1	11.1	Yes
				PAH	Benzo(a)pyrene	C	0.18 - 1.1	1.10E+00	2/4	1.70E-06	--	--	--
AG34	1E-04	2E+02	2E+02	Metal	Arsenic	C	1 - 10	6.73E+00	15/15	4.15E-06	<1	11.1	No
					Lead	--	14 - 1800	1.80E+03	15/15	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.0088 - 3.1	1.29E+00	12/15	1.99E-06	--	--	--
				Pest/PCB	Aroclor-1242	C,NC	15 - 15	1.50E+01	1/15	4.06E-06	7E+00	--	--
					Aroclor-1260	C,NC	0.038 - 380	3.20E+02	13/15	8.67E-05	2E+02	--	--
AH28	3E-06	<1	<1	Metal	Arsenic	C	1.5 - 6.5	4.63E+00	6/7	2.86E-06	<1	11.1	No
AH29	7E-06	2E+00	<1	Metal	Arsenic	C	3.5 - 9.1	7.35E+00	5/5	4.53E-06	<1	11.1	No
				PAH	Benzo(a)pyrene	C	1.1 - 1.1	1.10E+00	1/5	1.70E-06	--	--	--
AH32	1E-04	1E+02	7E+01	Metal	Antimony	NC	487 - 675	6.75E+02	2/2	--	5E+00	9.05	Yes
					Arsenic	C	3.2 - 66.6	5.75E+01	4/4	3.54E-05	<1	11.1	Yes
					Cadmium	NC	10.3 - 330	3.30E+02	2/4	1.05E-08	2E+00	3.14	Yes
					Copper	NC	55.5 - 175000	1.52E+05	4/4	--	1E+01	124.31	Yes
					Iron	NC	30200 - 165000	1.47E+05	4/4	--	2E+00	58000	Yes
					Lead	--	7.7 - 3720	3.64E+03	4/4	--	--	8.99	Yes
					Vanadium	NC	58.3 - 24900	2.09E+04	4/4	--	7E+01	117.17	Yes
				PAH	Benzo(a)anthracene	C	1.3 - 80	8.00E+01	2/4	1.24E-05	--	--	--
					Benzo(a)pyrene	C	0.13 - 16	1.60E+01	2/4	2.48E-05	--	--	--
					Benzo(b)fluoranthene	C	0.52 - 43	4.30E+01	2/4	6.66E-06	--	--	--
					Benzo(k)fluoranthene	C	0.11 - 13	1.30E+01	2/4	2.01E-06	--	--	--
					Naphthalene	C,NC	2.2 - 1400	1.40E+03	2/4	1.86E-05	8E+00	--	--

Table 7-9. Total Risk: Risk Characterization Analysis for Subsurface Soil (0 to 10 feet bgs), Construction Worker Scenario *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI	Chemicals of Concern		Basis for Chemical of Concern	Range of Detected Concentrations	RME EPC	Detection Frequency	Chemical-Specific Cancer Risk	Chemical-specific HI	Metals	
												HPAL	Maximum Concentration Exceeds HPAL?
AH33	2E-05	5E+00	2E+00	Metal	Arsenic	C	2.5 - 4.9	4.89E+00	4/4	3.01E-06	<1	11.1	No
				PAH	Benzo(a)anthracene	C	0.1 - 11	1.10E+01	3/4	1.70E-06	--	--	--
					Benzo(a)pyrene	C	0.1 - 7.5	7.50E+00	3/4	1.16E-05	--	--	--
					Benzo(b)fluoranthene	C	0.13 - 10	1.00E+01	3/4	1.55E-06	--	--	--
				Pest/PCB	Aroclor-1260	NC	1.6 - 3.4	3.40E+00	2/4	9.20E-07	2E+00	--	--
AH34	2E-05	3E+01	2E+01	Metal	Antimony	NC	0.34 - 400	4.00E+02	12/13	--	3E+00	9.05	Yes
					Arsenic	C	2 - 9.6	5.93E+00	12/13	3.66E-06	<1	11.1	No
					Lead	--	4.1 - 2200	1.04E+03	13/13	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	0.013 - 3	2.05E+00	12/13	3.17E-06	--	--	--
				Pest/PCB	Aroclor-1254	NC	0.29 - 5.1	5.10E+00	7/18	1.38E-06	2E+00	--	--
					Aroclor-1260	C,NC	0.03 - 94	3.93E+01	18/18	1.06E-05	2E+01	--	--
AI28	3E-05	<1	<1	Metal	Arsenic	C	1.8 - 5.5	5.50E+00	4/4	3.39E-06	<1	11.1	No
				PAH	Benzo(a)pyrene	C	12 - 12	1.20E+01	1/3	1.86E-05	--	--	--
					Benzo(b)fluoranthene	C	17 - 17	1.70E+01	1/3	2.63E-06	--	--	--
					Dibenz(a,h)anthracene	C	2 - 2	2.00E+00	1/3	1.88E-06	--	--	--
AI34	2E-05	3E+01	3E+01	Metal	Arsenic	C	3 - 7.3	5.17E+00	11/13	3.19E-06	<1	11.1	No
					Lead	--	10 - 2700	2.70E+03	12/13	--	--	8.99	Yes
				Pest/PCB	Aroclor-1260	C,NC	0.023 - 51	5.10E+01	17/18	1.38E-05	2E+01	--	--
AI35	4E-04	7E+02	7E+02	Metal	Arsenic	C	4.4 - 6.7	6.70E+00	3/4	4.13E-06	<1	11.1	No
					Lead	--	52 - 9700	9.70E+03	4/4	--	--	8.99	Yes
				Pest/PCB	Aroclor-1260	C,NC	22.3 - 1500	1.50E+03	5/5	4.06E-04	7E+02	--	--
					Dieldrin	C	7.9 - 7.9	7.90E+00	1/4	1.39E-05	<1	--	--
AJ28	7E-05	4E+00	2E+00	Metal	Arsenic	C,NC	3.1 - 106	1.06E+02	3/3	6.54E-05	2E+00	11.1	Yes
					Lead	--	67.9 - 893	8.93E+02	3/3	--	--	8.99	Yes
AJ29	1E-05	3E+00	<1	Metal	Arsenic	C	2.6 - 22.5	2.25E+01	4/4	1.39E-05	<1	11.1	Yes
AJ30	1E-05	3E+00	<1	Metal	Arsenic	C	6.4 - 6.4	6.40E+00	1/4	3.95E-06	<1	11.1	No
					Lead	--	119 - 5760	5.76E+03	2/4	--	--	8.99	Yes
				PAH	Benzo(a)pyrene	C	3.4 - 3.4	3.40E+00	1/4	5.26E-06	--	--	--

Table 7-9. Total Risk: Risk Characterization Analysis for Subsurface Soil (0 to 10 feet bgs), Construction Worker Scenario *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI	Chemicals of Concern		Basis for Chemical of Concern	Range of Detected Concentrations	RME EPC	Detection Frequency	Chemical-Specific Cancer Risk	Chemical-specific HI	Metals	
												HPAL	Maximum Concentration Exceeds HPAL?
AJ31	1E-05	8E+00	6E+00	Metal	Antimony	NC	3.9 - 762	7.62E+02	2/6	--	6E+00	9.05	Yes
					Arsenic	C	4.1 - 24.5	1.51E+01	4/6	9.32E-06	<1	11.1	Yes
					Lead	--	11.3 - 113000	1.13E+05	6/6	--	--	8.99	Yes
AJ33	8E-06	2E+00	<1	Metal	Arsenic	C	3.8 - 4	4.00E+00	2/2	2.47E-06	<1	11.1	No
				PAH	Benzo(a)pyrene	C	2.05 - 2.05	2.05E+00	1/2	3.17E-06	--	--	--
AJ34	5E-05	7E+01	7E+01	Metal	Arsenic	C	1.85 - 5.75	3.84E+00	10/12	2.37E-06	<1	11.1	No
				PAH	Benzo(a)pyrene	C	0.0295 - 0.98	9.80E-01	6/12	1.52E-06	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	0.004 - 147	1.47E+02	23/25	3.97E-05	7E+01	--	--
					Dieldrin	C	0.019 - 5.7	2.22E+00	9/12	3.90E-06	<1	--	--
AJ35	6E-04	9E+02	8E+02	Metal	Arsenic	C	2.9 - 26	1.19E+01	13/13	7.32E-06	<1	11.1	Yes
				PAH	Benzo(a)pyrene	C	0.33 - 2.2	2.20E+00	5/13	3.41E-06	--	--	--
				Pest/PCB	4,4'-DDT	C	0.0054 - 110	1.10E+02	7/13	2.44E-06	<1	--	--
					Aroclor-1260	C,NC	0.0089 - 12000	1.70E+03	20/21	4.61E-04	8E+02	--	--
					Dieldrin	C	0.8 - 2.2	2.20E+00	2/13	3.87E-06	<1	--	--
					Heptachlor epoxide	C,NC	0.21 - 86	8.60E+01	6/13	8.60E-05	5E+01	--	--
AJ36	2E-04	4E+02	4E+02	Metal	Arsenic	C	4.1 - 17	1.26E+01	7/8	7.75E-06	<1	11.1	Yes
				PAH	Benzo(a)pyrene	C	0.28 - 1.1	1.10E+00	6/8	1.70E-06	--	--	--
				Pest/PCB	Aroclor-1260	C,NC	0.25 - 750	7.50E+02	9/9	2.03E-04	4E+02	--	--
					Heptachlor epoxide	C,NC	0.0032 - 8.7	8.70E+00	6/8	8.70E-06	5E+00	--	--
AK29	9E-06	9E+00	3E+00	Metal	Antimony	NC	7.5 - 409	4.09E+02	7/9	--	3E+00	9.05	Yes
					Arsenic	C	0.6 - 20.6	1.20E+01	8/11	7.38E-06	<1	11.1	Yes
					Lead	--	1.6 - 6920	6.92E+03	11/11	--	--	8.99	Yes
				Pest/PCB	Aroclor-1260	NC	0.05 - 8.9	4.82E+00	5/11	1.31E-06	2E+00	--	--
AK30	1E-05	9E+00	7E+00	Metal	Arsenic	C	0.92 - 9.9	9.90E+00	5/9	6.10E-06	<1	11.1	No
					Lead	--	1.6 - 11200	1.12E+04	9/9	--	--	8.99	Yes
				Pest/PCB	Aroclor-1260	C,NC	2.6 - 14	1.40E+01	3/9	3.79E-06	7E+00	--	--
AK31	7E-06	1E+01	7E+00	Metal	Antimony	NC	6.5 - 976	9.06E+02	7/12	--	7E+00	9.05	Yes
					Arsenic	C	2.5 - 14.1	7.14E+00	7/12	4.40E-06	<1	11.1	No
					Lead	--	3 - 256000	2.56E+05	8/12	--	--	8.99	Yes
				Pest/PCB	Aroclor-1260	C,NC	0.15 - 25	6.49E+00	6/12	1.76E-06	3E+00	--	--

Table 7-9. Total Risk: Risk Characterization Analysis for Subsurface Soil (0 to 10 feet bgs), Construction Worker Scenario *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI	Chemicals of Concern		Basis for Chemical of Concern	Range of Detected Concentrations	RME EPC	Detection Frequency	Chemical-Specific Cancer Risk	Chemical-specific HI	Metals	
												HPAL	Maximum Concentration Exceeds HPAL?
AK32	5E-05	7E+01	7E+01	Metal	Arsenic	C	1.8 - 10.4	6.88E+00	8/9	4.24E-06	<1	11.1	No
					Lead	--	4.6 - 5570	5.57E+03	9/9	--	--	8.99	Yes
				Pest/PCB	Aroclor-1260	C,NC	1.5 - 150	1.50E+02	6/9	4.06E-05	7E+01	--	--
AK34	7E-05	1E+02	1E+02	Metal	Arsenic	C	1.4 - 12.7	1.27E+01	6/6	7.80E-06	<1	11.1	Yes
				Pest/PCB	Aroclor-1260	C,NC	0.015 - 240	2.40E+02	20/20	6.50E-05	1E+02	--	--
AK35	3E-06	6E+00	6E+00	Pest/PCB	Aroclor-1260	C,NC	0.008 - 12	1.20E+01	18/19	3.25E-06	6E+00	--	--
AK36	2E-05	2E+01	1E+01	Metal	Arsenic	C	2.4 - 22	1.22E+01	8/10	7.52E-06	<1	11.1	Yes
				Pest/PCB	Aroclor-1260	C,NC	0.016 - 220	2.51E+01	15/23	6.80E-06	1E+01	--	--
AK37	1E-05	7E+00	6E+00	Metal	Arsenic	C	2.9 - 13	1.14E+01	4/4	7.05E-06	<1	11.1	Yes
				PAH	Benzo(a)pyrene	C	0.23 - 1.2	1.20E+00	2/4	1.86E-06	--	--	--
				Pest/PCB	Aroclor-1248	NC	3.8 - 3.8	3.80E+00	1/5	1.03E-06	2E+00	--	--
					Aroclor-1260	C,NC	0.41 - 9.8	7.76E+00	5/5	2.10E-06	4E+00	--	--
AL33	6E-06	3E+00	<1	Metal	Arsenic	C	2.9 - 7	6.46E+00	5/5	3.99E-06	<1	11.1	No
AL34	7E-06	4E+00	2E+00	Metal	Arsenic	C	2 - 7.4	5.40E+00	11/12	3.33E-06	<1	11.1	No
				PAH	Benzo(a)pyrene	C	0.016 - 1.1	1.10E+00	7/12	1.70E-06	--	--	--
				Pest/PCB	Aroclor-1260	NC	0.047 - 5.2	4.06E+00	10/15	1.10E-06	2E+00	--	--
AL36	2E-05	1E+01	1E+01	Pest/PCB	Aroclor-1260	C,NC	0.019 - 21	2.10E+01	7/9	5.69E-06	1E+01	--	--
				Metal	Arsenic	C	3.1 - 3.1	3.10E+00	1/1	1.91E-06	<1	11.1	No
				PAH	Benzo(a)pyrene	C	4.5 - 4.5	4.50E+00	1/1	6.97E-06	--	--	--

Notes: All concentrations shown in mg/kg.

--	Not applicable or chemical is not a chemical of concern for this endpoint	mg/kg	Milligram per kilogram
bgs	Below ground surface	NC	Noncancer effect
C	Cancer effect	PAH	Polycyclic aromatic hydrocarbon
DDT	Dichlorodiphenyltrichloroethane	PCB	Polychlorinated biphenyl
EPC	Exposure point concentration	Pest	Pesticide
HI	Hazard index	RME	Reasonable maximum exposure
HPAL	Hunters Point ambient level	TEQ	Toxic equivalency factor

Table 7-10. Incremental Risk: Risk Characterization Analysis for Subsurface Soil (0 to 10 feet bgs), Construction Worker Scenario
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI		Chemicals of Concern	Basis for Chemical of Concern	Range of Detected Concentrations	RME EPC	Detection Frequency	Chemical-Specific Cancer Risk	Chemical-specific HI
AA39	2E-04	2E+01	6E+00	Metal	Antimony	NC	10.4 - 530	5.30E+02	6/12	--	4E+00
					Arsenic	C,NC	3.3 - 315	3.15E+02	10/12	1.94E-04	5E+00
					Iron	NC	14000 - 217000	1.77E+05	12/12	--	2E+00
					Lead	--	24.7 - 9300	9.30E+03	11/12	--	--
					Vanadium	NC	17 - 620	6.20E+02	12/12	--	2E+00
				PAH	Naphthalene	C	1.2 - 120	1.20E+02	6/12	1.59E-06	<1
AB29	2E-06	6E+00	3E+00	Metal	Antimony	C,NC	0.12 - 350	3.50E+02	5/10	--	3E+00
				Pest/PCB	Aroclor-1016	NC	13 - 13	1.30E+01	1/10	1.23E-07	2E+00
AB33	1E-05	<1	<1	PAH	Benzo(a)pyrene	C,NC	6.9 - 6.9	6.90E+00	1/3	1.07E-05	--
AB36	7E-06	1E+01	1E+01	Metal	Lead	--	3.4 - 6270	2.55E+03	11/11	--	--
				Pest/PCB	Aroclor-1260	C,NC	0.023 - 20	2.00E+01	2/9	5.41E-06	9E+00
					Total PCBs (Non-Dioxin)	NC	4.09 - 4.14	4.14E+00	2/2	1.12E-06	2E+00
AB39	2E-05	5E+00	2E+00	Metal	Antimony	NC	2.1 - 300	3.00E+02	5/6	--	2E+00
					Arsenic	C	3.4 - 30	2.38E+01	6/6	1.47E-05	<1
					Lead	--	39.7 - 5400	3.29E+03	6/6	--	--
				Dioxin	Dioxin (TEQ)	C	0.00000004 - 0.000523	4.38E-04	4/4	4.29E-06	--
AC29	9E-06	3E+01	2E+01	Pest/PCB	Aroclor-1016	NC	130 - 130	1.30E+02	1/3	1.23E-06	2E+01
					Aroclor-1260	C,NC	24 - 24	2.40E+01	1/3	6.50E-06	1E+01
AC30	1E-05	1E+02	1E+02	Metal	Lead	--	5.3 - 1020	1.02E+03	4/4	--	--
				PAH	Benzo(a)pyrene	C	0.05 - 2.4	2.40E+00	2/4	3.71E-06	--
				Pest/PCB	Aroclor-1016	C,NC	740 - 740	7.40E+02	1/4	7.01E-06	1E+02
AC33	6E-06	<1	<1	PAH	Benzo(a)pyrene	C,NC	0.051 - 1.9	1.90E+00	5/8	2.94E-06	--
AC34	7E-06	4E+00	3E+00	Metal	Iron	NC	16000 - 471000	2.63E+05	8/8	--	3E+00
				PAH	Benzo(a)pyrene	C	0.072 - 3.1	3.10E+00	6/8	4.80E-06	--
AC39	2E-05	5E+00	2E+00	Metal	Arsenic	C	14 - 23	2.11E+01	5/5	1.30E-05	<1
					Lead	--	420 - 2000	1.97E+03	5/5	--	--
					Manganese	NC	650 - 12000	1.20E+04	5/5	--	2E+00
AC40	1E-05	4E+00	2E+00	Metal	Arsenic	C	6.09 - 25	1.74E+01	9/9	1.08E-05	<1
					Lead	--	211 - 8600	4.68E+03	9/9	--	--

Table 7-10. Incremental Risk: Risk Characterization Analysis for Subsurface Soil (0 to 10 feet bgs), Construction Worker Scenario *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI		Chemicals of Concern	Basis for Chemical of Concern	Range of Detected Concentrations	RME EPC	Detection Frequency	Chemical-Specific Cancer Risk	Chemical-specific HI
AC41	9E-06	4E+00	2E+00	Metal	Arsenic	C	3.06 - 18	1.15E+01	8/8	7.12E-06	<1
					Copper	NC	50 - 27000	2.70E+04	8/8	--	2E+00
					Lead	--	87 - 1800	1.38E+03	8/8	--	--
AD29	1E-04	2E+02	2E+02	Metal	Arsenic	C	4.2 - 12.6	1.14E+01	4/4	7.02E-06	<1
				Pest/PCB	Aroclor-1254	C,NC	7.1 - 7.1	7.10E+00	1/2	1.92E-06	3E+00
					Aroclor-1260	C,NC	8.6 - 370	3.70E+02	2/2	1.00E-04	2E+02
AD32	3E-06	4E+00	<1	Metal	Lead	--	58 - 3840	3.36E+03	4/4	--	--
				PAH	Benzo(a)pyrene	C	0.052 - 1.1	1.10E+00	2/4	1.70E-06	--
AD33	8E-05	2E+01	1E+01	PAH	Benzo(a)anthracene	C	0.058 - 51	5.10E+01	6/8	7.89E-06	--
					Benzo(a)pyrene	C	0.059 - 16	1.60E+01	6/8	2.48E-05	--
					Benzo(b)fluoranthene	C	0.064 - 64	6.40E+01	7/8	9.91E-06	--
					Benzo(k)fluoranthene	C	0.058 - 53	5.30E+01	6/8	8.20E-06	--
					Dibenz(a,h)anthracene	C	5.3 - 5.3	5.30E+00	1/8	4.99E-06	--
					Indeno(1,2,3-cd)pyrene	C	0.053 - 17	1.70E+01	7/8	2.63E-06	--
				Pest/PCB	Aroclor-1248	C,NC	0.12 - 12	1.20E+01	2/8	3.25E-06	6E+00
					Aroclor-1254	C,NC	0.037 - 17	1.70E+01	2/8	4.60E-06	8E+00
					Dieldrin	C	3.2 - 6.4	6.40E+00	2/8	1.13E-05	<1
AD34	1E-05	1E+01	7E+00	Metal	Arsenic	C	2.8 - 13	1.06E+01	6/6	6.52E-06	<1
					Vanadium	NC	31 - 2100	1.08E+03	6/6	--	3E+00
				Pest/PCB	Aroclor-1260	C,NC	0.072 - 14	1.40E+01	5/6	3.79E-06	7E+00
AE31	3E-05	4E+01	2E+01	Metal	Antimony	NC	42.5 - 1930	1.93E+03	2/2	--	2E+01
					Arsenic	C	3 - 47.8	4.78E+01	4/4	2.95E-05	<1
					Copper	NC	42 - 167000	1.67E+05	4/4	--	1E+01
				Pest/PCB	Aroclor-1242	C,NC	0.024 - 7.2	6.20E+00	4/4	1.68E-06	3E+00
AF28	2E-06	4E+00	3E+00	Pest/PCB	Aroclor-1260	C,NC	0.056 - 7.2	7.20E+00	2/2	1.95E-06	3E+00
AF32	2E-06	<1	<1	No Chemicals of Concern Identified							
AF33	8E-06	<1	<1	Metal	Arsenic	C	11.3 - 12.2	1.22E+01	2/2	7.52E-06	<1
AG31	3E-06	<1	<1	PAH	Benzo(a)pyrene	C,NC	1.3 - 1.3	1.30E+00	1/4	2.01E-06	--

Table 7-10. Incremental Risk: Risk Characterization Analysis for Subsurface Soil (0 to 10 feet bgs), Construction Worker Scenario *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI		Chemicals of Concern	Basis for Chemical of Concern	Range of Detected Concentrations	RME EPC	Detection Frequency	Chemical-Specific Cancer Risk	Chemical-specific HI
AG32	1E-05	<1	<1	Metal	Arsenic	C	4 - 17.4	1.57E+01	4/4	9.67E-06	<1
				PAH	Benzo(a)pyrene	C	0.18 - 1.1	1.10E+00	2/4	1.70E-06	--
AG34	1E-04	2E+02	2E+02	PAH	Benzo(a)pyrene	C	0.0088 - 3.1	1.29E+00	12/15	1.99E-06	--
				Metal	Lead	--	14 - 1800	1.80E+03	15/15	--	--
				Pest/PCB	Aroclor-1242	C,NC	15 - 15	1.50E+01	1/15	4.06E-06	7E+00
					Aroclor-1260	C,NC	0.038 - 380	3.20E+02	13/15	8.67E-05	2E+02
AH29	3E-06	<1	<1	PAH	Benzo(a)pyrene	C,NC	1.1 - 1.1	1.10E+00	1/5	1.70E-06	--
AH32	1E-04	1E+02	7E+01	Metal	Antimony	NC	487 - 675	6.75E+02	2/2	--	5E+00
					Arsenic	C	3.2 - 66.6	5.75E+01	4/4	3.54E-05	<1
					Cadmium	NC	10.3 - 330	3.30E+02	2/4	1.05E-08	2E+00
					Copper	NC	55.5 - 175000	1.52E+05	4/4	--	1E+01
					Iron	NC	30200 - 165000	1.47E+05	4/4	--	2E+00
					Lead	--	7.7 - 3720	3.64E+03	4/4	--	--
					Vanadium	NC	58.3 - 24900	2.09E+04	4/4	--	7E+01
				PAH	Benzo(a)anthracene	C	1.3 - 80	8.00E+01	2/4	1.24E-05	--
					Benzo(a)pyrene	C	0.13 - 16	1.60E+01	2/4	2.48E-05	--
					Benzo(b)fluoranthene	C	0.52 - 43	4.30E+01	2/4	6.66E-06	--
					Benzo(k)fluoranthene	C	0.11 - 13	1.30E+01	2/4	2.01E-06	--
					Naphthalene	C,NC	2.2 - 1400	1.40E+03	2/4	1.86E-05	8E+00
AH33	2E-05	4E+00	2E+00	PAH	Benzo(a)anthracene	C,NC	0.1 - 11	1.10E+01	3/4	1.70E-06	--
					Benzo(a)pyrene	C,NC	0.1 - 7.5	7.50E+00	3/4	1.16E-05	--
					Benzo(b)fluoranthene	C,NC	0.13 - 10	1.00E+01	3/4	1.55E-06	--
				Pest/PCB	Aroclor-1260	NC	1.6 - 3.4	3.40E+00	2/4	9.20E-07	2E+00
AH34	2E-05	3E+01	2E+01	Metal	Antimony	NC	0.34 - 400	4.00E+02	12/13	--	3E+00
					Lead	--	4.1 - 2200	1.04E+03	13/13	--	--
				PAH	Benzo(a)pyrene	C	0.013 - 3	2.05E+00	12/13	3.17E-06	--
				Pest/PCB	Aroclor-1254	NC	0.29 - 5.1	5.10E+00	7/18	1.38E-06	2E+00
					Aroclor-1260	C,NC	0.03 - 94	3.93E+01	18/18	1.06E-05	2E+01

Table 7-10. Incremental Risk: Risk Characterization Analysis for Subsurface Soil (0 to 10 feet bgs), Construction Worker Scenario *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI		Chemicals of Concern	Basis for Chemical of Concern	Range of Detected Concentrations	RME EPC	Detection Frequency	Chemical-Specific Cancer Risk	Chemical-specific HI
AI28	3E-05	<1	<1	PAH	Benzo(a)pyrene	C	12 - 12	1.20E+01	1/3	1.86E-05	--
					Benzo(b)fluoranthene	C	17 - 17	1.70E+01	1/3	2.63E-06	--
					Dibenz(a,h)anthracene	C	2 - 2	2.00E+00	1/3	1.88E-06	--
AI34	2E-05	3E+01	3E+01	Metal	Lead	--	10 - 2700	2.70E+03	12/13	--	--
				Pest/PCB	Aroclor-1260	C,NC	0.023 - 51	5.10E+01	17/18	1.38E-05	2E+01
AI35	4E-04	7E+02	7E+02	Metal	Lead	--	52 - 9700	9.70E+03	4/4	--	--
				Pest/PCB	Aroclor-1260	C,NC	22.3 - 1500	1.50E+03	5/5	4.06E-04	7E+02
					Dieldrin	C	7.9 - 7.9	7.90E+00	1/4	1.39E-05	<1
AJ28	7E-05	3E+00	2E+00	Metal	Arsenic	C,NC	3.1 - 106	1.06E+02	3/3	6.54E-05	2E+00
					Lead	--	67.9 - 893	8.93E+02	3/3	--	--
AJ29	1E-05	<1	<1	Metal	Arsenic	C	2.6 - 22.5	2.25E+01	4/4	1.39E-05	<1
AJ30	7E-06	2E+00	<1	Metal	Lead	--	119 - 5760	5.76E+03	2/4	--	--
				PAH	Benzo(a)pyrene	C	3.4 - 3.4	3.40E+00	1/4	5.26E-06	--
AJ31	1E-05	8E+00	6E+00	Metal	Antimony	NC	3.9 - 762	7.62E+02	2/6	--	6E+00
					Arsenic	C	4.1 - 24.5	1.51E+01	4/6	9.32E-06	<1
					Lead	--	11.3 - 113000	1.13E+05	6/6	--	--
AJ33	6E-06	2E+00	<1	PAH	Benzo(a)pyrene	C,NC	2.05 - 2.05	2.05E+00	1/2	3.17E-06	--
AJ34	5E-05	7E+01	7E+01	PAH	Benzo(a)pyrene	C	0.0295 - 0.98	9.80E-01	6/12	1.52E-06	--
				Pest/PCB	Aroclor-1260	C,NC	0.004 - 147	1.47E+02	23/25	3.97E-05	7E+01
					Dieldrin	C	0.019 - 5.7	2.22E+00	9/12	3.90E-06	<1
AJ35	6E-04	9E+02	8E+02	Metal	Arsenic	C	2.9 - 26	1.19E+01	13/13	7.32E-06	<1
				PAH	Benzo(a)pyrene	C	0.33 - 2.2	2.20E+00	5/13	3.41E-06	--
				Pest/PCB	4,4'-DDT	C	0.0054 - 110	1.10E+02	7/13	2.44E-06	<1
					Aroclor-1260	C,NC	0.0089 - 12000	1.70E+03	20/21	4.61E-04	8E+02
					Dieldrin	C	0.8 - 2.2	2.20E+00	2/13	3.87E-06	<1
					Heptachlor epoxide	C,NC	0.21 - 86	8.60E+01	6/13	8.60E-05	5E+01
AJ36	2E-04	4E+02	4E+02	Metal	Arsenic	C	4.1 - 17	1.26E+01	7/8	7.75E-06	<1
				PAH	Benzo(a)pyrene	C	0.28 - 1.1	1.10E+00	6/8	1.70E-06	--
				Pest/PCB	Aroclor-1260	C,NC	0.25 - 750	7.50E+02	9/9	2.03E-04	4E+02
					Heptachlor epoxide	C,NC	0.0032 - 8.7	8.70E+00	6/8	8.70E-06	5E+00

Table 7-10. Incremental Risk: Risk Characterization Analysis for Subsurface Soil (0 to 10 feet bgs), Construction Worker Scenario *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Grid Number	Total RME Cancer Risk	Total RME HI	RME Segregated HI		Chemicals of Concern	Basis for Chemical of Concern	Range of Detected Concentrations	RME EPC	Detection Frequency	Chemical-Specific Cancer Risk	Chemical-specific HI
AK29	9E-06	8E+00	3E+00	Metal	Antimony	NC	7.5 - 409	4.09E+02	7/9	--	3E+00
					Arsenic	C	0.6 - 20.6	1.20E+01	8/11	7.38E-06	<1
					Lead	--	1.6 - 6920	6.92E+03	11/11	--	--
				Pest/PCB	Aroclor-1260	NC	0.05 - 8.9	4.82E+00	5/11	1.31E-06	2E+00
AK30	4E-06	8E+00	7E+00	Metal	Lead	--	1.6 - 11200	1.12E+04	9/9	--	--
				Pest/PCB	Aroclor-1260	C,NC	2.6 - 14	1.40E+01	3/9	3.79E-06	7E+00
AK31	7E-06	1E+01	7E+00	Metal	Antimony	NC	6.5 - 976	9.06E+02	7/12	--	7E+00
					Arsenic	C	2.5 - 14.1	7.14E+00	7/12	4.40E-06	<1
					Lead	--	3 - 256000	2.56E+05	8/12	--	--
				Pest/PCB	Aroclor-1260	C,NC	0.15 - 25	6.49E+00	6/12	1.76E-06	3E+00
AK32	4E-05	7E+01	7E+01	Metal	Lead	--	4.6 - 5570	5.57E+03	9/9	--	--
				Pest/PCB	Aroclor-1260	C,NC	1.5 - 150	1.50E+02	6/9	4.06E-05	7E+01
AK34	7E-05	1E+02	1E+02	Metal	Arsenic	C	1.4 - 12.7	1.27E+01	6/6	7.80E-06	<1
				Pest/PCB	Aroclor-1260	C,NC	0.015 - 240	2.40E+02	20/20	6.50E-05	1E+02
AK35	3E-06	6E+00	6E+00	Pest/PCB	Aroclor-1260	C,NC	0.008 - 12	1.20E+01	18/19	3.25E-06	6E+00
AK36	2E-05	1E+01	1E+01	Metal	Arsenic	C	2.4 - 22	1.22E+01	8/10	7.52E-06	<1
				Pest/PCB	Aroclor-1260	C,NC	0.016 - 220	2.51E+01	15/23	6.80E-06	1E+01
AK37	1E-05	7E+00	6E+00	Metal	Arsenic	C	2.9 - 13	1.14E+01	4/4	7.05E-06	<1
				PAH	Benzo(a)pyrene	C	0.23 - 1.2	1.20E+00	2/4	1.86E-06	--
				Pest/PCB	Aroclor-1248	NC	3.8 - 3.8	3.80E+00	1/5	1.03E-06	2E+00
					Aroclor-1260	C,NC	0.41 - 9.8	7.76E+00	5/5	2.10E-06	4E+00
AL33	2E-06	2E+00	<1	No Chemicals of Concern Identified							
AL34	4E-06	2E+00	2E+00	PAH	Benzo(a)pyrene	C	0.016 - 1.1	1.10E+00	7/12	1.70E-06	--
				Pest/PCB	Aroclor-1260	NC	0.047 - 5.2	4.06E+00	10/15	1.10E-06	2E+00
AL36	2E-05	1E+01	1E+01	PAH	Benzo(a)pyrene	C	4.5 - 4.5	4.50E+00	1/1	6.97E-06	--
				Pest/PCB	Aroclor-1260	C,NC	0.019 - 21	2.10E+01	7/9	5.69E-06	1E+01

Table 7-10. Incremental Risk: Risk Characterization Analysis for Subsurface Soil (0 to 10 feet bgs), Construction Worker Scenario *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Notes: All concentrations shown in mg/kg.

--	Not applicable or chemical is not a chemical of concern for this endpoint
<1	Less than 1
bgs	Below ground surface
C	Cancer effect
DDT	Dichlorodiphenyltrichloroethane
EPC	Exposure point concentration
HI	Hazard index
HPAL	Hunters Point ambient level
mg/kg	Milligram per kilogram
NC	Noncancer effect
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
Pest	Pesticide
RME	Reasonable maximum exposure
TEQ	Toxic equivalency factor

Table 7-11. Risk Characterization Analysis for B-Aquifer Groundwater Based on Domestic Use
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Exposure Area	Total RME Cancer Risk	Total RME HI	RME Segregated HI	Exposure Pathway	Source Aquifer for Exposure Pathway	Total RME Cancer Risk for Exposure Pathway	Total RME HI for Exposure Pathway	Chemical of Concern		Basis for Chemical of Concern	Detection Frequency	RME Concentration (µg/L)	Chemical-Specific Cancer Risk	Percent Contribution to Total RME Cancer Risk for Exposure Pathway	Chemical-Specific HI	Percent Contribution to Total RME HI for Exposure Pathway
Parcel E-2	5E-03	8E+01	6E+01	Domestic Use	B[a]	5E-03	8E+01	Metal	Arsenic	C, NC	150/372	1.6E+01	2.3E-03	46.1%	1.5E+00	1.9%
									Iron	NC	127/178	2.3E+04	--	--	2.1E+00	2.7%
									Chromium VI	NC	1/131	1.3E+02	--	--	1.2E+00	1.6%
									Thallium	NC	11/360	2.5E+00	--	--	1.0E+00	1.3%
								PAH	Benzo(a)anthracene	C	7/375	3.5E+00	6.3E-05	1.3%	--	--
									Benzo(a)pyrene	C	4/373	3.5E+00	6.3E-04	12.8%	--	--
									Benzo(b)fluoranthene	C	5/373	6.0E+00	1.1E-04	2.2%	--	--
									Benzo(k)fluoranthene	C	1/373	1.1E+00	2.0E-05	0.4%	--	--
									Indeno(1,2,3-cd)pyrene	C	3/373	3.0E+00	5.4E-05	1.1%	--	--
									Chrysene	C	13/375	2.9E+00	5.1E-06	0.1%	--	--
									Dibenz(a,h)anthracene	C	1/373	1.3E+00	1.4E-04	2.9%	--	--
								Pest/PCB	Aroclor-1016	C, NC	2/351	3.4E+00	3.5E-06	0.1%	1.3E+00	1.7%
									Aroclor-1242	C, NC	5/351	4.0E+01	1.2E-03	24.1%	5.5E+01	71.9%
									Aroclor-1254	C, NC	6/351	6.5E-01	1.9E-05	0.4%	<1	--
									Aroclor-1260	C, NC	40/351	1.2E+00	3.7E-05	0.7%	1.7E+00	2.2%
									Beta-BHC	C, NC	4/343	6.5E-02	1.7E-06	0.04%	<1	--
									Dieldrin	C, NC	5/343	1.3E-01	3.0E-05	0.6%	<1	--
									Heptachlor	C, NC	9/343	1.9E-02	1.3E-06	0.0%	<1	--
									Heptachlor epoxide	C, NC	3/322	6.6E-02	8.9E-06	0.2%	<1	--
									Heptachlor epoxide A	C, NC	4/41	3.7E-02	5.0E-06	0.1%	<1	--
									Heptachlor epoxide B	C, NC	3/41	1.5E-02	2.0E-06	0.04%	<1	--
								SVOC	4-Nitrophenol	NC	1/373	7.5E+00	--	--	2.2E+00	2.9%
									Bis(2-ethylhexyl)phthalate	C, NC	2/375	1.6E+02	3.3E-05	0.7%	<1	--
								VOC	1,1-Dichloroethane	C, NC	27/394	3.6E+00	1.8E-06	0.04%	<1	--
									1,2,3-Trichloropropane	C, NC	1/300	5.5E-01	9.8E-05	2.0%	<1	--
									1,2-Dichloroethane	C, NC	27/394	4.4E-01	3.6E-06	0.1%	<1	--
									1,4-Dichlorobenzene	C, NC	63/395	1.1E+00	3.8E-06	0.1%	<1	--
									Benzene	C, NC	105/394	1.1E+00	1.0E-05	0.2%	<1	--
									Carbon tetrachloride	C, NC	1/394	3.0E+00	4.1E-05	0.8%	<1	--
									Chloroform	C, NC	16/394	2.6E-01	1.7E-06	0.04%	<1	--
									Methylene Chloride	C, NC	2/394	3.0E+00	1.4E-06	0.03%	<1	--
									Naphthalene	C, NC	42/375	7.5E+00	8.0E-05	1.6%	1.2E+00	1.6%
									Tetrachloroethene	C, NC	21/394	4.9E+00	4.7E-05	1.0%	<1	--
									Trichloroethene	C, NC	23/394	4.6E+00	3.3E-06	0.1%	<1	--
									Vinyl chloride	C, NC	18/394	5.5E-01	1.7E-05	0.4%	<1	--

Notes: All concentrations shown in micrograms per liter (µg/L).

a As indicated in Section K3.5.2 of Appendix K, the domestic use evaluation for the B-aquifer included data from the A-aquifer.

--	Not applicable or chemical is not a chemical of concern for this endpoint	PAH	Polycyclic aromatic hydrocarbon
<1	Less than 1	PCB	Polychlorinated biphenyl
BHC	Benzenehexachloride	Pest	Pesticide
C	Cancer effect	RME	Reasonable maximum exposure
HI	Hazard index	SVOC	Semivolatile organic compound
NC	Noncancer effect	VOC	Volatile organic compound

Table 7-12. Lead Evaluation for Groundwater

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Chemical of Potential Concern	Aquifer	Location of Maximum	Detection Frequency	Maximum Concentration	95 UCL	RME EPC	California Regulatory Action Level	Maximum Detected Concentration Exceeds Action Level?	RME EPC Exceeds Action Level?
Lead	B [a]	IR01MWI-9	74 / 371	6,520	1.4E+02	140	15	Yes	Yes

Notes: All concentrations shown in micrograms per liter (µg/L).

a As indicated in Section K3.5.2 of Appendix K, the domestic use evaluation for the B-aquifer included data from the A-aquifer.

95 UCL One-sided 95 percent upper confidence limit of the mean
EPC Exposure point concentration
RME Reasonable maximum exposure

26	Cancer risks from exposure to radionuclides in soil	Section 2.5.1	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. Table 7 and Appendix B1. Record No. 4260.

Table 7. Combined Risk for Parcel E-2 Study Areas

Combined Incremental Risk[a,b]			
Parcel E-2 Study Area	Radiological Risk	Nonradiological Risk[c]	Combined Risk[d]
Landfill Area			
Recreational	2E-04 (1E-02)[e]	2E-04	3E-04 (1E-02)[e]
Construction	2E-05 (2E-03)[e]	4E-04	4E-04 (2E-03)[e]
Residential	2E-03 (2E-01)[e]	--[f]	--[f]
Panhandle Area			
Recreational	1E-04 (3E-03)[g,h]	6E-04	7E-04 (3E-03)
Construction	1E-05 (4E-04)[g,h]	2E-04	2E-04 (6E-04)
Residential	2E-03 (5E-02)[g,h]	--[f]	--[f]
East Adjacent Area			
Recreational	2E-04 (1E-02)[e]	6E-04	8E-04 (1E-02)[e]
Construction	2E-05 (2E-03)[e]	6E-04	6E-04 (2E-03)[e]
Residential	2E-03 (2E-01)[e]	--[f]	--[f]

Combined Total Risk[a,b]			
Parcel E-2 Study Area	Radiological Risk	Nonradiological Risk[c]	Combined Risk[d]
Landfill Area			
Recreational	2E-04 (1E-02)[e]	2E-04	4E-04 (1E-02)[e]
Construction	2E-05 (2E-03)[e]	4E-04	4E-04 (2E-03)[e]
Residential	2E-03 (2E-01)[e]	--[f]	--[f]
Panhandle Area			
Recreational	1E-04 (3E-03)[g,h]	6E-04	7E-04 (3E-03)
Construction	2E-05 (4E-04)[g,h]	2E-04	2E-04 (6E-04)
Residential	2E-03 (5E-02)[g,h]	--[f]	--[f]
East Adjacent Area			
Recreational	2E-04 (1E-02)[e]	7E-04	8E-04 (1E-02)[e]
Construction	2E-05 (2E-03)[e]	6E-04	6E-04 (2E-03)[e]
Residential	2E-03 (2E-01)[e]	--[f]	--[f]

Table 7. Combined Risk for Parcel E-2 Study Areas *(continued)*

Notes:

a The risk results presented in the table represent the highest risk for an individual exposure area within a study area. The residential exposure scenario is not presented since the nonradiological risk for a residential receptor was not evaluated in the RI/FS Report. The Shoreline Area is not presented since the nonradiological risk was not evaluated for this area in the RI/FS Report.

b Total excess lifetime cancer risk. The radiological risk included results for samples that were physically removed during the TCRAs conducted at the Metal Slag Area and PCB Hot Spot Area, with the exception of survey unit ABD (discussed in further detail in footnote h, below). The estimated radiological risk is therefore biased high because it includes sample results that are no longer present at Parcel E-2.

c Nonradiological risk was taken from RI/FS Report, Tables 7-2 and 7-3 (recreational exposure scenario), and Tables 7-6 and 7-7 (construction worker scenario).

d Consistent with EPA HHRA guidance, cancer risk results are presented to one significant figure. Accordingly, the combined risk results presented in the table may not equal the sum of the previous two columns; however, the results presented are an accurate representation of the sum of radiological and nonradiological risk.

e The value presented first excludes two anomalous biased samples collected during the Phase V investigation in survey unit AKL; the value presented in parentheses includes the anomalous biased samples. The biased soil samples at survey unit AKL were collocated with radioactive point sources that were subsequently removed. Therefore, the Navy believes that the radiological risk estimate using only the systematic samples collected within survey unit AKL (exclusive of the biased sample results) is most representative of current site conditions. However, the anomalous biased samples were retained in a separate risk estimate for survey unit AKL to conservatively account for the possibility of residual contamination.

f The residential exposure scenario was not evaluated in the RI/FS Report for Parcel E-2. Accordingly, the combined radiological and chemical risk cannot be calculated.

g The value presented first excludes one anomalous sample collected during the Phase V investigation in survey unit ACH; the value presented in parentheses includes the anomaly. The biased soil sample at survey unit ACH was collocated with a radioactive point source that was subsequently removed. Therefore, the Navy believes that the radiological risk estimate using only the systematic samples collected within survey unit ACH (exclusive of the biased sample result) is most representative of current site conditions. However, the anomalous biased sample was retained in a separate risk estimate for survey unit ACH to conservatively account for the possibility of residual contamination.

h The value presented in parentheses does not include survey grid ABD. The radiological risk results for survey grid ABD are biased high by results for samples located within the Metal Slag Area TCRA boundaries that were subsequently removed. For the residential receptor, the radiological risk values exceed unity (1E+00) and are therefore not considered valid.

EPA = U.S. Environmental Protection Agency

HHRA = human health risk assessment

Navy = Department of the Navy

PCB = Polychlorinated Biphenyl

RI/FS = Remedial Investigation and Feasibility Study

TCRA = time-critical removal action

Attachment B1. RESRAD Modeling and Risk Calculations

(Due to size, this attachment is provided on compact disc only)

Survey Grid	Net 95UCL Values				
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra
AAA	0.051	--	0.191	1.470	1.470
AAB	0.077	--	0.289	1.273	1.273
AAC	0.044	0.027	0.154	1.583	1.583
AAD	0.164	0.043	0.596	1.586	1.586
AAE	0.156	0.041	0.569	1.474	1.474
AAF	0.083	0.030	0.303	1.611	1.611
AAG	0.047	--	0.172	1.237	1.237
AAH	0.119	--	0.432	1.684	1.684
AAI	0.085	--	0.309	1.692	1.692
AAJ	0.039	--	0.142	1.726	1.726
AAK	0.019	--	0.070	1.294	1.294
AAL	0.035	--	0.125	2.063	2.063
ABA	0.092	--	0.347	1.776	1.776
ABB	0.088	--	0.340	1.377	1.377
ABC	0.109	0.032	0.399	1.315	1.315
ABD	0.139	0.021	0.507	1.522	1.522
ABE	0.249	0.037	0.946	1.318	1.318
ABF	0.050	0.026	0.182	1.277	1.277
ABG	0.367	--	1.334	8.054	8.054
ABH	0.092	--	0.344	1.324	1.324
ABI	0.086	--	0.315	1.895	1.895
ABJ	0.023	--	0.082	1.352	1.352
ABK	0.015	--	0.054	1.333	1.333
ABL	0.025	--	0.091	1.819	1.819
ABM	0.031	--	0.103	1.932	1.932
ACH	1.499	--	5.754	206.583	206.583
ACH - Rem	0.016	--	0.056	1.092	1.092
ACI	0.036	--	0.132	0.955	0.955
ACJ	0.024	--	0.086	1.196	1.196
ACK	0.017	--	0.062	1.202	1.202
ACL	0.039	--	0.150	1.392	1.392
ACM	0.027	--	0.098	2.043	2.043
ADI	0.048	--	0.171	1.403	1.403
ADJ	0.022	--	0.059	1.213	1.213
ADK	0.015	--	0.054	0.981	0.981
ADL	0.005	--	0.020	1.026	1.026
ADM	0.028	--	0.101	1.812	1.812
AEJ	0.020	--	0.074	0.947	0.947
AEK	0.023	--	0.084	1.375	1.375
AEL	0.020	--	0.073	1.532	1.532
AEM	0.063	--	0.225	2.073	2.073
AFI - AGI	0.070	--	0.255	1.953	1.953
AFJ	0.014	--	0.052	1.564	1.564
AFK	0.015	--	0.054	1.363	1.363
AFL	0.051	--	0.188	2.860	2.860
AFM	0.048	--	0.175	1.419	1.419
AGJ	0.058	--	0.212	2.505	2.505
AGK	0.054	--	0.198	2.183	2.183
AGL	0.044	--	0.158	1.983	1.983
AGM	0.049	--	0.176	1.948	1.948
AHH - AIH	0.063	--	0.228	1.716	1.716
AHI	0.025	--	0.088	1.280	1.280
AHJ	0.051	--	0.185	2.396	2.396
AHK	0.037	--	0.135	1.793	1.793
AHL	0.031	--	0.111	1.802	1.802
AHM	0.032	--	0.116	1.931	1.931
AII	0.053	--	0.193	2.175	2.175
AIJ	0.065	--	0.238	2.463	2.463
AIK	0.058	--	0.210	2.118	2.118
AIL	0.039	--	0.141	1.807	1.807
AIM	0.031	--	0.113	1.890	1.890
AJH	0.074	--	0.270	1.394	1.394
AJI	0.041	--	0.147	2.024	2.024
AJJ	0.059	--	0.215	2.028	2.028
AJK	0.041	--	0.148	1.672	1.672
AJL	0.034	--	0.123	1.803	1.803
AJM	0.024	--	0.088	1.971	1.971
AKG	0.053	--	0.194	1.064	1.064
AKI	0.035	--	0.128	1.833	1.833
AKJ	0.032	--	0.116	1.897	1.897
AKK	0.025	--	0.091	1.553	1.553
AKL	0.171	--	0.623	883.583	883.583
AKL - Rem	0.032	--	0.116	1.512	1.512
AKM	0.046	--	0.166	10.203	10.203

Dose Calculations, Adult Resident

Survey Grid	^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				Total Dose
	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	
AAA	1.489E-01	1.555E-07	8.502E-05	1.490E-01	--	--	--	--	4.017E-03	2.369E-05	9.650E-04	5.006E-03	7.810E-03	3.227E-03	3.531E-01	3.642E-01	1.427E+01	1.264E-03	7.058E-02	1.435E+01	1.486E+01
AAB	2.250E-01	2.350E-07	1.285E-04	2.252E-01	--	--	--	--	6.080E-03	3.585E-05	1.460E-03	7.576E-03	6.763E-03	2.794E-03	3.058E-01	3.153E-01	1.236E+01	1.095E-03	6.112E-02	1.242E+01	1.297E+01
AAC	1.274E-01	1.330E-07	7.274E-05	1.275E-01	3.603E-01	5.391E-07	2.310E-05	3.604E-01	3.239E-03	1.910E-05	7.780E-04	4.036E-03	8.411E-03	3.475E-03	3.803E-01	3.922E-01	1.537E+01	1.361E-03	7.601E-02	1.545E+01	1.633E+01
AAD	4.779E-01	4.990E-07	2.728E-04	4.782E-01	5.715E-01	8.551E-07	3.663E-05	5.716E-01	1.254E-02	7.394E-05	3.012E-03	1.563E-02	8.427E-03	3.482E-03	3.810E-01	3.929E-01	1.540E+01	1.364E-03	7.615E-02	1.548E+01	1.694E+01
AAE	4.546E-01	4.747E-07	2.596E-04	4.549E-01	5.346E-01	7.998E-07	3.426E-05	5.346E-01	1.197E-02	7.059E-05	2.876E-03	1.492E-02	7.832E-03	3.236E-03	3.541E-01	3.651E-01	1.431E+01	1.268E-03	7.077E-02	1.438E+01	1.575E+01
AAF	2.425E-01	2.532E-07	1.384E-04	2.426E-01	3.947E-01	5.905E-07	2.529E-05	3.947E-01	6.374E-03	3.759E-05	1.531E-03	7.943E-03	8.560E-03	3.537E-03	3.870E-01	3.991E-01	1.564E+01	1.385E-03	7.735E-02	1.572E+01	1.677E+01
AAG	1.373E-01	1.433E-07	7.838E-05	1.374E-01	--	--	--	--	3.618E-03	2.133E-05	8.689E-04	4.508E-03	6.572E-03	2.715E-03	2.971E-01	3.064E-01	1.201E+01	1.064E-03	5.939E-02	1.207E+01	1.252E+01
AAH	3.471E-01	3.624E-07	1.982E-04	3.473E-01	--	--	--	--	9.089E-03	5.359E-05	2.183E-03	1.133E-02	8.948E-03	3.697E-03	4.045E-01	4.172E-01	1.635E+01	1.448E-03	8.086E-02	1.643E+01	1.721E+01
AAI	2.483E-01	2.593E-07	1.418E-04	2.484E-01	--	--	--	--	6.500E-03	3.833E-05	1.561E-03	8.100E-03	8.990E-03	3.715E-03	4.065E-01	4.192E-01	1.643E+01	1.455E-03	8.124E-02	1.651E+01	1.719E+01
AAJ	1.135E-01	1.185E-07	6.477E-05	1.135E-01	--	--	--	--	2.986E-03	1.761E-05	7.173E-04	3.721E-03	9.171E-03	3.789E-03	4.146E-01	4.276E-01	1.676E+01	1.484E-03	8.288E-02	1.684E+01	1.739E+01
AAK	5.562E-02	5.807E-08	3.175E-05	5.565E-02	--	--	--	--	1.471E-03	8.675E-06	3.534E-04	1.833E-03	6.875E-03	2.841E-03	3.108E-01	3.205E-01	1.256E+01	1.113E-03	6.213E-02	1.263E+01	1.301E+01
AAL	1.004E-01	1.048E-07	5.731E-05	1.004E-01	--	--	--	--	2.629E-03	1.550E-05	6.314E-04	3.275E-03	1.096E-02	4.529E-03	4.956E-01	5.111E-01	2.003E+01	1.774E-03	9.906E-02	2.013E+01	2.075E+01
ABA	2.686E-01	2.805E-07	1.534E-04	2.688E-01	--	--	--	--	7.300E-03	4.305E-05	1.753E-03	9.096E-03	9.437E-03	3.899E-03	4.267E-01	4.400E-01	1.725E+01	1.527E-03	8.528E-02	1.733E+01	1.805E+01
ABB	2.570E-01	2.684E-07	1.467E-04	2.572E-01	--	--	--	--	7.153E-03	4.218E-05	1.718E-03	8.913E-03	7.316E-03	3.023E-03	3.308E-01	3.411E-01	1.337E+01	1.184E-03	6.611E-02	1.344E+01	1.404E+01
ABC	3.180E-01	3.321E-07	1.816E-04	3.182E-01	4.250E-01	6.359E-07	2.724E-05	4.251E-01	8.394E-03	4.950E-05	2.016E-03	1.046E-02	6.987E-03	2.887E-03	3.159E-01	3.257E-01	1.277E+01	1.131E-03	6.314E-02	1.283E+01	1.391E+01
ABD	4.052E-01	4.231E-07	2.314E-04	4.055E-01	2.811E-01	4.206E-07	1.802E-05	2.812E-01	1.067E-02	6.290E-05	2.562E-03	1.329E-02	8.087E-03	3.341E-03	3.656E-01	3.770E-01	1.478E+01	1.309E-03	7.308E-02	1.485E+01	1.593E+01
ABE	7.249E-01	7.569E-07	4.139E-04	7.253E-01	4.857E-01	7.267E-07	3.113E-05	4.858E-01	1.990E-02	1.174E-04	4.781E-03	2.480E-02	7.003E-03	2.893E-03	3.166E-01	3.265E-01	1.280E+01	1.133E-03	6.328E-02	1.286E+01	1.442E+01
ABF	1.454E-01	1.518E-07	8.303E-05	1.455E-01	3.471E-01	5.194E-07	2.225E-05	3.472E-01	3.828E-03	2.257E-05	9.195E-04	4.770E-03	6.785E-03	2.803E-03	3.067E-01	3.163E-01	1.240E+01	1.098E-03	6.131E-02	1.246E+01	1.327E+01
ABG	1.068E+00	1.115E-06	6.097E-04	1.068E+00	--	--	--	--	2.807E-02	1.655E-04	6.742E-03	3.498E-02	4.280E-02	1.769E-02	1.935E+00	1.996E+00	7.822E+01	6.928E-03	3.868E-01	7.862E+01	8.172E+01
ABH	2.686E-01	2.805E-07	1.534E-04	2.688E-01	--	--	--	--	7.237E-03	4.267E-05	1.738E-03	9.018E-03	7.034E-03	2.906E-03	3.180E-01	3.280E-01	1.286E+01	1.138E-03	6.357E-02	1.292E+01	1.353E+01
ABI	2.512E-01	2.623E-07	1.434E-04	2.513E-01	--	--	--	--	6.627E-03	3.907E-05	1.592E-03	8.257E-03	1.007E-02	4.160E-03	4.552E-01	4.695E-01	1.840E+01	1.630E-03	9.099E-02	1.849E+01	1.922E+01
ABJ	6.550E-02	6.839E-08	3.740E-05	6.554E-02	--	--	--	--	1.724E-03	1.016E-05	4.140E-04	2.148E-03	7.183E-03	2.968E-03	3.248E-01	3.349E-01	1.313E+01	1.163E-03	6.491E-02	1.319E+01	1.360E+01
ABK	4.312E-02	4.502E-08	2.462E-05	4.315E-02	--	--	--	--	1.135E-03	6.690E-06	2.725E-04	1.414E-03	7.082E-03	2.926E-03	3.202E-01	3.302E-01	1.294E+01	1.146E-03	6.400E-02	1.301E+01	1.338E+01
ABL	7.247E-02	7.567E-08	4.138E-05	7.251E-02	--	--	--	--	1.913E-03	1.128E-05	4.595E-04	2.384E-03	9.665E-03	3.993E-03	4.370E-01	4.506E-01	1.766E+01	1.564E-03	8.734E-02	1.775E+01	1.828E+01
ABM	9.078E-02	9.479E-08	5.183E-05	9.083E-02	--	--	--	--	2.166E-03	1.277E-05	5.202E-04	2.699E-03	1.027E-02	4.242E-03	4.641E-01	4.786E-01	1.876E+01	1.661E-03	9.277E-02	1.886E+01	1.943E+01
ACH	4.358E+00	4.550E-06	2.488E-03	4.360E+00	--	--	--	--	1.211E-01	7.139E-04	2.908E-02	1.509E-01	1.098E+00	4.537E-01	4.964E+01	5.119E+01	2.007E+03	1.777E-01	9.922E+00	2.017E+03	2.072E+03
ACH - Rem	4.777E-02	4.988E-08	2.727E-05	4.780E-02	--	--	--	--	1.177E-03	6.938E-06	2.826E-04	1.466E-03	5.801E-03	2.397E-03	2.623E-01	2.705E-01	1.060E+01	9.389E-04	5.242E-02	1.066E+01	1.097E+01
ACI	1.059E-01	1.106E-07	6.046E-05	1.060E-01	--	--	--	--	2.776E-03	1.637E-05	6.668E-04	3.459E-03	5.073E-03	2.096E-03	2.294E-01	2.365E-01	9.271E+00	8.211E-04	4.584E-02	9.318E+00	9.664E+00
ACJ	6.840E-02	7.142E-08	3.906E-05	6.844E-02	--	--	--	--	1.808E-03	1.066E-05	4.343E-04	2.253E-03	6.354E-03	2.625E-03	2.873E-01	2.963E-01	1.161E+01	1.028E-03	5.742E-02	1.167E+01	1.204E+01
ACK	4.951E-02	5.170E-08	2.827E-05	4.954E-02	--	--	--	--	1.303E-03	7.683E-06	3.130E-04	1.624E-03	6.386E-03	2.638E-03	2.887E-01	2.977E-01	1.167E+01	1.034E-03	5.771E-02	1.173E+01	1.208E+01
ACL	1.132E-01	1.182E-07	6.461E-05	1.132E-01	--	--	--	--	3.155E-03	1.860E-05	7.577E-04	3.931E-03	7.396E-03	3.056E-03	3.344E-01	3.448E-01	1.352E+01	1.197E-03	6.683E-02	1.358E+01	1.405E+01
ACM	7.858E-02	8.205E-08	4.486E-05	7.862E-02	--	--	--	--	2.060E-03	1.215E-05	4.949E-04	2.567E-03	1.086E-02	4.485E-03	4.908E-01	5.062E-01	1.984E+01	1.757E-03	9.810E-02	1.994E+01	2.053E+01
ADI	1.405E-01	1.467E-07	8.021E-05	1.406E-01	--	--	--	--	3.597E-03	2.121E-05	8.639E-04	4.482E-03	7.454E-03	3.080E-03	3.370E-01	3.476E-01	1.362E+01	1.206E-03	6.736E-02	1.369E+01	1.418E+01
ADJ	6.288E-02	6.566E-08	3.590E-05	6.292E-02	--	--	--	--	1.240E-03	7.310E-06	2.978E-04	1.545E-03	6.444E-03	2.663E-03	2.914E-01	3.005E-01	1.178E+01	1.043E-03	5.824E-02	1.184E+01	1.220E+01
ADK	4.312E-02	4.502E-08	2.462E-05	4.315E-02	--	--	--	--	1.135E-03	6.690E-06	2.725E-04	1.414E-03	5.211E-03	2.153E-03	2.356E-01	2.430E-01	9.524E+00	8.434E-04	4.709E-02	9.572E+00	9.859E+00
ADL	1.551E-02	1.620E-08	8.856E-06	1.552E-02	--	--	--	--	4.191E-04	2.471E-06	1.007E-04	5.223E-04	5.451E-03	2.252E-03	2.464E-01	2.541E-01	9.961E+00	8.821E-04	4.925E-02	1.001E+01	1.028E+01
ADM	8.264E-02	8.629E-08	4.719E-05	8.269E-02	--	--	--	--	2.124E-03	1.252E-05	5.101E-04	2.646E-03	9.628E-03	3.978E-03	4.353E-01	4.489E-01	1.760E+01	1.558E-03	8.701E-02	1.768E+01	1.822E+01
AEJ	5.940E-02	6.202E-08	3.391E-05	5.943E-02	--	--	--	--	1.555E-03	9.172E-06	3.736E-04	1.938E-03	5.031E-03	2.079E-03	2.274E-01	2.346E-01	9.193E+00	8.142E-04	4.546E-02	9.240E+00	9.536E+00
AEK	6.695E-02	6.991E-08	3.823E-05	6.699E-02	--	--	--	--	1.766E-03	1.041E-05	4.242E-04	2.200E-03	7.305E-03	3.018E-03	3.303E-01	3.406E-01	1.335E+01	1.182E-03	6.602E-02	1.342E+01	1.383E+01
AEL	5.852E-02	6.111E-08	3.341E-05	5.856E-02	--	--	--	--	1.534E-03	9.048E-06	3.686E-04	1.912E-03	8.140E-03	3.363E-03	3.680E-01	3.795E-01	1.488E+01	1.317E-03	7.356E-02	1.495E+01	1.539E+01
AEM	1.844E-01	1.925E-07	1.053E-04	1.845E-01	--	--	--	--	4.733E-03	2.791E-05	1.137E-03	5.898E-03	1.102E-02	4.551E-03	4.980E-01	5.136E-01	2.013E+01	1.783E-03	9.954E-02	2.023E+01	2.094E+01
AFI - AGI	2.047E-01	2.137E-07	1.169E-04	2.048E-01	--	--	--	--	5.364E-03	3.163E-05	1.288E-03	6.684E-03	1.038E-02	4.288E-03	4.692E-01	4.839E-01	1.896E+01	1.680E-03	9.378E-02	1.906E+01	1.976E+01
AFJ	4.167E-02	4.351E-08	2.379E-05	4.169E-02	--	--	--	--	1.092E-03	6.442E-06	2.624E-04	1.361E-03	8.310E-03	3.433E-03	3.757E-01	3.875E-01	1.519E+01	1.345E-03	7.509E-02	1.526E+01	1.569E+01
AFK	4.312E-02	4.502E-08	2.462E-05	4.315E-02	--	--	--	--	1.135E-03	6.690E-06	2.725E-04	1.414E-03	7.242E-03	2.992E-03	3.274E-01	3.376E-01	1.323E+01	1.172E-03	6.544E-02	1.330E+01	1.368E+01
AFL	1.495E-01	1.561E-07	8.535E-05	1.496E-01	--	--	--	--	3.954E-03	2.332E-05	9.498E-04	4.927E-03	1.520E-02	6.279E-03	6.871E-01	7.086E-01	2.777E+01	2.460E-03	1.373E-01	2.791E+01	2.878E+01
AFM	1.402E-01	1.464E-07	8.004E-05	1.403E-01	--	--	--	--	3.681E-03	2.170E-05	8.841E-04	4.586E-03	7.539E-03	3.115E-03	3.409E-01	3.515E-01	1.378E+01	1.220E-03	6.813E-02	1.385E+01	1.434E+01
AGJ	1.698E-01	1.773E-07	9.696E-05	1.699E-01	--	--	--	--	4.459E-03	2.629E-05	1.071E-03	5.557E-03	1.331E-02	5.500E-03	6.018E-01	6.206E-01	2.433E+01	2.154E-03	1.203E-01	2.445E+01	2.524E+01
AGK	1.582E-01	1.652E-07	9.033E-05	1.583E-01	--	--	--	--	4.165E-03	2.456E-05	1.000E-03	5.190E-03	1.160E-02	4.793E-03	5.245E-01	5.408E-01	2.120E+01	1.877E-03	1.048E-01	2.131E+01	2.201E+01
AGL	1.268E-01	1.324E-07	7.241E-05	1.269E-01	--	--	--	--	3.323E-03	1.959E-05	7.982E-04	4.141E-03	1.054E-02	4.354E-03	4.764E-01	4.913E-01	1.926E+01	1.705E-03	9.522E-02	1.935E+01	1.998E+01
AGM	1.411E-01	1.473E-07	8.054E-05	1.411E-01	--	--	--	--	3.702E-03	2.183E-05	8.892E-04	4.613E-03	1.035E-02	4.277E-03	4.680E-01	4.826E-01	1.892E+01	1.675E-03	9.354E-02	1.901E+01	1.964E+01
AHH - AIH	1.844E-01	1.925E-07	1.053E-04	1.845E-01	--	--	--	--	4.796E-03	2.828E-05	1.152E-03	5.976E-03	9.118E-03	3.767E-03	4.122E-01	4.251E-01	1.666E+01	1.476E-03	8.240E-02	1.675E+01	1.736E+01
AHI	7.335E-02	7.658E-08	4.188E-05	7.339E-02	--	--	--	--	1.850E-03	1.091E-05	4.444E-04	2.305E-03	6.801E-03	2.810E-03	3.075E-01	3.171E-01	1.243E+01	1.101E-03	6.145E-02	1.249E+01	1.288E+01
AHJ	1.483E-01	1.549E-07	8.469E-05	1.484E-01	--	--	--	--	3.891E-03	2.294E-05	9.346E-04	4.849E-03	1.273E-02	5.261E-03	5.756E-01	5.936E-01	2.327E+01	2.061E-03	1.151E-01	2.338E+01	2.413E+01
AHK	1.082E-01	1.130E-07	6.179E-05	1.083E-01	--	--	--	--	2.839E-03	1.674E-05	6.819E-04	3.538E-03	9.527E-03	3.936E-03	4.307E-01	4.442E-01	1.741E+01	1.542E-03	8.609E-02	1.750E+01	1.805E+01
AHL	8.875E-02	9.267E-08	5.067E-05	8.880E-02	--	--	--	--	2.334E-03	1.376E-05	5.606E-04	2.908E-03	9.575E-03	3.956E-03	4.329E-01	4.464E-01	1.750E+01	1.550E-03	8.653E-02	1.759E+01	1.812E+01
AHM	9.311E-02	9.722E-08	5.316E-05	9.316E-02	--	--	--	--	2.439E-03	1.438E-05	5.859E-04	3.039E-03	1.026E-02	4.239E-03	4.639E-01	4.784E-01	1.875E+01	1.661E-03	9.272E-02	1.885E+01	1.942E+01
AII	1.553E-01	1.622E-07	8.867E-05	1.554E-01	--	--	--	--	4.059E-03	2.394E-05	9.751E-04	5.058E-03	1.156E-02	4.775E-03	5.225E-01	5.389E-01	2.112E+01	1.871E-03	1.044E-01	2.123E+01	2.193E+01
AIJ	1.902E-01	1.986E-07	1.086E-04	1.903E-01	--	--	--	--	5.006E-03	2.952E-05	1.203E-03	6.238E-03	1.309E-02	5.408E-03	5.917E-01	6.102E-01	2.392E+01	2.118E-03	1.183E-01	2.404E+01	2.485E+01
AIK	1.698E-01	1.773E-07	9.696E-05	1.699E-01	--	--	--	--	4.417E-03	2.605E-05	1.061E-03	5.504E-03	1.125E-02	4.650E-03	5.088E-01	5.247E-01	2.057E+01	1.821E-03	1.017E-01	2.067E+01	2.137E+01
AIL	1.137E-01	1.188E-07	6.494E-05	1.138E-01	--	--	--	--	2.965E-03	1.748E-05	7.123E-04	3.695E-03	9.602E-03	3.967E-03	4.341E-01	4.477E-01	1.755E+01	1.554E-03	8.677E-02	1.763E+01	1.820E+01
AIM	9.049E-02	9.449E-08	5.167E-05	9.054E-02	--	--	--	--	2.376E-03	1.401E-05	5.707E-04	2.961E-03	1.004E-02	4.149E-03	4.540E-01	4.682E-01	1.835E+01	1.625E-03	9.075E-02	1.845E+01	1.901E+01
AJH	2.163E-01	2.259E-07	1.235E-04	2.165E-01	--	--	--	--	5.679E-03	3.349E-05	1.364E-03	7.077E-03	7.406E-03	3.060E-03	3.349E-01	3.453E-01	1.354E+01	1.199E-03	6.693E-02	1.360E+01	1.417E+01
AJI	1.181E-01	1.233E-07	6.743E-05	1.182E-01	--	--	--	--	3.091E-03	1.823E-05	7.426E-04	3.852E-03	1.075E-02	4.444E-03	4.862E-01	5.014E-01	1.965E+01	1.741E-03	9.719E-02	1.975E+01	2.038E+01
AJJ	1.727E-01	1.804E-07	9.862E-05	1.728E-01	--	--	--	--	4.522E-03	2.667E-05	1.086E-03	5.635E-03	1.078E-02	4.452E-03	4.872E-01	5.024E-01	1.969E+01	1.744E-03	9.738E-02	1.979E+01	2.047E+01
AJK	1.184E-01	1.236E-07	6.760E-05	1.185E-01	--	--	--	--	3.113E-03	1.835E-05	7.476E-04	3.879E-03	8.884E-03	3.671E-03	4.017E-01	4.142E-01	1.624E+01	1.438E-03	8.028E-02	1.632E+01	1.685E+01
AJL	9.863E-02	1.030E-07	5.631E-05	9.869E-02	--	--	--	--	2.586E-03	1.525E-05	6.213E-04	3.223E-03	9.580E-03	3.958E-03	4.331E-01	4.467E-01	1.751E+01	1.551E-03	8.657E-02	1.760E+01	1.814E+01
AJM	7.015E-02	7.325E-08	4.005E-05	7.019E-02	--	--	--	--	1.850E-03	1.091E-05	4.444E-04	2.305E-03	1.047E-02	4.327E-03	4.735E-01	4.883E-01	1.914E+01	1.695E-03	9.464E-02	1.924E+01	1.980E+01
AKG	1.553E-01	1.622E-07	8.867E-05	1.554E-01	--	--	--	--	4.080E-03	2.406E-05	9.801E-04	5.085E-03	5.653E-03	2.335E-03	2.556E-01	2.635E-01	1.033E+01	9.148E-04	5.108E-02	1.038E+01	1.081E+01
AKI	1.030E-01	1.075E-07	5.880E-05	1.030E-01	--	--	--	--	2.692E-03	1.587E-05	6.465E-04	3.354E-03	9.740E-03	4.024E-03	4.403E-01	4.541E-01	1.780E+01	1.576E-03	8.801E-02	1.789E+01	1.845E+01
AKJ	9.311E-02	9.722E-08	5.316E-05	9.316E-02	--	--	--	--	2.439E-03	1.438E-05	5.859E-04	3.039E-03	1.008E-02	4.165E-03	4.557E-01	4.700E-01	1.842E+01	1.631E-03	9.109E-02	1.851E+01	1.908E+01
AKK	7.393E-02	7.719E-08	4.221E-05	7.397E-02	--	--	--	--	1.913E-03	1.128E-05	4.595E-04	2.384E-03	8.252E-03	3.409E-03	3.731E-01	3.847E-01	1.508E+01	1.335E-03	7.457E-02	1.516E+01	1.562E+01
AKL	4.982E-01	5.202E-07	2.845E-04	4.985E-01	--	--	--	--	1.311E-02	7.729E-05	3.148E-03	1.633E-02	4.696E+00	1.940E+00	2.123E+02	2.190E+02	8.582E+03	7.601E-01	4.244E+01	8.625E+03	8.845E+03
AKL - Rem	9.253E-02	9.661E-08	5.283E-05	9.258E-02	--	--	--	--	2.439E-03	1.438E-05	5.859E-04	3.039E-03	8.034E-03	3.319E-03	3.632E-01	3.746E-01	1.468E+01	1.300E-03	7.260E-02	1.476E+01	1.523E+01
AKM	1.332E-01	1.391E-07	7.606E-05	1.333E-01	--	--	--	--	3.491E-03	2.059E-05	8.386E-04	4.351E-03	5.423E-02	2.240E-02	2.452E+00	2.528E+00	9.910E+01	8.776E-03	4.900E-01	9.960E+01	1.023E+02

Survey Grid	Net 95UCL Values				
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra
AAA	0.051	--	0.191	1.470	1.470
AAB	0.077	--	0.289	1.273	1.273
AAC	0.044	0.027	0.154	1.583	1.583
AAD	0.164	0.043	0.596	1.586	1.586
AAE	0.156	0.041	0.569	1.474	1.474
AAF	0.083	0.030	0.303	1.611	1.611
AAG	0.047	--	0.172	1.237	1.237
AAH	0.119	--	0.432	1.684	1.684
AAI	0.085	--	0.309	1.692	1.692
AAJ	0.039	--	0.142	1.726	1.726
AAK	0.019	--	0.070	1.294	1.294
AAL	0.035	--	0.125	2.063	2.063
ABA	0.092	--	0.347	1.776	1.776
ABB	0.088	--	0.340	1.377	1.377
ABC	0.109	0.032	0.399	1.315	1.315
ABD	0.139	0.021	0.507	1.522	1.522
ABE	0.249	0.037	0.946	1.318	1.318
ABF	0.050	0.026	0.182	1.277	1.277
ABG	0.367	--	1.334	8.054	8.054
ABH	0.092	--	0.344	1.324	1.324
ABI	0.086	--	0.315	1.895	1.895
ABJ	0.023	--	0.082	1.352	1.352
ABK	0.015	--	0.054	1.333	1.333
ABL	0.025	--	0.091	1.819	1.819
ABM	0.031	--	0.103	1.932	1.932
ACH	1.499	--	5.754	206.583	206.583
ACH - Rem	0.016	--	0.056	1.092	1.092
ACI	0.036	--	0.132	0.955	0.955
ACJ	0.024	--	0.086	1.196	1.196
ACK	0.017	--	0.062	1.202	1.202
ACL	0.039	--	0.150	1.392	1.392
ACM	0.027	--	0.098	2.043	2.043
ADI	0.048	--	0.171	1.403	1.403
ADJ	0.022	--	0.059	1.213	1.213
ADK	0.015	--	0.054	0.981	0.981
ADL	0.005	--	0.020	1.026	1.026
ADM	0.028	--	0.101	1.812	1.812
AEJ	0.020	--	0.074	0.947	0.947
AEK	0.023	--	0.084	1.375	1.375
AEL	0.020	--	0.073	1.532	1.532
AEM	0.063	--	0.225	2.073	2.073
AFI - AGI	0.070	--	0.255	1.953	1.953
AFJ	0.014	--	0.052	1.564	1.564
AFK	0.015	--	0.054	1.363	1.363
AFL	0.051	--	0.188	2.860	2.860
AFM	0.048	--	0.175	1.419	1.419
AGJ	0.058	--	0.212	2.505	2.505
AGK	0.054	--	0.198	2.183	2.183
AGL	0.044	--	0.158	1.983	1.983
AGM	0.049	--	0.176	1.948	1.948
AHH - AIH	0.063	--	0.228	1.716	1.716
AHI	0.025	--	0.088	1.280	1.280
AHJ	0.051	--	0.185	2.396	2.396
AHK	0.037	--	0.135	1.793	1.793
AHL	0.031	--	0.111	1.802	1.802
AHM	0.032	--	0.116	1.931	1.931
AII	0.053	--	0.193	2.175	2.175
AIJ	0.065	--	0.238	2.463	2.463
AIK	0.058	--	0.210	2.118	2.118
AIL	0.039	--	0.141	1.807	1.807
AIM	0.031	--	0.113	1.890	1.890
AJH	0.074	--	0.270	1.394	1.394
AJI	0.041	--	0.147	2.024	2.024
AJJ	0.059	--	0.215	2.028	2.028
AJK	0.041	--	0.148	1.672	1.672
AJL	0.034	--	0.123	1.803	1.803
AJM	0.024	--	0.088	1.971	1.971
AKG	0.053	--	0.194	1.064	1.064
AKI	0.035	--	0.128	1.833	1.833
AKJ	0.032	--	0.116	1.897	1.897
AKK	0.025	--	0.091	1.553	1.553
AKL	0.171	--	0.623	883.583	883.583
AKL - Rem	0.032	--	0.116	1.512	1.512
AKM	0.046	--	0.166	10.203	10.203

Risk Calculations, Adult Resident

Survey Grid	^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				Total Risk
	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	
AAA	2.069E-06	1.017E-11	1.184E-09	2.070E-06	--	--	--	--	5.589E-08	1.372E-10	1.053E-08	6.655E-08	9.080E-08	7.230E-08	2.823E-06	2.986E-06	2.517E-04	1.225E-07	1.750E-06	2.536E-04	2.587E-04
AAB	3.127E-06	1.537E-11	1.790E-09	3.129E-06	--	--	--	--	8.457E-08	2.077E-10	1.593E-08	1.007E-07	7.863E-08	6.261E-08	2.444E-06	2.586E-06	2.180E-04	1.061E-07	1.516E-06	2.196E-04	2.254E-04
AAC	1.770E-06	8.702E-12	1.013E-09	1.771E-06	2.139E-06	1.930E-12	1.486E-10	2.139E-06	4.505E-08	1.106E-10	8.486E-09	5.365E-08	9.778E-08	7.786E-08	3.040E-06	3.216E-06	2.711E-04	1.320E-07	1.885E-06	2.731E-04	2.803E-04
AAD	6.640E-06	3.264E-11	3.801E-09	6.644E-06	3.392E-06	3.061E-12	2.357E-10	3.392E-06	1.744E-07	4.283E-10	3.286E-08	2.077E-07	9.797E-08	7.801E-08	3.046E-06	3.222E-06	2.716E-04	1.322E-07	1.888E-06	2.736E-04	2.871E-04
AAE	6.317E-06	3.105E-11	3.616E-09	6.321E-06	3.173E-06	2.863E-12	2.205E-10	3.173E-06	1.665E-07	4.089E-10	3.137E-08	1.983E-07	9.105E-08	7.250E-08	2.831E-06	2.994E-06	2.524E-04	1.229E-07	1.755E-06	2.543E-04	2.670E-04
AAF	3.369E-06	1.656E-11	1.929E-09	3.371E-06	2.342E-06	2.114E-12	1.628E-10	2.342E-06	8.867E-08	2.177E-10	1.670E-08	1.056E-07	9.951E-08	7.924E-08	3.094E-06	3.273E-06	2.759E-04	1.343E-07	1.918E-06	2.779E-04	2.870E-04
AAG	1.907E-06	9.376E-12	1.092E-09	1.909E-06	--	--	--	--	5.032E-08	1.236E-10	9.479E-09	5.993E-08	7.640E-08	6.084E-08	2.375E-06	2.513E-06	2.118E-04	1.031E-07	1.473E-06	2.134E-04	2.179E-04
AAH	4.823E-06	2.371E-11	2.761E-09	4.826E-06	--	--	--	--	1.264E-07	3.104E-10	2.381E-08	1.506E-07	1.040E-07	8.283E-08	3.234E-06	3.421E-06	2.884E-04	1.404E-07	2.005E-06	2.905E-04	2.989E-04
AAI	3.450E-06	1.696E-11	1.975E-09	3.452E-06	--	--	--	--	9.043E-08	2.220E-10	1.703E-08	1.077E-07	1.045E-07	8.322E-08	3.249E-06	3.437E-06	2.898E-04	1.411E-07	2.015E-06	2.919E-04	2.989E-04
AAJ	1.576E-06	7.749E-12	9.024E-10	1.577E-06	--	--	--	--	4.154E-08	1.020E-10	7.825E-09	4.947E-08	1.066E-07	8.489E-08	3.315E-06	3.506E-06	2.956E-04	1.439E-07	2.055E-06	2.978E-04	3.029E-04
AAK	7.728E-07	3.799E-12	4.424E-10	7.732E-07	--	--	--	--	2.047E-08	5.025E-11	3.855E-09	2.437E-08	7.993E-08	6.364E-08	2.485E-06	2.628E-06	2.216E-04	1.079E-07	1.541E-06	2.232E-04	2.267E-04
AAL	1.395E-06	6.856E-12	7.983E-10	1.395E-06	--	--	--	--	3.657E-08	8.978E-11	6.887E-09	4.354E-08	1.274E-07	1.015E-07	3.962E-06	4.191E-06	3.533E-04	1.720E-07	2.456E-06	3.559E-04	3.616E-04
ABA	3.733E-06	1.835E-11	2.137E-09	3.735E-06	--	--	--	--	1.015E-07	2.493E-10	1.913E-08	1.209E-07	1.097E-07	8.735E-08	3.411E-06	3.608E-06	3.041E-04	1.481E-07	2.115E-06	3.064E-04	3.139E-04
ABB	3.571E-06	1.755E-11	2.044E-09	3.573E-06	--	--	--	--	9.950E-08	2.443E-10	1.874E-08	1.185E-07	8.505E-08	6.772E-08	2.644E-06	2.797E-06	2.358E-04	1.148E-07	1.639E-06	2.375E-04	2.440E-04
ABC	4.419E-06	2.172E-11	2.530E-09	4.422E-06	2.522E-06	2.276E-12	1.753E-10	2.523E-06	1.168E-07	2.867E-10	2.199E-08	1.391E-07	8.122E-08	6.467E-08	2.525E-06	2.671E-06	2.252E-04	1.096E-07	1.566E-06	2.268E-04	2.366E-04
ABD	5.631E-06	2.768E-11	3.223E-09	5.634E-06	1.669E-06	1.506E-12	1.159E-10	1.669E-06	1.484E-07	3.643E-10	2.795E-08	1.767E-07	9.401E-08	7.486E-08	2.923E-06	3.092E-06	2.606E-04	1.269E-07	1.812E-06	2.626E-04	2.731E-04
ABE	1.007E-05	4.951E-11	5.766E-09	1.008E-05	2.883E-06	2.601E-12	2.003E-10	2.883E-06	2.769E-07	6.799E-10	5.215E-08	3.297E-07	8.141E-08	6.482E-08	2.531E-06	2.677E-06	2.257E-04	1.099E-07	1.569E-06	2.274E-04	2.433E-04
ABF	2.021E-06	9.932E-12	1.157E-09	2.022E-06	2.060E-06	1.859E-12	1.432E-10	2.060E-06	5.325E-08	1.308E-10	1.003E-08	6.341E-08	7.887E-08	6.280E-08	2.452E-06	2.594E-06	2.187E-04	1.064E-07	1.520E-06	2.203E-04	2.270E-04
ABG	1.484E-05	7.293E-11	8.493E-09	1.485E-05	--	--	--	--	3.905E-07	9.587E-10	7.355E-08	4.650E-07	4.976E-07	3.962E-07	1.547E-05	1.636E-05	1.380E-03	6.716E-07	9.592E-06	1.390E-03	1.422E-03
ABH	3.733E-06	1.835E-11	2.137E-09	3.735E-06	--	--	--	--	1.007E-07	2.472E-10	1.896E-08	1.199E-07	8.178E-08	6.512E-08	2.542E-06	2.689E-06	2.267E-04	1.104E-07	1.576E-06	2.284E-04	2.349E-04
ABI	3.490E-06	1.716E-11	1.998E-09	3.492E-06	--	--	--	--	9.218E-08	2.263E-10	1.736E-08	1.098E-07	1.171E-07	9.321E-08	3.639E-06	3.850E-06	3.245E-04	1.580E-07	2.256E-06	3.269E-04	3.344E-04
ABJ	9.101E-07	4.474E-12	5.210E-10	9.106E-07	--	--	--	--	2.398E-08	5.888E-11	4.517E-09	2.855E-08	8.351E-08	6.649E-08	2.596E-06	2.746E-06	2.315E-04	1.127E-07	1.610E-06	2.332E-04	2.369E-04
ABK	5.991E-07	2.945E-12	3.430E-10	5.995E-07	--	--	--	--	1.578E-08	3.875E-11	2.973E-09	1.879E-08	8.234E-08	6.556E-08	2.560E-06	2.708E-06	2.283E-04	1.111E-07	1.587E-06	2.300E-04	2.333E-04
ABL	1.007E-06	4.950E-12	5.764E-10	1.008E-06	--	--	--	--	2.661E-08	6.535E-11	5.013E-09	3.169E-08	1.124E-07	8.947E-08	3.493E-06	3.695E-06	3.115E-04	1.516E-07	2.166E-06	3.138E-04	3.186E-04
ABM	1.261E-06	6.201E-12	7.221E-10	1.262E-06	--	--	--	--	3.013E-08	7.397E-11	5.674E-09	3.587E-08	1.193E-07	9.503E-08	3.710E-06	3.925E-06	3.309E-04	1.611E-07	2.300E-06	3.333E-04	3.386E-04
ACH	6.055E-05	2.976E-10	3.466E-08	6.058E-05	--	--	--	--	1.684E-06	4.136E-09	3.172E-07	2.006E-06	1.276E-05	1.016E-05	3.968E-04	4.198E-04	3.539E-02	1.723E-05	2.460E-04	3.565E-02	3.613E-02
ACH - Rem	6.638E-07	3.263E-12	3.800E-10	6.641E-07	--	--	--	--	1.637E-08	4.019E-11	3.083E-09	1.949E-08	6.744E-08	5.370E-08	2.097E-06	2.218E-06	1.870E-04	9.102E-08	1.300E-06	1.884E-04	1.913E-04
ACI	1.471E-06	7.233E-12	8.423E-10	1.472E-06	--	--	--	--	3.861E-08	9.481E-11	7.273E-09	4.598E-08	5.898E-08	4.696E-08	1.834E-06	1.940E-06	1.635E-04	7.960E-08	1.137E-06	1.647E-04	1.682E-04
ACJ	9.505E-07	4.672E-12	5.441E-10	9.510E-07	--	--	--	--	2.515E-08	6.175E-11	4.737E-09	2.995E-08	7.387E-08	5.882E-08	2.297E-06	2.429E-06	2.048E-04	9.969E-08	1.424E-06	2.063E-04	2.097E-04
ACK	6.880E-07	3.382E-12	3.938E-10	6.884E-07	--	--	--	--	1.812E-08	4.450E-11	3.414E-09	2.158E-08	7.424E-08	5.911E-08	2.308E-06	2.441E-06	2.058E-04	1.002E-07	1.431E-06	2.073E-04	2.105E-04
ACL	1.572E-06	7.729E-12	9.000E-10	1.573E-06	--	--	--	--	4.388E-08	1.078E-10	8.266E-09	5.226E-08	8.598E-08	6.846E-08	2.673E-06	2.828E-06	2.384E-04	1.160E-07	1.657E-06	2.401E-04	2.446E-04
ACM	1.092E-06	5.367E-12	6.250E-10	1.092E-06	--	--	--	--	2.866E-08	7.038E-11	5.399E-09	3.413E-08	1.262E-07	1.005E-07	3.924E-06	4.150E-06	3.499E-04	1.703E-07	2.433E-06	3.525E-04	3.578E-04
ADI	1.952E-06	9.595E-12	1.117E-09	1.953E-06	--	--	--	--	5.003E-08	1.228E-10	9.424E-09	5.958E-08	8.666E-08	6.900E-08	2.694E-06	2.850E-06	2.402E-04	1.170E-07	1.670E-06	2.420E-04	2.469E-04
ADJ	8.737E-07	4.295E-12	5.002E-10	8.742E-07	--	--	--	--	1.725E-08	4.235E-11	3.249E-09	2.054E-08	7.492E-08	5.966E-08	2.329E-06	2.464E-06	2.077E-04	1.011E-07	1.444E-06	2.092E-04	2.126E-04
ADK	5.991E-07	2.945E-12	3.430E-10	5.995E-07	--	--	--	--	1.578E-08	3.875E-11	2.973E-09	1.879E-08	6.059E-08	4.824E-08	1.884E-06	1.992E-06	1.680E-04	8.176E-08	1.168E-06	1.692E-04	1.718E-04
ADL	2.155E-07	1.059E-12	1.234E-10	2.157E-07	--	--	--	--	5.830E-09	1.432E-11	1.098E-09	6.943E-09	6.337E-08	5.045E-08	1.970E-06	2.084E-06	1.757E-04	8.552E-08	1.221E-06	1.770E-04	1.793E-04
ADM	1.148E-06	5.645E-12	6.573E-10	1.149E-06	--	--	--	--	2.954E-08	7.253E-11	5.564E-09	3.518E-08	1.119E-07	8.913E-08	3.480E-06	3.681E-06	3.103E-04	1.511E-07	2.157E-06	3.126E-04	3.175E-04
AEJ	8.253E-07	4.057E-12	4.724E-10	8.258E-07	--	--	--	--	2.164E-08	5.313E-11	4.076E-09	2.577E-08	5.848E-08	4.657E-08	1.818E-06	1.923E-06	1.621E-04	7.893E-08	1.127E-06	1.633E-04	1.661E-04
AEK	9.303E-07	4.573E-12	5.325E-10	9.308E-07	--	--	--	--	2.456E-08	6.031E-11	4.627E-09	2.925E-08	8.493E-08	6.763E-08	2.640E-06	2.793E-06	2.355E-04	1.146E-07	1.637E-06	2.372E-04	2.410E-04
AEL	8.132E-07	3.997E-12	4.655E-10	8.136E-07	--	--	--	--	2.134E-08	5.241E-11	4.020E-09	2.542E-08	9.463E-08	7.535E-08	2.942E-06	3.112E-06	2.623E-04	1.277E-07	1.824E-06	2.643E-04	2.682E-04
AEM	2.562E-06	1.259E-11	1.466E-09	2.563E-06	--	--	--	--	6.584E-08	1.617E-10	1.240E-08	7.840E-08	1.281E-07	1.020E-07	3.981E-06	4.211E-06	3.550E-04	1.728E-07	2.468E-06	3.577E-04	3.645E-04
AFI - AGI	2.844E-06	1.398E-11	1.628E-09	2.846E-06	--	--	--	--	7.462E-08	1.832E-10	1.406E-08	8.886E-08	1.206E-07	9.606E-08	3.751E-06	3.967E-06	3.345E-04	1.628E-07	2.325E-06	3.370E-04	3.439E-04
AFJ	5.790E-07	2.846E-12	3.314E-10	5.793E-07	--	--	--	--	1.520E-08	3.732E-11	2.863E-09	1.810E-08	9.661E-08	7.692E-08	3.003E-06	3.177E-06	2.678E-04	1.304E-07	1.862E-06	2.698E-04	2.736E-04
AFK	5.991E-07	2.945E-12	3.430E-10	5.995E-07	--	--	--	--	1.578E-08	3.875E-11	2.973E-09	1.879E-08	8.419E-08	6.704E-08	2.617E-06	2.769E-06	2.334E-04	1.136E-07	1.623E-06	2.351E-04	2.385E-04
AFL	2.077E-06	1.021E-11	1.189E-09	2.078E-06	--	--	--	--	5.501E-08	1.351E-10	1.036E-08	6.550E-08	1.767E-07	1.407E-07	5.493E-06	5.810E-06	4.898E-04	2.385E-07	3.406E-06	4.935E-04	5.014E-04
AFM	1.948E-06	9.575E-12	1.115E-09	1.949E-06	--	--	--	--	5.120E-08	1.257E-10	9.644E-09	6.097E-08	8.765E-08	6.979E-08	2.725E-06	2.882E-06	2.430E-04	1.183E-07	1.689E-06	2.448E-04	2.497E-04
AGJ	2.360E-06	1.160E-11	1.351E-09	2.361E-06	--	--	--	--	6.203E-08	1.523E-10	1.168E-08	7.387E-08	1.548E-07	1.232E-07	4.811E-06	5.089E-06	4.290E-04	2.089E-07	2.983E-06	4.322E-04	4.397E-04
AGK	2.198E-06	1.081E-11	1.258E-09	2.199E-06	--	--	--	--	5.793E-08	1.422E-10	1.091E-08	6.899E-08	1.349E-07	1.074E-07	4.193E-06	4.435E-06	3.739E-04	1.820E-07	2.599E-06	3.766E-04	3.833E-04
AGL	1.762E-06	8.662E-12	1.009E-09	1.763E-06	--	--	--	--	4.623E-08	1.135E-10	8.707E-09	5.505E-08	1.225E-07	9.754E-08	3.808E-06	4.028E-06	3.396E-04	1.653E-07	2.361E-06	3.421E-04	3.480E-04
AGM	1.960E-06	9.634E-12	1.122E-09	1.961E-06	--	--	--	--	5.149E-08	1.264E-10	9.699E-09	6.132E-08	1.203E-07	9.582E-08	3.741E-06	3.957E-06	3.336E-04	1.624E-07	2.319E-06	3.361E-04	3.421E-04
AHH - AIH	2.562E-06	1.259E-11	1.466E-09	2.563E-06	--	--	--	--	6.672E-08	1.638E-10	1.257E-08	7.945E-08	1.060E-07	8.440E-08	3.295E-06	3.486E-06	2.939E-04	1.431E-07	2.043E-06	2.961E-04	3.022E-04
AHI	1.019E-06	5.010E-12	5.834E-10	1.020E-06	--	--	--	--	2.574E-08	6.319E-11	4.847E-09	3.065E-08	7.906E-08	6.295E-08	2.458E-06	2.600E-06	2.192E-04	1.067E-07	1.524E-06	2.208E-04	2.245E-04
AHJ	2.061E-06	1.013E-11	1.180E-09	2.062E-06	--	--	--	--	5.413E-08	1.329E-10	1.020E-08	6.446E-08	1.480E-07	1.179E-07	4.602E-06	4.868E-06	4.103E-04	1.998E-07	2.853E-06	4.134E-04	4.204E-04
AHK	1.504E-06	7.391E-12	8.607E-10	1.505E-06	--	--	--	--	3.949E-08	9.697E-11	7.439E-09	4.703E-08	1.108E-07	8.819E-08	3.443E-06	3.642E-06	3.071E-04	1.495E-07	2.135E-06	3.093E-04	3.145E-04
AHL	1.233E-06	6.062E-12	7.059E-10	1.234E-06	--	--	--	--	3.247E-08	7.972E-11	6.116E-09	3.866E-08	1.113E-07	8.863E-08	3.461E-06	3.661E-06	3.086E-04	1.502E-07	2.146E-06	3.109E-04	3.158E-04
AHM	1.294E-06	6.359E-12	7.405E-10	1.294E-06	--	--	--	--	3.393E-08	8.331E-11	6.391E-09	4.041E-08	1.193E-07	9.498E-08	3.708E-06	3.923E-06	3.307E-04	1.610E-07	2.299E-06	3.332E-04	3.384E-04
AII	2.158E-06	1.061E-11	1.235E-09	2.159E-06	--	--	--	--	5.647E-08	1.387E-10	1.064E-08	6.725E-08	1.344E-07	1.070E-07	4.177E-06	4.419E-06	3.725E-04	1.813E-07	2.590E-06	3.753E-04	3.819E-04
AIJ	2.642E-06	1.299E-11	1.513E-09	2.644E-06	--	--	--	--	6.964E-08	1.710E-10	1.312E-08	8.293E-08	1.522E-07	1.212E-07	4.730E-06	5.004E-06	4.218E-04	2.053E-07	2.933E-06	4.250E-04	4.327E-04
AIK	2.360E-06	1.160E-11	1.351E-09	2.361E-06	--	--	--	--	6.145E-08	1.509E-10	1.157E-08	7.317E-08	1.308E-07	1.042E-07	4.068E-06	4.303E-06	3.627E-04	1.766E-07	2.522E-06	3.654E-04	3.722E-04
AIL	1.580E-06	7.769E-12	9.047E-10	1.581E-06	--	--	--	--	4.125E-08	1.013E-10	7.770E-09	4.912E-08	1.116E-07	8.888E-08	3.470E-06	3.671E-06	3.095E-04	1.506E-07	2.152E-06	3.118E-04	3.171E-04
AIM	1.257E-06	6.181E-12	7.197E-10	1.258E-06	--	--	--	--	3.305E-08	8.116E-11	6.226E-09	3.936E-08	1.168E-07	9.296E-08	3.630E-06	3.839E-06	3.237E-04	1.576E-07	2.250E-06	3.261E-04	3.312E-04
AJH	3.006E-06	1.478E-11	1.721E-09	3.008E-06	--	--	--	--	7.901E-08	1.940E-10	1.488E-08	9.408E-08	8.610E-08	6.856E-08	2.677E-06	2.832E-06	2.387E-04	1.162E-07	1.660E-06	2.405E-04	2.464E-04
AJI	1.641E-06	8.066E-12	9.393E-10	1.642E-06	--	--	--	--	4.301E-08	1.056E-10	8.100E-09	5.121E-08	1.250E-07	9.956E-08	3.887E-06	4.112E-06	3.466E-04	1.687E-07	2.410E-06	3.492E-04	3.550E-04
AJJ	2.400E-06	1.180E-11	1.374E-09	2.402E-06	--	--	--	--	6.291E-08	1.545E-10	1.185E-08	7.491E-08	1.253E-07	9.975E-08	3.895E-06	4.120E-06	3.473E-04	1.691E-07	2.415E-06	3.499E-04	3.565E-04
AJK	1.645E-06	8.086E-12	9.416E-10	1.646E-06	--	--	--	--	4.330E-08	1.063E-10	8.156E-09	5.156E-08	1.033E-07	8.224E-08	3.211E-06	3.396E-06	2.863E-04	1.394E-07	1.991E-06	2.885E-04	2.936E-04
AJL	1.370E-06	6.736E-12	7.845E-10	1.371E-06	--	--	--	--	3.598E-08	8.835E-11	6.777E-09	4.285E-08	1.114E-07	8.868E-08	3.463E-06	3.663E-06	3.088E-04	1.503E-07	2.147E-06	3.111E-04	3.161E-04
AJM	9.747E-07	4.791E-12	5.579E-10	9.752E-07	--	--	--	--	2.574E-08	6.319E-11	4.847E-09	3.065E-08	1.218E-07	9.695E-08	3.785E-06	4.004E-06	3.375E-04	1.643E-07	2.347E-06	3.401E-04	3.451E-04
AKG	2.158E-06	1.061E-11	1.235E-09	2.159E-06	--	--	--	--	5.676E-08	1.394E-10	1.069E-08	6.759E-08	6.571E-08	5.232E-08	2.043E-06	2.161E-06	1.822E-04	8.869E-08	1.267E-06	1.835E-04	1.879E-04
AKI	1.431E-06	7.034E-12	8.191E-10	1.432E-06	--	--	--	--	3.744E-08	9.194E-11	7.053E-09	4.459E-08	1.132E-07	9.016E-08	3.520E-06	3.724E-06	3.139E-04	1.528E-07	2.183E-06	3.162E-04	3.214E-04
AKJ	1.294E-06	6.359E-12	7.405E-10	1.294E-06	--	--	--	--	3.393E-08	8.331E-11	6.391E-09	4.041E-08	1.172E-07	9.331E-08	3.643E-06	3.854E-06	3.249E-04	1.581E-07	2.259E-06	3.273E-04	3.325E-04
AKK	1.027E-06	5.049E-12	5.880E-10	1.028E-06	--	--	--	--	2.661E-08	6.535E-11	5.013E-09	3.169E-08	9.593E-08	7.638E-08	2.982E-06	3.155E-06	2.659E-04	1.295E-07	1.849E-06	2.679E-04	2.721E-04
AKL	6.923E-06	3.403E-11	3.963E-09	6.927E-06	--	--	--	--	1.823E-07	4.477E-10	3.435E-08	2.171E-07	5.460E-05	4.347E-05	1.697E-03	1.795E-03	1.514E-01	7.368E-05	1.052E-03	1.525E-01	1.543E-01
AKL - Rem	1.286E-06	6.320E-12	7.359E-10	1.286E-06	--	--	--	--	3.393E-08	8.331E-11	6.391E-09	4.041E-08	9.340E-08	7.437E-08	2.904E-06	3.071E-06	2.589E-04	1.260E-07	1.800E-06	2.608E-04	2.652E-04
AKM	1.851E-06	9.099E-12	1.060E-09	1.852E-06	--	--	--	--	4.857E-08	1.193E-10	9.148E-09	4.041E-08	6.304E-07	5.020E-07	1.960E-05	2.073E-05	1.748E-03	8.508E-07	1.215E-05	1.761E-03	1.783E-03

Dose Calculations, Child Resident

Survey Grid	Net 95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				Total Dose
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	
AAA	0.051	--	0.191	1.470	1.470	1.489E-01	7.776E-08	1.700E-04	1.491E-01	--	--	--	--	4.017E-03	1.185E-05	1.930E-03	5.959E-03	1.614E-03	7.062E-01	7.157E-01	1.424E+00	1.427E+01	6.320E-04	1.411E-01	1.442E+01	1.599E+01
AAB	0.077	--	0.289	1.273	1.273	2.250E-01	1.175E-07	2.569E-04	2.253E-01	--	--	--	--	6.080E-03	1.793E-05	2.921E-03	9.018E-03	1.397E-03	6.116E-01	6.197E-01	1.233E+00	1.236E+01	5.473E-04	1.222E-01	1.248E+01	1.395E+01
AAC	0.044	0.027	0.154	1.583	1.583	1.274E-01	6.653E-08	1.454E-04	1.275E-01	3.603E-01	2.695E-07	4.619E-05	3.604E-01	3.239E-03	9.551E-06	1.556E-03	4.804E-03	1.738E-03	7.605E-01	7.707E-01	1.533E+00	1.537E+01	6.806E-04	1.520E-01	1.552E+01	1.755E+01
AAD	0.164	0.043	0.596	1.586	1.586	4.779E-01	2.496E-07	5.456E-04	4.784E-01	5.715E-01	4.275E-07	7.326E-05	5.716E-01	1.254E-02	3.698E-05	6.024E-03	1.860E-02	1.741E-03	7.620E-01	7.722E-01	1.536E+00	1.540E+01	6.819E-04	1.523E-01	1.555E+01	1.816E+01
AAE	0.156	0.041	0.569	1.474	1.474	4.546E-01	2.374E-07	5.190E-04	4.552E-01	5.346E-01	3.998E-07	6.852E-05	5.346E-01	1.197E-02	3.530E-05	5.751E-03	1.776E-02	1.618E-03	7.082E-01	7.176E-01	1.427E+00	1.431E+01	6.338E-04	1.415E-01	1.445E+01	1.689E+01
AAF	0.083	0.030	0.303	1.611	1.611	2.425E-01	1.266E-07	2.768E-04	2.428E-01	3.947E-01	2.952E-07	5.059E-05	3.947E-01	6.374E-03	1.880E-05	3.062E-03	9.455E-03	1.768E-03	7.740E-01	7.843E-01	1.560E+00	1.564E+01	6.927E-04	1.547E-01	1.580E+01	1.801E+01
AAG	0.047	--	0.172	1.237	1.237	1.373E-01	7.169E-08	1.567E-04	1.374E-01	--	--	--	--	3.618E-03	1.067E-05	1.738E-03	5.366E-03	1.358E-03	5.943E-01	6.022E-01	1.198E+00	1.201E+01	5.318E-04	1.188E-01	1.213E+01	1.347E+01
AAH	0.119	--	0.432	1.684	1.684	3.471E-01	1.813E-07	3.963E-04	3.475E-01	--	--	--	--	9.089E-03	2.680E-05	4.366E-03	1.348E-02	1.848E-03	8.091E-01	8.199E-01	1.631E+00	1.635E+01	7.241E-04	1.617E-01	1.651E+01	1.851E+01
AAI	0.085	--	0.309	1.692	1.692	2.483E-01	1.297E-07	2.835E-04	2.486E-01	--	--	--	--	6.500E-03	1.917E-05	3.123E-03	9.642E-03	1.857E-03	8.129E-01	8.238E-01	1.639E+00	1.643E+01	7.275E-04	1.625E-01	1.659E+01	1.849E+01
AAJ	0.039	--	0.142	1.726	1.726	1.135E-01	5.925E-08	1.295E-04	1.136E-01	--	--	--	--	2.986E-03	8.807E-06	1.435E-03	4.430E-03	1.895E-03	8.293E-01	8.403E-01	1.672E+00	1.676E+01	7.421E-04	1.657E-01	1.693E+01	1.872E+01
AAK	0.019	--	0.070	1.294	1.294	5.562E-02	2.904E-08	6.349E-05	5.568E-02	--	--	--	--	1.471E-03	4.339E-06	7.068E-04	2.182E-03	1.420E-03	6.217E-01	6.300E-01	1.253E+00	1.256E+01	5.563E-04	1.242E-01	1.269E+01	1.400E+01
AAL	0.035	--	0.125	2.063	2.063	1.004E-01	5.242E-08	1.146E-04	1.005E-01	--	--	--	--	2.629E-03	7.752E-06	1.263E-03	3.899E-03	2.265E-03	9.912E-01	1.004E+00	1.998E+00	2.003E+01	8.871E-04	1.981E-01	2.023E+01	2.233E+01
ABA	0.092	--	0.347	1.776	1.776	2.686E-01	1.403E-07	3.067E-04	2.689E-01	--	--	--	--	7.300E-03	2.153E-05	3.507E-03	1.083E-02	1.949E-03	8.533E-01	8.647E-01	1.720E+00	1.725E+01	7.636E-04	1.705E-01	1.742E+01	1.942E+01
ABB	0.088	--	0.340	1.377	1.377	2.570E-01	1.342E-07	2.934E-04	2.573E-01	--	--	--	--	7.153E-03	2.109E-05	3.436E-03	1.061E-02	1.511E-03	6.615E-01	6.704E-01	1.333E+00	1.337E+01	5.920E-04	1.322E-01	1.350E+01	1.510E+01
ABC	0.109	0.032	0.399	1.315	1.315	3.180E-01	1.661E-07	3.631E-04	3.184E-01	4.250E-01	3.179E-07	5.448E-05	4.251E-01	8.394E-03	2.475E-05	4.033E-03	1.245E-02	1.443E-03	6.317E-01	6.402E-01	1.273E+00	1.277E+01	5.654E-04	1.263E-01	1.289E+01	1.492E+01
ABD	0.139	0.021	0.507	1.522	1.522	4.052E-01	2.116E-07	4.626E-04	4.057E-01	2.811E-01	2.103E-07	3.604E-05	2.812E-01	1.067E-02	3.146E-05	5.124E-03	1.582E-02	1.671E-03	7.312E-01	7.410E-01	1.474E+00	1.478E+01	6.544E-04	1.461E-01	1.493E+01	1.710E+01
ABE	0.249	0.037	0.946	1.318	1.318	7.249E-01	3.786E-07	8.276E-04	7.257E-01	4.857E-01	3.633E-07	6.226E-05	4.858E-01	1.990E-02	5.870E-05	9.562E-03	2.953E-02	1.447E-03	6.332E-01	6.416E-01	1.276E+00	1.280E+01	5.667E-04	1.265E-01	1.292E+01	1.544E+01
ABF	0.050	0.026	0.182	1.277	1.277	1.454E-01	7.594E-08	1.660E-04	1.456E-01	3.471E-01	2.596E-07	4.450E-05	3.472E-01	3.828E-03	1.129E-05	1.839E-03	5.678E-03	1.402E-03	6.135E-01	6.217E-01	1.237E+00	1.240E+01	5.490E-04	1.226E-01	1.252E+01	1.426E+01
ABG	0.367	--	1.334	8.054	8.054	1.068E+00	5.577E-07	1.219E-03	1.069E+00	--	--	--	--	2.807E-02	8.278E-05	1.348E-02	4.164E-02	8.843E-03	3.871E+00	3.922E+00	7.802E+00	7.822E+01	3.464E-03	7.735E-01	7.900E+01	8.791E+01
ABH	0.092	--	0.344	1.324	1.324	2.686E-01	1.403E-07	3.067E-04	2.689E-01	--	--	--	--	7.237E-03	2.134E-05	3.477E-03	1.073E-02	1.453E-03	6.361E-01	6.446E-01	1.282E+00	1.286E+01	5.692E-04	1.271E-01	1.298E+01	1.454E+01
ABI	0.086	--	0.315	1.895	1.895	2.512E-01	1.312E-07	2.868E-04	2.515E-01	--	--	--	--	6.627E-03	1.954E-05	3.183E-03	9.830E-03	2.080E-03	9.105E-01	9.226E-01	1.835E+00	1.840E+01	8.148E-04	1.820E-01	1.858E+01	2.068E+01
ABJ	0.023	--	0.082	1.352	1.352	6.550E-02	3.421E-08	7.477E-05	6.557E-02	--	--	--	--	1.724E-03	5.083E-06	8.281E-04	2.557E-03	1.484E-03	6.495E-01	6.582E-01	1.309E+00	1.313E+01	5.813E-04	1.298E-01	1.326E+01	1.463E+01
ABK	0.015	--	0.054	1.333	1.333	4.312E-02	2.252E-08	4.923E-05	4.317E-02	--	--	--	--	1.135E-03	3.346E-06	5.450E-04	1.683E-03	1.463E-03	6.404E-01	6.489E-01	1.291E+00	1.294E+01	5.731E-04	1.280E-01	1.307E+01	1.441E+01
ABL	0.025	--	0.091	1.819	1.819	7.247E-02	3.785E-08	8.274E-05	7.256E-02	--	--	--	--	1.913E-03	5.642E-06	9.191E-04	2.838E-03	1.997E-03	8.740E-01	8.856E-01	1.762E+00	1.766E+01	7.821E-04	1.747E-01	1.784E+01	1.968E+01
ABM	0.031	--	0.103	1.932	1.932	9.078E-02	4.741E-08	1.036E-04	9.089E-02	--	--	--	--	2.166E-03	6.387E-06	1.040E-03	3.212E-03	2.121E-03	9.283E-01	9.407E-01	1.871E+00	1.876E+01	8.307E-04	1.855E-01	1.895E+01	2.091E+01
ACH	1.499	--	5.754	206.583	206.583	4.358E+00	2.276E-06	4.975E-03	4.363E+00	--	--	--	--	1.211E-01	3.571E-04	5.816E-02	1.796E-01	2.268E-01	9.928E+01	1.006E+02	2.001E+02	2.007E+03	8.885E-02	1.984E+01	2.026E+03	2.231E+03
ACH - Rem	0.016	--	0.056	1.092	1.092	4.777E-02	2.495E-08	5.453E-05	4.783E-02	--	--	--	--	1.177E-03	3.470E-06	5.653E-04	1.745E-03	1.198E-03	5.246E-01	5.316E-01	1.057E+00	1.060E+01	4.695E-04	1.048E-01	1.071E+01	1.181E+01
ACI	0.036	--	0.132	0.955	0.955	1.059E-01	5.530E-08	1.209E-04	1.060E-01	--	--	--	--	2.776E-03	8.186E-06	1.334E-03	4.118E-03	1.048E-03	4.587E-01	4.649E-01	9.246E-01	9.271E+00	4.105E-04	9.168E-02	9.363E+00	1.040E+01
ACJ	0.024	--	0.086	1.196	1.196	6.840E-02	3.572E-08	7.809E-05	6.848E-02	--	--	--	--	1.808E-03	5.332E-06	8.685E-04	2.682E-03	1.313E-03	5.746E-01	5.822E-01	1.158E+00	1.161E+01	5.142E-04	1.148E-01	1.173E+01	1.296E+01
ACK	0.017	--	0.062	1.202	1.202	4.951E-02	2.586E-08	5.653E-05	4.957E-02	--	--	--	--	1.303E-03	3.842E-06	6.259E-04	1.933E-03	1.319E-03	5.774E-01	5.851E-01	1.164E+00	1.167E+01	5.168E-04	1.154E-01	1.179E+01	1.300E+01
ACL	0.039	--	0.150	1.392	1.392	1.132E-01	5.910E-08	1.292E-04	1.133E-01	--	--	--	--	3.155E-03	9.303E-06	1.515E-03	4.679E-03	1.528E-03	6.688E-01	6.777E-01	1.348E+00	1.352E+01	5.985E-04	1.337E-01	1.365E+01	1.512E+01
ACM	0.027	--	0.098	2.043	2.043	7.858E-02	4.103E-08	8.970E-05	7.867E-02	--	--	--	--	2.060E-03	6.076E-06	9.898E-04	3.056E-03	2.243E-03	9.816E-01	9.947E-01	1.979E+00	1.984E+01	8.785E-04	1.962E-01	2.004E+01	2.210E+01
ADI	0.048	--	0.171	1.403	1.403	1.405E-01	7.336E-08	1.604E-04	1.406E-01	--	--	--	--	3.597E-03	1.061E-05	1.728E-03	5.335E-03	1.540E-03	6.740E-01	6.830E-01	1.359E+00	1.362E+01	6.032E-04	1.347E-01	1.376E+01	1.526E+01
ADJ	0.022	--	0.059	1.213	1.213	6.288E-02	3.284E-08	7.179E-05	6.295E-02	--	--	--	--	1.240E-03	3.656E-06	5.956E-04	1.839E-03	1.331E-03	5.827E-01	5.905E-01	1.175E+00	1.178E+01	5.215E-04	1.165E-01	1.189E+01	1.313E+01
ADK	0.015	--	0.054	0.981	0.981	4.312E-02	2.252E-08	4.923E-05	4.317E-02	--	--	--	--	1.135E-03	3.346E-06	5.450E-04	1.683E-03	1.077E-03	4.712E-01	4.775E-01	9.498E-01	9.524E+00	4.217E-04	9.418E-02	9.618E+00	1.061E+01
ADL	0.005	--	0.020	1.026	1.026	1.551E-02	8.101E-09	1.771E-05	1.553E-02	--	--	--	--	4.191E-04	1.236E-06	2.013E-04	6.217E-04	1.126E-03	4.929E-01	4.994E-01	9.934E-01	9.961E+00	4.411E-04	9.850E-02	1.006E+01	1.107E+01
ADM	0.028	--	0.101	1.812	1.812	8.264E-02	4.316E-08	9.435E-05	8.274E-02	--	--	--	--	2.124E-03	6.262E-06	1.020E-03	3.150E-03	1.989E-03	8.706E-01	8.822E-01	1.755E+00	1.760E+01	7.791E-04	1.740E-01	1.777E+01	1.961E+01
AEJ	0.020	--	0.074	0.947	0.947	5.940E-02	3.102E-08	6.781E-05	5.946E-02	--	--	--	--	1.555E-03	4.587E-06	7.472E-04	2.307E-03	1.039E-03	4.549E-01	4.610E-01	9.169E-01	9.193E+00	4.071E-04	9.091E-02	9.285E+00	1.026E+01
AEK	0.023	--	0.084	1.375	1.375	6.695E-02	3.496E-08	7.643E-05	6.703E-02	--	--	--	--	1.766E-03	5.207E-06	8.483E-04	2.619E-03	1.509E-03	6.606E-01	6.694E-01	1.331E+00	1.335E+01	5.912E-04	1.320E-01	1.348E+01	1.488E+01
AEL	0.020	--	0.073	1.532	1.532	5.852E-02	3.056E-08	6.681E-05	5.859E-02	--	--	--	--	1.534E-03	4.525E-06	7.371E-04	2.276E-03	1.682E-03	7.360E-01	7.459E-01	1.484E+00	1.488E+01	6.587E-04	1.471E-01	1.502E+01	1.657E+01
AEM	0.063	--	0.225	2.073	2.073	1.844E-01	9.628E-08	2.105E-04	1.846E-01	--	--	--	--	4.733E-03	1.396E-05	2.274E-03	7.020E-03	2.276E-03	9.960E-01	1.009E+00	2.008E+00	2.013E+01	8.914E-04	1.991E-01	2.033E+01	2.253E+01
AFI - AGI	0.070	--	0.255	1.953	1.953	2.047E-01	1.069E-07	2.337E-04	2.049E-01	--	--	--	--	5.364E-03	1.582E-05	2.577E-03	7.957E-03	2.144E-03	9.384E-01	9.509E-01	1.891E+00	1.896E+01	8.398E-04	1.875E-01	1.915E+01	2.126E+01
AFJ	0.014	--	0.052	1.564	1.564	4.167E-02	2.176E-08	4.757E-05	4.172E-02	--	--	--	--	1.092E-03	3.222E-06	5.248E-04	1.621E-03	1.717E-03	7.514E-01	7.614E-01	1.515E+00	1.519E+01	6.725E-04	1.502E-01	1.534E+01	1.690E+01
AFK	0.015	--	0.054	1.363	1.363	4.312E-02	2.252E-08	4.923E-05	4.317E-02	--	--	--	--	1.135E-03	3.346E-06	5.450E-04	1.683E-03	1.496E-03	6.548E-01	6.636E-01	1.320E+00	1.323E+01	5.860E-04	1.309E-01	1.337E+01	1.473E+01
AFL	0.051	--	0.188	2.860	2.860	1.495E-01	7.807E-08	1.707E-04	1.497E-01	--	--	--	--	3.954E-03	1.166E-05	1.900E-03	5.866E-03	3.140E-03	1.374E+00	1.393E+00	2.770E+00	2.777E+01	1.230E-03	2.747E-01	2.805E+01	3.098E+01
AFM	0.048	--	0.175	1.419	1.419	1.402E-01	7.321E-08	1.600E-04	1.403E-01	--	--	--	--	3.681E-03	1.085E-05	1.768E-03	5.460E-03	1.558E-03	6.817E-01	6.908E-01	1.374E+00	1.378E+01	6.101E-04	1.362E-01	1.391E+01	1.543E+01
AGJ	0.058	--	0.212	2.505	2.505	1.698E-01	8.869E-08	1.939E-04	1.700E-01	--	--	--	--	4.459E-03	1.315E-05	2.142E-03	6.615E-03	2.750E-03	1.204E+00	1.220E+00	2.426E+00	2.433E+01	1.077E-03	2.406E-01	2.457E+01	2.717E+01
AGK	0.054	--	0.198	2.183	2.183	1.582E-01	8.262E-08	1.806E-04	1.584E-01	--	--	--	--	4.165E-03	1.228E-05	2.001E-03	6.178E-03	2.396E-03	1.049E+00	1.063E+00	2.114E+00	2.120E+01	9.387E-04	2.096E-01	2.141E+01	2.369E+01
AGL	0.044	--	0.158	1.983	1.983	1.268E-01	6.623E-08	1.448E-04	1.270E-01	--	--	--	--	3.323E-03	9.800E-06	1.596E-03	4.929E-03	2.177E-03	9.528E-01	9.655E-01	1.920E+00	1.926E+01	8.527E-04	1.904E-01	1.945E+01	2.150E+01
AGM	0.049	--	0.176	1.948	1.948	1.411E-01	7.367E-08	1.610E-04	1.412E-01	--	--	--	--	3.702E-03	1.092E-05	1.778E-03	5.491E-03	2.138E-03	9.360E-01	9.485E-01	1.887E+00	1.892E+01	8.376E-04	1.871E-01	1.910E+01	2.114E+01
AHH - AIH	0.063	--	0.228	1.716	1.716	1.844E-01	9.628E-08	2.105E-04	1.846E-01	--	--	--	--	4.796E-03	1.414E-05	2.304E-03	7.114E-03	1.884E-03	8.245E-01	8.355E-01	1.662E+00	1.666E+01	7.378E-04	1.648E-01	1.683E+01	1.868E+01
AHI	0.025	--	0.088	1.280	1.280	7.335E-02	3.830E-08	8.373E-05	7.343E-02	--	--	--	--	1.850E-03	5.456E-06	8.887E-04	2.744E-03	1.405E-03	6.149E-01	6.231E-01	1.239E+00	1.243E+01	5.503E-04	1.229E-01	1.255E+01	1.387E+01
AHJ	0.051	--	0.185	2.396	2.396	1.483E-01	7.746E-08	1.693E-04	1.485E-01	--	--	--	--	3.891E-03	1.147E-05	1.869E-03	5.772E-03	2.630E-03	1.151E+00	1.167E+00	2.321E+00	2.327E+01	1.030E-03	2.301E-01	2.350E+01	2.597E+01
AHK	0.037	--	0.135	1.793	1.793	1.082E-01	5.652E-08	1.235E-04	1.083E-01	--	--	--	--	2.839E-03	8.372E-06	1.364E-03	4.211E-03	1.968E-03	8.615E-01	8.730E-01	1.736E+00	1.741E+01	7.710E-04	1.722E-01	1.758E+01	1.943E+01
AHL	0.031	--	0.111	1.802	1.802	8.875E-02	4.635E-08	1.013E-04	8.885E-02	--	--	--	--	2.334E-03	6.883E-06	1.121E-03	3.462E-03	1.978E-03	8.658E-01	8.774E-01	1.745E+00	1.750E+01	7.748E-04	1.730E-01	1.767E+01	1.951E+01
AHM	0.032	--	0.116	1.931	1.931	9.311E-02	4.862E-08	1.063E-04	9.321E-02	--	--	--	--	2.439E-03	7.193E-06	1.172E-03	3.618E-03	2.120E-03	9.278E-01	9.402E-01	1.870E+00	1.875E+01	8.303E-04	1.854E-01	1.894E+01	2.090E+01
AII	0.053	--	0.193	2.175	2.175	1.553E-01	8.110E-08	1.773E-04	1.555E-01	--	--	--	--	4.059E-03	1.197E-05	1.950E-03	6.022E-03	2.388E-03	1.045E+00	1.059E+00	2.106E+00	2.112E+01	9.353E-04	2.089E-01	2.133E+01	2.360E+01
AIJ	0.065	--	0.238	2.463	2.463	1.902E-01	9.931E-08	2.171E-04	1.904E-01	--	--	--	--	5.006E-03	1.476E-05	2.405E-03	7.426E-03	2.704E-03	1.183E+00	1.199E+00	2.385E+00	2.392E+01	1.059E-03	2.365E-01	2.416E+01	2.674E+01
AIK	0.058	--	0.210	2.118	2.118	1.698E-01	8.869E-08	1.939E-04	1.700E-01	--	--	--	--	4.417E-03	1.303E-05	2.122E-03	6.552E-03	2.325E-03	1.018E+00	1.031E+00	2.051E+00	2.057E+01	9.107E-04	2.034E-01	2.077E+01	2.300E+01
AIL	0.039	--	0.141	1.807	1.807	1.137E-01	5.940E-08	1.298E-04	1.139E-01	--	--	--	--	2.965E-03	8.745E-06	1.425E-03	4.398E-03	1.984E-03	8.682E-01	8.798E-01	1.750E+00	1.755E+01	7.770E-04	1.735E-01	1.772E+01	1.959E+01
AIM	0.031	--	0.113	1.890	1.890	9.049E-02	4.726E-08	1.033E-04	9.059E-02	--	--	--	--	2.376E-03	7.007E-06	1.141E-03	3.525E-03	2.075E-03	9.081E-01	9.202E-01	1.830E+00	1.835E+01	8.127E-04	1.815E-01	1.854E+01	2.046E+01
AJH	0.074	--	0.270	1.394	1.394	2.163E-01	1.130E-07	2.470E-04	2.166E-01	--	--	--	--	5.679E-03	1.675E-05	2.728E-03	8.424E-03	1.530E-03	6.697E-01	6.787E-01	1.350E+00	1.354E+01	5.993E-04	1.338E-01	1.367E+01	1.524E+01
AJI	0.041	--	0.147	2.024	2.024	1.181E-01	6.168E-08	1.348E-04	1.182E-01	--	--	--	--	3.091E-03	9.117E-06	1.485E-03	4.586E-03	2.222E-03	9.725E-01	9.855E-01	1.960E+00	1.965E+01	8.703E-04	1.944E-01	1.985E+01	2.193E+01
AJJ	0.059	--	0.215	2.028	2.028	1.727E-01	9.021E-08	1.972E-04	1.729E-01	--	--	--	--	4.522E-03	1.334E-05	2.173E-03	6.708E-03	2.226E-03	9.744E-01	9.874E-01	1.964E+00	1.969E+01	8.720E-04	1.947E-01	1.989E+01	2.203E+01
AJK	0.041	--	0.148	1.672	1.672	1.184E-01	6.183E-08	1.352E-04	1.185E-01	--	--	--	--	3.113E-03	9.179E-06	1.495E-03	4.617E-03	1.835E-03	8.033E-01	8.140E-01	1.619E+00	1.624E+01	7.189E-04	1.605E-01	1.640E+01	1.814E+01
AJL	0.034	--	0.123	1.803	1.803	9.863E-02	5.151E-08	1.126E-04	9.874E-02	--	--	--	--	2.586E-03	7.628E-06	1.243E-03	3.837E-03	1.979E-03	8.663E-01	8.778E-01	1.746E+00	1.751E+01	7.753E-04	1.731E-01	1.768E+01	1.953E+01
AJM	0.024	--	0.088	1.971	1.971	7.015E-02	3.663E-08	8.008E-05	7.023E-02	--	--	--	--	1.850E-03	5.456E-06	8.887E-04	2.744E-03	2.164E-03	9.470E-01	9.597E-01	1.909E+00	1.914E+01	8.475E-04	1.893E-01	1.933E+01	2.131E+01
AKG	0.053	--	0.194	1.064	1.064	1.553E-01	8.110E-08	1.773E-04	1.555E-01	--	--	--	--	4.080E-03	1.203E-05	1.960E-03	6.053E-03	1.168E-03	5.111E-01	5.179E-01	1.030E+00	1.033E+01	4.574E-04	1.021E-01	1.043E+01	1.162E+01
AKI	0.035	--	0.128	1.833	1.833	1.030E-01	5.378E-08	1.176E-04	1.031E-01	--	--	--	--	2.692E-03	7.938E-06	1.293E-03	3.993E-03	2.012E-03	8.807E-01	8.925E-01	1.775E+00	1.780E+01	7.882E-04	1.760E-01	1.798E+01	1.986E+01
AKJ	0.032	--	0.116	1.897	1.897	9.311E-02	4.862E-08	1.063E-04	9.321E-02	--	--	--	--	2.439E-03	7.193E-06	1.172E-03	3.618E-03	2.082E-03	9.115E-01	9.236E-01	1.837E+00	1.842E+01	8.157E-04	1.822E-01	1.860E+01	2.054E+01
AKK	0.025	--	0.091	1.553	1.553	7.393E-02	3.861E-08	8.439E-05	7.401E-02	--	--	--	--	1.913E-03	5.642E-06	9.191E-04	2.838E-03	1.705E-03	7.461E-01	7.561E-01	1.504E+00	1.508E+01	6.677E-04	1.491E-01	1.523E+01	1.681E+01
AKL	0.171	--	0.623	883.583	883.583	4.982E-01	2.602E-07	5.688E-04	4.988E-01	--	--	--	--	1.311E-02	3.865E-05	6.297E-03	1.944E-02	9.702E-01	4.246E+02	4.303E+02	8.559E+02	8.582E+03	3.800E-01	8.487E+01	8.667E+03	9.524E+03
AKL - Rem	0.032	--	0.116	1.512	1.512	9.253E-02	4.832E-08	1.056E-04	9.263E-02	--	--	--	--	2.439E-03	7.193E-06	1.172E-03	3.618E-03	1.660E-03	7.264E-01	7.361E-01	1.464E+00	1.468E+01	6.501E-04	1.452E-01	1.483E+01	1.639E+01
AKM	0.046	--	0.166	10.203	10.203	1.332E-01	6.957E-08	1.521E-04	1.334E-01	--	--	--	--	3.491E-03	1.030E-05	1.677E-03	5.179E-03	1.120E-02	4.903E+00	4.969E+00	9.883E+00	9.910E+01	4.388E-03	9.800E-01	1.001E+02	1.101E+02

Risk Calculations, Child Resident

Survey	Net 95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				
Grid	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Total Risk
AAA	0.051	--	0.191	1.470	1.470	6.294E-07	1.547E-12	7.205E-10	6.301E-07	--	--	--	--	1.784E-08	2.191E-11	6.720E-09	2.458E-08	2.976E-08	1.185E-08	1.850E-06	1.892E-06	6.454E-05	1.303E-08	4.794E-07	6.503E-05	6.758E-05
AAB	0.077	--	0.289	1.273	1.273	9.512E-07	2.338E-12	1.089E-09	9.523E-07	--	--	--	--	2.700E-08	3.315E-11	1.017E-08	3.720E-08	2.577E-08	1.026E-08	1.602E-06	1.638E-06	5.589E-05	1.128E-08	4.151E-07	5.631E-05	5.894E-05
AAC	0.044	0.027	0.154	1.583	1.583	5.385E-07	1.324E-12	6.164E-10	5.391E-07	1.220E-06	5.504E-13	1.695E-10	1.220E-06	1.438E-08	1.766E-11	5.417E-09	1.982E-08	3.205E-08	1.276E-08	1.992E-06	2.037E-06	6.950E-05	1.403E-08	5.162E-07	7.003E-05	7.385E-05
AAD	0.164	0.043	0.596	1.586	1.586	2.020E-06	4.965E-12	2.312E-09	2.022E-06	1.935E-06	8.730E-13	2.689E-10	1.935E-06	5.569E-08	6.838E-11	2.097E-08	7.673E-08	3.211E-08	1.278E-08	1.996E-06	2.041E-06	6.964E-05	1.406E-08	5.172E-07	7.017E-05	7.624E-05
AAE	0.156	0.041	0.569	1.474	1.474	1.922E-06	4.724E-12	2.200E-09	1.924E-06	1.810E-06	8.165E-13	2.515E-10	1.810E-06	5.316E-08	6.528E-11	2.002E-08	7.325E-08	2.984E-08	1.188E-08	1.855E-06	1.897E-06	6.472E-05	1.306E-08	4.807E-07	6.521E-05	7.091E-05
AAF	0.083	0.030	0.303	1.611	1.611	1.025E-06	2.519E-12	1.173E-09	1.026E-06	1.336E-06	6.028E-13	1.857E-10	1.336E-06	2.831E-08	3.476E-11	1.066E-08	3.900E-08	3.261E-08	1.298E-08	2.028E-06	2.073E-06	7.073E-05	1.428E-08	5.253E-07	7.127E-05	7.575E-05
AAG	0.047	--	0.172	1.237	1.237	5.802E-07	1.426E-12	6.643E-10	5.809E-07	--	--	--	--	1.606E-08	1.973E-11	6.051E-09	2.214E-08	2.504E-08	9.967E-09	1.557E-06	1.592E-06	5.431E-05	1.096E-08	4.033E-07	5.472E-05	5.692E-05
AAH	0.119	--	0.432	1.684	1.684	1.467E-06	3.606E-12	1.680E-09	1.469E-06	--	--	--	--	4.036E-08	4.956E-11	1.520E-08	5.561E-08	3.409E-08	1.357E-08	2.120E-06	2.167E-06	7.394E-05	1.493E-08	5.492E-07	7.450E-05	7.819E-05
AAI	0.085	--	0.309	1.692	1.692	1.049E-06	2.580E-12	1.201E-09	1.051E-06	--	--	--	--	2.887E-08	3.545E-11	1.087E-08	3.977E-08	3.425E-08	1.364E-08	2.130E-06	2.177E-06	7.429E-05	1.500E-08	5.518E-07	7.486E-05	7.813E-05
AAJ	0.039	--	0.142	1.726	1.726	4.795E-07	1.179E-12	5.489E-10	4.801E-07	--	--	--	--	1.326E-08	1.628E-11	4.995E-09	1.827E-08	3.494E-08	1.391E-08	2.172E-06	2.221E-06	7.578E-05	1.530E-08	5.629E-07	7.636E-05	7.908E-05
AAK	0.019	--	0.070	1.294	1.294	2.351E-07	5.779E-13	2.691E-10	2.353E-07	--	--	--	--	6.533E-09	8.023E-12	2.461E-09	9.002E-09	2.619E-08	1.043E-08	1.629E-06	1.665E-06	5.681E-05	1.147E-08	4.219E-07	5.724E-05	5.915E-05
AAL	0.035	--	0.125	2.063	2.063	4.242E-07	1.043E-12	4.857E-10	4.247E-07	--	--	--	--	1.167E-08	1.433E-11	4.397E-09	1.608E-08	4.177E-08	1.663E-08	2.597E-06	2.655E-06	9.059E-05	1.829E-08	6.728E-07	9.128E-05	9.437E-05
ABA	0.092	--	0.347	1.776	1.776	1.135E-06	2.791E-12	1.300E-09	1.137E-06	--	--	--	--	3.242E-08	3.981E-11	1.221E-08	4.467E-08	3.595E-08	1.431E-08	2.235E-06	2.286E-06	7.798E-05	1.574E-08	5.792E-07	7.857E-05	8.204E-05
ABB	0.088	--	0.340	1.377	1.377	1.086E-06	2.670E-12	1.244E-09	1.088E-06	--	--	--	--	3.176E-08	3.900E-11	1.196E-08	4.377E-08	2.787E-08	1.110E-08	1.733E-06	1.772E-06	6.046E-05	1.220E-08	4.490E-07	6.092E-05	6.382E-05
ABC	0.109	0.032	0.399	1.315	1.315	1.344E-06	3.304E-12	1.539E-09	1.346E-06	1.439E-06	6.492E-13	2.000E-10	1.439E-06	3.728E-08	4.577E-11	1.404E-08	5.136E-08	2.662E-08	1.060E-08	1.655E-06	1.692E-06	5.773E-05	1.165E-08	4.288E-07	5.817E-05	6.270E-05
ABD	0.139	0.021	0.507	1.522	1.522	1.713E-06	4.210E-12	1.961E-09	1.715E-06	9.517E-07	4.294E-13	1.323E-10	9.518E-07	4.737E-08	5.817E-11	1.784E-08	6.527E-08	3.081E-08	1.226E-08	1.916E-06	1.959E-06	6.682E-05	1.349E-08	4.963E-07	6.733E-05	7.202E-05
ABE	0.249	0.037	0.946	1.318	1.318	3.064E-06	7.532E-12	3.508E-09	3.067E-06	1.644E-06	7.419E-13	2.285E-10	1.645E-06	8.839E-08	1.085E-10	3.329E-08	1.218E-07	2.668E-08	1.062E-08	1.659E-06	1.696E-06	5.786E-05	1.168E-08	4.298E-07	5.831E-05	6.484E-05
ABF	0.050	0.026	0.182	1.277	1.277	6.146E-07	1.511E-12	7.036E-10	6.153E-07	1.175E-06	5.302E-13	1.633E-10	1.175E-06	1.700E-08	2.087E-11	6.403E-09	2.342E-08	2.585E-08	1.029E-08	1.607E-06	1.643E-06	5.606E-05	1.132E-08	4.164E-07	5.649E-05	5.995E-05
ABG	0.367	--	1.334	8.054	8.054	4.513E-06	1.109E-11	5.167E-09	4.518E-06	--	--	--	--	1.246E-07	1.531E-10	4.695E-08	1.717E-07	1.631E-07	6.492E-08	1.014E-05	1.037E-05	3.537E-04	7.140E-08	2.627E-06	3.564E-04	3.715E-04
ABH	0.092	--	0.344	1.324	1.324	1.135E-06	2.791E-12	1.300E-09	1.137E-06	--	--	--	--	3.214E-08	3.946E-11	1.210E-08	4.428E-08	2.680E-08	1.067E-08	1.666E-06	1.704E-06	5.813E-05	1.173E-08	4.317E-07	5.857E-05	6.146E-05
ABI	0.086	--	0.315	1.895	1.895	1.062E-06	2.610E-12	1.215E-09	1.063E-06	--	--	--	--	2.943E-08	3.613E-11	1.108E-08	4.055E-08	3.836E-08	1.527E-08	2.385E-06	2.439E-06	8.321E-05	1.680E-08	6.180E-07	8.384E-05	8.738E-05
ABJ	0.023	--	0.082	1.352	1.352	2.768E-07	6.805E-13	3.169E-10	2.771E-07	--	--	--	--	7.655E-09	9.400E-12	2.883E-09	1.055E-08	2.737E-08	1.089E-08	1.702E-06	1.740E-06	5.936E-05	1.198E-08	4.409E-07	5.981E-05	6.184E-05
ABK	0.015	--	0.054	1.333	1.333	1.823E-07	4.480E-13	2.086E-10	1.825E-07	--	--	--	--	5.038E-09	6.187E-12	1.898E-09	6.942E-09	2.698E-08	1.074E-08	1.678E-06	1.715E-06	5.852E-05	1.181E-08	4.347E-07	5.897E-05	6.087E-05
ABL	0.025	--	0.091	1.819	1.819	3.063E-07	7.530E-13	3.507E-10	3.067E-07	--	--	--	--	8.496E-09	1.043E-11	3.200E-09	1.171E-08	3.682E-08	1.466E-08	2.289E-06	2.341E-06	7.987E-05	1.612E-08	5.932E-07	8.048E-05	8.314E-05
ABM	0.031	--	0.103	1.932	1.932	3.837E-07	9.432E-13	4.393E-10	3.841E-07	--	--	--	--	9.617E-09	1.181E-11	3.622E-09	1.325E-08	3.911E-08	1.557E-08	2.432E-06	2.486E-06	8.483E-05	1.712E-08	6.301E-07	8.548E-05	8.836E-05
ACH	1.499	--	5.754	206.583	206.583	1.842E-05	4.528E-11	2.109E-08	1.844E-05	--	--	--	--	5.377E-07	6.602E-10	2.025E-07	7.408E-07	4.183E-06	1.665E-06	2.601E-04	2.659E-04	9.073E-03	1.832E-06	6.739E-05	9.142E-03	9.427E-03
ACH - Rem	0.016	--	0.056	1.092	1.092	2.019E-07	4.963E-13	2.311E-10	2.021E-07	--	--	--	--	5.225E-09	6.416E-12	1.968E-09	7.200E-09	2.210E-08	8.799E-09	1.374E-06	1.405E-06	4.794E-05	9.677E-09	3.560E-07	4.830E-05	4.992E-05
ACI	0.036	--	0.132	0.955	0.955	4.476E-07	1.100E-12	5.124E-10	4.481E-07	--	--	--	--	1.233E-08	1.514E-11	4.643E-09	1.699E-08	1.933E-08	7.694E-09	1.202E-06	1.229E-06	4.192E-05	8.463E-09	3.114E-07	4.224E-05	4.394E-05
ACJ	0.024	--	0.086	1.196	1.196	2.891E-07	7.107E-13	3.310E-10	2.894E-07	--	--	--	--	8.029E-09	9.859E-12	3.024E-09	1.106E-08	2.421E-08	9.637E-09	1.505E-06	1.539E-06	5.251E-05	1.060E-08	3.900E-07	5.291E-05	5.475E-05
ACK	0.017	--	0.062	1.202	1.202	2.093E-07	5.144E-13	2.396E-10	2.095E-07	--	--	--	--	5.786E-09	7.105E-12	2.179E-09	7.972E-09	2.433E-08	9.685E-09	1.513E-06	1.547E-06	5.277E-05	1.065E-08	3.919E-07	5.317E-05	5.494E-05
ACL	0.039	--	0.150	1.392	1.392	4.783E-07	1.176E-12	5.475E-10	4.788E-07	--	--	--	--	1.401E-08	1.720E-11	5.277E-09	1.930E-08	2.818E-08	1.122E-08	1.752E-06	1.791E-06	6.111E-05	1.234E-08	4.539E-07	6.158E-05	6.387E-05
ACM	0.027	--	0.098	2.043	2.043	3.321E-07	8.164E-13	3.802E-10	3.325E-07	--	--	--	--	9.150E-09	1.124E-11	3.446E-09	1.261E-08	4.136E-08	1.646E-08	2.572E-06	2.629E-06	8.971E-05	1.811E-08	6.663E-07	9.039E-05	9.337E-05
ADI	0.048	--	0.171	1.403	1.403	5.937E-07	1.460E-12	6.797E-10	5.944E-07	--	--	--	--	1.597E-08	1.961E-11	6.016E-09	2.201E-08	2.840E-08	1.131E-08	1.766E-06	1.805E-06	6.160E-05	1.243E-08	4.575E-07	6.207E-05	6.449E-05
ADJ	0.022	--	0.059	1.213	1.213	2.658E-07	6.533E-13	3.043E-10	2.661E-07	--	--	--	--	5.506E-09	6.760E-12	2.074E-09	7.586E-09	2.455E-08	9.774E-09	1.527E-06	1.561E-06	5.325E-05	1.075E-08	3.955E-07	5.366E-05	5.549E-05
ADK	0.015	--	0.054	0.981	0.981	1.823E-07	4.480E-13	2.086E-10	1.825E-07	--	--	--	--	5.038E-09	6.187E-12	1.898E-09	6.942E-09	1.986E-08	7.904E-09	1.234E-06	1.262E-06	4.306E-05	8.693E-09	3.198E-07	4.339E-05	4.484E-05
ADL	0.005	--	0.020	1.026	1.026	6.556E-08	1.612E-13	7.506E-11	6.564E-08	--	--	--	--	1.861E-09	2.285E-12	7.010E-10	2.565E-09	2.077E-08	8.267E-09	1.291E-06	1.320E-06	4.504E-05	9.092E-09	3.345E-07	4.538E-05	4.677E-05
ADM	0.028	--	0.101	1.812	1.812	3.493E-07	8.587E-13	3.999E-10	3.497E-07	--	--	--	--	9.430E-09	1.158E-11	3.552E-09	1.299E-08	3.668E-08	1.460E-08	2.281E-06	2.332E-06	7.956E-05	1.606E-08	5.909E-07	8.017E-05	8.286E-05
AEJ	0.020	--	0.074	0.947	0.947	2.510E-07	6.171E-13	2.874E-10	2.513E-07	--	--	--	--	6.907E-09	8.482E-12	2.602E-09	9.517E-09	1.917E-08	7.630E-09	1.192E-06	1.218E-06	4.157E-05	8.392E-09	3.087E-07	4.189E-05	4.337E-05
AEK	0.023	--	0.084	1.375	1.375	2.830E-07	6.956E-13	3.240E-10	2.833E-07	--	--	--	--	7.842E-09	9.629E-12	2.954E-09	1.080E-08	2.783E-08	1.108E-08	1.730E-06	1.769E-06	6.037E-05	1.219E-08	4.484E-07	6.083E-05	6.289E-05
AEL	0.020	--	0.073	1.532	1.532	2.474E-07	6.080E-13	2.832E-10	2.476E-07	--	--	--	--	6.814E-09	8.367E-12	2.566E-09	9.389E-09	3.101E-08	1.235E-08	1.928E-06	1.972E-06	6.726E-05	1.358E-08	4.996E-07	6.778E-05	7.001E-05
AEM	0.063	--	0.225	2.073	2.073	7.792E-07	1.915E-12	8.921E-10	7.801E-07	--	--	--	--	2.102E-08	2.581E-11	7.916E-09	2.896E-08	4.197E-08	1.671E-08	2.609E-06	2.668E-06	9.102E-05	1.837E-08	6.760E-07	9.172E-05	9.520E-05
AFI - AGI	0.070	--	0.255	1.953	1.953	8.652E-07	2.127E-12	9.905E-10	8.662E-07	--	--	--	--	2.382E-08	2.925E-11	8.972E-09	3.282E-08	3.954E-08	1.574E-08	2.458E-06	2.513E-06	8.575E-05	1.731E-08	6.369E-07	8.641E-05	8.982E-05
AFJ	0.014	--	0.052	1.564	1.564	1.761E-07	4.329E-13	2.016E-10	1.763E-07	--	--	--	--	4.851E-09	5.957E-12	1.827E-09	6.685E-09	3.166E-08	1.260E-08	1.968E-06	2.013E-06	6.867E-05	1.386E-08	5.100E-07	6.919E-05	7.139E-05
AFK	0.015	--	0.054	1.363	1.363	1.823E-07	4.480E-13	2.086E-10	1.825E-07	--	--	--	--	5.038E-09	6.187E-12	1.898E-09	6.942E-09	2.759E-08	1.098E-08	1.715E-06	1.754E-06	5.984E-05	1.208E-08	4.444E-07	6.030E-05	6.224E-05
AFL	0.051	--	0.188	2.860	2.860	6.318E-07	1.553E-12	7.233E-10	6.325E-07	--	--	--	--	1.756E-08	2.156E-11	6.614E-09	2.420E-08	5.790E-08	2.305E-08	3.600E-06	3.681E-06	1.256E-04	2.535E-08	9.328E-07	1.265E-04	1.309E-04
AFM	0.048	--	0.175	1.419	1.419	5.925E-07	1.457E-12	6.783E-10	5.932E-07	--	--	--	--	1.635E-08	2.007E-11	6.156E-09	2.252E-08	2.872E-08	1.143E-08	1.786E-06	1.826E-06	6.230E-05	1.258E-08	4.627E-07	6.278E-05	6.522E-05
AGJ	0.058	--	0.212	2.505	2.505	7.178E-07	1.765E-12	8.217E-10	7.186E-07	--	--	--	--	1.980E-08	2.432E-11	7.459E-09	2.729E-08	5.072E-08	2.019E-08	3.153E-06	3.224E-06	1.100E-04	2.220E-08	8.170E-07	1.108E-04	1.148E-04
AGK	0.054	--	0.198	2.183	2.183	6.687E-07	1.644E-12	7.655E-10	6.694E-07	--	--	--	--	1.849E-08	2.271E-11	6.966E-09	2.548E-08	4.420E-08	1.759E-08	2.748E-06	2.810E-06	9.586E-05	1.935E-08	7.119E-07	9.659E-05	1.001E-04
AGL	0.044	--	0.158	1.983	1.983	5.360E-07	1.318E-12	6.136E-10	5.366E-07	--	--	--	--	1.476E-08	1.812E-11	5.558E-09	2.033E-08	4.015E-08	1.598E-08	2.496E-06	2.552E-06	8.707E-05	1.758E-08	6.467E-07	8.774E-05	9.084E-05
AGM	0.049	--	0.176	1.948	1.948	5.962E-07	1.466E-12	6.825E-10	5.969E-07	--	--	--	--	1.644E-08	2.019E-11	6.192E-09	2.265E-08	3.944E-08	1.570E-08	2.452E-06	2.507E-06	8.553E-05	1.727E-08	6.353E-07	8.619E-05	8.931E-05
AHH - AIH	0.063	--	0.228	1.716	1.716	7.792E-07	1.915E-12	8.921E-10	7.801E-07	--	--	--	--	2.130E-08	2.615E-11	8.022E-09	2.935E-08	3.474E-08	1.383E-08	2.160E-06	2.208E-06	7.534E-05	1.521E-08	5.596E-07	7.592E-05	7.894E-05
AHI	0.025	--	0.088	1.280	1.280	3.100E-07	7.620E-13	3.549E-10	3.104E-07	--	--	--	--	8.215E-09	1.009E-11	3.094E-09	1.132E-08	2.591E-08	1.031E-08	1.611E-06	1.647E-06	5.620E-05	1.134E-08	4.174E-07	5.662E-05	5.859E-05
AHJ	0.051	--	0.185	2.396	2.396	6.269E-07	1.541E-12	7.177E-10	6.276E-07	--	--	--	--	1.728E-08	2.122E-11	6.508E-09	2.381E-08	4.851E-08	1.931E-08	3.016E-06	3.084E-06	1.052E-04	2.124E-08	7.814E-07	1.060E-04	1.097E-04
AHK	0.037	--	0.135	1.793	1.793	4.574E-07	1.124E-12	5.236E-10	4.579E-07	--	--	--	--	1.261E-08	1.548E-11	4.749E-09	1.737E-08	3.630E-08	1.445E-08	2.257E-06	2.308E-06	7.873E-05	1.589E-08	5.847E-07	7.933E-05	8.211E-05
AHL	0.031	--	0.111	1.802	1.802	3.751E-07	9.221E-13	4.294E-10	3.755E-07	--	--	--	--	1.036E-08	1.273E-11	3.904E-09	1.428E-08	3.648E-08	1.452E-08	2.268E-06	2.319E-06	7.912E-05	1.597E-08	5.876E-07	7.973E-05	8.243E-05
AHM	0.032	--	0.116	1.931	1.931	3.935E-07	9.674E-13	4.505E-10	3.940E-07	--	--	--	--	1.083E-08	1.330E-11	4.080E-09	1.493E-08	3.909E-08	1.556E-08	2.430E-06	2.485E-06	8.479E-05	1.712E-08	6.297E-07	8.543E-05	8.833E-05
AII	0.053	--	0.193	2.175	2.175	6.564E-07	1.614E-12	7.514E-10	6.571E-07	--	--	--	--	1.803E-08	2.214E-11	6.790E-09	2.484E-08	4.403E-08	1.753E-08	2.738E-06	2.799E-06	9.550E-05	1.928E-08	7.093E-07	9.623E-05	9.971E-05
AIJ	0.065	--	0.238	2.463	2.463	8.038E-07	1.976E-12	9.202E-10	8.047E-07	--	--	--	--	2.223E-08	2.730E-11	8.374E-09	3.063E-08	4.987E-08	1.985E-08	3.100E-06	3.170E-06	1.082E-04	2.183E-08	8.033E-07	1.090E-04	1.130E-04
AIK	0.058	--	0.210	2.118	2.118	7.178E-07	1.765E-12	8.217E-10	7.186E-07	--	--	--	--	1.962E-08	2.409E-11	7.388E-09	2.703E-08	4.288E-08	1.707E-08	2.666E-06	2.726E-06	9.300E-05	1.877E-08	6.907E-07	9.371E-05	9.718E-05
AIL	0.039	--	0.141	1.807	1.807	4.807E-07	1.182E-12	5.503E-10	4.813E-07	--	--	--	--	1.317E-08	1.617E-11	4.960E-09	1.814E-08	3.658E-08	1.456E-08	2.274E-06	2.326E-06	7.934E-05	1.602E-08	5.893E-07	7.995E-05	8.277E-05
AIM	0.031	--	0.113	1.890	1.890	3.825E-07	9.402E-13	4.379E-10	3.829E-07	--	--	--	--	1.055E-08	1.296E-11	3.974E-09	1.454E-08	3.826E-08	1.523E-08	2.379E-06	2.432E-06	8.299E-05	1.675E-08	6.164E-07	8.362E-05	8.645E-05
AJH	0.074	--	0.270	1.394	1.394	9.143E-07	2.248E-12	1.047E-09	9.154E-07	--	--	--	--	2.522E-08	3.097E-11	9.500E-09	3.475E-08	2.822E-08	1.123E-08	1.754E-06	1.794E-06	6.120E-05	1.235E-08	4.546E-07	6.167E-05	6.441E-05
AJI	0.041	--	0.147	2.024	2.024	4.992E-07	1.227E-12	5.714E-10	4.997E-07	--	--	--	--	1.373E-08	1.686E-11	5.171E-09	1.892E-08	4.098E-08	1.631E-08	2.548E-06	2.605E-06	8.887E-05	1.794E-08	6.601E-07	8.955E-05	9.267E-05
AJJ	0.059	--	0.215	2.028	2.028	7.301E-07	1.795E-12	8.358E-10	7.309E-07	--	--	--	--	2.008E-08	2.466E-11	7.564E-09	2.767E-08	4.106E-08	1.634E-08	2.553E-06	2.610E-06	8.905E-05	1.798E-08	6.614E-07	8.973E-05	9.310E-05
AJK	0.041	--	0.148	1.672	1.672	5.004E-07	1.230E-12	5.728E-10	5.010E-07	--	--	--	--	1.382E-08	1.697E-11	5.206E-09	1.905E-08	3.385E-08	1.347E-08	2.104E-06	2.152E-06	7.341E-05	1.482E-08	5.452E-07	7.397E-05	7.664E-05
AJL	0.034	--	0.123	1.803	1.803	4.169E-07	1.025E-12	4.772E-10	4.173E-07	--	--	--	--	1.149E-08	1.410E-11	4.326E-09	1.583E-08	3.650E-08	1.453E-08	2.269E-06	2.320E-06	7.917E-05	1.598E-08	5.880E-07	7.977E-05	8.252E-05
AJM	0.024	--	0.088	1.971	1.971	2.965E-07	7.288E-13	3.394E-10	2.968E-07	--	--	--	--	8.215E-09	1.009E-11	3.094E-09	1.132E-08	3.990E-08	1.588E-08	2.481E-06	2.537E-06	8.654E-05	1.747E-08	6.428E-07	8.720E-05	9.005E-05
AKG	0.053	--	0.194	1.064	1.064	6.564E-07	1.614E-12	7.514E-10	6.571E-07	--	--	--	--	1.812E-08	2.225E-11	6.825E-09	2.497E-08	2.154E-08	8.573E-09	1.339E-06	1.369E-06	4.671E-05	9.429E-09	3.469E-07	4.707E-05	4.912E-05
AKI	0.035	--	0.128	1.833	1.833	4.353E-07	1.070E-12	4.983E-10	4.358E-07	--	--	--	--	1.195E-08	1.468E-11	4.502E-09	1.647E-08	3.711E-08	1.477E-08	2.307E-06	2.359E-06	8.048E-05	1.625E-08	5.978E-07	8.110E-05	8.391E-05
AKJ	0.032	--	0.116	1.897	1.897	3.935E-07	9.674E-13	4.505E-10	3.940E-07	--	--	--	--	1.083E-08	1.330E-11	4.080E-09	1.493E-08	3.840E-08	1.529E-08	2.388E-06	2.441E-06	8.329E-05	1.681E-08	6.186E-07	8.393E-05	8.678E-05
AKK	0.025	--	0.091	1.553	1.553	3.125E-07	7.681E-13	3.577E-10	3.128E-07	--	--	--	--	8.496E-09	1.043E-11	3.200E-09	1.171E-08	3.144E-08	1.251E-08	1.955E-06	1.999E-06	6.819E-05	1.376E-08	5.064E-07	6.871E-05	7.103E-05
AKL	0.171	--	0.623	883.583	883.583	2.106E-06	5.177E-12	2.411E-09	2.108E-06	--	--	--	--	5.821E-08	7.148E-11	2.192E-08	8.020E-08	1.789E-05	7.123E-06	1.112E-03	1.137E-03	3.881E-02	7.834E-06	2.882E-04	3.910E-02	4.024E-02
AKL - Rem	0.032	--	0.116	1.512	1.512	3.911E-07	9.613E-13	4.477E-10	3.915E-07	--	--	--	--	1.083E-08	1.330E-11	4.080E-09	1.493E-08	3.061E-08	1.218E-08	1.903E-06	1.946E-06	6.639E-05	1.340E-08	4.931E-07	6.689E-05	6.924E-05
AKM	0.046	--	0.166	10.203	10.203	5.630E-07	1.384E-12	6.446E-10	5.637E-07	--	--	--	--	1.550E-08	1.904E-11	5.840E-09	2.136E-08	2.066E-07	8.224E-08	1.284E-05	1.313E-05	4.481E-04	9.046E-08	3.328E-06	4.515E-04	4.652E-04

Dose Calculations, Recreational Adult

Survey Grid	Net 95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Total Dose
AAA	0.051	--	0.191	1.470	1.470	1.107E-02	8.570E-10	7.223E-07	1.107E-02	--	--	--	--	2.987E-04	1.306E-07	8.202E-06	3.071E-04	5.807E-04	1.780E-05	3.001E-03	3.599E-03	1.061E+00	6.968E-06	5.997E-04	1.062E+00	1.077E+00
AAB	0.077	--	0.289	1.273	1.273	1.673E-02	1.295E-09	1.092E-06	1.673E-02	--	--	--	--	4.521E-04	1.976E-07	1.241E-05	4.647E-04	5.029E-04	1.541E-05	2.598E-03	3.117E-03	9.190E-01	6.034E-06	5.193E-04	9.195E-01	9.398E-01
AAC	0.044	0.027	0.154	1.583	1.583	9.470E-03	7.332E-10	6.180E-07	9.470E-03	2.679E-02	2.972E-09	9.170E-14	2.679E-02	2.408E-04	1.053E-07	6.612E-06	2.475E-04	6.254E-04	1.916E-05	3.231E-03	3.876E-03	1.143E+00	7.504E-06	6.458E-04	1.144E+00	1.184E+00
AAD	0.164	0.043	0.596	1.586	1.586	3.552E-02	2.750E-09	2.318E-06	3.552E-02	4.250E-02	4.714E-09	9.187E-14	4.250E-02	9.324E-04	4.076E-07	2.560E-05	9.584E-04	6.266E-04	1.920E-05	3.238E-03	3.883E-03	1.145E+00	7.518E-06	6.470E-04	1.146E+00	1.229E+00
AAE	0.156	0.041	0.569	1.474	1.474	3.379E-02	2.617E-09	2.205E-06	3.380E-02	3.975E-02	4.409E-09	8.538E-14	3.975E-02	8.902E-04	3.891E-07	2.444E-05	9.150E-04	5.823E-04	1.784E-05	3.009E-03	3.609E-03	1.064E+00	6.987E-06	6.013E-04	1.065E+00	1.143E+00
AAF	0.083	0.030	0.303	1.611	1.611	1.802E-02	1.396E-09	1.176E-06	1.803E-02	2.935E-02	3.255E-09	9.332E-14	2.935E-02	4.740E-04	2.072E-07	1.301E-05	4.872E-04	6.365E-04	1.950E-05	3.289E-03	3.945E-03	1.163E+00	7.637E-06	6.572E-04	1.164E+00	1.216E+00
AAG	0.047	--	0.172	1.237	1.237	1.020E-02	7.901E-10	6.659E-07	1.020E-02	--	--	--	--	2.690E-04	1.176E-07	7.386E-06	2.765E-04	4.887E-04	1.497E-05	2.525E-03	3.029E-03	8.930E-01	5.863E-06	5.046E-04	8.935E-01	9.070E-01
AAH	0.119	--	0.432	1.684	1.684	2.580E-02	1.998E-09	1.684E-06	2.580E-02	--	--	--	--	6.758E-04	2.954E-07	1.856E-05	6.947E-04	6.653E-04	2.039E-05	3.438E-03	4.123E-03	1.216E+00	7.983E-06	6.870E-04	1.217E+00	1.247E+00
AAI	0.085	--	0.309	1.692	1.692	1.846E-02	1.429E-09	1.204E-06	1.846E-02	--	--	--	--	4.833E-04	2.113E-07	1.327E-05	4.968E-04	6.685E-04	2.048E-05	3.454E-03	4.143E-03	1.222E+00	8.021E-06	6.903E-04	1.222E+00	1.245E+00
AAJ	0.039	--	0.142	1.726	1.726	8.433E-03	6.529E-10	5.503E-07	8.433E-03	--	--	--	--	2.221E-04	9.707E-08	6.097E-06	2.282E-04	6.819E-04	2.090E-05	3.523E-03	4.226E-03	1.246E+00	8.182E-06	7.042E-04	1.247E+00	1.260E+00
AAK	0.019	--	0.070	1.294	1.294	4.134E-03	3.201E-10	2.698E-07	4.134E-03	--	--	--	--	1.094E-04	4.782E-08	3.004E-06	1.124E-04	5.112E-04	1.566E-05	2.641E-03	3.168E-03	9.342E-01	6.134E-06	5.279E-04	9.347E-01	9.421E-01
AAL	0.035	--	0.125	2.063	2.063	7.461E-03	5.777E-10	4.869E-07	7.461E-03	--	--	--	--	1.955E-04	8.544E-08	5.367E-06	2.009E-04	8.151E-04	2.498E-05	4.212E-03	5.052E-03	1.490E+00	9.780E-06	8.417E-04	1.490E+00	1.503E+00
ABA	0.092	--	0.347	1.776	1.776	1.997E-02	1.546E-09	1.303E-06	1.997E-02	--	--	--	--	5.428E-04	2.373E-07	1.490E-05	5.579E-04	7.017E-04	2.150E-05	3.626E-03	4.349E-03	1.282E+00	8.419E-06	7.246E-04	1.283E+00	1.308E+00
ABB	0.088	--	0.340	1.377	1.377	1.910E-02	1.479E-09	1.247E-06	1.911E-02	--	--	--	--	5.319E-04	2.325E-07	1.460E-05	5.467E-04	5.440E-04	1.667E-05	2.811E-03	3.371E-03	9.941E-01	6.527E-06	5.617E-04	9.947E-01	1.018E+00
ABC	0.109	0.032	0.399	1.315	1.315	2.364E-02	1.830E-09	1.543E-06	2.364E-02	3.160E-02	3.505E-09	7.617E-14	3.160E-02	6.242E-04	2.729E-07	1.714E-05	6.416E-04	5.195E-04	1.592E-05	2.684E-03	3.220E-03	9.493E-01	6.233E-06	5.364E-04	9.499E-01	1.009E+00
ABD	0.139	0.021	0.507	1.522	1.522	3.012E-02	2.332E-09	1.966E-06	3.012E-02	2.090E-02	2.319E-09	8.816E-14	2.090E-02	7.932E-04	3.467E-07	2.178E-05	8.153E-04	6.013E-04	1.843E-05	3.107E-03	3.727E-03	1.099E+00	7.215E-06	6.209E-04	1.099E+00	1.155E+00
ABE	0.249	0.037	0.946	1.318	1.318	5.388E-02	4.172E-09	3.516E-06	5.389E-02	3.612E-02	4.006E-09	7.634E-14	3.612E-02	1.480E-03	6.470E-07	4.064E-05	1.521E-03	5.207E-04	1.595E-05	2.690E-03	3.227E-03	9.515E-01	6.248E-06	5.377E-04	9.520E-01	1.047E+00
ABF	0.050	0.026	0.182	1.277	1.277	1.081E-02	8.369E-10	7.054E-07	1.081E-02	2.581E-02	2.863E-09	7.397E-14	2.581E-02	2.846E-04	1.244E-07	7.815E-06	2.926E-04	5.045E-04	1.546E-05	2.607E-03	3.127E-03	9.219E-01	6.053E-06	5.209E-04	9.224E-01	9.625E-01
ABG	0.367	--	1.334	8.054	8.054	7.937E-02	6.146E-09	5.180E-06	7.938E-02	--	--	--	--	2.087E-03	9.124E-07	5.731E-05	2.145E-03	3.183E-03	9.753E-05	1.645E-02	1.973E-02	5.816E+00	3.819E-05	3.287E-03	5.820E+00	5.921E+00
ABH	0.092	--	0.344	1.324	1.324	1.997E-02	1.546E-09	1.303E-06	1.997E-02	--	--	--	--	5.381E-04	2.352E-07	1.477E-05	5.531E-04	5.230E-04	1.603E-05	2.703E-03	3.242E-03	9.558E-01	6.276E-06	5.401E-04	9.564E-01	9.801E-01
ABI	0.086	--	0.315	1.895	1.895	1.867E-02	1.446E-09	1.219E-06	1.867E-02	--	--	--	--	4.927E-04	2.154E-07	1.353E-05	5.065E-04	7.487E-04	2.294E-05	3.869E-03	4.640E-03	1.368E+00	8.984E-06	7.731E-04	1.369E+00	1.393E+00
ABJ	0.023	--	0.082	1.352	1.352	4.868E-03	3.770E-10	3.177E-07	4.869E-03	--	--	--	--	1.282E-04	5.603E-08	3.519E-06	1.317E-04	5.341E-04	1.637E-05	2.760E-03	3.310E-03	9.761E-01	6.409E-06	5.515E-04	9.766E-01	9.849E-01
ABK	0.015	--	0.054	1.333	1.333	3.205E-03	2.482E-10	2.092E-07	3.205E-03	--	--	--	--	8.436E-05	3.688E-08	2.316E-06	8.672E-05	5.266E-04	1.614E-05	2.721E-03	3.264E-03	9.623E-01	6.319E-06	5.438E-04	9.629E-01	9.694E-01
ABL	0.025	--	0.091	1.819	1.819	5.387E-03	4.171E-10	3.516E-07	5.387E-03	--	--	--	--	1.423E-04	6.219E-08	3.906E-06	1.462E-04	7.187E-04	2.202E-05	3.713E-03	4.454E-03	1.313E+00	8.623E-06	7.421E-04	1.314E+00	1.324E+00
ABM	0.031	--	0.103	1.932	1.932	6.748E-03	5.225E-10	4.404E-07	6.748E-03	--	--	--	--	1.610E-04	7.039E-08	4.421E-06	1.655E-04	7.633E-04	2.339E-05	3.944E-03	4.731E-03	1.395E+00	9.159E-06	7.882E-04	1.396E+00	1.407E+00
ACH	1.499	--	5.754	206.583	206.583	3.239E-01	2.508E-08	2.114E-05	3.239E-01	--	--	--	--	9.003E-03	3.936E-06	2.472E-04	9.254E-03	8.164E-02	2.502E-03	4.218E-01	5.060E-01	1.492E+02	9.796E-04	8.431E-02	1.493E+02	1.501E+02
ACH - Rem	0.016	--	0.056	1.092	1.092	3.551E-03	2.749E-10	2.317E-07	3.551E-03	--	--	--	--	8.749E-05	3.825E-08	2.402E-06	8.993E-05	4.314E-04	1.322E-05	2.229E-03	2.673E-03	7.883E-01	5.176E-06	4.454E-04	7.887E-01	7.950E-01
ACI	0.036	--	0.132	0.955	0.955	7.871E-03	6.094E-10	5.137E-07	7.872E-03	--	--	--	--	2.064E-04	9.023E-08	5.667E-06	2.122E-04	3.772E-04	1.156E-05	1.949E-03	2.338E-03	6.893E-01	4.526E-06	3.895E-04	6.897E-01	7.002E-01
ACJ	0.024	--	0.086	1.196	1.196	5.085E-03	3.937E-10	3.318E-07	5.085E-03	--	--	--	--	1.344E-04	5.877E-08	3.691E-06	1.382E-04	4.725E-04	1.448E-05	2.441E-03	2.928E-03	8.634E-01	5.669E-06	4.879E-04	8.639E-01	8.720E-01
ACK	0.017	--	0.062	1.202	1.202	3.680E-03	2.850E-10	2.402E-07	3.681E-03	--	--	--	--	9.688E-05	4.235E-08	2.660E-06	9.958E-05	4.748E-04	1.455E-05	2.453E-03	2.943E-03	8.677E-01	5.698E-06	4.903E-04	8.682E-01	8.749E-01
ACL	0.039	--	0.150	1.392	1.392	8.411E-03	6.513E-10	5.489E-07	8.412E-03	--	--	--	--	2.346E-04	1.025E-07	6.441E-06	2.411E-04	5.499E-04	1.685E-05	2.841E-03	3.408E-03	1.005E+00	6.598E-06	5.679E-04	1.006E+00	1.018E+00
ACM	0.027	--	0.098	2.043	2.043	5.841E-03	4.522E-10	3.812E-07	5.841E-03	--	--	--	--	1.532E-04	6.697E-08	4.207E-06	1.575E-04	8.072E-04	2.473E-05	4.171E-03	5.003E-03	1.475E+00	9.686E-06	8.335E-04	1.476E+00	1.487E+00
ADI	0.048	--	0.171	1.403	1.403	1.044E-02	8.085E-10	6.814E-07	1.044E-02	--	--	--	--	2.674E-04	1.169E-07	7.343E-06	2.749E-04	5.543E-04	1.698E-05	2.864E-03	3.435E-03	1.013E+00	6.651E-06	5.724E-04	1.013E+00	1.028E+00
ADJ	0.022	--	0.059	1.213	1.213	4.674E-03	3.619E-10	3.050E-07	4.674E-03	--	--	--	--	9.219E-05	4.030E-08	2.531E-06	9.476E-05	4.792E-04	1.468E-05	2.476E-03	2.970E-03	8.757E-01	5.750E-06	4.948E-04	8.762E-01	8.839E-01
ADK	0.015	--	0.054	0.981	0.981	3.205E-03	2.482E-10	2.092E-07	3.205E-03	--	--	--	--	8.436E-05	3.688E-08	2.316E-06	8.672E-05	3.875E-04	1.187E-05	2.002E-03	2.402E-03	7.081E-01	4.650E-06	4.001E-04	7.085E-01	7.142E-01
ADL	0.005	--	0.020	1.026	1.026	1.153E-03	8.927E-11	7.524E-08	1.153E-03	--	--	--	--	3.117E-05	1.362E-08	8.557E-07	3.203E-05	4.053E-04	1.242E-05	2.094E-03	2.512E-03	7.406E-01	4.863E-06	4.185E-04	7.410E-01	7.447E-01
ADM	0.028	--	0.101	1.812	1.812	6.143E-03	4.756E-10	4.009E-07	6.143E-03	--	--	--	--	1.579E-04	6.903E-08	4.336E-06	1.623E-04	7.159E-04	2.194E-05	3.699E-03	4.437E-03	1.308E+00	8.590E-06	7.393E-04	1.309E+00	1.320E+00
AEJ	0.020	--	0.074	0.947	0.947	4.415E-03	3.418E-10	2.881E-07	4.415E-03	--	--	--	--	1.157E-04	5.056E-08	3.176E-06	1.189E-04	3.741E-04	1.146E-05	1.933E-03	2.318E-03	6.836E-01	4.488E-06	3.863E-04	6.840E-01	6.908E-01
AEK	0.023	--	0.084	1.375	1.375	4.977E-03	3.853E-10	3.248E-07	4.977E-03	--	--	--	--	1.313E-04	5.740E-08	3.605E-06	1.350E-04	5.432E-04	1.665E-05	2.807E-03	3.367E-03	9.927E-01	6.518E-06	5.609E-04	9.932E-01	1.002E+00
AEL	0.020	--	0.073	1.532	1.532	4.350E-03	3.368E-10	2.839E-07	4.350E-03	--	--	--	--	1.141E-04	4.988E-08	3.133E-06	1.173E-04	6.052E-04	1.855E-05	3.127E-03	3.751E-03	1.106E+00	7.262E-06	6.250E-04	1.107E+00	1.115E+00
AEM	0.063	--	0.225	2.073	2.073	1.370E-02	1.061E-09	8.943E-07	1.370E-02	--	--	--	--	3.519E-04	1.538E-07	9.663E-06	3.617E-04	8.191E-04	2.510E-05	4.232E-03	5.076E-03	1.497E+00	9.828E-06	8.458E-04	1.498E+00	1.517E+00
AFI - AGI	0.070	--	0.255	1.953	1.953	1.522E-02	1.178E-09	9.930E-07	1.522E-02	--	--	--	--	3.989E-04	1.744E-07	1.095E-05	4.100E-04	7.716E-04	2.364E-05	3.987E-03	4.782E-03	1.410E+00	9.259E-06	7.968E-04	1.411E+00	1.431E+00
AFJ	0.014	--	0.052	1.564	1.564	3.097E-03	2.398E-10	2.021E-07	3.097E-03	--	--	--	--	8.123E-05	3.551E-08	2.230E-06	8.350E-05	6.179E-04	1.893E-05	3.193E-03	3.829E-03	1.129E+00	7.414E-06	6.381E-04	1.130E+00	1.137E+00
AFK	0.015	--	0.054	1.363	1.363	3.205E-03	2.482E-10	2.092E-07	3.205E-03	--	--	--	--	8.436E-05	3.688E-08	2.316E-06	8.672E-05	5.385E-04	1.650E-05	2.782E-03	3.337E-03	9.840E-01	6.461E-06	5.560E-04	9.846E-01	9.912E-01
AFL	0.051	--	0.188	2.860	2.860	1.111E-02	8.603E-10	7.251E-07	1.111E-02	--	--	--	--	2.940E-04	1.285E-07	8.073E-06	3.022E-04	1.130E-03	3.463E-05	5.839E-03	7.004E-03	2.065E+00	1.356E-05	1.167E-03	2.066E+00	2.085E+00
AFM	0.048	--	0.175	1.419	1.419	1.042E-02	8.068E-10	6.800E-07	1.042E-02	--	--	--	--	2.737E-04	1.196E-07	7.515E-06	2.813E-04	5.606E-04	1.718E-05	2.897E-03	3.474E-03	1.024E+00	6.727E-06	5.789E-04	1.025E+00	1.039E+00
AGJ	0.058	--	0.212	2.505	2.505	1.262E-02	9.774E-10	8.238E-07	1.262E-02	--	--	--	--	3.316E-04	1.449E-07	9.104E-06	3.408E-04	9.898E-04	3.033E-05	5.114E-03	6.134E-03	1.809E+00	1.188E-05	1.022E-03	1.810E+00	1.829E+00
AGK	0.054	--	0.198	2.183	2.183	1.176E-02	9.105E-10	7.674E-07	1.176E-02	--	--	--	--	3.097E-04	1.354E-07	8.503E-06	3.183E-04	8.625E-04	2.643E-05	4.457E-03	5.346E-03	1.576E+00	1.035E-05	8.907E-04	1.577E+00	1.595E+00
AGL	0.044	--	0.158	1.983	1.983	9.426E-03	7.299E-10	6.152E-07	9.427E-03	--	--	--	--	2.471E-04	1.080E-07	6.784E-06	2.540E-04	7.835E-04	2.401E-05	4.048E-03	4.856E-03	1.432E+00	9.401E-06	8.091E-04	1.433E+00	1.447E+00
AGM	0.049	--	0.176	1.948	1.948	1.048E-02	8.118E-10	6.842E-07	1.049E-02	--	--	--	--	2.753E-04	1.203E-07	7.558E-06	2.829E-04	7.697E-04	2.358E-05	3.977E-03	4.770E-03	1.406E+00	9.235E-06	7.948E-04	1.407E+00	1.423E+00
AHH - AIH	0.063	--	0.228	1.716	1.716	1.370E-02	1.061E-09	8.943E-07	1.370E-02	--	--	--	--	3.566E-04	1.559E-07	9.792E-06	3.666E-04	6.780E-04	2.077E-05	3.503E-03	4.202E-03	1.239E+00	8.135E-06	7.001E-04	1.240E+00	1.258E+00
AHI	0.025	--	0.088	1.280	1.280	5.452E-03	4.221E-10	3.558E-07	5.452E-03	--	--	--	--	1.376E-04	6.013E-08	3.777E-06	1.414E-04	5.057E-04	1.549E-05	2.613E-03	3.134E-03	9.241E-01	6.067E-06	5.222E-04	9.246E-01	9.333E-01
AHJ	0.051	--	0.185	2.396	2.396	1.103E-02	8.536E-10	7.195E-07	1.103E-02	--	--	--	--	2.893E-04	1.265E-07	7.944E-06	2.974E-04	9.467E-04	2.901E-05	4.892E-03	5.867E-03	1.730E+00	1.136E-05	9.776E-04	1.731E+00	1.748E+00
AHK	0.037	--	0.135	1.793	1.793	8.044E-03	6.228E-10	5.249E-07	8.044E-03	--	--	--	--	2.111E-04	9.228E-08	5.796E-06	2.170E-04	7.084E-04	2.171E-05	3.660E-03	4.390E-03	1.295E+00	8.500E-06	7.315E-04	1.295E+00	1.308E+00
AHL	0.031	--	0.111	1.802	1.802	6.597E-03	5.108E-10	4.305E-07	6.597E-03	--	--	--	--	1.735E-04	7.587E-08	4.765E-06	1.784E-04	7.120E-04	2.182E-05	3.679E-03	4.412E-03	1.301E+00	8.543E-06	7.352E-04	1.302E+00	1.313E+00
AHM	0.032	--	0.116	1.931	1.931	6.921E-03	5.358E-10	4.516E-07	6.921E-03	--	--	--	--	1.814E-04	7.929E-08	4.980E-06	1.864E-04	7.629E-04	2.338E-05	3.942E-03	4.728E-03	1.394E+00	9.154E-06	7.878E-04	1.395E+00	1.407E+00
AII	0.053	--	0.193	2.175	2.175	1.154E-02	8.938E-10	7.533E-07	1.154E-02	--	--	--	--	3.018E-04	1.320E-07	8.288E-06	3.103E-04	8.594E-04	2.633E-05	4.440E-03	5.326E-03	1.570E+00	1.031E-05	8.874E-04	1.571E+00	1.589E+00
AIJ	0.065	--	0.238	2.463	2.463	1.414E-02	1.094E-09	9.225E-07	1.414E-02	--	--	--	--	3.723E-04	1.627E-07	1.022E-05	3.826E-04	9.732E-04	2.982E-05	5.028E-03	6.031E-03	1.778E+00	1.168E-05	1.005E-03	1.779E+00	1.800E+00
AIK	0.058	--	0.210	2.118	2.118	1.262E-02	9.774E-10	8.238E-07	1.262E-02	--	--	--	--	3.284E-04	1.436E-07	9.018E-06	3.376E-04	8.368E-04	2.564E-05	4.324E-03	5.186E-03	1.529E+00	1.004E-05	8.642E-04	1.530E+00	1.548E+00
AIL	0.039	--	0.141	1.807	1.807	8.454E-03	6.546E-10	5.517E-07	8.455E-03	--	--	--	--	2.205E-04	9.639E-08	6.054E-06	2.266E-04	7.139E-04	2.188E-05	3.689E-03	4.425E-03	1.305E+00	8.566E-06	7.372E-04	1.305E+00	1.319E+00
AIM	0.031	--	0.113	1.890	1.890	6.726E-03	5.208E-10	4.390E-07	6.727E-03	--	--	--	--	1.767E-04	7.723E-08	4.851E-06	1.816E-04	7.467E-04	2.288E-05	3.858E-03	4.628E-03	1.365E+00	8.960E-06	7.711E-04	1.365E+00	1.377E+00
AJH	0.074	--	0.270	1.394	1.394	1.608E-02	1.245E-09	1.049E-06	1.608E-02	--	--	--	--	4.223E-04	1.846E-07	1.160E-05	4.341E-04	5.507E-04	1.688E-05	2.846E-03	3.413E-03	1.006E+00	6.608E-06	5.687E-04	1.007E+00	1.027E+00
AJI	0.041	--	0.147	2.024	2.024	8.778E-03	6.797E-10	5.729E-07	8.779E-03	--	--	--	--	2.299E-04	1.005E-07	6.312E-06	2.363E-04	7.997E-04	2.450E-05	4.132E-03	4.956E-03	1.461E+00	9.595E-06	8.258E-04	1.462E+00	1.476E+00
AJJ	0.059	--	0.215	2.028	2.028	1.284E-02	9.941E-10	8.379E-07	1.284E-02	--	--	--	--	3.363E-04	1.470E-07	9.233E-06	3.457E-04	8.013E-04	2.455E-05	4.140E-03	4.966E-03	1.464E+00	9.614E-06	8.274E-04	1.465E+00	1.483E+00
AJK	0.041	--	0.148	1.672	1.672	8.800E-03	6.814E-10	5.743E-07	8.801E-03	--	--	--	--	2.314E-04	1.012E-07	6.355E-06	2.379E-04	6.606E-04	2.024E-05	3.413E-03	4.094E-03	1.207E+00	7.926E-06	6.821E-04	1.208E+00	1.221E+00
AJL	0.034	--	0.123	1.803	1.803	7.331E-03	5.676E-10	4.784E-07	7.332E-03	--	--	--	--	1.923E-04	8.407E-08	5.281E-06	1.977E-04	7.123E-04	2.183E-05	3.681E-03	4.415E-03	1.302E+00	8.547E-06	7.356E-04	1.303E+00	1.314E+00
AJM	0.024	--	0.088	1.971	1.971	5.214E-03	4.037E-10	3.403E-07	5.214E-03	--	--	--	--	1.376E-04	6.013E-08	3.777E-06	1.414E-04	7.787E-04	2.386E-05	4.024E-03	4.826E-03	1.423E+00	9.344E-06	8.042E-04	1.424E+00	1.434E+00
AKG	0.053	--	0.194	1.064	1.064	1.154E-02	8.938E-10	7.533E-07	1.154E-02	--	--	--	--	3.034E-04	1.326E-07	8.331E-06	3.119E-04	4.203E-04	1.288E-05	2.172E-03	2.605E-03	7.681E-01	5.043E-06	4.340E-04	7.685E-01	7.830E-01
AKI	0.035	--	0.128	1.833	1.833	7.655E-03	5.927E-10	4.996E-07	7.656E-03	--	--	--	--	2.001E-04	8.749E-08	5.495E-06	2.057E-04	7.242E-04	2.219E-05	3.742E-03	4.488E-03	1.323E+00	8.690E-06	7.478E-04	1.324E+00	1.337E+00
AKJ	0.032	--	0.116	1.897	1.897	6.921E-03	5.358E-10	4.516E-07	6.921E-03	--	--	--	--	1.814E-04	7.929E-08	4.980E-06	1.864E-04	7.495E-04	2.297E-05	3.873E-03	4.645E-03	1.370E+00	8.993E-06	7.740E-04	1.370E+00	1.382E+00
AKK	0.025	--	0.091	1.553	1.553	5.495E-03	4.255E-10	3.586E-07	5.495E-03	--	--	--	--	1.423E-04	6.219E-08	3.906E-06	1.462E-04	6.135E-04	1.880E-05	3.170E-03	3.803E-03	1.121E+00	7.362E-06	6.336E-04	1.122E+00	1.131E+00
AKL	0.171	--	0.623	883.583	883.583	3.703E-02	2.867E-09	2.417E-06	3.704E-02	--	--	--	--	9.747E-04	4.261E-07	2.676E-05	1.002E-03	3.492E-01	1.070E-02	1.804E+00	2.164E+00	6.381E+02	4.190E-03	3.606E-01	6.385E+02	6.407E+02
AKL - Rem	0.032	--	0.116	1.512	1.512	6.877E-03	5.325E-10	4.488E-07	6.878E-03	--	--	--	--	1.814E-04	7.929E-08	4.980E-06	1.864E-04	5.973E-04	1.830E-05	3.086E-03	3.702E-03	1.092E+00	7.168E-06	6.168E-04	1.092E+00	1.103E+00
AKM	0.046	--	0.166	10.203	10.203	9.902E-03	7.667E-10	6.462E-07	9.902E-03	--	--	--	--	2.596E-04	1.135E-07	7.128E-06	2.668E-04	4.032E-03	1.236E-04	2.083E-02	2.499E-02	7.368E+00	4.838E-05	4.164E-03	7.372E+00	7.408E+00

Risk Calculations, Recreational Adult

Survey Grid	Net 95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				Total Risk
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	
AAA	0.051	--	0.191	1.470	1.470	1.538E-07	5.604E-14	1.007E-11	1.539E-07	--	--	--	--	4.155E-09	7.562E-13	8.940E-11	4.245E-09	6.751E-09	3.985E-10	2.398E-08	3.113E-08	1.872E-05	6.755E-10	1.487E-08	1.874E-05	1.893E-05
AAB	0.077	--	0.289	1.273	1.273	2.325E-07	8.470E-14	1.521E-11	2.325E-07	--	--	--	--	6.287E-09	1.144E-12	1.353E-10	6.424E-09	5.846E-09	3.451E-10	2.077E-08	2.696E-08	1.621E-05	5.850E-10	1.288E-08	1.623E-05	1.649E-05
AAC	0.044	0.027	0.154	1.583	1.583	1.316E-07	4.795E-14	8.612E-12	1.316E-07	1.590E-07	1.064E-14	1.263E-12	1.590E-07	3.349E-09	6.096E-13	7.208E-11	3.422E-09	7.270E-09	4.292E-10	2.583E-08	3.353E-08	2.016E-05	7.275E-10	1.601E-08	2.018E-05	2.051E-05
AAD	0.164	0.043	0.596	1.586	1.586	4.937E-07	1.799E-13	3.231E-11	4.938E-07	2.522E-07	1.688E-14	2.003E-12	2.522E-07	1.297E-08	2.360E-12	2.791E-10	1.325E-08	7.284E-09	4.300E-10	2.588E-08	3.359E-08	2.020E-05	7.289E-10	1.605E-08	2.022E-05	2.101E-05
AAE	0.156	0.041	0.569	1.474	1.474	4.697E-07	1.711E-13	3.073E-11	4.698E-07	2.359E-07	1.578E-14	1.874E-12	2.359E-07	1.238E-08	2.253E-12	2.664E-10	1.265E-08	6.769E-09	3.996E-10	2.405E-08	3.122E-08	1.877E-05	6.774E-10	1.491E-08	1.879E-05	1.954E-05
AAF	0.083	0.030	0.303	1.611	1.611	2.505E-07	9.126E-14	1.639E-11	2.506E-07	1.742E-07	1.165E-14	1.383E-12	1.742E-07	6.592E-09	1.200E-12	1.418E-10	6.735E-09	7.399E-09	4.368E-10	2.628E-08	3.412E-08	2.052E-05	7.403E-10	1.630E-08	2.053E-05	2.100E-05
AAG	0.047	--	0.172	1.237	1.237	1.418E-07	5.167E-14	9.280E-12	1.418E-07	--	--	--	--	3.741E-09	6.809E-13	8.051E-11	3.822E-09	5.680E-09	3.353E-10	2.018E-08	2.620E-08	1.575E-05	5.684E-10	1.251E-08	1.577E-05	1.594E-05
AAH	0.119	--	0.432	1.684	1.684	3.586E-07	1.306E-13	2.346E-11	3.587E-07	--	--	--	--	9.399E-09	1.711E-12	2.023E-10	9.603E-09	7.734E-09	4.566E-10	2.747E-08	3.567E-08	2.145E-05	7.739E-10	1.704E-08	2.147E-05	2.187E-05
AAI	0.085	--	0.309	1.692	1.692	2.565E-07	9.345E-14	1.679E-11	2.566E-07	--	--	--	--	6.722E-09	1.224E-12	1.447E-10	6.868E-09	7.771E-09	4.587E-10	2.761E-08	3.583E-08	2.155E-05	7.776E-10	1.712E-08	2.157E-05	2.187E-05
AAJ	0.039	--	0.142	1.726	1.726	1.172E-07	4.270E-14	7.669E-12	1.172E-07	--	--	--	--	3.088E-09	5.621E-13	6.646E-11	3.155E-09	7.927E-09	4.680E-10	2.816E-08	3.656E-08	2.198E-05	7.932E-10	1.746E-08	2.200E-05	2.216E-05
AAK	0.019	--	0.070	1.294	1.294	5.746E-08	2.093E-14	3.760E-12	5.747E-08	--	--	--	--	1.522E-09	2.769E-13	3.274E-11	1.555E-09	5.942E-09	3.508E-10	2.111E-08	2.740E-08	1.648E-05	5.946E-10	1.309E-08	1.649E-05	1.658E-05
AAL	0.035	--	0.125	2.063	2.063	1.037E-07	3.778E-14	6.785E-12	1.037E-07	--	--	--	--	2.718E-09	4.948E-13	5.850E-11	2.777E-09	9.475E-09	5.594E-10	3.366E-08	4.369E-08	2.628E-05	9.481E-10	2.087E-08	2.630E-05	2.645E-05
ABA	0.092	--	0.347	1.776	1.776	2.776E-07	1.011E-13	1.816E-11	2.776E-07	--	--	--	--	7.549E-09	1.374E-12	1.625E-10	7.713E-09	8.157E-09	4.815E-10	2.898E-08	3.761E-08	2.262E-05	8.162E-10	1.797E-08	2.264E-05	2.296E-05
ABB	0.088	--	0.340	1.377	1.377	2.655E-07	9.673E-14	1.737E-11	2.656E-07	--	--	--	--	7.397E-09	1.346E-12	1.592E-10	7.558E-09	6.324E-09	3.733E-10	2.246E-08	2.916E-08	1.754E-05	6.328E-10	1.393E-08	1.755E-05	1.785E-05
ABC	0.109	0.032	0.399	1.315	1.315	3.286E-07	1.197E-13	2.150E-11	3.286E-07	1.876E-07	1.255E-14	1.490E-12	1.876E-07	8.681E-09	1.580E-12	1.868E-10	8.869E-09	6.039E-09	3.565E-10	2.145E-08	2.785E-08	1.675E-05	6.043E-10	1.330E-08	1.676E-05	1.731E-05
ABD	0.139	0.021	0.507	1.522	1.522	4.187E-07	1.525E-13	2.739E-11	4.187E-07	1.241E-07	8.302E-15	9.853E-13	1.241E-07	1.103E-08	2.008E-12	2.374E-10	1.127E-08	6.990E-09	4.126E-10	2.483E-08	3.223E-08	1.938E-05	6.994E-10	1.540E-08	1.940E-05	1.999E-05
ABE	0.249	0.037	0.946	1.318	1.318	7.490E-07	2.728E-13	4.900E-11	7.490E-07	2.144E-07	1.434E-14	1.702E-12	2.144E-07	2.058E-08	3.747E-12	4.430E-10	2.103E-08	6.053E-09	3.573E-10	2.150E-08	2.791E-08	1.678E-05	6.057E-10	1.333E-08	1.680E-05	1.781E-05
ABF	0.050	0.026	0.182	1.277	1.277	1.502E-07	5.473E-14	9.830E-12	1.503E-07	1.532E-07	1.025E-14	1.217E-12	1.532E-07	3.959E-09	7.205E-13	8.519E-11	4.045E-09	5.864E-09	3.462E-10	2.083E-08	2.704E-08	1.626E-05	5.868E-10	1.292E-08	1.628E-05	1.661E-05
ABG	0.367	--	1.334	8.054	8.054	1.103E-06	4.019E-13	7.219E-11	1.103E-06	--	--	--	--	2.903E-08	5.283E-12	6.246E-10	2.966E-08	3.700E-08	2.184E-09	1.314E-07	1.706E-07	1.026E-04	3.702E-09	8.150E-08	1.027E-04	1.040E-04
ABH	0.092	--	0.344	1.324	1.324	2.776E-07	1.011E-13	1.816E-11	2.776E-07	--	--	--	--	7.484E-09	1.362E-12	1.610E-10	7.647E-09	6.080E-09	3.589E-10	2.160E-08	2.804E-08	1.686E-05	6.084E-10	1.339E-08	1.688E-05	1.719E-05
ABI	0.086	--	0.315	1.895	1.895	2.595E-07	9.455E-14	1.698E-11	2.596E-07	--	--	--	--	6.853E-09	1.247E-12	1.475E-10	7.002E-09	8.703E-09	5.138E-10	3.092E-08	4.014E-08	2.414E-05	8.709E-10	1.917E-08	2.416E-05	2.446E-05
ABJ	0.023	--	0.082	1.352	1.352	6.767E-08	2.465E-14	4.428E-12	6.768E-08	--	--	--	--	1.783E-09	3.245E-13	3.836E-11	1.821E-09	6.209E-09	3.665E-10	2.206E-08	2.863E-08	1.722E-05	6.213E-10	1.368E-08	1.723E-05	1.733E-05
ABK	0.015	--	0.054	1.333	1.333	4.455E-08	1.623E-14	2.915E-12	4.455E-08	--	--	--	--	1.173E-09	2.136E-13	2.525E-11	1.199E-09	6.122E-09	3.614E-10	2.175E-08	2.823E-08	1.698E-05	6.126E-10	1.348E-08	1.699E-05	1.706E-05
ABL	0.025	--	0.091	1.819	1.819	7.488E-08	2.728E-14	4.899E-12	7.488E-08	--	--	--	--	1.979E-09	3.601E-13	4.257E-11	2.021E-09	8.354E-09	4.932E-10	2.968E-08	3.853E-08	2.317E-05	8.360E-10	1.840E-08	2.319E-05	2.330E-05
ABM	0.031	--	0.103	1.932	1.932	9.380E-08	3.417E-14	6.137E-12	9.380E-08	--	--	--	--	2.240E-09	4.076E-13	4.819E-11	2.288E-09	8.873E-09	5.238E-10	3.152E-08	4.092E-08	2.461E-05	8.879E-10	1.955E-08	2.463E-05	2.476E-05
ACH	1.499	--	5.754	206.583	206.583	4.502E-06	1.640E-12	2.946E-10	4.503E-06	--	--	--	--	1.252E-07	2.279E-11	2.694E-09	1.279E-07	9.490E-07	5.603E-08	3.371E-06	4.376E-06	2.632E-03	9.497E-08	2.091E-06	2.634E-03	2.643E-03
ACH - Rem	0.016	--	0.056	1.092	1.092	4.936E-08	1.798E-14	3.229E-12	4.936E-08	--	--	--	--	1.217E-09	2.215E-13	2.619E-11	1.243E-09	5.014E-09	2.960E-10	1.781E-08	2.312E-08	1.391E-05	5.018E-10	1.105E-08	1.392E-05	1.399E-05
ACI	0.036	--	0.132	0.955	0.955	1.094E-07	3.986E-14	7.159E-12	1.094E-07	--	--	--	--	2.871E-09	5.225E-13	6.177E-11	2.933E-09	4.385E-09	2.589E-10	1.558E-08	2.022E-08	1.216E-05	4.388E-10	9.660E-09	1.217E-05	1.230E-05
ACJ	0.024	--	0.086	1.196	1.196	7.067E-08	2.575E-14	4.624E-12	7.068E-08	--	--	--	--	1.870E-09	3.403E-13	4.023E-11	1.910E-09	5.492E-09	3.242E-10	1.951E-08	2.533E-08	1.523E-05	5.496E-10	1.210E-08	1.524E-05	1.534E-05
ACK	0.017	--	0.062	1.202	1.202	5.116E-08	1.864E-14	3.347E-12	5.116E-08	--	--	--	--	1.347E-09	2.452E-13	2.899E-11	1.377E-09	5.520E-09	3.258E-10	1.961E-08	2.545E-08	1.531E-05	5.523E-10	1.216E-08	1.532E-05	1.540E-05
ACL	0.039	--	0.150	1.392	1.392	1.169E-07	4.259E-14	7.650E-12	1.169E-07	--	--	--	--	3.262E-09	5.938E-13	7.020E-11	3.333E-09	6.393E-09	3.774E-10	2.271E-08	2.948E-08	1.773E-05	6.397E-10	1.408E-08	1.774E-05	1.789E-05
ACM	0.027	--	0.098	2.043	2.043	8.118E-08	2.957E-14	5.312E-12	8.119E-08	--	--	--	--	2.131E-09	3.878E-13	4.585E-11	2.177E-09	9.383E-09	5.539E-10	3.333E-08	4.327E-08	2.602E-05	9.389E-10	2.067E-08	2.604E-05	2.617E-05
ADI	0.048	--	0.171	1.403	1.403	1.451E-07	5.287E-14	9.496E-12	1.452E-07	--	--	--	--	3.719E-09	6.770E-13	8.004E-11	3.800E-09	6.443E-09	3.804E-10	2.289E-08	2.971E-08	1.787E-05	6.447E-10	1.419E-08	1.788E-05	1.806E-05
ADJ	0.022	--	0.059	1.213	1.213	6.497E-08	2.367E-14	4.251E-12	6.497E-08	--	--	--	--	1.282E-09	2.334E-13	2.759E-11	1.310E-09	5.570E-09	3.288E-10	1.979E-08	2.569E-08	1.545E-05	5.574E-10	1.227E-08	1.546E-05	1.555E-05
ADK	0.015	--	0.054	0.981	0.981	4.455E-08	1.623E-14	2.915E-12	4.455E-08	--	--	--	--	1.173E-09	2.136E-13	2.525E-11	1.199E-09	4.504E-09	2.659E-10	1.600E-08	2.077E-08	1.249E-05	4.507E-10	9.923E-09	1.250E-05	1.257E-05
ADL	0.005	--	0.020	1.026	1.026	1.603E-08	5.838E-15	1.049E-12	1.603E-08	--	--	--	--	4.334E-10	7.889E-14	9.327E-12	4.429E-10	4.711E-09	2.781E-10	1.674E-08	2.173E-08	1.306E-05	4.714E-10	1.038E-08	1.308E-05	1.311E-05
ADM	0.028	--	0.101	1.812	1.812	8.539E-08	3.111E-14	5.587E-12	8.539E-08	--	--	--	--	2.196E-09	3.997E-13	4.726E-11	2.244E-09	8.322E-09	4.913E-10	2.956E-08	3.838E-08	2.308E-05	8.327E-10	1.833E-08	2.310E-05	2.322E-05
AEJ	0.020	--	0.074	0.947	0.947	6.137E-08	2.235E-14	4.015E-12	6.137E-08	--	--	--	--	1.609E-09	2.928E-13	3.461E-11	1.643E-09	4.348E-09	2.567E-10	1.545E-08	2.005E-08	1.206E-05	4.351E-10	9.579E-09	1.207E-05	1.215E-05
AEK	0.023	--	0.084	1.375	1.375	6.917E-08	2.520E-14	4.526E-12	6.918E-08	--	--	--	--	1.826E-09	3.324E-13	3.930E-11	1.866E-09	6.314E-09	3.728E-10	2.243E-08	2.912E-08	1.751E-05	6.319E-10	1.391E-08	1.753E-05	1.763E-05
AEL	0.020	--	0.073	1.532	1.532	6.047E-08	2.203E-14	3.956E-12	6.047E-08	--	--	--	--	1.587E-09	2.888E-13	3.415E-11	1.621E-09	7.036E-09	4.153E-10	2.499E-08	3.245E-08	1.951E-05	7.040E-10	1.550E-08	1.953E-05	1.962E-05
AEM	0.063	--	0.225	2.073	2.073	1.905E-07	6.939E-14	1.246E-11	1.905E-07	--	--	--	--	4.895E-09	8.908E-13	1.053E-10	5.001E-09	9.521E-09	5.621E-10	3.382E-08	4.391E-08	2.640E-05	9.527E-10	2.097E-08	2.643E-05	2.666E-05
AFI - AGI	0.070	--	0.255	1.953	1.953	2.115E-07	7.704E-14	1.384E-11	2.115E-07	--	--	--	--	5.547E-09	1.010E-12	1.194E-10	5.668E-09	8.970E-09	5.295E-10	3.186E-08	4.136E-08	2.487E-05	8.976E-10	1.976E-08	2.490E-05	2.515E-05
AFJ	0.014	--	0.052	1.564	1.564	4.305E-08	1.568E-14	2.817E-12	4.305E-08	--	--	--	--	1.130E-09	2.056E-13	2.431E-11	1.154E-09	7.183E-09	4.240E-10	2.552E-08	3.312E-08	1.992E-05	7.187E-10	1.582E-08	1.994E-05	2.001E-05
AFK	0.015	--	0.054	1.363	1.363	4.455E-08	1.623E-14	2.915E-12	4.455E-08	--	--	--	--	1.173E-09	2.136E-13	2.525E-11	1.199E-09	6.259E-09	3.695E-10	2.224E-08	2.886E-08	1.736E-05	6.263E-10	1.379E-08	1.737E-05	1.745E-05
AFL	0.051	--	0.188	2.860	2.860	1.544E-07	5.626E-14	1.011E-11	1.545E-07	--	--	--	--	4.089E-09	7.443E-13	8.800E-11	4.178E-09	1.314E-08	7.755E-10	4.667E-08	6.058E-08	3.643E-05	1.315E-09	2.894E-08	3.646E-05	3.668E-05
AFM	0.048	--	0.175	1.419	1.419	1.448E-07	5.276E-14	9.477E-12	1.449E-07	--	--	--	--	3.806E-09	6.928E-13	8.191E-11	3.889E-09	6.517E-09	3.847E-10	2.315E-08	3.005E-08	1.807E-05	6.521E-10	1.436E-08	1.809E-05	1.827E-05
AGJ	0.058	--	0.212	2.505	2.505	1.755E-07	6.392E-14	1.148E-11	1.755E-07	--	--	--	--	4.612E-09	8.393E-13	9.924E-11	4.712E-09	1.151E-08	6.792E-10	4.087E-08	5.306E-08	3.191E-05	1.151E-09	2.535E-08	3.193E-05	3.217E-05
AGK	0.054	--	0.198	2.183	2.183	1.635E-07	5.954E-14	1.069E-11	1.635E-07	--	--	--	--	4.307E-09	7.839E-13	9.268E-11	4.400E-09	1.003E-08	5.919E-10	3.562E-08	4.624E-08	2.781E-05	1.003E-09	2.209E-08	2.783E-05	2.804E-05
AGL	0.044	--	0.158	1.983	1.983	1.310E-07	4.773E-14	8.573E-12	1.310E-07	--	--	--	--	3.437E-09	6.255E-13	7.395E-11	3.511E-09	9.108E-09	5.377E-10	3.235E-08	4.200E-08	2.526E-05	9.114E-10	2.006E-08	2.528E-05	2.545E-05
AGM	0.049	--	0.176	1.948	1.948	1.457E-07	5.309E-14	9.536E-12	1.458E-07	--	--	--	--	3.828E-09	6.968E-13	8.238E-11	3.911E-09	8.947E-09	5.282E-10	3.178E-08	4.126E-08	2.481E-05	8.953E-10	1.971E-08	2.483E-05	2.502E-05
AHH - AIH	0.063	--	0.228	1.716	1.716	1.905E-07	6.939E-14	1.246E-11	1.905E-07	--	--	--	--	4.960E-09	9.027E-13	1.067E-10	5.067E-09	7.881E-09	4.652E-10	2.800E-08	3.634E-08	2.186E-05	7.886E-10	1.736E-08	2.187E-05	2.211E-05
AHI	0.025	--	0.088	1.280	1.280	7.578E-08	2.760E-14	4.958E-12	7.578E-08	--	--	--	--	1.913E-09	3.482E-13	4.117E-11	1.955E-09	5.878E-09	3.470E-10	2.088E-08	2.711E-08	1.630E-05	5.882E-10	1.295E-08	1.631E-05	1.642E-05
AHJ	0.051	--	0.185	2.396	2.396	1.532E-07	5.583E-14	1.003E-11	1.533E-07	--	--	--	--	4.024E-09	7.324E-13	8.659E-11	4.111E-09	1.100E-08	6.497E-10	3.909E-08	5.075E-08	3.052E-05	1.101E-09	2.424E-08	3.054E-05	3.075E-05
AHK	0.037	--	0.135	1.793	1.793	1.118E-07	4.073E-14	7.316E-12	1.118E-07	--	--	--	--	2.936E-09	5.344E-13	6.318E-11	3.000E-09	8.235E-09	4.861E-10	2.925E-08	3.797E-08	2.284E-05	8.240E-10	1.814E-08	2.286E-05	2.301E-05
AHL	0.031	--	0.111	1.802	1.802	9.169E-08	3.340E-14	5.999E-12	9.170E-08	--	--	--	--	2.414E-09	4.393E-13	5.194E-11	2.466E-09	8.276E-09	4.886E-10	2.940E-08	3.817E-08	2.295E-05	8.281E-10	1.823E-08	2.297E-05	2.310E-05
AHM	0.032	--	0.116	1.931	1.931	9.620E-08	3.504E-14	6.294E-12	9.620E-08	--	--	--	--	2.523E-09	4.591E-13	5.428E-11	2.577E-09	8.869E-09	5.236E-10	3.151E-08	4.090E-08	2.459E-05	8.875E-10	1.954E-08	2.461E-05	2.475E-05
AII	0.053	--	0.193	2.175	2.175	1.605E-07	5.845E-14	1.050E-11	1.605E-07	--	--	--	--	4.198E-09	7.641E-13	9.034E-11	4.289E-09	9.990E-09	5.897E-10	3.549E-08	4.607E-08	2.770E-05	9.996E-10	2.201E-08	2.773E-05	2.794E-05
AIJ	0.065	--	0.238	2.463	2.463	1.965E-07	7.158E-14	1.286E-11	1.965E-07	--	--	--	--	5.177E-09	9.423E-13	1.114E-10	5.290E-09	1.131E-08	6.678E-10	4.019E-08	5.217E-08	3.137E-05	1.132E-09	2.492E-08	3.140E-05	3.165E-05
AIK	0.058	--	0.210	2.118	2.118	1.755E-07	6.392E-14	1.148E-11	1.755E-07	--	--	--	--	4.568E-09	8.314E-13	9.830E-11	4.667E-09	9.728E-09	5.743E-10	3.456E-08	4.486E-08	2.698E-05	9.734E-10	2.143E-08	2.700E-05	2.722E-05
AIL	0.039	--	0.141	1.807	1.807	1.175E-07	4.281E-14	7.689E-12	1.175E-07	--	--	--	--	3.067E-09	5.581E-13	6.599E-11	3.133E-09	8.299E-09	4.899E-10	2.948E-08	3.827E-08	2.301E-05	8.304E-10	1.828E-08	2.303E-05	2.319E-05
AIM	0.031	--	0.113	1.890	1.890	9.350E-08	3.406E-14	6.117E-12	9.350E-08	--	--	--	--	2.457E-09	4.472E-13	5.288E-11	2.511E-09	8.680E-09	5.124E-10	3.084E-08	4.003E-08	2.407E-05	8.686E-10	1.912E-08	2.409E-05	2.423E-05
AJH	0.074	--	0.270	1.394	1.394	2.235E-07	8.142E-14	1.462E-11	2.235E-07	--	--	--	--	5.873E-09	1.069E-12	1.264E-10	6.001E-09	6.402E-09	3.779E-10	2.274E-08	2.952E-08	1.775E-05	6.406E-10	1.410E-08	1.777E-05	1.803E-05
AJI	0.041	--	0.147	2.024	2.024	1.220E-07	4.445E-14	7.984E-12	1.220E-07	--	--	--	--	3.197E-09	5.819E-13	6.880E-11	3.267E-09	9.296E-09	5.488E-10	3.302E-08	4.287E-08	2.578E-05	9.302E-10	2.048E-08	2.580E-05	2.597E-05
AJJ	0.059	--	0.215	2.028	2.028	1.785E-07	6.501E-14	1.168E-11	1.785E-07	--	--	--	--	4.677E-09	8.512E-13	1.006E-10	4.778E-09	9.314E-09	5.499E-10	3.309E-08	4.295E-08	2.583E-05	9.320E-10	2.052E-08	2.585E-05	2.608E-05
AJK	0.041	--	0.148	1.672	1.672	1.223E-07	4.456E-14	8.003E-12	1.223E-07	--	--	--	--	3.219E-09	5.859E-13	6.927E-11	3.289E-09	7.679E-09	4.533E-10	2.728E-08	3.541E-08	2.129E-05	7.684E-10	1.692E-08	2.131E-05	2.147E-05
AJL	0.034	--	0.123	1.803	1.803	1.019E-07	3.712E-14	6.667E-12	1.019E-07	--	--	--	--	2.675E-09	4.868E-13	5.756E-11	2.733E-09	8.281E-09	4.888E-10	2.942E-08	3.819E-08	2.296E-05	8.286E-10	1.824E-08	2.298E-05	2.313E-05
AJM	0.024	--	0.088	1.971	1.971	7.248E-08	2.640E-14	4.742E-12	7.248E-08	--	--	--	--	1.913E-09	3.482E-13	4.117E-11	1.955E-09	9.052E-09	5.344E-10	3.216E-08	4.175E-08	2.510E-05	9.058E-10	1.994E-08	2.513E-05	2.524E-05
AKG	0.053	--	0.194	1.064	1.064	1.605E-07	5.845E-14	1.050E-11	1.605E-07	--	--	--	--	4.220E-09	7.681E-13	9.081E-11	4.311E-09	4.886E-09	2.884E-10	1.736E-08	2.253E-08	1.355E-05	4.889E-10	1.076E-08	1.356E-05	1.375E-05
AKI	0.035	--	0.128	1.833	1.833	1.064E-07	3.876E-14	6.962E-12	1.064E-07	--	--	--	--	2.784E-09	5.066E-13	5.990E-11	2.844E-09	8.419E-09	4.970E-10	2.991E-08	3.882E-08	2.335E-05	8.424E-10	1.854E-08	2.337E-05	2.351E-05
AKJ	0.032	--	0.116	1.897	1.897	9.620E-08	3.504E-14	6.294E-12	9.620E-08	--	--	--	--	2.523E-09	4.591E-13	5.428E-11	2.577E-09	8.713E-09	5.143E-10	3.095E-08	4.018E-08	2.416E-05	8.718E-10	1.919E-08	2.418E-05	2.432E-05
AKK	0.025	--	0.091	1.553	1.553	7.638E-08	2.782E-14	4.997E-12	7.639E-08	--	--	--	--	1.979E-09	3.601E-13	4.257E-11	2.021E-09	7.132E-09	4.210E-10	2.534E-08	3.289E-08	1.978E-05	7.137E-10	1.571E-08	1.980E-05	1.991E-05
AKL	0.171	--	0.623	883.583	883.583	5.148E-07	1.875E-13	3.368E-11	5.148E-07	--	--	--	--	1.356E-08	2.467E-12	2.917E-10	1.385E-08	4.059E-06	2.396E-07	1.442E-05	1.872E-05	1.126E-02	4.062E-07	8.942E-06	1.127E-02	1.129E-02
AKL - Rem	0.032	--	0.116	1.512	1.512	9.560E-08	3.482E-14	6.255E-12	9.560E-08	--	--	--	--	2.523E-09	4.591E-13	5.428E-11	2.577E-09	6.944E-09	4.099E-10	2.467E-08	3.202E-08	1.926E-05	6.948E-10	1.530E-08	1.927E-05	1.940E-05
AKM	0.046	--	0.166	10.203	10.203	1.376E-07	5.014E-14	9.005E-12	1.376E-07	--	--	--	--	3.611E-09	6.572E-13	7.770E-11	3.689E-09	4.687E-08	2.767E-09	1.665E-07	2.161E-07	1.300E-04	4.690E-09	1.032E-07	1.301E-04	1.304E-04

Survey Grid	Net 95UCL Values				
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra
AAA	0.051	--	0.191	1.470	1.470
AAB	0.077	--	0.289	1.273	1.273
AAC	0.044	0.027	0.154	1.583	1.583
AAD	0.164	0.043	0.596	1.586	1.586
AAE	0.156	0.041	0.569	1.474	1.474
AAF	0.083	0.030	0.303	1.611	1.611
AAG	0.047	--	0.172	1.237	1.237
AAH	0.119	--	0.432	1.684	1.684
AAI	0.085	--	0.309	1.692	1.692
AAJ	0.039	--	0.142	1.726	1.726
AAK	0.019	--	0.070	1.294	1.294
AAL	0.035	--	0.125	2.063	2.063
ABA	0.092	--	0.347	1.776	1.776
ABB	0.088	--	0.340	1.377	1.377
ABC	0.109	0.032	0.399	1.315	1.315
ABD	0.139	0.021	0.507	1.522	1.522
ABE	0.249	0.037	0.946	1.318	1.318
ABF	0.050	0.026	0.182	1.277	1.277
ABG	0.367	--	1.334	8.054	8.054
ABH	0.092	--	0.344	1.324	1.324
ABI	0.086	--	0.315	1.895	1.895
ABJ	0.023	--	0.082	1.352	1.352
ABK	0.015	--	0.054	1.333	1.333
ABL	0.025	--	0.091	1.819	1.819
ABM	0.031	--	0.103	1.932	1.932
ACH	1.499	--	5.754	206.583	206.583
ACH - Rem	0.016	--	0.056	1.092	1.092
ACI	0.036	--	0.132	0.955	0.955
ACJ	0.024	--	0.086	1.196	1.196
ACK	0.017	--	0.062	1.202	1.202
ACL	0.039	--	0.150	1.392	1.392
ACM	0.027	--	0.098	2.043	2.043
ADI	0.048	--	0.171	1.403	1.403
ADJ	0.022	--	0.059	1.213	1.213
ADK	0.015	--	0.054	0.981	0.981
ADL	0.005	--	0.020	1.026	1.026
ADM	0.028	--	0.101	1.812	1.812
AEJ	0.020	--	0.074	0.947	0.947
AEK	0.023	--	0.084	1.375	1.375
AEL	0.020	--	0.073	1.532	1.532
AEM	0.063	--	0.225	2.073	2.073
AFI - AGI	0.070	--	0.255	1.953	1.953
AFJ	0.014	--	0.052	1.564	1.564
AFK	0.015	--	0.054	1.363	1.363
AFL	0.051	--	0.188	2.860	2.860
AFM	0.048	--	0.175	1.419	1.419
AGJ	0.058	--	0.212	2.505	2.505
AGK	0.054	--	0.198	2.183	2.183
AGL	0.044	--	0.158	1.983	1.983
AGM	0.049	--	0.176	1.948	1.948
AHH - AIH	0.063	--	0.228	1.716	1.716
AHI	0.025	--	0.088	1.280	1.280
AHJ	0.051	--	0.185	2.396	2.396
AHK	0.037	--	0.135	1.793	1.793
AHL	0.031	--	0.111	1.802	1.802
AHM	0.032	--	0.116	1.931	1.931
AII	0.053	--	0.193	2.175	2.175
AIJ	0.065	--	0.238	2.463	2.463
AIK	0.058	--	0.210	2.118	2.118
AIL	0.039	--	0.141	1.807	1.807
AIM	0.031	--	0.113	1.890	1.890
AJH	0.074	--	0.270	1.394	1.394
AJI	0.041	--	0.147	2.024	2.024
AJJ	0.059	--	0.215	2.028	2.028
AJK	0.041	--	0.148	1.672	1.672
AJL	0.034	--	0.123	1.803	1.803
AJM	0.024	--	0.088	1.971	1.971
AKG	0.053	--	0.194	1.064	1.064
AKI	0.035	--	0.128	1.833	1.833
AKJ	0.032	--	0.116	1.897	1.897
AKK	0.025	--	0.091	1.553	1.553
AKL	0.171	--	0.623	883.583	883.583
AKL - Rem	0.032	--	0.116	1.512	1.512
AKM	0.046	--	0.166	10.203	10.203

Dose Calculations, Recreational Child

	^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				
Survey Grid	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Total Dose
AAA	1.107E-02	4.335E-10	1.445E-06	1.107E-02	--	--	--	--	2.987E-04	6.604E-08	1.640E-05	3.152E-04	5.807E-04	8.998E-06	6.000E-03	6.590E-03	1.061E+00	3.524E-06	1.199E-03	1.062E+00	1.080E+00
AAB	1.673E-02	6.552E-10	2.183E-06	1.673E-02	--	--	--	--	4.521E-04	9.994E-08	2.482E-05	4.770E-04	5.029E-04	7.792E-06	5.196E-03	5.706E-03	9.190E-01	3.051E-06	1.038E-03	9.200E-01	9.430E-01
AAC	9.470E-03	3.709E-10	1.236E-06	9.471E-03	2.679E-02	1.503E-09	3.925E-07	2.679E-02	2.408E-04	5.324E-08	1.322E-05	2.541E-04	6.254E-04	9.690E-06	6.461E-03	7.096E-03	1.143E+00	3.795E-06	1.291E-03	1.144E+00	1.188E+00
AAD	3.552E-02	1.391E-09	4.636E-06	3.553E-02	4.250E-02	2.384E-09	6.225E-07	4.250E-02	9.324E-04	2.061E-07	5.118E-05	9.838E-04	6.266E-04	9.708E-06	6.474E-03	7.110E-03	1.145E+00	3.802E-06	1.294E-03	1.146E+00	1.232E+00
AAE	3.379E-02	1.324E-09	4.411E-06	3.380E-02	3.975E-02	2.230E-09	5.823E-07	3.975E-02	8.902E-04	1.968E-07	4.887E-05	9.392E-04	5.823E-04	9.022E-06	6.016E-03	6.608E-03	1.064E+00	3.533E-06	1.203E-03	1.065E+00	1.146E+00
AAF	1.802E-02	7.060E-10	2.352E-06	1.803E-02	2.935E-02	1.647E-09	4.299E-07	2.935E-02	4.740E-04	1.048E-07	2.602E-05	5.001E-04	6.365E-04	9.861E-06	6.576E-03	7.222E-03	1.163E+00	3.862E-06	1.314E-03	1.164E+00	1.220E+00
AAG	1.020E-02	3.997E-10	1.332E-06	1.021E-02	--	--	--	--	2.690E-04	5.947E-08	1.477E-05	2.838E-04	4.887E-04	7.571E-06	5.049E-03	5.545E-03	8.930E-01	2.965E-06	1.009E-03	8.940E-01	9.100E-01
AAH	2.580E-02	1.011E-09	3.368E-06	2.580E-02	--	--	--	--	6.758E-04	1.494E-07	3.710E-05	7.130E-04	6.653E-04	1.031E-05	6.874E-03	7.549E-03	1.216E+00	4.037E-06	1.374E-03	1.217E+00	1.251E+00
AAI	1.846E-02	7.229E-10	2.409E-06	1.846E-02	--	--	--	--	4.833E-04	1.069E-07	2.653E-05	5.100E-04	6.685E-04	1.036E-05	6.906E-03	7.585E-03	1.222E+00	4.056E-06	1.380E-03	1.223E+00	1.250E+00
AAJ	8.433E-03	3.303E-10	1.101E-06	8.434E-03	--	--	--	--	2.221E-04	4.909E-08	1.219E-05	2.343E-04	6.819E-04	1.057E-05	7.045E-03	7.738E-03	1.246E+00	4.138E-06	1.408E-03	1.248E+00	1.264E+00
AAK	4.134E-03	1.619E-10	5.396E-07	4.135E-03	--	--	--	--	1.094E-04	2.419E-08	6.005E-06	1.154E-04	5.112E-04	7.920E-06	5.281E-03	5.800E-03	9.342E-01	3.102E-06	1.056E-03	9.352E-01	9.453E-01
AAL	7.461E-03	2.922E-10	9.738E-07	7.462E-03	--	--	--	--	1.955E-04	4.321E-08	1.073E-05	2.062E-04	8.151E-04	1.263E-05	8.421E-03	9.249E-03	1.490E+00	4.946E-06	1.683E-03	1.491E+00	1.508E+00
ABA	1.997E-02	7.821E-10	2.606E-06	1.997E-02	--	--	--	--	5.428E-04	1.200E-07	2.980E-05	5.727E-04	7.017E-04	1.087E-05	7.249E-03	7.962E-03	1.282E+00	4.258E-06	1.449E-03	1.284E+00	1.312E+00
ABB	1.910E-02	7.483E-10	2.493E-06	1.911E-02	--	--	--	--	5.319E-04	1.176E-07	2.920E-05	5.612E-04	5.440E-04	8.428E-06	5.620E-03	6.173E-03	9.941E-01	3.301E-06	1.123E-03	9.952E-01	1.021E+00
ABC	2.364E-02	9.260E-10	3.086E-06	2.364E-02	3.160E-02	1.773E-09	4.629E-07	3.160E-02	6.242E-04	1.380E-07	3.426E-05	6.586E-04	5.195E-04	8.049E-06	5.367E-03	5.895E-03	9.493E-01	3.152E-06	1.073E-03	9.504E-01	1.012E+00
ABD	3.012E-02	1.180E-09	3.931E-06	3.012E-02	2.090E-02	1.173E-09	3.062E-07	2.090E-02	7.932E-04	1.754E-07	4.354E-05	8.369E-04	6.013E-04	9.316E-06	6.212E-03	6.823E-03	1.099E+00	3.649E-06	1.242E-03	1.100E+00	1.159E+00
ABE	5.388E-02	2.111E-09	7.033E-06	5.389E-02	3.612E-02	2.027E-09	5.291E-07	3.612E-02	1.480E-03	3.272E-07	8.125E-05	1.562E-03	5.207E-04	8.067E-06	5.379E-03	5.908E-03	9.515E-01	3.159E-06	1.075E-03	9.526E-01	1.050E+00
ABF	1.081E-02	4.234E-10	1.411E-06	1.081E-02	2.581E-02	1.448E-09	3.781E-07	2.581E-02	2.846E-04	6.293E-08	1.563E-05	3.003E-04	5.045E-04	7.816E-06	5.212E-03	5.724E-03	9.219E-01	3.061E-06	1.042E-03	9.229E-01	9.656E-01
ABG	7.937E-02	3.109E-09	1.036E-05	7.938E-02	--	--	--	--	2.087E-03	4.614E-07	1.146E-04	2.202E-03	3.183E-03	4.931E-05	3.288E-02	3.611E-02	5.816E+00	1.931E-05	6.572E-03	5.823E+00	5.941E+00
ABH	1.997E-02	7.821E-10	2.606E-06	1.997E-02	--	--	--	--	5.381E-04	1.190E-07	2.954E-05	5.678E-04	5.230E-04	8.104E-06	5.404E-03	5.935E-03	9.558E-01	3.174E-06	1.080E-03	9.569E-01	9.834E-01
ABI	1.867E-02	7.314E-10	2.437E-06	1.867E-02	--	--	--	--	4.927E-04	1.089E-07	2.705E-05	5.199E-04	7.487E-04	1.160E-05	7.735E-03	8.496E-03	1.368E+00	4.543E-06	1.546E-03	1.370E+00	1.397E+00
ABJ	4.868E-03	1.907E-10	6.354E-07	4.869E-03	--	--	--	--	1.282E-04	2.834E-08	7.036E-06	1.352E-04	5.341E-04	8.275E-06	5.518E-03	6.061E-03	9.761E-01	3.241E-06	1.103E-03	9.772E-01	9.882E-01
ABK	3.205E-03	1.255E-10	4.183E-07	3.206E-03	--	--	--	--	8.436E-05	1.865E-08	4.631E-06	8.901E-05	5.266E-04	8.159E-06	5.441E-03	5.975E-03	9.623E-01	3.195E-06	1.087E-03	9.634E-01	9.727E-01
ABL	5.387E-03	2.110E-10	7.031E-07	5.388E-03	--	--	--	--	1.423E-04	3.145E-08	7.809E-06	1.501E-04	7.187E-04	1.113E-05	7.425E-03	8.155E-03	1.313E+00	4.361E-06	1.484E-03	1.315E+00	1.329E+00
ABM	6.748E-03	2.643E-10	8.807E-07	6.749E-03	--	--	--	--	1.610E-04	3.560E-08	8.840E-06	1.699E-04	7.633E-04	1.183E-05	7.886E-03	8.661E-03	1.395E+00	4.632E-06	1.576E-03	1.397E+00	1.412E+00
ACH	3.239E-01	1.269E-08	4.228E-05	3.239E-01	--	--	--	--	9.003E-03	1.990E-06	4.942E-04	9.499E-03	8.164E-02	1.265E-03	8.435E-01	9.264E-01	1.492E+02	4.954E-04	1.686E-01	1.494E+02	1.506E+02
ACH - Rem	3.551E-03	1.391E-10	4.635E-07	3.551E-03	--	--	--	--	8.749E-05	1.934E-08	4.803E-06	9.231E-05	4.314E-04	6.683E-06	4.457E-03	4.895E-03	7.883E-01	2.617E-06	8.908E-04	7.892E-01	7.977E-01
ACI	7.871E-03	3.083E-10	1.027E-06	7.872E-03	--	--	--	--	2.064E-04	4.563E-08	1.133E-05	2.178E-04	3.772E-04	5.844E-06	3.897E-03	4.280E-03	6.893E-01	2.289E-06	7.790E-04	6.901E-01	7.025E-01
ACJ	5.085E-03	1.992E-10	6.636E-07	5.085E-03	--	--	--	--	1.344E-04	2.972E-08	7.380E-06	1.418E-04	4.725E-04	7.320E-06	4.881E-03	5.361E-03	8.634E-01	2.867E-06	9.756E-04	8.644E-01	8.750E-01
ACK	3.680E-03	1.442E-10	4.804E-07	3.681E-03	--	--	--	--	9.688E-05	2.142E-08	5.318E-06	1.022E-04	4.748E-04	7.357E-06	4.906E-03	5.388E-03	8.677E-01	2.881E-06	9.805E-04	8.687E-01	8.779E-01
ACL	8.411E-03	3.295E-10	1.098E-06	8.412E-03	--	--	--	--	2.346E-04	5.186E-08	1.288E-05	2.475E-04	5.499E-04	8.520E-06	5.681E-03	6.240E-03	1.005E+00	3.337E-06	1.136E-03	1.006E+00	1.021E+00
ACM	5.841E-03	2.288E-10	7.623E-07	5.841E-03	--	--	--	--	1.532E-04	3.387E-08	8.410E-06	1.617E-04	8.072E-04	1.251E-05	8.340E-03	9.159E-03	1.475E+00	4.898E-06	1.667E-03	1.477E+00	1.492E+00
ADI	1.044E-02	4.090E-10	1.363E-06	1.044E-02	--	--	--	--	2.674E-04	5.912E-08	1.468E-05	2.822E-04	5.543E-04	8.588E-06	5.726E-03	6.289E-03	1.013E+00	3.363E-06	1.145E-03	1.014E+00	1.031E+00
ADJ	4.674E-03	1.831E-10	6.101E-07	4.675E-03	--	--	--	--	9.219E-05	2.038E-08	5.061E-06	9.727E-05	4.792E-04	7.424E-06	4.951E-03	5.437E-03	8.757E-01	2.908E-06	9.895E-04	8.767E-01	8.869E-01
ADK	3.205E-03	1.255E-10	4.183E-07	3.206E-03	--	--	--	--	8.436E-05	1.865E-08	4.631E-06	8.901E-05	3.875E-04	6.004E-06	4.003E-03	4.397E-03	7.081E-01	2.351E-06	8.002E-04	7.089E-01	7.166E-01
ADL	1.153E-03	4.516E-11	1.505E-07	1.153E-03	--	--	--	--	3.117E-05	6.890E-09	1.711E-06	3.288E-05	4.053E-04	6.279E-06	4.187E-03	4.599E-03	7.406E-01	2.459E-06	8.369E-04	7.415E-01	7.472E-01
ADM	6.143E-03	2.406E-10	8.018E-07	6.144E-03	--	--	--	--	1.579E-04	3.491E-08	8.668E-06	1.666E-04	7.159E-04	1.109E-05	7.396E-03	8.123E-03	1.308E+00	4.344E-06	1.478E-03	1.310E+00	1.324E+00
AEJ	4.415E-03	1.729E-10	5.762E-07	4.415E-03	--	--	--	--	1.157E-04	2.557E-08	6.349E-06	1.220E-04	3.741E-04	5.795E-06	3.865E-03	4.244E-03	6.836E-01	2.270E-06	7.724E-04	6.843E-01	6.931E-01
AEK	4.977E-03	1.949E-10	6.495E-07	4.977E-03	--	--	--	--	1.313E-04	2.903E-08	7.208E-06	1.385E-04	5.432E-04	8.416E-06	5.612E-03	6.164E-03	9.927E-01	3.296E-06	1.122E-03	9.938E-01	1.005E+00
AEL	4.350E-03	1.704E-10	5.678E-07	4.351E-03	--	--	--	--	1.141E-04	2.522E-08	6.263E-06	1.204E-04	6.052E-04	9.377E-06	6.253E-03	6.868E-03	1.106E+00	3.673E-06	1.250E-03	1.107E+00	1.119E+00
AEM	1.370E-02	5.367E-10	1.789E-06	1.371E-02	--	--	--	--	3.519E-04	7.780E-08	1.932E-05	3.713E-04	8.191E-04	1.269E-05	8.462E-03	9.294E-03	1.497E+00	4.970E-06	1.691E-03	1.498E+00	1.522E+00
AFI - AGI	1.522E-02	5.960E-10	1.986E-06	1.522E-02	--	--	--	--	3.989E-04	8.818E-08	2.190E-05	4.208E-04	7.716E-04	1.196E-05	7.972E-03	8.756E-03	1.410E+00	4.682E-06	1.593E-03	1.412E+00	1.436E+00
AFJ	3.097E-03	1.213E-10	4.042E-07	3.098E-03	--	--	--	--	8.123E-05	1.796E-08	4.459E-06	8.571E-05	6.179E-04	9.573E-06	6.384E-03	7.011E-03	1.129E+00	3.749E-06	1.276E-03	1.130E+00	1.141E+00
AFK	3.205E-03	1.255E-10	4.183E-07	3.206E-03	--	--	--	--	8.436E-05	1.865E-08	4.631E-06	8.901E-05	5.385E-04	8.343E-06	5.563E-03	6.110E-03	9.840E-01	3.267E-06	1.112E-03	9.851E-01	9.945E-01
AFL	1.111E-02	4.352E-10	1.450E-06	1.111E-02	--	--	--	--	2.940E-04	6.500E-08	1.614E-05	3.102E-04	1.130E-03	1.751E-05	1.168E-02	1.282E-02	2.065E+00	6.857E-06	2.334E-03	2.067E+00	2.092E+00
AFM	1.042E-02	4.081E-10	1.360E-06	1.042E-02	--	--	--	--	2.737E-04	6.051E-08	1.502E-05	2.888E-04	5.606E-04	8.685E-06	5.792E-03	6.361E-03	1.024E+00	3.402E-06	1.158E-03	1.026E+00	1.043E+00
AGJ	1.262E-02	4.944E-10	1.648E-06	1.263E-02	--	--	--	--	3.316E-04	7.331E-08	1.820E-05	3.499E-04	9.898E-04	1.534E-05	1.023E-02	1.123E-02	1.809E+00	6.006E-06	2.044E-03	1.811E+00	1.835E+00
AGK	1.176E-02	4.606E-10	1.535E-06	1.176E-02	--	--	--	--	3.097E-04	6.846E-08	1.700E-05	3.267E-04	8.625E-04	1.336E-05	8.911E-03	9.787E-03	1.576E+00	5.234E-06	1.781E-03	1.578E+00	1.600E+00
AGL	9.426E-03	3.692E-10	1.230E-06	9.428E-03	--	--	--	--	2.471E-04	5.463E-08	1.356E-05	2.607E-04	7.835E-04	1.214E-05	8.095E-03	8.890E-03	1.432E+00	4.754E-06	1.618E-03	1.433E+00	1.452E+00
AGM	1.048E-02	4.107E-10	1.368E-06	1.049E-02	--	--	--	--	2.753E-04	6.085E-08	1.511E-05	2.904E-04	7.697E-04	1.192E-05	7.952E-03	8.733E-03	1.406E+00	4.670E-06	1.589E-03	1.408E+00	1.428E+00
AHH - AIH	1.370E-02	5.367E-10	1.789E-06	1.371E-02	--	--	--	--	3.566E-04	7.884E-08	1.958E-05	3.763E-04	6.780E-04	1.050E-05	7.004E-03	7.693E-03	1.239E+00	4.114E-06	1.400E-03	1.240E+00	1.262E+00
AHI	5.452E-03	2.135E-10	7.116E-07	5.452E-03	--	--	--	--	1.376E-04	3.041E-08	7.551E-06	1.451E-04	5.057E-04	7.834E-06	5.224E-03	5.738E-03	9.241E-01	3.068E-06	1.044E-03	9.251E-01	9.364E-01
AHJ	1.103E-02	4.318E-10	1.439E-06	1.103E-02	--	--	--	--	2.893E-04	6.397E-08	1.588E-05	3.053E-04	9.467E-04	1.467E-05	9.781E-03	1.074E-02	1.730E+00	5.744E-06	1.955E-03	1.732E+00	1.754E+00
AHK	8.044E-03	3.151E-10	1.050E-06	8.045E-03	--	--	--	--	2.111E-04	4.667E-08	1.159E-05	2.227E-04	7.084E-04	1.098E-05	7.319E-03	8.038E-03	1.295E+00	4.298E-06	1.463E-03	1.296E+00	1.312E+00
AHL	6.597E-03	2.584E-10	8.610E-07	6.598E-03	--	--	--	--	1.735E-04	3.837E-08	9.527E-06	1.831E-04	7.120E-04	1.103E-05	7.356E-03	8.079E-03	1.301E+00	4.320E-06	1.470E-03	1.303E+00	1.317E+00
AHM	6.921E-03	2.711E-10	9.033E-07	6.922E-03	--	--	--	--	1.814E-04	4.010E-08	9.956E-06	1.914E-04	7.629E-04	1.182E-05	7.882E-03	8.657E-03	1.394E+00	4.629E-06	1.575E-03	1.396E+00	1.412E+00
AII	1.154E-02	4.521E-10	1.507E-06	1.154E-02	--	--	--	--	3.018E-04	6.673E-08	1.657E-05	3.185E-04	8.594E-04	1.331E-05	8.878E-03	9.751E-03	1.570E+00	5.214E-06	1.775E-03	1.572E+00	1.594E+00
AIJ	1.414E-02	5.537E-10	1.845E-06	1.414E-02	--	--	--	--	3.723E-04	8.230E-08	2.044E-05	3.928E-04	9.732E-04	1.508E-05	1.005E-02	1.104E-02	1.778E+00	5.905E-06	2.010E-03	1.780E+00	1.806E+00
AIK	1.262E-02	4.944E-10	1.648E-06	1.263E-02	--	--	--	--	3.284E-04	7.262E-08	1.803E-05	3.466E-04	8.368E-04	1.297E-05	8.646E-03	9.496E-03	1.529E+00	5.078E-06	1.728E-03	1.531E+00	1.553E+00
AIL	8.454E-03	3.311E-10	1.103E-06	8.455E-03	--	--	--	--	2.205E-04	4.875E-08	1.210E-05	2.326E-04	7.139E-04	1.106E-05	7.376E-03	8.101E-03	1.305E+00	4.332E-06	1.474E-03	1.306E+00	1.323E+00
AIM	6.726E-03	2.635E-10	8.779E-07	6.727E-03	--	--	--	--	1.767E-04	3.906E-08	9.699E-06	1.864E-04	7.467E-04	1.157E-05	7.715E-03	8.473E-03	1.365E+00	4.531E-06	1.542E-03	1.366E+00	1.382E+00
AJH	1.608E-02	6.298E-10	2.099E-06	1.608E-02	--	--	--	--	4.223E-04	9.336E-08	2.318E-05	4.456E-04	5.507E-04	8.532E-06	5.690E-03	6.249E-03	1.006E+00	3.342E-06	1.137E-03	1.008E+00	1.030E+00
AJI	8.778E-03	3.438E-10	1.146E-06	8.780E-03	--	--	--	--	2.299E-04	5.082E-08	1.262E-05	2.425E-04	7.997E-04	1.239E-05	8.262E-03	9.074E-03	1.461E+00	4.852E-06	1.651E-03	1.463E+00	1.481E+00
AJJ	1.284E-02	5.029E-10	1.676E-06	1.284E-02	--	--	--	--	3.363E-04	7.434E-08	1.846E-05	3.548E-04	8.013E-04	1.241E-05	8.278E-03	9.092E-03	1.464E+00	4.862E-06	1.655E-03	1.466E+00	1.488E+00
AJK	8.800E-03	3.447E-10	1.149E-06	8.801E-03	--	--	--	--	2.314E-04	5.117E-08	1.270E-05	2.442E-04	6.606E-04	1.023E-05	6.825E-03	7.496E-03	1.207E+00	4.008E-06	1.364E-03	1.209E+00	1.225E+00
AJL	7.331E-03	2.871E-10	9.569E-07	7.332E-03	--	--	--	--	1.923E-04	4.252E-08	1.056E-05	2.029E-04	7.123E-04	1.104E-05	7.360E-03	8.083E-03	1.302E+00	4.322E-06	1.471E-03	1.303E+00	1.319E+00
AJM	5.214E-03	2.042E-10	6.805E-07	5.215E-03	--	--	--	--	1.376E-04	3.041E-08	7.551E-06	1.451E-04	7.787E-04	1.207E-05	8.046E-03	8.836E-03	1.423E+00	4.725E-06	1.608E-03	1.425E+00	1.439E+00
AKG	1.154E-02	4.521E-10	1.507E-06	1.154E-02	--	--	--	--	3.034E-04	6.708E-08	1.666E-05	3.201E-04	4.203E-04	6.512E-06	4.342E-03	4.769E-03	7.681E-01	2.550E-06	8.679E-04	7.689E-01	7.856E-01
AKI	7.655E-03	2.998E-10	9.991E-07	7.656E-03	--	--	--	--	2.001E-04	4.425E-08	1.099E-05	2.112E-04	7.242E-04	1.122E-05	7.482E-03	8.218E-03	1.323E+00	4.394E-06	1.496E-03	1.325E+00	1.341E+00
AKJ	6.921E-03	2.711E-10	9.033E-07	6.922E-03	--	--	--	--	1.814E-04	4.010E-08	9.956E-06	1.914E-04	7.495E-04	1.161E-05	7.743E-03	8.505E-03	1.370E+00	4.548E-06	1.548E-03	1.371E+00	1.387E+00
AKK	5.495E-03	2.152E-10	7.172E-07	5.496E-03	--	--	--	--	1.423E-04	3.145E-08	7.809E-06	1.501E-04	6.135E-04	9.506E-06	6.339E-03	6.962E-03	1.121E+00	3.723E-06	1.267E-03	1.122E+00	1.135E+00
AKL	3.703E-02	1.451E-09	4.834E-06	3.704E-02	--	--	--	--	9.747E-04	2.155E-07	5.350E-05	1.028E-03	3.492E-01	5.410E-03	3.608E+00	3.962E+00	6.381E+02	2.119E-03	7.211E-01	6.388E+02	6.428E+02
AKL - Rem	6.877E-03	2.694E-10	8.976E-07	6.878E-03	--	--	--	--	1.814E-04	4.010E-08	9.956E-06	1.914E-04	5.973E-04	9.255E-06	6.171E-03	6.778E-03	1.092E+00	3.625E-06	1.234E-03	1.093E+00	1.107E+00
AKM	9.902E-03	3.878E-10	1.292E-06	9.903E-03	--	--	--	--	2.596E-04	5.739E-08	1.425E-05	2.739E-04	4.032E-03	6.247E-05	4.166E-02	4.575E-02	7.368E+00	2.447E-05	8.326E-03	7.377E+00	7.433E+00

Risk Calculations, Recreational Child

Survey Grid	Net 95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				Total Risk
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	
AAA	0.051	--	0.191	1.470	1.470	4.679E-08	8.624E-15	6.121E-12	4.680E-08	--	--	--	--	1.327E-09	1.222E-13	5.710E-11	1.384E-09	6.605E-11	1.572E-08	1.800E-08	3.379E-08	4.798E-06	7.265E-11	4.072E-09	4.802E-06	4.884E-06
AAB	0.077	--	0.289	1.273	1.273	7.072E-08	1.303E-14	9.251E-12	7.073E-08	--	--	--	--	2.008E-09	1.849E-13	8.640E-11	2.094E-09	5.720E-11	1.362E-08	1.559E-08	2.926E-08	4.155E-06	6.291E-11	3.526E-09	4.158E-06	4.260E-06
AAC	0.044	0.027	0.154	1.583	1.583	4.004E-08	7.379E-15	5.237E-12	4.004E-08	9.067E-08	3.069E-15	1.441E-12	9.067E-08	1.070E-09	9.849E-14	4.603E-11	1.116E-09	7.113E-11	1.693E-08	1.939E-08	3.639E-08	5.167E-06	7.824E-11	4.385E-09	5.171E-06	5.340E-06
AAD	0.164	0.043	0.596	1.586	1.586	1.502E-07	2.768E-14	1.965E-11	1.502E-07	1.438E-07	4.867E-15	2.285E-12	1.438E-07	4.141E-09	3.813E-13	1.782E-10	4.319E-09	7.127E-11	1.696E-08	1.942E-08	3.646E-08	5.177E-06	7.839E-11	4.393E-09	5.181E-06	5.516E-06
AAE	0.156	0.041	0.569	1.474	1.474	1.429E-07	2.633E-14	1.869E-11	1.429E-07	1.345E-07	4.553E-15	2.137E-12	1.345E-07	3.953E-09	3.640E-13	1.701E-10	4.124E-09	6.623E-11	1.577E-08	1.805E-08	3.388E-08	4.811E-06	7.285E-11	4.083E-09	4.815E-06	5.131E-06
AAF	0.083	0.030	0.303	1.611	1.611	7.620E-08	1.404E-14	9.968E-12	7.621E-08	9.931E-08	3.361E-15	1.578E-12	9.931E-08	2.105E-09	1.938E-13	9.059E-11	2.196E-09	7.239E-11	1.723E-08	1.973E-08	3.703E-08	5.258E-06	7.962E-11	4.463E-09	5.263E-06	5.478E-06
AAG	0.047	--	0.172	1.237	1.237	4.314E-08	7.951E-15	5.643E-12	4.315E-08	--	--	--	--	1.195E-09	1.100E-13	5.141E-11	1.246E-09	5.558E-11	1.323E-08	1.515E-08	2.843E-08	4.037E-06	6.113E-11	3.426E-09	4.041E-06	4.113E-06
AAH	0.119	--	0.432	1.684	1.684	1.091E-07	2.010E-14	1.427E-11	1.091E-07	--	--	--	--	3.001E-09	2.764E-13	1.292E-10	3.131E-09	7.567E-11	1.801E-08	2.062E-08	3.871E-08	5.497E-06	8.323E-11	4.665E-09	5.501E-06	5.652E-06
AAI	0.085	--	0.309	1.692	1.692	7.803E-08	1.438E-14	1.021E-11	7.804E-08	--	--	--	--	2.147E-09	1.977E-13	9.239E-11	2.239E-09	7.603E-11	1.810E-08	2.072E-08	3.890E-08	5.523E-06	8.363E-11	4.687E-09	5.528E-06	5.647E-06
AAJ	0.039	--	0.142	1.726	1.726	3.565E-08	6.571E-15	4.664E-12	3.566E-08	--	--	--	--	9.861E-10	9.081E-14	4.244E-11	1.029E-09	7.756E-11	1.846E-08	2.114E-08	3.968E-08	5.634E-06	8.531E-11	4.781E-09	5.639E-06	5.715E-06
AAK	0.019	--	0.070	1.294	1.294	1.748E-08	3.221E-15	2.286E-12	1.748E-08	--	--	--	--	4.858E-10	4.474E-14	2.091E-11	5.068E-10	5.814E-11	1.384E-08	1.585E-08	2.975E-08	4.223E-06	6.395E-11	3.584E-09	4.227E-06	4.275E-06
AAL	0.035	--	0.125	2.063	2.063	3.154E-08	5.813E-15	4.126E-12	3.155E-08	--	--	--	--	8.680E-10	7.993E-14	3.736E-11	9.055E-10	9.271E-11	2.207E-08	2.527E-08	4.743E-08	6.734E-06	1.020E-10	5.715E-09	6.740E-06	6.820E-06
ABA	0.092	--	0.347	1.776	1.776	8.442E-08	1.556E-14	1.104E-11	8.443E-08	--	--	--	--	2.411E-09	2.220E-13	1.038E-10	2.515E-09	7.981E-11	1.900E-08	2.175E-08	4.083E-08	5.797E-06	8.778E-11	4.920E-09	5.802E-06	5.930E-06
ABB	0.088	--	0.340	1.377	1.377	8.077E-08	1.489E-14	1.057E-11	8.078E-08	--	--	--	--	2.362E-09	2.175E-13	1.017E-10	2.464E-09	6.187E-11	1.473E-08	1.686E-08	3.165E-08	4.494E-06	6.805E-11	3.814E-09	4.498E-06	4.613E-06
ABC	0.109	0.032	0.399	1.315	1.315	9.995E-08	1.842E-14	1.307E-11	9.996E-08	1.069E-07	3.620E-15	1.699E-12	1.069E-07	2.772E-09	2.553E-13	1.193E-10	2.891E-09	5.909E-11	1.407E-08	1.610E-08	3.023E-08	4.292E-06	6.499E-11	3.642E-09	4.296E-06	4.536E-06
ABD	0.139	0.021	0.507	1.522	1.522	1.273E-07	2.347E-14	1.666E-11	1.274E-07	7.074E-08	2.394E-15	1.124E-12	7.075E-08	3.522E-09	3.244E-13	1.516E-10	3.674E-09	6.839E-11	1.628E-08	1.864E-08	3.499E-08	4.968E-06	7.522E-11	4.216E-09	4.972E-06	5.209E-06
ABE	0.249	0.037	0.946	1.318	1.318	2.278E-07	4.198E-14	2.980E-11	2.278E-07	1.222E-07	4.137E-15	1.942E-12	1.222E-07	6.573E-09	6.053E-13	2.829E-10	6.856E-09	5.922E-11	1.410E-08	1.614E-08	3.030E-08	4.302E-06	6.514E-11	3.651E-09	4.305E-06	4.693E-06
ABF	0.050	0.026	0.182	1.277	1.277	4.570E-08	8.422E-15	5.978E-12	4.570E-08	8.735E-08	2.956E-15	1.388E-12	8.735E-08	1.264E-09	1.164E-13	5.441E-11	1.319E-09	5.738E-11	1.366E-08	1.564E-08	2.935E-08	4.168E-06	6.311E-11	3.537E-09	4.171E-06	4.335E-06
ABG	0.367	--	1.334	8.054	8.054	3.356E-07	6.185E-14	4.390E-11	3.356E-07	--	--	--	--	9.269E-09	8.535E-13	3.989E-10	9.669E-09	3.620E-10	8.617E-08	9.866E-08	1.852E-07	2.629E-05	3.982E-10	2.232E-08	2.632E-05	2.685E-05
ABH	0.092	--	0.344	1.324	1.324	8.442E-08	1.556E-14	1.104E-11	8.443E-08	--	--	--	--	2.390E-09	2.201E-13	1.029E-10	2.493E-09	5.949E-11	1.416E-08	1.621E-08	3.044E-08	4.321E-06	6.543E-11	3.667E-09	4.325E-06	4.442E-06
ABI	0.086	--	0.315	1.895	1.895	7.894E-08	1.455E-14	1.033E-11	7.895E-08	--	--	--	--	2.188E-09	2.015E-13	9.418E-11	2.283E-09	8.516E-11	2.027E-08	2.321E-08	4.357E-08	6.186E-06	9.366E-11	5.250E-09	6.191E-06	6.316E-06
ABJ	0.023	--	0.082	1.352	1.352	2.058E-08	3.793E-15	2.693E-12	2.059E-08	--	--	--	--	5.692E-10	5.242E-14	2.450E-11	5.938E-10	6.075E-11	1.446E-08	1.656E-08	3.108E-08	4.413E-06	6.682E-11	3.745E-09	4.416E-06	4.469E-06
ABK	0.015	--	0.054	1.333	1.333	1.355E-08	2.497E-15	1.773E-12	1.355E-08	--	--	--	--	3.747E-10	3.450E-14	1.612E-11	3.908E-10	5.990E-11	1.426E-08	1.632E-08	3.064E-08	4.351E-06	6.588E-11	3.692E-09	4.354E-06	4.399E-06
ABL	0.025	--	0.091	1.819	1.819	2.277E-08	4.197E-15	2.979E-12	2.278E-08	--	--	--	--	6.318E-10	5.818E-14	2.719E-11	6.590E-10	8.174E-11	1.946E-08	2.228E-08	4.182E-08	5.937E-06	8.991E-11	5.039E-09	5.943E-06	6.008E-06
ABM	0.031	--	0.103	1.932	1.932	2.853E-08	5.258E-15	3.732E-12	2.853E-08	--	--	--	--	7.151E-10	6.586E-14	3.078E-11	7.460E-10	8.682E-11	2.067E-08	2.366E-08	4.442E-08	6.306E-06	9.549E-11	5.352E-09	6.312E-06	6.385E-06
ACH	1.499	--	5.754	206.583	206.583	1.369E-06	2.524E-13	1.791E-10	1.370E-06	--	--	--	--	3.998E-08	3.682E-12	1.721E-09	4.171E-08	9.286E-09	2.210E-06	2.531E-06	4.751E-06	6.745E-04	1.021E-08	5.724E-07	6.751E-04	6.812E-04
ACH - Rem	0.016	--	0.056	1.092	1.092	1.501E-08	2.767E-15	1.964E-12	1.501E-08	--	--	--	--	3.886E-10	3.578E-14	1.672E-11	4.053E-10	4.906E-11	1.168E-08	1.337E-08	2.510E-08	3.564E-06	5.396E-11	3.025E-09	3.567E-06	3.607E-06
ACI	0.036	--	0.132	0.955	0.955	3.328E-08	6.133E-15	4.353E-12	3.328E-08	--	--	--	--	9.167E-10	8.441E-14	3.945E-11	9.562E-10	4.290E-11	1.021E-08	1.169E-08	2.195E-08	3.116E-06	4.719E-11	2.645E-09	3.119E-06	3.175E-06
ACJ	0.024	--	0.086	1.196	1.196	2.150E-08	3.962E-15	2.812E-12	2.150E-08	--	--	--	--	5.970E-10	5.498E-14	2.569E-11	6.228E-10	5.374E-11	1.279E-08	1.465E-08	2.749E-08	3.903E-06	5.911E-11	3.313E-09	3.907E-06	3.956E-06
ACK	0.017	--	0.062	1.202	1.202	1.556E-08	2.868E-15	2.035E-12	1.556E-08	--	--	--	--	4.302E-10	3.962E-14	1.852E-11	4.488E-10	5.401E-11	1.286E-08	1.472E-08	2.763E-08	3.923E-06	5.940E-11	3.329E-09	3.926E-06	3.970E-06
ACL	0.039	--	0.150	1.392	1.392	3.556E-08	6.554E-15	4.652E-12	3.557E-08	--	--	--	--	1.042E-09	9.593E-14	4.484E-11	1.087E-09	6.255E-11	1.489E-08	1.705E-08	3.200E-08	4.543E-06	6.880E-11	3.856E-09	4.547E-06	4.616E-06
ACM	0.027	--	0.098	2.043	2.043	2.469E-08	4.551E-15	3.230E-12	2.470E-08	--	--	--	--	6.804E-10	6.266E-14	2.928E-11	7.097E-10	9.181E-11	2.185E-08	2.502E-08	4.697E-08	6.669E-06	1.010E-10	5.660E-09	6.675E-06	6.747E-06
ADI	0.048	--	0.171	1.403	1.403	4.415E-08	8.136E-15	5.775E-12	4.415E-08	--	--	--	--	1.188E-09	1.094E-13	5.112E-11	1.239E-09	6.304E-11	1.501E-08	1.718E-08	3.225E-08	4.579E-06	6.934E-11	3.886E-09	4.583E-06	4.661E-06
ADJ	0.022	--	0.059	1.213	1.213	1.976E-08	3.642E-15	2.585E-12	1.976E-08	--	--	--	--	4.094E-10	3.770E-14	1.762E-11	4.271E-10	5.450E-11	1.297E-08	1.485E-08	2.788E-08	3.959E-06	5.995E-11	3.360E-09	3.962E-06	4.010E-06
ADK	0.015	--	0.054	0.981	0.981	1.355E-08	2.497E-15	1.773E-12	1.355E-08	--	--	--	--	3.747E-10	3.450E-14	1.612E-11	3.908E-10	4.407E-11	1.049E-08	1.201E-08	2.255E-08	3.201E-06	4.848E-11	2.717E-09	3.204E-06	3.241E-06
ADL	0.005	--	0.020	1.026	1.026	4.875E-09	8.984E-16	6.377E-13	4.875E-09	--	--	--	--	1.384E-10	1.275E-14	5.957E-12	1.444E-10	4.610E-11	1.097E-08	1.256E-08	2.358E-08	3.348E-06	5.070E-11	2.842E-09	3.351E-06	3.380E-06
ADM	0.028	--	0.101	1.812	1.812	2.597E-08	4.787E-15	3.397E-12	2.597E-08	--	--	--	--	7.012E-10	6.458E-14	3.018E-11	7.315E-10	8.143E-11	1.938E-08	2.219E-08	4.166E-08	5.915E-06	8.956E-11	5.020E-09	5.920E-06	5.988E-06
AEJ	0.020	--	0.074	0.947	0.947	1.867E-08	3.440E-15	2.442E-12	1.867E-08	--	--	--	--	5.136E-10	4.730E-14	2.211E-11	5.358E-10	4.255E-11	1.013E-08	1.160E-08	2.177E-08	3.090E-06	4.679E-11	2.623E-09	3.093E-06	3.134E-06
AEK	0.023	--	0.084	1.375	1.375	2.104E-08	3.878E-15	2.752E-12	2.104E-08	--	--	--	--	5.831E-10	5.370E-14	2.510E-11	6.083E-10	6.178E-11	1.471E-08	1.684E-08	3.161E-08	4.488E-06	6.796E-11	3.809E-09	4.492E-06	4.545E-06
AEL	0.020	--	0.073	1.532	1.532	1.839E-08	3.390E-15	2.406E-12	1.839E-08	--	--	--	--	5.067E-10	4.666E-14	2.181E-11	5.285E-10	6.884E-11	1.639E-08	1.876E-08	3.522E-08	5.000E-06	7.572E-11	4.244E-09	5.005E-06	5.059E-06
AEM	0.063	--	0.225	2.073	2.073	5.794E-08	1.068E-14	7.579E-12	5.794E-08	--	--	--	--	1.563E-09	1.439E-13	6.726E-11	1.630E-09	9.316E-11	2.218E-08	2.539E-08	4.766E-08	6.767E-06	1.025E-10	5.743E-09	6.773E-06	6.880E-06
AFI - AGI	0.070	--	0.255	1.953	1.953	6.433E-08	1.186E-14	8.415E-12	6.434E-08	--	--	--	--	1.771E-09	1.631E-13	7.624E-11	1.848E-09	8.776E-11	2.089E-08	2.392E-08	4.490E-08	6.375E-06	9.653E-11	5.410E-09	6.380E-06	6.492E-06
AFJ	0.014	--	0.052	1.564	1.564	1.309E-08	2.413E-15	1.713E-12	1.310E-08	--	--	--	--	3.608E-10	3.322E-14	1.553E-11	3.763E-10	7.028E-11	1.673E-08	1.915E-08	3.595E-08	5.105E-06	7.730E-11	4.332E-09	5.109E-06	5.159E-06
AFK	0.015	--	0.054	1.363	1.363	1.355E-08	2.497E-15	1.773E-12	1.355E-08	--	--	--	--	3.747E-10	3.450E-14	1.612E-11	3.908E-10	6.124E-11	1.458E-08	1.669E-08	3.133E-08	4.449E-06	6.736E-11	3.775E-09	4.452E-06	4.498E-06
AFL	0.051	--	0.188	2.860	2.860	4.698E-08	8.658E-15	6.145E-12	4.698E-08	--	--	--	--	1.306E-09	1.202E-13	5.620E-11	1.362E-09	1.285E-10	3.060E-08	3.503E-08	6.576E-08	9.336E-06	1.414E-10	7.924E-09	9.344E-06	9.458E-06
AFM	0.048	--	0.175	1.419	1.419	4.405E-08	8.119E-15	5.763E-12	4.406E-08	--	--	--	--	1.215E-09	1.119E-13	5.231E-11	1.268E-09	6.376E-11	1.518E-08	1.738E-08	3.262E-08	4.631E-06	7.013E-11	3.931E-09	4.635E-06	4.713E-06
AGJ	0.058	--	0.212	2.505	2.505	5.337E-08	9.836E-15	6.981E-12	5.338E-08	--	--	--	--	1.473E-09	1.356E-13	6.338E-11	1.536E-09	1.126E-10	2.680E-08	3.068E-08	5.759E-08	8.177E-06	1.238E-10	6.940E-09	8.184E-06	8.297E-06
AGK	0.054	--	0.198	2.183	2.183	4.972E-08	9.163E-15	6.504E-12	4.972E-08	--	--	--	--	1.375E-09	1.266E-13	5.919E-11	1.435E-09	9.810E-11	2.335E-08	2.674E-08	5.019E-08	7.126E-06	1.079E-10	6.048E-09	7.132E-06	7.233E-06
AGL	0.044	--	0.158	1.983	1.983	3.985E-08	7.345E-15	5.213E-12	3.986E-08	--	--	--	--	1.097E-09	1.010E-13	4.723E-11	1.145E-09	8.911E-11	2.121E-08	2.429E-08	4.559E-08	6.473E-06	9.801E-11	5.494E-09	6.478E-06	6.565E-06
AGM	0.049	--	0.176	1.948	1.948	4.433E-08	8.170E-15	5.799E-12	4.433E-08	--	--	--	--	1.222E-09	1.126E-13	5.261E-11	1.275E-09	8.754E-11	2.084E-08	2.386E-08	4.478E-08	6.359E-06	9.628E-11	5.397E-09	6.364E-06	6.454E-06
AHH - AIH	0.063	--	0.228	1.716	1.716	5.794E-08	1.068E-14	7.579E-12	5.794E-08	--	--	--	--	1.584E-09	1.458E-13	6.816E-11	1.652E-09	7.711E-11	1.836E-08	2.102E-08	3.945E-08	5.601E-06	8.481E-11	4.754E-09	5.606E-06	5.705E-06
AHI	0.025	--	0.088	1.280	1.280	2.305E-08	4.248E-15	3.015E-12	2.305E-08	--	--	--	--	6.109E-10	5.626E-14	2.629E-11	6.373E-10	5.751E-11	1.369E-08	1.568E-08	2.942E-08	4.178E-06	6.326E-11	3.545E-09	4.181E-06	4.234E-06
AHJ	0.051	--	0.185	2.396	2.396	4.661E-08	8.591E-15	6.097E-12	4.662E-08	--	--	--	--	1.285E-09	1.183E-13	5.530E-11	1.340E-09	1.077E-10	2.563E-08	2.935E-08	5.509E-08	7.821E-06	1.184E-10	6.638E-09	7.828E-06	7.931E-06
AHK	0.037	--	0.135	1.793	1.793	3.401E-08	6.268E-15	4.449E-12	3.401E-08	--	--	--	--	9.375E-10	8.633E-14	4.035E-11	9.779E-10	8.057E-11	1.918E-08	2.196E-08	4.122E-08	5.853E-06	8.862E-11	4.967E-09	5.858E-06	5.934E-06
AHL	0.031	--	0.111	1.802	1.802	2.789E-08	5.140E-15	3.648E-12	2.789E-08	--	--	--	--	7.707E-10	7.097E-14	3.317E-11	8.040E-10	8.098E-11	1.928E-08	2.207E-08	4.143E-08	5.882E-06	8.907E-11	4.992E-09	5.887E-06	5.957E-06
AHM	0.032	--	0.116	1.931	1.931	2.926E-08	5.393E-15	3.827E-12	2.926E-08	--	--	--	--	8.055E-10	7.417E-14	3.467E-11	8.402E-10	8.678E-11	2.066E-08	2.365E-08	4.439E-08	6.303E-06	9.544E-11	5.349E-09	6.309E-06	6.383E-06
AII	0.053	--	0.193	2.175	2.175	4.880E-08	8.995E-15	6.384E-12	4.881E-08	--	--	--	--	1.341E-09	1.234E-13	5.769E-11	1.398E-09	9.774E-11	2.327E-08	2.664E-08	5.000E-08	7.100E-06	1.075E-10	6.026E-09	7.106E-06	7.206E-06
AIJ	0.065	--	0.238	2.463	2.463	5.976E-08	1.101E-14	7.818E-12	5.977E-08	--	--	--	--	1.653E-09	1.522E-13	7.115E-11	1.725E-09	1.107E-10	2.635E-08	3.017E-08	5.663E-08	8.040E-06	1.217E-10	6.824E-09	8.047E-06	8.165E-06
AIK	0.058	--	0.210	2.118	2.118	5.337E-08	9.836E-15	6.981E-12	5.338E-08	--	--	--	--	1.459E-09	1.343E-13	6.278E-11	1.522E-09	9.518E-11	2.266E-08	2.594E-08	4.869E-08	6.914E-06	1.047E-10	5.868E-09	6.920E-06	7.023E-06
AIL	0.039	--	0.141	1.807	1.807	3.574E-08	6.588E-15	4.676E-12	3.575E-08	--	--	--	--	9.792E-10	9.017E-14	4.214E-11	1.021E-09	8.120E-11	1.933E-08	2.213E-08	4.154E-08	5.898E-06	8.931E-11	5.006E-09	5.903E-06	5.982E-06
AIM	0.031	--	0.113	1.890	1.890	2.844E-08	5.241E-15	3.720E-12	2.844E-08	--	--	--	--	7.846E-10	7.225E-14	3.377E-11	8.185E-10	8.493E-11	2.022E-08	2.315E-08	4.345E-08	6.169E-06	9.342E-11	5.236E-09	6.175E-06	6.247E-06
AJH	0.074	--	0.270	1.394	1.394	6.798E-08	1.253E-14	8.893E-12	6.799E-08	--	--	--	--	1.875E-09	1.727E-13	8.072E-11	1.956E-09	6.264E-11	1.491E-08	1.707E-08	3.204E-08	4.550E-06	6.889E-11	3.861E-09	4.554E-06	4.656E-06
AJI	0.041	--	0.147	2.024	2.024	3.711E-08	6.840E-15	4.855E-12	3.712E-08	--	--	--	--	1.021E-09	9.401E-14	4.394E-11	1.065E-09	9.096E-11	2.165E-08	2.479E-08	4.653E-08	6.607E-06	1.000E-10	5.607E-09	6.612E-06	6.697E-06
AJJ	0.059	--	0.215	2.028	2.028	5.428E-08	1.000E-14	7.101E-12	5.429E-08	--	--	--	--	1.493E-09	1.375E-13	6.427E-11	1.558E-09	9.114E-11	2.169E-08	2.484E-08	4.662E-08	6.620E-06	1.002E-10	5.618E-09	6.626E-06	6.728E-06
AJK	0.041	--	0.148	1.672	1.672	3.720E-08	6.857E-15	4.867E-12	3.721E-08	--	--	--	--	1.028E-09	9.465E-14	4.424E-11	1.072E-09	7.513E-11	1.789E-08	2.048E-08	3.844E-08	5.457E-06	8.264E-11	4.632E-09	5.462E-06	5.539E-06
AJL	0.034	--	0.123	1.803	1.803	3.099E-08	5.712E-15	4.054E-12	3.100E-08	--	--	--	--	8.541E-10	7.865E-14	3.676E-11	8.910E-10	8.102E-11	1.929E-08	2.208E-08	4.145E-08	5.885E-06	8.912E-11	4.995E-09	5.890E-06	5.964E-06
AJM	0.024	--	0.088	1.971	1.971	2.204E-08	4.063E-15	2.884E-12	2.205E-08	--	--	--	--	6.109E-10	5.626E-14	2.629E-11	6.373E-10	8.857E-11	2.108E-08	2.414E-08	4.531E-08	6.434E-06	9.742E-11	5.460E-09	6.439E-06	6.507E-06
AKG	0.053	--	0.194	1.064	1.064	4.880E-08	8.995E-15	6.384E-12	4.881E-08	--	--	--	--	1.347E-09	1.241E-13	5.799E-11	1.406E-09	4.780E-11	1.138E-08	1.303E-08	2.446E-08	3.472E-06	5.258E-11	2.947E-09	3.475E-06	3.550E-06
AKI	0.035	--	0.128	1.833	1.833	3.236E-08	5.965E-15	4.234E-12	3.237E-08	--	--	--	--	8.889E-10	8.185E-14	3.826E-11	9.272E-10	8.237E-11	1.961E-08	2.245E-08	4.214E-08	5.983E-06	9.060E-11	5.078E-09	5.988E-06	6.064E-06
AKJ	0.032	--	0.116	1.897	1.897	2.926E-08	5.393E-15	3.827E-12	2.926E-08	--	--	--	--	8.055E-10	7.417E-14	3.467E-11	8.402E-10	8.525E-11	2.029E-08	2.323E-08	4.361E-08	6.192E-06	9.376E-11	5.255E-09	6.197E-06	6.271E-06
AKK	0.025	--	0.091	1.553	1.553	2.323E-08	4.282E-15	3.039E-12	2.323E-08	--	--	--	--	6.318E-10	5.818E-14	2.719E-11	6.590E-10	6.978E-11	1.661E-08	1.902E-08	3.570E-08	5.069E-06	7.676E-11	4.302E-09	5.073E-06	5.133E-06
AKL	0.171	--	0.623	883.583	883.583	1.566E-07	2.886E-14	2.048E-11	1.566E-07	--	--	--	--	4.328E-09	3.986E-13	1.863E-10	4.515E-09	3.972E-08	9.454E-06	1.082E-05	2.032E-05	2.885E-03	4.368E-08	2.448E-06	2.887E-03	2.908E-03
AKL - Rem	0.032	--	0.116	1.512	1.512	2.908E-08	5.359E-15	3.804E-12	2.908E-08	--	--	--	--	8.055E-10	7.417E-14	3.467E-11	8.402E-10	6.794E-11	1.617E-08	1.852E-08	3.476E-08	4.935E-06	7.473E-11	4.188E-09	4.939E-06	5.004E-06
AKM	0.046	--	0.166	10.203	10.203	4.186E-08	7.715E-15	5.476E-12	4.187E-08	--	--	--	--	1.153E-09	1.062E-13	4.962E-11	1.203E-09	4.586E-10	1.092E-07	1.250E-07	2.346E-07	3.331E-05	5.044E-10	2.827E-08	3.334E-05	3.362E-05

Survey Grid	Net 95UCL Values				
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra
AAA	0.051	--	0.191	1.470	1.470
AAB	0.077	--	0.289	1.273	1.273
AAC	0.044	0.027	0.154	1.583	1.583
AAD	0.164	0.043	0.596	1.586	1.586
AAE	0.156	0.041	0.569	1.474	1.474
AAF	0.083	0.030	0.303	1.611	1.611
AAG	0.047	--	0.172	1.237	1.237
AAH	0.119	--	0.432	1.684	1.684
AAI	0.085	--	0.309	1.692	1.692
AAJ	0.039	--	0.142	1.726	1.726
AAK	0.019	--	0.070	1.294	1.294
AAL	0.035	--	0.125	2.063	2.063
ABA	0.092	--	0.347	1.776	1.776
ABB	0.088	--	0.340	1.377	1.377
ABC	0.109	0.032	0.399	1.315	1.315
ABD	0.139	0.021	0.507	1.522	1.522
ABE	0.249	0.037	0.946	1.318	1.318
ABF	0.050	0.026	0.182	1.277	1.277
ABG	0.367	--	1.334	8.054	8.054
ABH	0.092	--	0.344	1.324	1.324
ABI	0.086	--	0.315	1.895	1.895
ABJ	0.023	--	0.082	1.352	1.352
ABK	0.015	--	0.054	1.333	1.333
ABL	0.025	--	0.091	1.819	1.819
ABM	0.031	--	0.103	1.932	1.932
ACH	1.499	--	5.754	206.583	206.583
ACH - Rem	0.016	--	0.056	1.092	1.092
ACI	0.036	--	0.132	0.955	0.955
ACJ	0.024	--	0.086	1.196	1.196
ACK	0.017	--	0.062	1.202	1.202
ACL	0.039	--	0.150	1.392	1.392
ACM	0.027	--	0.098	2.043	2.043
ADI	0.048	--	0.171	1.403	1.403
ADJ	0.022	--	0.059	1.213	1.213
ADK	0.015	--	0.054	0.981	0.981
ADL	0.005	--	0.020	1.026	1.026
ADM	0.028	--	0.101	1.812	1.812
AEJ	0.020	--	0.074	0.947	0.947
AEK	0.023	--	0.084	1.375	1.375
AEL	0.020	--	0.073	1.532	1.532
AEM	0.063	--	0.225	2.073	2.073
AFI - AGI	0.070	--	0.255	1.953	1.953
AFJ	0.014	--	0.052	1.564	1.564
AFK	0.015	--	0.054	1.363	1.363
AFL	0.051	--	0.188	2.860	2.860
AFM	0.048	--	0.175	1.419	1.419
AGJ	0.058	--	0.212	2.505	2.505
AGK	0.054	--	0.198	2.183	2.183
AGL	0.044	--	0.158	1.983	1.983
AGM	0.049	--	0.176	1.948	1.948
AHH - AIH	0.063	--	0.228	1.716	1.716
AHI	0.025	--	0.088	1.280	1.280
AHJ	0.051	--	0.185	2.396	2.396
AHK	0.037	--	0.135	1.793	1.793
AHL	0.031	--	0.111	1.802	1.802
AHM	0.032	--	0.116	1.931	1.931
AII	0.053	--	0.193	2.175	2.175
AIJ	0.065	--	0.238	2.463	2.463
AIK	0.058	--	0.210	2.118	2.118
AIL	0.039	--	0.141	1.807	1.807
AIM	0.031	--	0.113	1.890	1.890
AJH	0.074	--	0.270	1.394	1.394
AJI	0.041	--	0.147	2.024	2.024
AJJ	0.059	--	0.215	2.028	2.028
AJK	0.041	--	0.148	1.672	1.672
AJL	0.034	--	0.123	1.803	1.803
AJM	0.024	--	0.088	1.971	1.971
AKG	0.053	--	0.194	1.064	1.064
AKI	0.035	--	0.128	1.833	1.833
AKJ	0.032	--	0.116	1.897	1.897
AKK	0.025	--	0.091	1.553	1.553
AKL	0.171	--	0.623	883.583	883.583
AKL - Rem	0.032	--	0.116	1.512	1.512
AKM	0.046	--	0.166	10.203	10.203

Dose Calculations, Construction Worker

	^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				
Survey Grid	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Total Dose
AAA	3.544E-02	2.644E-08	4.770E-05	3.549E-02	--	--	--	--	9.563E-04	4.028E-06	5.415E-04	1.502E-03	1.859E-03	5.487E-04	1.981E-01	2.005E-01	3.397E+00	2.150E-04	3.960E-02	3.437E+00	3.675E+00
AAB	5.357E-02	3.996E-08	7.209E-05	5.364E-02	--	--	--	--	1.447E-03	6.096E-06	8.194E-04	2.273E-03	1.610E-03	4.752E-04	1.715E-01	1.736E-01	2.942E+00	1.862E-04	3.429E-02	2.977E+00	3.206E+00
AAC	3.033E-02	2.262E-08	4.081E-05	3.037E-02	8.576E-02	9.166E-08	1.296E-05	8.577E-02	7.710E-04	3.248E-06	4.366E-04	1.211E-03	2.002E-03	5.909E-04	2.133E-01	2.159E-01	3.659E+00	2.315E-04	4.265E-02	3.702E+00	4.035E+00
AAD	1.138E-01	8.485E-08	1.531E-04	1.139E-01	1.360E-01	1.454E-07	2.056E-05	1.360E-01	2.985E-03	1.257E-05	1.690E-03	4.688E-03	2.006E-03	5.920E-04	2.137E-01	2.163E-01	3.666E+00	2.320E-04	4.273E-02	3.709E+00	4.180E+00
AAE	1.082E-01	8.072E-08	1.456E-04	1.084E-01	1.272E-01	1.360E-07	1.923E-05	1.272E-01	2.850E-03	1.200E-05	1.614E-03	4.475E-03	1.864E-03	5.502E-04	1.986E-01	2.010E-01	3.407E+00	2.156E-04	3.971E-02	3.447E+00	3.888E+00
AAF	5.772E-02	4.306E-08	7.768E-05	5.780E-02	9.392E-02	1.004E-07	1.420E-05	9.394E-02	1.517E-03	6.391E-06	8.592E-04	2.383E-03	2.037E-03	6.014E-04	2.171E-01	2.197E-01	3.723E+00	2.356E-04	4.340E-02	3.767E+00	4.141E+00
AAG	3.268E-02	2.438E-08	4.398E-05	3.272E-02	--	--	--	--	8.611E-04	3.627E-06	4.876E-04	1.352E-03	1.564E-03	4.617E-04	1.667E-01	1.687E-01	2.859E+00	1.809E-04	3.332E-02	2.892E+00	3.095E+00
AAH	8.262E-02	6.163E-08	1.112E-04	8.273E-02	--	--	--	--	2.164E-03	9.113E-06	1.225E-03	3.398E-03	2.130E-03	6.286E-04	2.269E-01	2.297E-01	3.892E+00	2.463E-04	4.537E-02	3.938E+00	4.254E+00
AAI	5.910E-02	4.409E-08	7.954E-05	5.918E-02	--	--	--	--	1.547E-03	6.518E-06	8.762E-04	2.430E-03	2.140E-03	6.316E-04	2.280E-01	2.308E-01	3.911E+00	2.475E-04	4.559E-02	3.957E+00	4.249E+00
AAJ	2.700E-02	2.014E-08	3.634E-05	2.704E-02	--	--	--	--	7.109E-04	2.994E-06	4.025E-04	1.116E-03	2.183E-03	6.443E-04	2.326E-01	2.354E-01	3.989E+00	2.524E-04	4.650E-02	4.036E+00	4.300E+00
AAK	1.324E-02	9.875E-09	1.782E-05	1.326E-02	--	--	--	--	3.502E-04	1.475E-06	1.983E-04	5.500E-04	1.636E-03	4.830E-04	1.744E-01	1.765E-01	2.991E+00	1.892E-04	3.486E-02	3.026E+00	3.216E+00
AAL	2.389E-02	1.782E-08	3.215E-05	2.392E-02	--	--	--	--	6.257E-04	2.636E-06	3.543E-04	9.827E-04	2.609E-03	7.701E-04	2.780E-01	2.814E-01	4.769E+00	3.017E-04	5.558E-02	4.824E+00	5.131E+00
ABA	6.395E-02	4.770E-08	8.606E-05	6.403E-02	--	--	--	--	1.738E-03	7.320E-06	9.839E-04	2.729E-03	2.246E-03	6.630E-04	2.393E-01	2.422E-01	4.105E+00	2.598E-04	4.785E-02	4.153E+00	4.462E+00
ABB	6.118E-02	4.564E-08	8.233E-05	6.126E-02	--	--	--	--	1.703E-03	7.172E-06	9.641E-04	2.674E-03	1.741E-03	5.140E-04	1.856E-01	1.878E-01	3.182E+00	2.014E-04	3.710E-02	3.220E+00	3.472E+00
ABC	7.571E-02	5.647E-08	1.019E-04	7.581E-02	1.011E-01	1.081E-07	1.529E-05	1.012E-01	1.998E-03	8.417E-06	1.131E-03	3.138E-03	1.663E-03	4.908E-04	1.772E-01	1.793E-01	3.039E+00	1.923E-04	3.543E-02	3.075E+00	3.434E+00
ABD	9.646E-02	7.195E-08	1.298E-04	9.659E-02	6.691E-02	7.151E-08	1.011E-05	6.692E-02	2.539E-03	1.070E-05	1.438E-03	3.988E-03	1.925E-03	5.681E-04	2.051E-01	2.076E-01	3.518E+00	2.226E-04	4.100E-02	3.559E+00	3.934E+00
ABE	1.726E-01	1.287E-07	2.322E-04	1.728E-01	1.156E-01	1.236E-07	1.747E-05	1.156E-01	4.738E-03	1.996E-05	2.683E-03	7.441E-03	1.667E-03	4.920E-04	1.776E-01	1.798E-01	3.046E+00	1.928E-04	3.551E-02	3.082E+00	3.557E+00
ABF	3.461E-02	2.582E-08	4.658E-05	3.466E-02	8.262E-02	8.830E-08	1.249E-05	8.263E-02	9.112E-04	3.838E-06	5.160E-04	1.431E-03	1.615E-03	4.766E-04	1.721E-01	1.742E-01	2.951E+00	1.868E-04	3.440E-02	2.986E+00	3.279E+00
ABG	2.542E-01	1.896E-07	3.421E-04	2.545E-01	--	--	--	--	6.682E-03	2.815E-05	3.783E-03	1.049E-02	1.019E-02	3.007E-03	1.086E+00	1.099E+00	1.862E+01	1.178E-03	2.170E-01	1.884E+01	2.020E+01
ABH	6.395E-02	4.770E-08	8.606E-05	6.403E-02	--	--	--	--	1.723E-03	7.257E-06	9.754E-04	2.705E-03	1.674E-03	4.942E-04	1.784E-01	1.806E-01	3.060E+00	1.936E-04	3.567E-02	3.096E+00	3.343E+00
ABI	5.979E-02	4.460E-08	8.047E-05	5.988E-02	--	--	--	--	1.577E-03	6.645E-06	8.932E-04	2.477E-03	2.397E-03	7.074E-04	2.554E-01	2.585E-01	4.380E+00	2.772E-04	5.106E-02	4.431E+00	4.752E+00
ABJ	1.559E-02	1.163E-08	2.098E-05	1.561E-02	--	--	--	--	4.103E-04	1.728E-06	2.323E-04	6.444E-04	1.710E-03	5.047E-04	1.822E-01	1.844E-01	3.125E+00	1.977E-04	3.642E-02	3.161E+00	3.362E+00
ABK	1.026E-02	7.656E-09	1.381E-05	1.028E-02	--	--	--	--	2.701E-04	1.138E-06	1.529E-04	4.241E-04	1.686E-03	4.976E-04	1.796E-01	1.818E-01	3.081E+00	1.949E-04	3.591E-02	3.117E+00	3.309E+00
ABL	1.725E-02	1.287E-08	2.322E-05	1.727E-02	--	--	--	--	4.554E-04	1.918E-06	2.579E-04	7.152E-04	2.300E-03	6.790E-04	2.451E-01	2.481E-01	4.204E+00	2.660E-04	4.901E-02	4.254E+00	4.520E+00
ABM	2.161E-02	1.612E-08	2.908E-05	2.164E-02	--	--	--	--	5.155E-04	2.172E-06	2.919E-04	8.096E-04	2.443E-03	7.212E-04	2.604E-01	2.635E-01	4.466E+00	2.826E-04	5.205E-02	4.518E+00	4.804E+00
ACH	1.037E+00	7.737E-07	1.396E-03	1.039E+00	--	--	--	--	2.882E-02	1.214E-04	1.632E-02	4.526E-02	2.613E-01	7.714E-02	2.785E+01	2.819E+01	4.776E+02	3.022E-02	5.567E+00	4.832E+02	5.125E+02
ACH - Rem	1.137E-02	8.482E-09	1.530E-05	1.139E-02	--	--	--	--	2.801E-04	1.180E-06	1.586E-04	4.399E-04	1.381E-03	4.076E-04	1.471E-01	1.489E-01	2.524E+00	1.597E-04	2.942E-02	2.553E+00	2.714E+00
ACI	2.521E-02	1.880E-08	3.392E-05	2.524E-02	--	--	--	--	6.608E-04	2.783E-06	3.742E-04	1.038E-03	1.207E-03	3.564E-04	1.287E-01	1.302E-01	2.207E+00	1.396E-04	2.572E-02	2.233E+00	2.389E+00
ACJ	1.628E-02	1.215E-08	2.191E-05	1.630E-02	--	--	--	--	4.304E-04	1.813E-06	2.437E-04	6.759E-04	1.512E-03	4.464E-04	1.612E-01	1.631E-01	2.764E+00	1.749E-04	3.222E-02	2.796E+00	2.976E+00
ACK	1.179E-02	8.792E-09	1.586E-05	1.180E-02	--	--	--	--	3.102E-04	1.306E-06	1.756E-04	4.871E-04	1.520E-03	4.486E-04	1.620E-01	1.639E-01	2.778E+00	1.758E-04	3.238E-02	2.810E+00	2.987E+00
ACL	2.694E-02	2.009E-08	3.625E-05	2.697E-02	--	--	--	--	7.509E-04	3.163E-06	4.252E-04	1.179E-03	1.760E-03	5.196E-04	1.876E-01	1.899E-01	3.217E+00	2.036E-04	3.750E-02	3.255E+00	3.473E+00
ACM	1.870E-02	1.395E-08	2.517E-05	1.873E-02	--	--	--	--	4.905E-04	2.066E-06	2.777E-04	7.703E-04	2.584E-03	7.627E-04	2.753E-01	2.787E-01	4.722E+00	2.988E-04	5.505E-02	4.778E+00	5.076E+00
ADI	3.344E-02	2.494E-08	4.500E-05	3.348E-02	--	--	--	--	8.561E-04	3.606E-06	4.848E-04	1.345E-03	1.774E-03	5.237E-04	1.891E-01	1.914E-01	3.243E+00	2.052E-04	3.780E-02	3.281E+00	3.507E+00
ADJ	1.497E-02	1.117E-08	2.014E-05	1.499E-02	--	--	--	--	2.951E-04	1.243E-06	1.671E-04	4.635E-04	1.534E-03	4.527E-04	1.634E-01	1.654E-01	2.803E+00	1.774E-04	3.268E-02	2.836E+00	3.017E+00
ADK	1.026E-02	7.656E-09	1.381E-05	1.028E-02	--	--	--	--	2.701E-04	1.138E-06	1.529E-04	4.241E-04	1.240E-03	3.661E-04	1.322E-01	1.338E-01	2.267E+00	1.434E-04	2.642E-02	2.293E+00	2.438E+00
ADL	3.692E-03	2.754E-09	4.969E-06	3.697E-03	--	--	--	--	9.977E-05	4.203E-07	5.649E-05	1.567E-04	1.297E-03	3.829E-04	1.382E-01	1.399E-01	2.371E+00	1.500E-04	2.764E-02	2.399E+00	2.543E+00
ADM	1.967E-02	1.467E-08	2.647E-05	1.970E-02	--	--	--	--	5.055E-04	2.129E-06	2.862E-04	7.939E-04	2.292E-03	6.764E-04	2.442E-01	2.472E-01	4.188E+00	2.650E-04	4.882E-02	4.237E+00	4.505E+00
AEJ	1.414E-02	1.055E-08	1.903E-05	1.416E-02	--	--	--	--	3.703E-04	1.560E-06	2.097E-04	5.815E-04	1.197E-03	3.534E-04	1.276E-01	1.291E-01	2.188E+00	1.385E-04	2.551E-02	2.214E+00	2.358E+00
AEK	1.594E-02	1.189E-08	2.145E-05	1.596E-02	--	--	--	--	4.204E-04	1.771E-06	2.380E-04	6.601E-04	1.739E-03	5.132E-04	1.853E-01	1.875E-01	3.178E+00	2.011E-04	3.704E-02	3.215E+00	3.419E+00
AEL	1.393E-02	1.039E-08	1.875E-05	1.395E-02	--	--	--	--	3.653E-04	1.539E-06	2.068E-04	5.736E-04	1.937E-03	5.719E-04	2.064E-01	2.090E-01	3.541E+00	2.241E-04	4.127E-02	3.582E+00	3.806E+00
AEM	4.388E-02	3.273E-08	5.906E-05	4.394E-02	--	--	--	--	1.127E-03	4.746E-06	6.379E-04	1.769E-03	2.622E-03	7.739E-04	2.794E-01	2.828E-01	4.792E+00	3.032E-04	5.585E-02	4.848E+00	5.176E+00
AFI - AGI	4.873E-02	3.635E-08	6.558E-05	4.879E-02	--	--	--	--	1.277E-03	5.379E-06	7.230E-04	2.005E-03	2.470E-03	7.291E-04	2.632E-01	2.664E-01	4.514E+00	2.857E-04	5.262E-02	4.567E+00	4.884E+00
AFJ	9.918E-03	7.398E-09	1.335E-05	9.932E-03	--	--	--	--	2.601E-04	1.095E-06	1.473E-04	4.084E-04	1.978E-03	5.838E-04	2.108E-01	2.133E-01	3.615E+00	2.287E-04	4.214E-02	3.657E+00	3.881E+00
AFK	1.026E-02	7.656E-09	1.381E-05	1.028E-02	--	--	--	--	2.701E-04	1.138E-06	1.529E-04	4.241E-04	1.724E-03	5.088E-04	1.837E-01	1.859E-01	3.150E+00	1.993E-04	3.672E-02	3.187E+00	3.384E+00
AFL	3.558E-02	2.654E-08	4.789E-05	3.563E-02	--	--	--	--	9.413E-04	3.965E-06	5.330E-04	1.478E-03	3.617E-03	1.068E-03	3.855E-01	3.901E-01	6.611E+00	4.183E-04	7.706E-02	6.689E+00	7.116E+00
AFM	3.337E-02	2.489E-08	4.491E-05	3.341E-02	--	--	--	--	8.762E-04	3.691E-06	4.961E-04	1.376E-03	1.794E-03	5.297E-04	1.912E-01	1.935E-01	3.280E+00	2.075E-04	3.823E-02	3.318E+00	3.546E+00
AGJ	4.043E-02	3.015E-08	5.440E-05	4.048E-02	--	--	--	--	1.062E-03	4.471E-06	6.011E-04	1.667E-03	3.168E-03	9.352E-04	3.376E-01	3.417E-01	5.790E+00	3.664E-04	6.750E-02	5.858E+00	6.242E+00
AGK	3.766E-02	2.809E-08	5.068E-05	3.771E-02	--	--	--	--	9.914E-04	4.176E-06	5.613E-04	1.557E-03	2.761E-03	8.149E-04	2.942E-01	2.978E-01	5.046E+00	3.193E-04	5.882E-02	5.105E+00	5.442E+00
AGL	3.019E-02	2.252E-08	4.063E-05	3.023E-02	--	--	--	--	7.910E-04	3.332E-06	4.479E-04	1.242E-03	2.508E-03	7.403E-04	2.672E-01	2.705E-01	4.584E+00	2.900E-04	5.343E-02	4.637E+00	4.939E+00
AGM	3.358E-02	2.505E-08	4.519E-05	3.362E-02	--	--	--	--	8.812E-04	3.712E-06	4.989E-04	1.384E-03	2.464E-03	7.272E-04	2.625E-01	2.657E-01	4.503E+00	2.849E-04	5.249E-02	4.555E+00	4.856E+00
AHH - AIH	4.388E-02	3.273E-08	5.906E-05	4.394E-02	--	--	--	--	1.142E-03	4.809E-06	6.464E-04	1.793E-03	2.170E-03	6.406E-04	2.312E-01	2.341E-01	3.966E+00	2.510E-04	4.623E-02	4.013E+00	4.293E+00
AHI	1.746E-02	1.302E-08	2.350E-05	1.748E-02	--	--	--	--	4.404E-04	1.855E-06	2.494E-04	6.916E-04	1.619E-03	4.778E-04	1.725E-01	1.746E-01	2.958E+00	1.872E-04	3.448E-02	2.993E+00	3.186E+00
AHJ	3.531E-02	2.634E-08	4.751E-05	3.535E-02	--	--	--	--	9.263E-04	3.902E-06	5.245E-04	1.455E-03	3.030E-03	8.945E-04	3.229E-01	3.268E-01	5.538E+00	3.505E-04	6.456E-02	5.603E+00	5.967E+00
AHK	2.576E-02	1.922E-08	3.467E-05	2.579E-02	--	--	--	--	6.758E-04	2.847E-06	3.827E-04	1.061E-03	2.268E-03	6.693E-04	2.416E-01	2.446E-01	4.144E+00	2.622E-04	4.831E-02	4.193E+00	4.464E+00
AHL	2.112E-02	1.576E-08	2.843E-05	2.115E-02	--	--	--	--	5.556E-04	2.340E-06	3.146E-04	8.725E-04	2.279E-03	6.727E-04	2.428E-01	2.458E-01	4.165E+00	2.636E-04	4.855E-02	4.214E+00	4.482E+00
AHM	2.216E-02	1.653E-08	2.983E-05	2.219E-02	--	--	--	--	5.806E-04	2.446E-06	3.288E-04	9.119E-04	2.442E-03	7.208E-04	2.602E-01	2.634E-01	4.463E+00	2.824E-04	5.203E-02	4.516E+00	4.802E+00
AII	3.697E-02	2.757E-08	4.975E-05	3.702E-02	--	--	--	--	9.663E-04	4.071E-06	5.472E-04	1.518E-03	2.751E-03	8.120E-04	2.931E-01	2.967E-01	5.027E+00	3.181E-04	5.860E-02	5.086E+00	5.422E+00
AIJ	4.527E-02	3.377E-08	6.092E-05	4.533E-02	--	--	--	--	1.192E-03	5.020E-06	6.748E-04	1.872E-03	3.115E-03	9.195E-04	3.319E-01	3.360E-01	5.693E+00	3.603E-04	6.636E-02	5.760E+00	6.143E+00
AIK	4.043E-02	3.015E-08	5.440E-05	4.048E-02	--	--	--	--	1.051E-03	4.429E-06	5.954E-04	1.651E-03	2.679E-03	7.907E-04	2.854E-01	2.889E-01	4.896E+00	3.098E-04	5.707E-02	4.953E+00	5.284E+00
AIL	2.707E-02	2.020E-08	3.644E-05	2.711E-02	--	--	--	--	7.059E-04	2.973E-06	3.997E-04	1.109E-03	2.285E-03	6.745E-04	2.435E-01	2.465E-01	4.177E+00	2.643E-04	4.869E-02	4.226E+00	4.500E+00
AIM	2.154E-02	1.607E-08	2.899E-05	2.157E-02	--	--	--	--	5.656E-04	2.383E-06	3.203E-04	8.883E-04	2.390E-03	7.055E-04	2.547E-01	2.578E-01	4.369E+00	2.764E-04	5.092E-02	4.420E+00	4.700E+00
AJH	5.149E-02	3.841E-08	6.930E-05	5.156E-02	--	--	--	--	1.352E-03	5.695E-06	7.655E-04	2.123E-03	1.763E-03	5.203E-04	1.878E-01	1.901E-01	3.222E+00	2.039E-04	3.755E-02	3.260E+00	3.503E+00
AJI	2.811E-02	2.097E-08	3.783E-05	2.815E-02	--	--	--	--	7.359E-04	3.100E-06	4.167E-04	1.156E-03	2.560E-03	7.556E-04	2.728E-01	2.761E-01	4.678E+00	2.960E-04	5.453E-02	4.733E+00	5.039E+00
AJJ	4.112E-02	3.067E-08	5.533E-05	4.117E-02	--	--	--	--	1.077E-03	4.535E-06	6.096E-04	1.691E-03	2.565E-03	7.571E-04	2.733E-01	2.766E-01	4.688E+00	2.966E-04	5.464E-02	4.743E+00	5.062E+00
AJK	2.818E-02	2.102E-08	3.793E-05	2.822E-02	--	--	--	--	7.409E-04	3.121E-06	4.195E-04	1.164E-03	2.114E-03	6.241E-04	2.253E-01	2.281E-01	3.865E+00	2.445E-04	4.505E-02	3.910E+00	4.167E+00
AJL	2.348E-02	1.751E-08	3.159E-05	2.351E-02	--	--	--	--	6.157E-04	2.594E-06	3.486E-04	9.669E-04	2.280E-03	6.731E-04	2.430E-01	2.459E-01	4.167E+00	2.637E-04	4.858E-02	4.216E+00	4.487E+00
AJM	1.670E-02	1.246E-08	2.247E-05	1.672E-02	--	--	--	--	4.404E-04	1.855E-06	2.494E-04	6.916E-04	2.493E-03	7.358E-04	2.656E-01	2.689E-01	4.556E+00	2.883E-04	5.310E-02	4.609E+00	4.895E+00
AKG	3.697E-02	2.757E-08	4.975E-05	3.702E-02	--	--	--	--	9.713E-04	4.092E-06	5.500E-04	1.525E-03	1.345E-03	3.971E-04	1.434E-01	1.451E-01	2.459E+00	1.556E-04	2.866E-02	2.488E+00	2.671E+00
AKI	2.451E-02	1.829E-08	3.299E-05	2.455E-02	--	--	--	--	6.408E-04	2.699E-06	3.628E-04	1.006E-03	2.318E-03	6.843E-04	2.470E-01	2.500E-01	4.237E+00	2.681E-04	4.939E-02	4.286E+00	4.562E+00
AKJ	2.216E-02	1.653E-08	2.983E-05	2.219E-02	--	--	--	--	5.806E-04	2.446E-06	3.288E-04	9.119E-04	2.399E-03	7.082E-04	2.556E-01	2.588E-01	4.385E+00	2.775E-04	5.111E-02	4.436E+00	4.718E+00
AKK	1.760E-02	1.313E-08	2.368E-05	1.762E-02	--	--	--	--	4.554E-04	1.918E-06	2.579E-04	7.152E-04	1.964E-03	5.797E-04	2.093E-01	2.118E-01	3.589E+00	2.271E-04	4.184E-02	3.631E+00	3.862E+00
AKL	1.186E-01	8.846E-08	1.596E-04	1.188E-01	--	--	--	--	3.120E-03	1.314E-05	1.767E-03	4.900E-03	1.118E+00	3.299E-01	1.191E+02	1.206E+02	2.043E+03	1.293E-01	2.381E+01	2.067E+03	2.187E+03
AKL - Rem	2.202E-02	1.643E-08	2.964E-05	2.205E-02	--	--	--	--	5.806E-04	2.446E-06	3.288E-04	9.119E-04	1.912E-03	5.644E-04	2.038E-01	2.062E-01	3.495E+00	2.211E-04	4.073E-02	3.536E+00	3.765E+00
AKM	3.171E-02	2.365E-08	4.267E-05	3.175E-02	--	--	--	--	8.311E-04	3.501E-06	4.706E-04	1.305E-03	1.291E-02	3.810E-03	1.375E+00	1.392E+00	2.359E+01	1.493E-03	2.750E-01	2.386E+01	2.529E+01

Risk Calculations, Construction Worker

Survey Grid	Net 95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				Total Risk
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	
AAA	0.051	--	0.191	1.470	1.470	2.644E-08	9.282E-14	3.568E-11	2.648E-08	--	--	--	--	7.608E-10	1.334E-12	3.377E-10	1.100E-09	1.279E-09	7.275E-10	9.375E-08	9.576E-08	2.579E-06	6.902E-10	1.569E-08	2.595E-06	2.719E-06
AAB	0.077	--	0.289	1.273	1.273	3.996E-08	1.403E-13	5.393E-11	4.001E-08	--	--	--	--	1.151E-09	2.019E-12	5.111E-10	1.664E-09	1.108E-09	6.300E-10	8.119E-08	8.292E-08	2.233E-06	5.977E-10	1.359E-08	2.247E-06	2.372E-06
AAC	0.044	0.027	0.154	1.583	1.583	2.262E-08	7.941E-14	3.053E-11	2.265E-08	6.559E-08	4.228E-14	1.075E-11	6.560E-08	6.133E-10	1.076E-12	2.723E-10	8.867E-10	1.378E-09	7.835E-10	1.010E-07	1.031E-07	2.777E-06	7.433E-10	1.690E-08	2.795E-06	2.987E-06
AAD	0.164	0.043	0.596	1.586	1.586	8.485E-08	2.979E-13	1.145E-10	8.497E-08	1.040E-07	6.706E-14	1.704E-11	1.040E-07	2.375E-09	4.164E-12	1.054E-09	3.433E-09	1.380E-09	7.850E-10	1.012E-07	1.033E-07	2.783E-06	7.447E-10	1.693E-08	2.800E-06	3.096E-06
AAE	0.156	0.041	0.569	1.474	1.474	8.072E-08	2.834E-13	1.089E-10	8.083E-08	9.730E-08	6.272E-14	1.594E-11	9.732E-08	2.267E-09	3.976E-12	1.006E-09	3.277E-09	1.283E-09	7.295E-10	9.401E-08	9.602E-08	2.586E-06	6.921E-10	1.574E-08	2.602E-06	2.880E-06
AAF	0.083	0.030	0.303	1.611	1.611	4.306E-08	1.511E-13	5.810E-11	4.311E-08	7.183E-08	4.631E-14	1.177E-11	7.185E-08	1.207E-09	2.117E-12	5.358E-10	1.745E-09	1.402E-09	7.974E-10	1.027E-07	1.049E-07	2.826E-06	7.565E-10	1.720E-08	2.844E-06	3.066E-06
AAG	0.047	--	0.172	1.237	1.237	2.438E-08	8.557E-14	3.289E-11	2.441E-08	--	--	--	--	6.851E-10	1.201E-12	3.041E-10	9.904E-10	1.076E-09	6.122E-10	7.889E-08	8.058E-08	2.170E-06	5.808E-10	1.321E-08	2.184E-06	2.290E-06
AAH	0.119	--	0.432	1.684	1.684	6.163E-08	2.164E-13	8.317E-11	6.172E-08	--	--	--	--	1.721E-09	3.018E-12	7.640E-10	2.488E-09	1.466E-09	8.335E-10	1.074E-07	1.097E-07	2.955E-06	7.907E-10	1.798E-08	2.973E-06	3.147E-06
AAI	0.085	--	0.309	1.692	1.692	4.409E-08	1.548E-13	5.950E-11	4.415E-08	--	--	--	--	1.231E-09	2.159E-12	5.464E-10	1.780E-09	1.473E-09	8.375E-10	1.079E-07	1.102E-07	2.969E-06	7.945E-10	1.807E-08	2.987E-06	3.144E-06
AAJ	0.039	--	0.142	1.726	1.726	2.014E-08	7.072E-14	2.718E-11	2.017E-08	--	--	--	--	5.655E-10	9.917E-13	2.510E-10	8.176E-10	1.502E-09	8.543E-10	1.101E-07	1.124E-07	3.028E-06	8.105E-10	1.843E-08	3.047E-06	3.181E-06
AAK	0.019	--	0.070	1.294	1.294	9.875E-09	3.467E-14	1.333E-11	9.889E-09	--	--	--	--	2.786E-10	4.886E-13	1.237E-10	4.028E-10	1.126E-09	6.404E-10	8.253E-08	8.429E-08	2.270E-06	6.076E-10	1.381E-08	2.285E-06	2.379E-06
AAL	0.035	--	0.125	2.063	2.063	1.782E-08	6.256E-14	2.405E-11	1.785E-08	--	--	--	--	4.978E-10	8.729E-13	2.210E-10	7.196E-10	1.796E-09	1.021E-09	1.316E-07	1.344E-07	3.620E-06	9.688E-10	2.203E-08	3.643E-06	3.796E-06
ABA	0.092	--	0.347	1.776	1.776	4.770E-08	1.675E-13	6.437E-11	4.776E-08	--	--	--	--	1.382E-09	2.424E-12	6.137E-10	1.999E-09	1.546E-09	8.791E-10	1.133E-07	1.157E-07	3.116E-06	8.340E-10	1.896E-08	3.136E-06	3.301E-06
ABB	0.088	--	0.340	1.377	1.377	4.564E-08	1.602E-13	6.159E-11	4.570E-08	--	--	--	--	1.355E-09	2.375E-12	6.013E-10	1.958E-09	1.198E-09	6.815E-10	8.782E-08	8.970E-08	2.416E-06	6.465E-10	1.470E-08	2.431E-06	2.568E-06
ABC	0.109	0.032	0.399	1.315	1.315	5.647E-08	1.982E-13	7.621E-11	5.655E-08	7.736E-08	4.987E-14	1.267E-11	7.737E-08	1.590E-09	2.788E-12	7.056E-10	2.298E-09	1.144E-09	6.508E-10	8.387E-08	8.566E-08	2.307E-06	6.174E-10	1.404E-08	2.322E-06	2.543E-06
ABD	0.139	0.021	0.507	1.522	1.522	7.195E-08	2.526E-13	9.710E-11	7.205E-08	5.117E-08	3.299E-14	8.384E-12	5.118E-08	2.020E-09	3.542E-12	8.967E-10	2.920E-09	1.325E-09	7.533E-10	9.707E-08	9.915E-08	2.670E-06	7.146E-10	1.625E-08	2.687E-06	2.912E-06
ABE	0.249	0.037	0.946	1.318	1.318	1.287E-07	4.519E-13	1.737E-10	1.289E-07	8.841E-08	5.699E-14	1.449E-11	8.843E-08	3.769E-09	6.610E-12	1.673E-09	5.449E-09	1.147E-09	6.523E-10	8.406E-08	8.586E-08	2.312E-06	6.188E-10	1.407E-08	2.327E-06	2.636E-06
ABF	0.050	0.026	0.182	1.277	1.277	2.582E-08	9.064E-14	3.484E-11	2.586E-08	6.319E-08	4.073E-14	1.035E-11	6.320E-08	7.249E-10	1.271E-12	3.218E-10	1.048E-09	1.111E-09	6.320E-10	8.144E-08	8.318E-08	2.240E-06	5.996E-10	1.363E-08	2.254E-06	2.428E-06
ABG	0.367	--	1.334	8.054	8.054	1.896E-07	6.656E-13	2.559E-10	1.899E-07	--	--	--	--	5.316E-09	9.321E-12	2.360E-09	7.684E-09	7.011E-09	3.987E-09	5.138E-07	5.248E-07	1.413E-05	3.783E-09	8.601E-08	1.422E-05	1.495E-05
ABH	0.092	--	0.344	1.324	1.324	4.770E-08	1.675E-13	6.437E-11	4.776E-08	--	--	--	--	1.370E-09	2.403E-12	6.084E-10	1.981E-09	1.152E-09	6.553E-10	8.444E-08	8.625E-08	2.323E-06	6.216E-10	1.413E-08	2.337E-06	2.473E-06
ABI	0.086	--	0.315	1.895	1.895	4.460E-08	1.566E-13	6.019E-11	4.466E-08	--	--	--	--	1.255E-09	2.201E-12	5.571E-10	1.814E-09	1.649E-09	9.380E-10	1.209E-07	1.235E-07	3.325E-06	8.898E-10	2.023E-08	3.346E-06	3.516E-06
ABJ	0.023	--	0.082	1.352	1.352	1.163E-08	4.083E-14	1.569E-11	1.165E-08	--	--	--	--	3.264E-10	5.724E-13	1.449E-10	4.719E-10	1.177E-09	6.691E-10	8.623E-08	8.807E-08	2.372E-06	6.348E-10	1.443E-08	2.387E-06	2.487E-06
ABK	0.015	--	0.054	1.333	1.333	7.656E-09	2.688E-14	1.033E-11	7.667E-09	--	--	--	--	2.149E-10	3.768E-13	9.537E-11	3.106E-10	1.160E-09	6.597E-10	8.501E-08	8.683E-08	2.339E-06	6.259E-10	1.423E-08	2.353E-06	2.448E-06
ABL	0.025	--	0.091	1.819	1.819	1.287E-08	4.517E-14	1.737E-11	1.289E-08	--	--	--	--	3.623E-10	6.353E-13	1.608E-10	5.238E-10	1.583E-09	9.003E-10	1.160E-07	1.185E-07	3.191E-06	8.541E-10	1.942E-08	3.212E-06	3.344E-06
ABM	0.031	--	0.103	1.932	1.932	1.612E-08	5.659E-14	2.175E-11	1.614E-08	--	--	--	--	4.101E-10	7.192E-13	1.821E-10	5.929E-10	1.682E-09	9.563E-10	1.232E-07	1.259E-07	3.390E-06	9.072E-10	2.063E-08	3.411E-06	3.554E-06
ACH	1.499	--	5.754	206.583	206.583	7.737E-07	2.716E-12	1.044E-09	7.748E-07	--	--	--	--	2.293E-08	4.021E-11	1.018E-08	3.315E-08	1.799E-07	1.023E-07	1.318E-05	1.346E-05	3.626E-04	9.703E-08	2.206E-06	3.649E-04	3.791E-04
ACH - Rem	0.016	--	0.056	1.092	1.092	8.482E-09	2.978E-14	1.145E-11	8.494E-09	--	--	--	--	2.228E-10	3.908E-13	9.891E-11	3.221E-10	9.503E-10	5.404E-10	6.964E-08	7.113E-08	1.916E-06	5.127E-10	1.166E-08	1.928E-06	2.008E-06
ACI	0.036	--	0.132	0.955	0.955	1.880E-08	6.601E-14	2.537E-11	1.883E-08	--	--	--	--	5.257E-10	9.218E-13	2.333E-10	7.599E-10	8.310E-10	4.726E-10	6.090E-08	6.220E-08	1.675E-06	4.483E-10	1.019E-08	1.686E-06	1.768E-06
ACJ	0.024	--	0.086	1.196	1.196	1.215E-08	4.264E-14	1.639E-11	1.216E-08	--	--	--	--	3.424E-10	6.004E-13	1.520E-10	4.950E-10	1.041E-09	5.919E-10	7.627E-08	7.791E-08	2.098E-06	5.615E-10	1.277E-08	2.111E-06	2.202E-06
ACK	0.017	--	0.062	1.202	1.202	8.792E-09	3.086E-14	1.186E-11	8.804E-09	--	--	--	--	2.467E-10	4.327E-13	1.095E-10	3.567E-10	1.046E-09	5.949E-10	7.666E-08	7.830E-08	2.109E-06	5.643E-10	1.283E-08	2.122E-06	2.209E-06
ACL	0.039	--	0.150	1.392	1.392	2.009E-08	7.054E-14	2.711E-11	2.012E-08	--	--	--	--	5.974E-10	1.048E-12	2.652E-10	8.636E-10	1.211E-09	6.889E-10	8.878E-08	9.068E-08	2.442E-06	6.536E-10	1.486E-08	2.458E-06	2.569E-06
ACM	0.027	--	0.098	2.043	2.043	1.395E-08	4.898E-14	1.883E-11	1.397E-08	--	--	--	--	3.902E-10	6.842E-13	1.732E-10	5.641E-10	1.778E-09	1.011E-09	1.303E-07	1.331E-07	3.585E-06	9.594E-10	2.181E-08	3.607E-06	3.755E-06
ADI	0.048	--	0.171	1.403	1.403	2.494E-08	8.756E-14	3.366E-11	2.498E-08	--	--	--	--	6.811E-10	1.194E-12	3.023E-10	9.846E-10	1.221E-09	6.944E-10	8.948E-08	9.139E-08	2.461E-06	6.588E-10	1.498E-08	2.477E-06	2.594E-06
ADJ	0.022	--	0.059	1.213	1.213	1.117E-08	3.920E-14	1.507E-11	1.118E-08	--	--	--	--	2.348E-10	4.117E-13	1.042E-10	3.394E-10	1.056E-09	6.003E-10	7.736E-08	7.901E-08	2.128E-06	5.695E-10	1.295E-08	2.141E-06	2.232E-06
ADK	0.015	--	0.054	0.981	0.981	7.656E-09	2.688E-14	1.033E-11	7.667E-09	--	--	--	--	2.149E-10	3.768E-13	9.537E-11	3.106E-10	8.536E-10	4.854E-10	6.256E-08	6.389E-08	1.721E-06	4.605E-10	1.047E-08	1.732E-06	1.804E-06
ADL	0.005	--	0.020	1.026	1.026	2.754E-09	9.669E-15	3.717E-12	2.758E-09	--	--	--	--	7.937E-11	1.392E-13	3.523E-11	1.147E-10	8.928E-10	5.077E-10	6.543E-08	6.683E-08	1.800E-06	4.817E-10	1.095E-08	1.811E-06	1.881E-06
ADM	0.028	--	0.101	1.812	1.812	1.467E-08	5.151E-14	1.980E-11	1.469E-08	--	--	--	--	4.021E-10	7.052E-13	1.785E-10	5.814E-10	1.577E-09	8.969E-10	1.156E-07	1.180E-07	3.179E-06	8.509E-10	1.935E-08	3.199E-06	3.333E-06
AEJ	0.020	--	0.074	0.947	0.947	1.055E-08	3.702E-14	1.423E-11	1.056E-08	--	--	--	--	2.946E-10	5.165E-13	1.308E-10	4.258E-10	8.240E-10	4.686E-10	6.039E-08	6.168E-08	1.661E-06	4.446E-10	1.011E-08	1.672E-06	1.744E-06
AEK	0.023	--	0.084	1.375	1.375	1.189E-08	4.173E-14	1.604E-11	1.190E-08	--	--	--	--	3.344E-10	5.864E-13	1.484E-10	4.834E-10	1.197E-09	6.805E-10	8.769E-08	8.957E-08	2.412E-06	6.456E-10	1.468E-08	2.428E-06	2.530E-06
AEL	0.020	--	0.073	1.532	1.532	1.039E-08	3.648E-14	1.402E-11	1.041E-08	--	--	--	--	2.906E-10	5.095E-13	1.290E-10	4.201E-10	1.333E-09	7.582E-10	9.771E-08	9.980E-08	2.688E-06	7.193E-10	1.636E-08	2.705E-06	2.815E-06
AEM	0.063	--	0.225	2.073	2.073	3.273E-08	1.149E-13	4.418E-11	3.278E-08	--	--	--	--	8.963E-10	1.572E-12	3.979E-10	1.296E-09	1.804E-09	1.026E-09	1.322E-07	1.351E-07	3.637E-06	9.735E-10	2.213E-08	3.660E-06	3.829E-06
AFI - AGI	0.070	--	0.255	1.953	1.953	3.635E-08	1.276E-13	4.905E-11	3.640E-08	--	--	--	--	1.016E-09	1.781E-12	4.509E-10	1.469E-09	1.700E-09	9.667E-10	1.246E-07	1.272E-07	3.427E-06	9.171E-10	2.085E-08	3.448E-06	3.614E-06
AFJ	0.014	--	0.052	1.564	1.564	7.398E-09	2.597E-14	9.984E-12	7.408E-09	--	--	--	--	2.069E-10	3.628E-13	9.184E-11	2.991E-10	1.361E-09	7.741E-10	9.975E-08	1.019E-07	2.744E-06	7.344E-10	1.670E-08	2.761E-06	2.871E-06
AFK	0.015	--	0.054	1.363	1.363	7.656E-09	2.688E-14	1.033E-11	7.667E-09	--	--	--	--	2.149E-10	3.768E-13	9.537E-11	3.106E-10	1.186E-09	6.746E-10	8.693E-08	8.879E-08	2.391E-06	6.400E-10	1.455E-08	2.406E-06	2.503E-06
AFL	0.051	--	0.188	2.860	2.860	2.654E-08	9.318E-14	3.582E-11	2.658E-08	--	--	--	--	7.488E-10	1.313E-12	3.324E-10	1.083E-09	2.489E-09	1.416E-09	1.824E-07	1.863E-07	5.018E-06	1.343E-09	3.054E-08	5.050E-06	5.264E-06
AFM	0.048	--	0.175	1.419	1.419	2.489E-08	8.738E-14	3.359E-11	2.493E-08	--	--	--	--	6.970E-10	1.222E-12	3.094E-10	1.008E-09	1.235E-09	7.023E-10	9.050E-08	9.244E-08	2.489E-06	6.663E-10	1.515E-08	2.505E-06	2.624E-06
AGJ	0.058	--	0.212	2.505	2.505	3.015E-08	1.059E-13	4.069E-11	3.020E-08	--	--	--	--	8.445E-10	1.481E-12	3.749E-10	1.221E-09	2.180E-09	1.240E-09	1.598E-07	1.632E-07	4.395E-06	1.176E-09	2.675E-08	4.423E-06	4.618E-06
AGK	0.054	--	0.198	2.183	2.183	2.809E-08	9.861E-14	3.791E-11	2.813E-08	--	--	--	--	7.887E-10	1.383E-12	3.501E-10	1.140E-09	1.900E-09	1.081E-09	1.392E-07	1.422E-07	3.830E-06	1.025E-09	2.331E-08	3.855E-06	4.026E-06
AGL	0.044	--	0.158	1.983	1.983	2.252E-08	7.905E-14	3.039E-11	2.255E-08	--	--	--	--	6.293E-10	1.104E-12	2.793E-10	9.097E-10	1.726E-09	9.815E-10	1.265E-07	1.292E-07	3.479E-06	9.312E-10	2.117E-08	3.501E-06	3.654E-06
AGM	0.049	--	0.176	1.948	1.948	2.505E-08	8.793E-14	3.380E-11	2.508E-08	--	--	--	--	7.010E-10	1.229E-12	3.112E-10	1.013E-09	1.695E-09	9.642E-10	1.243E-07	1.269E-07	3.418E-06	9.147E-10	2.080E-08	3.440E-06	3.593E-06
AHH - AIH	0.063	--	0.228	1.716	1.716	3.273E-08	1.149E-13	4.418E-11	3.278E-08	--	--	--	--	9.082E-10	1.593E-12	4.032E-10	1.313E-09	1.494E-09	8.493E-10	1.094E-07	1.118E-07	3.011E-06	8.058E-10	1.832E-08	3.030E-06	3.176E-06
AHI	0.025	--	0.088	1.280	1.280	1.302E-08	4.572E-14	1.757E-11	1.304E-08	--	--	--	--	3.503E-10	6.144E-13	1.555E-10	5.065E-10	1.114E-09	6.335E-10	8.163E-08	8.338E-08	2.246E-06	6.010E-10	1.367E-08	2.260E-06	2.357E-06
AHJ	0.051	--	0.185	2.396	2.396	2.634E-08	9.245E-14	3.554E-11	2.637E-08	--	--	--	--	7.369E-10	1.292E-12	3.271E-10	1.065E-09	2.086E-09	1.186E-09	1.528E-07	1.561E-07	4.204E-06	1.125E-09	2.558E-08	4.231E-06	4.414E-06
AHK	0.037	--	0.135	1.793	1.793	1.922E-08	6.746E-14	2.593E-11	1.924E-08	--	--	--	--	5.376E-10	9.428E-13	2.387E-10	7.772E-10	1.561E-09	8.875E-10	1.144E-07	1.168E-07	3.146E-06	8.419E-10	1.914E-08	3.166E-06	3.303E-06
AHL	0.031	--	0.111	1.802	1.802	1.576E-08	5.532E-14	2.127E-11	1.578E-08	--	--	--	--	4.420E-10	7.751E-13	1.962E-10	6.390E-10	1.568E-09	8.919E-10	1.149E-07	1.174E-07	3.162E-06	8.462E-10	1.924E-08	3.182E-06	3.316E-06
AHM	0.032	--	0.116	1.931	1.931	1.653E-08	5.804E-14	2.231E-11	1.655E-08	--	--	--	--	4.619E-10	8.100E-13	2.050E-10	6.678E-10	1.681E-09	9.558E-10	1.232E-07	1.258E-07	3.388E-06	9.068E-10	2.062E-08	3.410E-06	3.553E-06
AII	0.053	--	0.193	2.175	2.175	2.757E-08	9.680E-14	3.721E-11	2.761E-08	--	--	--	--	7.688E-10	1.348E-12	3.412E-10	1.111E-09	1.893E-09	1.077E-09	1.387E-07	1.417E-07	3.816E-06	1.021E-09	2.322E-08	3.840E-06	4.011E-06
AIJ	0.065	--	0.238	2.463	2.463	3.377E-08	1.185E-13	4.557E-11	3.381E-08	--	--	--	--	9.481E-10	1.663E-12	4.208E-10	1.371E-09	2.144E-09	1.219E-09	1.571E-07	1.605E-07	4.322E-06	1.157E-09	2.630E-08	4.349E-06	4.545E-06
AIK	0.058	--	0.210	2.118	2.118	3.015E-08	1.059E-13	4.069E-11	3.020E-08	--	--	--	--	8.365E-10	1.467E-12	3.713E-10	1.209E-09	1.843E-09	1.048E-09	1.351E-07	1.380E-07	3.716E-06	9.946E-10	2.261E-08	3.740E-06	3.909E-06
AIL	0.039	--	0.141	1.807	1.807	2.020E-08	7.090E-14	2.725E-11	2.022E-08	--	--	--	--	5.615E-10	9.847E-13	2.493E-10	8.118E-10	1.573E-09	8.944E-10	1.153E-07	1.177E-07	3.170E-06	8.485E-10	1.929E-08	3.191E-06	3.329E-06
AIM	0.031	--	0.113	1.890	1.890	1.607E-08	5.641E-14	2.168E-11	1.609E-08	--	--	--	--	4.500E-10	7.891E-13	1.997E-10	6.505E-10	1.645E-09	9.355E-10	1.206E-07	1.231E-07	3.316E-06	8.875E-10	2.018E-08	3.337E-06	3.477E-06
AJH	0.074	--	0.270	1.394	1.394	3.841E-08	1.348E-13	5.184E-11	3.846E-08	--	--	--	--	1.076E-09	1.886E-12	4.774E-10	1.555E-09	1.213E-09	6.899E-10	8.891E-08	9.081E-08	2.446E-06	6.545E-10	1.488E-08	2.461E-06	2.592E-06
AJI	0.041	--	0.147	2.024	2.024	2.097E-08	7.362E-14	2.830E-11	2.100E-08	--	--	--	--	5.855E-10	1.027E-12	2.599E-10	8.464E-10	1.762E-09	1.002E-09	1.291E-07	1.319E-07	3.551E-06	9.504E-10	2.161E-08	3.574E-06	3.728E-06
AJJ	0.059	--	0.215	2.028	2.028	3.067E-08	1.077E-13	4.139E-11	3.071E-08	--	--	--	--	8.564E-10	1.502E-12	3.802E-10	1.238E-09	1.765E-09	1.004E-09	1.294E-07	1.321E-07	3.558E-06	9.523E-10	2.165E-08	3.581E-06	3.745E-06
AJK	0.041	--	0.148	1.672	1.672	2.102E-08	7.380E-14	2.837E-11	2.105E-08	--	--	--	--	5.894E-10	1.034E-12	2.616E-10	8.521E-10	1.455E-09	8.276E-10	1.066E-07	1.089E-07	2.933E-06	7.851E-10	1.785E-08	2.952E-06	3.083E-06
AJL	0.034	--	0.123	1.803	1.803	1.751E-08	6.148E-14	2.363E-11	1.754E-08	--	--	--	--	4.898E-10	8.589E-13	2.174E-10	7.081E-10	1.569E-09	8.924E-10	1.150E-07	1.175E-07	3.163E-06	8.466E-10	1.925E-08	3.183E-06	3.319E-06
AJM	0.024	--	0.088	1.971	1.971	1.246E-08	4.373E-14	1.681E-11	1.247E-08	--	--	--	--	3.503E-10	6.144E-13	1.555E-10	5.065E-10	1.716E-09	9.756E-10	1.257E-07	1.284E-07	3.458E-06	9.255E-10	2.104E-08	3.480E-06	3.622E-06
AKG	0.053	--	0.194	1.064	1.064	2.757E-08	9.680E-14	3.721E-11	2.761E-08	--	--	--	--	7.727E-10	1.355E-12	3.430E-10	1.117E-09	9.259E-10	5.265E-10	6.785E-08	6.930E-08	1.866E-06	4.995E-10	1.136E-08	1.878E-06	1.976E-06
AKI	0.035	--	0.128	1.833	1.833	1.829E-08	6.420E-14	2.468E-11	1.831E-08	--	--	--	--	5.097E-10	8.939E-13	2.263E-10	7.369E-10	1.595E-09	9.073E-10	1.169E-07	1.194E-07	3.216E-06	8.607E-10	1.957E-08	3.236E-06	3.375E-06
AKJ	0.032	--	0.116	1.897	1.897	1.653E-08	5.804E-14	2.231E-11	1.655E-08	--	--	--	--	4.619E-10	8.100E-13	2.050E-10	6.678E-10	1.651E-09	9.390E-10	1.210E-07	1.236E-07	3.328E-06	8.908E-10	2.025E-08	3.350E-06	3.490E-06
AKK	0.025	--	0.091	1.553	1.553	1.313E-08	4.608E-14	1.771E-11	1.314E-08	--	--	--	--	3.623E-10	6.353E-13	1.608E-10	5.238E-10	1.352E-09	7.686E-10	9.905E-08	1.012E-07	2.725E-06	7.292E-10	1.658E-08	2.742E-06	2.857E-06
AKL	0.171	--	0.623	883.583	883.583	8.846E-08	3.106E-13	1.194E-10	8.858E-08	--	--	--	--	2.482E-09	4.353E-12	1.102E-09	3.588E-09	7.692E-07	4.375E-07	5.637E-05	5.758E-05	1.551E-03	4.150E-07	9.437E-06	1.561E-03	1.618E-03
AKL - Rem	0.032	--	0.116	1.512	1.512	1.643E-08	5.767E-14	2.217E-11	1.645E-08	--	--	--	--	4.619E-10	8.100E-13	2.050E-10	6.678E-10	1.316E-09	7.483E-10	9.643E-08	9.850E-08	2.653E-06	7.100E-10	1.614E-08	2.670E-06	2.785E-06
AKM	0.046	--	0.166	10.203	10.203	2.365E-08	8.303E-14	3.192E-11	2.368E-08	--	--	--	--	6.612E-10	1.159E-12	2.935E-10	9.558E-10	8.882E-09	5.051E-09	6.509E-07	6.649E-07	1.791E-05	4.792E-09	1.090E-07	1.802E-05	1.871E-05

Dose Calculations, Adult Resident

Survey Grid	95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				Total Dose
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	
AAA	0.100	--	0.367	2.287	2.287	2.900E-01	3.028E-07	1.656E-04	2.902E-01	--	--	--	--	7.723E-03	4.554E-05	1.855E-03	9.623E-03	1.216E-02	5.022E-03	5.496E-01	5.667E-01	2.221E+01	1.967E-03	1.098E-01	2.233E+01	2.319E+01
AAB	0.126	--	0.465	2.090	2.090	3.662E-01	3.823E-07	2.091E-04	3.664E-01	--	--	--	--	9.785E-03	5.770E-05	2.350E-03	1.219E-02	1.111E-02	4.590E-03	5.022E-01	5.179E-01	2.030E+01	1.798E-03	1.004E-01	2.040E+01	2.130E+01
AAC	0.092	0.027	0.330	2.400	2.400	2.685E-01	2.804E-07	1.533E-04	2.687E-01	3.603E-01	5.391E-07	2.310E-05	3.604E-01	6.944E-03	4.095E-05	1.668E-03	8.653E-03	1.276E-02	5.270E-03	5.767E-01	5.947E-01	2.331E+01	2.064E-03	1.153E-01	2.343E+01	2.466E+01
AAD	0.213	0.043	0.772	2.403	2.403	6.190E-01	6.464E-07	3.534E-04	6.194E-01	5.715E-01	8.551E-07	3.663E-05	5.716E-01	1.624E-02	9.579E-05	3.902E-03	2.024E-02	1.277E-02	5.277E-03	5.774E-01	5.955E-01	2.334E+01	2.067E-03	1.154E-01	2.346E+01	2.526E+01
AAE	0.205	0.041	0.745	2.291	2.291	5.958E-01	6.221E-07	3.402E-04	5.961E-01	5.346E-01	7.998E-07	3.426E-05	5.346E-01	1.568E-02	9.244E-05	3.766E-03	1.953E-02	1.218E-02	5.031E-03	5.505E-01	5.677E-01	2.225E+01	1.971E-03	1.100E-01	2.236E+01	2.408E+01
AAF	0.132	0.030	0.479	2.428	2.428	3.836E-01	4.006E-07	2.190E-04	3.838E-01	3.947E-01	5.905E-07	2.529E-05	3.947E-01	1.008E-02	5.943E-05	2.421E-03	1.256E-02	1.290E-02	5.332E-03	5.834E-01	6.017E-01	2.358E+01	2.089E-03	1.166E-01	2.370E+01	2.509E+01
AAG	0.096	--	0.348	2.054	2.054	2.784E-01	2.907E-07	1.590E-04	2.786E-01	--	--	--	--	7.323E-03	4.318E-05	1.759E-03	9.125E-03	1.092E-02	4.511E-03	4.936E-01	5.090E-01	1.995E+01	1.767E-03	9.865E-02	2.005E+01	2.085E+01
AAH	0.168	--	0.608	2.501	2.501	4.882E-01	5.098E-07	2.788E-04	4.885E-01	--	--	--	--	1.279E-02	7.544E-05	3.073E-03	1.594E-02	1.329E-02	5.492E-03	6.010E-01	6.198E-01	2.429E+01	2.151E-03	1.201E-01	2.441E+01	2.554E+01
AAI	0.134	--	0.485	2.509	2.509	3.894E-01	4.066E-07	2.223E-04	3.897E-01	--	--	--	--	1.021E-02	6.018E-05	2.451E-03	1.272E-02	1.334E-02	5.510E-03	6.029E-01	6.218E-01	2.437E+01	2.158E-03	1.205E-01	2.449E+01	2.552E+01
AAJ	0.088	--	0.318	2.543	2.543	2.546E-01	2.658E-07	1.454E-04	2.547E-01	--	--	--	--	6.691E-03	3.946E-05	1.607E-03	8.338E-03	1.352E-02	5.584E-03	6.111E-01	6.302E-01	2.470E+01	2.187E-03	1.221E-01	2.482E+01	2.572E+01
AAK	0.068	--	0.246	2.111	2.111	1.967E-01	2.054E-07	1.123E-04	1.969E-01	--	--	--	--	5.176E-03	3.052E-05	1.243E-03	6.450E-03	1.122E-02	4.636E-03	5.073E-01	5.231E-01	2.050E+01	1.816E-03	1.014E-01	2.061E+01	2.133E+01
AAL	0.083	--	0.301	2.880	2.880	2.415E-01	2.522E-07	1.379E-04	2.416E-01	--	--	--	--	6.334E-03	3.735E-05	1.521E-03	7.892E-03	1.531E-02	6.324E-03	6.921E-01	7.137E-01	2.797E+01	2.477E-03	1.383E-01	2.811E+01	2.908E+01
ABA	0.141	--	0.523	2.593	2.593	4.098E-01	4.279E-07	2.340E-04	4.100E-01	--	--	--	--	1.101E-02	6.489E-05	2.643E-03	1.371E-02	1.378E-02	5.694E-03	6.231E-01	6.426E-01	2.519E+01	2.230E-03	1.245E-01	2.531E+01	2.638E+01
ABB	0.137	--	0.516	2.194	2.194	3.981E-01	4.157E-07	2.273E-04	3.984E-01	--	--	--	--	1.086E-02	6.402E-05	2.608E-03	1.353E-02	1.166E-02	4.818E-03	5.272E-01	5.437E-01	2.131E+01	1.887E-03	1.054E-01	2.142E+01	2.237E+01
ABC	0.158	0.032	0.575	2.132	2.132	4.592E-01	4.795E-07	2.622E-04	4.594E-01	4.250E-01	6.359E-07	2.724E-05	4.251E-01	1.210E-02	7.135E-05	2.906E-03	1.508E-02	1.133E-02	4.682E-03	5.123E-01	5.283E-01	2.071E+01	1.834E-03	1.024E-01	2.081E+01	2.224E+01
ABD	0.188	0.021	0.683	2.339	2.339	5.464E-01	5.705E-07	3.119E-04	5.467E-01	2.811E-01	4.206E-07	1.802E-05	2.812E-01	1.437E-02	8.475E-05	3.452E-03	1.791E-02	1.243E-02	5.136E-03	5.621E-01	5.796E-01	2.272E+01	2.012E-03	1.123E-01	2.283E+01	2.426E+01
ABE	0.298	0.037	1.122	2.135	2.135	8.660E-01	9.043E-07	4.945E-04	8.665E-01	4.857E-01	7.267E-07	3.113E-05	4.858E-01	2.361E-02	1.392E-04	5.671E-03	2.942E-02	1.135E-02	4.688E-03	5.130E-01	5.291E-01	2.074E+01	1.837E-03	1.025E-01	2.084E+01	2.275E+01
ABF	0.099	0.026	0.358	2.094	2.094	2.866E-01	2.992E-07	1.636E-04	2.867E-01	3.471E-01	5.194E-07	2.225E-05	3.472E-01	7.533E-03	4.442E-05	1.809E-03	9.387E-03	1.113E-02	4.598E-03	5.032E-01	5.189E-01	2.034E+01	1.801E-03	1.006E-01	2.044E+01	2.160E+01
ABG	0.416	--	1.510	8.871	8.871	1.209E+00	1.262E-06	6.903E-04	1.210E+00	--	--	--	--	3.177E-02	1.874E-04	7.632E-03	3.959E-02	4.715E-02	1.948E-02	2.132E+00	2.198E+00	8.616E+01	7.631E-03	4.261E-01	8.660E+01	9.005E+01
ABH	0.141	--	0.520	2.141	2.141	4.098E-01	4.279E-07	2.340E-04	4.100E-01	--	--	--	--	1.094E-02	6.452E-05	2.628E-03	1.363E-02	1.138E-02	4.702E-03	5.145E-01	5.306E-01	2.080E+01	1.842E-03	1.028E-01	2.090E+01	2.185E+01
ABI	0.135	--	0.491	2.712	2.712	3.923E-01	4.097E-07	2.240E-04	3.926E-01	--	--	--	--	1.033E-02	6.092E-05	2.482E-03	1.287E-02	1.441E-02	5.956E-03	6.517E-01	6.721E-01	2.634E+01	2.333E-03	1.303E-01	2.647E+01	2.755E+01
ABJ	0.071	--	0.258	2.169	2.169	2.066E-01	2.158E-07	1.180E-04	2.067E-01	--	--	--	--	5.429E-03	3.201E-05	1.304E-03	6.765E-03	1.153E-02	4.763E-03	5.212E-01	5.375E-01	2.107E+01	1.866E-03	1.042E-01	2.117E+01	2.192E+01
ABK	0.063	--	0.230	2.150	2.150	1.843E-01	1.924E-07	1.052E-04	1.844E-01	--	--	--	--	4.840E-03	2.854E-05	1.163E-03	6.031E-03	1.143E-02	4.721E-03	5.166E-01	5.328E-01	2.088E+01	1.849E-03	1.033E-01	2.099E+01	2.171E+01
ABL	0.074	--	0.267	2.636	2.636	2.136E-01	2.230E-07	1.220E-04	2.137E-01	--	--	--	--	5.618E-03	3.313E-05	1.350E-03	7.001E-03	1.401E-02	5.789E-03	6.334E-01	6.532E-01	2.560E+01	2.267E-03	1.266E-01	2.573E+01	2.661E+01
ABM	0.080	--	0.279	2.749	2.749	2.319E-01	2.422E-07	1.324E-04	2.320E-01	--	--	--	--	5.871E-03	3.462E-05	1.410E-03	7.316E-03	1.461E-02	6.037E-03	6.606E-01	6.812E-01	2.670E+01	2.365E-03	1.320E-01	2.684E+01	2.776E+01
ACH	1.548	--	5.930	207.400	207.400	4.499E+00	4.697E-06	2.569E-03	4.501E+00	--	--	--	--	1.248E-01	7.358E-04	2.997E-02	1.555E-01	1.102E+00	4.555E-01	4.984E+01	5.140E+01	2.014E+03	1.784E-01	9.961E+00	2.025E+03	2.081E+03
ACH - Rem	0.065	--	0.232	1.909	1.909	1.889E-01	1.972E-07	1.079E-04	1.890E-01	--	--	--	--	4.882E-03	2.879E-05	1.173E-03	6.083E-03	1.015E-02	4.192E-03	4.587E-01	4.731E-01	1.854E+01	1.642E-03	9.169E-02	1.864E+01	1.930E+01
ACI	0.085	--	0.308	1.772	1.772	2.470E-01	2.579E-07	1.410E-04	2.472E-01	--	--	--	--	6.481E-03	3.822E-05	1.557E-03	8.076E-03	9.418E-03	3.891E-03	4.258E-01	4.391E-01	1.721E+01	1.524E-03	8.511E-02	1.730E+01	1.799E+01
ACJ	0.072	--	0.262	2.013	2.013	2.095E-01	2.188E-07	1.196E-04	2.097E-01	--	--	--	--	5.513E-03	3.251E-05	1.324E-03	6.870E-03	1.070E-02	4.421E-03	4.837E-01	4.988E-01	1.955E+01	1.732E-03	9.668E-02	1.965E+01	2.037E+01
ACK	0.066	--	0.238	2.019	2.019	1.906E-01	1.991E-07	1.088E-04	1.908E-01	--	--	--	--	5.008E-03	2.953E-05	1.203E-03	6.241E-03	1.073E-02	4.434E-03	4.852E-01	5.003E-01	1.961E+01	1.737E-03	9.697E-02	1.971E+01	2.041E+01
ACL	0.088	--	0.326	2.209	2.209	2.543E-01	2.655E-07	1.452E-04	2.544E-01	--	--	--	--	6.860E-03	4.045E-05	1.648E-03	8.548E-03	1.174E-02	4.851E-03	5.308E-01	5.474E-01	2.146E+01	1.900E-03	1.061E-01	2.156E+01	2.237E+01
ACM	0.076	--	0.274	2.860	2.860	2.197E-01	2.294E-07	1.254E-04	2.198E-01	--	--	--	--	5.766E-03	3.400E-05	1.385E-03	7.184E-03	1.520E-02	6.281E-03	6.873E-01	7.087E-01	2.778E+01	2.460E-03	1.374E-01	2.792E+01	2.885E+01
ADI	0.097	--	0.347	2.220	2.220	2.816E-01	2.940E-07	1.608E-04	2.818E-01	--	--	--	--	7.302E-03	4.306E-05	1.754E-03	9.099E-03	1.180E-02	4.875E-03	5.335E-01	5.501E-01	2.156E+01	1.910E-03	1.066E-01	2.167E+01	2.251E+01
ADJ	0.070	--	0.235	2.030	2.030	2.040E-01	2.130E-07	1.165E-04	2.041E-01	--	--	--	--	4.945E-03	2.916E-05	1.188E-03	6.162E-03	1.079E-02	4.458E-03	4.878E-01	5.031E-01	1.972E+01	1.746E-03	9.750E-02	1.982E+01	2.053E+01
ADK	0.063	--	0.230	1.798	1.798	1.843E-01	1.924E-07	1.052E-04	1.844E-01	--	--	--	--	4.840E-03	2.854E-05	1.163E-03	6.031E-03	9.556E-03	3.948E-03	4.321E-01	4.456E-01	1.746E+01	1.547E-03	8.636E-02	1.755E+01	1.819E+01
ADL	0.054	--	0.196	1.843	1.843	1.566E-01	1.636E-07	8.944E-05	1.567E-01	--	--	--	--	4.124E-03	2.432E-05	9.907E-04	5.139E-03	9.796E-03	4.047E-03	4.429E-01	4.567E-01	1.790E+01	1.585E-03	8.852E-02	1.799E+01	1.861E+01
ADM	0.077	--	0.277	2.629	2.629	2.238E-01	2.337E-07	1.278E-04	2.239E-01	--	--	--	--	5.829E-03	3.437E-05	1.400E-03	7.263E-03	1.397E-02	5.773E-03	6.317E-01	6.515E-01	2.554E+01	2.261E-03	1.263E-01	2.566E+01	2.655E+01
AEJ	0.069	--	0.250	1.764	1.764	2.005E-01	2.094E-07	1.145E-04	2.006E-01	--	--	--	--	5.261E-03	3.102E-05	1.264E-03	6.555E-03	9.376E-03	3.874E-03	4.239E-01	4.371E-01	1.713E+01	1.517E-03	8.472E-02	1.722E+01	1.786E+01
AEK	0.072	--	0.260	2.192	2.192	2.081E-01	2.173E-07	1.188E-04	2.082E-01	--	--	--	--	5.471E-03	3.226E-05	1.314E-03	6.817E-03	1.165E-02	4.814E-03	5.267E-01	5.432E-01	2.129E+01	1.886E-03	1.053E-01	2.140E+01	2.216E+01
AEL	0.069	--	0.249	2.349	2.349	1.997E-01	2.085E-07	1.140E-04	1.998E-01	--	--	--	--	5.240E-03	3.090E-05	1.259E-03	6.529E-03	1.248E-02	5.158E-03	5.645E-01	5.821E-01	2.282E+01	2.021E-03	1.128E-01	2.293E+01	2.372E+01
AEM	0.112	--	0.401	2.890	2.890	3.255E-01	3.399E-07	1.858E-04	3.257E-01	--	--	--	--	8.438E-03	4.976E-05	2.027E-03	1.051E-02	1.536E-02	6.346E-03	6.945E-01	7.162E-01	2.807E+01	2.486E-03	1.388E-01	2.821E+01	2.926E+01
AFI - AGI	0.119	--	0.431	2.770	2.770	3.458E-01	3.611E-07	1.975E-04	3.460E-01	--	--	--	--	9.069E-03	5.348E-05	2.178E-03	1.130E-02	1.472E-02	6.083E-03	6.656E-01	6.864E-01	2.691E+01	2.383E-03	1.330E-01	2.704E+01	2.808E+01
AFJ	0.063	--	0.228	2.381	2.381	1.828E-01	1.909E-07	1.044E-04	1.829E-01	--	--	--	--	4.798E-03	2.829E-05	1.152E-03	5.978E-03	1.266E-02	5.229E-03	5.722E-01	5.900E-01	2.313E+01	2.048E-03	1.144E-01	2.324E+01	2.402E+01
AFK	0.063	--	0.230	2.180	2.180	1.843E-01	1.924E-07	1.052E-04	1.844E-01	--	--	--	--	4.840E-03	2.854E-05	1.163E-03	6.031E-03	1.159E-02	4.787E-03	5.239E-01	5.402E-01	2.117E+01	1.875E-03	1.047E-01	2.128E+01	2.201E+01
AFL	0.100	--	0.364	3.677	3.677	2.906E-01	3.035E-07	1.659E-04	2.908E-01	--	--	--	--	7.659E-03	4.516E-05	1.840E-03	9.544E-03	1.954E-02	8.075E-03	8.836E-01	9.112E-01	3.571E+01	3.163E-03	1.766E-01	3.589E+01	3.711E+01
AFM	0.097	--	0.351	2.236	2.236	2.813E-01	2.937E-07	1.606E-04	2.815E-01	--	--	--	--	7.386E-03	4.355E-05	1.774E-03	9.203E-03	1.188E-02	4.910E-03	5.373E-01	5.541E-01	2.172E+01	1.923E-03	1.074E-01	2.183E+01	2.267E+01
AGJ	0.107	--	0.388	3.322	3.322	3.110E-01	3.247E-07	1.775E-04	3.111E-01	--	--	--	--	8.164E-03	4.814E-05	1.961E-03	1.017E-02	1.766E-02	7.295E-03	7.983E-01	8.232E-01	3.227E+01	2.858E-03	1.596E-01	3.243E+01	3.357E+01
AGK	0.103	--	0.374	3.000	3.000	2.993E-01	3.126E-07	1.709E-04	2.995E-01	--	--	--	--	7.870E-03	4.641E-05	1.890E-03	9.807E-03	1.595E-02	6.588E-03	7.209E-01	7.434E-01	2.914E+01	2.581E-03	1.441E-01	2.929E+01	3.034E+01
AGL	0.092	--	0.334	2.800	2.800	2.680E-01	2.798E-07	1.530E-04	2.681E-01	--	--	--	--	7.028E-03	4.144E-05	1.688E-03	8.758E-03	1.488E-02	6.149E-03	6.728E-01	6.939E-01	2.720E+01	2.409E-03	1.345E-01	2.733E+01	2.830E+01
AGM	0.097	--	0.352	2.765	2.765	2.822E-01	2.947E-07	1.611E-04	2.824E-01	--	--	--	--	7.407E-03	4.368E-05	1.779E-03	9.230E-03	1.470E-02	6.072E-03	6.644E-01	6.852E-01	2.686E+01	2.378E-03	1.328E-01	2.699E+01	2.797E+01
AHH - AIH	0.112	--	0.404	2.533	2.533	3.255E-01	3.399E-07	1.858E-04	3.257E-01	--	--	--	--	8.501E-03	5.013E-05	2.042E-03	1.059E-02	1.346E-02	5.562E-03	6.087E-01	6.277E-01	2.460E+01	2.179E-03	1.217E-01	2.473E+01	2.569E+01
AHI	0.074	--	0.264	2.097	2.097	2.145E-01	2.239E-07	1.225E-04	2.146E-01	--	--	--	--	5.555E-03	3.276E-05	1.334E-03	6.922E-03	1.115E-02	4.605E-03	5.039E-01	5.197E-01	2.037E+01	1.804E-03	1.007E-01	2.047E+01	2.121E+01
AHJ	0.100	--	0.361	3.213	3.213	2.895E-01	3.022E-07	1.653E-04	2.896E-01	--	--	--	--	7.596E-03	4.479E-05	1.825E-03	9.466E-03	1.708E-02	7.056E-03	7.721E-01	7.962E-01	3.121E+01	2.764E-03	1.543E-01	3.136E+01	3.246E+01
AHK	0.086	--	0.311	2.610	2.610	2.494E-01	2.604E-07	1.424E-04	2.495E-01	--	--	--	--	6.544E-03	3.859E-05	1.572E-03	8.155E-03	1.387E-02	5.732E-03	6.272E-01	6.468E-01	2.535E+01	2.245E-03	1.254E-01	2.548E+01	2.638E+01
AHL	0.079	--	0.287	2.619	2.619	2.299E-01	2.400E-07	1.313E-04	2.300E-01	--	--	--	--	6.039E-03	3.561E-05	1.451E-03	7.525E-03	1.392E-02	5.751E-03	6.293E-01	6.490E-01	2.544E+01	2.253E-03	1.258E-01	2.557E+01	2.645E+01
AHM	0.081	--	0.292	2.748	2.748	2.342E-01	2.446E-07	1.337E-04	2.344E-01	--	--	--	--	6.144E-03	3.623E-05	1.476E-03	7.656E-03	1.461E-02	6.035E-03	6.603E-01	6.810E-01	2.669E+01	2.364E-03	1.320E-01	2.683E+01	2.775E+01
AII	0.102	--	0.369	2.992	2.992	2.964E-01	3.095E-07	1.692E-04	2.966E-01	--	--	--	--	7.765E-03	4.578E-05	1.865E-03	9.675E-03	1.590E-02	6.570E-03	7.190E-01	7.415E-01	2.906E+01	2.574E-03	1.437E-01	2.921E+01	3.026E+01
AIJ	0.114	--	0.414	3.280	3.280	3.313E-01	3.459E-07	1.892E-04	3.315E-01	--	--	--	--	8.712E-03	5.137E-05	2.093E-03	1.086E-02	1.743E-02	7.203E-03	7.882E-01	8.128E-01	3.186E+01	2.821E-03	1.575E-01	3.202E+01	3.317E+01
AIK	0.107	--	0.386	2.935	2.935	3.110E-01	3.247E-07	1.775E-04	3.111E-01	--	--	--	--	8.122E-03	4.789E-05	1.951E-03	1.012E-02	1.560E-02	6.445E-03	7.053E-01	7.273E-01	2.851E+01	2.525E-03	1.410E-01	2.865E+01	2.970E+01
AIL	0.088	--	0.317	2.624	2.624	2.549E-01	2.661E-07	1.455E-04	2.550E-01	--	--	--	--	6.670E-03	3.933E-05	1.602E-03	8.312E-03	1.395E-02	5.762E-03	6.305E-01	6.503E-01	2.549E+01	2.257E-03	1.260E-01	2.562E+01	2.653E+01
AIM	0.080	--	0.289	2.707	2.707	2.316E-01	2.419E-07	1.322E-04	2.318E-01	--	--	--	--	6.081E-03	3.586E-05	1.461E-03	7.578E-03	1.439E-02	5.945E-03	6.505E-01	6.708E-01	2.629E+01	2.329E-03	1.300E-01	2.643E+01	2.734E+01
AJH	0.123	--	0.446	2.211	2.211	3.575E-01	3.732E-07	2.041E-04	3.577E-01	--	--	--	--	9.385E-03	5.534E-05	2.254E-03	1.169E-02	1.175E-02	4.855E-03	5.313E-01	5.479E-01	2.148E+01	1.902E-03	1.062E-01	2.158E+01	2.250E+01
AJI	0.089	--	0.323	2.841	2.841	2.592E-01	2.707E-07	1.480E-04	2.594E-01	--	--	--	--	6.797E-03	4.008E-05	1.633E-03	8.469E-03	1.510E-02	6.239E-03	6.827E-01	7.040E-01	2.759E+01	2.444E-03	1.365E-01	2.773E+01	2.871E+01
AJJ	0.108	--	0.391	2.845	2.845	3.139E-01	3.277E-07	1.792E-04	3.140E-01	--	--	--	--	8.228E-03	4.851E-05	1.976E-03	1.025E-02	1.512E-02	6.248E-03	6.837E-01	7.050E-01	2.763E+01	2.447E-03	1.366E-01	2.777E+01	2.880E+01
AJK	0.089	--	0.324	2.489	2.489	2.595E-01	2.710E-07	1.482E-04	2.597E-01	--	--	--	--	6.818E-03	4.020E-05	1.638E-03	8.496E-03	1.323E-02	5.466E-03	5.981E-01	6.168E-01	2.418E+01	2.141E-03	1.195E-01	2.430E+01	2.518E+01
AJL	0.083	--	0.299	2.620	2.620	2.398E-01	2.503E-07	1.369E-04	2.399E-01	--	--	--	--	6.292E-03	3.710E-05	1.511E-03	7.840E-03	1.393E-02	5.754E-03	6.296E-01	6.493E-01	2.545E+01	2.254E-03	1.258E-01	2.558E+01	2.647E+01
AJM	0.073	--	0.264	2.788	2.788	2.113E-01	2.206E-07	1.206E-04	2.114E-01	--	--	--	--	5.555E-03	3.276E-05	1.334E-03	6.922E-03	1.482E-02	6.122E-03	6.700E-01	6.909E-01	2.708E+01	2.398E-03	1.339E-01	2.722E+01	2.813E+01
AKG	0.102	--	0.370	1.881	1.881	2.964E-01	3.095E-07	1.692E-04	2.966E-01	--	--	--	--	7.786E-03	4.591E-05	1.870E-03	9.702E-03	9.998E-03	4.131E-03	4.520E-01	4.661E-01	1.827E+01	1.618E-03	9.034E-02	1.836E+01	1.913E+01
AKI	0.084	--	0.304	2.650	2.650	2.441E-01	2.549E-07	1.394E-04	2.443E-01	--	--	--	--	6.397E-03	3.772E-05	1.537E-03	7.971E-03	1.408E-02	5.819E-03	6.368E-01	6.567E-01	2.574E+01	2.280E-03	1.273E-01	2.587E+01	2.678E+01
AKJ	0.081	--	0.292	2.714	2.714	2.342E-01	2.446E-07	1.337E-04	2.344E-01	--	--	--	--	6.144E-03	3.623E-05	1.476E-03	7.656E-03	1.442E-02	5.960E-03	6.522E-01	6.726E-01	2.636E+01	2.335E-03	1.304E-01	2.649E+01	2.741E+01
AKK	0.074	--	0.267	2.370	2.370	2.151E-01	2.246E-07	1.228E-04	2.152E-01	--	--	--	--	5.618E-03	3.313E-05	1.350E-03	7.001E-03	1.260E-02	5.205E-03	5.695E-01	5.873E-01	2.302E+01	2.039E-03	1.138E-01	2.314E+01	2.395E+01
AKL	0.220	--	0.799	884.400	884.400	6.394E-01	6.676E-07	3.650E-04	6.397E-01	--	--	--	--	1.681E-02	9.914E-05	4.038E-03	2.095E-02	4.701E+00	1.942E+00	2.125E+02	2.192E+02	8.590E+03	7.608E-01	4.248E+01	8.633E+03	8.853E+03
AKL - Rem	0.080	--	0.292	2.329	2.329	2.337E-01	2.440E-07	1.334E-04	2.338E-01	--	--	--	--	6.144E-03	3.623E-05	1.476E-03	7.656E-03	1.238E-02	5.114E-03	5.597E-01	5.772E-01	2.262E+01	2.003E-03	1.119E-01	2.274E+01	2.355E+01
AKM	0.094	--	0.342	11.020	11.020	2.743E-01	2.865E-07	1.566E-04	2.745E-01	--	--	--	--	7.196E-03	4.243E-05	1.729E-03	8.967E-03	5.857E-02	2.420E-02	2.648E+00	2.731E+00	1.070E+02	9.479E-03	5.293E-01	1.076E+02	1.106E+02

Risk Calculations, Adult Resident

Survey Grid	95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				Total Risk
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	
AAA	0.100	--	0.367	2.287	2.287	4.030E-06	1.981E-11	2.307E-09	4.032E-06	--	--	--	--	1.074E-07	2.638E-10	2.023E-08	1.279E-07	1.413E-07	1.125E-07	4.393E-06	4.647E-06	3.918E-04	1.907E-07	2.724E-06	3.947E-04	4.035E-04
AAB	0.126	--	0.465	2.090	2.090	5.088E-06	2.501E-11	2.912E-09	5.091E-06	--	--	--	--	1.361E-07	3.342E-10	2.564E-08	1.621E-07	1.291E-07	1.028E-07	4.015E-06	4.247E-06	3.580E-04	1.743E-07	2.489E-06	3.607E-04	3.702E-04
AAC	0.092	0.027	0.330	2.400	2.400	3.731E-06	1.834E-11	2.136E-09	3.733E-06	2.139E-06	1.930E-12	1.486E-10	2.139E-06	9.660E-08	2.372E-10	1.819E-08	1.150E-07	1.483E-07	1.181E-07	4.610E-06	4.877E-06	4.111E-04	2.001E-07	2.858E-06	4.142E-04	4.250E-04
AAD	0.213	0.043	0.772	2.403	2.403	8.601E-06	4.228E-11	4.924E-09	8.606E-06	3.392E-06	3.061E-12	2.357E-10	3.392E-06	2.260E-07	5.549E-10	4.256E-08	2.691E-07	1.485E-07	1.182E-07	4.616E-06	4.883E-06	4.116E-04	2.004E-07	2.862E-06	4.147E-04	4.318E-04
AAE	0.205	0.041	0.745	2.291	2.291	8.278E-06	4.069E-11	4.739E-09	8.283E-06	3.173E-06	2.863E-12	2.205E-10	3.173E-06	2.181E-07	5.355E-10	4.108E-08	2.597E-07	1.416E-07	1.127E-07	4.401E-06	4.655E-06	3.924E-04	1.910E-07	2.729E-06	3.954E-04	4.117E-04
AAF	0.132	0.030	0.479	2.428	2.428	5.330E-06	2.620E-11	3.051E-09	5.333E-06	2.342E-06	2.114E-12	1.628E-10	2.342E-06	1.402E-07	3.443E-10	2.641E-08	1.670E-07	1.500E-07	1.195E-07	4.664E-06	4.934E-06	4.159E-04	2.025E-07	2.892E-06	4.190E-04	4.318E-04
AAG	0.096	--	0.348	2.054	2.054	3.868E-06	1.902E-11	2.214E-09	3.871E-06	--	--	--	--	1.019E-07	2.501E-10	1.919E-08	1.213E-07	1.269E-07	1.011E-07	3.946E-06	4.174E-06	3.519E-04	1.713E-07	2.446E-06	3.545E-04	3.626E-04
AAH	0.168	--	0.608	2.501	2.501	6.784E-06	3.335E-11	3.883E-09	6.788E-06	--	--	--	--	1.780E-07	4.370E-10	3.352E-08	2.119E-07	1.545E-07	1.230E-07	4.804E-06	5.082E-06	4.284E-04	2.086E-07	2.979E-06	4.316E-04	4.437E-04
AAI	0.134	--	0.485	2.509	2.509	5.411E-06	2.660E-11	3.097E-09	5.414E-06	--	--	--	--	1.420E-07	3.486E-10	2.674E-08	1.691E-07	1.550E-07	1.234E-07	4.820E-06	5.098E-06	4.298E-04	2.092E-07	2.988E-06	4.330E-04	4.437E-04
AAJ	0.088	--	0.318	2.543	2.543	3.537E-06	1.739E-11	2.025E-09	3.539E-06	--	--	--	--	9.308E-08	2.286E-10	1.753E-08	1.108E-07	1.571E-07	1.251E-07	4.885E-06	5.167E-06	4.356E-04	2.121E-07	3.029E-06	4.389E-04	4.477E-04
AAK	0.068	--	0.246	2.111	2.111	2.734E-06	1.344E-11	1.565E-09	2.735E-06	--	--	--	--	7.201E-08	1.768E-10	1.356E-08	8.575E-08	1.304E-07	1.039E-07	4.055E-06	4.290E-06	3.616E-04	1.760E-07	2.514E-06	3.643E-04	3.714E-04
AAL	0.083	--	0.301	2.880	2.880	3.356E-06	1.649E-11	1.921E-09	3.358E-06	--	--	--	--	8.811E-08	2.163E-10	1.660E-08	1.049E-07	1.780E-07	1.417E-07	5.532E-06	5.852E-06	4.933E-04	2.402E-07	3.430E-06	4.970E-04	5.063E-04
ABA	0.141	--	0.523	2.593	2.593	5.694E-06	2.799E-11	3.259E-09	5.697E-06	--	--	--	--	1.531E-07	3.759E-10	2.884E-08	1.823E-07	1.602E-07	1.276E-07	4.981E-06	5.269E-06	4.442E-04	2.162E-07	3.088E-06	4.475E-04	4.586E-04
ABB	0.137	--	0.516	2.194	2.194	5.532E-06	2.719E-11	3.167E-09	5.535E-06	--	--	--	--	1.510E-07	3.709E-10	2.845E-08	1.799E-07	1.356E-07	1.079E-07	4.215E-06	4.458E-06	3.758E-04	1.830E-07	2.613E-06	3.786E-04	3.888E-04
ABC	0.158	0.032	0.575	2.132	2.132	6.380E-06	3.136E-11	3.652E-09	6.384E-06	2.522E-06	2.276E-12	1.753E-10	2.523E-06	1.683E-07	4.133E-10	3.170E-08	2.004E-07	1.317E-07	1.049E-07	4.096E-06	4.332E-06	3.652E-04	1.778E-07	2.539E-06	3.679E-04	3.814E-04
ABD	0.188	0.021	0.683	2.339	2.339	7.592E-06	3.732E-11	4.346E-09	7.596E-06	1.669E-06	1.506E-12	1.159E-10	1.669E-06	1.999E-07	4.909E-10	3.766E-08	2.381E-07	1.445E-07	1.151E-07	4.493E-06	4.753E-06	4.007E-04	1.950E-07	2.786E-06	4.037E-04	4.179E-04
ABE	0.298	0.037	1.122	2.135	2.135	1.203E-05	5.915E-11	6.888E-09	1.204E-05	2.883E-06	2.601E-12	2.003E-10	2.883E-06	3.284E-07	8.064E-10	6.186E-08	3.911E-07	1.319E-07	1.050E-07	4.101E-06	4.338E-06	3.657E-04	1.780E-07	2.543E-06	3.684E-04	3.881E-04
ABF	0.099	0.026	0.358	2.094	2.094	3.982E-06	1.957E-11	2.279E-09	3.984E-06	2.060E-06	1.859E-12	1.432E-10	2.060E-06	1.048E-07	2.573E-10	1.974E-08	1.248E-07	1.294E-07	1.030E-07	4.023E-06	4.255E-06	3.587E-04	1.746E-07	2.494E-06	3.614E-04	3.718E-04
ABG	0.416	--	1.510	8.871	8.871	1.680E-05	8.257E-11	9.616E-09	1.681E-05	--	--	--	--	4.420E-07	1.085E-09	8.326E-08	5.263E-07	5.481E-07	4.365E-07	1.704E-05	1.803E-05	1.520E-03	7.398E-07	1.057E-05	1.531E-03	1.566E-03
ABH	0.141	--	0.520	2.141	2.141	5.694E-06	2.799E-11	3.259E-09	5.697E-06	--	--	--	--	1.522E-07	3.737E-10	2.867E-08	1.813E-07	1.323E-07	1.053E-07	4.113E-06	4.350E-06	3.668E-04	1.785E-07	2.550E-06	3.695E-04	3.797E-04
ABI	0.135	--	0.491	2.712	2.712	5.451E-06	2.680E-11	3.121E-09	5.455E-06	--	--	--	--	1.437E-07	3.529E-10	2.707E-08	1.711E-07	1.676E-07	1.334E-07	5.210E-06	5.511E-06	4.646E-04	2.262E-07	3.230E-06	4.680E-04	4.792E-04
ABJ	0.071	--	0.258	2.169	2.169	2.871E-06	1.411E-11	1.643E-09	2.873E-06	--	--	--	--	7.552E-08	1.854E-10	1.423E-08	8.993E-08	1.340E-07	1.067E-07	4.167E-06	4.407E-06	3.715E-04	1.809E-07	2.583E-06	3.743E-04	3.817E-04
ABK	0.063	--	0.230	2.150	2.150	2.560E-06	1.258E-11	1.465E-09	2.562E-06	--	--	--	--	6.733E-08	1.653E-10	1.268E-08	8.017E-08	1.328E-07	1.058E-07	4.130E-06	4.369E-06	3.683E-04	1.793E-07	2.561E-06	3.710E-04	3.780E-04
ABL	0.074	--	0.267	2.636	2.636	2.968E-06	1.459E-11	1.699E-09	2.970E-06	--	--	--	--	7.816E-08	1.919E-10	1.472E-08	9.307E-08	1.629E-07	1.297E-07	5.064E-06	5.356E-06	4.515E-04	2.198E-07	3.139E-06	4.549E-04	4.633E-04
ABM	0.080	--	0.279	2.749	2.749	3.222E-06	1.584E-11	1.845E-09	3.224E-06	--	--	--	--	8.167E-08	2.005E-10	1.538E-08	9.725E-08	1.699E-07	1.353E-07	5.281E-06	5.586E-06	4.709E-04	2.292E-07	3.274E-06	4.744E-04	4.833E-04
ACH	1.548	--	5.930	207.400	207.400	6.251E-05	3.073E-10	3.578E-08	6.255E-05	--	--	--	--	1.736E-06	4.262E-09	3.270E-07	2.067E-06	1.282E-05	1.020E-05	3.984E-04	4.214E-04	3.553E-02	1.730E-05	2.470E-04	3.579E-02	3.628E-02
ACH - Rem	0.065	--	0.232	1.909	1.909	2.625E-06	1.290E-11	1.502E-09	2.626E-06	--	--	--	--	6.791E-08	1.667E-10	1.279E-08	8.087E-08	1.180E-07	9.392E-08	3.667E-06	3.879E-06	3.270E-04	1.592E-07	2.274E-06	3.294E-04	3.360E-04
ACI	0.085	--	0.308	1.772	1.772	3.432E-06	1.687E-11	1.965E-09	3.434E-06	--	--	--	--	9.016E-08	2.214E-10	1.698E-08	1.074E-07	1.095E-07	8.718E-08	3.404E-06	3.601E-06	3.035E-04	1.478E-07	2.110E-06	3.058E-04	3.129E-04
ACJ	0.072	--	0.262	2.013	2.013	2.911E-06	1.431E-11	1.667E-09	2.913E-06	--	--	--	--	7.669E-08	1.883E-10	1.445E-08	9.133E-08	1.244E-07	9.904E-08	3.867E-06	4.090E-06	3.448E-04	1.679E-07	2.397E-06	3.474E-04	3.545E-04
ACK	0.066	--	0.238	2.019	2.019	2.649E-06	1.302E-11	1.516E-09	2.650E-06	--	--	--	--	6.967E-08	1.711E-10	1.312E-08	8.296E-08	1.248E-07	9.933E-08	3.878E-06	4.103E-06	3.459E-04	1.684E-07	2.405E-06	3.484E-04	3.553E-04
ACL	0.088	--	0.326	2.209	2.209	3.533E-06	1.737E-11	2.023E-09	3.535E-06	--	--	--	--	9.543E-08	2.343E-10	1.797E-08	1.136E-07	1.365E-07	1.087E-07	4.243E-06	4.489E-06	3.784E-04	1.842E-07	2.631E-06	3.812E-04	3.894E-04
ACM	0.076	--	0.274	2.860	2.860	3.053E-06	1.501E-11	1.747E-09	3.055E-06	--	--	--	--	8.021E-08	1.969E-10	1.511E-08	9.551E-08	1.767E-07	1.407E-07	5.494E-06	5.811E-06	4.899E-04	2.385E-07	3.406E-06	4.936E-04	5.025E-04
ADI	0.097	--	0.347	2.220	2.220	3.913E-06	1.923E-11	2.240E-09	3.915E-06	--	--	--	--	1.016E-07	2.494E-10	1.913E-08	1.210E-07	1.372E-07	1.092E-07	4.265E-06	4.511E-06	3.803E-04	1.851E-07	2.644E-06	3.831E-04	3.917E-04
ADJ	0.070	--	0.235	2.030	2.030	2.835E-06	1.393E-11	1.623E-09	2.836E-06	--	--	--	--	6.879E-08	1.689E-10	1.296E-08	8.191E-08	1.254E-07	9.988E-08	3.900E-06	4.125E-06	3.477E-04	1.693E-07	2.418E-06	3.503E-04	3.574E-04
ADK	0.063	--	0.230	1.798	1.798	2.560E-06	1.258E-11	1.465E-09	2.562E-06	--	--	--	--	6.733E-08	1.653E-10	1.268E-08	8.017E-08	1.111E-07	8.846E-08	3.454E-06	3.654E-06	3.080E-04	1.499E-07	2.141E-06	3.103E-04	3.166E-04
ADL	0.054	--	0.196	1.843	1.843	2.177E-06	1.070E-11	1.246E-09	2.178E-06	--	--	--	--	5.737E-08	1.409E-10	1.081E-08	6.832E-08	1.139E-07	9.068E-08	3.540E-06	3.745E-06	3.157E-04	1.537E-07	2.195E-06	3.181E-04	3.240E-04
ADM	0.077	--	0.277	2.629	2.629	3.109E-06	1.528E-11	1.780E-09	3.111E-06	--	--	--	--	8.108E-08	1.991E-10	1.527E-08	9.655E-08	1.624E-07	1.293E-07	5.050E-06	5.342E-06	4.503E-04	2.192E-07	3.131E-06	4.537E-04	4.622E-04
AEJ	0.069	--	0.250	1.764	1.764	2.786E-06	1.370E-11	1.595E-09	2.788E-06	--	--	--	--	7.318E-08	1.797E-10	1.378E-08	8.714E-08	1.090E-07	8.679E-08	3.389E-06	3.584E-06	3.022E-04	1.471E-07	2.101E-06	3.044E-04	3.109E-04
AEK	0.072	--	0.260	2.192	2.192	2.891E-06	1.421E-11	1.655E-09	2.893E-06	--	--	--	--	7.611E-08	1.869E-10	1.434E-08	9.063E-08	1.354E-07	1.078E-07	4.211E-06	4.454E-06	3.755E-04	1.828E-07	2.611E-06	3.783E-04	3.857E-04
AEL	0.069	--	0.249	2.349	2.349	2.774E-06	1.364E-11	1.588E-09	2.776E-06	--	--	--	--	7.289E-08	1.790E-10	1.373E-08	8.679E-08	1.451E-07	1.156E-07	4.512E-06	4.773E-06	4.024E-04	1.959E-07	2.798E-06	4.054E-04	4.130E-04
AEM	0.112	--	0.401	2.890	2.890	4.523E-06	2.223E-11	2.589E-09	4.525E-06	--	--	--	--	1.174E-07	2.882E-10	2.211E-08	1.398E-07	1.786E-07	1.422E-07	5.552E-06	5.872E-06	4.951E-04	2.410E-07	3.442E-06	4.987E-04	5.093E-04
AFI - AGI	0.119	--	0.431	2.770	2.770	4.805E-06	2.362E-11	2.751E-09	4.808E-06	--	--	--	--	1.262E-07	3.098E-10	2.376E-08	1.502E-07	1.712E-07	1.363E-07	5.321E-06	5.629E-06	4.745E-04	2.310E-07	3.299E-06	4.780E-04	4.886E-04
AFJ	0.063	--	0.228	2.381	2.381	2.540E-06	1.249E-11	1.454E-09	2.541E-06	--	--	--	--	6.674E-08	1.639E-10	1.257E-08	7.947E-08	1.471E-07	1.171E-07	4.574E-06	4.838E-06	4.079E-04	1.986E-07	2.836E-06	4.109E-04	4.184E-04
AFK	0.063	--	0.230	2.180	2.180	2.560E-06	1.258E-11	1.465E-09	2.562E-06	--	--	--	--	6.733E-08	1.653E-10	1.268E-08	8.017E-08	1.347E-07	1.073E-07	4.188E-06	4.430E-06	3.734E-04	1.818E-07	2.596E-06	3.762E-04	3.833E-04
AFL	0.100	--	0.364	3.677	3.677	4.038E-06	1.985E-11	2.312E-09	4.040E-06	--	--	--	--	1.065E-07	2.616E-10	2.007E-08	1.269E-07	2.272E-07	1.809E-07	7.064E-06	7.472E-06	6.299E-04	3.066E-07	4.379E-06	6.346E-04	6.462E-04
AFM	0.097	--	0.351	2.236	2.236	3.909E-06	1.921E-11	2.238E-09	3.911E-06	--	--	--	--	1.027E-07	2.523E-10	1.935E-08	1.223E-07	1.382E-07	1.100E-07	4.295E-06	4.544E-06	3.830E-04	1.865E-07	2.663E-06	3.859E-04	3.945E-04
AGJ	0.107	--	0.388	3.322	3.322	4.321E-06	2.124E-11	2.473E-09	4.323E-06	--	--	--	--	1.136E-07	2.789E-10	2.139E-08	1.352E-07	2.053E-07	1.634E-07	6.382E-06	6.750E-06	5.691E-04	2.770E-07	3.957E-06	5.733E-04	5.845E-04
AGK	0.103	--	0.374	3.000	3.000	4.159E-06	2.045E-11	2.381E-09	4.162E-06	--	--	--	--	1.095E-07	2.688E-10	2.062E-08	1.304E-07	1.854E-07	1.476E-07	5.763E-06	6.096E-06	5.139E-04	2.502E-07	3.573E-06	5.177E-04	5.281E-04
AGL	0.092	--	0.334	2.800	2.800	3.723E-06	1.830E-11	2.131E-09	3.725E-06	--	--	--	--	9.777E-08	2.401E-10	1.842E-08	1.164E-07	1.730E-07	1.378E-07	5.379E-06	5.690E-06	4.796E-04	2.335E-07	3.335E-06	4.832E-04	4.927E-04
AGM	0.097	--	0.352	2.765	2.765	3.921E-06	1.927E-11	2.244E-09	3.923E-06	--	--	--	--	1.030E-07	2.530E-10	1.941E-08	1.227E-07	1.708E-07	1.360E-07	5.312E-06	5.618E-06	4.736E-04	2.306E-07	3.293E-06	4.772E-04	4.868E-04
AHH - AIH	0.112	--	0.404	2.533	2.533	4.523E-06	2.223E-11	2.589E-09	4.525E-06	--	--	--	--	1.183E-07	2.904E-10	2.227E-08	1.408E-07	1.565E-07	1.246E-07	4.866E-06	5.147E-06	4.339E-04	2.112E-07	3.017E-06	4.371E-04	4.469E-04
AHI	0.074	--	0.264	2.097	2.097	2.980E-06	1.465E-11	1.706E-09	2.982E-06	--	--	--	--	7.728E-08	1.897E-10	1.456E-08	9.202E-08	1.296E-07	1.032E-07	4.028E-06	4.261E-06	3.592E-04	1.749E-07	2.498E-06	3.619E-04	3.692E-04
AHJ	0.100	--	0.361	3.213	3.213	4.022E-06	1.977E-11	2.302E-09	4.024E-06	--	--	--	--	1.057E-07	2.595E-10	1.990E-08	1.258E-07	1.985E-07	1.581E-07	6.172E-06	6.529E-06	5.504E-04	2.679E-07	3.827E-06	5.545E-04	5.652E-04
AHK	0.086	--	0.311	2.610	2.610	3.465E-06	1.703E-11	1.983E-09	3.467E-06	--	--	--	--	9.104E-08	2.235E-10	1.715E-08	1.084E-07	1.613E-07	1.284E-07	5.014E-06	5.303E-06	4.471E-04	2.176E-07	3.109E-06	4.504E-04	4.593E-04
AHL	0.079	--	0.287	2.619	2.619	3.194E-06	1.570E-11	1.828E-09	3.196E-06	--	--	--	--	8.401E-08	2.063E-10	1.582E-08	1.000E-07	1.618E-07	1.289E-07	5.031E-06	5.322E-06	4.486E-04	2.184E-07	3.119E-06	4.520E-04	4.606E-04
AHM	0.081	--	0.292	2.748	2.748	3.255E-06	1.600E-11	1.863E-09	3.257E-06	--	--	--	--	8.547E-08	2.099E-10	1.610E-08	1.018E-07	1.698E-07	1.352E-07	5.279E-06	5.584E-06	4.707E-04	2.292E-07	3.273E-06	4.742E-04	4.832E-04
AII	0.102	--	0.369	2.992	2.992	4.119E-06	2.025E-11	2.358E-09	4.121E-06	--	--	--	--	1.080E-07	2.652E-10	2.035E-08	1.286E-07	1.849E-07	1.472E-07	5.748E-06	6.080E-06	5.125E-04	2.495E-07	3.563E-06	5.163E-04	5.267E-04
AIJ	0.114	--	0.414	3.280	3.280	4.603E-06	2.263E-11	2.635E-09	4.606E-06	--	--	--	--	1.212E-07	2.976E-10	2.283E-08	1.443E-07	2.027E-07	1.614E-07	6.301E-06	6.665E-06	5.619E-04	2.735E-07	3.906E-06	5.660E-04	5.775E-04
AIK	0.107	--	0.386	2.935	2.935	4.321E-06	2.124E-11	2.473E-09	4.323E-06	--	--	--	--	1.130E-07	2.774E-10	2.128E-08	1.345E-07	1.814E-07	1.444E-07	5.638E-06	5.964E-06	5.028E-04	2.447E-07	3.496E-06	5.065E-04	5.169E-04
AIL	0.088	--	0.317	2.624	2.624	3.541E-06	1.741E-11	2.027E-09	3.543E-06	--	--	--	--	9.279E-08	2.278E-10	1.748E-08	1.105E-07	1.621E-07	1.291E-07	5.041E-06	5.332E-06	4.495E-04	2.188E-07	3.125E-06	4.528E-04	4.618E-04
AIM	0.080	--	0.289	2.707	2.707	3.218E-06	1.582E-11	1.842E-09	3.220E-06	--	--	--	--	8.460E-08	2.077E-10	1.593E-08	1.007E-07	1.673E-07	1.332E-07	5.200E-06	5.501E-06	4.637E-04	2.257E-07	3.224E-06	4.672E-04	4.760E-04
AJH	0.123	--	0.446	2.211	2.211	4.967E-06	2.441E-11	2.843E-09	4.970E-06	--	--	--	--	1.305E-07	3.205E-10	2.459E-08	1.555E-07	1.366E-07	1.088E-07	4.247E-06	4.493E-06	3.787E-04	1.844E-07	2.633E-06	3.816E-04	3.912E-04
AJI	0.089	--	0.323	2.841	2.841	3.602E-06	1.771E-11	2.062E-09	3.604E-06	--	--	--	--	9.455E-08	2.322E-10	1.781E-08	1.126E-07	1.755E-07	1.398E-07	5.458E-06	5.773E-06	4.867E-04	2.369E-07	3.384E-06	4.903E-04	4.998E-04
AJJ	0.108	--	0.391	2.845	2.845	4.361E-06	2.144E-11	2.496E-09	4.364E-06	--	--	--	--	1.145E-07	2.810E-10	2.156E-08	1.363E-07	1.758E-07	1.400E-07	5.465E-06	5.781E-06	4.873E-04	2.372E-07	3.388E-06	4.910E-04	5.013E-04
AJK	0.089	--	0.324	2.489	2.489	3.606E-06	1.773E-11	2.064E-09	3.608E-06	--	--	--	--	9.484E-08	2.329E-10	1.786E-08	1.129E-07	1.538E-07	1.225E-07	4.781E-06	5.058E-06	4.264E-04	2.076E-07	2.964E-06	4.295E-04	4.383E-04
AJL	0.083	--	0.299	2.620	2.620	3.331E-06	1.638E-11	1.907E-09	3.333E-06	--	--	--	--	8.752E-08	2.149E-10	1.649E-08	1.042E-07	1.619E-07	1.289E-07	5.033E-06	5.324E-06	4.488E-04	2.185E-07	3.120E-06	4.521E-04	4.609E-04
AJM	0.073	--	0.264	2.788	2.788	2.936E-06	1.443E-11	1.680E-09	2.937E-06	--	--	--	--	7.728E-08	1.897E-10	1.456E-08	9.202E-08	1.723E-07	1.372E-07	5.356E-06	5.665E-06	4.776E-04	2.325E-07	3.321E-06	4.811E-04	4.898E-04
AKG	0.102	--	0.370	1.881	1.881	4.119E-06	2.025E-11	2.358E-09	4.121E-06	--	--	--	--	1.083E-07	2.659E-10	2.040E-08	1.290E-07	1.162E-07	9.255E-08	3.613E-06	3.822E-06	3.222E-04	1.569E-07	2.240E-06	3.246E-04	3.327E-04
AKI	0.084	--	0.304	2.650	2.650	3.392E-06	1.667E-11	1.942E-09	3.394E-06	--	--	--	--	8.899E-08	2.185E-10	1.676E-08	1.060E-07	1.637E-07	1.304E-07	5.091E-06	5.385E-06	4.539E-04	2.210E-07	3.156E-06	4.573E-04	4.662E-04
AKJ	0.081	--	0.292	2.714	2.714	3.255E-06	1.600E-11	1.863E-09	3.257E-06	--	--	--	--	8.547E-08	2.099E-10	1.610E-08	1.018E-07	1.677E-07	1.335E-07	5.214E-06	5.515E-06	4.649E-04	2.263E-07	3.232E-06	4.684E-04	4.772E-04
AKK	0.074	--	0.267	2.370	2.370	2.988E-06	1.469E-11	1.711E-09	2.990E-06	--	--	--	--	7.816E-08	1.919E-10	1.472E-08	9.307E-08	1.464E-07	1.166E-07	4.553E-06	4.816E-06	4.060E-04	1.976E-07	2.823E-06	4.090E-04	4.169E-04
AKL	0.220	--	0.799	884.400	884.400	8.884E-06	4.367E-11	5.085E-09	8.889E-06	--	--	--	--	2.339E-07	5.743E-10	4.405E-08	2.785E-07	5.465E-05	4.351E-05	1.699E-03	1.797E-03	1.515E-01	7.375E-05	1.053E-03	1.526E-01	1.544E-01
AKL - Rem	0.080	--	0.292	2.329	2.329	3.247E-06	1.596E-11	1.858E-09	3.248E-06	--	--	--	--	8.547E-08	2.099E-10	1.610E-08	1.018E-07	1.439E-07	1.146E-07	4.474E-06	4.733E-06	3.990E-04	1.942E-07	2.774E-06	4.019E-04	4.100E-04
AKM	0.094	--	0.342	11.020	11.020	3.812E-06	1.874E-11	2.182E-09	3.814E-06	--	--	--	--	1.001E-07	2.458E-10	1.886E-08	1.192E-07	6.809E-07	5.422E-07	2.117E-05	2.239E-05	1.888E-03	9.190E-07	1.312E-05	1.902E-03	1.928E-03

Dose Calculations, Child Resident

Survey	95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				
Grid	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Total Dose
AAA	0.100	--	0.367	2.287	2.287	2.900E-01	1.515E-07	3.311E-04	2.904E-01	--	--	--	--	7.723E-03	2.277E-05	3.710E-03	1.146E-02	1.216E-02	2.511E-03	1.099E+00	1.114E+00	2.221E+01	9.836E-04	2.197E-01	2.243E+01	2.385E+01
AAB	0.126	--	0.465	2.090	2.090	3.662E-01	1.912E-07	4.180E-04	3.666E-01	--	--	--	--	9.785E-03	2.886E-05	4.701E-03	1.451E-02	1.111E-02	2.295E-03	1.004E+00	1.018E+00	2.030E+01	8.989E-04	2.007E-01	2.050E+01	2.190E+01
AAC	0.092	0.027	0.330	2.400	2.400	2.685E-01	1.402E-07	3.066E-04	2.688E-01	3.603E-01	2.695E-07	4.619E-05	3.604E-01	6.944E-03	2.048E-05	3.336E-03	1.030E-02	1.276E-02	2.635E-03	1.153E+00	1.169E+00	2.331E+01	1.032E-03	2.305E-01	2.354E+01	2.535E+01
AAD	0.213	0.043	0.772	2.403	2.403	6.190E-01	3.233E-07	7.067E-04	6.197E-01	5.715E-01	4.275E-07	7.326E-05	5.716E-01	1.624E-02	4.791E-05	7.804E-03	2.410E-02	1.277E-02	2.638E-03	1.155E+00	1.170E+00	2.334E+01	1.034E-03	2.308E-01	2.357E+01	2.596E+01
AAE	0.205	0.041	0.745	2.291	2.291	5.958E-01	3.111E-07	6.801E-04	5.965E-01	5.346E-01	3.998E-07	6.852E-05	5.346E-01	1.568E-02	4.623E-05	7.531E-03	2.325E-02	1.218E-02	2.516E-03	1.101E+00	1.116E+00	2.225E+01	9.854E-04	2.201E-01	2.247E+01	2.474E+01
AAF	0.132	0.030	0.479	2.428	2.428	3.836E-01	2.003E-07	4.379E-04	3.841E-01	3.947E-01	2.952E-07	5.059E-05	3.947E-01	1.008E-02	2.972E-05	4.842E-03	1.495E-02	1.290E-02	2.666E-03	1.167E+00	1.182E+00	2.358E+01	1.044E-03	2.332E-01	2.382E+01	2.579E+01
AAG	0.096	--	0.348	2.054	2.054	2.784E-01	1.454E-07	3.178E-04	2.787E-01	--	--	--	--	7.323E-03	2.159E-05	3.518E-03	1.086E-02	1.092E-02	2.255E-03	9.872E-01	1.000E+00	1.995E+01	8.834E-04	1.973E-01	2.015E+01	2.144E+01
AAH	0.168	--	0.608	2.501	2.501	4.882E-01	2.550E-07	5.574E-04	4.888E-01	--	--	--	--	1.279E-02	3.773E-05	6.146E-03	1.898E-02	1.329E-02	2.746E-03	1.202E+00	1.218E+00	2.429E+01	1.076E-03	2.402E-01	2.453E+01	2.626E+01
AAI	0.134	--	0.485	2.509	2.509	3.894E-01	2.034E-07	4.446E-04	3.899E-01	--	--	--	--	1.021E-02	3.010E-05	4.903E-03	1.514E-02	1.334E-02	2.755E-03	1.206E+00	1.222E+00	2.437E+01	1.079E-03	2.410E-01	2.461E+01	2.624E+01
AAJ	0.088	--	0.318	2.543	2.543	2.546E-01	1.330E-07	2.906E-04	2.549E-01	--	--	--	--	6.691E-03	1.973E-05	3.215E-03	9.926E-03	1.352E-02	2.792E-03	1.222E+00	1.238E+00	2.470E+01	1.094E-03	2.443E-01	2.495E+01	2.645E+01
AAK	0.068	--	0.246	2.111	2.111	1.967E-01	1.027E-07	2.246E-04	1.970E-01	--	--	--	--	5.176E-03	1.527E-05	2.487E-03	7.678E-03	1.122E-02	2.318E-03	1.015E+00	1.028E+00	2.050E+01	9.079E-04	2.028E-01	2.071E+01	2.194E+01
AAL	0.083	--	0.301	2.880	2.880	2.415E-01	1.261E-07	2.757E-04	2.418E-01	--	--	--	--	6.334E-03	1.868E-05	3.043E-03	9.395E-03	1.531E-02	3.162E-03	1.384E+00	1.403E+00	2.797E+01	1.239E-03	2.766E-01	2.825E+01	2.991E+01
ABA	0.141	--	0.523	2.593	2.593	4.098E-01	2.140E-07	4.678E-04	4.102E-01	--	--	--	--	1.101E-02	3.245E-05	5.287E-03	1.632E-02	1.378E-02	2.847E-03	1.246E+00	1.263E+00	2.519E+01	1.115E-03	2.491E-01	2.544E+01	2.713E+01
ABB	0.137	--	0.516	2.194	2.194	3.981E-01	2.079E-07	4.545E-04	3.986E-01	--	--	--	--	1.086E-02	3.202E-05	5.216E-03	1.611E-02	1.166E-02	2.409E-03	1.054E+00	1.069E+00	2.131E+01	9.436E-04	2.107E-01	2.152E+01	2.301E+01
ABC	0.158	0.032	0.575	2.132	2.132	4.592E-01	2.398E-07	5.242E-04	4.597E-01	4.250E-01	3.179E-07	5.448E-05	4.251E-01	1.210E-02	3.568E-05	5.813E-03	1.795E-02	1.133E-02	2.341E-03	1.025E+00	1.038E+00	2.071E+01	9.170E-04	2.048E-01	2.091E+01	2.285E+01
ABD	0.188	0.021	0.683	2.339	2.339	5.464E-01	2.853E-07	6.237E-04	5.470E-01	2.811E-01	2.103E-07	3.604E-05	2.812E-01	1.437E-02	4.238E-05	6.904E-03	2.132E-02	1.243E-02	2.568E-03	1.124E+00	1.139E+00	2.272E+01	1.006E-03	2.247E-01	2.294E+01	2.493E+01
ABE	0.298	0.037	1.122	2.135	2.135	8.660E-01	4.523E-07	9.887E-04	8.670E-01	4.857E-01	3.633E-07	6.226E-05	4.858E-01	2.361E-02	6.963E-05	1.134E-02	3.502E-02	1.135E-02	2.344E-03	1.026E+00	1.040E+00	2.074E+01	9.183E-04	2.051E-01	2.094E+01	2.337E+01
ABF	0.099	0.026	0.358	2.094	2.094	2.866E-01	1.496E-07	3.271E-04	2.869E-01	3.471E-01	2.596E-07	4.450E-05	3.472E-01	7.533E-03	2.222E-05	3.619E-03	1.117E-02	1.113E-02	2.299E-03	1.006E+00	1.020E+00	2.034E+01	9.006E-04	2.011E-01	2.054E+01	2.221E+01
ABG	0.416	--	1.510	8.871	8.871	1.209E+00	6.314E-07	1.380E-03	1.210E+00	--	--	--	--	3.177E-02	9.370E-05	1.526E-02	4.713E-02	4.715E-02	9.740E-03	4.263E+00	4.320E+00	8.616E+01	3.815E-03	8.521E-01	8.702E+01	9.260E+01
ABH	0.141	--	0.520	2.141	2.141	4.098E-01	2.140E-07	4.678E-04	4.102E-01	--	--	--	--	1.094E-02	3.227E-05	5.257E-03	1.623E-02	1.138E-02	2.351E-03	1.029E+00	1.043E+00	2.080E+01	9.208E-04	2.056E-01	2.100E+01	2.247E+01
ABI	0.135	--	0.491	2.712	2.712	3.923E-01	2.049E-07	4.479E-04	3.928E-01	--	--	--	--	1.033E-02	3.047E-05	4.963E-03	1.533E-02	1.441E-02	2.978E-03	1.303E+00	1.321E+00	2.634E+01	1.166E-03	2.605E-01	2.660E+01	2.833E+01
ABJ	0.071	--	0.258	2.169	2.169	2.066E-01	1.079E-07	2.359E-04	2.069E-01	--	--	--	--	5.429E-03	1.601E-05	2.608E-03	8.053E-03	1.153E-02	2.382E-03	1.042E+00	1.056E+00	2.107E+01	9.329E-04	2.083E-01	2.128E+01	2.255E+01
ABK	0.063	--	0.230	2.150	2.150	1.843E-01	9.622E-08	2.103E-04	1.845E-01	--	--	--	--	4.840E-03	1.427E-05	2.325E-03	7.179E-03	1.143E-02	2.361E-03	1.033E+00	1.047E+00	2.088E+01	9.247E-04	2.065E-01	2.109E+01	2.233E+01
ABL	0.074	--	0.267	2.636	2.636	2.136E-01	1.116E-07	2.439E-04	2.138E-01	--	--	--	--	5.618E-03	1.657E-05	2.699E-03	8.334E-03	1.401E-02	2.894E-03	1.267E+00	1.284E+00	2.560E+01	1.134E-03	2.532E-01	2.586E+01	2.736E+01
ABM	0.080	--	0.279	2.749	2.749	2.319E-01	1.211E-07	2.648E-04	2.322E-01	--	--	--	--	5.871E-03	1.731E-05	2.820E-03	8.708E-03	1.461E-02	3.018E-03	1.321E+00	1.339E+00	2.670E+01	1.182E-03	2.640E-01	2.697E+01	2.855E+01
ACH	1.548	--	5.930	207.400	207.400	4.499E+00	2.349E-06	5.136E-03	4.504E+00	--	--	--	--	1.248E-01	3.680E-04	5.994E-02	1.851E-01	1.102E+00	2.277E-01	9.968E+01	1.010E+02	2.014E+03	8.920E-02	1.992E+01	2.034E+03	2.140E+03
ACH - Rem	0.065	--	0.232	1.909	1.909	1.889E-01	9.865E-08	2.157E-04	1.891E-01	--	--	--	--	4.882E-03	1.440E-05	2.345E-03	7.241E-03	1.015E-02	2.096E-03	9.175E-01	9.297E-01	1.854E+01	8.211E-04	1.834E-01	1.873E+01	1.985E+01
ACI	0.085	--	0.308	1.772	1.772	2.470E-01	1.290E-07	2.820E-04	2.473E-01	--	--	--	--	6.481E-03	1.911E-05	3.113E-03	9.614E-03	9.418E-03	1.946E-03	8.516E-01	8.630E-01	1.721E+01	7.621E-04	1.702E-01	1.738E+01	1.850E+01
ACJ	0.072	--	0.262	2.013	2.013	2.095E-01	1.094E-07	2.392E-04	2.098E-01	--	--	--	--	5.513E-03	1.626E-05	2.648E-03	8.178E-03	1.070E-02	2.210E-03	9.674E-01	9.804E-01	1.955E+01	8.658E-04	1.933E-01	1.975E+01	2.094E+01
ACK	0.066	--	0.238	2.019	2.019	1.906E-01	9.956E-08	2.176E-04	1.909E-01	--	--	--	--	5.008E-03	1.477E-05	2.406E-03	7.429E-03	1.073E-02	2.217E-03	9.703E-01	9.833E-01	1.961E+01	8.684E-04	1.939E-01	1.981E+01	2.099E+01
ACL	0.088	--	0.326	2.209	2.209	2.543E-01	1.328E-07	2.903E-04	2.546E-01	--	--	--	--	6.860E-03	2.023E-05	3.295E-03	1.018E-02	1.174E-02	2.425E-03	1.062E+00	1.076E+00	2.146E+01	9.501E-04	2.122E-01	2.167E+01	2.301E+01
ACM	0.076	--	0.274	2.860	2.860	2.197E-01	1.147E-07	2.508E-04	2.200E-01	--	--	--	--	5.766E-03	1.700E-05	2.770E-03	8.552E-03	1.520E-02	3.140E-03	1.375E+00	1.393E+00	2.778E+01	1.230E-03	2.747E-01	2.806E+01	2.968E+01
ADI	0.097	--	0.347	2.220	2.220	2.816E-01	1.471E-07	3.215E-04	2.819E-01	--	--	--	--	7.302E-03	2.153E-05	3.508E-03	1.083E-02	1.180E-02	2.438E-03	1.067E+00	1.081E+00	2.156E+01	9.548E-04	2.132E-01	2.178E+01	2.315E+01
ADJ	0.070	--	0.235	2.030	2.030	2.040E-01	1.065E-07	2.329E-04	2.042E-01	--	--	--	--	4.945E-03	1.458E-05	2.376E-03	7.335E-03	1.079E-02	2.229E-03	9.756E-01	9.886E-01	1.972E+01	8.731E-04	1.950E-01	1.991E+01	2.111E+01
ADK	0.063	--	0.230	1.798	1.798	1.843E-01	9.622E-08	2.103E-04	1.845E-01	--	--	--	--	4.840E-03	1.427E-05	2.325E-03	7.179E-03	9.556E-03	1.974E-03	8.641E-01	8.756E-01	1.746E+01	7.733E-04	1.727E-01	1.764E+01	1.870E+01
ADL	0.054	--	0.196	1.843	1.843	1.566E-01	8.180E-08	1.788E-04	1.568E-01	--	--	--	--	4.124E-03	1.216E-05	1.981E-03	6.118E-03	9.796E-03	2.024E-03	8.857E-01	8.976E-01	1.790E+01	7.927E-04	1.770E-01	1.808E+01	1.914E+01
ADM	0.077	--	0.277	2.629	2.629	2.238E-01	1.169E-07	2.555E-04	2.240E-01	--	--	--	--	5.829E-03	1.719E-05	2.800E-03	8.646E-03	1.397E-02	2.887E-03	1.263E+00	1.280E+00	2.554E+01	1.131E-03	2.525E-01	2.579E+01	2.730E+01
AEJ	0.069	--	0.250	1.764	1.764	2.005E-01	1.047E-07	2.289E-04	2.008E-01	--	--	--	--	5.261E-03	1.551E-05	2.527E-03	7.803E-03	9.376E-03	1.937E-03	8.478E-01	8.591E-01	1.713E+01	7.587E-04	1.694E-01	1.730E+01	1.837E+01
AEK	0.072	--	0.260	2.192	2.192	2.081E-01	1.087E-07	2.375E-04	2.083E-01	--	--	--	--	5.471E-03	1.613E-05	2.628E-03	8.115E-03	1.165E-02	2.407E-03	1.053E+00	1.068E+00	2.129E+01	9.428E-04	2.105E-01	2.150E+01	2.279E+01
AEL	0.069	--	0.249	2.349	2.349	1.997E-01	1.043E-07	2.279E-04	1.999E-01	--	--	--	--	5.240E-03	1.545E-05	2.517E-03	7.772E-03	1.248E-02	2.579E-03	1.129E+00	1.144E+00	2.282E+01	1.010E-03	2.256E-01	2.304E+01	2.439E+01
AEM	0.112	--	0.401	2.890	2.890	3.255E-01	1.700E-07	3.716E-04	3.259E-01	--	--	--	--	8.438E-03	2.488E-05	4.054E-03	1.252E-02	1.536E-02	3.173E-03	1.389E+00	1.407E+00	2.807E+01	1.243E-03	2.776E-01	2.835E+01	3.010E+01
AFI - AGI	0.119	--	0.431	2.770	2.770	3.458E-01	1.806E-07	3.948E-04	3.462E-01	--	--	--	--	9.069E-03	2.675E-05	4.357E-03	1.345E-02	1.472E-02	3.041E-03	1.331E+00	1.349E+00	2.691E+01	1.191E-03	2.661E-01	2.717E+01	2.888E+01
AFJ	0.063	--	0.228	2.381	2.381	1.828E-01	9.546E-08	2.087E-04	1.830E-01	--	--	--	--	4.798E-03	1.415E-05	2.305E-03	7.117E-03	1.266E-02	2.614E-03	1.144E+00	1.160E+00	2.313E+01	1.024E-03	2.287E-01	2.336E+01	2.471E+01
AFK	0.063	--	0.230	2.180	2.180	1.843E-01	9.622E-08	2.103E-04	1.845E-01	--	--	--	--	4.840E-03	1.427E-05	2.325E-03	7.179E-03	1.159E-02	2.394E-03	1.048E+00	1.062E+00	2.117E+01	9.376E-04	2.094E-01	2.138E+01	2.264E+01
AFL	0.100	--	0.364	3.677	3.677	2.906E-01	1.518E-07	3.318E-04	2.910E-01	--	--	--	--	7.659E-03	2.259E-05	3.680E-03	1.136E-02	1.954E-02	4.037E-03	1.767E+00	1.791E+00	3.571E+01	1.581E-03	3.532E-01	3.607E+01	3.816E+01
AFM	0.097	--	0.351	2.236	2.236	2.813E-01	1.469E-07	3.212E-04	2.816E-01	--	--	--	--	7.386E-03	2.178E-05	3.548E-03	1.096E-02	1.188E-02	2.455E-03	1.075E+00	1.089E+00	2.172E+01	9.617E-04	2.148E-01	2.193E+01	2.332E+01
AGJ	0.107	--	0.388	3.322	3.322	3.110E-01	1.624E-07	3.550E-04	3.113E-01	--	--	--	--	8.164E-03	2.408E-05	3.922E-03	1.211E-02	1.766E-02	3.648E-03	1.597E+00	1.618E+00	3.227E+01	1.429E-03	3.191E-01	3.259E+01	3.453E+01
AGK	0.103	--	0.374	3.000	3.000	2.993E-01	1.563E-07	3.417E-04	2.997E-01	--	--	--	--	7.870E-03	2.321E-05	3.781E-03	1.167E-02	1.595E-02	3.294E-03	1.442E+00	1.461E+00	2.914E+01	1.290E-03	2.882E-01	2.943E+01	3.120E+01
AGL	0.092	--	0.334	2.800	2.800	2.680E-01	1.399E-07	3.059E-04	2.683E-01	--	--	--	--	7.028E-03	2.073E-05	3.376E-03	1.043E-02	1.488E-02	3.074E-03	1.346E+00	1.364E+00	2.720E+01	1.204E-03	2.689E-01	2.747E+01	2.911E+01
AGM	0.097	--	0.352	2.765	2.765	2.822E-01	1.474E-07	3.221E-04	2.825E-01	--	--	--	--	7.407E-03	2.184E-05	3.558E-03	1.099E-02	1.470E-02	3.036E-03	1.329E+00	1.347E+00	2.686E+01	1.189E-03	2.656E-01	2.712E+01	2.876E+01
AHH - AIH	0.112	--	0.404	2.533	2.533	3.255E-01	1.700E-07	3.716E-04	3.259E-01	--	--	--	--	8.501E-03	2.507E-05	4.084E-03	1.261E-02	1.346E-02	2.781E-03	1.217E+00	1.234E+00	2.460E+01	1.089E-03	2.433E-01	2.485E+01	2.642E+01
AHI	0.074	--	0.264	2.097	2.097	2.145E-01	1.120E-07	2.448E-04	2.147E-01	--	--	--	--	5.555E-03	1.638E-05	2.669E-03	8.240E-03	1.115E-02	2.303E-03	1.008E+00	1.021E+00	2.037E+01	9.019E-04	2.014E-01	2.057E+01	2.181E+01
AHJ	0.100	--	0.361	3.213	3.213	2.895E-01	1.512E-07	3.304E-04	2.898E-01	--	--	--	--	7.596E-03	2.240E-05	3.649E-03	1.127E-02	1.708E-02	3.528E-03	1.544E+00	1.565E+00	3.121E+01	1.382E-03	3.086E-01	3.152E+01	3.338E+01
AHK	0.086	--	0.311	2.610	2.610	2.494E-01	1.302E-07	2.847E-04	2.496E-01	--	--	--	--	6.544E-03	1.930E-05	3.144E-03	9.707E-03	1.387E-02	2.866E-03	1.254E+00	1.271E+00	2.535E+01	1.123E-03	2.507E-01	2.560E+01	2.713E+01
AHL	0.079	--	0.287	2.619	2.619	2.299E-01	1.201E-07	2.624E-04	2.301E-01	--	--	--	--	6.039E-03	1.781E-05	2.901E-03	8.958E-03	1.392E-02	2.876E-03	1.259E+00	1.275E+00	2.544E+01	1.126E-03	2.516E-01	2.569E+01	2.721E+01
AHM	0.081	--	0.292	2.748	2.748	2.342E-01	1.223E-07	2.674E-04	2.345E-01	--	--	--	--	6.144E-03	1.812E-05	2.952E-03	9.114E-03	1.461E-02	3.017E-03	1.321E+00	1.338E+00	2.669E+01	1.182E-03	2.639E-01	2.696E+01	2.854E+01
AII	0.102	--	0.369	2.992	2.992	2.964E-01	1.548E-07	3.384E-04	2.968E-01	--	--	--	--	7.765E-03	2.290E-05	3.730E-03	1.152E-02	1.590E-02	3.285E-03	1.438E+00	1.457E+00	2.906E+01	1.287E-03	2.874E-01	2.935E+01	3.112E+01
AIJ	0.114	--	0.414	3.280	3.280	3.313E-01	1.730E-07	3.782E-04	3.317E-01	--	--	--	--	8.712E-03	2.569E-05	4.185E-03	1.292E-02	1.743E-02	3.601E-03	1.576E+00	1.597E+00	3.186E+01	1.411E-03	3.150E-01	3.218E+01	3.412E+01
AIK	0.107	--	0.386	2.935	2.935	3.110E-01	1.624E-07	3.550E-04	3.113E-01	--	--	--	--	8.122E-03	2.395E-05	3.902E-03	1.205E-02	1.560E-02	3.223E-03	1.411E+00	1.429E+00	2.851E+01	1.262E-03	2.819E-01	2.879E+01	3.054E+01
AIL	0.088	--	0.317	2.624	2.624	2.549E-01	1.331E-07	2.910E-04	2.552E-01	--	--	--	--	6.670E-03	1.967E-05	3.204E-03	9.895E-03	1.395E-02	2.881E-03	1.261E+00	1.278E+00	2.549E+01	1.129E-03	2.520E-01	2.574E+01	2.728E+01
AIM	0.080	--	0.289	2.707	2.707	2.316E-01	1.210E-07	2.644E-04	2.319E-01	--	--	--	--	6.081E-03	1.793E-05	2.921E-03	9.021E-03	1.439E-02	2.972E-03	1.301E+00	1.318E+00	2.629E+01	1.164E-03	2.600E-01	2.655E+01	2.811E+01
AJH	0.123	--	0.446	2.211	2.211	3.575E-01	1.867E-07	4.081E-04	3.579E-01	--	--	--	--	9.385E-03	2.768E-05	4.508E-03	1.392E-02	1.175E-02	2.428E-03	1.063E+00	1.077E+00	2.148E+01	9.510E-04	2.124E-01	2.169E+01	2.314E+01
AJI	0.089	--	0.323	2.841	2.841	2.592E-01	1.354E-07	2.959E-04	2.595E-01	--	--	--	--	6.797E-03	2.004E-05	3.265E-03	1.008E-02	1.510E-02	3.119E-03	1.365E+00	1.384E+00	2.759E+01	1.222E-03	2.729E-01	2.787E+01	2.952E+01
AJJ	0.108	--	0.391	2.845	2.845	3.139E-01	1.639E-07	3.583E-04	3.142E-01	--	--	--	--	8.228E-03	2.426E-05	3.953E-03	1.220E-02	1.512E-02	3.124E-03	1.367E+00	1.386E+00	2.763E+01	1.224E-03	2.733E-01	2.791E+01	2.962E+01
AJK	0.089	--	0.324	2.489	2.489	2.595E-01	1.355E-07	2.963E-04	2.598E-01	--	--	--	--	6.818E-03	2.011E-05	3.275E-03	1.011E-02	1.323E-02	2.733E-03	1.196E+00	1.212E+00	2.418E+01	1.071E-03	2.391E-01	2.442E+01	2.590E+01
AJL	0.083	--	0.299	2.620	2.620	2.398E-01	1.252E-07	2.737E-04	2.400E-01	--	--	--	--	6.292E-03	1.855E-05	3.023E-03	9.333E-03	1.393E-02	2.877E-03	1.259E+00	1.276E+00	2.545E+01	1.127E-03	2.517E-01	2.570E+01	2.723E+01
AJM	0.073	--	0.264	2.788	2.788	2.113E-01	1.103E-07	2.412E-04	2.115E-01	--	--	--	--	5.555E-03	1.638E-05	2.669E-03	8.240E-03	1.482E-02	3.061E-03	1.340E+00	1.358E+00	2.708E+01	1.199E-03	2.678E-01	2.735E+01	2.893E+01
AKG	0.102	--	0.370	1.881	1.881	2.964E-01	1.548E-07	3.384E-04	2.968E-01	--	--	--	--	7.786E-03	2.296E-05	3.740E-03	1.155E-02	9.998E-03	2.065E-03	9.040E-01	9.161E-01	1.827E+01	8.090E-04	1.807E-01	1.845E+01	1.968E+01
AKI	0.084	--	0.304	2.650	2.650	2.441E-01	1.275E-07	2.787E-04	2.444E-01	--	--	--	--	6.397E-03	1.886E-05	3.073E-03	9.489E-03	1.408E-02	2.910E-03	1.274E+00	1.291E+00	2.574E+01	1.140E-03	2.545E-01	2.600E+01	2.754E+01
AKJ	0.081	--	0.292	2.714	2.714	2.342E-01	1.223E-07	2.674E-04	2.345E-01	--	--	--	--	6.144E-03	1.812E-05	2.952E-03	9.114E-03	1.442E-02	2.980E-03	1.304E+00	1.322E+00	2.636E+01	1.167E-03	2.607E-01	2.662E+01	2.819E+01
AKK	0.074	--	0.267	2.370	2.370	2.151E-01	1.123E-07	2.455E-04	2.153E-01	--	--	--	--	5.618E-03	1.657E-05	2.699E-03	8.334E-03	1.260E-02	2.602E-03	1.139E+00	1.154E+00	2.302E+01	1.019E-03	2.276E-01	2.325E+01	2.463E+01
AKL	0.220	--	0.799	884.400	884.400	6.394E-01	3.339E-07	7.299E-04	6.401E-01	--	--	--	--	1.681E-02	4.958E-05	8.077E-03	2.494E-02	4.701E+00	9.711E-01	4.250E+02	4.307E+02	8.590E+03	3.804E-01	8.495E+01	8.676E+03	9.107E+03
AKL - Rem	0.080	--	0.292	2.329	2.329	2.337E-01	1.220E-07	2.667E-04	2.339E-01	--	--	--	--	6.144E-03	1.812E-05	2.952E-03	9.114E-03	1.238E-02	2.557E-03	1.119E+00	1.134E+00	2.262E+01	1.002E-03	2.237E-01	2.285E+01	2.422E+01
AKM	0.094	--	0.342	11.020	11.020	2.743E-01	1.433E-07	3.132E-04	2.747E-01	--	--	--	--	7.196E-03	2.122E-05	3.457E-03	1.067E-02	5.857E-02	1.210E-02	5.296E+00	5.367E+00	1.070E+02	4.740E-03	1.058E+00	1.081E+02	1.138E+02

Risk Calculations, Child Resident

Survey Grid	95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				Total Risk
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	
AAA	0.100	--	0.367	2.287	2.287	1.226E-06	3.013E-12	1.403E-09	1.227E-06	--	--	--	--	3.429E-08	4.211E-11	1.292E-08	4.725E-08	4.631E-08	1.844E-08	2.879E-06	2.944E-06	1.004E-04	2.028E-08	7.460E-07	1.012E-04	1.054E-04
AAB	0.126	--	0.465	2.090	2.090	1.548E-06	3.805E-12	1.772E-09	1.549E-06	--	--	--	--	4.345E-08	5.336E-11	1.637E-08	5.987E-08	4.232E-08	1.685E-08	2.631E-06	2.690E-06	9.179E-05	1.853E-08	6.818E-07	9.249E-05	9.679E-05
AAC	0.092	0.027	0.330	2.400	2.400	1.135E-06	2.790E-12	1.299E-09	1.136E-06	1.220E-06	5.504E-13	1.695E-10	1.220E-06	3.084E-08	3.787E-11	1.161E-08	4.249E-08	4.860E-08	1.935E-08	3.022E-06	3.090E-06	1.054E-04	2.128E-08	7.829E-07	1.062E-04	1.117E-04
AAD	0.213	0.043	0.772	2.403	2.403	2.616E-06	6.431E-12	2.995E-09	2.619E-06	1.935E-06	8.730E-13	2.689E-10	1.935E-06	7.214E-08	8.858E-11	2.717E-08	9.940E-08	4.866E-08	1.937E-08	3.025E-06	3.093E-06	1.055E-04	2.130E-08	7.839E-07	1.063E-04	1.141E-04
AAE	0.205	0.041	0.745	2.291	2.291	2.518E-06	6.190E-12	2.883E-09	2.521E-06	1.810E-06	8.165E-13	2.515E-10	1.810E-06	6.962E-08	8.548E-11	2.622E-08	9.592E-08	4.639E-08	1.847E-08	2.884E-06	2.949E-06	1.006E-04	2.031E-08	7.473E-07	1.014E-04	1.088E-04
AAF	0.132	0.030	0.479	2.428	2.428	1.621E-06	3.986E-12	1.856E-09	1.623E-06	1.336E-06	6.028E-13	1.857E-10	1.336E-06	4.476E-08	5.496E-11	1.686E-08	6.167E-08	4.917E-08	1.957E-08	3.057E-06	3.126E-06	1.066E-04	2.153E-08	7.920E-07	1.075E-04	1.136E-04
AAG	0.096	--	0.348	2.054	2.054	1.177E-06	2.893E-12	1.347E-09	1.178E-06	--	--	--	--	3.252E-08	3.993E-11	1.225E-08	4.481E-08	4.159E-08	1.656E-08	2.586E-06	2.644E-06	9.021E-05	1.821E-08	6.700E-07	9.090E-05	9.477E-05
AAH	0.168	--	0.608	2.501	2.501	2.064E-06	5.073E-12	2.362E-09	2.066E-06	--	--	--	--	5.681E-08	6.976E-11	2.140E-08	7.828E-08	5.065E-08	2.016E-08	3.149E-06	3.220E-06	1.098E-04	2.217E-08	8.158E-07	1.107E-04	1.160E-04
AAI	0.134	--	0.485	2.509	2.509	1.646E-06	4.046E-12	1.884E-09	1.648E-06	--	--	--	--	4.532E-08	5.565E-11	1.707E-08	6.245E-08	5.081E-08	2.023E-08	3.159E-06	3.230E-06	1.102E-04	2.224E-08	8.184E-07	1.110E-04	1.160E-04
AAJ	0.088	--	0.318	2.543	2.543	1.076E-06	2.645E-12	1.232E-09	1.077E-06	--	--	--	--	2.972E-08	3.649E-11	1.119E-08	4.094E-08	5.150E-08	2.050E-08	3.202E-06	3.274E-06	1.117E-04	2.255E-08	8.295E-07	1.125E-04	1.169E-04
AAK	0.068	--	0.246	2.111	2.111	8.316E-07	2.044E-12	9.520E-10	8.325E-07	--	--	--	--	2.299E-08	2.823E-11	8.658E-09	3.167E-08	4.275E-08	1.702E-08	2.658E-06	2.718E-06	9.272E-05	1.872E-08	6.886E-07	9.342E-05	9.700E-05
AAL	0.083	--	0.301	2.880	2.880	1.021E-06	2.509E-12	1.169E-09	1.022E-06	--	--	--	--	2.813E-08	3.454E-11	1.059E-08	3.876E-08	5.832E-08	2.322E-08	3.626E-06	3.707E-06	1.265E-04	2.553E-08	9.395E-07	1.275E-04	1.322E-04
ABA	0.141	--	0.523	2.593	2.593	1.732E-06	4.257E-12	1.983E-09	1.734E-06	--	--	--	--	4.887E-08	6.001E-11	1.841E-08	6.734E-08	5.251E-08	2.090E-08	3.265E-06	3.338E-06	1.139E-04	2.299E-08	8.458E-07	1.148E-04	1.199E-04
ABB	0.137	--	0.516	2.194	2.194	1.683E-06	4.137E-12	1.926E-09	1.685E-06	--	--	--	--	4.822E-08	5.921E-11	1.816E-08	6.644E-08	4.443E-08	1.769E-08	2.762E-06	2.824E-06	9.636E-05	1.945E-08	7.157E-07	9.710E-05	1.017E-04
ABC	0.158	0.032	0.575	2.132	2.132	1.941E-06	4.771E-12	2.222E-09	1.943E-06	1.439E-06	6.492E-13	2.000E-10	1.439E-06	5.373E-08	6.598E-11	2.024E-08	7.403E-08	4.317E-08	1.719E-08	2.684E-06	2.745E-06	9.364E-05	1.890E-08	6.955E-07	9.435E-05	1.006E-04
ABD	0.188	0.021	0.683	2.339	2.339	2.309E-06	5.677E-12	2.644E-09	2.312E-06	9.517E-07	4.294E-13	1.323E-10	9.518E-07	6.382E-08	7.837E-11	2.404E-08	8.794E-08	4.736E-08	1.885E-08	2.945E-06	3.011E-06	1.027E-04	2.074E-08	7.630E-07	1.035E-04	1.099E-04
ABE	0.298	0.037	1.122	2.135	2.135	3.660E-06	8.998E-12	4.190E-09	3.665E-06	1.644E-06	7.419E-13	2.285E-10	1.645E-06	1.048E-07	1.287E-10	3.949E-08	1.445E-07	4.323E-08	1.721E-08	2.688E-06	2.748E-06	9.377E-05	1.893E-08	6.964E-07	9.448E-05	1.027E-04
ABF	0.099	0.026	0.358	2.094	2.094	1.211E-06	2.977E-12	1.387E-09	1.213E-06	1.175E-06	5.302E-13	1.633E-10	1.175E-06	3.345E-08	4.108E-11	1.260E-08	4.609E-08	4.240E-08	1.688E-08	2.636E-06	2.696E-06	9.197E-05	1.857E-08	6.831E-07	9.267E-05	9.780E-05
ABG	0.416	--	1.510	8.871	8.871	5.110E-06	1.256E-11	5.850E-09	5.116E-06	--	--	--	--	1.411E-07	1.733E-10	5.315E-08	1.944E-07	1.796E-07	7.151E-08	1.117E-05	1.142E-05	3.896E-04	7.865E-08	2.894E-06	3.926E-04	4.093E-04
ABH	0.141	--	0.520	2.141	2.141	1.732E-06	4.257E-12	1.983E-09	1.734E-06	--	--	--	--	4.859E-08	5.967E-11	1.830E-08	6.695E-08	4.336E-08	1.726E-08	2.696E-06	2.756E-06	9.403E-05	1.898E-08	6.984E-07	9.475E-05	9.931E-05
ABI	0.135	--	0.491	2.712	2.712	1.658E-06	4.076E-12	1.898E-09	1.660E-06	--	--	--	--	4.588E-08	5.634E-11	1.728E-08	6.322E-08	5.492E-08	2.186E-08	3.414E-06	3.491E-06	1.191E-04	2.404E-08	8.847E-07	1.200E-04	1.252E-04
ABJ	0.071	--	0.258	2.169	2.169	8.733E-07	2.147E-12	9.998E-10	8.743E-07	--	--	--	--	2.411E-08	2.960E-11	9.081E-09	3.322E-08	4.392E-08	1.748E-08	2.731E-06	2.792E-06	9.526E-05	1.923E-08	7.075E-07	9.599E-05	9.969E-05
ABK	0.063	--	0.230	2.150	2.150	7.788E-07	1.914E-12	8.915E-10	7.796E-07	--	--	--	--	2.149E-08	2.639E-11	8.095E-09	2.961E-08	4.354E-08	1.733E-08	2.707E-06	2.768E-06	9.443E-05	1.906E-08	7.013E-07	9.515E-05	9.873E-05
ABL	0.074	--	0.267	2.636	2.636	9.028E-07	2.219E-12	1.034E-09	9.038E-07	--	--	--	--	2.495E-08	3.064E-11	9.397E-09	3.438E-08	5.338E-08	2.125E-08	3.319E-06	3.393E-06	1.158E-04	2.337E-08	8.599E-07	1.167E-04	1.210E-04
ABM	0.080	--	0.279	2.749	2.749	9.802E-07	2.410E-12	1.122E-09	9.813E-07	--	--	--	--	2.607E-08	3.201E-11	9.820E-09	3.592E-08	5.567E-08	2.216E-08	3.461E-06	3.539E-06	1.207E-04	2.437E-08	8.967E-07	1.217E-04	1.262E-04
ACH	1.548	--	5.930	207.400	207.400	1.901E-05	4.674E-11	2.177E-08	1.904E-05	--	--	--	--	5.541E-07	6.804E-10	2.087E-07	7.635E-07	4.200E-06	1.672E-06	2.611E-04	2.670E-04	9.109E-03	1.839E-06	6.765E-05	9.179E-03	9.465E-03
ACH - Rem	0.065	--	0.232	1.909	1.909	7.984E-07	1.963E-12	9.140E-10	7.993E-07	--	--	--	--	2.168E-08	2.662E-11	8.166E-09	2.987E-08	3.866E-08	1.539E-08	2.403E-06	2.457E-06	8.384E-05	1.693E-08	6.227E-07	8.448E-05	8.777E-05
ACI	0.085	--	0.308	1.772	1.772	1.044E-06	2.567E-12	1.195E-09	1.045E-06	--	--	--	--	2.878E-08	3.534E-11	1.084E-08	3.966E-08	3.588E-08	1.428E-08	2.231E-06	2.281E-06	7.783E-05	1.571E-08	5.780E-07	7.842E-05	8.179E-05
ACJ	0.072	--	0.262	2.013	2.013	8.856E-07	2.177E-12	1.014E-09	8.866E-07	--	--	--	--	2.448E-08	3.006E-11	9.221E-09	3.373E-08	4.076E-08	1.623E-08	2.534E-06	2.591E-06	8.841E-05	1.785E-08	6.566E-07	8.909E-05	9.260E-05
ACK	0.066	--	0.238	2.019	2.019	8.058E-07	1.981E-12	9.225E-10	8.067E-07	--	--	--	--	2.224E-08	2.731E-11	8.377E-09	3.064E-08	4.088E-08	1.628E-08	2.542E-06	2.599E-06	8.867E-05	1.790E-08	6.586E-07	8.935E-05	9.279E-05
ACL	0.088	--	0.326	2.209	2.209	1.075E-06	2.642E-12	1.230E-09	1.076E-06	--	--	--	--	3.046E-08	3.741E-11	1.147E-08	4.197E-08	4.473E-08	1.781E-08	2.781E-06	2.844E-06	9.702E-05	1.958E-08	7.206E-07	9.776E-05	1.017E-04
ACM	0.076	--	0.274	2.860	2.860	9.286E-07	2.283E-12	1.063E-09	9.297E-07	--	--	--	--	2.560E-08	3.144E-11	9.644E-09	3.528E-08	5.792E-08	2.305E-08	3.601E-06	3.682E-06	1.256E-04	2.536E-08	9.329E-07	1.266E-04	1.312E-04
ADI	0.097	--	0.347	2.220	2.220	1.190E-06	2.926E-12	1.363E-09	1.192E-06	--	--	--	--	3.243E-08	3.982E-11	1.221E-08	4.468E-08	4.496E-08	1.790E-08	2.795E-06	2.858E-06	9.750E-05	1.968E-08	7.242E-07	9.825E-05	1.023E-04
ADJ	0.070	--	0.235	2.030	2.030	8.623E-07	2.120E-12	9.871E-10	8.633E-07	--	--	--	--	2.196E-08	2.696E-11	8.271E-09	3.026E-08	4.111E-08	1.636E-08	2.556E-06	2.613E-06	8.916E-05	1.800E-08	6.622E-07	8.984E-05	9.334E-05
ADK	0.063	--	0.230	1.798	1.798	7.788E-07	1.914E-12	8.915E-10	7.796E-07	--	--	--	--	2.149E-08	2.639E-11	8.095E-09	2.961E-08	3.641E-08	1.449E-08	2.264E-06	2.315E-06	7.897E-05	1.594E-08	5.865E-07	7.957E-05	8.269E-05
ADL	0.054	--	0.196	1.843	1.843	6.621E-07	1.627E-12	7.579E-10	6.628E-07	--	--	--	--	1.832E-08	2.249E-11	6.898E-09	2.524E-08	3.732E-08	1.486E-08	2.320E-06	2.373E-06	8.094E-05	1.634E-08	6.012E-07	8.156E-05	8.462E-05
ADM	0.077	--	0.277	2.629	2.629	9.458E-07	2.325E-12	1.083E-09	9.469E-07	--	--	--	--	2.588E-08	3.178E-11	9.749E-09	3.567E-08	5.324E-08	2.119E-08	3.310E-06	3.384E-06	1.155E-04	2.331E-08	8.576E-07	1.163E-04	1.207E-04
AEJ	0.069	--	0.250	1.764	1.764	8.475E-07	2.083E-12	9.703E-10	8.485E-07	--	--	--	--	2.336E-08	2.869E-11	8.799E-09	3.219E-08	3.572E-08	1.422E-08	2.221E-06	2.271E-06	7.747E-05	1.564E-08	5.754E-07	7.807E-05	8.122E-05
AEK	0.072	--	0.260	2.192	2.192	8.795E-07	2.162E-12	1.007E-09	8.805E-07	--	--	--	--	2.430E-08	2.983E-11	9.151E-09	3.348E-08	4.439E-08	1.767E-08	2.760E-06	2.822E-06	9.627E-05	1.943E-08	7.150E-07	9.701E-05	1.007E-04
AEL	0.069	--	0.249	2.349	2.349	8.439E-07	2.074E-12	9.661E-10	8.448E-07	--	--	--	--	2.327E-08	2.857E-11	8.764E-09	3.206E-08	4.757E-08	1.894E-08	2.957E-06	3.024E-06	1.032E-04	2.083E-08	7.662E-07	1.040E-04	1.079E-04
AEM	0.112	--	0.401	2.890	2.890	1.376E-06	3.382E-12	1.575E-09	1.377E-06	--	--	--	--	3.747E-08	4.601E-11	1.411E-08	5.163E-08	5.852E-08	2.330E-08	3.639E-06	3.720E-06	1.269E-04	2.562E-08	9.427E-07	1.279E-04	1.330E-04
AFI - AGI	0.119	--	0.431	2.770	2.770	1.462E-06	3.593E-12	1.673E-09	1.463E-06	--	--	--	--	4.027E-08	4.945E-11	1.517E-08	5.549E-08	5.609E-08	2.233E-08	3.487E-06	3.566E-06	1.217E-04	2.456E-08	9.036E-07	1.226E-04	1.277E-04
AFJ	0.063	--	0.228	2.381	2.381	7.726E-07	1.899E-12	8.845E-10	7.735E-07	--	--	--	--	2.131E-08	2.616E-11	8.025E-09	2.936E-08	4.822E-08	1.919E-08	2.998E-06	3.065E-06	1.046E-04	2.111E-08	7.767E-07	1.054E-04	1.092E-04
AFK	0.063	--	0.230	2.180	2.180	7.788E-07	1.914E-12	8.915E-10	7.796E-07	--	--	--	--	2.149E-08	2.639E-11	8.095E-09	2.961E-08	4.415E-08	1.757E-08	2.745E-06	2.806E-06	9.575E-05	1.933E-08	7.111E-07	9.648E-05	1.001E-04
AFL	0.100	--	0.364	3.677	3.677	1.228E-06	3.019E-12	1.406E-09	1.230E-06	--	--	--	--	3.401E-08	4.177E-11	1.281E-08	4.687E-08	7.446E-08	2.964E-08	4.629E-06	4.733E-06	1.615E-04	3.260E-08	1.199E-06	1.627E-04	1.687E-04
AFM	0.097	--	0.351	2.236	2.236	1.189E-06	2.923E-12	1.361E-09	1.190E-06	--	--	--	--	3.280E-08	4.027E-11	1.235E-08	4.519E-08	4.528E-08	1.802E-08	2.815E-06	2.878E-06	9.821E-05	1.982E-08	7.294E-07	9.895E-05	1.031E-04
AGJ	0.107	--	0.388	3.322	3.322	1.314E-06	3.231E-12	1.505E-09	1.316E-06	--	--	--	--	3.626E-08	4.452E-11	1.366E-08	4.996E-08	6.727E-08	2.678E-08	4.182E-06	4.276E-06	1.459E-04	2.945E-08	1.084E-06	1.470E-04	1.527E-04
AGK	0.103	--	0.374	3.000	3.000	1.265E-06	3.110E-12	1.448E-09	1.267E-06	--	--	--	--	3.495E-08	4.291E-11	1.316E-08	4.815E-08	6.075E-08	2.418E-08	3.777E-06	3.862E-06	1.318E-04	2.660E-08	9.786E-07	1.328E-04	1.379E-04
AGL	0.092	--	0.334	2.800	2.800	1.133E-06	2.784E-12	1.297E-09	1.134E-06	--	--	--	--	3.121E-08	3.832E-11	1.176E-08	4.300E-08	5.670E-08	2.257E-08	3.525E-06	3.604E-06	1.230E-04	2.482E-08	9.134E-07	1.239E-04	1.287E-04
AGM	0.097	--	0.352	2.765	2.765	1.193E-06	2.932E-12	1.365E-09	1.194E-06	--	--	--	--	3.289E-08	4.039E-11	1.239E-08	4.532E-08	5.599E-08	2.229E-08	3.481E-06	3.559E-06	1.214E-04	2.451E-08	9.019E-07	1.224E-04	1.272E-04
AHH - AIH	0.112	--	0.404	2.533	2.533	1.376E-06	3.382E-12	1.575E-09	1.377E-06	--	--	--	--	3.775E-08	4.636E-11	1.422E-08	5.202E-08	5.129E-08	2.042E-08	3.189E-06	3.261E-06	1.112E-04	2.246E-08	8.263E-07	1.121E-04	1.168E-04
AHI	0.074	--	0.264	2.097	2.097	9.065E-07	2.228E-12	1.038E-09	9.075E-07	--	--	--	--	2.467E-08	3.029E-11	9.292E-09	3.399E-08	4.246E-08	1.690E-08	2.640E-06	2.699E-06	9.210E-05	1.859E-08	6.840E-07	9.280E-05	9.644E-05
AHJ	0.100	--	0.361	3.213	3.213	1.223E-06	3.007E-12	1.401E-09	1.225E-06	--	--	--	--	3.373E-08	4.142E-11	1.271E-08	4.648E-08	6.506E-08	2.590E-08	4.045E-06	4.136E-06	1.411E-04	2.849E-08	1.048E-06	1.422E-04	1.476E-04
AHK	0.086	--	0.311	2.610	2.610	1.054E-06	2.591E-12	1.207E-09	1.055E-06	--	--	--	--	2.906E-08	3.569E-11	1.095E-08	4.004E-08	5.285E-08	2.104E-08	3.286E-06	3.360E-06	1.146E-04	2.314E-08	8.514E-07	1.155E-04	1.200E-04
AHL	0.079	--	0.287	2.619	2.619	9.716E-07	2.388E-12	1.112E-09	9.727E-07	--	--	--	--	2.682E-08	3.293E-11	1.010E-08	3.695E-08	5.303E-08	2.111E-08	3.297E-06	3.371E-06	1.150E-04	2.322E-08	8.543E-07	1.159E-04	1.203E-04
AHM	0.081	--	0.292	2.748	2.748	9.900E-07	2.434E-12	1.133E-09	9.912E-07	--	--	--	--	2.729E-08	3.351E-11	1.028E-08	3.760E-08	5.565E-08	2.215E-08	3.460E-06	3.538E-06	1.207E-04	2.436E-08	8.964E-07	1.216E-04	1.262E-04
AII	0.102	--	0.369	2.992	2.992	1.253E-06	3.080E-12	1.434E-09	1.254E-06	--	--	--	--	3.448E-08	4.234E-11	1.299E-08	4.751E-08	6.059E-08	2.412E-08	3.767E-06	3.852E-06	1.314E-04	2.653E-08	9.760E-07	1.324E-04	1.376E-04
AIJ	0.114	--	0.414	3.280	3.280	1.400E-06	3.442E-12	1.603E-09	1.402E-06	--	--	--	--	3.869E-08	4.750E-11	1.457E-08	5.330E-08	6.642E-08	2.644E-08	4.130E-06	4.222E-06	1.441E-04	2.908E-08	1.070E-06	1.452E-04	1.508E-04
AIK	0.107	--	0.386	2.935	2.935	1.314E-06	3.231E-12	1.505E-09	1.316E-06	--	--	--	--	3.607E-08	4.429E-11	1.359E-08	4.970E-08	5.943E-08	2.366E-08	3.695E-06	3.778E-06	1.289E-04	2.602E-08	9.574E-07	1.299E-04	1.350E-04
AIL	0.088	--	0.317	2.624	2.624	1.077E-06	2.648E-12	1.233E-09	1.078E-06	--	--	--	--	2.962E-08	3.637E-11	1.116E-08	4.082E-08	5.314E-08	2.115E-08	3.304E-06	3.378E-06	1.152E-04	2.326E-08	8.559E-07	1.161E-04	1.206E-04
AIM	0.080	--	0.289	2.707	2.707	9.790E-07	2.407E-12	1.121E-09	9.801E-07	--	--	--	--	2.701E-08	3.316E-11	1.017E-08	3.721E-08	5.482E-08	2.182E-08	3.408E-06	3.485E-06	1.189E-04	2.400E-08	8.830E-07	1.198E-04	1.243E-04
AJH	0.123	--	0.446	2.211	2.211	1.511E-06	3.714E-12	1.730E-09	1.513E-06	--	--	--	--	4.167E-08	5.117E-11	1.570E-08	5.742E-08	4.477E-08	1.782E-08	2.784E-06	2.846E-06	9.711E-05	1.960E-08	7.212E-07	9.785E-05	1.023E-04
AJI	0.089	--	0.323	2.841	2.841	1.096E-06	2.693E-12	1.254E-09	1.097E-06	--	--	--	--	3.018E-08	3.706E-11	1.137E-08	4.159E-08	5.753E-08	2.290E-08	3.577E-06	3.657E-06	1.248E-04	2.519E-08	9.267E-07	1.257E-04	1.305E-04
AJJ	0.108	--	0.391	2.845	2.845	1.327E-06	3.261E-12	1.519E-09	1.328E-06	--	--	--	--	3.654E-08	4.486E-11	1.376E-08	5.034E-08	5.761E-08	2.293E-08	3.582E-06	3.662E-06	1.250E-04	2.522E-08	9.280E-07	1.259E-04	1.309E-04
AJK	0.089	--	0.324	2.489	2.489	1.097E-06	2.696E-12	1.256E-09	1.098E-06	--	--	--	--	3.028E-08	3.718E-11	1.140E-08	4.172E-08	5.040E-08	2.006E-08	3.134E-06	3.204E-06	1.093E-04	2.207E-08	8.119E-07	1.102E-04	1.145E-04
AJL	0.083	--	0.299	2.620	2.620	1.013E-06	2.491E-12	1.160E-09	1.015E-06	--	--	--	--	2.794E-08	3.431E-11	1.052E-08	3.850E-08	5.306E-08	2.112E-08	3.299E-06	3.373E-06	1.151E-04	2.323E-08	8.546E-07	1.159E-04	1.204E-04
AJM	0.073	--	0.264	2.788	2.788	8.930E-07	2.195E-12	1.022E-09	8.940E-07	--	--	--	--	2.467E-08	3.029E-11	9.292E-09	3.399E-08	5.646E-08	2.247E-08	3.510E-06	3.589E-06	1.224E-04	2.472E-08	9.094E-07	1.234E-04	1.279E-04
AKG	0.102	--	0.370	1.881	1.881	1.253E-06	3.080E-12	1.434E-09	1.254E-06	--	--	--	--	3.457E-08	4.245E-11	1.302E-08	4.764E-08	3.809E-08	1.516E-08	2.368E-06	2.421E-06	8.261E-05	1.668E-08	6.136E-07	8.324E-05	8.697E-05
AKI	0.084	--	0.304	2.650	2.650	1.032E-06	2.536E-12	1.181E-09	1.033E-06	--	--	--	--	2.841E-08	3.488E-11	1.070E-08	3.914E-08	5.366E-08	2.136E-08	3.336E-06	3.411E-06	1.164E-04	2.349E-08	8.644E-07	1.173E-04	1.218E-04
AKJ	0.081	--	0.292	2.714	2.714	9.900E-07	2.434E-12	1.133E-09	9.912E-07	--	--	--	--	2.729E-08	3.351E-11	1.028E-08	3.760E-08	5.496E-08	2.188E-08	3.417E-06	3.494E-06	1.192E-04	2.406E-08	8.853E-07	1.201E-04	1.246E-04
AKK	0.074	--	0.267	2.370	2.370	9.090E-07	2.234E-12	1.041E-09	9.100E-07	--	--	--	--	2.495E-08	3.064E-11	9.397E-09	3.438E-08	4.799E-08	1.910E-08	2.984E-06	3.051E-06	1.041E-04	2.101E-08	7.731E-07	1.049E-04	1.089E-04
AKL	0.220	--	0.799	884.400	884.400	2.702E-06	6.643E-12	3.094E-09	2.705E-06	--	--	--	--	7.466E-08	9.168E-11	2.812E-08	1.029E-07	1.791E-05	7.129E-06	1.113E-03	1.138E-03	3.884E-02	7.841E-06	2.885E-04	3.914E-02	4.028E-02
AKL - Rem	0.080	--	0.292	2.329	2.329	9.876E-07	2.428E-12	1.131E-09	9.887E-07	--	--	--	--	2.729E-08	3.351E-11	1.028E-08	3.760E-08	4.716E-08	1.877E-08	2.932E-06	2.998E-06	1.023E-04	2.065E-08	7.597E-07	1.031E-04	1.071E-04
AKM	0.094	--	0.342	11.020	11.020	1.160E-06	2.850E-12	1.327E-09	1.161E-06	--	--	--	--	3.196E-08	3.924E-11	1.204E-08	4.403E-08	2.232E-07	8.883E-08	1.387E-05	1.419E-05	4.840E-04	9.770E-08	3.595E-06	4.877E-04	5.031E-04

Dose Calculations, Recreational Adult

Survey	95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				
Grid	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Total Dose
AAA	0.100	--	0.367	2.287	2.287	2.156E-02	1.669E-09	1.407E-06	2.156E-02	--	--	--	--	5.742E-04	2.510E-07	1.577E-05	5.902E-04	9.038E-04	2.770E-05	4.670E-03	5.602E-03	1.652E+00	1.084E-05	9.333E-04	1.653E+00	1.680E+00
AAB	0.126	--	0.465	2.090	2.090	2.722E-02	2.107E-09	1.776E-06	2.722E-02	--	--	--	--	7.276E-04	3.181E-07	1.998E-05	7.479E-04	8.260E-04	2.531E-05	4.268E-03	5.119E-03	1.509E+00	9.911E-06	8.529E-04	1.510E+00	1.543E+00
AAC	0.092	0.027	0.330	2.400	2.400	1.996E-02	1.545E-09	1.303E-06	1.996E-02	2.679E-02	2.972E-09	1.962E-07	2.679E-02	5.163E-04	2.257E-07	1.418E-05	5.307E-04	9.485E-04	2.906E-05	4.901E-03	5.878E-03	1.733E+00	1.138E-05	9.794E-04	1.734E+00	1.787E+00
AAD	0.213	0.043	0.772	2.403	2.403	4.601E-02	3.563E-09	3.003E-06	4.601E-02	4.250E-02	4.714E-09	3.113E-07	4.250E-02	1.208E-03	5.280E-07	3.317E-05	1.242E-03	9.497E-04	2.910E-05	4.907E-03	5.886E-03	1.735E+00	1.140E-05	9.807E-04	1.736E+00	1.832E+00
AAE	0.205	0.041	0.745	2.291	2.291	4.428E-02	3.429E-09	2.890E-06	4.429E-02	3.975E-02	4.409E-09	2.911E-07	3.975E-02	1.166E-03	5.096E-07	3.201E-05	1.198E-03	9.054E-04	2.774E-05	4.678E-03	5.611E-03	1.655E+00	1.086E-05	9.350E-04	1.656E+00	1.746E+00
AAF	0.132	0.030	0.479	2.428	2.428	2.851E-02	2.208E-09	1.861E-06	2.852E-02	2.935E-02	3.255E-09	2.149E-07	2.935E-02	7.495E-04	3.276E-07	2.058E-05	7.704E-04	9.595E-04	2.940E-05	4.958E-03	5.947E-03	1.754E+00	1.151E-05	9.909E-04	1.755E+00	1.819E+00
AAG	0.096	--	0.348	2.054	2.054	2.069E-02	1.602E-09	1.351E-06	2.070E-02	--	--	--	--	5.445E-04	2.380E-07	1.495E-05	5.597E-04	8.117E-04	2.487E-05	4.194E-03	5.031E-03	1.483E+00	9.740E-06	8.382E-04	1.484E+00	1.511E+00
AAH	0.168	--	0.608	2.501	2.501	3.629E-02	2.810E-09	2.368E-06	3.629E-02	--	--	--	--	9.513E-04	4.159E-07	2.612E-05	9.778E-04	9.884E-04	3.029E-05	5.107E-03	6.126E-03	1.806E+00	1.186E-05	1.021E-03	1.807E+00	1.851E+00
AAI	0.134	--	0.485	2.509	2.509	2.895E-02	2.241E-09	1.889E-06	2.895E-02	--	--	--	--	7.589E-04	3.317E-07	2.084E-05	7.800E-04	9.916E-04	3.038E-05	5.123E-03	6.145E-03	1.812E+00	1.190E-05	1.024E-03	1.813E+00	1.849E+00
AAJ	0.088	--	0.318	2.543	2.543	1.892E-02	1.465E-09	1.235E-06	1.892E-02	--	--	--	--	4.976E-04	2.175E-07	1.366E-05	5.114E-04	1.005E-03	3.080E-05	5.193E-03	6.229E-03	1.837E+00	1.206E-05	1.038E-03	1.838E+00	1.863E+00
AAK	0.068	--	0.246	2.111	2.111	1.462E-02	1.132E-09	9.544E-07	1.463E-02	--	--	--	--	3.849E-04	1.683E-07	1.057E-05	3.956E-04	8.343E-04	2.556E-05	4.311E-03	5.170E-03	1.525E+00	1.001E-05	8.615E-04	1.525E+00	1.546E+00
AAL	0.083	--	0.301	2.880	2.880	1.795E-02	1.390E-09	1.171E-06	1.795E-02	--	--	--	--	4.710E-04	2.059E-07	1.293E-05	4.841E-04	1.138E-03	3.488E-05	5.881E-03	7.054E-03	2.080E+00	1.366E-05	1.175E-03	2.081E+00	2.107E+00
ABA	0.141	--	0.523	2.593	2.593	3.046E-02	2.358E-09	1.988E-06	3.046E-02	--	--	--	--	8.183E-04	3.577E-07	2.247E-05	8.411E-04	1.025E-03	3.140E-05	5.295E-03	6.351E-03	1.873E+00	1.230E-05	1.058E-03	1.874E+00	1.911E+00
ABB	0.137	--	0.516	2.194	2.194	2.959E-02	2.291E-09	1.931E-06	2.960E-02	--	--	--	--	8.074E-04	3.529E-07	2.217E-05	8.299E-04	8.671E-04	2.657E-05	4.480E-03	5.374E-03	1.585E+00	1.040E-05	8.954E-04	1.585E+00	1.621E+00
ABC	0.158	0.032	0.575	2.132	2.132	3.413E-02	2.643E-09	2.227E-06	3.413E-02	3.160E-02	3.505E-09	2.315E-07	3.160E-02	8.997E-04	3.933E-07	2.470E-05	9.248E-04	8.426E-04	2.582E-05	4.354E-03	5.222E-03	1.540E+00	1.011E-05	8.701E-04	1.541E+00	1.612E+00
ABD	0.188	0.021	0.683	2.339	2.339	4.061E-02	3.144E-09	2.650E-06	4.061E-02	2.090E-02	2.319E-09	1.531E-07	2.090E-02	1.069E-03	4.672E-07	2.934E-05	1.098E-03	9.244E-04	2.833E-05	4.776E-03	5.729E-03	1.689E+00	1.109E-05	9.545E-04	1.690E+00	1.759E+00
ABE	0.298	0.037	1.122	2.135	2.135	6.437E-02	4.984E-09	4.201E-06	6.438E-02	3.612E-02	4.006E-09	2.645E-07	3.612E-02	1.756E-03	7.674E-07	4.820E-05	1.805E-03	8.438E-04	2.585E-05	4.360E-03	5.229E-03	1.542E+00	1.012E-05	8.713E-04	1.543E+00	1.650E+00
ABF	0.099	0.026	0.358	2.094	2.094	2.130E-02	1.649E-09	1.390E-06	2.130E-02	2.581E-02	2.863E-09	1.891E-07	2.581E-02	5.601E-04	2.449E-07	1.538E-05	5.758E-04	8.275E-04	2.536E-05	4.276E-03	5.129E-03	1.512E+00	9.930E-06	8.546E-04	1.513E+00	1.566E+00
ABG	0.416	--	1.510	8.871	8.871	8.986E-02	6.958E-09	5.864E-06	8.987E-02	--	--	--	--	2.363E-03	1.033E-06	6.487E-05	2.429E-03	3.506E-03	1.074E-04	1.811E-02	2.173E-02	6.407E+00	4.207E-05	3.620E-03	6.410E+00	6.524E+00
ABH	0.141	--	0.520	2.141	2.141	3.046E-02	2.358E-09	1.988E-06	3.046E-02	--	--	--	--	8.136E-04	3.557E-07	2.234E-05	8.363E-04	8.461E-04	2.593E-05	4.372E-03	5.244E-03	1.546E+00	1.015E-05	8.737E-04	1.547E+00	1.584E+00
ABI	0.135	--	0.491	2.712	2.712	2.916E-02	2.258E-09	1.903E-06	2.916E-02	--	--	--	--	7.682E-04	3.358E-07	2.109E-05	7.897E-04	1.072E-03	3.284E-05	5.538E-03	6.643E-03	1.959E+00	1.286E-05	1.107E-03	1.960E+00	1.996E+00
ABJ	0.071	--	0.258	2.169	2.169	1.536E-02	1.189E-09	1.002E-06	1.536E-02	--	--	--	--	4.037E-04	1.765E-07	1.108E-05	4.149E-04	8.572E-04	2.627E-05	4.429E-03	5.313E-03	1.566E+00	1.029E-05	8.852E-04	1.567E+00	1.588E+00
ABK	0.063	--	0.230	2.150	2.150	1.370E-02	1.060E-09	8.938E-07	1.370E-02	--	--	--	--	3.599E-04	1.573E-07	9.881E-06	3.699E-04	8.497E-04	2.604E-05	4.390E-03	5.266E-03	1.553E+00	1.020E-05	8.774E-04	1.554E+00	1.573E+00
ABL	0.074	--	0.267	2.636	2.636	1.588E-02	1.229E-09	1.036E-06	1.588E-02	--	--	--	--	4.178E-04	1.826E-07	1.147E-05	4.294E-04	1.042E-03	3.192E-05	5.383E-03	6.456E-03	1.904E+00	1.250E-05	1.076E-03	1.905E+00	1.928E+00
ABM	0.080	--	0.279	2.749	2.749	1.724E-02	1.335E-09	1.125E-06	1.724E-02	--	--	--	--	4.365E-04	1.908E-07	1.199E-05	4.487E-04	1.086E-03	3.329E-05	5.613E-03	6.733E-03	1.985E+00	1.304E-05	1.122E-03	1.986E+00	2.011E+00
ACH	1.548	--	5.930	207.400	207.400	3.344E-01	2.589E-08	2.182E-05	3.344E-01	--	--	--	--	9.278E-03	4.056E-06	2.548E-04	9.537E-03	8.196E-02	2.512E-03	4.235E-01	5.080E-01	1.498E+02	9.835E-04	8.464E-02	1.499E+02	1.507E+02
ACH - Rem	0.065	--	0.232	1.909	1.909	1.404E-02	1.087E-09	9.163E-07	1.404E-02	--	--	--	--	3.630E-04	1.587E-07	9.967E-06	3.731E-04	7.544E-04	2.312E-05	3.898E-03	4.676E-03	1.379E+00	9.052E-06	7.791E-04	1.379E+00	1.399E+00
ACI	0.085	--	0.308	1.772	1.772	1.836E-02	1.422E-09	1.198E-06	1.836E-02	--	--	--	--	4.819E-04	2.107E-07	1.323E-05	4.954E-04	7.003E-04	2.146E-05	3.618E-03	4.340E-03	1.280E+00	8.403E-06	7.232E-04	1.280E+00	1.304E+00
ACJ	0.072	--	0.262	2.013	2.013	1.557E-02	1.206E-09	1.016E-06	1.558E-02	--	--	--	--	4.099E-04	1.792E-07	1.126E-05	4.214E-04	7.955E-04	2.438E-05	4.111E-03	4.930E-03	1.454E+00	9.546E-06	8.215E-04	1.455E+00	1.476E+00
ACK	0.066	--	0.238	2.019	2.019	1.417E-02	1.097E-09	9.248E-07	1.417E-02	--	--	--	--	3.724E-04	1.628E-07	1.022E-05	3.828E-04	7.979E-04	2.445E-05	4.123E-03	4.945E-03	1.458E+00	9.574E-06	8.240E-04	1.459E+00	1.478E+00
ACL	0.088	--	0.326	2.209	2.209	1.890E-02	1.463E-09	1.234E-06	1.890E-02	--	--	--	--	5.101E-04	2.230E-07	1.401E-05	5.243E-04	8.730E-04	2.675E-05	4.511E-03	5.411E-03	1.595E+00	1.048E-05	9.015E-04	1.596E+00	1.621E+00
ACM	0.076	--	0.274	2.860	2.860	1.633E-02	1.264E-09	1.066E-06	1.633E-02	--	--	--	--	4.287E-04	1.874E-07	1.177E-05	4.407E-04	1.130E-03	3.463E-05	5.840E-03	7.005E-03	2.065E+00	1.356E-05	1.167E-03	2.067E+00	2.090E+00
ADI	0.097	--	0.347	2.220	2.220	2.093E-02	1.621E-09	1.366E-06	2.093E-02	--	--	--	--	5.429E-04	2.373E-07	1.491E-05	5.581E-04	8.773E-04	2.688E-05	4.533E-03	5.437E-03	1.603E+00	1.053E-05	9.060E-04	1.604E+00	1.631E+00
ADJ	0.070	--	0.235	2.030	2.030	1.516E-02	1.174E-09	9.896E-07	1.517E-02	--	--	--	--	3.677E-04	1.607E-07	1.010E-05	3.779E-04	8.023E-04	2.458E-05	4.145E-03	4.972E-03	1.466E+00	9.626E-06	8.284E-04	1.467E+00	1.487E+00
ADK	0.063	--	0.230	1.798	1.798	1.370E-02	1.060E-09	8.938E-07	1.370E-02	--	--	--	--	3.599E-04	1.573E-07	9.881E-06	3.699E-04	7.106E-04	2.177E-05	3.672E-03	4.404E-03	1.299E+00	8.526E-06	7.338E-04	1.299E+00	1.318E+00
ADL	0.054	--	0.196	1.843	1.843	1.164E-02	9.015E-10	7.598E-07	1.164E-02	--	--	--	--	3.067E-04	1.341E-07	8.420E-06	3.152E-04	7.284E-04	2.232E-05	3.763E-03	4.514E-03	1.331E+00	8.740E-06	7.521E-04	1.332E+00	1.348E+00
ADM	0.077	--	0.277	2.629	2.629	1.663E-02	1.288E-09	1.085E-06	1.663E-02	--	--	--	--	4.334E-04	1.895E-07	1.190E-05	4.455E-04	1.039E-03	3.184E-05	5.368E-03	6.439E-03	1.899E+00	1.247E-05	1.073E-03	1.900E+00	1.923E+00
AEJ	0.069	--	0.250	1.764	1.764	1.491E-02	1.154E-09	9.727E-07	1.491E-02	--	--	--	--	3.912E-04	1.710E-07	1.074E-05	4.021E-04	6.971E-04	2.136E-05	3.602E-03	4.321E-03	1.274E+00	8.365E-06	7.199E-04	1.275E+00	1.294E+00
AEK	0.072	--	0.260	2.192	2.192	1.547E-02	1.198E-09	1.009E-06	1.547E-02	--	--	--	--	4.068E-04	1.778E-07	1.117E-05	4.182E-04	8.663E-04	2.655E-05	4.476E-03	5.369E-03	1.583E+00	1.039E-05	8.946E-04	1.584E+00	1.605E+00
AEL	0.069	--	0.249	2.349	2.349	1.484E-02	1.149E-09	9.685E-07	1.484E-02	--	--	--	--	3.896E-04	1.703E-07	1.070E-05	4.005E-04	9.283E-04	2.845E-05	4.797E-03	5.753E-03	1.696E+00	1.114E-05	9.586E-04	1.697E+00	1.718E+00
AEM	0.112	--	0.401	2.890	2.890	2.419E-02	1.873E-09	1.579E-06	2.420E-02	--	--	--	--	6.274E-04	2.743E-07	1.723E-05	6.449E-04	1.142E-03	3.500E-05	5.901E-03	7.079E-03	2.087E+00	1.370E-05	1.179E-03	2.088E+00	2.120E+00
AFI - AGI	0.119	--	0.431	2.770	2.770	2.571E-02	1.990E-09	1.678E-06	2.571E-02	--	--	--	--	6.744E-04	2.948E-07	1.852E-05	6.932E-04	1.095E-03	3.354E-05	5.656E-03	6.785E-03	2.000E+00	1.314E-05	1.130E-03	2.002E+00	2.035E+00
AFJ	0.063	--	0.228	2.381	2.381	1.359E-02	1.052E-09	8.867E-07	1.359E-02	--	--	--	--	3.567E-04	1.559E-07	9.795E-06	3.667E-04	9.410E-04	2.883E-05	4.862E-03	5.832E-03	1.720E+00	1.129E-05	9.717E-04	1.721E+00	1.740E+00
AFK	0.063	--	0.230	2.180	2.180	1.370E-02	1.060E-09	8.938E-07	1.370E-02	--	--	--	--	3.599E-04	1.573E-07	9.881E-06	3.699E-04	8.615E-04	2.640E-05	4.452E-03	5.339E-03	1.574E+00	1.034E-05	8.897E-04	1.575E+00	1.595E+00
AFL	0.100	--	0.364	3.677	3.677	2.160E-02	1.673E-09	1.410E-06	2.160E-02	--	--	--	--	5.695E-04	2.490E-07	1.564E-05	5.854E-04	1.453E-03	4.453E-05	7.508E-03	9.006E-03	2.656E+00	1.744E-05	1.501E-03	2.657E+00	2.688E+00
AFM	0.097	--	0.351	2.236	2.236	2.091E-02	1.619E-09	1.365E-06	2.091E-02	--	--	--	--	5.492E-04	2.401E-07	1.508E-05	5.645E-04	8.837E-04	2.708E-05	4.566E-03	5.477E-03	1.615E+00	1.060E-05	9.125E-04	1.616E+00	1.643E+00
AGJ	0.107	--	0.388	3.322	3.322	2.311E-02	1.790E-09	1.508E-06	2.312E-02	--	--	--	--	6.071E-04	2.654E-07	1.667E-05	6.240E-04	1.313E-03	4.023E-05	6.784E-03	8.137E-03	2.399E+00	1.575E-05	1.356E-03	2.401E+00	2.432E+00
AGK	0.103	--	0.374	3.000	3.000	2.225E-02	1.723E-09	1.452E-06	2.225E-02	--	--	--	--	5.852E-04	2.558E-07	1.607E-05	6.015E-04	1.186E-03	3.633E-05	6.126E-03	7.348E-03	2.167E+00	1.423E-05	1.224E-03	2.168E+00	2.198E+00
AGL	0.092	--	0.334	2.800	2.800	1.992E-02	1.542E-09	1.300E-06	1.992E-02	--	--	--	--	5.226E-04	2.285E-07	1.435E-05	5.372E-04	1.107E-03	3.391E-05	5.718E-03	6.858E-03	2.022E+00	1.328E-05	1.143E-03	2.023E+00	2.051E+00
AGM	0.097	--	0.352	2.765	2.765	2.098E-02	1.624E-09	1.369E-06	2.098E-02	--	--	--	--	5.508E-04	2.408E-07	1.512E-05	5.661E-04	1.093E-03	3.348E-05	5.646E-03	6.772E-03	1.997E+00	1.311E-05	1.128E-03	1.998E+00	2.026E+00
AHH - AIH	0.112	--	0.404	2.533	2.533	2.419E-02	1.873E-09	1.579E-06	2.420E-02	--	--	--	--	6.321E-04	2.763E-07	1.736E-05	6.498E-04	1.001E-03	3.067E-05	5.172E-03	6.204E-03	1.829E+00	1.201E-05	1.034E-03	1.830E+00	1.861E+00
AHI	0.074	--	0.264	2.097	2.097	1.594E-02	1.234E-09	1.040E-06	1.594E-02	--	--	--	--	4.131E-04	1.806E-07	1.134E-05	4.246E-04	8.287E-04	2.539E-05	4.282E-03	5.136E-03	1.514E+00	9.944E-06	8.558E-04	1.515E+00	1.537E+00
AHJ	0.100	--	0.361	3.213	3.213	2.152E-02	1.666E-09	1.404E-06	2.152E-02	--	--	--	--	5.648E-04	2.469E-07	1.551E-05	5.806E-04	1.270E-03	3.891E-05	6.561E-03	7.870E-03	2.320E+00	1.524E-05	1.311E-03	2.322E+00	2.352E+00
AHK	0.086	--	0.311	2.610	2.610	1.853E-02	1.435E-09	1.210E-06	1.854E-02	--	--	--	--	4.866E-04	2.127E-07	1.336E-05	5.002E-04	1.031E-03	3.161E-05	5.330E-03	6.393E-03	1.885E+00	1.238E-05	1.065E-03	1.886E+00	1.911E+00
AHL	0.079	--	0.287	2.619	2.619	1.709E-02	1.323E-09	1.115E-06	1.709E-02	--	--	--	--	4.491E-04	1.963E-07	1.233E-05	4.616E-04	1.035E-03	3.172E-05	5.348E-03	6.415E-03	1.891E+00	1.242E-05	1.069E-03	1.893E+00	1.916E+00
AHM	0.081	--	0.292	2.748	2.748	1.741E-02	1.348E-09	1.136E-06	1.741E-02	--	--	--	--	4.569E-04	1.997E-07	1.254E-05	4.696E-04	1.086E-03	3.328E-05	5.611E-03	6.731E-03	1.985E+00	1.303E-05	1.121E-03	1.986E+00	2.010E+00
AII	0.102	--	0.369	2.992	2.992	2.203E-02	1.706E-09	1.438E-06	2.204E-02	--	--	--	--	5.774E-04	2.524E-07	1.585E-05	5.935E-04	1.182E-03	3.623E-05	6.110E-03	7.328E-03	2.161E+00	1.419E-05	1.221E-03	2.162E+00	2.192E+00
AIJ	0.114	--	0.414	3.280	3.280	2.463E-02	1.907E-09	1.607E-06	2.463E-02	--	--	--	--	6.478E-04	2.832E-07	1.779E-05	6.658E-04	1.296E-03	3.972E-05	6.698E-03	8.034E-03	2.369E+00	1.555E-05	1.339E-03	2.370E+00	2.403E+00
AIK	0.107	--	0.386	2.935	2.935	2.311E-02	1.790E-09	1.508E-06	2.312E-02	--	--	--	--	6.040E-04	2.640E-07	1.658E-05	6.208E-04	1.160E-03	3.554E-05	5.993E-03	7.189E-03	2.120E+00	1.392E-05	1.198E-03	2.121E+00	2.152E+00
AIL	0.088	--	0.317	2.624	2.624	1.894E-02	1.467E-09	1.236E-06	1.895E-02	--	--	--	--	4.960E-04	2.168E-07	1.362E-05	5.098E-04	1.037E-03	3.178E-05	5.358E-03	6.427E-03	1.895E+00	1.244E-05	1.071E-03	1.896E+00	1.922E+00
AIM	0.080	--	0.289	2.707	2.707	1.722E-02	1.333E-09	1.124E-06	1.722E-02	--	--	--	--	4.522E-04	1.977E-07	1.242E-05	4.648E-04	1.070E-03	3.278E-05	5.528E-03	6.630E-03	1.955E+00	1.284E-05	1.105E-03	1.956E+00	1.980E+00
AJH	0.123	--	0.446	2.211	2.211	2.657E-02	2.057E-09	1.734E-06	2.657E-02	--	--	--	--	6.978E-04	3.050E-07	1.916E-05	7.173E-04	8.738E-04	2.678E-05	4.515E-03	5.415E-03	1.597E+00	1.048E-05	9.023E-04	1.598E+00	1.630E+00
AJI	0.089	--	0.323	2.841	2.841	1.927E-02	1.492E-09	1.257E-06	1.927E-02	--	--	--	--	5.054E-04	2.209E-07	1.388E-05	5.195E-04	1.123E-03	3.440E-05	5.801E-03	6.958E-03	2.052E+00	1.347E-05	1.159E-03	2.053E+00	2.080E+00
AJJ	0.108	--	0.391	2.845	2.845	2.333E-02	1.806E-09	1.523E-06	2.333E-02	--	--	--	--	6.118E-04	2.674E-07	1.680E-05	6.288E-04	1.124E-03	3.445E-05	5.809E-03	6.968E-03	2.055E+00	1.349E-05	1.161E-03	2.056E+00	2.087E+00
AJK	0.089	--	0.324	2.489	2.489	1.929E-02	1.494E-09	1.259E-06	1.929E-02	--	--	--	--	5.069E-04	2.216E-07	1.392E-05	5.211E-04	9.837E-04	3.014E-05	5.083E-03	6.096E-03	1.798E+00	1.180E-05	1.016E-03	1.799E+00	1.824E+00
AJL	0.083	--	0.299	2.620	2.620	1.782E-02	1.380E-09	1.163E-06	1.782E-02	--	--	--	--	4.678E-04	2.045E-07	1.285E-05	4.809E-04	1.035E-03	3.173E-05	5.350E-03	6.417E-03	1.892E+00	1.242E-05	1.069E-03	1.893E+00	1.918E+00
AJM	0.073	--	0.264	2.788	2.788	1.570E-02	1.216E-09	1.025E-06	1.571E-02	--	--	--	--	4.131E-04	1.806E-07	1.134E-05	4.246E-04	1.102E-03	3.376E-05	5.693E-03	6.829E-03	2.013E+00	1.322E-05	1.138E-03	2.015E+00	2.038E+00
AKG	0.102	--	0.370	1.881	1.881	2.203E-02	1.706E-09	1.438E-06	2.204E-02	--	--	--	--	5.789E-04	2.531E-07	1.590E-05	5.951E-04	7.434E-04	2.278E-05	3.841E-03	4.607E-03	1.358E+00	8.920E-06	7.676E-04	1.359E+00	1.386E+00
AKI	0.084	--	0.304	2.650	2.650	1.815E-02	1.405E-09	1.184E-06	1.815E-02	--	--	--	--	4.757E-04	2.079E-07	1.306E-05	4.889E-04	1.047E-03	3.209E-05	5.411E-03	6.491E-03	1.914E+00	1.257E-05	1.081E-03	1.915E+00	1.940E+00
AKJ	0.081	--	0.292	2.714	2.714	1.741E-02	1.348E-09	1.136E-06	1.741E-02	--	--	--	--	4.569E-04	1.997E-07	1.254E-05	4.696E-04	1.073E-03	3.287E-05	5.542E-03	6.647E-03	1.960E+00	1.287E-05	1.108E-03	1.961E+00	1.986E+00
AKK	0.074	--	0.267	2.370	2.370	1.599E-02	1.238E-09	1.043E-06	1.599E-02	--	--	--	--	4.178E-04	1.826E-07	1.147E-05	4.294E-04	9.366E-04	2.870E-05	4.840E-03	5.805E-03	1.712E+00	1.124E-05	9.672E-04	1.713E+00	1.735E+00
AKL	0.220	--	0.799	884.400	884.400	4.752E-02	3.680E-09	3.101E-06	4.753E-02	--	--	--	--	1.250E-03	5.465E-07	3.433E-05	1.285E-03	3.495E-01	1.071E-02	1.806E+00	2.166E+00	6.387E+02	4.194E-03	3.609E-01	6.391E+02	6.413E+02
AKL - Rem	0.080	--	0.292	2.329	2.329	1.737E-02	1.345E-09	1.133E-06	1.737E-02	--	--	--	--	4.569E-04	1.997E-07	1.254E-05	4.696E-04	9.204E-04	2.820E-05	4.756E-03	5.704E-03	1.682E+00	1.104E-05	9.505E-04	1.683E+00	1.707E+00
AKM	0.094	--	0.342	11.020	11.020	2.039E-02	1.579E-09	1.331E-06	2.039E-02	--	--	--	--	5.351E-04	2.339E-07	1.469E-05	5.500E-04	4.355E-03	1.335E-04	2.250E-02	2.699E-02	7.959E+00	5.226E-05	4.497E-03	7.963E+00	8.011E+00

Risk Calculations, Recreational Adult

Survey Grid	95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				Total Risk
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	
AAA	0.100	--	0.367	2.287	2.287	2.997E-07	1.092E-13	1.961E-11	2.997E-07	--	--	--	--	7.986E-09	1.454E-12	1.719E-10	8.160E-09	1.051E-08	6.202E-10	3.732E-08	4.845E-08	2.914E-05	1.051E-09	2.314E-08	2.916E-05	2.952E-05
AAB	0.126	--	0.465	2.090	2.090	3.783E-07	1.378E-13	2.475E-11	3.784E-07	--	--	--	--	1.012E-08	1.842E-12	2.177E-10	1.034E-08	9.601E-09	5.668E-10	3.411E-08	4.428E-08	2.663E-05	9.608E-10	2.115E-08	2.665E-05	2.708E-05
AAC	0.092	0.027	0.330	2.400	2.400	2.774E-07	1.011E-13	1.815E-11	2.775E-07	1.590E-07	1.064E-14	1.263E-12	1.590E-07	7.181E-09	1.307E-12	1.545E-10	7.337E-09	1.103E-08	6.509E-10	3.917E-08	5.084E-08	3.058E-05	1.103E-09	2.429E-08	3.060E-05	3.110E-05
AAD	0.213	0.043	0.772	2.403	2.403	6.396E-07	2.330E-13	4.185E-11	6.396E-07	2.522E-07	1.688E-14	2.003E-12	2.522E-07	1.680E-08	3.058E-12	3.615E-10	1.716E-08	1.104E-08	6.517E-10	3.922E-08	5.091E-08	3.061E-05	1.105E-09	2.432E-08	3.064E-05	3.160E-05
AAE	0.205	0.041	0.745	2.291	2.291	6.155E-07	2.242E-13	4.027E-11	6.156E-07	2.359E-07	1.578E-14	1.874E-12	2.359E-07	1.621E-08	2.951E-12	3.489E-10	1.656E-08	1.052E-08	6.213E-10	3.739E-08	4.854E-08	2.919E-05	1.053E-09	2.318E-08	2.921E-05	3.013E-05
AAF	0.132	0.030	0.479	2.428	2.428	3.964E-07	1.444E-13	2.593E-11	3.964E-07	1.742E-07	1.165E-14	1.383E-12	1.742E-07	1.042E-08	1.897E-12	2.243E-10	1.065E-08	1.115E-08	6.585E-10	3.962E-08	5.144E-08	3.093E-05	1.116E-09	2.457E-08	3.096E-05	3.159E-05
AAG	0.096	--	0.348	2.054	2.054	2.877E-07	1.048E-13	1.882E-11	2.877E-07	--	--	--	--	7.573E-09	1.378E-12	1.630E-10	7.737E-09	9.436E-09	5.570E-10	3.352E-08	4.351E-08	2.617E-05	9.442E-10	2.079E-08	2.619E-05	2.653E-05
AAH	0.168	--	0.608	2.501	2.501	5.044E-07	1.838E-13	3.301E-11	5.045E-07	--	--	--	--	1.323E-08	2.408E-12	2.847E-10	1.352E-08	1.149E-08	6.783E-10	4.082E-08	5.298E-08	3.186E-05	1.150E-09	2.531E-08	3.189E-05	3.246E-05
AAI	0.134	--	0.485	2.509	2.509	4.024E-07	1.466E-13	2.633E-11	4.024E-07	--	--	--	--	1.055E-08	1.921E-12	2.271E-10	1.078E-08	1.153E-08	6.804E-10	4.095E-08	5.315E-08	3.196E-05	1.153E-09	2.539E-08	3.199E-05	3.246E-05
AAJ	0.088	--	0.318	2.543	2.543	2.630E-07	9.582E-14	1.721E-11	2.630E-07	--	--	--	--	6.920E-09	1.260E-12	1.489E-10	7.070E-09	1.168E-08	6.897E-10	4.150E-08	5.387E-08	3.240E-05	1.169E-09	2.574E-08	3.242E-05	3.275E-05
AAK	0.068	--	0.246	2.111	2.111	2.033E-07	7.405E-14	1.330E-11	2.033E-07	--	--	--	--	5.353E-09	9.743E-13	1.152E-10	5.469E-09	9.698E-09	5.725E-10	3.445E-08	4.472E-08	2.689E-05	9.704E-10	2.136E-08	2.692E-05	2.717E-05
AAL	0.083	--	0.301	2.880	2.880	2.495E-07	9.090E-14	1.633E-11	2.495E-07	--	--	--	--	6.550E-09	1.192E-12	1.410E-10	6.692E-09	1.323E-08	7.811E-10	4.700E-08	6.101E-08	3.669E-05	1.324E-09	2.915E-08	3.672E-05	3.704E-05
ABA	0.141	--	0.523	2.593	2.593	4.234E-07	1.542E-13	2.770E-11	4.234E-07	--	--	--	--	1.138E-08	2.071E-12	2.449E-10	1.163E-08	1.191E-08	7.032E-10	4.232E-08	5.493E-08	3.303E-05	1.192E-09	2.624E-08	3.306E-05	3.355E-05
ABB	0.137	--	0.516	2.194	2.194	4.114E-07	1.499E-13	2.692E-11	4.114E-07	--	--	--	--	1.123E-08	2.044E-12	2.416E-10	1.147E-08	1.008E-08	5.950E-10	3.581E-08	4.648E-08	2.795E-05	1.009E-09	2.220E-08	2.797E-05	2.844E-05
ABC	0.158	0.032	0.575	2.132	2.132	4.744E-07	1.728E-13	3.104E-11	4.745E-07	1.876E-07	1.255E-14	1.490E-12	1.876E-07	1.251E-08	2.277E-12	2.693E-10	1.278E-08	9.794E-09	5.782E-10	3.479E-08	4.517E-08	2.716E-05	9.801E-10	2.158E-08	2.718E-05	2.790E-05
ABD	0.188	0.021	0.683	2.339	2.339	5.645E-07	2.056E-13	3.693E-11	5.645E-07	1.241E-07	8.302E-15	9.853E-13	1.241E-07	1.486E-08	2.705E-12	3.198E-10	1.519E-08	1.075E-08	6.343E-10	3.817E-08	4.955E-08	2.980E-05	1.075E-09	2.367E-08	2.982E-05	3.058E-05
ABE	0.298	0.037	1.122	2.135	2.135	8.948E-07	3.260E-13	5.855E-11	8.949E-07	2.144E-07	1.434E-14	1.702E-12	2.144E-07	2.442E-08	4.444E-12	5.254E-10	2.495E-08	9.808E-09	5.790E-10	3.484E-08	4.523E-08	2.720E-05	9.815E-10	2.161E-08	2.722E-05	2.840E-05
ABF	0.099	0.026	0.358	2.094	2.094	2.961E-07	1.078E-13	1.937E-11	2.961E-07	1.532E-07	1.025E-14	1.217E-12	1.532E-07	7.791E-09	1.418E-12	1.676E-10	7.960E-09	9.620E-09	5.679E-10	3.417E-08	4.436E-08	2.668E-05	9.626E-10	2.119E-08	2.670E-05	2.720E-05
ABG	0.416	--	1.510	8.871	8.871	1.249E-06	4.550E-13	8.173E-11	1.249E-06	--	--	--	--	3.286E-08	5.981E-12	7.071E-10	3.357E-08	4.075E-08	2.406E-09	1.448E-07	1.879E-07	1.130E-04	4.078E-09	8.977E-08	1.131E-04	1.146E-04
ABH	0.141	--	0.520	2.141	2.141	4.234E-07	1.542E-13	2.770E-11	4.234E-07	--	--	--	--	1.132E-08	2.060E-12	2.435E-10	1.156E-08	9.836E-09	5.806E-10	3.494E-08	4.536E-08	2.728E-05	9.842E-10	2.167E-08	2.730E-05	2.778E-05
ABI	0.135	--	0.491	2.712	2.712	4.054E-07	1.477E-13	2.652E-11	4.054E-07	--	--	--	--	1.068E-08	1.945E-12	2.299E-10	1.092E-08	1.246E-08	7.355E-10	4.426E-08	5.745E-08	3.455E-05	1.247E-09	2.745E-08	3.458E-05	3.505E-05
ABJ	0.071	--	0.258	2.169	2.169	2.135E-07	7.777E-14	1.397E-11	2.135E-07	--	--	--	--	5.614E-09	1.022E-12	1.208E-10	5.736E-09	9.964E-09	5.882E-10	3.540E-08	4.595E-08	2.763E-05	9.971E-10	2.195E-08	2.766E-05	2.792E-05
ABK	0.063	--	0.230	2.150	2.150	1.904E-07	6.935E-14	1.246E-11	1.904E-07	--	--	--	--	5.005E-09	9.110E-13	1.077E-10	5.114E-09	9.877E-09	5.831E-10	3.509E-08	4.555E-08	2.739E-05	9.884E-10	2.176E-08	2.741E-05	2.765E-05
ABL	0.074	--	0.267	2.636	2.636	2.207E-07	8.039E-14	1.444E-11	2.207E-07	--	--	--	--	5.810E-09	1.058E-12	1.250E-10	5.936E-09	1.211E-08	7.149E-10	4.302E-08	5.584E-08	3.358E-05	1.212E-09	2.668E-08	3.361E-05	3.389E-05
ABM	0.080	--	0.279	2.749	2.749	2.396E-07	8.729E-14	1.568E-11	2.396E-07	--	--	--	--	6.071E-09	1.105E-12	1.306E-10	6.203E-09	1.263E-08	7.455E-10	4.486E-08	5.824E-08	3.502E-05	1.264E-09	2.782E-08	3.505E-05	3.536E-05
ACH	1.548	--	5.930	207.400	207.400	4.648E-06	1.693E-12	3.041E-10	4.648E-06	--	--	--	--	1.290E-07	2.349E-11	2.777E-09	1.318E-07	9.528E-07	5.625E-08	3.385E-06	4.394E-06	2.642E-03	9.534E-08	2.099E-06	2.644E-03	2.654E-03
ACH - Rem	0.065	--	0.232	1.909	1.909	1.952E-07	7.110E-14	1.277E-11	1.952E-07	--	--	--	--	5.049E-09	9.189E-13	1.086E-10	5.158E-09	8.770E-09	5.177E-10	3.115E-08	4.044E-08	2.432E-05	8.776E-10	1.932E-08	2.434E-05	2.458E-05
ACI	0.085	--	0.308	1.772	1.772	2.552E-07	9.297E-14	1.670E-11	2.552E-07	--	--	--	--	6.702E-09	1.220E-12	1.442E-10	6.848E-09	8.141E-09	4.806E-10	2.892E-08	3.754E-08	2.258E-05	8.146E-10	1.793E-08	2.259E-05	2.289E-05
ACJ	0.072	--	0.262	2.013	2.013	2.165E-07	7.886E-14	1.416E-11	2.165E-07	--	--	--	--	5.701E-09	1.038E-12	1.227E-10	5.825E-09	9.248E-09	5.459E-10	3.285E-08	4.265E-08	2.565E-05	9.254E-10	2.037E-08	2.567E-05	2.593E-05
ACK	0.066	--	0.238	2.019	2.019	1.970E-07	7.175E-14	1.289E-11	1.970E-07	--	--	--	--	5.179E-09	9.427E-13	1.115E-10	5.292E-09	9.275E-09	5.476E-10	3.295E-08	4.277E-08	2.572E-05	9.281E-10	2.043E-08	2.574E-05	2.599E-05
ACL	0.088	--	0.326	2.209	2.209	2.627E-07	9.571E-14	1.719E-11	2.627E-07	--	--	--	--	7.094E-09	1.291E-12	1.527E-10	7.248E-09	1.015E-08	5.991E-10	3.605E-08	4.680E-08	2.814E-05	1.015E-09	2.236E-08	2.817E-05	2.848E-05
ACM	0.076	--	0.274	2.860	2.860	2.270E-07	8.269E-14	1.485E-11	2.270E-07	--	--	--	--	5.963E-09	1.085E-12	1.283E-10	6.092E-09	1.314E-08	7.756E-10	4.668E-08	6.059E-08	3.644E-05	1.315E-09	2.894E-08	3.647E-05	3.676E-05
ADI	0.097	--	0.347	2.220	2.220	2.910E-07	1.060E-13	1.904E-11	2.910E-07	--	--	--	--	7.551E-09	1.374E-12	1.625E-10	7.715E-09	1.020E-08	6.021E-10	3.623E-08	4.703E-08	2.828E-05	1.021E-09	2.247E-08	2.831E-05	2.865E-05
ADJ	0.070	--	0.235	2.030	2.030	2.108E-07	7.679E-14	1.379E-11	2.108E-07	--	--	--	--	5.114E-09	9.308E-13	1.100E-10	5.225E-09	9.326E-09	5.505E-10	3.313E-08	4.301E-08	2.586E-05	9.332E-10	2.054E-08	2.588E-05	2.614E-05
ADK	0.063	--	0.230	1.798	1.798	1.904E-07	6.935E-14	1.246E-11	1.904E-07	--	--	--	--	5.005E-09	9.110E-13	1.077E-10	5.114E-09	8.260E-09	4.876E-10	2.934E-08	3.809E-08	2.291E-05	8.265E-10	1.820E-08	2.293E-05	2.316E-05
ADL	0.054	--	0.196	1.843	1.843	1.618E-07	5.896E-14	1.059E-11	1.619E-07	--	--	--	--	4.265E-09	7.763E-13	9.178E-11	4.358E-09	8.467E-09	4.998E-10	3.008E-08	3.904E-08	2.348E-05	8.472E-10	1.865E-08	2.350E-05	2.370E-05
ADM	0.077	--	0.277	2.629	2.629	2.312E-07	8.422E-14	1.513E-11	2.312E-07	--	--	--	--	6.028E-09	1.097E-12	1.297E-10	6.159E-09	1.208E-08	7.130E-10	4.291E-08	5.570E-08	3.349E-05	1.209E-09	2.661E-08	3.352E-05	3.381E-05
AEJ	0.069	--	0.250	1.764	1.764	2.072E-07	7.547E-14	1.356E-11	2.072E-07	--	--	--	--	5.440E-09	9.902E-13	1.171E-10	5.558E-09	8.104E-09	4.784E-10	2.879E-08	3.737E-08	2.247E-05	8.109E-10	1.785E-08	2.249E-05	2.274E-05
AEK	0.072	--	0.260	2.192	2.192	2.150E-07	7.832E-14	1.407E-11	2.150E-07	--	--	--	--	5.658E-09	1.030E-12	1.218E-10	5.781E-09	1.007E-08	5.945E-10	3.577E-08	4.644E-08	2.793E-05	1.008E-09	2.218E-08	2.795E-05	2.822E-05
AEL	0.069	--	0.249	2.349	2.349	2.063E-07	7.514E-14	1.350E-11	2.063E-07	--	--	--	--	5.419E-09	9.862E-13	1.166E-10	5.536E-09	1.079E-08	6.370E-10	3.834E-08	4.976E-08	2.993E-05	1.080E-09	2.377E-08	2.995E-05	3.021E-05
AEM	0.112	--	0.401	2.890	2.890	3.363E-07	1.225E-13	2.200E-11	3.363E-07	--	--	--	--	8.726E-09	1.588E-12	1.878E-10	8.916E-09	1.328E-08	7.838E-10	4.716E-08	6.123E-08	3.682E-05	1.329E-09	2.925E-08	3.685E-05	3.726E-05
AFI - AGI	0.119	--	0.431	2.770	2.770	3.573E-07	1.302E-13	2.338E-11	3.573E-07	--	--	--	--	9.379E-09	1.707E-12	2.018E-10	9.583E-09	1.273E-08	7.512E-10	4.521E-08	5.868E-08	3.529E-05	1.273E-09	2.803E-08	3.532E-05	3.574E-05
AFJ	0.063	--	0.228	2.381	2.381	1.889E-07	6.880E-14	1.236E-11	1.889E-07	--	--	--	--	4.962E-09	9.030E-13	1.068E-10	5.069E-09	1.094E-08	6.457E-10	3.886E-08	5.044E-08	3.033E-05	1.095E-09	2.410E-08	3.036E-05	3.060E-05
AFK	0.063	--	0.230	2.180	2.180	1.904E-07	6.935E-14	1.246E-11	1.904E-07	--	--	--	--	5.005E-09	9.110E-13	1.077E-10	5.114E-09	1.001E-08	5.912E-10	3.558E-08	4.618E-08	2.777E-05	1.002E-09	2.206E-08	2.780E-05	2.804E-05
AFL	0.100	--	0.364	3.677	3.677	3.003E-07	1.094E-13	1.965E-11	3.003E-07	--	--	--	--	7.921E-09	1.442E-12	1.705E-10	8.093E-09	1.689E-08	9.972E-10	6.001E-08	7.790E-08	4.684E-05	1.690E-09	3.721E-08	4.688E-05	4.727E-05
AFM	0.097	--	0.351	2.236	2.236	2.907E-07	1.059E-13	1.902E-11	2.907E-07	--	--	--	--	7.638E-09	1.390E-12	1.644E-10	7.804E-09	1.027E-08	6.064E-10	3.649E-08	4.737E-08	2.849E-05	1.028E-09	2.263E-08	2.851E-05	2.886E-05
AGJ	0.107	--	0.388	3.322	3.322	3.213E-07	1.170E-13	2.102E-11	3.213E-07	--	--	--	--	8.443E-09	1.537E-12	1.817E-10	8.627E-09	1.526E-08	9.009E-10	5.422E-08	7.038E-08	4.232E-05	1.527E-09	3.362E-08	4.236E-05	4.276E-05
AGK	0.103	--	0.374	3.000	3.000	3.093E-07	1.127E-13	2.024E-11	3.093E-07	--	--	--	--	8.139E-09	1.481E-12	1.751E-10	8.315E-09	1.378E-08	8.136E-10	4.896E-08	6.356E-08	3.822E-05	1.379E-09	3.036E-08	3.825E-05	3.863E-05
AGL	0.092	--	0.334	2.800	2.800	2.768E-07	1.008E-13	1.811E-11	2.769E-07	--	--	--	--	7.268E-09	1.323E-12	1.564E-10	7.426E-09	1.286E-08	7.594E-10	4.570E-08	5.932E-08	3.567E-05	1.287E-09	2.834E-08	3.570E-05	3.605E-05
AGM	0.097	--	0.352	2.765	2.765	2.916E-07	1.062E-13	1.908E-11	2.916E-07	--	--	--	--	7.660E-09	1.394E-12	1.648E-10	7.826E-09	1.270E-08	7.499E-10	4.512E-08	5.858E-08	3.523E-05	1.271E-09	2.798E-08	3.526E-05	3.561E-05
AHH - AIH	0.112	--	0.404	2.533	2.533	3.363E-07	1.225E-13	2.200E-11	3.363E-07	--	--	--	--	8.792E-09	1.600E-12	1.892E-10	8.982E-09	1.164E-08	6.869E-10	4.134E-08	5.366E-08	3.227E-05	1.164E-09	2.563E-08	3.230E-05	3.270E-05
AHI	0.074	--	0.264	2.097	2.097	2.216E-07	8.072E-14	1.450E-11	2.216E-07	--	--	--	--	5.745E-09	1.046E-12	1.236E-10	5.870E-09	9.634E-09	5.687E-10	3.422E-08	4.443E-08	2.672E-05	9.640E-10	2.122E-08	2.674E-05	2.701E-05
AHJ	0.100	--	0.361	3.213	3.213	2.991E-07	1.089E-13	1.957E-11	2.991E-07	--	--	--	--	7.856E-09	1.430E-12	1.690E-10	8.026E-09	1.476E-08	8.714E-10	5.244E-08	6.807E-08	4.093E-05	1.477E-09	3.252E-08	4.097E-05	4.134E-05
AHK	0.086	--	0.311	2.610	2.610	2.576E-07	9.385E-14	1.686E-11	2.576E-07	--	--	--	--	6.768E-09	1.232E-12	1.456E-10	6.915E-09	1.199E-08	7.078E-10	4.260E-08	5.529E-08	3.325E-05	1.200E-09	2.641E-08	3.328E-05	3.360E-05
AHL	0.079	--	0.287	2.619	2.619	2.375E-07	8.652E-14	1.554E-11	2.375E-07	--	--	--	--	6.246E-09	1.137E-12	1.344E-10	6.381E-09	1.203E-08	7.103E-10	4.274E-08	5.548E-08	3.337E-05	1.204E-09	2.650E-08	3.339E-05	3.369E-05
AHM	0.081	--	0.292	2.748	2.748	2.420E-07	8.816E-14	1.583E-11	2.420E-07	--	--	--	--	6.354E-09	1.157E-12	1.367E-10	6.492E-09	1.262E-08	7.453E-10	4.485E-08	5.822E-08	3.501E-05	1.263E-09	2.781E-08	3.504E-05	3.535E-05
AII	0.102	--	0.369	2.992	2.992	3.063E-07	1.116E-13	2.004E-11	3.063E-07	--	--	--	--	8.030E-09	1.462E-12	1.728E-10	8.204E-09	1.375E-08	8.114E-10	4.883E-08	6.339E-08	3.812E-05	1.375E-09	3.028E-08	3.815E-05	3.853E-05
AIJ	0.114	--	0.414	3.280	3.280	3.423E-07	1.247E-13	2.240E-11	3.423E-07	--	--	--	--	9.009E-09	1.640E-12	1.939E-10	9.205E-09	1.507E-08	8.895E-10	5.353E-08	6.949E-08	4.179E-05	1.508E-09	3.319E-08	4.182E-05	4.224E-05
AIK	0.107	--	0.386	2.935	2.935	3.213E-07	1.170E-13	2.102E-11	3.213E-07	--	--	--	--	8.400E-09	1.529E-12	1.808E-10	8.582E-09	1.348E-08	7.960E-10	4.790E-08	6.218E-08	3.739E-05	1.349E-09	2.970E-08	3.742E-05	3.782E-05
AIL	0.088	--	0.317	2.624	2.624	2.633E-07	9.593E-14	1.723E-11	2.634E-07	--	--	--	--	6.898E-09	1.256E-12	1.484E-10	7.048E-09	1.205E-08	7.116E-10	4.282E-08	5.559E-08	3.343E-05	1.206E-09	2.655E-08	3.346E-05	3.378E-05
AIM	0.080	--	0.289	2.707	2.707	2.393E-07	8.718E-14	1.566E-11	2.393E-07	--	--	--	--	6.289E-09	1.145E-12	1.353E-10	6.426E-09	1.244E-08	7.341E-10	4.418E-08	5.735E-08	3.449E-05	1.244E-09	2.739E-08	3.452E-05	3.482E-05
AJH	0.123	--	0.446	2.211	2.211	3.693E-07	1.345E-13	2.416E-11	3.694E-07	--	--	--	--	9.705E-09	1.766E-12	2.088E-10	9.916E-09	1.016E-08	5.996E-10	3.608E-08	4.684E-08	2.817E-05	1.016E-09	2.238E-08	2.819E-05	2.862E-05
AJI	0.089	--	0.323	2.841	2.841	2.678E-07	9.757E-14	1.752E-11	2.679E-07	--	--	--	--	7.029E-09	1.279E-12	1.513E-10	7.181E-09	1.305E-08	7.705E-10	4.637E-08	6.019E-08	3.619E-05	1.306E-09	2.875E-08	3.622E-05	3.656E-05
AJJ	0.108	--	0.391	2.845	2.845	3.243E-07	1.181E-13	2.122E-11	3.243E-07	--	--	--	--	8.509E-09	1.549E-12	1.831E-10	8.693E-09	1.307E-08	7.716E-10	4.643E-08	6.027E-08	3.625E-05	1.308E-09	2.879E-08	3.628E-05	3.667E-05
AJK	0.089	--	0.324	2.489	2.489	2.681E-07	9.768E-14	1.754E-11	2.682E-07	--	--	--	--	7.051E-09	1.283E-12	1.517E-10	7.204E-09	1.143E-08	6.750E-10	4.062E-08	5.273E-08	3.171E-05	1.144E-09	2.519E-08	3.174E-05	3.206E-05
AJL	0.083	--	0.299	2.620	2.620	2.477E-07	9.024E-14	1.621E-11	2.477E-07	--	--	--	--	6.507E-09	1.184E-12	1.400E-10	6.648E-09	1.204E-08	7.105E-10	4.276E-08	5.551E-08	3.338E-05	1.204E-09	2.651E-08	3.341E-05	3.372E-05
AJM	0.073	--	0.264	2.788	2.788	2.183E-07	7.952E-14	1.428E-11	2.183E-07	--	--	--	--	5.745E-09	1.046E-12	1.236E-10	5.870E-09	1.281E-08	7.561E-10	4.550E-08	5.906E-08	3.552E-05	1.282E-09	2.821E-08	3.555E-05	3.583E-05
AKG	0.102	--	0.370	1.881	1.881	3.063E-07	1.116E-13	2.004E-11	3.063E-07	--	--	--	--	8.052E-09	1.465E-12	1.733E-10	8.226E-09	8.641E-09	5.101E-10	3.070E-08	3.985E-08	2.396E-05	8.647E-10	1.904E-08	2.398E-05	2.434E-05
AKI	0.084	--	0.304	2.650	2.650	2.522E-07	9.188E-14	1.650E-11	2.522E-07	--	--	--	--	6.615E-09	1.204E-12	1.424E-10	6.759E-09	1.217E-08	7.187E-10	4.325E-08	5.614E-08	3.376E-05	1.218E-09	2.682E-08	3.379E-05	3.410E-05
AKJ	0.081	--	0.292	2.714	2.714	2.420E-07	8.816E-14	1.583E-11	2.420E-07	--	--	--	--	6.354E-09	1.157E-12	1.367E-10	6.492E-09	1.247E-08	7.360E-10	4.429E-08	5.750E-08	3.458E-05	1.248E-09	2.747E-08	3.461E-05	3.491E-05
AKK	0.074	--	0.267	2.370	2.370	2.222E-07	8.094E-14	1.454E-11	2.222E-07	--	--	--	--	5.810E-09	1.058E-12	1.250E-10	5.936E-09	1.089E-08	6.427E-10	3.868E-08	5.021E-08	3.019E-05	1.089E-09	2.398E-08	3.022E-05	3.050E-05
AKL	0.220	--	0.799	884.400	884.400	6.606E-07	2.406E-13	4.322E-11	6.606E-07	--	--	--	--	1.739E-08	3.165E-12	3.742E-10	1.776E-08	4.063E-06	2.398E-07	1.443E-05	1.874E-05	1.127E-02	4.066E-07	8.950E-06	1.128E-02	1.130E-02
AKL - Rem	0.080	--	0.292	2.329	2.329	2.414E-07	8.794E-14	1.580E-11	2.414E-07	--	--	--	--	6.354E-09	1.157E-12	1.367E-10	6.492E-09	1.070E-08	6.316E-10	3.801E-08	4.934E-08	2.967E-05	1.071E-09	2.357E-08	2.970E-05	2.999E-05
AKM	0.094	--	0.342	11.020	11.020	2.835E-07	1.033E-13	1.855E-11	2.835E-07	--	--	--	--	7.442E-09	1.355E-12	1.602E-10	7.604E-09	5.063E-08	2.989E-09	1.798E-07	2.335E-07	1.404E-04	5.066E-09	1.115E-07	1.405E-04	1.410E-04

Dose Calculations, Recreational Child

Survey Grid	95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				Total Dose
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	
AAA	0.100	--	0.367	2.287	2.287	2.156E-02	8.444E-10	2.814E-06	2.156E-02	--	--	--	--	5.742E-04	1.270E-07	3.152E-05	6.059E-04	9.038E-04	1.400E-05	9.338E-03	1.026E-02	1.652E+00	5.484E-06	1.866E-03	1.654E+00	1.686E+00
AAB	0.126	--	0.465	2.090	2.090	2.722E-02	1.066E-09	3.553E-06	2.722E-02	--	--	--	--	7.276E-04	1.609E-07	3.994E-05	7.677E-04	8.260E-04	1.280E-05	8.533E-03	9.372E-03	1.509E+00	5.012E-06	1.706E-03	1.511E+00	1.548E+00
AAC	0.092	0.027	0.330	2.400	2.400	1.996E-02	7.818E-10	2.605E-06	1.996E-02	2.679E-02	1.503E-09	3.925E-07	2.679E-02	5.163E-04	1.142E-07	2.834E-05	5.448E-04	9.485E-04	1.470E-05	9.799E-03	1.076E-02	1.733E+00	5.755E-06	1.959E-03	1.735E+00	1.793E+00
AAD	0.213	0.043	0.772	2.403	2.403	4.601E-02	1.802E-09	6.005E-06	4.602E-02	4.250E-02	2.384E-09	6.225E-07	4.250E-02	1.208E-03	2.671E-07	6.631E-05	1.274E-03	9.497E-04	1.471E-05	9.811E-03	1.078E-02	1.735E+00	5.762E-06	1.961E-03	1.737E+00	1.838E+00
AAE	0.205	0.041	0.745	2.291	2.291	4.428E-02	1.735E-09	5.780E-06	4.429E-02	3.975E-02	2.230E-09	5.823E-07	3.975E-02	1.166E-03	2.577E-07	6.399E-05	1.230E-03	9.054E-04	1.403E-05	9.354E-03	1.027E-02	1.655E+00	5.494E-06	1.870E-03	1.656E+00	1.752E+00
AAF	0.132	0.030	0.479	2.428	2.428	2.851E-02	1.117E-09	3.722E-06	2.852E-02	2.935E-02	1.647E-09	4.299E-07	2.935E-02	7.495E-04	1.657E-07	4.114E-05	7.908E-04	9.595E-04	1.487E-05	9.914E-03	1.089E-02	1.754E+00	5.822E-06	1.981E-03	1.755E+00	1.825E+00
AAG	0.096	--	0.348	2.054	2.054	2.069E-02	8.106E-10	2.701E-06	2.070E-02	--	--	--	--	5.445E-04	1.204E-07	2.989E-05	5.745E-04	8.117E-04	1.258E-05	8.386E-03	9.211E-03	1.483E+00	4.925E-06	1.676E-03	1.485E+00	1.516E+00
AAH	0.168	--	0.608	2.501	2.501	3.629E-02	1.421E-09	4.737E-06	3.630E-02	--	--	--	--	9.513E-04	2.103E-07	5.222E-05	1.004E-03	9.884E-04	1.531E-05	1.021E-02	1.122E-02	1.806E+00	5.997E-06	2.041E-03	1.808E+00	1.857E+00
AAI	0.134	--	0.485	2.509	2.509	2.895E-02	1.134E-09	3.778E-06	2.895E-02	--	--	--	--	7.589E-04	1.678E-07	4.166E-05	8.007E-04	9.916E-04	1.536E-05	1.024E-02	1.125E-02	1.812E+00	6.017E-06	2.048E-03	1.814E+00	1.855E+00
AAJ	0.088	--	0.318	2.543	2.543	1.892E-02	7.412E-10	2.470E-06	1.893E-02	--	--	--	--	4.976E-04	1.100E-07	2.731E-05	5.250E-04	1.005E-03	1.557E-05	1.038E-02	1.140E-02	1.837E+00	6.098E-06	2.075E-03	1.839E+00	1.869E+00
AAK	0.068	--	0.246	2.111	2.111	1.462E-02	5.728E-10	1.909E-06	1.463E-02	--	--	--	--	3.849E-04	8.510E-08	2.113E-05	4.061E-04	8.343E-04	1.293E-05	8.619E-03	9.466E-03	1.525E+00	5.062E-06	1.723E-03	1.526E+00	1.551E+00
AAL	0.083	--	0.301	2.880	2.880	1.795E-02	7.031E-10	2.343E-06	1.795E-02	--	--	--	--	4.710E-04	1.041E-07	2.585E-05	4.969E-04	1.138E-03	1.763E-05	1.176E-02	1.291E-02	2.080E+00	6.906E-06	2.350E-03	2.082E+00	2.114E+00
ABA	0.141	--	0.523	2.593	2.593	3.046E-02	1.193E-09	3.975E-06	3.046E-02	--	--	--	--	8.183E-04	1.809E-07	4.492E-05	8.634E-04	1.025E-03	1.588E-05	1.059E-02	1.163E-02	1.873E+00	6.218E-06	2.116E-03	1.875E+00	1.918E+00
ABB	0.137	--	0.516	2.194	2.194	2.959E-02	1.159E-09	3.863E-06	2.960E-02	--	--	--	--	8.074E-04	1.785E-07	4.432E-05	8.519E-04	8.671E-04	1.343E-05	8.958E-03	9.839E-03	1.585E+00	5.261E-06	1.791E-03	1.586E+00	1.627E+00
ABC	0.158	0.032	0.575	2.132	2.132	3.413E-02	1.337E-09	4.455E-06	3.414E-02	3.160E-02	1.773E-09	4.629E-07	3.160E-02	8.997E-04	1.989E-07	4.939E-05	9.493E-04	8.426E-04	1.305E-05	8.705E-03	9.561E-03	1.540E+00	5.113E-06	1.740E-03	1.541E+00	1.618E+00
ABD	0.188	0.021	0.683	2.339	2.339	4.061E-02	1.591E-09	5.301E-06	4.062E-02	2.090E-02	1.173E-09	3.062E-07	2.090E-02	1.069E-03	2.363E-07	5.866E-05	1.128E-03	9.244E-04	1.432E-05	9.550E-03	1.049E-02	1.689E+00	5.609E-06	1.909E-03	1.691E+00	1.764E+00
ABE	0.298	0.037	1.122	2.135	2.135	6.437E-02	2.521E-09	8.402E-06	6.438E-02	3.612E-02	2.027E-09	5.291E-07	3.612E-02	1.756E-03	3.881E-07	9.637E-05	1.852E-03	8.438E-04	1.307E-05	8.717E-03	9.574E-03	1.542E+00	5.120E-06	1.742E-03	1.544E+00	1.656E+00
ABF	0.099	0.026	0.358	2.094	2.094	2.130E-02	8.343E-10	2.780E-06	2.130E-02	2.581E-02	1.448E-09	3.781E-07	2.581E-02	5.601E-04	1.238E-07	3.075E-05	5.910E-04	8.275E-04	1.282E-05	8.550E-03	9.390E-03	1.512E+00	5.021E-06	1.709E-03	1.514E+00	1.571E+00
ABG	0.416	--	1.510	8.871	8.871	8.986E-02	3.520E-09	1.173E-05	8.988E-02	--	--	--	--	2.363E-03	5.223E-07	1.297E-04	2.493E-03	3.506E-03	5.432E-05	3.622E-02	3.978E-02	6.407E+00	2.127E-05	7.240E-03	6.414E+00	6.546E+00
ABH	0.141	--	0.520	2.141	2.141	3.046E-02	1.193E-09	3.975E-06	3.046E-02	--	--	--	--	8.136E-04	1.799E-07	4.466E-05	8.585E-04	8.461E-04	1.311E-05	8.742E-03	9.601E-03	1.546E+00	5.134E-06	1.747E-03	1.548E+00	1.589E+00
ABI	0.135	--	0.491	2.712	2.712	2.916E-02	1.142E-09	3.806E-06	2.917E-02	--	--	--	--	7.682E-04	1.698E-07	4.217E-05	8.106E-04	1.072E-03	1.661E-05	1.107E-02	1.216E-02	1.959E+00	6.503E-06	2.213E-03	1.961E+00	2.003E+00
ABJ	0.071	--	0.258	2.169	2.169	1.536E-02	6.016E-10	2.005E-06	1.536E-02	--	--	--	--	4.037E-04	8.925E-08	2.216E-05	4.259E-04	8.572E-04	1.328E-05	8.856E-03	9.726E-03	1.566E+00	5.201E-06	1.770E-03	1.568E+00	1.594E+00
ABK	0.063	--	0.230	2.150	2.150	1.370E-02	5.364E-10	1.788E-06	1.370E-02	--	--	--	--	3.599E-04	7.956E-08	1.975E-05	3.797E-04	8.497E-04	1.316E-05	8.778E-03	9.641E-03	1.553E+00	5.156E-06	1.755E-03	1.554E+00	1.578E+00
ABL	0.074	--	0.267	2.636	2.636	1.588E-02	6.219E-10	2.072E-06	1.588E-02	--	--	--	--	4.178E-04	9.236E-08	2.293E-05	4.408E-04	1.042E-03	1.614E-05	1.076E-02	1.182E-02	1.904E+00	6.321E-06	2.151E-03	1.906E+00	1.934E+00
ABM	0.080	--	0.279	2.749	2.749	1.724E-02	6.752E-10	2.250E-06	1.724E-02	--	--	--	--	4.365E-04	9.651E-08	2.396E-05	4.606E-04	1.086E-03	1.683E-05	1.122E-02	1.233E-02	1.985E+00	6.592E-06	2.243E-03	1.988E+00	2.018E+00
ACH	1.548	--	5.930	207.400	207.400	3.344E-01	1.310E-08	4.365E-05	3.344E-01	--	--	--	--	9.278E-03	2.051E-06	5.093E-04	9.790E-03	8.196E-02	1.270E-03	8.468E-01	9.300E-01	1.498E+02	4.973E-04	1.693E-01	1.500E+02	1.512E+02
ACH - Rem	0.065	--	0.232	1.909	1.909	1.404E-02	5.500E-10	1.833E-06	1.404E-02	--	--	--	--	3.630E-04	8.025E-08	1.993E-05	3.830E-04	7.544E-04	1.169E-05	7.794E-03	8.561E-03	1.379E+00	4.578E-06	1.558E-03	1.380E+00	1.403E+00
ACI	0.085	--	0.308	1.772	1.772	1.836E-02	7.192E-10	2.397E-06	1.836E-02	--	--	--	--	4.819E-04	1.065E-07	2.645E-05	5.085E-04	7.003E-04	1.085E-05	7.235E-03	7.946E-03	1.280E+00	4.249E-06	1.446E-03	1.281E+00	1.308E+00
ACJ	0.072	--	0.262	2.013	2.013	1.557E-02	6.100E-10	2.033E-06	1.558E-02	--	--	--	--	4.099E-04	9.063E-08	2.250E-05	4.325E-04	7.955E-04	1.233E-05	8.219E-03	9.027E-03	1.454E+00	4.827E-06	1.643E-03	1.455E+00	1.480E+00
ACK	0.066	--	0.238	2.019	2.019	1.417E-02	5.550E-10	1.850E-06	1.417E-02	--	--	--	--	3.724E-04	8.233E-08	2.044E-05	3.929E-04	7.979E-04	1.236E-05	8.244E-03	9.054E-03	1.458E+00	4.842E-06	1.648E-03	1.460E+00	1.483E+00
ACL	0.088	--	0.326	2.209	2.209	1.890E-02	7.403E-10	2.467E-06	1.890E-02	--	--	--	--	5.101E-04	1.128E-07	2.800E-05	5.382E-04	8.730E-04	1.353E-05	9.019E-03	9.906E-03	1.595E+00	5.297E-06	1.803E-03	1.597E+00	1.626E+00
ACM	0.076	--	0.274	2.860	2.860	1.633E-02	6.397E-10	2.132E-06	1.633E-02	--	--	--	--	4.287E-04	9.478E-08	2.353E-05	4.523E-04	1.130E-03	1.751E-05	1.168E-02	1.283E-02	2.065E+00	6.858E-06	2.334E-03	2.068E+00	2.097E+00
ADI	0.097	--	0.347	2.220	2.220	2.093E-02	8.199E-10	2.732E-06	2.093E-02	--	--	--	--	5.429E-04	1.200E-07	2.980E-05	5.729E-04	8.773E-04	1.359E-05	9.064E-03	9.955E-03	1.603E+00	5.324E-06	1.812E-03	1.605E+00	1.637E+00
ADJ	0.070	--	0.235	2.030	2.030	1.516E-02	5.940E-10	1.979E-06	1.517E-02	--	--	--	--	3.677E-04	8.129E-08	2.018E-05	3.880E-04	8.023E-04	1.243E-05	8.288E-03	9.103E-03	1.466E+00	4.868E-06	1.657E-03	1.468E+00	1.492E+00
ADK	0.063	--	0.230	1.798	1.798	1.370E-02	5.364E-10	1.788E-06	1.370E-02	--	--	--	--	3.599E-04	7.956E-08	1.975E-05	3.797E-04	7.106E-04	1.101E-05	7.341E-03	8.063E-03	1.299E+00	4.312E-06	1.467E-03	1.300E+00	1.322E+00
ADL	0.054	--	0.196	1.843	1.843	1.164E-02	4.561E-10	1.520E-06	1.164E-02	--	--	--	--	3.067E-04	6.780E-08	1.683E-05	3.236E-04	7.284E-04	1.128E-05	7.525E-03	8.265E-03	1.331E+00	4.420E-06	1.504E-03	1.333E+00	1.353E+00
ADM	0.077	--	0.277	2.629	2.629	1.663E-02	6.515E-10	2.171E-06	1.664E-02	--	--	--	--	4.334E-04	9.582E-08	2.379E-05	4.573E-04	1.039E-03	1.610E-05	1.073E-02	1.179E-02	1.899E+00	6.304E-06	2.146E-03	1.901E+00	1.930E+00
AEJ	0.069	--	0.250	1.764	1.764	1.491E-02	5.838E-10	1.945E-06	1.491E-02	--	--	--	--	3.912E-04	8.648E-08	2.147E-05	4.127E-04	6.971E-04	1.080E-05	7.202E-03	7.910E-03	1.274E+00	4.230E-06	1.440E-03	1.275E+00	1.299E+00
AEK	0.072	--	0.260	2.192	2.192	1.547E-02	6.058E-10	2.019E-06	1.547E-02	--	--	--	--	4.068E-04	8.994E-08	2.233E-05	4.292E-04	8.663E-04	1.342E-05	8.950E-03	9.830E-03	1.583E+00	5.256E-06	1.789E-03	1.585E+00	1.611E+00
AEL	0.069	--	0.249	2.349	2.349	1.484E-02	5.813E-10	1.937E-06	1.484E-02	--	--	--	--	3.896E-04	8.613E-08	2.139E-05	4.111E-04	9.283E-04	1.438E-05	9.591E-03	1.053E-02	1.696E+00	5.633E-06	1.917E-03	1.698E+00	1.724E+00
AEM	0.112	--	0.401	2.890	2.890	2.419E-02	9.476E-10	3.158E-06	2.420E-02	--	--	--	--	6.274E-04	1.387E-07	3.444E-05	6.620E-04	1.142E-03	1.770E-05	1.180E-02	1.296E-02	2.087E+00	6.930E-06	2.359E-03	2.090E+00	2.127E+00
AFI - AGI	0.119	--	0.431	2.770	2.770	2.571E-02	1.007E-09	3.355E-06	2.571E-02	--	--	--	--	6.744E-04	1.491E-07	3.702E-05	7.115E-04	1.095E-03	1.696E-05	1.131E-02	1.242E-02	2.000E+00	6.642E-06	2.261E-03	2.003E+00	2.042E+00
AFJ	0.063	--	0.228	2.381	2.381	1.359E-02	5.322E-10	1.773E-06	1.359E-02	--	--	--	--	3.567E-04	7.887E-08	1.958E-05	3.764E-04	9.410E-04	1.458E-05	9.722E-03	1.068E-02	1.720E+00	5.710E-06	1.943E-03	1.722E+00	1.746E+00
AFK	0.063	--	0.230	2.180	2.180	1.370E-02	5.364E-10	1.788E-06	1.370E-02	--	--	--	--	3.599E-04	7.956E-08	1.975E-05	3.797E-04	8.615E-04	1.335E-05	8.901E-03	9.776E-03	1.574E+00	5.228E-06	1.779E-03	1.576E+00	1.600E+00
AFL	0.100	--	0.364	3.677	3.677	2.160E-02	8.461E-10	2.819E-06	2.160E-02	--	--	--	--	5.695E-04	1.259E-07	3.126E-05	6.009E-04	1.453E-03	2.251E-05	1.501E-02	1.649E-02	2.656E+00	8.817E-06	3.001E-03	2.659E+00	2.697E+00
AFM	0.097	--	0.351	2.236	2.236	2.091E-02	8.190E-10	2.729E-06	2.091E-02	--	--	--	--	5.492E-04	1.214E-07	3.015E-05	5.795E-04	8.837E-04	1.369E-05	9.130E-03	1.003E-02	1.615E+00	5.362E-06	1.825E-03	1.617E+00	1.648E+00
AGJ	0.107	--	0.388	3.322	3.322	2.311E-02	9.053E-10	3.017E-06	2.312E-02	--	--	--	--	6.071E-04	1.342E-07	3.333E-05	6.405E-04	1.313E-03	2.034E-05	1.356E-02	1.490E-02	2.399E+00	7.966E-06	2.711E-03	2.402E+00	2.441E+00
AGK	0.103	--	0.374	3.000	3.000	2.225E-02	8.715E-10	2.904E-06	2.225E-02	--	--	--	--	5.852E-04	1.294E-07	3.212E-05	6.174E-04	1.186E-03	1.837E-05	1.225E-02	1.345E-02	2.167E+00	7.194E-06	2.448E-03	2.169E+00	2.205E+00
AGL	0.092	--	0.334	2.800	2.800	1.992E-02	7.801E-10	2.600E-06	1.992E-02	--	--	--	--	5.226E-04	1.155E-07	2.869E-05	5.514E-04	1.107E-03	1.714E-05	1.143E-02	1.256E-02	2.022E+00	6.714E-06	2.285E-03	2.024E+00	2.057E+00
AGM	0.097	--	0.352	2.765	2.765	2.098E-02	8.216E-10	2.738E-06	2.098E-02	--	--	--	--	5.508E-04	1.218E-07	3.023E-05	5.811E-04	1.093E-03	1.693E-05	1.129E-02	1.240E-02	1.997E+00	6.630E-06	2.257E-03	1.999E+00	2.033E+00
AHH - AIH	0.112	--	0.404	2.533	2.533	2.419E-02	9.476E-10	3.158E-06	2.420E-02	--	--	--	--	6.321E-04	1.398E-07	3.470E-05	6.670E-04	1.001E-03	1.551E-05	1.034E-02	1.136E-02	1.829E+00	6.074E-06	2.067E-03	1.831E+00	1.868E+00
AHI	0.074	--	0.264	2.097	2.097	1.594E-02	6.244E-10	2.081E-06	1.594E-02	--	--	--	--	4.131E-04	9.132E-08	2.268E-05	4.358E-04	8.287E-04	1.284E-05	8.562E-03	9.404E-03	1.514E+00	5.029E-06	1.711E-03	1.516E+00	1.542E+00
AHJ	0.100	--	0.361	3.213	3.213	2.152E-02	8.427E-10	2.808E-06	2.152E-02	--	--	--	--	5.648E-04	1.249E-07	3.101E-05	5.960E-04	1.270E-03	1.967E-05	1.312E-02	1.441E-02	2.320E+00	7.705E-06	2.622E-03	2.323E+00	2.360E+00
AHK	0.086	--	0.311	2.610	2.610	1.853E-02	7.260E-10	2.419E-06	1.854E-02	--	--	--	--	4.866E-04	1.076E-07	2.671E-05	5.134E-04	1.031E-03	1.598E-05	1.066E-02	1.170E-02	1.885E+00	6.259E-06	2.130E-03	1.887E+00	1.918E+00
AHL	0.079	--	0.287	2.619	2.619	1.709E-02	6.693E-10	2.230E-06	1.709E-02	--	--	--	--	4.491E-04	9.928E-08	2.465E-05	4.738E-04	1.035E-03	1.604E-05	1.069E-02	1.174E-02	1.891E+00	6.280E-06	2.137E-03	1.894E+00	1.923E+00
AHM	0.081	--	0.292	2.748	2.748	1.741E-02	6.820E-10	2.272E-06	1.741E-02	--	--	--	--	4.569E-04	1.010E-07	2.508E-05	4.821E-04	1.086E-03	1.683E-05	1.122E-02	1.232E-02	1.985E+00	6.590E-06	2.243E-03	1.987E+00	2.017E+00
AII	0.102	--	0.369	2.992	2.992	2.203E-02	8.630E-10	2.876E-06	2.204E-02	--	--	--	--	5.774E-04	1.276E-07	3.169E-05	6.092E-04	1.182E-03	1.832E-05	1.222E-02	1.342E-02	2.161E+00	7.175E-06	2.442E-03	2.163E+00	2.199E+00
AIJ	0.114	--	0.414	3.280	3.280	2.463E-02	9.646E-10	3.214E-06	2.463E-02	--	--	--	--	6.478E-04	1.432E-07	3.556E-05	6.835E-04	1.296E-03	2.008E-05	1.339E-02	1.471E-02	2.369E+00	7.865E-06	2.677E-03	2.372E+00	2.412E+00
AIK	0.107	--	0.386	2.935	2.935	2.311E-02	9.053E-10	3.017E-06	2.312E-02	--	--	--	--	6.040E-04	1.335E-07	3.315E-05	6.372E-04	1.160E-03	1.797E-05	1.198E-02	1.316E-02	2.120E+00	7.038E-06	2.395E-03	2.122E+00	2.159E+00
AIL	0.088	--	0.317	2.624	2.624	1.894E-02	7.420E-10	2.473E-06	1.895E-02	--	--	--	--	4.960E-04	1.097E-07	2.723E-05	5.233E-04	1.037E-03	1.607E-05	1.071E-02	1.177E-02	1.895E+00	6.292E-06	2.141E-03	1.897E+00	1.928E+00
AIM	0.080	--	0.289	2.707	2.707	1.722E-02	6.743E-10	2.247E-06	1.722E-02	--	--	--	--	4.522E-04	9.997E-08	2.482E-05	4.771E-04	1.070E-03	1.657E-05	1.105E-02	1.214E-02	1.955E+00	6.491E-06	2.209E-03	1.957E+00	1.987E+00
AJH	0.123	--	0.446	2.211	2.211	2.657E-02	1.041E-09	3.468E-06	2.657E-02	--	--	--	--	6.978E-04	1.543E-07	3.831E-05	7.363E-04	8.738E-04	1.354E-05	9.028E-03	9.915E-03	1.597E+00	5.302E-06	1.804E-03	1.599E+00	1.636E+00
AJI	0.089	--	0.323	2.841	2.841	1.927E-02	7.547E-10	2.515E-06	1.927E-02	--	--	--	--	5.054E-04	1.117E-07	2.774E-05	5.332E-04	1.123E-03	1.740E-05	1.160E-02	1.274E-02	2.052E+00	6.813E-06	2.319E-03	2.054E+00	2.087E+00
AJJ	0.108	--	0.391	2.845	2.845	2.333E-02	9.138E-10	3.045E-06	2.333E-02	--	--	--	--	6.118E-04	1.353E-07	3.358E-05	6.455E-04	1.124E-03	1.742E-05	1.162E-02	1.276E-02	2.055E+00	6.822E-06	2.322E-03	2.057E+00	2.094E+00
AJK	0.089	--	0.324	2.489	2.489	1.929E-02	7.556E-10	2.518E-06	1.929E-02	--	--	--	--	5.069E-04	1.121E-07	2.783E-05	5.349E-04	9.837E-04	1.524E-05	1.016E-02	1.116E-02	1.798E+00	5.969E-06	2.031E-03	1.800E+00	1.831E+00
AJL	0.083	--	0.299	2.620	2.620	1.782E-02	6.980E-10	2.326E-06	1.782E-02	--	--	--	--	4.678E-04	1.034E-07	2.568E-05	4.936E-04	1.035E-03	1.604E-05	1.070E-02	1.175E-02	1.892E+00	6.283E-06	2.138E-03	1.894E+00	1.924E+00
AJM	0.073	--	0.264	2.788	2.788	1.570E-02	6.151E-10	2.050E-06	1.571E-02	--	--	--	--	4.131E-04	9.132E-08	2.268E-05	4.358E-04	1.102E-03	1.707E-05	1.138E-02	1.250E-02	2.013E+00	6.686E-06	2.275E-03	2.016E+00	2.044E+00
AKG	0.102	--	0.370	1.881	1.881	2.203E-02	8.630E-10	2.876E-06	2.204E-02	--	--	--	--	5.789E-04	1.280E-07	3.178E-05	6.108E-04	7.434E-04	1.152E-05	7.680E-03	8.435E-03	1.358E+00	4.511E-06	1.535E-03	1.360E+00	1.391E+00
AKI	0.084	--	0.304	2.650	2.650	1.815E-02	7.107E-10	2.368E-06	1.815E-02	--	--	--	--	4.757E-04	1.052E-07	2.611E-05	5.019E-04	1.047E-03	1.623E-05	1.082E-02	1.188E-02	1.914E+00	6.355E-06	2.163E-03	1.916E+00	1.947E+00
AKJ	0.081	--	0.292	2.714	2.714	1.741E-02	6.820E-10	2.272E-06	1.741E-02	--	--	--	--	4.569E-04	1.010E-07	2.508E-05	4.821E-04	1.073E-03	1.662E-05	1.108E-02	1.217E-02	1.960E+00	6.508E-06	2.215E-03	1.962E+00	1.992E+00
AKK	0.074	--	0.267	2.370	2.370	1.599E-02	6.261E-10	2.086E-06	1.599E-02	--	--	--	--	4.178E-04	9.236E-08	2.293E-05	4.408E-04	9.366E-04	1.451E-05	9.677E-03	1.063E-02	1.712E+00	5.683E-06	1.934E-03	1.714E+00	1.741E+00
AKL	0.220	--	0.799	884.400	884.400	4.752E-02	1.861E-09	6.203E-06	4.753E-02	--	--	--	--	1.250E-03	2.764E-07	6.863E-05	1.319E-03	3.495E-01	5.415E-03	3.611E+00	3.966E+00	6.387E+02	2.121E-03	7.218E-01	6.394E+02	6.435E+02
AKL - Rem	0.080	--	0.292	2.329	2.329	1.737E-02	6.803E-10	2.267E-06	1.737E-02	--	--	--	--	4.569E-04	1.010E-07	2.508E-05	4.821E-04	9.204E-04	1.426E-05	9.509E-03	1.044E-02	1.682E+00	5.585E-06	1.901E-03	1.684E+00	1.712E+00
AKM	0.094	--	0.342	11.020	11.020	2.039E-02	7.987E-10	2.662E-06	2.039E-02	--	--	--	--	5.351E-04	1.183E-07	2.937E-05	5.646E-04	4.355E-03	6.748E-05	4.499E-02	4.942E-02	7.959E+00	2.643E-05	8.993E-03	7.968E+00	8.038E+00

Risk Calculations, Recreational Child

Survey Grid	95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				Total Risk
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	
AAA	0.100	--	0.367	2.287	2.287	9.114E-08	1.680E-14	1.192E-11	9.116E-08	--	--	--	--	2.550E-09	2.348E-13	1.098E-10	2.660E-09	3.444E-09	1.028E-10	2.447E-08	2.802E-08	7.467E-06	1.131E-10	6.337E-09	7.474E-06	7.595E-06
AAB	0.126	--	0.465	2.090	2.090	1.151E-07	2.121E-14	1.505E-11	1.151E-07	--	--	--	--	3.231E-09	2.975E-13	1.391E-10	3.370E-09	3.148E-09	9.395E-11	2.236E-08	2.560E-08	6.824E-06	1.033E-10	5.791E-09	6.830E-06	6.974E-06
AAC	0.092	0.027	0.330	2.400	2.400	8.439E-08	1.555E-14	1.104E-11	8.440E-08	9.067E-08	3.069E-15	1.441E-12	9.067E-08	2.293E-09	2.112E-13	9.869E-11	2.392E-09	3.614E-09	1.079E-10	2.568E-08	2.940E-08	7.836E-06	1.187E-10	6.650E-09	7.843E-06	8.050E-06
AAD	0.213	0.043	0.772	2.403	2.403	1.945E-07	3.585E-14	2.545E-11	1.946E-07	1.438E-07	4.867E-15	2.285E-12	1.438E-07	5.364E-09	4.940E-13	2.309E-10	5.596E-09	3.619E-09	1.080E-10	2.571E-08	2.944E-08	7.846E-06	1.188E-10	6.659E-09	7.853E-06	8.226E-06
AAE	0.205	0.041	0.745	2.291	2.291	1.872E-07	3.451E-14	2.449E-11	1.872E-07	1.345E-07	4.553E-15	2.137E-12	1.345E-07	5.177E-09	4.767E-13	2.228E-10	5.400E-09	3.450E-09	1.030E-10	2.451E-08	2.807E-08	7.480E-06	1.133E-10	6.348E-09	7.487E-06	7.842E-06
AAF	0.132	0.030	0.479	2.428	2.428	1.206E-07	2.222E-14	1.577E-11	1.206E-07	9.931E-08	3.361E-15	1.578E-12	9.931E-08	3.328E-09	3.065E-13	1.433E-10	3.472E-09	3.657E-09	1.091E-10	2.598E-08	2.975E-08	7.927E-06	1.200E-10	6.728E-09	7.934E-06	8.187E-06
AAG	0.096	--	0.348	2.054	2.054	8.749E-08	1.612E-14	1.145E-11	8.750E-08	--	--	--	--	2.418E-09	2.227E-13	1.041E-10	2.522E-09	3.093E-09	9.233E-11	2.198E-08	2.516E-08	6.706E-06	1.015E-10	5.692E-09	6.712E-06	6.827E-06
AAH	0.168	--	0.608	2.501	2.501	1.534E-07	2.828E-14	2.007E-11	1.535E-07	--	--	--	--	4.225E-09	3.890E-13	1.818E-10	4.407E-09	3.767E-09	1.124E-10	2.676E-08	3.064E-08	8.166E-06	1.236E-10	6.930E-09	8.173E-06	8.361E-06
AAI	0.134	--	0.485	2.509	2.509	1.224E-07	2.255E-14	1.601E-11	1.224E-07	--	--	--	--	3.370E-09	3.103E-13	1.450E-10	3.515E-09	3.779E-09	1.128E-10	2.685E-08	3.074E-08	8.192E-06	1.240E-10	6.952E-09	8.199E-06	8.356E-06
AAJ	0.088	--	0.318	2.543	2.543	8.000E-08	1.474E-14	1.047E-11	8.001E-08	--	--	--	--	2.210E-09	2.035E-13	9.510E-11	2.305E-09	3.830E-09	1.143E-10	2.721E-08	3.115E-08	8.303E-06	1.257E-10	7.047E-09	8.310E-06	8.424E-06
AAK	0.068	--	0.246	2.111	2.111	6.183E-08	1.140E-14	8.088E-12	6.184E-08	--	--	--	--	1.709E-09	1.574E-13	7.357E-11	1.783E-09	3.179E-09	9.489E-11	2.259E-08	2.586E-08	6.892E-06	1.044E-10	5.850E-09	6.898E-06	6.988E-06
AAL	0.083	--	0.301	2.880	2.880	7.589E-08	1.399E-14	9.928E-12	7.590E-08	--	--	--	--	2.092E-09	1.926E-13	9.002E-11	2.182E-09	4.337E-09	1.295E-10	3.082E-08	3.528E-08	9.403E-06	1.424E-10	7.980E-09	9.411E-06	9.525E-06
ABA	0.141	--	0.523	2.593	2.593	1.288E-07	2.373E-14	1.685E-11	1.288E-07	--	--	--	--	3.634E-09	3.347E-13	1.564E-10	3.791E-09	3.905E-09	1.166E-10	2.775E-08	3.177E-08	8.466E-06	1.282E-10	7.185E-09	8.473E-06	8.638E-06
ABB	0.137	--	0.516	2.194	2.194	1.251E-07	2.306E-14	1.637E-11	1.251E-07	--	--	--	--	3.585E-09	3.302E-13	1.543E-10	3.740E-09	3.304E-09	9.862E-11	2.348E-08	2.688E-08	7.163E-06	1.085E-10	6.080E-09	7.170E-06	7.325E-06
ABC	0.158	0.032	0.575	2.132	2.132	1.443E-07	2.659E-14	1.888E-11	1.443E-07	1.069E-07	3.620E-15	1.699E-12	1.069E-07	3.995E-09	3.679E-13	1.720E-10	4.168E-09	3.211E-09	9.583E-11	2.281E-08	2.612E-08	6.961E-06	1.054E-10	5.908E-09	6.967E-06	7.249E-06
ABD	0.188	0.021	0.683	2.339	2.339	1.717E-07	3.164E-14	2.246E-11	1.717E-07	7.074E-08	2.394E-15	1.124E-12	7.075E-08	4.746E-09	4.370E-13	2.043E-10	4.951E-09	3.523E-09	1.051E-10	2.503E-08	2.865E-08	7.637E-06	1.156E-10	6.481E-09	7.643E-06	7.920E-06
ABE	0.298	0.037	1.122	2.135	2.135	2.722E-07	5.016E-14	3.560E-11	2.722E-07	1.222E-07	4.137E-15	1.942E-12	1.222E-07	7.796E-09	7.179E-13	3.355E-10	8.133E-09	3.215E-09	9.597E-11	2.284E-08	2.616E-08	6.971E-06	1.056E-10	5.916E-09	6.977E-06	7.406E-06
ABF	0.099	0.026	0.358	2.094	2.094	9.005E-08	1.660E-14	1.178E-11	9.006E-08	8.735E-08	2.956E-15	1.388E-12	8.735E-08	2.488E-09	2.291E-13	1.071E-10	2.595E-09	3.154E-09	9.413E-11	2.241E-08	2.565E-08	6.837E-06	1.035E-10	5.802E-09	6.843E-06	7.048E-06
ABG	0.416	--	1.510	8.871	8.871	3.799E-07	7.002E-14	4.970E-11	3.800E-07	--	--	--	--	1.049E-08	9.662E-13	4.516E-10	1.094E-08	1.336E-08	3.988E-10	9.492E-08	1.087E-07	2.896E-05	4.386E-10	2.458E-08	2.899E-05	2.949E-05
ABH	0.141	--	0.520	2.141	2.141	1.288E-07	2.373E-14	1.685E-11	1.288E-07	--	--	--	--	3.613E-09	3.327E-13	1.555E-10	3.769E-09	3.224E-09	9.624E-11	2.291E-08	2.623E-08	6.990E-06	1.059E-10	5.933E-09	6.996E-06	7.155E-06
ABI	0.135	--	0.491	2.712	2.712	1.233E-07	2.272E-14	1.613E-11	1.233E-07	--	--	--	--	3.412E-09	3.142E-13	1.468E-10	3.559E-09	4.084E-09	1.219E-10	2.902E-08	3.322E-08	8.855E-06	1.341E-10	7.515E-09	8.862E-06	9.022E-06
ABJ	0.071	--	0.258	2.169	2.169	6.493E-08	1.197E-14	8.494E-12	6.494E-08	--	--	--	--	1.793E-09	1.651E-13	7.716E-11	1.870E-09	3.267E-09	9.750E-11	2.321E-08	2.657E-08	7.082E-06	1.072E-10	6.010E-09	7.088E-06	7.181E-06
ABK	0.063	--	0.230	2.150	2.150	5.790E-08	1.067E-14	7.574E-12	5.791E-08	--	--	--	--	1.598E-09	1.472E-13	6.878E-11	1.667E-09	3.238E-09	9.664E-11	2.301E-08	2.634E-08	7.020E-06	1.063E-10	5.958E-09	7.026E-06	7.112E-06
ABL	0.074	--	0.267	2.636	2.636	6.713E-08	1.237E-14	8.781E-12	6.713E-08	--	--	--	--	1.855E-09	1.708E-13	7.985E-11	1.935E-09	3.970E-09	1.185E-10	2.821E-08	3.229E-08	8.607E-06	1.303E-10	7.304E-09	8.614E-06	8.715E-06
ABM	0.080	--	0.279	2.749	2.749	7.288E-08	1.343E-14	9.534E-12	7.289E-08	--	--	--	--	1.939E-09	1.785E-13	8.344E-11	2.022E-09	4.140E-09	1.236E-10	2.941E-08	3.368E-08	8.975E-06	1.359E-10	7.617E-09	8.983E-06	9.092E-06
ACH	1.548	--	5.930	207.400	207.400	1.414E-06	2.606E-13	1.849E-10	1.414E-06	--	--	--	--	4.121E-08	3.794E-12	1.773E-09	4.298E-08	3.123E-07	9.323E-09	2.219E-06	2.541E-06	6.772E-04	1.025E-08	5.747E-07	6.777E-04	6.817E-04
ACH - Rem	0.065	--	0.232	1.909	1.909	5.936E-08	1.094E-14	7.765E-12	5.937E-08	--	--	--	--	1.612E-09	1.485E-13	6.938E-11	1.682E-09	2.875E-09	8.581E-11	2.043E-08	2.339E-08	6.233E-06	9.438E-11	5.290E-09	6.238E-06	6.323E-06
ACI	0.085	--	0.308	1.772	1.772	7.763E-08	1.431E-14	1.015E-11	7.764E-08	--	--	--	--	2.140E-09	1.971E-13	9.211E-11	2.232E-09	2.669E-09	7.965E-11	1.896E-08	2.171E-08	5.786E-06	8.761E-11	4.910E-09	5.791E-06	5.892E-06
ACJ	0.072	--	0.262	2.013	2.013	6.585E-08	1.214E-14	8.614E-12	6.586E-08	--	--	--	--	1.821E-09	1.676E-13	7.835E-11	1.899E-09	3.032E-09	9.048E-11	2.154E-08	2.466E-08	6.572E-06	9.952E-11	5.578E-09	6.578E-06	6.671E-06
ACK	0.066	--	0.238	2.019	2.019	5.991E-08	1.104E-14	7.837E-12	5.992E-08	--	--	--	--	1.654E-09	1.523E-13	7.118E-11	1.725E-09	3.041E-09	9.075E-11	2.160E-08	2.473E-08	6.592E-06	9.982E-11	5.595E-09	6.598E-06	6.684E-06
ACL	0.088	--	0.326	2.209	2.209	7.991E-08	1.473E-14	1.045E-11	7.992E-08	--	--	--	--	2.265E-09	2.086E-13	9.749E-11	2.363E-09	3.327E-09	9.929E-11	2.364E-08	2.706E-08	7.212E-06	1.092E-10	6.121E-09	7.219E-06	7.328E-06
ACM	0.076	--	0.274	2.860	2.860	6.904E-08	1.272E-14	9.032E-12	6.905E-08	--	--	--	--	1.904E-09	1.753E-13	8.194E-11	1.986E-09	4.307E-09	1.286E-10	3.060E-08	3.504E-08	9.338E-06	1.414E-10	7.925E-09	9.346E-06	9.452E-06
ADI	0.097	--	0.347	2.220	2.220	8.850E-08	1.631E-14	1.158E-11	8.851E-08	--	--	--	--	2.411E-09	2.220E-13	1.038E-10	2.515E-09	3.343E-09	9.979E-11	2.375E-08	2.720E-08	7.248E-06	1.098E-10	6.152E-09	7.255E-06	7.373E-06
ADJ	0.070	--	0.235	2.030	2.030	6.411E-08	1.182E-14	8.387E-12	6.412E-08	--	--	--	--	1.633E-09	1.504E-13	7.028E-11	1.703E-09	3.057E-09	9.125E-11	2.172E-08	2.487E-08	6.628E-06	1.004E-10	5.625E-09	6.634E-06	6.724E-06
ADK	0.063	--	0.230	1.798	1.798	5.790E-08	1.067E-14	7.574E-12	5.791E-08	--	--	--	--	1.598E-09	1.472E-13	6.878E-11	1.667E-09	2.708E-09	8.082E-11	1.924E-08	2.203E-08	5.870E-06	8.889E-11	4.982E-09	5.876E-06	5.957E-06
ADL	0.054	--	0.196	1.843	1.843	4.923E-08	9.072E-15	6.439E-12	4.923E-08	--	--	--	--	1.362E-09	1.254E-13	5.862E-11	1.421E-09	2.776E-09	8.284E-11	1.972E-08	2.258E-08	6.017E-06	9.112E-11	5.107E-09	6.023E-06	6.096E-06
ADM	0.077	--	0.277	2.629	2.629	7.032E-08	1.296E-14	9.199E-12	7.033E-08	--	--	--	--	1.925E-09	1.772E-13	8.284E-11	2.008E-09	3.959E-09	1.182E-10	2.813E-08	3.221E-08	8.584E-06	1.300E-10	7.285E-09	8.591E-06	8.696E-06
AEJ	0.069	--	0.250	1.764	1.764	6.302E-08	1.161E-14	8.243E-12	6.302E-08	--	--	--	--	1.737E-09	1.600E-13	7.477E-11	1.812E-09	2.657E-09	7.929E-11	1.887E-08	2.161E-08	5.759E-06	8.721E-11	4.888E-09	5.764E-06	5.851E-06
AEK	0.072	--	0.260	2.192	2.192	6.539E-08	1.205E-14	8.554E-12	6.540E-08	--	--	--	--	1.807E-09	1.664E-13	7.776E-11	1.885E-09	3.301E-09	9.853E-11	2.345E-08	2.685E-08	7.157E-06	1.084E-10	6.074E-09	7.163E-06	7.257E-06
AEL	0.069	--	0.249	2.349	2.349	6.274E-08	1.156E-14	8.208E-12	6.275E-08	--	--	--	--	1.730E-09	1.593E-13	7.447E-11	1.805E-09	3.538E-09	1.056E-10	2.513E-08	2.878E-08	7.669E-06	1.161E-10	6.509E-09	7.676E-06	7.769E-06
AEM	0.112	--	0.401	2.890	2.890	1.023E-07	1.885E-14	1.338E-11	1.023E-07	--	--	--	--	2.786E-09	2.566E-13	1.199E-10	2.907E-09	4.352E-09	1.299E-10	3.092E-08	3.541E-08	9.436E-06	1.429E-10	8.008E-09	9.444E-06	9.585E-06
AFI - AGI	0.119	--	0.431	2.770	2.770	1.087E-07	2.003E-14	1.422E-11	1.087E-07	--	--	--	--	2.995E-09	2.758E-13	1.289E-10	3.124E-09	4.172E-09	1.245E-10	2.964E-08	3.394E-08	9.044E-06	1.369E-10	7.676E-09	9.052E-06	9.198E-06
AFJ	0.063	--	0.228	2.381	2.381	5.744E-08	1.059E-14	7.515E-12	5.745E-08	--	--	--	--	1.584E-09	1.459E-13	6.819E-11	1.653E-09	3.586E-09	1.070E-10	2.548E-08	2.917E-08	7.774E-06	1.177E-10	6.598E-09	7.781E-06	7.869E-06
AFK	0.063	--	0.230	2.180	2.180	5.790E-08	1.067E-14	7.574E-12	5.791E-08	--	--	--	--	1.598E-09	1.472E-13	6.878E-11	1.667E-09	3.283E-09	9.799E-11	2.333E-08	2.671E-08	7.118E-06	1.078E-10	6.041E-09	7.124E-06	7.210E-06
AFL	0.100	--	0.364	3.677	3.677	9.133E-08	1.683E-14	1.195E-11	9.134E-08	--	--	--	--	2.529E-09	2.329E-13	1.089E-10	2.638E-09	5.538E-09	1.653E-10	3.934E-08	4.505E-08	1.201E-05	1.818E-10	1.019E-08	1.202E-05	1.215E-05
AFM	0.097	--	0.351	2.236	2.236	8.840E-08	1.629E-14	1.156E-11	8.842E-08	--	--	--	--	2.439E-09	2.246E-13	1.050E-10	2.544E-09	3.367E-09	1.005E-10	2.393E-08	2.739E-08	7.301E-06	1.105E-10	6.196E-09	7.307E-06	7.425E-06
AGJ	0.107	--	0.388	3.322	3.322	9.772E-08	1.801E-14	1.278E-11	9.773E-08	--	--	--	--	2.696E-09	2.483E-13	1.160E-10	2.812E-09	5.003E-09	1.493E-10	3.555E-08	4.070E-08	1.085E-05	1.642E-10	9.205E-09	1.086E-05	1.100E-05
AGK	0.103	--	0.374	3.000	3.000	9.407E-08	1.734E-14	1.231E-11	9.408E-08	--	--	--	--	2.599E-09	2.393E-13	1.118E-10	2.711E-09	4.518E-09	1.349E-10	3.210E-08	3.675E-08	9.795E-06	1.483E-10	8.313E-09	9.803E-06	9.937E-06
AGL	0.092	--	0.334	2.800	2.800	8.420E-08	1.552E-14	1.102E-11	8.421E-08	--	--	--	--	2.321E-09	2.137E-13	9.989E-11	2.421E-09	4.217E-09	1.259E-10	2.996E-08	3.430E-08	9.142E-06	1.384E-10	7.759E-09	9.150E-06	9.271E-06
AGM	0.097	--	0.352	2.765	2.765	8.868E-08	1.634E-14	1.160E-11	8.869E-08	--	--	--	--	2.446E-09	2.252E-13	1.053E-10	2.551E-09	4.164E-09	1.243E-10	2.959E-08	3.387E-08	9.028E-06	1.367E-10	7.662E-09	9.036E-06	9.161E-06
AHH - AIH	0.112	--	0.404	2.533	2.533	1.023E-07	1.885E-14	1.338E-11	1.023E-07	--	--	--	--	2.807E-09	2.585E-13	1.208E-10	2.928E-09	3.815E-09	1.139E-10	2.710E-08	3.103E-08	8.270E-06	1.252E-10	7.019E-09	8.277E-06	8.414E-06
AHI	0.074	--	0.264	2.097	2.097	6.740E-08	1.242E-14	8.817E-12	6.741E-08	--	--	--	--	1.834E-09	1.689E-13	7.895E-11	1.914E-09	3.158E-09	9.426E-11	2.244E-08	2.569E-08	6.847E-06	1.037E-10	5.811E-09	6.853E-06	6.948E-06
AHJ	0.100	--	0.361	3.213	3.213	9.096E-08	1.676E-14	1.190E-11	9.097E-08	--	--	--	--	2.508E-09	2.310E-13	1.080E-10	2.617E-09	4.839E-09	1.444E-10	3.438E-08	3.936E-08	1.049E-05	1.589E-10	8.903E-09	1.050E-05	1.063E-05
AHK	0.086	--	0.311	2.610	2.610	7.836E-08	1.444E-14	1.025E-11	7.837E-08	--	--	--	--	2.161E-09	1.990E-13	9.301E-11	2.254E-09	3.931E-09	1.173E-10	2.793E-08	3.197E-08	8.522E-06	1.290E-10	7.232E-09	8.529E-06	8.642E-06
AHL	0.079	--	0.287	2.619	2.619	7.224E-08	1.331E-14	9.450E-12	7.225E-08	--	--	--	--	1.994E-09	1.836E-13	8.583E-11	2.080E-09	3.944E-09	1.177E-10	2.802E-08	3.209E-08	8.551E-06	1.295E-10	7.257E-09	8.558E-06	8.665E-06
AHM	0.081	--	0.292	2.748	2.748	7.361E-08	1.357E-14	9.629E-12	7.362E-08	--	--	--	--	2.029E-09	1.868E-13	8.733E-11	2.117E-09	4.138E-09	1.235E-10	2.940E-08	3.367E-08	8.972E-06	1.359E-10	7.615E-09	8.980E-06	9.089E-06
AII	0.102	--	0.369	2.992	2.992	9.315E-08	1.717E-14	1.219E-11	9.317E-08	--	--	--	--	2.564E-09	2.361E-13	1.104E-10	2.675E-09	4.506E-09	1.345E-10	3.201E-08	3.665E-08	9.769E-06	1.479E-10	8.291E-09	9.777E-06	9.910E-06
AIJ	0.114	--	0.414	3.280	3.280	1.041E-07	1.919E-14	1.362E-11	1.041E-07	--	--	--	--	2.877E-09	2.649E-13	1.238E-10	3.001E-09	4.940E-09	1.474E-10	3.510E-08	4.018E-08	1.071E-05	1.622E-10	9.089E-09	1.072E-05	1.087E-05
AIK	0.107	--	0.386	2.935	2.935	9.772E-08	1.801E-14	1.278E-11	9.773E-08	--	--	--	--	2.682E-09	2.470E-13	1.154E-10	2.798E-09	4.420E-09	1.319E-10	3.140E-08	3.596E-08	9.583E-06	1.451E-10	8.133E-09	9.591E-06	9.728E-06
AIL	0.088	--	0.317	2.624	2.624	8.009E-08	1.476E-14	1.048E-11	8.010E-08	--	--	--	--	2.203E-09	2.028E-13	9.480E-11	2.298E-09	3.952E-09	1.179E-10	2.808E-08	3.215E-08	8.567E-06	1.297E-10	7.271E-09	8.575E-06	8.689E-06
AIM	0.080	--	0.289	2.707	2.707	7.279E-08	1.341E-14	9.522E-12	7.280E-08	--	--	--	--	2.008E-09	1.849E-13	8.643E-11	2.095E-09	4.077E-09	1.217E-10	2.896E-08	3.316E-08	8.838E-06	1.338E-10	7.501E-09	8.846E-06	8.954E-06
AJH	0.123	--	0.446	2.211	2.211	1.123E-07	2.070E-14	1.469E-11	1.123E-07	--	--	--	--	3.099E-09	2.854E-13	1.334E-10	3.233E-09	3.330E-09	9.938E-11	2.366E-08	2.709E-08	7.219E-06	1.093E-10	6.127E-09	7.225E-06	7.368E-06
AJI	0.089	--	0.323	2.841	2.841	8.146E-08	1.501E-14	1.066E-11	8.147E-08	--	--	--	--	2.244E-09	2.067E-13	9.660E-11	2.341E-09	4.279E-09	1.277E-10	3.040E-08	3.480E-08	9.276E-06	1.405E-10	7.872E-09	9.284E-06	9.402E-06
AJJ	0.108	--	0.391	2.845	2.845	9.863E-08	1.818E-14	1.290E-11	9.865E-08	--	--	--	--	2.717E-09	2.502E-13	1.169E-10	2.834E-09	4.285E-09	1.279E-10	3.044E-08	3.485E-08	9.289E-06	1.407E-10	7.883E-09	9.297E-06	9.433E-06
AJK	0.089	--	0.324	2.489	2.489	8.156E-08	1.503E-14	1.067E-11	8.157E-08	--	--	--	--	2.251E-09	2.073E-13	9.690E-11	2.348E-09	3.748E-09	1.119E-10	2.663E-08	3.049E-08	8.127E-06	1.231E-10	6.897E-09	8.134E-06	8.248E-06
AJL	0.083	--	0.299	2.620	2.620	7.535E-08	1.389E-14	9.856E-12	7.536E-08	--	--	--	--	2.078E-09	1.913E-13	8.942E-11	2.167E-09	3.946E-09	1.178E-10	2.803E-08	3.210E-08	8.554E-06	1.295E-10	7.260E-09	8.562E-06	8.671E-06
AJM	0.073	--	0.264	2.788	2.788	6.640E-08	1.224E-14	8.685E-12	6.640E-08	--	--	--	--	1.834E-09	1.689E-13	7.895E-11	1.914E-09	4.199E-09	1.253E-10	2.983E-08	3.416E-08	9.103E-06	1.378E-10	7.726E-09	9.111E-06	9.213E-06
AKG	0.102	--	0.370	1.881	1.881	9.315E-08	1.717E-14	1.219E-11	9.317E-08	--	--	--	--	2.571E-09	2.368E-13	1.107E-10	2.682E-09	2.833E-09	8.455E-11	2.013E-08	2.304E-08	6.141E-06	9.300E-11	5.212E-09	6.147E-06	6.266E-06
AKI	0.084	--	0.304	2.650	2.650	7.672E-08	1.414E-14	1.004E-11	7.673E-08	--	--	--	--	2.112E-09	1.945E-13	9.092E-11	2.203E-09	3.991E-09	1.191E-10	2.836E-08	3.247E-08	8.652E-06	1.310E-10	7.343E-09	8.660E-06	8.771E-06
AKJ	0.081	--	0.292	2.714	2.714	7.361E-08	1.357E-14	9.629E-12	7.362E-08	--	--	--	--	2.029E-09	1.868E-13	8.733E-11	2.117E-09	4.087E-09	1.220E-10	2.904E-08	3.325E-08	8.861E-06	1.342E-10	7.520E-09	8.869E-06	8.978E-06
AKK	0.074	--	0.267	2.370	2.370	6.758E-08	1.246E-14	8.841E-12	6.759E-08	--	--	--	--	1.855E-09	1.708E-13	7.985E-11	1.935E-09	3.569E-09	1.065E-10	2.536E-08	2.903E-08	7.738E-06	1.172E-10	6.567E-09	7.745E-06	7.843E-06
AKL	0.220	--	0.799	884.400	884.400	2.009E-07	3.703E-14	2.628E-11	2.009E-07	--	--	--	--	5.552E-09	5.113E-13	2.390E-10	5.791E-09	1.332E-06	3.975E-08	9.463E-06	1.083E-05	2.888E-03	4.372E-08	2.451E-06	2.890E-03	2.901E-03
AKL - Rem	0.080	--	0.292	2.329	2.329	7.343E-08	1.353E-14	9.605E-12	7.344E-08	--	--	--	--	2.029E-09	1.868E-13	8.733E-11	2.117E-09	3.507E-09	1.047E-10	2.492E-08	2.853E-08	7.604E-06	1.151E-10	6.454E-09	7.611E-06	7.715E-06
AKM	0.094	--	0.342	11.020	11.020	8.621E-08	1.589E-14	1.128E-11	8.622E-08	--	--	--	--	2.376E-09	2.188E-13	1.023E-10	2.479E-09	1.660E-08	4.953E-10	1.179E-07	1.350E-07	3.598E-05	5.448E-10	3.054E-08	3.601E-05	3.624E-05

Dose Calculations, Construction Worker

Survey Grid	95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				Total Dose
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	
AAA	0.100	--	0.367	2.287	2.287	6.904E-02	5.150E-08	9.291E-05	6.913E-02	--	--	--	--	1.838E-03	7.744E-06	1.041E-03	2.887E-03	2.893E-03	8.540E-04	3.083E-01	3.120E-01	5.288E+00	3.346E-04	6.163E-02	5.350E+00	5.734E+00
AAB	0.126	--	0.465	2.090	2.090	8.716E-02	6.502E-08	1.173E-04	8.728E-02	--	--	--	--	2.329E-03	9.811E-06	1.319E-03	3.658E-03	2.644E-03	7.804E-04	2.817E-01	2.852E-01	4.832E+00	3.058E-04	5.633E-02	4.889E+00	5.265E+00
AAC	0.092	0.027	0.330	2.400	2.400	6.392E-02	4.768E-08	8.602E-05	6.401E-02	8.576E-02	9.166E-08	1.296E-05	8.577E-02	1.653E-03	6.963E-06	9.360E-04	2.596E-03	3.036E-03	8.962E-04	3.235E-01	3.275E-01	5.549E+00	3.511E-04	6.468E-02	5.614E+00	6.094E+00
AAD	0.213	0.043	0.772	2.403	2.403	1.473E-01	1.099E-07	1.983E-04	1.475E-01	1.360E-01	1.454E-07	2.056E-05	1.360E-01	3.867E-03	1.629E-05	2.190E-03	6.073E-03	3.040E-03	8.973E-04	3.239E-01	3.279E-01	5.556E+00	3.516E-04	6.476E-02	5.621E+00	6.238E+00
AAE	0.205	0.041	0.745	2.291	2.291	1.418E-01	1.058E-07	1.908E-04	1.420E-01	1.272E-01	1.360E-07	1.923E-05	1.272E-01	3.732E-03	1.572E-05	2.113E-03	5.860E-03	2.898E-03	8.555E-04	3.088E-01	3.126E-01	5.297E+00	3.352E-04	6.174E-02	5.359E+00	5.947E+00
AAF	0.132	0.030	0.479	2.428	2.428	9.131E-02	6.811E-08	1.229E-04	9.144E-02	9.392E-02	1.004E-07	1.420E-05	9.394E-02	2.399E-03	1.011E-05	1.359E-03	3.768E-03	3.071E-03	9.066E-04	3.273E-01	3.313E-01	5.614E+00	3.552E-04	6.543E-02	5.679E+00	6.200E+00
AAG	0.096	--	0.348	2.054	2.054	6.627E-02	4.943E-08	8.919E-05	6.636E-02	--	--	--	--	1.743E-03	7.343E-06	9.870E-04	2.738E-03	2.598E-03	7.670E-04	2.769E-01	2.802E-01	4.749E+00	3.005E-04	5.536E-02	4.805E+00	5.154E+00
AAH	0.168	--	0.608	2.501	2.501	1.162E-01	8.669E-08	1.564E-04	1.164E-01	--	--	--	--	3.046E-03	1.283E-05	1.724E-03	4.783E-03	3.164E-03	9.339E-04	3.371E-01	3.412E-01	5.782E+00	3.659E-04	6.740E-02	5.850E+00	6.312E+00
AAI	0.134	--	0.485	2.509	2.509	9.270E-02	6.915E-08	1.248E-04	9.282E-02	--	--	--	--	2.429E-03	1.023E-05	1.376E-03	3.815E-03	3.174E-03	9.369E-04	3.382E-01	3.423E-01	5.801E+00	3.671E-04	6.762E-02	5.869E+00	6.308E+00
AAJ	0.088	--	0.318	2.543	2.543	6.060E-02	4.520E-08	8.155E-05	6.068E-02	--	--	--	--	1.593E-03	6.710E-06	9.019E-04	2.502E-03	3.217E-03	9.496E-04	3.428E-01	3.470E-01	5.879E+00	3.720E-04	6.853E-02	5.948E+00	6.358E+00
AAK	0.068	--	0.246	2.111	2.111	4.683E-02	3.493E-08	6.303E-05	4.690E-02	--	--	--	--	1.232E-03	5.191E-06	6.977E-04	1.935E-03	2.670E-03	7.882E-04	2.846E-01	2.880E-01	4.881E+00	3.088E-04	5.689E-02	4.938E+00	5.275E+00
AAL	0.083	--	0.301	2.880	2.880	5.749E-02	4.288E-08	7.736E-05	5.756E-02	--	--	--	--	1.508E-03	6.351E-06	8.537E-04	2.368E-03	3.643E-03	1.075E-03	3.882E-01	3.929E-01	6.659E+00	4.213E-04	7.762E-02	6.737E+00	7.189E+00
ABA	0.141	--	0.523	2.593	2.593	9.754E-02	7.276E-08	1.313E-04	9.767E-02	--	--	--	--	2.620E-03	1.104E-05	1.483E-03	4.114E-03	3.280E-03	9.682E-04	3.495E-01	3.538E-01	5.995E+00	3.794E-04	6.988E-02	6.065E+00	6.521E+00
ABB	0.137	--	0.516	2.194	2.194	9.477E-02	7.069E-08	1.275E-04	9.490E-02	--	--	--	--	2.585E-03	1.089E-05	1.464E-03	4.059E-03	2.775E-03	8.192E-04	2.958E-01	2.993E-01	5.073E+00	3.210E-04	5.913E-02	5.132E+00	5.530E+00
ABC	0.158	0.032	0.575	2.132	2.132	1.093E-01	8.153E-08	1.471E-04	1.094E-01	1.011E-01	1.081E-07	1.529E-05	1.012E-01	2.880E-03	1.213E-05	1.631E-03	4.523E-03	2.697E-03	7.961E-04	2.874E-01	2.909E-01	4.929E+00	3.119E-04	5.746E-02	4.987E+00	5.493E+00
ABD	0.188	0.021	0.683	2.339	2.339	1.301E-01	9.701E-08	1.750E-04	1.302E-01	6.691E-02	7.151E-08	1.011E-05	6.692E-02	3.421E-03	1.441E-05	1.937E-03	5.373E-03	2.959E-03	8.734E-04	3.153E-01	3.191E-01	5.408E+00	3.422E-04	6.304E-02	5.471E+00	5.993E+00
ABE	0.298	0.037	1.122	2.135	2.135	2.061E-01	1.538E-07	2.774E-04	2.064E-01	1.156E-01	1.236E-07	1.747E-05	1.156E-01	5.620E-03	2.367E-05	3.182E-03	8.826E-03	2.701E-03	7.972E-04	2.878E-01	2.913E-01	4.936E+00	3.124E-04	5.754E-02	4.994E+00	5.616E+00
ABF	0.099	0.026	0.358	2.094	2.094	6.821E-02	5.088E-08	9.179E-05	6.830E-02	8.262E-02	8.830E-08	1.249E-05	8.263E-02	1.793E-03	7.554E-06	1.015E-03	2.816E-03	2.649E-03	7.819E-04	2.823E-01	2.857E-01	4.841E+00	3.064E-04	5.643E-02	4.898E+00	5.338E+00
ABG	0.416	--	1.510	8.871	8.871	2.878E-01	2.147E-07	3.873E-04	2.882E-01	--	--	--	--	7.564E-03	3.186E-05	4.283E-03	1.188E-02	1.122E-02	3.312E-03	1.196E+00	1.210E+00	2.051E+01	1.298E-03	2.391E-01	2.075E+01	2.226E+01
ABH	0.141	--	0.520	2.141	2.141	9.754E-02	7.276E-08	1.313E-04	9.767E-02	--	--	--	--	2.605E-03	1.097E-05	1.475E-03	4.091E-03	2.708E-03	7.994E-04	2.886E-01	2.921E-01	4.950E+00	3.132E-04	5.770E-02	5.008E+00	5.402E+00
ABI	0.135	--	0.491	2.712	2.712	9.339E-02	6.966E-08	1.257E-04	9.351E-02	--	--	--	--	2.459E-03	1.036E-05	1.393E-03	3.862E-03	3.431E-03	1.013E-03	3.656E-01	3.700E-01	6.270E+00	3.968E-04	7.309E-02	6.344E+00	6.811E+00
ABJ	0.071	--	0.258	2.169	2.169	4.918E-02	3.669E-08	6.619E-05	4.925E-02	--	--	--	--	1.292E-03	5.444E-06	7.318E-04	2.030E-03	2.744E-03	8.099E-04	2.924E-01	2.959E-01	5.015E+00	3.173E-04	5.845E-02	5.073E+00	5.421E+00
ABK	0.063	--	0.230	2.150	2.150	4.386E-02	3.272E-08	5.902E-05	4.392E-02	--	--	--	--	1.152E-03	4.853E-06	6.523E-04	1.809E-03	2.720E-03	8.028E-04	2.898E-01	2.933E-01	4.971E+00	3.145E-04	5.794E-02	5.029E+00	5.368E+00
ABL	0.074	--	0.267	2.636	2.636	5.085E-02	3.793E-08	6.843E-05	5.091E-02	--	--	--	--	1.337E-03	5.634E-06	7.573E-04	2.100E-03	3.335E-03	9.843E-04	3.553E-01	3.597E-01	6.094E+00	3.856E-04	7.104E-02	6.166E+00	6.579E+00
ABM	0.080	--	0.279	2.749	2.749	5.520E-02	4.118E-08	7.429E-05	5.528E-02	--	--	--	--	1.398E-03	5.887E-06	7.913E-04	2.195E-03	3.477E-03	1.026E-03	3.706E-01	3.751E-01	6.356E+00	4.022E-04	7.409E-02	6.430E+00	6.863E+00
ACH	1.548	--	5.930	207.400	207.400	1.071E+00	7.988E-07	1.441E-03	1.072E+00	--	--	--	--	2.970E-02	1.251E-04	1.682E-02	4.665E-02	2.624E-01	7.744E-02	2.796E+01	2.830E+01	4.795E+02	3.034E-02	5.589E+00	4.851E+02	5.145E+02
ACH - Rem	0.065	--	0.232	1.909	1.909	4.497E-02	3.354E-08	6.051E-05	4.503E-02	--	--	--	--	1.162E-03	4.895E-06	6.580E-04	1.825E-03	2.415E-03	7.128E-04	2.573E-01	2.605E-01	4.414E+00	2.793E-04	5.145E-02	4.465E+00	4.773E+00
ACI	0.085	--	0.308	1.772	1.772	5.880E-02	4.386E-08	7.913E-05	5.888E-02	--	--	--	--	1.543E-03	6.499E-06	8.736E-04	2.423E-03	2.242E-03	6.617E-04	2.389E-01	2.418E-01	4.097E+00	2.592E-04	4.776E-02	4.145E+00	4.448E+00
ACJ	0.072	--	0.262	2.013	2.013	4.988E-02	3.720E-08	6.712E-05	4.994E-02	--	--	--	--	1.312E-03	5.528E-06	7.431E-04	2.061E-03	2.546E-03	7.517E-04	2.714E-01	2.747E-01	4.654E+00	2.945E-04	5.425E-02	4.709E+00	5.035E+00
ACK	0.066	--	0.238	2.019	2.019	4.538E-02	3.385E-08	6.107E-05	4.544E-02	--	--	--	--	1.192E-03	5.022E-06	6.750E-04	1.872E-03	2.554E-03	7.539E-04	2.722E-01	2.755E-01	4.668E+00	2.954E-04	5.441E-02	4.723E+00	5.045E+00
ACL	0.088	--	0.326	2.209	2.209	6.053E-02	4.515E-08	8.146E-05	6.061E-02	--	--	--	--	1.633E-03	6.879E-06	9.246E-04	2.564E-03	2.794E-03	8.248E-04	2.978E-01	3.014E-01	5.107E+00	3.232E-04	5.953E-02	5.167E+00	5.532E+00
ACM	0.076	--	0.274	2.860	2.860	5.230E-02	3.901E-08	7.038E-05	5.237E-02	--	--	--	--	1.372E-03	5.781E-06	7.771E-04	2.155E-03	3.618E-03	1.068E-03	3.855E-01	3.902E-01	6.612E+00	4.184E-04	7.708E-02	6.690E+00	7.135E+00
ADI	0.097	--	0.347	2.220	2.220	6.703E-02	5.000E-08	9.021E-05	6.712E-02	--	--	--	--	1.738E-03	7.322E-06	9.842E-04	2.730E-03	2.808E-03	8.289E-04	2.993E-01	3.029E-01	5.133E+00	3.248E-04	5.983E-02	5.193E+00	5.566E+00
ADJ	0.070	--	0.235	2.030	2.030	4.856E-02	3.622E-08	6.535E-05	4.863E-02	--	--	--	--	1.177E-03	4.958E-06	6.665E-04	1.849E-03	2.568E-03	7.580E-04	2.736E-01	2.770E-01	4.693E+00	2.970E-04	5.471E-02	4.748E+00	5.076E+00
ADK	0.063	--	0.230	1.798	1.798	4.386E-02	3.272E-08	5.902E-05	4.392E-02	--	--	--	--	1.152E-03	4.853E-06	6.523E-04	1.809E-03	2.274E-03	6.714E-04	2.424E-01	2.453E-01	4.157E+00	2.630E-04	4.846E-02	4.206E+00	4.497E+00
ADL	0.054	--	0.196	1.843	1.843	3.729E-02	2.781E-08	5.018E-05	3.734E-02	--	--	--	--	9.818E-04	4.136E-06	5.559E-04	1.542E-03	2.331E-03	6.882E-04	2.484E-01	2.515E-01	4.261E+00	2.696E-04	4.967E-02	4.311E+00	4.601E+00
ADM	0.077	--	0.277	2.629	2.629	5.327E-02	3.973E-08	7.168E-05	5.334E-02	--	--	--	--	1.388E-03	5.845E-06	7.856E-04	2.179E-03	3.326E-03	9.817E-04	3.544E-01	3.587E-01	6.078E+00	3.846E-04	7.085E-02	6.149E+00	6.564E+00
AEJ	0.069	--	0.250	1.764	1.764	4.773E-02	3.561E-08	6.424E-05	4.780E-02	--	--	--	--	1.252E-03	5.275E-06	7.091E-04	1.967E-03	2.231E-03	6.587E-04	2.378E-01	2.407E-01	4.078E+00	2.581E-04	4.754E-02	4.126E+00	4.417E+00
AEK	0.072	--	0.260	2.192	2.192	4.953E-02	3.695E-08	6.666E-05	4.960E-02	--	--	--	--	1.302E-03	5.486E-06	7.374E-04	2.045E-03	2.773E-03	8.185E-04	2.955E-01	2.991E-01	5.068E+00	3.207E-04	5.907E-02	5.127E+00	5.478E+00
AEL	0.069	--	0.249	2.349	2.349	4.752E-02	3.545E-08	6.396E-05	4.759E-02	--	--	--	--	1.247E-03	5.254E-06	7.062E-04	1.959E-03	2.971E-03	8.771E-04	3.166E-01	3.205E-01	5.431E+00	3.437E-04	6.331E-02	5.495E+00	5.865E+00
AEM	0.112	--	0.401	2.890	2.890	7.748E-02	5.779E-08	1.043E-04	7.758E-02	--	--	--	--	2.009E-03	8.461E-06	1.137E-03	3.154E-03	3.656E-03	1.079E-03	3.896E-01	3.943E-01	6.682E+00	4.228E-04	7.789E-02	6.760E+00	7.235E+00
AFI - AGI	0.119	--	0.431	2.770	2.770	8.232E-02	6.141E-08	1.108E-04	8.243E-02	--	--	--	--	2.159E-03	9.094E-06	1.222E-03	3.390E-03	3.504E-03	1.034E-03	3.734E-01	3.779E-01	6.404E+00	4.053E-04	7.465E-02	6.479E+00	6.943E+00
AFJ	0.063	--	0.228	2.381	2.381	4.351E-02	3.246E-08	5.856E-05	4.357E-02	--	--	--	--	1.142E-03	4.811E-06	6.467E-04	1.794E-03	3.012E-03	8.891E-04	3.210E-01	3.249E-01	5.505E+00	3.483E-04	6.417E-02	5.569E+00	5.940E+00
AFK	0.063	--	0.230	2.180	2.180	4.386E-02	3.272E-08	5.902E-05	4.392E-02	--	--	--	--	1.152E-03	4.853E-06	6.523E-04	1.809E-03	2.758E-03	8.140E-04	2.939E-01	2.974E-01	5.040E+00	3.189E-04	5.875E-02	5.099E+00	5.442E+00
AFL	0.100	--	0.364	3.677	3.677	6.918E-02	5.160E-08	9.310E-05	6.927E-02	--	--	--	--	1.823E-03	7.680E-06	1.032E-03	2.863E-03	4.651E-03	1.373E-03	4.957E-01	5.017E-01	8.501E+00	5.379E-04	9.910E-02	8.601E+00	9.175E+00
AFM	0.097	--	0.351	2.236	2.236	6.696E-02	4.995E-08	9.012E-05	6.705E-02	--	--	--	--	1.758E-03	7.406E-06	9.955E-04	2.761E-03	2.829E-03	8.349E-04	3.014E-01	3.051E-01	5.170E+00	3.271E-04	6.026E-02	5.230E+00	5.605E+00
AGJ	0.107	--	0.388	3.322	3.322	7.402E-02	5.521E-08	9.961E-05	7.412E-02	--	--	--	--	1.944E-03	8.187E-06	1.100E-03	3.052E-03	4.202E-03	1.240E-03	4.478E-01	4.532E-01	7.680E+00	4.860E-04	8.953E-02	7.770E+00	8.301E+00
AGK	0.103	--	0.374	3.000	3.000	7.125E-02	5.315E-08	9.589E-05	7.135E-02	--	--	--	--	1.873E-03	7.891E-06	1.061E-03	2.942E-03	3.795E-03	1.120E-03	4.044E-01	4.093E-01	6.936E+00	4.389E-04	8.085E-02	7.017E+00	7.501E+00
AGL	0.092	--	0.334	2.800	2.800	6.378E-02	4.758E-08	8.584E-05	6.387E-02	--	--	--	--	1.673E-03	7.047E-06	9.473E-04	2.627E-03	3.542E-03	1.046E-03	3.774E-01	3.820E-01	6.474E+00	4.096E-04	7.546E-02	6.549E+00	6.998E+00
AGM	0.097	--	0.352	2.765	2.765	6.717E-02	5.011E-08	9.040E-05	6.726E-02	--	--	--	--	1.763E-03	7.427E-06	9.984E-04	2.769E-03	3.498E-03	1.032E-03	3.727E-01	3.773E-01	6.393E+00	4.045E-04	7.452E-02	6.468E+00	6.915E+00
AHH - AIH	0.112	--	0.404	2.533	2.533	7.748E-02	5.779E-08	1.043E-04	7.758E-02	--	--	--	--	2.024E-03	8.524E-06	1.146E-03	3.178E-03	3.204E-03	9.458E-04	3.414E-01	3.456E-01	5.856E+00	3.706E-04	6.826E-02	5.925E+00	6.351E+00
AHI	0.074	--	0.264	2.097	2.097	5.105E-02	3.808E-08	6.871E-05	5.112E-02	--	--	--	--	1.322E-03	5.570E-06	7.488E-04	2.077E-03	2.653E-03	7.830E-04	2.827E-01	2.861E-01	4.848E+00	3.068E-04	5.651E-02	4.905E+00	5.244E+00
AHJ	0.100	--	0.361	3.213	3.213	6.890E-02	5.140E-08	9.272E-05	6.899E-02	--	--	--	--	1.808E-03	7.617E-06	1.024E-03	2.840E-03	4.064E-03	1.200E-03	4.331E-01	4.384E-01	7.428E+00	4.701E-04	8.659E-02	7.516E+00	8.026E+00
AHK	0.086	--	0.311	2.610	2.610	5.935E-02	4.427E-08	7.988E-05	5.943E-02	--	--	--	--	1.558E-03	6.562E-06	8.821E-04	2.446E-03	3.302E-03	9.746E-04	3.518E-01	3.561E-01	6.034E+00	3.818E-04	7.034E-02	6.105E+00	6.523E+00
AHL	0.079	--	0.287	2.619	2.619	5.472E-02	4.082E-08	7.364E-05	5.479E-02	--	--	--	--	1.438E-03	6.056E-06	8.140E-04	2.258E-03	3.313E-03	9.779E-04	3.530E-01	3.573E-01	6.055E+00	3.832E-04	7.058E-02	6.126E+00	6.540E+00
AHM	0.081	--	0.292	2.748	2.748	5.576E-02	4.159E-08	7.504E-05	5.583E-02	--	--	--	--	1.463E-03	6.161E-06	8.282E-04	2.297E-03	3.476E-03	1.026E-03	3.704E-01	3.749E-01	6.353E+00	4.020E-04	7.406E-02	6.428E+00	6.861E+00
AII	0.102	--	0.369	2.992	2.992	7.056E-02	5.263E-08	9.496E-05	7.066E-02	--	--	--	--	1.848E-03	7.786E-06	1.047E-03	2.903E-03	3.785E-03	1.117E-03	4.033E-01	4.082E-01	6.918E+00	4.377E-04	8.063E-02	6.999E+00	7.480E+00
AIJ	0.114	--	0.414	3.280	3.280	7.886E-02	5.883E-08	1.061E-04	7.897E-02	--	--	--	--	2.074E-03	8.735E-06	1.174E-03	3.257E-03	4.149E-03	1.225E-03	4.421E-01	4.475E-01	7.583E+00	4.799E-04	8.840E-02	7.672E+00	8.202E+00
AIK	0.107	--	0.386	2.935	2.935	7.402E-02	5.521E-08	9.961E-05	7.412E-02	--	--	--	--	1.933E-03	8.144E-06	1.095E-03	3.036E-03	3.713E-03	1.096E-03	3.956E-01	4.004E-01	6.786E+00	4.294E-04	7.910E-02	6.865E+00	7.343E+00
AIL	0.088	--	0.317	2.624	2.624	6.067E-02	4.525E-08	8.165E-05	6.075E-02	--	--	--	--	1.588E-03	6.689E-06	8.991E-04	2.494E-03	3.319E-03	9.798E-04	3.537E-01	3.580E-01	6.067E+00	3.839E-04	7.072E-02	6.138E+00	6.559E+00
AIM	0.080	--	0.289	2.707	2.707	5.513E-02	4.113E-08	7.420E-05	5.521E-02	--	--	--	--	1.448E-03	6.098E-06	8.197E-04	2.273E-03	3.424E-03	1.011E-03	3.649E-01	3.693E-01	6.259E+00	3.960E-04	7.295E-02	6.332E+00	6.759E+00
AJH	0.123	--	0.446	2.211	2.211	8.509E-02	6.347E-08	1.145E-04	8.520E-02	--	--	--	--	2.234E-03	9.410E-06	1.265E-03	3.508E-03	2.797E-03	8.256E-04	2.980E-01	3.017E-01	5.112E+00	3.235E-04	5.959E-02	5.172E+00	5.562E+00
AJI	0.089	--	0.323	2.841	2.841	6.171E-02	4.603E-08	8.304E-05	6.179E-02	--	--	--	--	1.618E-03	6.815E-06	9.161E-04	2.541E-03	3.594E-03	1.061E-03	3.830E-01	3.876E-01	6.568E+00	4.156E-04	7.656E-02	6.645E+00	7.097E+00
AJJ	0.108	--	0.391	2.845	2.845	7.471E-02	5.573E-08	1.005E-04	7.481E-02	--	--	--	--	1.959E-03	8.250E-06	1.109E-03	3.076E-03	3.599E-03	1.062E-03	3.835E-01	3.882E-01	6.578E+00	4.162E-04	7.667E-02	6.655E+00	7.121E+00
AJK	0.089	--	0.324	2.489	2.489	6.178E-02	4.608E-08	8.314E-05	6.186E-02	--	--	--	--	1.623E-03	6.836E-06	9.189E-04	2.549E-03	3.149E-03	9.294E-04	3.355E-01	3.396E-01	5.755E+00	3.641E-04	6.708E-02	5.822E+00	6.226E+00
AJL	0.083	--	0.299	2.620	2.620	5.707E-02	4.257E-08	7.681E-05	5.715E-02	--	--	--	--	1.498E-03	6.309E-06	8.480E-04	2.352E-03	3.314E-03	9.783E-04	3.532E-01	3.575E-01	6.057E+00	3.833E-04	7.061E-02	6.128E+00	6.545E+00
AJM	0.073	--	0.264	2.788	2.788	5.029E-02	3.751E-08	6.768E-05	5.036E-02	--	--	--	--	1.322E-03	5.570E-06	7.488E-04	2.077E-03	3.527E-03	1.041E-03	3.758E-01	3.804E-01	6.446E+00	4.079E-04	7.514E-02	6.521E+00	6.954E+00
AKG	0.102	--	0.370	1.881	1.881	7.056E-02	5.263E-08	9.496E-05	7.066E-02	--	--	--	--	1.853E-03	7.807E-06	1.049E-03	2.911E-03	2.379E-03	7.024E-04	2.536E-01	2.566E-01	4.349E+00	2.752E-04	5.069E-02	4.400E+00	4.730E+00
AKI	0.084	--	0.304	2.650	2.650	5.811E-02	4.335E-08	7.820E-05	5.819E-02	--	--	--	--	1.523E-03	6.414E-06	8.622E-04	2.391E-03	3.352E-03	9.895E-04	3.572E-01	3.616E-01	6.127E+00	3.877E-04	7.142E-02	6.199E+00	6.621E+00
AKJ	0.081	--	0.292	2.714	2.714	5.576E-02	4.159E-08	7.504E-05	5.583E-02	--	--	--	--	1.463E-03	6.161E-06	8.282E-04	2.297E-03	3.433E-03	1.013E-03	3.658E-01	3.703E-01	6.275E+00	3.971E-04	7.314E-02	6.348E+00	6.777E+00
AKK	0.074	--	0.267	2.370	2.370	5.119E-02	3.819E-08	6.889E-05	5.126E-02	--	--	--	--	1.337E-03	5.634E-06	7.573E-04	2.100E-03	2.998E-03	8.850E-04	3.195E-01	3.234E-01	5.479E+00	3.467E-04	6.387E-02	5.544E+00	5.920E+00
AKL	0.220	--	0.799	884.400	884.400	1.522E-01	1.135E-07	2.048E-04	1.524E-01	--	--	--	--	4.002E-03	1.686E-05	2.266E-03	6.285E-03	1.119E+00	3.302E-01	1.192E+02	1.207E+02	2.045E+03	1.294E-01	2.383E+01	2.069E+03	2.190E+03
AKL - Rem	0.080	--	0.292	2.329	2.329	5.562E-02	4.149E-08	7.485E-05	5.569E-02	--	--	--	--	1.463E-03	6.161E-06	8.282E-04	2.297E-03	2.946E-03	8.696E-04	3.139E-01	3.178E-01	5.385E+00	3.407E-04	6.277E-02	5.448E+00	5.824E+00
AKM	0.094	--	0.342	11.020	11.020	6.530E-02	4.871E-08	8.788E-05	6.539E-02	--	--	--	--	1.713E-03	7.216E-06	9.700E-04	2.690E-03	1.394E-02	4.115E-03	1.485E+00	1.504E+00	2.548E+01	1.612E-03	2.970E-01	2.578E+01	2.735E+01

Risk Calculations, Construction Worker

Survey Grid	95UCL Values					^{137}Cs				^{60}Co				^{90}Sr				^{210}Pb				^{226}Ra				Total Risk
	^{137}Cs	^{60}Co	^{90}Sr	^{210}Pb	^{226}Ra	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	Ground	Inhalation	Soil	ROC Total	
AAA	0.100	--	0.367	2.287	2.287	5.150E-08	1.808E-13	6.950E-11	5.157E-08	--	--	--	--	1.462E-09	2.565E-12	6.492E-10	2.114E-09	1.991E-09	1.132E-09	1.459E-07	1.490E-07	4.014E-06	1.074E-09	2.443E-08	4.039E-06	4.242E-06
AAB	0.126	--	0.465	2.090	2.090	6.502E-08	2.282E-13	8.774E-11	6.511E-08	--	--	--	--	1.853E-09	3.249E-12	8.225E-10	2.679E-09	1.820E-09	1.035E-09	1.333E-07	1.362E-07	3.668E-06	9.817E-10	2.232E-08	3.691E-06	3.895E-06
AAC	0.092	0.027	0.330	2.400	2.400	4.768E-08	1.674E-13	6.434E-11	4.774E-08	6.559E-08	4.228E-14	1.075E-11	6.560E-08	1.315E-09	2.306E-12	5.837E-10	1.901E-09	2.089E-09	1.188E-09	1.531E-07	1.564E-07	4.212E-06	1.127E-09	2.563E-08	4.239E-06	4.510E-06
AAD	0.213	0.043	0.772	2.403	2.403	1.099E-07	3.859E-13	1.483E-10	1.101E-07	1.040E-07	6.706E-14	1.704E-11	1.040E-07	3.076E-09	5.395E-12	1.366E-09	4.447E-09	2.092E-09	1.190E-09	1.533E-07	1.566E-07	4.217E-06	1.129E-09	2.566E-08	4.244E-06	4.619E-06
AAE	0.205	0.041	0.745	2.291	2.291	1.058E-07	3.714E-13	1.428E-10	1.059E-07	9.730E-08	6.272E-14	1.594E-11	9.732E-08	2.969E-09	5.206E-12	1.318E-09	4.292E-09	1.995E-09	1.134E-09	1.462E-07	1.493E-07	4.021E-06	1.076E-09	2.447E-08	4.046E-06	4.403E-06
AAF	0.132	0.030	0.479	2.428	2.428	6.811E-08	2.391E-13	9.192E-11	6.821E-08	7.183E-08	4.631E-14	1.177E-11	7.185E-08	1.909E-09	3.347E-12	8.473E-10	2.759E-09	2.114E-09	1.202E-09	1.549E-07	1.582E-07	4.261E-06	1.140E-09	2.593E-08	4.288E-06	4.589E-06
AAG	0.096	--	0.348	2.054	2.054	4.943E-08	1.735E-13	6.671E-11	4.950E-08	--	--	--	--	1.387E-09	2.432E-12	6.156E-10	2.005E-09	1.788E-09	1.017E-09	1.310E-07	1.339E-07	3.605E-06	9.648E-10	2.194E-08	3.628E-06	3.813E-06
AAH	0.168	--	0.608	2.501	2.501	8.669E-08	3.043E-13	1.170E-10	8.681E-08	--	--	--	--	2.423E-09	4.249E-12	1.075E-09	3.503E-09	2.177E-09	1.238E-09	1.596E-07	1.630E-07	4.389E-06	1.175E-09	2.671E-08	4.417E-06	4.670E-06
AAI	0.134	--	0.485	2.509	2.509	6.915E-08	2.427E-13	9.331E-11	6.924E-08	--	--	--	--	1.933E-09	3.389E-12	8.579E-10	2.794E-09	2.184E-09	1.242E-09	1.601E-07	1.635E-07	4.403E-06	1.178E-09	2.680E-08	4.431E-06	4.667E-06
AAJ	0.088	--	0.318	2.543	2.543	4.520E-08	1.587E-13	6.100E-11	4.526E-08	--	--	--	--	1.267E-09	2.222E-12	5.625E-10	1.832E-09	2.214E-09	1.259E-09	1.622E-07	1.657E-07	4.463E-06	1.194E-09	2.716E-08	4.491E-06	4.704E-06
AAK	0.068	--	0.246	2.111	2.111	3.493E-08	1.226E-13	4.714E-11	3.498E-08	--	--	--	--	9.803E-10	1.719E-12	4.351E-10	1.417E-09	1.838E-09	1.045E-09	1.347E-07	1.376E-07	3.705E-06	9.915E-10	2.255E-08	3.728E-06	3.902E-06
AAL	0.083	--	0.301	2.880	2.880	4.288E-08	1.505E-13	5.787E-11	4.294E-08	--	--	--	--	1.199E-09	2.103E-12	5.324E-10	1.734E-09	2.507E-09	1.426E-09	1.837E-07	1.877E-07	5.054E-06	1.353E-09	3.076E-08	5.087E-06	5.319E-06
ABA	0.141	--	0.523	2.593	2.593	7.276E-08	2.554E-13	9.819E-11	7.286E-08	--	--	--	--	2.084E-09	3.655E-12	9.251E-10	3.013E-09	2.257E-09	1.284E-09	1.654E-07	1.690E-07	4.551E-06	1.218E-09	2.769E-08	4.580E-06	4.824E-06
ABB	0.137	--	0.516	2.194	2.194	7.069E-08	2.482E-13	9.540E-11	7.079E-08	--	--	--	--	2.056E-09	3.606E-12	9.127E-10	2.973E-09	1.910E-09	1.086E-09	1.400E-07	1.430E-07	3.850E-06	1.031E-09	2.343E-08	3.875E-06	4.092E-06
ABC	0.158	0.032	0.575	2.132	2.132	8.153E-08	2.862E-13	1.100E-10	8.164E-08	7.736E-08	4.987E-14	1.267E-11	7.737E-08	2.291E-09	4.018E-12	1.017E-09	3.312E-09	1.856E-09	1.056E-09	1.360E-07	1.389E-07	3.742E-06	1.001E-09	2.277E-08	3.765E-06	4.067E-06
ABD	0.188	0.021	0.683	2.339	2.339	9.701E-08	3.406E-13	1.309E-10	9.714E-08	5.117E-08	3.299E-14	8.384E-12	5.118E-08	2.722E-09	4.773E-12	1.208E-09	3.935E-09	2.036E-09	1.158E-09	1.492E-07	1.524E-07	4.105E-06	1.099E-09	2.498E-08	4.131E-06	4.436E-06
ABE	0.298	0.037	1.122	2.135	2.135	1.538E-07	5.398E-13	2.075E-10	1.540E-07	8.841E-08	5.699E-14	1.449E-11	8.843E-08	4.471E-09	7.840E-12	1.985E-09	6.464E-09	1.859E-09	1.057E-09	1.362E-07	1.391E-07	3.747E-06	1.003E-09	2.280E-08	3.771E-06	4.159E-06
ABF	0.099	0.026	0.358	2.094	2.094	5.088E-08	1.786E-13	6.866E-11	5.095E-08	6.319E-08	4.073E-14	1.035E-11	6.320E-08	1.427E-09	2.502E-12	6.333E-10	2.062E-09	1.823E-09	1.037E-09	1.336E-07	1.365E-07	3.675E-06	9.836E-10	2.236E-08	3.698E-06	3.951E-06
ABG	0.416	--	1.510	8.871	8.871	2.147E-07	7.536E-13	2.897E-10	2.150E-07	--	--	--	--	6.017E-09	1.055E-11	2.671E-09	8.699E-09	7.723E-09	4.392E-09	5.660E-07	5.781E-07	1.557E-05	4.167E-09	9.474E-08	1.567E-05	1.647E-05
ABH	0.141	--	0.520	2.141	2.141	7.276E-08	2.554E-13	9.819E-11	7.286E-08	--	--	--	--	2.072E-09	3.634E-12	9.198E-10	2.996E-09	1.864E-09	1.060E-09	1.366E-07	1.395E-07	3.757E-06	1.006E-09	2.287E-08	3.781E-06	3.997E-06
ABI	0.135	--	0.491	2.712	2.712	6.966E-08	2.446E-13	9.401E-11	6.976E-08	--	--	--	--	1.957E-09	3.431E-12	8.685E-10	2.829E-09	2.361E-09	1.343E-09	1.730E-07	1.767E-07	4.760E-06	1.274E-09	2.896E-08	4.790E-06	5.039E-06
ABJ	0.071	--	0.258	2.169	2.169	3.669E-08	1.288E-13	4.951E-11	3.674E-08	--	--	--	--	1.028E-09	1.803E-12	4.564E-10	1.486E-09	1.888E-09	1.074E-09	1.384E-07	1.413E-07	3.807E-06	1.019E-09	2.316E-08	3.831E-06	4.010E-06
ABK	0.063	--	0.230	2.150	2.150	3.272E-08	1.148E-13	4.415E-11	3.276E-08	--	--	--	--	9.165E-10	1.607E-12	4.068E-10	1.325E-09	1.872E-09	1.064E-09	1.372E-07	1.401E-07	3.773E-06	1.010E-09	2.296E-08	3.797E-06	3.971E-06
ABL	0.074	--	0.267	2.636	2.636	3.793E-08	1.331E-13	5.118E-11	3.798E-08	--	--	--	--	1.064E-09	1.866E-12	4.723E-10	1.538E-09	2.295E-09	1.305E-09	1.682E-07	1.718E-07	4.626E-06	1.238E-09	2.815E-08	4.656E-06	4.867E-06
ABM	0.080	--	0.279	2.749	2.749	4.118E-08	1.446E-13	5.557E-11	4.123E-08	--	--	--	--	1.112E-09	1.950E-12	4.935E-10	1.607E-09	2.393E-09	1.361E-09	1.754E-07	1.791E-07	4.824E-06	1.291E-09	2.936E-08	4.855E-06	5.077E-06
ACH	1.548	--	5.930	207.400	207.400	7.988E-07	2.804E-12	1.078E-09	7.999E-07	--	--	--	--	2.363E-08	4.144E-11	1.049E-08	3.416E-08	1.806E-07	1.027E-07	1.323E-05	1.352E-05	3.640E-04	9.742E-08	2.215E-06	3.663E-04	3.806E-04
ACH - Rem	0.065	--	0.232	1.909	1.909	3.354E-08	1.177E-13	4.526E-11	3.359E-08	--	--	--	--	9.245E-10	1.621E-12	4.104E-10	1.336E-09	1.662E-09	9.451E-10	1.218E-07	1.244E-07	3.350E-06	8.967E-10	2.039E-08	3.372E-06	3.531E-06
ACI	0.085	--	0.308	1.772	1.772	4.386E-08	1.540E-13	5.919E-11	4.392E-08	--	--	--	--	1.227E-09	2.152E-12	5.448E-10	1.774E-09	1.543E-09	8.773E-10	1.131E-07	1.155E-07	3.110E-06	8.323E-10	1.892E-08	3.130E-06	3.291E-06
ACJ	0.072	--	0.262	2.013	2.013	3.720E-08	1.306E-13	5.021E-11	3.726E-08	--	--	--	--	1.044E-09	1.831E-12	4.634E-10	1.509E-09	1.753E-09	9.966E-10	1.284E-07	1.312E-07	3.533E-06	9.455E-10	2.150E-08	3.555E-06	3.725E-06
ACK	0.066	--	0.238	2.019	2.019	3.385E-08	1.188E-13	4.568E-11	3.390E-08	--	--	--	--	9.484E-10	1.663E-12	4.210E-10	1.371E-09	1.758E-09	9.996E-10	1.288E-07	1.316E-07	3.543E-06	9.483E-10	2.156E-08	3.566E-06	3.733E-06
ACL	0.088	--	0.326	2.209	2.209	4.515E-08	1.585E-13	6.093E-11	4.521E-08	--	--	--	--	1.299E-09	2.278E-12	5.767E-10	1.878E-09	1.923E-09	1.094E-09	1.409E-07	1.440E-07	3.877E-06	1.038E-09	2.359E-08	3.901E-06	4.092E-06
ACM	0.076	--	0.274	2.860	2.860	3.901E-08	1.369E-13	5.265E-11	3.906E-08	--	--	--	--	1.092E-09	1.915E-12	4.847E-10	1.578E-09	2.490E-09	1.416E-09	1.825E-07	1.864E-07	5.019E-06	1.343E-09	3.054E-08	5.051E-06	5.278E-06
ADI	0.097	--	0.347	2.220	2.220	5.000E-08	1.755E-13	6.748E-11	5.007E-08	--	--	--	--	1.383E-09	2.425E-12	6.138E-10	1.999E-09	1.933E-09	1.099E-09	1.416E-07	1.447E-07	3.896E-06	1.043E-09	2.371E-08	3.921E-06	4.118E-06
ADJ	0.070	--	0.235	2.030	2.030	3.622E-08	1.272E-13	4.889E-11	3.627E-08	--	--	--	--	9.365E-10	1.642E-12	4.157E-10	1.354E-09	1.767E-09	1.005E-09	1.295E-07	1.323E-07	3.563E-06	9.535E-10	2.168E-08	3.585E-06	3.755E-06
ADK	0.063	--	0.230	1.798	1.798	3.272E-08	1.148E-13	4.415E-11	3.276E-08	--	--	--	--	9.165E-10	1.607E-12	4.068E-10	1.325E-09	1.565E-09	8.902E-10	1.147E-07	1.172E-07	3.155E-06	8.445E-10	1.920E-08	3.176E-06	3.327E-06
ADL	0.054	--	0.196	1.843	1.843	2.781E-08	9.764E-14	3.753E-11	2.785E-08	--	--	--	--	7.810E-10	1.370E-12	3.467E-10	1.129E-09	1.605E-09	9.125E-10	1.176E-07	1.201E-07	3.234E-06	8.657E-10	1.968E-08	3.255E-06	3.404E-06
ADM	0.077	--	0.277	2.629	2.629	3.973E-08	1.395E-13	5.362E-11	3.979E-08	--	--	--	--	1.104E-09	1.936E-12	4.900E-10	1.596E-09	2.289E-09	1.302E-09	1.677E-07	1.713E-07	4.614E-06	1.235E-09	2.808E-08	4.643E-06	4.856E-06
AEJ	0.069	--	0.250	1.764	1.764	3.561E-08	1.250E-13	4.805E-11	3.565E-08	--	--	--	--	9.962E-10	1.747E-12	4.422E-10	1.440E-09	1.536E-09	8.734E-10	1.125E-07	1.150E-07	3.096E-06	8.286E-10	1.884E-08	3.115E-06	3.268E-06
AEK	0.072	--	0.260	2.192	2.192	3.695E-08	1.297E-13	4.986E-11	3.700E-08	--	--	--	--	1.036E-09	1.817E-12	4.599E-10	1.498E-09	1.908E-09	1.085E-09	1.398E-07	1.428E-07	3.847E-06	1.030E-09	2.341E-08	3.871E-06	4.053E-06
AEL	0.069	--	0.249	2.349	2.349	3.545E-08	1.245E-13	4.784E-11	3.550E-08	--	--	--	--	9.922E-10	1.740E-12	4.405E-10	1.434E-09	2.045E-09	1.163E-09	1.499E-07	1.531E-07	4.122E-06	1.103E-09	2.509E-08	4.149E-06	4.339E-06
AEM	0.112	--	0.401	2.890	2.890	5.779E-08	2.029E-13	7.799E-11	5.787E-08	--	--	--	--	1.598E-09	2.802E-12	7.093E-10	2.310E-09	2.516E-09	1.431E-09	1.844E-07	1.883E-07	5.072E-06	1.357E-09	3.087E-08	5.104E-06	5.353E-06
AFI - AGI	0.119	--	0.431	2.770	2.770	6.141E-08	2.156E-13	8.287E-11	6.149E-08	--	--	--	--	1.717E-09	3.012E-12	7.624E-10	2.483E-09	2.412E-09	1.371E-09	1.767E-07	1.805E-07	4.861E-06	1.301E-09	2.958E-08	4.892E-06	5.137E-06
AFJ	0.063	--	0.228	2.381	2.381	3.246E-08	1.139E-13	4.380E-11	3.250E-08	--	--	--	--	9.086E-10	1.593E-12	4.033E-10	1.313E-09	2.073E-09	1.179E-09	1.519E-07	1.552E-07	4.179E-06	1.118E-09	2.543E-08	4.205E-06	4.394E-06
AFK	0.063	--	0.230	2.180	2.180	3.272E-08	1.148E-13	4.415E-11	3.276E-08	--	--	--	--	9.165E-10	1.607E-12	4.068E-10	1.325E-09	1.898E-09	1.079E-09	1.391E-07	1.421E-07	3.826E-06	1.024E-09	2.328E-08	3.850E-06	4.026E-06
AFL	0.100	--	0.364	3.677	3.677	5.160E-08	1.812E-13	6.964E-11	5.167E-08	--	--	--	--	1.451E-09	2.544E-12	6.439E-10	2.097E-09	3.201E-09	1.820E-09	2.346E-07	2.396E-07	6.453E-06	1.727E-09	3.927E-08	6.494E-06	6.788E-06
AFM	0.097	--	0.351	2.236	2.236	4.995E-08	1.754E-13	6.741E-11	5.002E-08	--	--	--	--	1.399E-09	2.453E-12	6.209E-10	2.022E-09	1.947E-09	1.107E-09	1.427E-07	1.457E-07	3.924E-06	1.050E-09	2.388E-08	3.949E-06	4.147E-06
AGJ	0.107	--	0.388	3.322	3.322	5.521E-08	1.938E-13	7.451E-11	5.529E-08	--	--	--	--	1.546E-09	2.711E-12	6.863E-10	2.235E-09	2.892E-09	1.645E-09	2.119E-07	2.165E-07	5.830E-06	1.560E-09	3.548E-08	5.867E-06	6.141E-06
AGK	0.103	--	0.374	3.000	3.000	5.315E-08	1.866E-13	7.173E-11	5.322E-08	--	--	--	--	1.490E-09	2.613E-12	6.616E-10	2.155E-09	2.612E-09	1.485E-09	1.914E-07	1.955E-07	5.265E-06	1.409E-09	3.204E-08	5.298E-06	5.549E-06
AGL	0.092	--	0.334	2.800	2.800	4.758E-08	1.670E-13	6.421E-11	4.764E-08	--	--	--	--	1.331E-09	2.334E-12	5.908E-10	1.924E-09	2.438E-09	1.386E-09	1.786E-07	1.825E-07	4.914E-06	1.315E-09	2.990E-08	4.945E-06	5.177E-06
AGM	0.097	--	0.352	2.765	2.765	5.011E-08	1.759E-13	6.762E-11	5.017E-08	--	--	--	--	1.403E-09	2.460E-12	6.226E-10	2.028E-09	2.407E-09	1.369E-09	1.764E-07	1.802E-07	4.853E-06	1.299E-09	2.953E-08	4.883E-06	5.116E-06
AHH - AIH	0.112	--	0.404	2.533	2.533	5.779E-08	2.029E-13	7.799E-11	5.787E-08	--	--	--	--	1.610E-09	2.823E-12	7.146E-10	2.327E-09	2.205E-09	1.254E-09	1.616E-07	1.651E-07	4.445E-06	1.190E-09	2.705E-08	4.474E-06	4.699E-06
AHI	0.074	--	0.264	2.097	2.097	3.808E-08	1.337E-13	5.139E-11	3.813E-08	--	--	--	--	1.052E-09	1.845E-12	4.670E-10	1.521E-09	1.826E-09	1.038E-09	1.338E-07	1.367E-07	3.680E-06	9.850E-10	2.240E-08	3.704E-06	3.880E-06
AHJ	0.100	--	0.361	3.213	3.213	5.140E-08	1.804E-13	6.936E-11	5.146E-08	--	--	--	--	1.439E-09	2.523E-12	6.386E-10	2.080E-09	2.797E-09	1.591E-09	2.050E-07	2.094E-07	5.639E-06	1.509E-09	3.431E-08	5.675E-06	5.938E-06
AHK	0.086	--	0.311	2.610	2.610	4.427E-08	1.554E-13	5.975E-11	4.433E-08	--	--	--	--	1.239E-09	2.173E-12	5.501E-10	1.792E-09	2.272E-09	1.292E-09	1.665E-07	1.701E-07	4.581E-06	1.226E-09	2.787E-08	4.610E-06	4.826E-06
AHL	0.079	--	0.287	2.619	2.619	4.082E-08	1.433E-13	5.508E-11	4.087E-08	--	--	--	--	1.144E-09	2.006E-12	5.077E-10	1.653E-09	2.280E-09	1.297E-09	1.671E-07	1.707E-07	4.596E-06	1.230E-09	2.797E-08	4.626E-06	4.839E-06
AHM	0.081	--	0.292	2.748	2.748	4.159E-08	1.460E-13	5.613E-11	4.165E-08	--	--	--	--	1.164E-09	2.040E-12	5.165E-10	1.682E-09	2.392E-09	1.361E-09	1.753E-07	1.791E-07	4.823E-06	1.291E-09	2.935E-08	4.853E-06	5.076E-06
AII	0.102	--	0.369	2.992	2.992	5.263E-08	1.848E-13	7.103E-11	5.271E-08	--	--	--	--	1.470E-09	2.579E-12	6.527E-10	2.126E-09	2.605E-09	1.481E-09	1.909E-07	1.950E-07	5.251E-06	1.405E-09	3.195E-08	5.284E-06	5.534E-06
AIJ	0.114	--	0.414	3.280	3.280	5.883E-08	2.065E-13	7.939E-11	5.891E-08	--	--	--	--	1.650E-09	2.893E-12	7.323E-10	2.385E-09	2.856E-09	1.624E-09	2.093E-07	2.137E-07	5.756E-06	1.541E-09	3.503E-08	5.793E-06	6.068E-06
AIK	0.107	--	0.386	2.935	2.935	5.521E-08	1.938E-13	7.451E-11	5.529E-08	--	--	--	--	1.538E-09	2.697E-12	6.828E-10	2.224E-09	2.555E-09	1.453E-09	1.873E-07	1.913E-07	5.151E-06	1.379E-09	3.135E-08	5.184E-06	5.432E-06
AIL	0.088	--	0.317	2.624	2.624	4.525E-08	1.589E-13	6.107E-11	4.532E-08	--	--	--	--	1.263E-09	2.215E-12	5.607E-10	1.826E-09	2.284E-09	1.299E-09	1.674E-07	1.710E-07	4.605E-06	1.232E-09	2.802E-08	4.634E-06	4.853E-06
AIM	0.080	--	0.289	2.707	2.707	4.113E-08	1.444E-13	5.550E-11	4.118E-08	--	--	--	--	1.152E-09	2.020E-12	5.112E-10	1.665E-09	2.357E-09	1.340E-09	1.727E-07	1.764E-07	4.751E-06	1.271E-09	2.891E-08	4.781E-06	5.000E-06
AJH	0.123	--	0.446	2.211	2.211	6.347E-08	2.228E-13	8.565E-11	6.356E-08	--	--	--	--	1.777E-09	3.116E-12	7.889E-10	2.569E-09	1.925E-09	1.095E-09	1.411E-07	1.441E-07	3.880E-06	1.039E-09	2.361E-08	3.905E-06	4.115E-06
AJI	0.089	--	0.323	2.841	2.841	4.603E-08	1.616E-13	6.212E-11	4.609E-08	--	--	--	--	1.287E-09	2.257E-12	5.713E-10	1.861E-09	2.473E-09	1.407E-09	1.813E-07	1.851E-07	4.986E-06	1.334E-09	3.034E-08	5.018E-06	5.251E-06
AJJ	0.108	--	0.391	2.845	2.845	5.573E-08	1.956E-13	7.521E-11	5.581E-08	--	--	--	--	1.558E-09	2.732E-12	6.916E-10	2.252E-09	2.477E-09	1.409E-09	1.815E-07	1.854E-07	4.993E-06	1.336E-09	3.038E-08	5.025E-06	5.268E-06
AJK	0.089	--	0.324	2.489	2.489	4.608E-08	1.618E-13	6.219E-11	4.614E-08	--	--	--	--	1.291E-09	2.264E-12	5.731E-10	1.866E-09	2.167E-09	1.232E-09	1.588E-07	1.622E-07	4.368E-06	1.169E-09	2.658E-08	4.396E-06	4.606E-06
AJL	0.083	--	0.299	2.620	2.620	4.257E-08	1.494E-13	5.745E-11	4.263E-08	--	--	--	--	1.191E-09	2.089E-12	5.289E-10	1.722E-09	2.281E-09	1.297E-09	1.672E-07	1.707E-07	4.598E-06	1.231E-09	2.798E-08	4.627E-06	4.842E-06
AJM	0.073	--	0.264	2.788	2.788	3.751E-08	1.317E-13	5.063E-11	3.757E-08	--	--	--	--	1.052E-09	1.845E-12	4.670E-10	1.521E-09	2.427E-09	1.380E-09	1.779E-07	1.817E-07	4.893E-06	1.310E-09	2.978E-08	4.924E-06	5.145E-06
AKG	0.102	--	0.370	1.881	1.881	5.263E-08	1.848E-13	7.103E-11	5.271E-08	--	--	--	--	1.474E-09	2.586E-12	6.545E-10	2.131E-09	1.638E-09	9.313E-10	1.200E-07	1.226E-07	3.301E-06	8.835E-10	2.009E-08	3.322E-06	3.500E-06
AKI	0.084	--	0.304	2.650	2.650	4.335E-08	1.522E-13	5.850E-11	4.340E-08	--	--	--	--	1.211E-09	2.124E-12	5.377E-10	1.751E-09	2.307E-09	1.312E-09	1.691E-07	1.727E-07	4.651E-06	1.245E-09	2.830E-08	4.680E-06	4.898E-06
AKJ	0.081	--	0.292	2.714	2.714	4.159E-08	1.460E-13	5.613E-11	4.165E-08	--	--	--	--	1.164E-09	2.040E-12	5.165E-10	1.682E-09	2.363E-09	1.344E-09	1.732E-07	1.769E-07	4.763E-06	1.275E-09	2.899E-08	4.793E-06	5.014E-06
AKK	0.074	--	0.267	2.370	2.370	3.819E-08	1.341E-13	5.153E-11	3.824E-08	--	--	--	--	1.064E-09	1.866E-12	4.723E-10	1.538E-09	2.063E-09	1.173E-09	1.512E-07	1.544E-07	4.159E-06	1.113E-09	2.531E-08	4.186E-06	4.380E-06
AKL	0.220	--	0.799	884.400	884.400	1.135E-07	3.985E-13	1.532E-10	1.137E-07	--	--	--	--	3.184E-09	5.583E-12	1.413E-09	4.603E-09	7.700E-07	4.379E-07	5.642E-05	5.763E-05	1.552E-03	4.154E-07	9.445E-06	1.562E-03	1.620E-03
AKL - Rem	0.080	--	0.292	2.329	2.329	4.149E-08	1.456E-13	5.599E-11	4.154E-08	--	--	--	--	1.164E-09	2.040E-12	5.165E-10	1.682E-09	2.028E-09	1.153E-09	1.486E-07	1.518E-07	4.087E-06	1.094E-09	2.487E-08	4.113E-06	4.308E-06
AKM	0.094	--	0.342	11.020	11.020	4.871E-08	1.710E-13	6.574E-11	4.878E-08	--	--	--	--	1.363E-09	2.390E-12	6.050E-10	1.970E-09	9.594E-09	5.456E-09	7.031E-07	7.181E-07	1.934E-05	5.176E-09	1.177E-07	1.946E-05	2.023E-05

27	**NMOCs in landfill gas**	Section 2.5.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 4.1.2.2, pages 4-6 and 4-7. Record No. 4237. Final Parcel E Nonstandard Data Gaps Investigation, Landfill Gas Characterization, Hunters Point Shipyard, San Francisco, California. TtEMI. December 2003. Appendix D, Attachment D-1. *(note: this document was provided as Appendix A to the Final Remedial Investigation/Feasibility Study Report for Parcel E-2; Record No. 4237)* Draft Removal Action Closeout Report, Parcel E Landfill Gas Time-Critical Removal Action, Hunters Point Shipyard, San Francisco, California. TtEMI. March 2004. Appendix G, Attachments G-1 through G-4. *(note: this document was accepted as final and was provided as Appendix F to the Final Remedial Investigation/Feasibility Study Report for Parcel E-2; Record No. 4237)*

along Crisp Avenue, the 13 Crisp Avenue GMPs are included in the monitoring network to ensure that landfill gas is not migrating north toward non-Navy property (former Parcel A) (TtEMI and ITSI, 2004c).

The landfill gas monitoring network was designed, in accordance with 27 CCR, to ensure that any landfill gas is not allowed to accumulate above action levels. The perimeter GMPs are monitored on a regular basis to ensure that methane gas does not exceed 5 percent by volume at the boundary, as specified in the Interim Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c). GMPs on the UCSF compound and along Crisp Avenue act as secondary and tertiary lines of monitoring at increasing distances from the Parcel E-2 Landfill (TtEMI and ITSI, 2004c). The methane action level at all GMPs is set at 2.5 percent by volume in air to minimize the likelihood of exceeding the 27 CCR limit of 5 percent. All of the GMP locations are presented on Figure 3-6.

4.1.2.2. Nonmethane Organic Compounds

With regard to NMOCs at closed landfills, 27 CCR § 20921 states that trace gases should be controlled to prevent adverse acute and chronic exposure to toxic and cancer-causing chemicals. The evaluation methods for NMOCs involved comparing outdoor air data against the EPA Region 9 PRGs for outdoor air (EPA, 2004) and performing risk assessments on soil gas data collected from permanent GMPs. NMOC data collected from temporary soil gas probes installed during the landfill gas characterization were not evaluated, because site conditions had changed following implementation of the landfill gas TCRA.

To evaluate compliance with 27 CCR, the Navy has conducted several risk assessments to evaluate whether trace gases from the Parcel E-2 Landfill pose a potential risk to human health. The risk assessments were performed using the Johnson and Ettinger vapor intrusion model (EPA, 2003). Field data, analytical data, and risk assessment results for GMPs along Crisp Avenue (GMP13 through GMP16, GMP18, and GMP19) are presented in the Landfill Gas Characterization Report (Appendix A to this report). Field data, analytical data, and risk assessment results for GMP22 through GMP26 on the UCSF compound are presented in Appendices E, F, and G, respectively, of the Landfill Gas TCRA Closeout Report (Appendix F to this report). ELCR calculations for GMPs along Crisp Avenue, using the laboratory results, ranged from 6.4×10^{-7} to 2.0×10^{-8} for a residential exposure scenario. ELCR calculations for the GMPs on the UCSF compound ranged from 4.0×10^{-7} to 8.8×10^{-9} for an industrial

exposure scenario (TtEMI and ITSI, 2004c). These risk ranges are an order of magnitude below the NCP point of departure of 10^{-6} [40 CFR § 300.430(e)(2)(i)(A)(2); 55 Federal Register 8848 (1990)].

Field measurements for NMOCs, collected during the same time frame as the laboratory analytical data, ranged from 0 part per million by volume (ppmv) to 51 ppmv. Assuming that NMOCs remain at the same proportions in the landfill gas, the ELCR is directly proportionate to the total NMOC concentration. Thus, recognizing that a 10-fold increase in the ELCR would require a 10-fold increase in the NMOC measurements, 500 ppmv was selected as the action level for NMOCs detected at GMPs included in the monitoring network. If the concentration of total NMOCs increased from the 50-ppmv range to greater than 500 ppmv, then additional sampling and analysis for NMOCs and further evaluation of risk to human health is warranted in accordance with the interim Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c).

4.1.3. Soil Evaluation

Due to the quantity of soil data evaluated in this RI, the nature and extent evaluation of soil was focused to discuss chemicals that were detected at concentrations greater than the laboratory reporting limits (LRLs), exceeding outdoor levels or human health risk-based criteria developed for the RI. The development of the criteria is discussed in Section 4.1.3.2. All soil data, except for soil physically removed during interim actions, is summarized in Appendix J1 and is included in the HHRA and SLERA presented in this report.

Because the removal actions were performed concurrent with the Draft RI/FS Report, the nature and extent evaluation and risk assessments presented in this Draft Final RI/FS Report incorporate post-excavation soil samples from the removal action areas. At both the Metal Slag Area and PCB Hot Spot Area, post-excavation soil samples contained chemical concentrations that warrant further analysis in this Draft Final RI/FS Report. This analysis is presented in Sections 4.2.4, 4.3.2, and 4.4.2 of this RI/FS Report.

As discussed in Section 3, the Parcel E-2 soil data set consists of 1,113 samples analyzed for a wide variety of inorganic and organic chemicals. To facilitate review of the large data set, the evaluation was performed separately for each of the three study areas at Parcel E-2: the Landfill Area, the Panhandle Area, and the East Adjacent Area. The data set was further subdivided into three separate depth ranges (0 to 2 feet bgs, 2 to 10 feet bgs, and greater than 10 feet bgs) for consistency with the depth ranges evaluated in the HHRA.

Comprehensive data summary tables are presented in Appendix J1 by chemical category (i.e., metals, pesticides, PCBs, SVOCs, VOCs, and petroleum hydrocarbons) for each study area and depth interval. Each table presents a series of summary statistics of the data for each chemical, such as the number of samples collected; number of results that exceed the detection limit; minimum and maximum

ATTACHMENT D1: JOHNSON ETTINGER MODEL BACKUP SPREADSHEET

Parcel E Nonstandard Data Gaps Investigation, Landfill Gas Characterization, Hunters Point Shipyard, San Francisco, California

Point ID	Sampling ID	Sample Date	Depth to Top of Screen (feet)	Analyte	CAS Number	Result ($\mu g/m^3$)	Qualifier	Average Concentration ($\mu g/m^3$)	Risk Calculated by the JEM	Hazard Quotient
GMP13	GMP13SG001	6/5/2002	6	Chloroform	67663	36.135			1.5E-08	2.2E-03
GMP13	GMP13SG001	6/5/2002	6	Isopropyl Alcohol	67630	6.474			NA	NA
GMP13	GMP13SG001	6/5/2002	6	Tetrachloroethene	127184	14.49			4.8E-09	5.4E-05
								TOTAL	**2.0E-08**	**2.2E-03**
GMP14	GMP14SG001	6/5/2002	6	1,2,4-Trimethylbenzene	95636	38.922			NA	7.4E-04
GMP14	GMP14SG001	6/5/2002	6	Carbon Tetrachloride	56235	25.6			6.5E-08	1.4E-03
GMP14	GMP14SG001	6/5/2002	6	Chloroform	67663	54.45			2.2E-08	3.3E-03
GMP14	GMP14SG001	6/5/2002	6	Isopropyl Alcohol	67630	10.458			NA	NA
GMP14	GMP14SG001	6/5/2002	6	Trichlorofluoromethane	75694	6.27			NA	1.4E-06
								TOTAL	**8.7E-08**	**5.5E-03**
GMP15	GMP15SG001	6/5/2002	6	1,2,4-Trimethylbenzene	95636	6.986			NA	1.3E-04
GMP15	GMP15SG001	6/5/2002	6	Carbon Tetrachloride	56235	5.952			1.5E-08	3.3E-04
GMP15	GMP15SG001	6/5/2002	6	Chloroform	67663	16.335			6.7E-09	9.9E-04
GMP15	GMP15SG001	6/5/2002	6	Dichlorodifluoromethane	75718	9.054			NA	5.5E-06
GMP15	GMP15SG001	6/5/2002	6	o-Xylene	95476	7.92	J3		NA	1.2E-05
GMP15	GMP15SG001	6/5/2002	6	Tetrachloroethene	127184	12.42			4.1E-09	4.6E-05
GMP15	GMP15SG001	6/5/2002	6	Trichlorofluoromethane	75694	5.016			NA	1.1E-06
								TOTAL	**2.6E-08**	**1.5E-03**
GMP16	GMP16SG001	6/5/2002	5	1,2,4-Trimethylbenzene	95636	12.475				
GMP16	GMP16SG002	6/5/2002	5	1,2,4-Trimethylbenzene	95636	21.956		17.22	NA	3.9E-04
GMP16	GMP16SG001	6/5/2002	5	1,3,5-Trimethylbenzene	108678	4.99				
GMP16	GMP16SG002	6/5/2002	5	1,3,5-Trimethylbenzene	108678	9.481		7.24	NA	1.6E-04
GMP16	GMP16SG001	6/5/2002	5	1,4-Dichlorobenzene	106476	2.5	U			
GMP16	GMP16SG002	6/5/2002	5	1,4-Dichlorobenzene	106467	6.11		4.31	3.1E-09	6.0E-06
GMP16	GMP16SG001	6/5/2002	5	4-Ethyltoluene	622968	1.8	U			
GMP16	GMP16SG002	6/5/2002	5	4-Ethyltoluene	622968	6.174		3.99	NA	NA
GMP16	GMP16SG001	6/5/2002	5	Acetone	67641	1	U			
GMP16	GMP16SG002	6/5/2002	5	Acetone	67641	11.086		6.04	NA	7.8E-06
GMP16	GMP16SG001	6/5/2002	5	Benzene	71432	27.95				
GMP16	GMP16SG002	6/5/2002	5	Benzene	71432	27.625		27.79	6.4E-08	8.6E-04
GMP16	GMP16SG001	6/5/2002	5	Bromodichloromethane	75274	8.136				
GMP16	GMP16SG002	6/5/2002	5	Bromodichloromethane	75274	8.136		8.14	1.0E-08	9.2E-06
GMP16	GMP16SG001	6/5/2002	5	Chloroform	67663	5.94				
GMP16	GMP16SG002	6/5/2002	5	Chloroform	67663	5.445		5.69	2.8E-09	4.1E-04
GMP16	GMP16SG001	6/5/2002	5	Dibromochloromethane	124481	11.245				
GMP16	GMP16SG002	6/5/2002	5	Dibromochloromethane	124481	12.975		12.11	9.0E-09	1.1E-05
GMP16	GMP16SG001	6/5/2002	5	Dichlorodifluoromethane	75718	5.533				
GMP16	GMP16SG002	6/5/2002	5	Dichlorodifluoromethane	75718	9.054		7.29	NA	5.3E-06
GMP16	GMP16SG001	6/5/2002	5	Ethylbenzene	100414	28.16				

ATTACHMENT D1: JOHNSON ETTINGER MODEL BACKUP SPREADSHEET (Continued)

Parcel E Nonstandard Data Gaps Investigation, Landfill Gas Characterization, Hunters Point Shipyard, San Francisco, California

Point ID	Sampling ID	Sample Date	Depth to Top of Screen (feet)	Analyte	CAS Number	Result ($\mu g/m^3$)	Qualifier	Average Concentration ($\mu g/m^3$)	Risk Calculated by the JEM	Hazard Quotient
GMP16	GMP16SG002	6/5/2002	5	Ethylbenzene	100414	57.2		42.68	3.3E-09	6.9E-06
GMP16	GMP16SG001	6/5/2002	5	m,p-Xylenes	106423	48.4				
GMP16	GMP16SG002	6/5/2002	5	m,p-Xylenes	106423	83.6		66.00	NA	1.1E-04
GMP16	GMP16SG001	6/5/2002	5	o-Xylene	95476	22.44	J3			
GMP16	GMP16SG002	6/5/2002	5	o-Xylene	95476	34.76	J3	28.60	NA	5.3E-05
GMP16	GMP16SG001	6/5/2002	5	Styrene	100425	5.184				
GMP16	GMP16SG002	6/5/2002	5	Styrene	100425	7.776		6.48	NA	1.0E-06
GMP16	GMP16SG001	6/5/2002	5	Tetrachloroethene	127184	1.4	U			
GMP16	GMP16SG002	6/5/2002	5	Tetrachloroethene	127184	5.658		3.53	1.4E-09	1.6E-05
GMP16	GMP16SG001	6/5/2002	5	Tetrahydrofuran	109999	1.25	U			
GMP16	GMP16SG002	6/5/2002	5	Tetrahydrofuran	109999	3.289		2.27	NA	NA
GMP16	GMP16SG001	6/5/2002	5	Trichlorofluoromethane	75694	6.27				
GMP16	GMP16SG002	6/5/2002	5	Trichlorofluoromethane	75694	5.7		5.99	NA	1.6E-06
								TOTAL	**9.4E-08**	**2.1E-03**
GMP18	GMP18SG001	6/5/2002	6	Trichloroethene	79016	16.037			1.1E-07	6.5E-05
								TOTAL	**1.1E-07**	**6.5E-05**
GMP19	GMP19SG001	6/5/2002	4.5	1,2,4-Trichlorobenzene	120821	7.144			NA	3.2E-06
GMP19	GMP19SG001	6/5/2002	4.5	1,2,4-Trimethylbenzene	95636	25.948			NA	6.6E-04
GMP19	GMP19SG001	6/5/2002	4.5	1,3,5-Trimethylbenzene	108678	5.489			NA	1.4E-04
GMP19	GMP19SG001	6/5/2002	4.5	1,3-Butadiene	106990	10.752			5.6E-07	2.3E-03
GMP19	GMP19SG001	6/5/2002	4.5	Benzene	71432	13.975			3.6E-08	4.8E-04
GMP19	GMP19SG001	6/5/2002	4.5	Bromodichloromethane	75274	11.526			1.6E-08	1.5E-05
GMP19	GMP19SG001	6/5/2002	4.5	Chloroform	67663	10.395			5.6E-09	8.2E-04
GMP19	GMP19SG001	6/5/2002	4.5	Dichlorodifluoromethane	75718	4.7785			NA	3.8E-06
GMP19	GMP19SG001	6/5/2002	4.5	Hexachlorobutadiene	87683	20.615	J7		2.7E-08	2.6E-03
GMP19	GMP19SG001	6/5/2002	4.5	o-Xylene	95476	11.44	J3		NA	2.3E-05
GMP19	GMP19SG001	6/5/2002	4.5	Propylene	115071	36.75			NA	NA
								TOTAL	**6.4E-07**	**7.1E-03**
SG01E	SG01SG008	4/4/2002	13.5	1,3-Butadiene	106990	17			3.7E-07	1.5E-03
SG01E	SG01SG008	4/4/2002	13.5	2-Butanone	78933	50			NA	7.2E-06
SG01E	SG01SG008	4/4/2002	13.5	2-Hexanone	591786	13			NA	NA
SG01E	SG01SG008	4/4/2002	13.5	4-Methyl-2-Pentanone	108101	5	J		NA	7.2E-07
SG01E	SG01SG008	4/4/2002	13.5	Acetone	67641	150			NA	9.0E-05
SG01E	SG01SG008	4/4/2002	13.5	Benzene	71432	9			8.1E-09	1.1E-04
SG01E	SG01SG008	4/4/2002	13.5	Carbon Disulfide	75150	4	J		NA	4.8E-07
SG01E	SG01SG008	4/4/2002	13.5	Chloroform	67663	5	J		9.6E-10	1.4E-04
SG01E	SG01SG008	4/4/2002	13.5	Chloromethane	74873	2	J		1.5E-10	2.2E-06
SG01E	SG01SG008	4/4/2002	13.5	Cyclohexane	110827	6			NA	2.0E-08
SG01E	SG01SG008	4/4/2002	13.5	Dichlorodifluoromethane	75718	4	J		NA	1.1E-06

ATTACHMENT D1: JOHNSON ETTINGER MODEL BACKUP SPREADSHEET (Continued)

Parcel E Nonstandard Data Gaps Investigation, Landfill Gas Characterization, Hunters Point Shipyard, San Francisco, California

Point ID	Sampling ID	Sample Date	Depth to Top of Screen (feet)	Analyte	CAS Number	Result ($\mu g/m^3$)	Qualifier	Average Concentration ($\mu g/m^3$)	Risk Calculated by the JEM	Hazard Quotient
SG01E	SG01SG008	4/4/2002	13.5	Ethanol	64175	3			NA	NA
SG01E	SG01SG008	4/4/2002	13.5	Ethylbenzene	100414	3	J		8.8E-11	1.9E-07
SG01E	SG01SG008	4/4/2002	13.5	Heptane	142825	11			NA	NA
SG01E	SG01SG008	4/4/2002	13.5	m,p-Xylenes	106423	5	J		NA	3.2E-06
SG01E	SG01SG008	4/4/2002	13.5	n-Hexane	110543	22			NA	1.7E-05
SG01E	SG01SG008	4/4/2002	13.5	Propylene	115071	250			NA	NA
SG01E	SG01SG008	4/4/2002	13.5	Toluene	108883	11			NA	2.6E-06
								TOTAL	**3.8E-07**	**1.9E-03**
SG25C	SG25SG008	4/3/2002	3.3	Chloroform	67663	13			9.1E-09	1.3E-03
SG25C	SG25SG008	4/3/2002	3.3	Cyclohexane	110827	3	J		NA	3.8E-08
SG25C	SG25SG008	4/3/2002	3.3	Dichlorodifluoromethane	75718	4	J		NA	4.3E-06
SG25C	SG25SG008	4/3/2002	3.3	n-Hexane	110543	3	J		NA	7.1E-06
SG25C	SG25SG008	4/3/2002	3.3	Toluene	108883	3	J		NA	2.7E-06
								TOTAL	**9.1E-09**	**1.3E-03**

Notes:

$\mu g/m^3$	Micrograms per cubic meter
CAS	Chemical Abstracts Service
GMP	Gas monitoring probe
ID	Identification
J	Estimated concentration
JEM	Johnson Ettinger Model
NA	Not available
SG	Soil gas
U	Not detected

Model Inputs:

Lf	15 cm
Ls	Top of Screen varies with each GMP
Ts	15
SCS soil type	S
Dry bulk density	1.5
Total porosity	0.43
Water-filled porosity	0.3
ATc	70
ATnc	30
ED	30
EF	350

ATTACHMENT G-1: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, Californ

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP22	GMP22004	2/25/2003	6	1,1,1-Trichloroethane	71556	7.74	U		
GMP22	GMP22004	2/25/2003	6	1,1,2,2-Tetrachloroethane	79345	9.77	UJ0		
GMP22	GMP22004	2/25/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	10.88	U		
GMP22	GMP22004	2/25/2003	6	1,1,2-Trichloroethane	79005	7.74	U		
GMP22	GMP22004	2/25/2003	6	1,1-Dichloroethane	75343	9.48	J3	5.2E-10	1.9E-06
GMP22	GMP22004	2/25/2003	6	1,1-Dichloroethene	75354	5.64	U		
GMP22	GMP22004	2/25/2003	6	1,2,4-Trichlorobenzene	120821	10.53	UJ0		
GMP22	GMP22004	2/25/2003	6	1,2,4-Trimethylbenzene	95636	129.74	J03	NA	1.8E-03
GMP22	GMP22004	2/25/2003	6	1,2-Dibromoethane	106934	10.95	U		
GMP22	GMP22004	2/25/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	66.12	J3		
GMP22	GMP22004	2/25/2003	6	1,2-Dichlorobenzene	95501	20.16	J03	NA	9.3E-06
GMP22	GMP22004	2/25/2003	6	1,2-Dichloroethane	107062	4.53	J3	5.7E-09	1.2E-04
GMP22	GMP22004	2/25/2003	6	1,2-Dichloropropane	78875	6.58	U		
GMP22	GMP22004	2/25/2003	6	1,3,5-Trimethylbenzene	108678	494.01	J03	NA	6.7E-03
GMP22	GMP22004	2/25/2003	6	1,3-Butadiene	106990	3.14	U		
GMP22	GMP22004	2/25/2003	6	1,3-Dichlorobenzene	541731	8.55	UJ0		
GMP22	GMP22004	2/25/2003	6	1,4-Dichlorobenzene	106467	128.31	J03	4.6E-08	1.1E-04
GMP22	GMP22004	2/25/2003	6	1,4-Dioxane	123911	5.12	U		
GMP22	GMP22004	2/25/2003	6	2-Butanone	78933	4.19	U		
GMP22	GMP22004	2/25/2003	6	2-Hexanone	591786	5.82	U		
GMP22	GMP22004	2/25/2003	6	4-Ethyltoluene	622968	83.79	J03		
GMP22	GMP22004	2/25/2003	6	4-Methyl-2-pentanone	108101	5.82	U		
GMP22	GMP22004	2/25/2003	6	Acetone	67641	15.67	U4J3		
GMP22	GMP22004	2/25/2003	6	Benzene	71432	61.75	J3	7.1E-08	1.1E-03
GMP22	GMP22004	2/25/2003	6	Benzyl chloride	100447	7.39	UJ0		
GMP22	GMP22004	2/25/2003	6	Bromodichloromethane	75274	9.49	U		
GMP22	GMP22004	2/25/2003	6	Bromoform	75252	14.70	UJ0		
GMP22	GMP22004	2/25/2003	6	Bromomethane	74839	3.95	J3	NA	7.9E-05
GMP22	GMP22004	2/25/2003	6	Carbon disulfide	75150	16.43	J3	NA	3.0E-06
GMP22	GMP22004	2/25/2003	6	Carbon tetrachloride	56235	8.96	U		
GMP22	GMP22004	2/25/2003	6	Chlorobenzene	108907	6.58	UJ0		
GMP22	GMP22004	2/25/2003	6	Chloroethane	75003	29.48	J3	NA	4.8E-05
GMP22	GMP22004	2/25/2003	6	Chloroform	67663	6.93	J3		
GMP22	GMP22004	2/25/2003	6	Chloromethane	74873	39.90	J3	3.7E-09	1.9E-05
GMP22	GMP22004	2/25/2003	6	cis-1,2-Dichloroethene	156592	7.58	J3	NA	2.1E-05
GMP22	GMP22004	2/25/2003	6	cis-1,3-Dichloropropene	542756	6.45	U		
GMP22	GMP22004	2/25/2003	6	Cyclohexane	110827	1,291.30	J3		
GMP22	GMP22004	2/25/2003	6	Dibromochloromethane	124481	12.11	U		

ATTACHMENT G-1: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, Californ

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP22	GMP22004	2/25/2003	6	Dichlorodifluoromethane	75718	47.79	J3	NA	2.1E-05
GMP22	GMP22004	2/25/2003	6	Ethanol	64175	2.67	U		
GMP22	GMP22004	2/25/2003	6	Ethylbenzene	100414	154.00	J03	5.9E-09	1.5E-05
GMP22	GMP22004	2/25/2003	6	Heptane	142825	790.40	J3		
GMP22	GMP22004	2/25/2003	6	Hexachlorobutadiene	87683	15.19	UJ0		
GMP22	GMP22004	2/25/2003	6	Hexane	110543	963.90	J3	NA	1.1E-03
GMP22	GMP22004	2/25/2003	6	Isopropyl alcohol	67630	3.49	U		
GMP22	GMP22004	2/25/2003	6	m,p-xylenes	106423	704.00	J03	NA	7.0E-04
GMP22	GMP22004	2/25/2003	6	Methylene chloride	75092	16.24	U4J3		
GMP22	GMP22004	2/25/2003	6	o-xylene	95476	1,056.00	J03	NA	1.1E-03
GMP22	GMP22004	2/25/2003	6	Propylene	115071	2,275.00			
GMP22	GMP22004	2/25/2003	6	Styrene	100425	10.37	J03	NA	1.0E-06
GMP22	GMP22004	2/25/2003	6	Tert-butyl methyl ether	1634044	5.12	U		
GMP22	GMP22004	2/25/2003	6	Tetrachloroethene	127184	20.01	J3	3.9E-09	3.1E-06
GMP22	GMP22004	2/25/2003	6	Tetrahydrofuran	109999	4.19	U		
GMP22	GMP22004	2/25/2003	6	Toluene	108883	38.30	J3	NA	1.1E-05
GMP22	GMP22004	2/25/2003	6	trans-1,2-Dichloroethene	156605	5.59	U		
GMP22	GMP22004	2/25/2003	6	trans-1,3-Dichloropropene		6.45	U		
GMP22	GMP22004	2/25/2003	6	Trichloroethene	79016	17.14	J3	7.1E-08	5.0E-05
GMP22	GMP22004	2/25/2003	6	Trichlorofluoromethane	75694	7.98	U		
GMP22	GMP22004	2/25/2003	6	Vinyl acetate	108054	5.00	U		
GMP22	GMP22004	2/25/2003	6	Vinyl chloride	75014	3.64	U		
						GMP22 Total Risk:		**2.1E-07**	**1.3E-02**
GMP23	GMP23002	2/25/2003	6	1,1,1-Trichloroethane	71556	7.74	U		
GMP23	GMP23002	2/25/2003	6	1,1,2,2-Tetrachloroethane	79345	9.77	UJ0		
GMP23	GMP23002	2/25/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	10.88	U		
GMP23	GMP23002	2/25/2003	6	1,1,2-Trichloroethane	79005	7.74	U		
GMP23	GMP23002	2/25/2003	6	1,1-Dichloroethane	75343	5.77	U		
GMP23	GMP23002	2/25/2003	6	1,1-Dichloroethene	75354	5.64	U		
GMP23	GMP23002	2/25/2003	6	1,2,4-Trichlorobenzene	120821	10.53	UJ0		
GMP23	GMP23002	2/25/2003	6	1,2,4-Trimethylbenzene	95636	284.43	J03	NA	3.9E-03
GMP23	GMP23002	2/25/2003	6	1,2-Dibromoethane	106934	10.95	U		
GMP23	GMP23002	2/25/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	9.95	J3		
GMP23	GMP23002	2/25/2003	6	1,2-Dichlorobenzene	95501	28.11	J30	NA	1.3E-05
GMP23	GMP23002	2/25/2003	6	1,2-Dichloroethane	107062	5.77	U		
GMP23	GMP23002	2/25/2003	6	1,2-Dichloropropane	78875	6.58	U		
GMP23	GMP23002	2/25/2003	6	1,3,5-Trimethylbenzene	108678	484.03	J03	NA	6.6E-03
GMP23	GMP23002	2/25/2003	6	1,3-Butadiene	106990	3.14	U		

ATTACHMENT G-1: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, Californ

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP23	GMP23002	2/25/2003	6	1,3-Dichlorobenzene	541731	8.55	UJ0		
GMP23	GMP23002	2/25/2003	6	1,4-Dichlorobenzene	106467	37.88	J03	1.4E-08	3.2E-05
GMP23	GMP23002	2/25/2003	6	1,4-Dioxane	123911	5.12	U		
GMP23	GMP23002	2/25/2003	6	2-Butanone	78933	35.88	U2J3		
GMP23	GMP23002	2/25/2003	6	2-Hexanone	591786	5.82	U		
GMP23	GMP23002	2/25/2003	6	4-Ethyltoluene	622968	66.15	J03		
GMP23	GMP23002	2/25/2003	6	4-Methyl-2-pentanone	108101	5.82	U		
GMP23	GMP23002	2/25/2003	6	Acetone	67641	939.90	J3	NA	7.9E-04
GMP23	GMP23002	2/25/2003	6	Benzene	71432	110.50	J3	1.3E-07	2.1E-03
GMP23	GMP23002	2/25/2003	6	Benzyl chloride	100447	7.39	UJ0		
GMP23	GMP23002	2/25/2003	6	Bromodichloromethane	75274	9.49	U		
GMP23	GMP23002	2/25/2003	6	Bromoform	75252	14.70	UJ0		
GMP23	GMP23002	2/25/2003	6	Bromomethane	74839	5.53	U		
GMP23	GMP23002	2/25/2003	6	Carbon disulfide	75150	948.00	J3	NA	1.7E-04
GMP23	GMP23002	2/25/2003	6	Carbon tetrachloride	56235	8.96	U		
GMP23	GMP23002	2/25/2003	6	Chlorobenzene	108907	629.80	J03	NA	1.0E-03
GMP23	GMP23002	2/25/2003	6	Chloroethane	75003	26.80	J3	NA	4.4E-05
GMP23	GMP23002	2/25/2003	6	Chloroform	67663	6.93	U		
GMP23	GMP23002	2/25/2003	6	Chloromethane	74873	357.00	J3	3.4E-08	1.7E-04
GMP23	GMP23002	2/25/2003	6	cis-1,2-Dichloroethene	156592	11.97	J3	NA	3.3E-05
GMP23	GMP23002	2/25/2003	6	cis-1,3-Dichloropropene	542756	6.45	U		
GMP23	GMP23002	2/25/2003	6	Cyclohexane	110827	418.80	J3		
GMP23	GMP23002	2/25/2003	6	Dibromochloromethane	124481	12.11	U		
GMP23	GMP23002	2/25/2003	6	Dichlorodifluoromethane	75718	18.11	U2J3		
GMP23	GMP23002	2/25/2003	6	Ethanol	64175	11.84	U2J3		
GMP23	GMP23002	2/25/2003	6	Ethylbenzene	100414	171.60	J03	6.5E-09	1.6E-05
GMP23	GMP23002	2/25/2003	6	Heptane	142825	748.80	J3		
GMP23	GMP23002	2/25/2003	6	Hexachlorobutadiene	87683	15.19	UJ0		
GMP23	GMP23002	2/25/2003	6	Hexane	110543	571.20	J3	NA	6.1E-04
GMP23	GMP23002	2/25/2003	6	Isopropyl alcohol	67630	3.49	U		
GMP23	GMP23002	2/25/2003	6	m,p-xylenes	106423	748.00	J30	NA	7.2E-04
GMP23	GMP23002	2/25/2003	6	Methylene chloride	75092	22.24	U4J3		
GMP23	GMP23002	2/25/2003	6	o-xylene	95476	528.00	J03	NA	5.9E-04
GMP23	GMP23002	2/25/2003	6	Propylene	115071	6,125.00			
GMP23	GMP23002	2/25/2003	6	Styrene	100425	6.05	UJ0		
GMP23	GMP23002	2/25/2003	6	Tert-butyl methyl ether	1634044	5.12	U		
GMP23	GMP23002	2/25/2003	6	Tetrachloroethene	127184	15.18	J3	3.0E-09	2.4E-06
GMP23	GMP23002	2/25/2003	6	Tetrahydrofuran	109999	4.19	U		

ATTACHMENT G-1: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, Californ

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP23	GMP23002	2/25/2003	6	Toluene	108883	49.79	J3	NA	1.4E-05
GMP23	GMP23002	2/25/2003	6	trans-1,2-Dichloroethene	156605	5.59	U		
GMP23	GMP23002	2/25/2003	6	trans-1,3-Dichloropropene		6.45	U		
GMP23	GMP23002	2/25/2003	6	Trichloroethene	79016	11.06	J3	4.4E-08	3.2E-05
GMP23	GMP23002	2/25/2003	6	Trichlorofluoromethane	75694	7.98	U		
GMP23	GMP23002	2/25/2003	6	Vinyl acetate	108054	5.00	U		
GMP23	GMP23002	2/25/2003	6	Vinyl chloride	75014	2.60	J3	9.5E-09	3.4E-06
						GMP23 Total Risk:		**2.4E-07**	**1.7E-02**
GMP24	GMP24001	2/25/2003	6	1,1,1-Trichloroethane	71556	7.74	U		
GMP24	GMP24001	2/25/2003	6	1,1,2,2-Tetrachloroethane	79345	9.77	UJ0		
GMP24	GMP24001	2/25/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	10.88	U		
GMP24	GMP24001	2/25/2003	6	1,1,2-Trichloroethane	79005	7.74	U		
GMP24	GMP24001	2/25/2003	6	1,1-Dichloroethane	75343	70.04	J3	3.9E-09	1.4E-05
GMP24	GMP24001	2/25/2003	6	1,1-Dichloroethene	75354	2.86	J3	NA	1.6E-06
GMP24	GMP24001	2/25/2003	6	1,2,4-Trichlorobenzene	120821	10.53	UJ0		
GMP24	GMP24001	2/25/2003	6	1,2,4-Trimethylbenzene	95636	698.60	J03	NA	9.3E-03
GMP24	GMP24001	2/25/2003	6	1,2-Dibromoethane	106934	10.95	U		
GMP24	GMP24001	2/25/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	92.43	J3		
GMP24	GMP24001	2/25/2003	6	1,2-Dichlorobenzene	95501	8.55	UJ0		
GMP24	GMP24001	2/25/2003	6	1,2-Dichloroethane	107062	5.77	U		
GMP24	GMP24001	2/25/2003	6	1,2-Dichloropropane	78875	6.58	U		
GMP24	GMP24001	2/25/2003	6	1,3,5-Trimethylbenzene	108678	998.00	J03	NA	1.4E-02
GMP24	GMP24001	2/25/2003	6	1,3-Butadiene	106990	3.14	U		
GMP24	GMP24001	2/25/2003	6	1,3-Dichlorobenzene	541731	8.55	UJ0		
GMP24	GMP24001	2/25/2003	6	1,4-Dichlorobenzene	106467	22.61	J03	8.3E-09	1.9E-05
GMP24	GMP24001	2/25/2003	6	1,4-Dioxane	123911	5.12	U		
GMP24	GMP24001	2/25/2003	6	2-Butanone	78933	59.80	U2J3		
GMP24	GMP24001	2/25/2003	6	2-Hexanone	591786	5.82	U		
GMP24	GMP24001	2/25/2003	6	4-Ethyltoluene	622968	101.43	J03		
GMP24	GMP24001	2/25/2003	6	4-Methyl-2-pentanone	108101	5.82	U		
GMP24	GMP24001	2/25/2003	6	Acetone	67641	175.93	U2J3		
GMP24	GMP24001	2/25/2003	6	Benzene	71432	191.75	J3	2.2E-07	3.6E-03
GMP24	GMP24001	2/25/2003	6	Benzyl chloride	100447	7.39	UJ0		
GMP24	GMP24001	2/25/2003	6	Bromodichloromethane	75274	9.49	U		
GMP24	GMP24001	2/25/2003	6	Bromoform	75252	14.70	UJ0		
GMP24	GMP24001	2/25/2003	6	Bromomethane	74839	5.53	U		
GMP24	GMP24001	2/25/2003	6	Carbon disulfide	75150	66.36	J3	NA	1.2E-05
GMP24	GMP24001	2/25/2003	6	Carbon tetrachloride	56235	8.96	U		

ATTACHMENT G-1: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, Californ

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m^3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP24	GMP24001	2/25/2003	6	Chlorobenzene	108907	6.58	UJ0		
GMP24	GMP24001	2/25/2003	6	Chloroethane	75003	294.80	J3	NA	4.8E-04
GMP24	GMP24001	2/25/2003	6	Chloroform	67663	6.93	U		
GMP24	GMP24001	2/25/2003	6	Chloromethane	74873	50.40	J3	4.8E-09	2.5E-05
GMP24	GMP24001	2/25/2003	6	cis-1,2-Dichloroethene	156592	55.86	J3	NA	1.6E-04
GMP24	GMP24001	2/25/2003	6	cis-1,3-Dichloropropene	542756	6.45	U		
GMP24	GMP24001	2/25/2003	6	Cyclohexane	110827	872.50	J3		
GMP24	GMP24001	2/25/2003	6	Dibromochloromethane	124481	12.11	U		
GMP24	GMP24001	2/25/2003	6	Dichlorodifluoromethane	75718	120.72	J3	NA	5.2E-05
GMP24	GMP24001	2/25/2003	6	Ethanol	64175	2.67	U		
GMP24	GMP24001	2/25/2003	6	Ethylbenzene	100414	145.20	J03	5.5E-09	1.4E-05
GMP24	GMP24001	2/25/2003	6	Heptane	142825	624.00	J3		
GMP24	GMP24001	2/25/2003	6	Hexachlorobutadiene	87683	15.19	UJ0		
GMP24	GMP24001	2/25/2003	6	Hexane	110543	963.90	J3	NA	1.1E-03
GMP24	GMP24001	2/25/2003	6	Isopropyl alcohol	67630	3.49	U		
GMP24	GMP24001	2/25/2003	6	m,p-xylenes	106423	1,452.00	J03	NA	1.4E-03
GMP24	GMP24001	2/25/2003	6	Methylene chloride	75092	14.12	U4J3		
GMP24	GMP24001	2/25/2003	6	o-xylene	95476	1,012.00	J03	NA	1.1E-03
GMP24	GMP24001	2/25/2003	6	Propylene	115071	6,125.00			
GMP24	GMP24001	2/25/2003	6	Styrene	100425	56.16	J03	NA	5.3E-06
GMP24	GMP24001	2/25/2003	6	Tert-butyl methyl ether	1634044	5.12	U		
GMP24	GMP24001	2/25/2003	6	Tetrachloroethene	127184	22.08	J3	4.3E-09	3.4E-06
GMP24	GMP24001	2/25/2003	6	Tetrahydrofuran	109999	4.19	U		
GMP24	GMP24001	2/25/2003	6	Toluene	108883	57.45	J3	NA	1.6E-05
GMP24	GMP24001	2/25/2003	6	trans-1,2-Dichloroethene	156605	6.38	J3	NA	8.6E-06
GMP24	GMP24001	2/25/2003	6	trans-1,3-Dichloropropene		6.45	U		
GMP24	GMP24001	2/25/2003	6	Trichloroethene	79016	23.23	J3	9.5E-08	6.7E-05
GMP24	GMP24001	2/25/2003	6	Trichlorofluoromethane	75694	15.96	U2J3		
GMP24	GMP24001	2/25/2003	6	Vinyl acetate	108054	5.00	U		
GMP24	GMP24001	2/25/2003	6	Vinyl chloride	75014	16.90	J3	6.0E-08	2.2E-05
						GMP24 Total Risk:		**4.0E-07**	**3.1E-02**
GMP25	GMP25001	2/25/2003	6.5	1,1,1-Trichloroethane	71556	7.74	U		
GMP25	GMP25001	2/25/2003	6.5	1,1,2,2-Tetrachloroethane	79345	9.77	U		
GMP25	GMP25001	2/25/2003	6.5	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	10.88	U		
GMP25	GMP25001	2/25/2003	6.5	1,1,2-Trichloroethane	79005	7.74	U		
GMP25	GMP25001	2/25/2003	6.5	1,1-Dichloroethane	75343	53.56	J3	2.7E-09	9.3E-06
GMP25	GMP25001	2/25/2003	6.5	1,1-Dichloroethene	75354	5.64	U		
GMP25	GMP25001	2/25/2003	6.5	1,2,4-Trichlorobenzene	120821	10.53	U		

ATTACHMENT G-1: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, Californ

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP25	GMP25001	2/25/2003	6.5	1,2,4-Trimethylbenzene	95636	5.49	J3	NA	6.9E-05
GMP25	GMP25001	2/25/2003	6.5	1,2-Dibromoethane	106934	10.95	U		
GMP25	GMP25001	2/25/2003	6.5	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	213.30	J3		
GMP25	GMP25001	2/25/2003	6.5	1,2-Dichlorobenzene	95501	8.55	U		
GMP25	GMP25001	2/25/2003	6.5	1,2-Dichloroethane	107062	5.77	U		
GMP25	GMP25001	2/25/2003	6.5	1,2-Dichloropropane	78875	6.58	U		
GMP25	GMP25001	2/25/2003	6.5	1,3,5-Trimethylbenzene	108678	6.99	U		
GMP25	GMP25001	2/25/2003	6.5	1,3-Butadiene	106990	3.14	U		
GMP25	GMP25001	2/25/2003	6.5	1,3-Dichlorobenzene	541731	8.55	U		
GMP25	GMP25001	2/25/2003	6.5	1,4-Dichlorobenzene	106467	7.94	J3	2.7E-09	6.1E-06
GMP25	GMP25001	2/25/2003	6.5	1,4-Dioxane	123911	5.12	U		
GMP25	GMP25001	2/25/2003	6.5	2-Butanone	78933	4.19	U		
GMP25	GMP25001	2/25/2003	6.5	2-Hexanone	591786	5.82	U		
GMP25	GMP25001	2/25/2003	6.5	4-Ethyltoluene	622968	6.17	U		
GMP25	GMP25001	2/25/2003	6.5	4-Methyl-2-pentanone	108101	5.82	U		
GMP25	GMP25001	2/25/2003	6.5	Acetone	67641	3.37	U		
GMP25	GMP25001	2/25/2003	6.5	Benzene	71432	39.00	J3	4.2E-08	6.8E-04
GMP25	GMP25001	2/25/2003	6.5	Benzyl chloride	100447	7.39	U		
GMP25	GMP25001	2/25/2003	6.5	Bromodichloromethane	75274	9.49	U		
GMP25	GMP25001	2/25/2003	6.5	Bromoform	75252	14.70	U		
GMP25	GMP25001	2/25/2003	6.5	Bromomethane	74839	5.53	U		
GMP25	GMP25001	2/25/2003	6.5	Carbon disulfide	75150	8.22	J3	NA	1.4E-06
GMP25	GMP25001	2/25/2003	6.5	Carbon tetrachloride	56235	8.96	U		
GMP25	GMP25001	2/25/2003	6.5	Chlorobenzene	108907	98.70	J3	NA	1.5E-04
GMP25	GMP25001	2/25/2003	6.5	Chloroethane	75003	227.80	J3	NA	3.4E-04
GMP25	GMP25001	2/25/2003	6.5	Chloroform	67663	6.93	U		
GMP25	GMP25001	2/25/2003	6.5	Chloromethane	74873	2.94	U2J3		
GMP25	GMP25001	2/25/2003	6.5	cis-1,2-Dichloroethene	156592	11.17	J3	NA	2.9E-05
GMP25	GMP25001	2/25/2003	6.5	cis-1,3-Dichloropropene	542756	6.45	U		
GMP25	GMP25001	2/25/2003	6.5	Cyclohexane	110827	153.56	J3		
GMP25	GMP25001	2/25/2003	6.5	Dibromochloromethane	124481	12.11	U		
GMP25	GMP25001	2/25/2003	6.5	Dichlorodifluoromethane	75718	47.79	J3	NA	1.9E-05
GMP25	GMP25001	2/25/2003	6.5	Ethanol	64175	2.67	U		
GMP25	GMP25001	2/25/2003	6.5	Ethylbenzene	100414	6.16	U		
GMP25	GMP25001	2/25/2003	6.5	Heptane	142825	5.82	U		
GMP25	GMP25001	2/25/2003	6.5	Hexachlorobutadiene	87683	15.19	U		
GMP25	GMP25001	2/25/2003	6.5	Hexane	110543	26.06	U2J3		
GMP25	GMP25001	2/25/2003	6.5	Isopropyl alcohol	67630	3.49	U		

ATTACHMENT G-1: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

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Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP25	GMP25001	2/25/2003	6.5	m,p-xylenes	106423	8.80	J3	NA	7.9E-06
GMP25	GMP25001	2/25/2003	6.5	Methylene chloride	75092	27.89	U4J3		
GMP25	GMP25001	2/25/2003	6.5	o-xylene	95476	9.68	J3	NA	1.0E-05
GMP25	GMP25001	2/25/2003	6.5	Propylene	115071	262.50	J3		
GMP25	GMP25001	2/25/2003	6.5	Styrene	100425	6.05	U		
GMP25	GMP25001	2/25/2003	6.5	Tert-butyl methyl ether	1634044	5.12	U		
GMP25	GMP25001	2/25/2003	6.5	Tetrachloroethene	127184	11.73	J3	2.1E-09	1.7E-06
GMP25	GMP25001	2/25/2003	6.5	Tetrahydrofuran	109999	4.19	U		
GMP25	GMP25001	2/25/2003	6.5	Toluene	108883	5.36	U		
GMP25	GMP25001	2/25/2003	6.5	trans-1,2-Dichloroethene	156605	5.59	U		
GMP25	GMP25001	2/25/2003	6.5	trans-1,3-Dichloropropene		6.45	U		
GMP25	GMP25001	2/25/2003	6.5	Trichloroethene	79016	8.30	J3	3.1E-08	2.2E-05
GMP25	GMP25001	2/25/2003	6.5	Trichlorofluoromethane	75694	7.98	U		
GMP25	GMP25001	2/25/2003	6.5	Vinyl acetate	108054	5.00	U		
GMP25	GMP25001	2/25/2003	6.5	Vinyl chloride	75014	1.92	J3	6.5E-09	2.4E-06
						GMP25 Total Risk:		**8.7E-08**	**1.4E-03**
GMP26	GMP26001	2/25/2003	6	1,1,1-Trichloroethane	71556	7.74	U		
GMP26	GMP26001	2/25/2003	6	1,1,2,2-Tetrachloroethane	79345	9.77	U		
GMP26	GMP26001	2/25/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	10.88	U		
GMP26	GMP26001	2/25/2003	6	1,1,2-Trichloroethane	79005	7.74	U		
GMP26	GMP26001	2/25/2003	6	1,1-Dichloroethane	75343	5.77	U		
GMP26	GMP26001	2/25/2003	6	1,1-Dichloroethene	75354	5.64	U		
GMP26	GMP26001	2/25/2003	6	1,2,4-Trichlorobenzene	120821	10.53	U		
GMP26	GMP26001	2/25/2003	6	1,2,4-Trimethylbenzene	95636	6.99	U		
GMP26	GMP26001	2/25/2003	6	1,2-Dibromoethane	106934	10.95	U		
GMP26	GMP26001	2/25/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	24.89			
GMP26	GMP26001	2/25/2003	6	1,2-Dichlorobenzene	95501	8.55	U		
GMP26	GMP26001	2/25/2003	6	1,2-Dichloroethane	107062	5.77	U		
GMP26	GMP26001	2/25/2003	6	1,2-Dichloropropane	78875	6.58	U		
GMP26	GMP26001	2/25/2003	6	1,3,5-Trimethylbenzene	108678	6.99	U		
GMP26	GMP26001	2/25/2003	6	1,3-Butadiene	106990	3.14	U		
GMP26	GMP26001	2/25/2003	6	1,3-Dichlorobenzene	541731	8.55	U		
GMP26	GMP26001	2/25/2003	6	1,4-Dichlorobenzene	106467	8.55	U		
GMP26	GMP26002	2/25/2003	6	1,4-Dichlorobenzene	106467	8.55	U		
GMP26	GMP26001	2/25/2003	6	1,4-Dioxane	123911	5.12	U		
GMP26	GMP26001	2/25/2003	6	2-Butanone	78933	4.19	U		
GMP26	GMP26001	2/25/2003	6	2-Hexanone	591786	5.82	U		
GMP26	GMP26001	2/25/2003	6	4-Ethyltoluene	622968	6.17	U		

ATTACHMENT G-1: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, Californ

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m^3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP26	GMP26001	2/25/2003	6	4-Methyl-2-pentanone	108101	5.82	U		
GMP26	GMP26001	2/25/2003	6	Acetone	67641	3.37	U		
GMP26	GMP26001	2/25/2003	6	Benzene	71432	4.55	U		
GMP26	GMP26001	2/25/2003	6	Benzyl chloride	100447	7.39	U		
GMP26	GMP26001	2/25/2003	6	Bromodichloromethane	75274	9.49	U		
GMP26	GMP26001	2/25/2003	6	Bromoform	75252	14.70	U		
GMP26	GMP26001	2/25/2003	6	Bromomethane	74839	5.53	U		
GMP26	GMP26001	2/25/2003	6	Carbon disulfide	75150	4.42	U		
GMP26	GMP26001	2/25/2003	6	Carbon tetrachloride	56235	8.96	U		
GMP26	GMP26001	2/25/2003	6	Chlorobenzene	108907	6.58	U		
GMP26	GMP26001	2/25/2003	6	Chloroethane	75003	3.75	U		
GMP26	GMP26001	2/25/2003	6	Chloroform	67663	17.82		4.3E-09	7.9E-04
GMP26	GMP26001	2/25/2003	6	Chloromethane	74873	2.94	U		
GMP26	GMP26001	2/25/2003	6	cis-1,2-Dichloroethene	156592	5.59	U		
GMP26	GMP26001	2/25/2003	6	cis-1,3-Dichloropropene	542756	6.45	U		
GMP26	GMP26001	2/25/2003	6	Cyclohexane	110827	4.89	U		
GMP26	GMP26001	2/25/2003	6	Dibromochloromethane	124481	12.11	U		
GMP26	GMP26001	2/25/2003	6	Dichlorodifluoromethane	75718	8.55	U2		
GMP26	GMP26001	2/25/2003	6	Ethanol	64175	2.67	U		
GMP26	GMP26001	2/25/2003	6	Ethylbenzene	100414	6.16	U		
GMP26	GMP26001	2/25/2003	6	Heptane	142825	5.82	U		
GMP26	GMP26001	2/25/2003	6	Hexachlorobutadiene	87683	15.19	U		
GMP26	GMP26001	2/25/2003	6	Hexane	110543	5.00	U		
GMP26	GMP26001	2/25/2003	6	Isopropyl alcohol	67630	3.49	U		
GMP26	GMP26001	2/25/2003	6	m,p-Xylenes	106423	6.16	U		
GMP26	GMP26001	2/25/2003	6	Methylene chloride	75092	6.71	U4		
GMP26	GMP26001	2/25/2003	6	o-Xylene	95476	6.16	U		
GMP26	GMP26001	2/25/2003	6	Propylene	115071	2.45	U2		
GMP26	GMP26001	2/25/2003	6	Styrene	100425	6.05	U		
GMP26	GMP26001	2/25/2003	6	Tert-butyl methyl ether	1634044	5.12	U		
GMP26	GMP26001	2/25/2003	6	Tetrachloroethene	127184	9.66	U		
GMP26	GMP26001	2/25/2003	6	Tetrahydrofuran	109999	4.19	U		
GMP26	GMP26001	2/25/2003	6	Toluene	108883	5.36	U		
GMP26	GMP26001	2/25/2003	6	trans-1,2-Dichloroethene	156605	5.59	U		
GMP26	GMP26001	2/25/2003	6	trans-1,3-Dichloropropene		6.45	U		
GMP26	GMP26001	2/25/2003	6	Trichloroethene	79016	7.74	U	1.5E-08	1.1E-05

ATTACHMENT G-1: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, Californ

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP26	GMP26001	2/25/2003	6	Trichlorofluoromethane	75694	7.98	U		
GMP26	GMP26001	2/25/2003	6	Vinyl acetate	108054	5.00	U		
GMP26	GMP26001	2/25/2003	6	Vinyl chloride	75014	3.64	U		
						GMP26 Total Risk:		**2.0E-08**	**8.0E-04**

Notes:

$\mu g/m^3$	Micrograms per cubic meter
J	Estimated value
JEM	Johnson-Ettinger Model
NA	Not analyzed
U	Not detected

ATTACHMENT G-2: MAY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point ID No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP22	GMP22005	5/27/2003	6	1,1,1-Trichloroethane	71556	19	U		
GMP22	GMP22005	5/27/2003	6	1,1,2,2-Tetrachloroethane	79345	24	U		
GMP22	GMP22005	5/27/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	27	U		
GMP22	GMP22005	5/27/2003	6	1,1,2-Trichloroethane	79005	19	U		
GMP22	GMP22005	5/27/2003	6	1,1-Dichloroethane	75343	14	U		
GMP22	GMP22005	5/27/2003	6	1,1-Dichloroethene	75354	14	U		
GMP22	GMP22005	5/27/2003	6	1,2,4-Trichlorobenzene	120821	26	U		
GMP22	GMP22005	5/27/2003	6	1,2,4-Trimethylbenzene	95636	80	J3	NA	1.1E-03
GMP22	GMP22005	5/27/2003	6	1,2-Dibromoethane	106934	27	U		
GMP22	GMP22005	5/27/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	31	J3		
GMP22	GMP22005	5/27/2003	6	1,2-Dichlorobenzene	95501	21	U		
GMP22	GMP22005	5/27/2003	6	1,2-Dichloroethane	107062	14	U		
GMP22	GMP22005	5/27/2003	6	1,2-Dichloropropane	78875	16	U		
GMP22	GMP22005	5/27/2003	6	1,3,5-Trimethylbenzene	108678	17	U		
GMP22	GMP22005	5/27/2003	6	1,3-Butadiene	106990	8	U		
GMP22	GMP22005	5/27/2003	6	1,3-Dichlorobenzene	541731	21	U		
GMP22	GMP22005	5/27/2003	6	1,4-Dichlorobenzene	106467	21	U		
GMP22	GMP22005	5/27/2003	6	1,4-Dioxane	123911	13	U		
GMP22	GMP22005	5/27/2003	6	2-Butanone	78933	10	U		
GMP22	GMP22005	5/27/2003	6	2-Hexanone	591786	15	U		
GMP22	GMP22005	5/27/2003	6	4-Ethyltoluene	622968	15	U		
GMP22	GMP22005	5/27/2003	6	4-Methyl-2-pentanone	108101	15	U		
GMP22	GMP22005	5/27/2003	6	Acetone	67641	8	U		
GMP22	GMP22005	5/27/2003	6	Benzene	71432	28	J3	3.3E-08	5.2E-04
GMP22	GMP22005	5/27/2003	6	Benzyl chloride	100447	18	U		
GMP22	GMP22005	5/27/2003	6	Bromodichloromethane	75274	24	U		
GMP22	GMP22005	5/27/2003	6	Bromoform	75252	37	U		
GMP22	GMP22005	5/27/2003	6	Bromomethane	74839	14	U		
GMP22	GMP22005	5/27/2003	6	Carbon disulfide	75150	11	U		
GMP22	GMP22005	5/27/2003	6	Carbon tetrachloride	56235	22	U		
GMP22	GMP22005	5/27/2003	6	Chlorobenzene	108907	16	U		
GMP22	GMP22005	5/27/2003	6	Chloroethane	75003	9	U		
GMP22	GMP22005	5/27/2003	6	Chloroform	67663	17	U	2.0E-09	3.6E-04
GMP22	GMP22005	5/27/2003	6	Chloromethane	74873	7	U		
GMP22	GMP22005	5/27/2003	6	cis-1,2-Dichloroethene	156592	14	U		
GMP22	GMP22005	5/27/2003	6	cis-1,3-Dichloropropene	542756	16	U		

ATTACHMENT G-2: MAY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point ID No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP22	GMP22005	5/27/2003	6	Cyclohexane	110827	730	J3		
GMP22	GMP22005	5/27/2003	6	Dibromochloromethane	124481	30	U		
GMP22	GMP22005	5/27/2003	6	Dichlorodifluoromethane	75718	21	J3	NA	9.3E-06
GMP22	GMP22005	5/27/2003	6	Ethanol	64175	7	U		
GMP22	GMP22005	5/27/2003	6	Ethylbenzene	100414	15	U		
GMP22	GMP22005	5/27/2003	6	Heptane	142825	310	J3		
GMP22	GMP22005	5/27/2003	6	Hexachlorobutadiene	87683	38	U		
GMP22	GMP22005	5/27/2003	6	Hexane	110543	430	J3	NA	4.6E-04
GMP22	GMP22005	5/27/2003	6	Isopropyl alcohol	67630	9	U		
GMP22	GMP22005	5/27/2003	6	m,p-xylenes	106423	290	J3	NA	2.9E-04
GMP22	GMP22005	5/27/2003	6	Methylene chloride	75092	12	U		
GMP22	GMP22005	5/27/2003	6	o-xylene	95476	210	U		
GMP22	GMP22005	5/27/2003	6	Propylene	95476	1,400	J3		
GMP22	GMP22005	5/27/2003	6	Styrene	100425	15	J3	NA	1.4E-06
GMP22	GMP22005	5/27/2003	6	Tert-butyl methyl ether	1634044	13	U		
GMP22	GMP22005	5/27/2003	6	Tetrachloroethene	127184	24	U		
GMP22	GMP22005	5/27/2003	6	Tetrahydrofuran	109999	10	U		
GMP22	GMP22005	5/27/2003	6	Toluene	108883	13	U		
GMP22	GMP22005	5/27/2003	6	trans-1,2-Dichloroethene	156605	14	U		
GMP22	GMP22005	5/27/2003	6	trans-1,3-Dichloropropene	542756	16	U		
GMP22	GMP22005	5/27/2003	6	Trichloroethene	79016	19	U		
GMP22	GMP22005	5/27/2003	6	Trichlorofluoromethane	75694	20	U		
GMP22	GMP22005	5/27/2003	6	Vinyl acetate	108054	12	U		
GMP22	GMP22005	5/27/2003	6	Vinyl chloride	75014	9	U		
						GMP22 Total Risk:		**3.5E-08**	**2.7E-03**
GMP23	GMP23003	5/27/2003	6	1,1,1-Trichloroethane	71556	77	U		
GMP23	GMP23003	5/27/2003	6	1,1,2,2-Tetrachloroethane	79345	98	U		
GMP23	GMP23003	5/27/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	110	U		
GMP23	GMP23003	5/27/2003	6	1,1,2-Trichloroethane	79005	77	U		
GMP23	GMP23003	5/27/2003	6	1,1-Dichloroethane	75343	58	U		
GMP23	GMP23003	5/27/2003	6	1,1-Dichloroethene	75354	56	U		
GMP23	GMP23003	5/27/2003	6	1,2,4-Trichlorobenzene	120821	110	U		
GMP23	GMP23003	5/27/2003	6	1,2,4-Trimethylbenzene	95636	130		NA	1.8E-03
GMP23	GMP23003	5/27/2003	6	1,2-Dibromoethane	106934	110	U		
GMP23	GMP23003	5/27/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	100	U		
GMP23	GMP23003	5/27/2003	6	1,2-Dichlorobenzene	95501	86	U		

ATTACHMENT G-2: MAY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point ID No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP23	GMP23003	5/27/2003	6	1,2-Dichloroethane	107062	58	U		
GMP23	GMP23003	5/27/2003	6	1,2-Dichloropropane	78875	66	U		
GMP23	GMP23003	5/27/2003	6	1,3,5-Trimethylbenzene	108678	200			
GMP23	GMP23003	5/27/2003	6	1,3-Butadiene	106990	31	U		
GMP23	GMP23003	5/27/2003	6	1,3-Dichlorobenzene	541731	86	U		
GMP23	GMP23003	5/27/2003	6	1,4-Dichlorobenzene	106467	86	U		
GMP23	GMP23003	5/27/2003	6	1,4-Dioxane	123911	51	U		
GMP23	GMP23003	5/27/2003	6	2-Butanone	78933	42	U		
GMP23	GMP23003	5/27/2003	6	2-Hexanone	591786	58	U		
GMP23	GMP23003	5/27/2003	6	4-Ethyltoluene	622968	62	U		
GMP23	GMP23003	5/27/2003	6	4-Methyl-2-pentanone	108101	58	U		
GMP23	GMP23003	5/27/2003	6	Acetone	67641	34	U		
GMP23	GMP23003	5/27/2003	6	Benzene	71432	85		1.0E-07	1.6E-03
GMP23	GMP23003	5/27/2003	6	Benzyl chloride	100447	74	U		
GMP23	GMP23003	5/27/2003	6	Bromodichloromethane	75274	95	U		
GMP23	GMP23003	5/27/2003	6	Bromoform	75252	150	U		
GMP23	GMP23003	5/27/2003	6	Bromomethane	74839	55	U		
GMP23	GMP23003	5/27/2003	6	Carbon disulfide	75150	150		NA	2.7E-05
GMP23	GMP23003	5/27/2003	6	Carbon tetrachloride	56235	90	U		
GMP23	GMP23003	5/27/2003	6	Chlorobenzene	108907	180		NA	2.9E-04
GMP23	GMP23003	5/27/2003	6	Chloroethane	75003	38	U		
GMP23	GMP23003	5/27/2003	6	Chloroform	67663	69	U	8.3E-09	1.4E-03
GMP23	GMP23003	5/27/2003	6	Chloromethane	74873	65		6.0E-09	3.2E-05
GMP23	GMP23003	5/27/2003	6	cis-1,2-Dichloroethene	156592	56	U		
GMP23	GMP23003	5/27/2003	6	cis-1,3-Dichloropropene	542756	65	U		
GMP23	GMP23003	5/27/2003	6	Cyclohexane	110827	320			
GMP23	GMP23003	5/27/2003	6	Dibromochloromethane	124481	120	U		
GMP23	GMP23003	5/27/2003	6	Dichlorodifluoromethane	75718	70	U		
GMP23	GMP23003	5/27/2003	6	Ethanol	64175	27	U		
GMP23	GMP23003	5/27/2003	6	Ethylbenzene	100414	62	U		
GMP23	GMP23003	5/27/2003	6	Heptane	142825	580			
GMP23	GMP23003	5/27/2003	6	Hexachlorobutadiene	87683	150	U		
GMP23	GMP23003	5/27/2003	6	Hexane	110543	540		NA	5.8E-04
GMP23	GMP23003	5/27/2003	6	Isopropyl alcohol	67630	35	U		
GMP23	GMP23003	5/27/2003	6	m,p-xylenes	106423	260		NA	2.6E-04
GMP23	GMP23003	5/27/2003	6	Methylene chloride	75092	49	U		

ATTACHMENT G-2: MAY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point ID No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP23	GMP23003	5/27/2003	6	o-xylene	95476	170	U		
GMP23	GMP23003	5/27/2003	6	Propylene	95476	8,800			
GMP23	GMP23003	5/27/2003	6	Styrene	100425	60		NA	5.6E-06
GMP23	GMP23003	5/27/2003	6	Tert-butyl methyl ether	1634044	51	U		
GMP23	GMP23003	5/27/2003	6	Tetrachloroethene	127184	97	U	9.5E-09	7.9E-06
GMP23	GMP23003	5/27/2003	6	Tetrahydrofuran	109999	42	U		
GMP23	GMP23003	5/27/2003	6	Toluene	108883	54	U		
GMP23	GMP23003	5/27/2003	6	trans-1,2-Dichloroethene	156605	56	U		
GMP23	GMP23003	5/27/2003	6	trans-1,3-Dichloropropene	542756	65	U	3.8E-09	1.4E-04
GMP23	GMP23003	5/27/2003	6	Trichloroethene	79016	77	U		
GMP23	GMP23003	5/27/2003	6	Trichlorofluoromethane	75694	80	U		
GMP23	GMP23003	5/27/2003	6	Vinyl acetate	108054	50	U		
GMP23	GMP23003	5/27/2003	6	Vinyl chloride	75014	36	U	6.5E-08	2.4E-05
						GMP23 Total Risk:		**1.9E-07**	**6.2E-03**
GMP24	GMP24002	5/27/2003	6	1,1,1-Trichloroethane	71556	77	U		
GMP24	GMP24002	5/27/2003	6	1,1,2,2-Tetrachloroethane	79345	98	U		
GMP24	GMP24002	5/27/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	110	U		
GMP24	GMP24002	5/27/2003	6	1,1,2-Trichloroethane	79005	77	U		
GMP24	GMP24002	5/27/2003	6	1,1-Dichloroethane	75343	58	U		
GMP24	GMP24002	5/27/2003	6	1,1-Dichloroethene	75354	56	U		
GMP24	GMP24002	5/27/2003	6	1,2,4-Trichlorobenzene	120821	110	U		
GMP24	GMP24002	5/27/2003	6	1,2,4-Trimethylbenzene	95636	260		NA	3.6E-03
GMP24	GMP24002	5/27/2003	6	1,2-Dibromoethane	106934	110	U		
GMP24	GMP24002	5/27/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	100	U		
GMP24	GMP24002	5/27/2003	6	1,2-Dichlorobenzene	95501	86	U		
GMP24	GMP24002	5/27/2003	6	1,2-Dichloroethane	107062	58	U		
GMP24	GMP24002	5/27/2003	6	1,2-Dichloropropane	78875	66	U		
GMP24	GMP24002	5/27/2003	6	1,3,5-Trimethylbenzene	108678	290			
GMP24	GMP24002	5/27/2003	6	1,3-Butadiene	106990	31	U		
GMP24	GMP24002	5/27/2003	6	1,3-Dichlorobenzene	541731	86	U		
GMP24	GMP24002	5/27/2003	6	1,4-Dichlorobenzene	106467	86	U		
GMP24	GMP24002	5/27/2003	6	1,4-Dioxane	123911	51	U		
GMP24	GMP24002	5/27/2003	6	2-Butanone	78933	100	U4		
GMP24	GMP24002	5/27/2003	6	2-Hexanone	591786	58	U		
GMP24	GMP24002	5/27/2003	6	4-Ethyltoluene	622968	62	U		
GMP24	GMP24002	5/27/2003	6	4-Methyl-2-pentanone	108101	58	U		

ATTACHMENT G-2: MAY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point ID No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP24	GMP24002	5/27/2003	6	Acetone	67641	2,900		NA	2.4E-03
GMP24	GMP24002	5/27/2003	6	Benzene	71432	52		6.0E-08	1.0E-03
GMP24	GMP24002	5/27/2003	6	Benzyl chloride	100447	74	U		
GMP24	GMP24002	5/27/2003	6	Bromodichloromethane	75274	95	U		
GMP24	GMP24002	5/27/2003	6	Bromoform	75252	150	U		
GMP24	GMP24002	5/27/2003	6	Bromomethane	74839	55	U		
GMP24	GMP24002	5/27/2003	6	Carbon disulfide	75150	1,400		NA	2.6E-04
GMP24	GMP24002	5/27/2003	6	Carbon tetrachloride	56235	90	U		
GMP24	GMP24002	5/27/2003	6	Chlorobenzene	108907	66	U		
GMP24	GMP24002	5/27/2003	6	Chloroethane	75003	46		NA	7.2E-05
GMP24	GMP24002	5/27/2003	6	Chloroform	67663	69	U	8.3E-09	1.4E-03
GMP24	GMP24002	5/27/2003	6	Chloromethane	74873	250		2.4E-08	1.2E-04
GMP24	GMP24002	5/27/2003	6	cis-1,2-Dichloroethene	156592	56	U		
GMP24	GMP24002	5/27/2003	6	cis-1,3-Dichloropropene	542756	65	U	3.8E-09	1.4E-04
GMP24	GMP24002	5/27/2003	6	Cyclohexane	110827	230			
GMP24	GMP24002	5/27/2003	6	Dibromochloromethane	124481	120	U		
GMP24	GMP24002	5/27/2003	6	Dichlorodifluoromethane	75718	70	U		
GMP24	GMP24002	5/27/2003	6	Ethanol	64175	27	U		
GMP24	GMP24002	5/27/2003	6	Ethylbenzene	100414	62	U		
GMP24	GMP24002	5/27/2003	6	Heptane	142825	190			
GMP24	GMP24002	5/27/2003	6	Hexachlorobutadiene	87683	150	U		
GMP24	GMP24002	5/27/2003	6	Hexane	110543	390		NA	4.2E-04
GMP24	GMP24002	5/27/2003	6	Isopropyl alcohol	67630	35	U		
GMP24	GMP24002	5/27/2003	6	m,p-xylenes	106423	290		NA	2.9E-04
GMP24	GMP24002	5/27/2003	6	Methylene chloride	75092	49	U		
GMP24	GMP24002	5/27/2003	6	o-xylene	95476	240	U		
GMP24	GMP24002	5/27/2003	6	Propylene	95476	8,100			
GMP24	GMP24002	5/27/2003	6	Styrene	100425	60		NA	5.6E-06
GMP24	GMP24002	5/27/2003	6	Tert-butyl methyl ether	1634044	51	U		
GMP24	GMP24002	5/27/2003	6	Tetrachloroethene	127184	97	U	9.5E-09	7.9E-06
GMP24	GMP24002	5/27/2003	6	Tetrahydrofuran	109999	42	U		
GMP24	GMP24002	5/27/2003	6	Toluene	108883	54	U		
GMP24	GMP24002	5/27/2003	6	trans-1,2-Dichloroethene	156605	56	U		
GMP24	GMP24002	5/27/2003	6	trans-1,3-Dichloropropene	542756	65	U	3.8E-09	1.4E-04
GMP24	GMP24002	5/27/2003	6	Trichloroethene	79016	77	U		
GMP24	GMP24002	5/27/2003	6	Trichlorofluoromethane	75694	80	U		

ATTACHMENT G-2: MAY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point ID No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP24	GMP24002	5/27/2003	6	Vinyl acetate	108054	50	U		
GMP24	GMP24002	5/27/2003	6	Vinyl chloride	75014	36	U	6.5E-08	2.4E-05
						GMP24 Total Risk:		**1.7E-07**	**9.8E-03**
GMP25	GMP25002	5/27/2003	6.5	1,1,1-Trichloroethane	71556	39	U		
GMP25	GMP25002	5/27/2003	6.5	1,1,2,2-Tetrachloroethane	79345	49	U		
GMP25	GMP25002	5/27/2003	6.5	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	54	U		
GMP25	GMP25002	5/27/2003	6.5	1,1,2-Trichloroethane	79005	39	U		
GMP25	GMP25002	5/27/2003	6.5	1,1-Dichloroethane	75343	45		2.5E-09	8.6E-06
GMP25	GMP25002	5/27/2003	6.5	1,1-Dichloroethene	75354	28	U		
GMP25	GMP25002	5/27/2003	6.5	1,2,4-Trichlorobenzene	120821	53	U		
GMP25	GMP25002	5/27/2003	6.5	1,2,4-Trimethylbenzene	95636	35	U		
GMP25	GMP25002	5/27/2003	6.5	1,2-Dibromoethane	106934	55	U		
GMP25	GMP25002	5/27/2003	6.5	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	85			
GMP25	GMP25002	5/27/2003	6.5	1,2-Dichlorobenzene	95501	43	U		
GMP25	GMP25002	5/27/2003	6.5	1,2-Dichloroethane	107062	29	U		
GMP25	GMP25002	5/27/2003	6.5	1,2-Dichloropropane	78875	33	U		
GMP25	GMP25002	5/27/2003	6.5	1,3,5-Trimethylbenzene	108678	35	U		
GMP25	GMP25002	5/27/2003	6.5	1,3-Butadiene	106990	16	U		
GMP25	GMP25002	5/27/2003	6.5	1,3-Dichlorobenzene	541731	43	U		
GMP25	GMP25002	5/27/2003	6.5	1,4-Dichlorobenzene	106467	43	U		
GMP25	GMP25002	5/27/2003	6.5	1,4-Dioxane	123911	26	U		
GMP25	GMP25002	5/27/2003	6.5	2-Butanone	78933	21	U		
GMP25	GMP25002	5/27/2003	6.5	2-Hexanone	591786	29	U		
GMP25	GMP25002	5/27/2003	6.5	4-Ethyltoluene	622968	31	U		
GMP25	GMP25002	5/27/2003	6.5	4-Methyl-2-pentanone	108101	29	U		
GMP25	GMP25002	5/27/2003	6.5	Acetone	67641	17	U		
GMP25	GMP25002	5/27/2003	6.5	Benzene	71432	42		4.5E-08	7.2E-04
GMP25	GMP25002	5/27/2003	6.5	Benzyl chloride	100447	37	U		
GMP25	GMP25002	5/27/2003	6.5	Bromodichloromethane	75274	47	U		
GMP25	GMP25002	5/27/2003	6.5	Bromoform	75252	74	U		
GMP25	GMP25002	5/27/2003	6.5	Bromomethane	74839	28	U		
GMP25	GMP25002	5/27/2003	6.5	Carbon disulfide	75150	22	U		
GMP25	GMP25002	5/27/2003	6.5	Carbon tetrachloride	56235	45	U		
GMP25	GMP25002	5/27/2003	6.5	Chloroform	67663	35	U	4.0E-09	7.0E-04
GMP25	GMP25002	5/27/2003	6.5	Chloromethane	74873	15	U		
GMP25	GMP25002	5/27/2003	6.5	cis-1,2-Dichloroethene	156592	28	U		

ATTACHMENT G-2: MAY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point ID No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP25	GMP25002	5/27/2003	6.5	cis-1,3-Dichloropropene	542756	32	U		
GMP25	GMP25002	5/27/2003	6.5	Cyclohexane	110827	66	U2		
GMP25	GMP25002	5/27/2003	6.5	Dibromochloromethane	124481	61	U		
GMP25	GMP25002	5/27/2003	6.5	Ethanol	64175	13	U		
GMP25	GMP25002	5/27/2003	6.5	Ethylbenzene	100414	31	U		
GMP25	GMP25002	5/27/2003	6.5	Heptane	142825	29	U		
GMP25	GMP25002	5/27/2003	6.5	Hexachlorobutadiene	87683	76	U		
GMP25	GMP25002	5/27/2003	6.5	Hexane	110543	25	U		
GMP25	GMP25002	5/27/2003	6.5	Isopropyl alcohol	67630	17	U		
GMP25	GMP25002	5/27/2003	6.5	m,p-xylenes	106423	31	U		
GMP25	GMP25002	5/27/2003	6.5	Methylene chloride	75092	25	U		
GMP25	GMP25002	5/27/2003	6.5	o-xylene	95476	31	U		
GMP25	GMP25002	5/27/2003	6.5	Propylene	95476	12	U		
GMP25	GMP25002	5/27/2003	6.5	Styrene	100425	30	U		
GMP25	GMP25002	5/27/2003	6.5	Tert-butyl methyl ether	1634044	26	U		
GMP25	GMP25002	5/27/2003	6.5	Tetrachloroethene	127184	48	U		
GMP25	GMP25002	5/27/2003	6.5	Tetrahydrofuran	109999	21	U		
GMP25	GMP25002	5/27/2003	6.5	Toluene	108883	27	U		
GMP25	GMP25002	5/27/2003	6.5	trans-1,2-Dichloroethene	156605	28	U		
GMP25	GMP25002	5/27/2003	6.5	trans-1,3-Dichloropropene	542756	32	U		
GMP25	GMP25002	5/27/2003	6.5	Trichloroethene	79016	39	U		
GMP25	GMP25002	5/27/2003	6.5	Trichlorofluoromethane	75694	40	U		
GMP25	GMP25002	5/27/2003	6.5	Vinyl acetate	108054	25	U		
GMP25	GMP25002	5/27/2003	6.5	Vinyl chloride	75014	18	U		
GMP25DUP	GMP25003	5/27/2003	6.5	Chlorobenzene	108907	94	J3	NA	1.4E-04
GMP25DUP	GMP25003	5/27/2003	6.5	Chloroethane	75003	230	J3	NA	3.4E-04
GMP25DUP	GMP25003	5/27/2003	6.5	Dichlorodifluoromethane	75718	23	J3	NA	9.3E-06
						GMP25 Total Risk:		**5.2E-08**	**1.9E-03**
GMP26	GMP26003	5/27/2003	6	1,1,1-Trichloroethane	71556	8	U		
GMP26	GMP26003	5/27/2003	6	1,1,2,2-Tetrachloroethane	79345	10	U		
GMP26	GMP26003	5/27/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	11	U		
GMP26	GMP26003	5/27/2003	6	1,1,2-Trichloroethane	79005	8	U		
GMP26	GMP26003	5/27/2003	6	1,1-Dichloroethane	75343	6	U		
GMP26	GMP26003	5/27/2003	6	1,1-Dichloroethene	75354	6	U		
GMP26	GMP26003	5/27/2003	6	1,2,4-Trichlorobenzene	120821	11	U		
GMP26	GMP26003	5/27/2003	6	1,2,4-Trimethylbenzene	95636	7	U		

ATTACHMENT G-2: MAY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point ID No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP26	GMP26003	5/27/2003	6	1,2-Dibromoethane	106934	11	U		
GMP26	GMP26003	5/27/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	21			
GMP26	GMP26003	5/27/2003	6	1,2-Dichlorobenzene	95501	9	U		
GMP26	GMP26003	5/27/2003	6	1,2-Dichloroethane	107062	6	U		
GMP26	GMP26003	5/27/2003	6	1,2-Dichloropropane	78875	7	U		
GMP26	GMP26003	5/27/2003	6	1,3,5-Trimethylbenzene	108678	7	U		
GMP26	GMP26003	5/27/2003	6	1,3-Butadiene	106990	3	U		
GMP26	GMP26003	5/27/2003	6	1,3-Dichlorobenzene	541731	9	U		
GMP26	GMP26003	5/27/2003	6	1,4-Dichlorobenzene	106467	9	U		
GMP26	GMP26003	5/27/2003	6	1,4-Dioxane	123911	5	U		
GMP26	GMP26003	5/27/2003	6	2-Butanone	78933	4	U		
GMP26	GMP26003	5/27/2003	6	2-Hexanone	591786	6	U		
GMP26	GMP26003	5/27/2003	6	4-Ethyltoluene	622968	6	U		
GMP26	GMP26003	5/27/2003	6	4-Methyl-2-pentanone	108101	6	U		
GMP26	GMP26003	5/27/2003	6	Acetone	67641	3	U		
GMP26	GMP26003	5/27/2003	6	Benzene	71432	5	U		
GMP26	GMP26003	5/27/2003	6	Benzyl chloride	100447	7	U	6.5E-09	3.9E-05
GMP26	GMP26003	5/27/2003	6	Bromodichloromethane	75274	9	U		
GMP26	GMP26003	5/27/2003	6	Bromoform	75252	15	U		
GMP26	GMP26003	5/27/2003	6	Bromomethane	74839	6	U		
GMP26	GMP26003	5/27/2003	6	Carbon disulfide	75150	4	U		
GMP26	GMP26003	5/27/2003	6	Carbon tetrachloride	56235	9	U		
GMP26	GMP26003	5/27/2003	6	Chlorobenzene	108907	7	U		
GMP26	GMP26003	5/27/2003	6	Chloroethane	75003	4	U		
GMP26	GMP26003	5/27/2003	6	Chloroform	67663	19		2.3E-09	4.0E-04
GMP26	GMP26003	5/27/2003	6	Chloromethane	74873	3	U		
GMP26	GMP26003	5/27/2003	6	cis-1,2-Dichloroethene	156592	6	U		
GMP26	GMP26003	5/27/2003	6	cis-1,3-Dichloropropene	542756	6	U		
GMP26	GMP26003	5/27/2003	6	Cyclohexane	110827	5	U		
GMP26	GMP26003	5/27/2003	6	Dibromochloromethane	124481	12	U		
GMP26	GMP26003	5/27/2003	6	Dichlorodifluoromethane	75718	7	U		
GMP26	GMP26003	5/27/2003	6	Ethanol	64175	3	U		
GMP26	GMP26003	5/27/2003	6	Ethylbenzene	100414	6	U		
GMP26	GMP26003	5/27/2003	6	Heptane	142825	6	U		
GMP26	GMP26003	5/27/2003	6	Hexachlorobutadiene	87683	15	U		
GMP26	GMP26003	5/27/2003	6	Hexane	110543	5	U		

ATTACHMENT G-2: MAY 2003 GMP ANALYTICAL RESULTS AND INDUSTRIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point ID No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP26	GMP26003	5/27/2003	6	Isopropyl alcohol	67630	3	U		
GMP26	GMP26003	5/27/2003	6	m,p-xylenes	106423	6	U		
GMP26	GMP26003	5/27/2003	6	Methylene chloride	75092	5	U		
GMP26	GMP26003	5/27/2003	6	o-xylene	95476	6	U		
GMP26	GMP26003	5/27/2003	6	Propylene	95476	2	U		
GMP26	GMP26003	5/27/2003	6	Styrene	100425	6	U		
GMP26	GMP26003	5/27/2003	6	Tert-butyl methyl ether	1634044	5	U		
GMP26	GMP26003	5/27/2003	6	Tetrachloroethene	127184	10	U		
GMP26	GMP26003	5/27/2003	6	Tetrahydrofuran	109999	4	U		
GMP26	GMP26003	5/27/2003	6	Toluene	108883	5	U		
GMP26	GMP26003	5/27/2003	6	trans-1,2-Dichloroethene	156605	6	U		
GMP26	GMP26003	5/27/2003	6	trans-1,3-Dichloropropene	542756	6	U		
GMP26	GMP26003	5/27/2003	6	Trichloroethene	79016	8	U		
GMP26	GMP26003	5/27/2003	6	Trichlorofluoromethane	75694	8	U		
GMP26	GMP26003	5/27/2003	6	Vinyl acetate	108054	5	U		
GMP26	GMP26003	5/27/2003	6	Vinyl chloride	75014	4	U		
						GMP26 Total Risk:		**8.8E-09**	**4.4E-04**

Notes:

µg/m3	Micrograms per cubic meter
GMP	Gas monitoring probe
J	Estimated value
JEM	Johnson-Ettinger Model
NA	Not analyzed
U	Not detected

ATTACHMENT G-3: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, San Francisco, Hunters Point Shipyard, Califor

Point Identification No.	Sampe Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP22	GMP22004	2/25/2003	6	1,1,1-Trichloroethane	71556	7.74	U		
GMP22	GMP22004	2/25/2003	6	1,1,2,2-Tetrachloroethane	79345	9.77	UJ0		
GMP22	GMP22004	2/25/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	10.88	U		
GMP22	GMP22004	2/25/2003	6	1,1,2-Trichloroethane	79005	7.74	U		
GMP22	GMP22004	2/25/2003	6	1,1-Dichloroethane	75343	9.48	J3	8.8E-10	2.6E-06
GMP22	GMP22004	2/25/2003	6	1,1-Dichloroethene	75354	5.64	U		
GMP22	GMP22004	2/25/2003	6	1,2,4-Trichlorobenzene	120821	10.53	UJ0		
GMP22	GMP22004	2/25/2003	6	1,2,4-Trimethylbenzene	95636	129.74	J03	NA	2.5E-03
GMP22	GMP22004	2/25/2003	6	1,2-Dibromoethane	106934	10.95	U		
GMP22	GMP22004	2/25/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	66.12	J3		
GMP22	GMP22004	2/25/2003	6	1,2-Dichlorobenzene	95501	20.16	J03	NA	1.3E-05
GMP22	GMP22004	2/25/2003	6	1,2-Dichloroethane	107062	4.53	J3	9.5E-09	1.7E-04
GMP22	GMP22004	2/25/2003	6	1,2-Dichloropropane	78875	6.58	U		
GMP22	GMP22004	2/25/2003	6	1,3,5-Trimethylbenzene	108678	494.01	J03	NA	9.4E-03
GMP22	GMP22004	2/25/2003	6	1,3-Butadiene	106990	3.14	U		
GMP22	GMP22004	2/25/2003	6	1,3-Dichlorobenzene	541731	8.55	UJ0		
GMP22	GMP22004	2/25/2003	6	1,4-Dichlorobenzene	106467	128.31	J03	7.8E-08	1.5E-04
GMP22	GMP22004	2/25/2003	6	1,4-Dioxane	123911	5.12	U		
GMP22	GMP22004	2/25/2003	6	2-Butanone	78933	4.19	U		
GMP22	GMP22004	2/25/2003	6	2-Hexanone	591786	5.82	U		
GMP22	GMP22004	2/25/2003	6	4-Ethyltoluene	622968	83.79	J03		
GMP22	GMP22004	2/25/2003	6	4-Methyl-2-pentanone	108101	5.82	U		
GMP22	GMP22004	2/25/2003	6	Acetone	67641	15.67	U4J3		
GMP22	GMP22004	2/25/2003	6	Benzene	71432	61.75	J3	1.2E-07	1.6E-03
GMP22	GMP22004	2/25/2003	6	Benzyl chloride	100447	7.39	UJ0		
GMP22	GMP22004	2/25/2003	6	Bromodichloromethane	75274	9.49	U		
GMP22	GMP22004	2/25/2003	6	Bromoform	75252	14.70	UJ0		
GMP22	GMP22004	2/25/2003	6	Bromomethane	74839	3.95	J3	NA	1.1E-04
GMP22	GMP22004	2/25/2003	6	Carbon disulfide	75150	16.43	J3	NA	4.2E-06
GMP22	GMP22004	2/25/2003	6	Carbon tetrachloride	56235	8.96	U		
GMP22	GMP22004	2/25/2003	6	Chlorobenzene	108907	6.58	UJ0		
GMP22	GMP22004	2/25/2003	6	Chloroethane	75003	29.48	J3	NA	6.7E-05
GMP22	GMP22004	2/25/2003	6	Chloroform	67663	6.93	J3		
GMP22	GMP22004	2/25/2003	6	Chloromethane	74873	39.90	J3	6.3E-09	2.7E-05
GMP22	GMP22004	2/25/2003	6	cis-1,2-Dichloroethene	156592	7.58	J3	NA	2.9E-05
GMP22	GMP22004	2/25/2003	6	cis-1,3-Dichloropropene	542756	6.45	U		
GMP22	GMP22004	2/25/2003	6	Cyclohexane	110827	1,291.30	J3		
GMP22	GMP22004	2/25/2003	6	Dibromochloromethane	124481	12.11	U		

ATTACHMENT G-3: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, San Francisco, Hunters Point Shipyard, Califor

Point Identification No.	Sampe Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP22	GMP22004	2/25/2003	6	Dichlorodifluoromethane	75718	47.79	J3	NA	2.9E-05
GMP22	GMP22004	2/25/2003	6	Ethanol	64175	2.67	U		
GMP22	GMP22004	2/25/2003	6	Ethylbenzene	100414	154.00	J03	9.9E-09	2.1E-05
GMP22	GMP22004	2/25/2003	6	Heptane	142825	790.40	J3		
GMP22	GMP22004	2/25/2003	6	Hexachlorobutadiene	87683	15.19	UJ0		
GMP22	GMP22004	2/25/2003	6	Hexane	110543	963.90	J3	NA	1.5E-03
GMP22	GMP22004	2/25/2003	6	Isopropyl alcohol	67630	3.49	U		
GMP22	GMP22004	2/25/2003	6	m,p-xylenes	106423	704.00	J03	NA	9.8E-04
GMP22	GMP22004	2/25/2003	6	Methylene chloride	75092	16.24	U4J3		
GMP22	GMP22004	2/25/2003	6	o-xylene	95476	1,056.00	J03	NA	1.6E-03
GMP22	GMP22004	2/25/2003	6	Propylene	115071	2,275.00			
GMP22	GMP22004	2/25/2003	6	Styrene	100425	10.37	J03	NA	1.4E-06
GMP22	GMP22004	2/25/2003	6	Tert-butyl methyl ether	1634044	5.12	U		
GMP22	GMP22004	2/25/2003	6	Tetrachloroethene	127184	20.01	J3	6.6E-09	4.4E-06
GMP22	GMP22004	2/25/2003	6	Tetrahydrofuran	109999	4.19	U		
GMP22	GMP22004	2/25/2003	6	Toluene	108883	38.30	J3	NA	1.5E-05
GMP22	GMP22004	2/25/2003	6	trans-1,2-Dichloroethene	156605	5.59	U		
GMP22	GMP22004	2/25/2003	6	trans-1,3-Dichloropropene		6.45	U		
GMP22	GMP22004	2/25/2003	6	Trichloroethene	79016	17.14	J3	1.2E-07	7.0E-05
GMP22	GMP22004	2/25/2003	6	Trichlorofluoromethane	75694	7.98	U		
GMP22	GMP22004	2/25/2003	6	Vinyl acetate	108054	5.00	U		
GMP22	GMP22004	2/25/2003	6	Vinyl chloride	75014	3.64	U		
						GMP22 Total Risk:		**3.5E-07**	**1.8E-02**
GMP23	GMP23002	2/25/2003	6	1,1,1-Trichloroethane	71556	7.74	U		
GMP23	GMP23002	2/25/2003	6	1,1,2,2-Tetrachloroethane	79345	9.77	UJ0		
GMP23	GMP23002	2/25/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	10.88	U		
GMP23	GMP23002	2/25/2003	6	1,1,2-Trichloroethane	79005	7.74	U		
GMP23	GMP23002	2/25/2003	6	1,1-Dichloroethane	75343	5.77	U		
GMP23	GMP23002	2/25/2003	6	1,1-Dichloroethene	75354	5.64	U		
GMP23	GMP23002	2/25/2003	6	1,2,4-Trichlorobenzene	120821	10.53	UJ0		
GMP23	GMP23002	2/25/2003	6	1,2,4-Trimethylbenzene	95636	284.43	J03	NA	5.4E-03
GMP23	GMP23002	2/25/2003	6	1,2-Dibromoethane	106934	10.95	U		
GMP23	GMP23002	2/25/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	9.95	J3		
GMP23	GMP23002	2/25/2003	6	1,2-Dichlorobenzene	95501	28.11	J30	NA	1.8E-05
GMP23	GMP23002	2/25/2003	6	1,2-Dichloroethane	107062	5.77	U		
GMP23	GMP23002	2/25/2003	6	1,2-Dichloropropane	78875	6.58	U		
GMP23	GMP23002	2/25/2003	6	1,3,5-Trimethylbenzene	108678	484.03	J03	NA	9.2E-03
GMP23	GMP23002	2/25/2003	6	1,3-Butadiene	106990	3.14	U		

ATTACHMENT G-3: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, San Francisco, Hunters Point Shipyard, Califor

Point Identification No.	Sampe Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP23	GMP23002	2/25/2003	6	1,3-Dichlorobenzene	541731	8.55	UJ0		
GMP23	GMP23002	2/25/2003	6	1,4-Dichlorobenzene	106467	37.88	J03	2.3E-08	4.5E-05
GMP23	GMP23002	2/25/2003	6	1,4-Dioxane	123911	5.12	U		
GMP23	GMP23002	2/25/2003	6	2-Butanone	78933	35.88	U2J3		
GMP23	GMP23002	2/25/2003	6	2-Hexanone	591786	5.82	U		
GMP23	GMP23002	2/25/2003	6	4-Ethyltoluene	622968	66.15	J03		
GMP23	GMP23002	2/25/2003	6	4-Methyl-2-pentanone	108101	5.82	U		
GMP23	GMP23002	2/25/2003	6	Acetone	67641	939.90	J3	NA	1.1E-03
GMP23	GMP23002	2/25/2003	6	Benzene	71432	110.50	J3	2.2E-07	2.9E-03
GMP23	GMP23002	2/25/2003	6	Benzyl chloride	100447	7.39	UJ0		
GMP23	GMP23002	2/25/2003	6	Bromodichloromethane	75274	9.49	U		
GMP23	GMP23002	2/25/2003	6	Bromoform	75252	14.70	UJ0		
GMP23	GMP23002	2/25/2003	6	Bromomethane	74839	5.53	U		
GMP23	GMP23002	2/25/2003	6	Carbon disulfide	75150	948.00	J3	NA	2.4E-04
GMP23	GMP23002	2/25/2003	6	Carbon tetrachloride	56235	8.96	U		
GMP23	GMP23002	2/25/2003	6	Chlorobenzene	108907	629.80	J03	NA	1.4E-03
GMP23	GMP23002	2/25/2003	6	Chloroethane	75003	26.80	J3	NA	6.1E-05
GMP23	GMP23002	2/25/2003	6	Chloroform	67663	6.93	U		
GMP23	GMP23002	2/25/2003	6	Chloromethane	74873	357.00	J3	5.7E-08	2.4E-04
GMP23	GMP23002	2/25/2003	6	cis-1,2-Dichloroethene	156592	11.97	J3	NA	4.6E-05
GMP23	GMP23002	2/25/2003	6	cis-1,3-Dichloropropene	542756	6.45	U		
GMP23	GMP23002	2/25/2003	6	Cyclohexane	110827	418.80	J3		
GMP23	GMP23002	2/25/2003	6	Dibromochloromethane	124481	12.11	U		
GMP23	GMP23002	2/25/2003	6	Dichlorodifluoromethane	75718	18.11	U2J3		
GMP23	GMP23002	2/25/2003	6	Ethanol	64175	11.84	U2J3		
GMP23	GMP23002	2/25/2003	6	Ethylbenzene	100414	171.60	J03	1.1E-08	2.3E-05
GMP23	GMP23002	2/25/2003	6	Heptane	142825	748.80	J3		
GMP23	GMP23002	2/25/2003	6	Hexachlorobutadiene	87683	15.19	UJ0		
GMP23	GMP23002	2/25/2003	6	Hexane	110543	571.20	J3	NA	8.6E-04
GMP23	GMP23002	2/25/2003	6	Isopropyl alcohol	67630	3.49	U		
GMP23	GMP23002	2/25/2003	6	m,p-xylenes	106423	748.00	J30	NA	1.0E-03
GMP23	GMP23002	2/25/2003	6	Methylene chloride	75092	22.24	U4J3		
GMP23	GMP23002	2/25/2003	6	o-xylene	95476	528.00	J03	NA	8.2E-04
GMP23	GMP23002	2/25/2003	6	Propylene	115071	6,125.00			
GMP23	GMP23002	2/25/2003	6	Styrene	100425	6.05	UJ0		
GMP23	GMP23002	2/25/2003	6	Tert-butyl methyl ether	1634044	5.12	U		
GMP23	GMP23002	2/25/2003	6	Tetrachloroethene	127184	15.18	J3	5.0E-09	3.3E-06
GMP23	GMP23002	2/25/2003	6	Tetrahydrofuran	109999	4.19	U		

ATTACHMENT G-3: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, San Francisco, Hunters Point Shipyard, Califor

Point Identification No.	Sampe Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP23	GMP23002	2/25/2003	6	Toluene	108883	49.79	J3	NA	1.9E-05
GMP23	GMP23002	2/25/2003	6	trans-1,2-Dichloroethene	156605	5.59	U		
GMP23	GMP23002	2/25/2003	6	trans-1,3-Dichloropropene		6.45	U		
GMP23	GMP23002	2/25/2003	6	Trichloroethene	79016	11.06	J3	7.4E-08	4.5E-05
GMP23	GMP23002	2/25/2003	6	Trichlorofluoromethane	75694	7.98	U		
GMP23	GMP23002	2/25/2003	6	Vinyl acetate	108054	5.00	U		
GMP23	GMP23002	2/25/2003	6	Vinyl chloride	75014	2.60	J3	1.6E-08	4.7E-06
						GMP23 Total Risk:		**4.1E-07**	**2.3E-02**
GMP24	GMP24001	2/25/2003	6	1,1,1-Trichloroethane	71556	7.74	U		
GMP24	GMP24001	2/25/2003	6	1,1,2,2-Tetrachloroethane	79345	9.77	UJ0		
GMP24	GMP24001	2/25/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	10.88	U		
GMP24	GMP24001	2/25/2003	6	1,1,2-Trichloroethane	79005	7.74	U		
GMP24	GMP24001	2/25/2003	6	1,1-Dichloroethane	75343	70.04	J3	6.5E-09	1.9E-05
GMP24	GMP24001	2/25/2003	6	1,1-Dichloroethene	75354	2.86	J3	NA	2.3E-06
GMP24	GMP24001	2/25/2003	6	1,2,4-Trichlorobenzene	120821	10.53	UJ0		
GMP24	GMP24001	2/25/2003	6	1,2,4-Trimethylbenzene	95636	698.60	J03	NA	1.3E-02
GMP24	GMP24001	2/25/2003	6	1,2-Dibromoethane	106934	10.95	U		
GMP24	GMP24001	2/25/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	92.43	J3		
GMP24	GMP24001	2/25/2003	6	1,2-Dichlorobenzene	95501	8.55	UJ0		
GMP24	GMP24001	2/25/2003	6	1,2-Dichloroethane	107062	5.77	U		
GMP24	GMP24001	2/25/2003	6	1,2-Dichloropropane	78875	6.58	U		
GMP24	GMP24001	2/25/2003	6	1,3,5-Trimethylbenzene	108678	998.00	J03	NA	1.9E-02
GMP24	GMP24001	2/25/2003	6	1,3-Butadiene	106990	3.14	U		
GMP24	GMP24001	2/25/2003	6	1,3-Dichlorobenzene	541731	8.55	UJ0		
GMP24	GMP24001	2/25/2003	6	1,4-Dichlorobenzene	106467	22.61	J03	1.4E-08	2.7E-05
GMP24	GMP24001	2/25/2003	6	1,4-Dioxane	123911	5.12	U		
GMP24	GMP24001	2/25/2003	6	2-Butanone	78933	59.80	U2J3		
GMP24	GMP24001	2/25/2003	6	2-Hexanone	591786	5.82	U		
GMP24	GMP24001	2/25/2003	6	4-Ethyltoluene	622968	101.43	J03		
GMP24	GMP24001	2/25/2003	6	4-Methyl-2-pentanone	108101	5.82	U		
GMP24	GMP24001	2/25/2003	6	Acetone	67641	175.93	U2J3		
GMP24	GMP24001	2/25/2003	6	Benzene	71432	191.75	J3	3.7E-07	5.0E-03
GMP24	GMP24001	2/25/2003	6	Benzyl chloride	100447	7.39	UJ0		
GMP24	GMP24001	2/25/2003	6	Bromodichloromethane	75274	9.49	U		
GMP24	GMP24001	2/25/2003	6	Bromoform	75252	14.70	UJ0		
GMP24	GMP24001	2/25/2003	6	Bromomethane	74839	5.53	U		
GMP24	GMP24001	2/25/2003	6	Carbon disulfide	75150	66.36	J3	NA	1.7E-05
GMP24	GMP24001	2/25/2003	6	Carbon tetrachloride	56235	8.96	U		

ATTACHMENT G-3: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, San Francisco, Hunters Point Shipyard, Califor

Point Identification No.	Sampe Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP24	GMP24001	2/25/2003	6	Chlorobenzene	108907	6.58	UJ0		
GMP24	GMP24001	2/25/2003	6	Chloroethane	75003	294.80	J3	NA	6.7E-04
GMP24	GMP24001	2/25/2003	6	Chloroform	67663	6.93	U		
GMP24	GMP24001	2/25/2003	6	Chloromethane	74873	50.40	J3	8.0E-09	3.5E-05
GMP24	GMP24001	2/25/2003	6	cis-1,2-Dichloroethene	156592	55.86	J3	NA	2.2E-04
GMP24	GMP24001	2/25/2003	6	cis-1,3-Dichloropropene	542756	6.45	U		
GMP24	GMP24001	2/25/2003	6	Cyclohexane	110827	872.50	J3		
GMP24	GMP24001	2/25/2003	6	Dibromochloromethane	124481	12.11	U		
GMP24	GMP24001	2/25/2003	6	Dichlorodifluoromethane	75718	120.72	J3	NA	7.3E-05
GMP24	GMP24001	2/25/2003	6	Ethanol	64175	2.67	U		
GMP24	GMP24001	2/25/2003	6	Ethylbenzene	100414	145.20	J03	9.3E-09	2.0E-05
GMP24	GMP24001	2/25/2003	6	Heptane	142825	624.00	J3		
GMP24	GMP24001	2/25/2003	6	Hexachlorobutadiene	87683	15.19	UJ0		
GMP24	GMP24001	2/25/2003	6	Hexane	110543	963.90	J3	NA	1.5E-03
GMP24	GMP24001	2/25/2003	6	Isopropyl alcohol	67630	3.49	U		
GMP24	GMP24001	2/25/2003	6	m,p-xylenes	106423	1,452.00	J03	NA	2.0E-03
GMP24	GMP24001	2/25/2003	6	Methylene chloride	75092	14.12	U4J3		
GMP24	GMP24001	2/25/2003	6	o-xylene	95476	1,012.00	J03	NA	1.6E-03
GMP24	GMP24001	2/25/2003	6	Propylene	115071	6,125.00			
GMP24	GMP24001	2/25/2003	6	Styrene	100425	56.16	J03	NA	7.4E-06
GMP24	GMP24001	2/25/2003	6	Tert-butyl methyl ether	1634044	5.12	U		
GMP24	GMP24001	2/25/2003	6	Tetrachloroethene	127184	22.08	J3	7.3E-09	4.8E-06
GMP24	GMP24001	2/25/2003	6	Tetrahydrofuran	109999	4.19	U		
GMP24	GMP24001	2/25/2003	6	Toluene	108883	57.45	J3	NA	2.2E-05
GMP24	GMP24001	2/25/2003	6	trans-1,2-Dichloroethene	156605	6.38	J3	NA	1.2E-05
GMP24	GMP24001	2/25/2003	6	trans-1,3-Dichloropropene		6.45	U		
GMP24	GMP24001	2/25/2003	6	Trichloroethene	79016	23.23	J3	1.6E-07	9.4E-05
GMP24	GMP24001	2/25/2003	6	Trichlorofluoromethane	75694	15.96	U2J3		
GMP24	GMP24001	2/25/2003	6	Vinyl acetate	108054	5.00	U		
GMP24	GMP24001	2/25/2003	6	Vinyl chloride	75014	16.90	J3	1.0E-07	3.1E-05
						GMP24 Total Risk:		**6.8E-07**	**4.3E-02**
GMP25	GMP25001	2/25/2003	6.5	1,1,1-Trichloroethane	71556	7.74	U		
GMP25	GMP25001	2/25/2003	6.5	1,1,2,2-Tetrachloroethane	79345	9.77	U		
GMP25	GMP25001	2/25/2003	6.5	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	10.88	U		
GMP25	GMP25001	2/25/2003	6.5	1,1,2-Trichloroethane	79005	7.74	U		
GMP25	GMP25001	2/25/2003	6.5	1,1-Dichloroethane	75343	53.56	J3	4.6E-09	1.3E-05
GMP25	GMP25001	2/25/2003	6.5	1,1-Dichloroethene	75354	5.64	U		
GMP25	GMP25001	2/25/2003	6.5	1,2,4-Trichlorobenzene	120821	10.53	U		

ATTACHMENT G-3: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, San Francisco, Hunters Point Shipyard, Califor

Point Identification No.	Sampe Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP25	GMP25001	2/25/2003	6.5	1,2,4-Trimethylbenzene	95636	5.49	J3	NA	9.7E-05
GMP25	GMP25001	2/25/2003	6.5	1,2-Dibromoethane	106934	10.95	U		
GMP25	GMP25001	2/25/2003	6.5	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	213.30	J3		
GMP25	GMP25001	2/25/2003	6.5	1,2-Dichlorobenzene	95501	8.55	U		
GMP25	GMP25001	2/25/2003	6.5	1,2-Dichloroethane	107062	5.77	U		
GMP25	GMP25001	2/25/2003	6.5	1,2-Dichloropropane	78875	6.58	U		
GMP25	GMP25001	2/25/2003	6.5	1,3,5-Trimethylbenzene	108678	6.99	U		
GMP25	GMP25001	2/25/2003	6.5	1,3-Butadiene	106990	3.14	U		
GMP25	GMP25001	2/25/2003	6.5	1,3-Dichlorobenzene	541731	8.55	U		
GMP25	GMP25001	2/25/2003	6.5	1,4-Dichlorobenzene	106467	7.94	J3	4.5E-09	8.6E-06
GMP25	GMP25001	2/25/2003	6.5	1,4-Dioxane	123911	5.12	U		
GMP25	GMP25001	2/25/2003	6.5	2-Butanone	78933	4.19	U		
GMP25	GMP25001	2/25/2003	6.5	2-Hexanone	591786	5.82	U		
GMP25	GMP25001	2/25/2003	6.5	4-Ethyltoluene	622968	6.17	U		
GMP25	GMP25001	2/25/2003	6.5	4-Methyl-2-pentanone	108101	5.82	U		
GMP25	GMP25001	2/25/2003	6.5	Acetone	67641	3.37	U		
GMP25	GMP25001	2/25/2003	6.5	Benzene	71432	39.00	J3	7.1E-08	9.5E-04
GMP25	GMP25001	2/25/2003	6.5	Benzyl chloride	100447	7.39	U		
GMP25	GMP25001	2/25/2003	6.5	Bromodichloromethane	75274	9.49	U		
GMP25	GMP25001	2/25/2003	6.5	Bromoform	75252	14.70	U		
GMP25	GMP25001	2/25/2003	6.5	Bromomethane	74839	5.53	U		
GMP25	GMP25001	2/25/2003	6.5	Carbon disulfide	75150	8.22	J3	NA	2.0E-06
GMP25	GMP25001	2/25/2003	6.5	Carbon tetrachloride	56235	8.96	U		
GMP25	GMP25001	2/25/2003	6.5	Chlorobenzene	108907	98.70	J3	NA	2.1E-04
GMP25	GMP25001	2/25/2003	6.5	Chloroethane	75003	227.80	J3	NA	4.8E-04
GMP25	GMP25001	2/25/2003	6.5	Chloroform	67663	6.93	U		
GMP25	GMP25001	2/25/2003	6.5	Chloromethane	74873	2.94	U2J3		
GMP25	GMP25001	2/25/2003	6.5	cis-1,2-Dichloroethene	156592	11.17	J3	NA	4.0E-05
GMP25	GMP25001	2/25/2003	6.5	cis-1,3-Dichloropropene	542756	6.45	U		
GMP25	GMP25001	2/25/2003	6.5	Cyclohexane	110827	153.56	J3		
GMP25	GMP25001	2/25/2003	6.5	Dibromochloromethane	124481	12.11	U		
GMP25	GMP25001	2/25/2003	6.5	Dichlorodifluoromethane	75718	47.79	J3	NA	2.7E-05
GMP25	GMP25001	2/25/2003	6.5	Ethanol	64175	2.67	U		
GMP25	GMP25001	2/25/2003	6.5	Ethylbenzene	100414	6.16	U		
GMP25	GMP25001	2/25/2003	6.5	Heptane	142825	5.82	U		
GMP25	GMP25001	2/25/2003	6.5	Hexachlorobutadiene	87683	15.19	U		
GMP25	GMP25001	2/25/2003	6.5	Hexane	110543	26.06	U2J3		
GMP25	GMP25001	2/25/2003	6.5	Isopropyl alcohol	67630	3.49	U		

ATTACHMENT G-3: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

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Point Identification No.	Sampe Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP25	GMP25001	2/25/2003	6.5	m,p-xylenes	106423	8.80	J3	NA	1.1E-05
GMP25	GMP25001	2/25/2003	6.5	Methylene chloride	75092	27.89	U4J3		
GMP25	GMP25001	2/25/2003	6.5	o-xylene	95476	9.68	J3	NA	1.4E-05
GMP25	GMP25001	2/25/2003	6.5	Propylene	115071	262.50	J3		
GMP25	GMP25001	2/25/2003	6.5	Styrene	100425	6.05	U		
GMP25	GMP25001	2/25/2003	6.5	Tert-butyl methyl ether	1634044	5.12	U		
GMP25	GMP25001	2/25/2003	6.5	Tetrachloroethene	127184	11.73	J3	3.6E-09	2.4E-06
GMP25	GMP25001	2/25/2003	6.5	Tetrahydrofuran	109999	4.19	U		
GMP25	GMP25001	2/25/2003	6.5	Toluene	108883	5.36	U		
GMP25	GMP25001	2/25/2003	6.5	trans-1,2-Dichloroethene	156605	5.59	U		
GMP25	GMP25001	2/25/2003	6.5	trans-1,3-Dichloropropene		6.45	U		
GMP25	GMP25001	2/25/2003	6.5	Trichloroethene	79016	8.30	J3	5.2E-08	3.1E-05
GMP25	GMP25001	2/25/2003	6.5	Trichlorofluoromethane	75694	7.98	U		
GMP25	GMP25001	2/25/2003	6.5	Vinyl acetate	108054	5.00	U		
GMP25	GMP25001	2/25/2003	6.5	Vinyl chloride	75014	1.92	J3	1.1E-08	3.3E-06
						GMP25 Total Risk:		**1.5E-07**	**1.9E-03**
GMP26	GMP26001	2/25/2003	6	1,1,1-Trichloroethane	71556	7.74	U		
GMP26	GMP26001	2/25/2003	6	1,1,2,2-Tetrachloroethane	79345	9.77	U		
GMP26	GMP26001	2/25/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	10.88	U		
GMP26	GMP26001	2/25/2003	6	1,1,2-Trichloroethane	79005	7.74	U		
GMP26	GMP26001	2/25/2003	6	1,1-Dichloroethane	75343	5.77	U		
GMP26	GMP26001	2/25/2003	6	1,1-Dichloroethene	75354	5.64	U		
GMP26	GMP26001	2/25/2003	6	1,2,4-Trichlorobenzene	120821	10.53	U		
GMP26	GMP26001	2/25/2003	6	1,2,4-Trimethylbenzene	95636	6.99	U		
GMP26	GMP26001	2/25/2003	6	1,2-Dibromoethane	106934	10.95	U		
GMP26	GMP26001	2/25/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	24.89			
GMP26	GMP26001	2/25/2003	6	1,2-Dichlorobenzene	95501	8.55	U		
GMP26	GMP26001	2/25/2003	6	1,2-Dichloroethane	107062	5.77	U		
GMP26	GMP26001	2/25/2003	6	1,2-Dichloropropane	78875	6.58	U		
GMP26	GMP26001	2/25/2003	6	1,3,5-Trimethylbenzene	108678	6.99	U		
GMP26	GMP26001	2/25/2003	6	1,3-Butadiene	106990	3.14	U		
GMP26	GMP26001	2/25/2003	6	1,3-Dichlorobenzene	541731	8.55	U		
GMP26	GMP26001	2/25/2003	6	1,4-Dichlorobenzene	106467	8.55	U		
GMP26	GMP26002	2/25/2003	6	1,4-Dichlorobenzene	106467	8.55	U		
GMP26	GMP26001	2/25/2003	6	1,4-Dioxane	123911	5.12	U		
GMP26	GMP26001	2/25/2003	6	2-Butanone	78933	4.19	U		
GMP26	GMP26001	2/25/2003	6	2-Hexanone	591786	5.82	U		
GMP26	GMP26001	2/25/2003	6	4-Ethyltoluene	622968	6.17	U		

ATTACHMENT G-3: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

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Point Identification No.	Sampe Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP26	GMP26001	2/25/2003	6	4-Methyl-2-pentanone	108101	5.82	U		
GMP26	GMP26001	2/25/2003	6	Acetone	67641	3.37	U		
GMP26	GMP26001	2/25/2003	6	Benzene	71432	4.55	U		
GMP26	GMP26001	2/25/2003	6	Benzyl chloride	100447	7.39	U		
GMP26	GMP26001	2/25/2003	6	Bromodichloromethane	75274	9.49	U		
GMP26	GMP26001	2/25/2003	6	Bromoform	75252	14.70	U		
GMP26	GMP26001	2/25/2003	6	Bromomethane	74839	5.53	U		
GMP26	GMP26001	2/25/2003	6	Carbon disulfide	75150	4.42	U		
GMP26	GMP26001	2/25/2003	6	Carbon tetrachloride	56235	8.96	U		
GMP26	GMP26001	2/25/2003	6	Chlorobenzene	108907	6.58	U		
GMP26	GMP26001	2/25/2003	6	Chloroethane	75003	3.75	U		
GMP26	GMP26001	2/25/2003	6	Chloroform	67663	17.82		7.2E-09	1.1E-03
GMP26	GMP26001	2/25/2003	6	Chloromethane	74873	2.94	U		
GMP26	GMP26001	2/25/2003	6	cis-1,2-Dichloroethene	156592	5.59	U		
GMP26	GMP26001	2/25/2003	6	cis-1,3-Dichloropropene	542756	6.45	U		
GMP26	GMP26001	2/25/2003	6	Cyclohexane	110827	4.89	U		
GMP26	GMP26001	2/25/2003	6	Dibromochloromethane	124481	12.11	U		
GMP26	GMP26001	2/25/2003	6	Dichlorodifluoromethane	75718	8.55	U2		
GMP26	GMP26001	2/25/2003	6	Ethanol	64175	2.67	U		
GMP26	GMP26001	2/25/2003	6	Ethylbenzene	100414	6.16	U		
GMP26	GMP26001	2/25/2003	6	Heptane	142825	5.82	U		
GMP26	GMP26001	2/25/2003	6	Hexachlorobutadiene	87683	15.19	U		
GMP26	GMP26001	2/25/2003	6	Hexane	110543	5.00	U		
GMP26	GMP26001	2/25/2003	6	Isopropyl alcohol	67630	3.49	U		
GMP26	GMP26001	2/25/2003	6	m,p-Xylenes	106423	6.16	U		
GMP26	GMP26001	2/25/2003	6	Methylene chloride	75092	6.71	U4		
GMP26	GMP26001	2/25/2003	6	o-Xylene	95476	6.16	U		
GMP26	GMP26001	2/25/2003	6	Propylene	115071	2.45	U2		
GMP26	GMP26001	2/25/2003	6	Styrene	100425	6.05	U		
GMP26	GMP26001	2/25/2003	6	Tert-butyl methyl ether	1634044	5.12	U		
GMP26	GMP26001	2/25/2003	6	Tetrachloroethene	127184	9.66	U		
GMP26	GMP26001	2/25/2003	6	Tetrahydrofuran	109999	4.19	U		
GMP26	GMP26001	2/25/2003	6	Toluene	108883	5.36	U		
GMP26	GMP26001	2/25/2003	6	trans-1,2-Dichloroethene	156605	5.59	U		
GMP26	GMP26001	2/25/2003	6	trans-1,3-Dichloropropene		6.45	U		
GMP26	GMP26001	2/25/2003	6	Trichloroethene	79016	7.74	U	2.6E-08	1.6E-05

ATTACHMENT G-3: FEBRUARY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, San Francisco, Hunters Point Shipyard, Califor

Point Identification No.	Sampe Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result ($\mu g/m^3$)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP26	GMP26001	2/25/2003	6	Trichlorofluoromethane	75694	7.98	U		
GMP26	GMP26001	2/25/2003	6	Vinyl acetate	108054	5.00	U		
GMP26	GMP26001	2/25/2003	6	Vinyl chloride	75014	3.64	U		
						GMP26 Total Risk:		**3.3E-08**	**1.1E-03**

Notes:

$\mu g/m^3$	Micrograms per cubic meter
J	Estimated value
JEM	Johnson-Ettinger Model
NA	Not analyzed
U	Not detected

ATTACHMENT G-4: MAY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP22	GMP22005	5/27/2003	6	1,1,1-Trichloroethane	71556	19	U		
GMP22	GMP22005	5/27/2003	6	1,1,2,2-Tetrachloroethane	79345	24	U		
GMP22	GMP22005	5/27/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	27	U		
GMP22	GMP22005	5/27/2003	6	1,1,2-Trichloroethane	79005	19	U		
GMP22	GMP22005	5/27/2003	6	1,1-Dichloroethane	75343	14	U		
GMP22	GMP22005	5/27/2003	6	1,1-Dichloroethene	75354	14	U		
GMP22	GMP22005	5/27/2003	6	1,2,4-Trichlorobenzene	120821	26	U		
GMP22	GMP22005	5/27/2003	6	1,2,4-Trimethylbenzene	95636	80	J3	NA	1.5E-03
GMP22	GMP22005	5/27/2003	6	1,2-Dibromoethane	106934	27	U		
GMP22	GMP22005	5/27/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	31	J3		
GMP22	GMP22005	5/27/2003	6	1,2-Dichlorobenzene	95501	21	U		
GMP22	GMP22005	5/27/2003	6	1,2-Dichloroethane	107062	14	U		
GMP22	GMP22005	5/27/2003	6	1,2-Dichloropropane	78875	16	U		
GMP22	GMP22005	5/27/2003	6	1,3,5-Trimethylbenzene	108678	17	U		
GMP22	GMP22005	5/27/2003	6	1,3-Butadiene	106990	8	U		
GMP22	GMP22005	5/27/2003	6	1,3-Dichlorobenzene	541731	21	U		
GMP22	GMP22005	5/27/2003	6	1,4-Dichlorobenzene	106467	21	U		
GMP22	GMP22005	5/27/2003	6	1,4-Dioxane	123911	13	U		
GMP22	GMP22005	5/27/2003	6	2-Butanone	78933	10	U		
GMP22	GMP22005	5/27/2003	6	2-Hexanone	591786	15	U		
GMP22	GMP22005	5/27/2003	6	4-Ethyltoluene	622968	15	U		
GMP22	GMP22005	5/27/2003	6	4-Methyl-2-pentanone	108101	15	U		
GMP22	GMP22005	5/27/2003	6	Acetone	67641	8	U		
GMP22	GMP22005	5/27/2003	6	Benzene	71432	28	J3	5.5E-08	7.3E-04
GMP22	GMP22005	5/27/2003	6	Benzyl chloride	100447	18	U		
GMP22	GMP22005	5/27/2003	6	Bromodichloromethane	75274	24	U		
GMP22	GMP22005	5/27/2003	6	Bromoform	75252	37	U		
GMP22	GMP22005	5/27/2003	6	Bromomethane	74839	14	U		
GMP22	GMP22005	5/27/2003	6	Carbon disulfide	75150	11	U		
GMP22	GMP22005	5/27/2003	6	Carbon tetrachloride	56235	22	U		
GMP22	GMP22005	5/27/2003	6	Chlorobenzene	108907	16	U		
GMP22	GMP22005	5/27/2003	6	Chloroethane	75003	9	U		
GMP22	GMP22005	5/27/2003	6	Chloroform	67663	17	U	3.4E-09	5.0E-04
GMP22	GMP22005	5/27/2003	6	Chloromethane	74873	7	U		
GMP22	GMP22005	5/27/2003	6	cis-1,2-Dichloroethene	156592	14	U		
GMP22	GMP22005	5/27/2003	6	cis-1,3-Dichloropropene	542756	16	U		

ATTACHMENT G-4: MAY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP22	GMP22005	5/27/2003	6	Cyclohexane	110827	730	J3		
GMP22	GMP22005	5/27/2003	6	Dibromochloromethane	124481	30	U		
GMP22	GMP22005	5/27/2003	6	Dichlorodifluoromethane	75718	21	J3	NA	1.3E-05
GMP22	GMP22005	5/27/2003	6	Ethanol	64175	7	U		
GMP22	GMP22005	5/27/2003	6	Ethylbenzene	100414	15	U		
GMP22	GMP22005	5/27/2003	6	Heptane	142825	310	J3		
GMP22	GMP22005	5/27/2003	6	Hexachlorobutadiene	87683	38	U		
GMP22	GMP22005	5/27/2003	6	Hexane	110543	430	J3	NA	6.5E-04
GMP22	GMP22005	5/27/2003	6	Isopropyl alcohol	67630	9	U		
GMP22	GMP22005	5/27/2003	6	m,p-xylenes	106423	290	J3	NA	4.0E-04
GMP22	GMP22005	5/27/2003	6	Methylene chloride	75092	12	U		
GMP22	GMP22005	5/27/2003	6	o-xylene	95476	210	U		
GMP22	GMP22005	5/27/2003	6	Propylene	95476	1,400	J3		
GMP22	GMP22005	5/27/2003	6	Styrene	100425	15	J3	NA	2.0E-06
GMP22	GMP22005	5/27/2003	6	Tert-butyl methyl ether	1634044	13	U		
GMP22	GMP22005	5/27/2003	6	Tetrachloroethene	127184	24	U		
GMP22	GMP22005	5/27/2003	6	Tetrahydrofuran	109999	10	U		
GMP22	GMP22005	5/27/2003	6	Toluene	108883	13	U		
GMP22	GMP22005	5/27/2003	6	trans-1,2-Dichloroethene	156605	14	U		
GMP22	GMP22005	5/27/2003	6	trans-1,3-Dichloropropene	542756	16	U		
GMP22	GMP22005	5/27/2003	6	Trichloroethene	79016	19	U		
GMP22	GMP22005	5/27/2003	6	Trichlorofluoromethane	75694	20	U		
GMP22	GMP22005	5/27/2003	6	Vinyl acetate	108054	12	U		
GMP22	GMP22005	5/27/2003	6	Vinyl chloride	75014	9	U		
						GMP22 Total Risk:		**5.8E-08**	**3.8E-03**
GMP23	GMP23003	5/27/2003	6	1,1,1-Trichloroethane	71556	77	U		
GMP23	GMP23003	5/27/2003	6	1,1,2,2-Tetrachloroethane	79345	98	U		
GMP23	GMP23003	5/27/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	110	U		
GMP23	GMP23003	5/27/2003	6	1,1,2-Trichloroethane	79005	77	U		
GMP23	GMP23003	5/27/2003	6	1,1-Dichloroethane	75343	58	U		
GMP23	GMP23003	5/27/2003	6	1,1-Dichloroethene	75354	56	U		
GMP23	GMP23003	5/27/2003	6	1,2,4-Trichlorobenzene	120821	110	U		
GMP23	GMP23003	5/27/2003	6	1,2,4-Trimethylbenzene	95636	130		NA	2.5E-03
GMP23	GMP23003	5/27/2003	6	1,2-Dibromoethane	106934	110	U		
GMP23	GMP23003	5/27/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	100	U		
GMP23	GMP23003	5/27/2003	6	1,2-Dichlorobenzene	95501	86	U		

ATTACHMENT G-4: MAY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP23	GMP23003	5/27/2003	6	1,2-Dichloroethane	107062	58	U		
GMP23	GMP23003	5/27/2003	6	1,2-Dichloropropane	78875	66	U		
GMP23	GMP23003	5/27/2003	6	1,3,5-Trimethylbenzene	108678	200			
GMP23	GMP23003	5/27/2003	6	1,3-Butadiene	106990	31	U		
GMP23	GMP23003	5/27/2003	6	1,3-Dichlorobenzene	541731	86	U		
GMP23	GMP23003	5/27/2003	6	1,4-Dichlorobenzene	106467	86	U		
GMP23	GMP23003	5/27/2003	6	1,4-Dioxane	123911	51	U		
GMP23	GMP23003	5/27/2003	6	2-Butanone	78933	42	U		
GMP23	GMP23003	5/27/2003	6	2-Hexanone	591786	58	U		
GMP23	GMP23003	5/27/2003	6	4-Ethyltoluene	622968	62	U		
GMP23	GMP23003	5/27/2003	6	4-Methyl-2-pentanone	108101	58	U		
GMP23	GMP23003	5/27/2003	6	Acetone	67641	34	U		
GMP23	GMP23003	5/27/2003	6	Benzene	71432	85		1.7E-07	2.2E-03
GMP23	GMP23003	5/27/2003	6	Benzyl chloride	100447	74	U		
GMP23	GMP23003	5/27/2003	6	Bromodichloromethane	75274	95	U		
GMP23	GMP23003	5/27/2003	6	Bromoform	75252	150	U		
GMP23	GMP23003	5/27/2003	6	Bromomethane	74839	55	U		
GMP23	GMP23003	5/27/2003	6	Carbon disulfide	75150	150		NA	3.8E-05
GMP23	GMP23003	5/27/2003	6	Carbon tetrachloride	56235	90	U		
GMP23	GMP23003	5/27/2003	6	Chlorobenzene	108907	180		NA	4.1E-04
GMP23	GMP23003	5/27/2003	6	Chloroethane	75003	38	U		
GMP23	GMP23003	5/27/2003	6	Chloroform	67663	69	U	1.4E-08	2.0E-03
GMP23	GMP23003	5/27/2003	6	Chloromethane	74873	65		1.0E-08	4.5E-05
GMP23	GMP23003	5/27/2003	6	cis-1,2-Dichloroethene	156592	56	U		
GMP23	GMP23003	5/27/2003	6	cis-1,3-Dichloropropene	542756	65	U		
GMP23	GMP23003	5/27/2003	6	Cyclohexane	110827	320			
GMP23	GMP23003	5/27/2003	6	Dibromochloromethane	124481	120	U		
GMP23	GMP23003	5/27/2003	6	Dichlorodifluoromethane	75718	70	U		
GMP23	GMP23003	5/27/2003	6	Ethanol	64175	27	U		
GMP23	GMP23003	5/27/2003	6	Ethylbenzene	100414	62	U		
GMP23	GMP23003	5/27/2003	6	Heptane	142825	580			
GMP23	GMP23003	5/27/2003	6	Hexachlorobutadiene	87683	150	U		
GMP23	GMP23003	5/27/2003	6	Hexane	110543	540		NA	8.1E-04
GMP23	GMP23003	5/27/2003	6	Isopropyl alcohol	67630	35	U		
GMP23	GMP23003	5/27/2003	6	m,p-xylenes	106423	260		NA	3.6E-04
GMP23	GMP23003	5/27/2003	6	Methylene chloride	75092	49	U		

ATTACHMENT G-4: MAY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP23	GMP23003	5/27/2003	6	o-xylene	95476	170	U		
GMP23	GMP23003	5/27/2003	6	Propylene	95476	8,800			
GMP23	GMP23003	5/27/2003	6	Styrene	100425	60		NA	7.9E-06
GMP23	GMP23003	5/27/2003	6	Tert-butyl methyl ether	1634044	51	U		
GMP23	GMP23003	5/27/2003	6	Tetrachloroethene	127184	97	U	1.6E-08	1.1E-05
GMP23	GMP23003	5/27/2003	6	Tetrahydrofuran	109999	42	U		
GMP23	GMP23003	5/27/2003	6	Toluene	108883	54	U		
GMP23	GMP23003	5/27/2003	6	trans-1,2-Dichloroethene	156605	56	U		
GMP23	GMP23003	5/27/2003	6	trans-1,3-Dichloropropene	542756	65	U	6.4E-09	1.9E-04
GMP23	GMP23003	5/27/2003	6	Trichloroethene	79016	77	U		
GMP23	GMP23003	5/27/2003	6	Trichlorofluoromethane	75694	80	U		
GMP23	GMP23003	5/27/2003	6	Vinyl acetate	108054	50	U		
GMP23	GMP23003	5/27/2003	6	Vinyl chloride	75014	36	U	1.1E-07	3.3E-05
						GMP23 Total Risk:		**3.3E-07**	**8.6E-03**
GMP24	GMP24002	5/27/2003	6	1,1,1-Trichloroethane	71556	77	U		
GMP24	GMP24002	5/27/2003	6	1,1,2,2-Tetrachloroethane	79345	98	U		
GMP24	GMP24002	5/27/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	110	U		
GMP24	GMP24002	5/27/2003	6	1,1,2-Trichloroethane	79005	77	U		
GMP24	GMP24002	5/27/2003	6	1,1-Dichloroethane	75343	58	U		
GMP24	GMP24002	5/27/2003	6	1,1-Dichloroethene	75354	56	U		
GMP24	GMP24002	5/27/2003	6	1,2,4-Trichlorobenzene	120821	110	U		
GMP24	GMP24002	5/27/2003	6	1,2,4-Trimethylbenzene	95636	260		NA	5.0E-03
GMP24	GMP24002	5/27/2003	6	1,2-Dibromoethane	106934	110	U		
GMP24	GMP24002	5/27/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	100	U		
GMP24	GMP24002	5/27/2003	6	1,2-Dichlorobenzene	95501	86	U		
GMP24	GMP24002	5/27/2003	6	1,2-Dichloroethane	107062	58	U		
GMP24	GMP24002	5/27/2003	6	1,2-Dichloropropane	78875	66	U		
GMP24	GMP24002	5/27/2003	6	1,3,5-Trimethylbenzene	108678	290			
GMP24	GMP24002	5/27/2003	6	1,3-Butadiene	106990	31	U		
GMP24	GMP24002	5/27/2003	6	1,3-Dichlorobenzene	541731	86	U		
GMP24	GMP24002	5/27/2003	6	1,4-Dichlorobenzene	106467	86	U		
GMP24	GMP24002	5/27/2003	6	1,4-Dioxane	123911	51	U		
GMP24	GMP24002	5/27/2003	6	2-Butanone	78933	100	U4		
GMP24	GMP24002	5/27/2003	6	2-Hexanone	591786	58	U		
GMP24	GMP24002	5/27/2003	6	4-Ethyltoluene	622968	62	U		
GMP24	GMP24002	5/27/2003	6	4-Methyl-2-pentanone	108101	58	U		

ATTACHMENT G-4: MAY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP24	GMP24002	5/27/2003	6	Acetone	67641	2,900		NA	3.3E-03
GMP24	GMP24002	5/27/2003	6	Benzene	71432	52		1.0E-07	1.4E-03
GMP24	GMP24002	5/27/2003	6	Benzyl chloride	100447	74	U		
GMP24	GMP24002	5/27/2003	6	Bromodichloromethane	75274	95	U		
GMP24	GMP24002	5/27/2003	6	Bromoform	75252	150	U		
GMP24	GMP24002	5/27/2003	6	Bromomethane	74839	55	U		
GMP24	GMP24002	5/27/2003	6	Carbon disulfide	75150	1,400		NA	3.6E-04
GMP24	GMP24002	5/27/2003	6	Carbon tetrachloride	56235	90	U		
GMP24	GMP24002	5/27/2003	6	Chlorobenzene	108907	66	U		
GMP24	GMP24002	5/27/2003	6	Chloroethane	75003	46		NA	1.0E-04
GMP24	GMP24002	5/27/2003	6	Chloroform	67663	69	U	1.4E-08	2.0E-03
GMP24	GMP24002	5/27/2003	6	Chloromethane	74873	250		4.0E-08	1.7E-04
GMP24	GMP24002	5/27/2003	6	cis-1,2-Dichloroethene	156592	56	U		
GMP24	GMP24002	5/27/2003	6	cis-1,3-Dichloropropene	542756	65	U	6.4E-09	1.9E-04
GMP24	GMP24002	5/27/2003	6	Cyclohexane	110827	230			
GMP24	GMP24002	5/27/2003	6	Dibromochloromethane	124481	120	U		
GMP24	GMP24002	5/27/2003	6	Dichlorodifluoromethane	75718	70	U		
GMP24	GMP24002	5/27/2003	6	Ethanol	64175	27	U		
GMP24	GMP24002	5/27/2003	6	Ethylbenzene	100414	62	U		
GMP24	GMP24002	5/27/2003	6	Heptane	142825	190			
GMP24	GMP24002	5/27/2003	6	Hexachlorobutadiene	87683	150	U		
GMP24	GMP24002	5/27/2003	6	Hexane	110543	390		NA	5.9E-04
GMP24	GMP24002	5/27/2003	6	Isopropyl alcohol	67630	35	U		
GMP24	GMP24002	5/27/2003	6	m,p-xylenes	106423	290		NA	4.0E-04
GMP24	GMP24002	5/27/2003	6	Methylene chloride	75092	49	U		
GMP24	GMP24002	5/27/2003	6	o-xylene	95476	240	U		
GMP24	GMP24002	5/27/2003	6	Propylene	95476	8,100			
GMP24	GMP24002	5/27/2003	6	Styrene	100425	60		NA	7.9E-06
GMP24	GMP24002	5/27/2003	6	Tert-butyl methyl ether	1634044	51	U		
GMP24	GMP24002	5/27/2003	6	Tetrachloroethene	127184	97	U	1.6E-08	1.1E-05
GMP24	GMP24002	5/27/2003	6	Tetrahydrofuran	109999	42	U		
GMP24	GMP24002	5/27/2003	6	Toluene	108883	54	U		
GMP24	GMP24002	5/27/2003	6	trans-1,2-Dichloroethene	156605	56	U		
GMP24	GMP24002	5/27/2003	6	trans-1,3-Dichloropropene	542756	65	U	6.4E-09	1.9E-04
GMP24	GMP24002	5/27/2003	6	Trichloroethene	79016	77	U		
GMP24	GMP24002	5/27/2003	6	Trichlorofluoromethane	75694	80	U		

ATTACHMENT G-4: MAY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP24	GMP24002	5/27/2003	6	Vinyl acetate	108054	50	U		
GMP24	GMP24002	5/27/2003	6	Vinyl chloride	75014	36	U	1.1E-07	3.3E-05
						GMP24 Total Risk:		**2.9E-07**	**1.4E-02**
GMP25	GMP25002	5/27/2003	6.5	1,1,1-Trichloroethane	71556	39	U		
GMP25	GMP25002	5/27/2003	6.5	1,1,2,2-Tetrachloroethane	79345	49	U		
GMP25	GMP25002	5/27/2003	6.5	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	54	U		
GMP25	GMP25002	5/27/2003	6.5	1,1,2-Trichloroethane	79005	39	U		
GMP25	GMP25002	5/27/2003	6.5	1,1-Dichloroethane	75343	45		4.2E-09	1.2E-05
GMP25	GMP25002	5/27/2003	6.5	1,1-Dichloroethene	75354	28	U		
GMP25	GMP25002	5/27/2003	6.5	1,2,4-Trichlorobenzene	120821	53	U		
GMP25	GMP25002	5/27/2003	6.5	1,2,4-Trimethylbenzene	95636	35	U		
GMP25	GMP25002	5/27/2003	6.5	1,2-Dibromoethane	106934	55	U		
GMP25	GMP25002	5/27/2003	6.5	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	85			
GMP25	GMP25002	5/27/2003	6.5	1,2-Dichlorobenzene	95501	43	U		
GMP25	GMP25002	5/27/2003	6.5	1,2-Dichloroethane	107062	29	U		
GMP25	GMP25002	5/27/2003	6.5	1,2-Dichloropropane	78875	33	U		
GMP25	GMP25002	5/27/2003	6.5	1,3,5-Trimethylbenzene	108678	35	U		
GMP25	GMP25002	5/27/2003	6.5	1,3-Butadiene	106990	16	U		
GMP25	GMP25002	5/27/2003	6.5	1,3-Dichlorobenzene	541731	43	U		
GMP25	GMP25002	5/27/2003	6.5	1,4-Dichlorobenzene	106467	43	U		
GMP25	GMP25002	5/27/2003	6.5	1,4-Dioxane	123911	26	U		
GMP25	GMP25002	5/27/2003	6.5	2-Butanone	78933	21	U		
GMP25	GMP25002	5/27/2003	6.5	2-Hexanone	591786	29	U		
GMP25	GMP25002	5/27/2003	6.5	4-Ethyltoluene	622968	31	U		
GMP25	GMP25002	5/27/2003	6.5	4-Methyl-2-pentanone	108101	29	U		
GMP25	GMP25002	5/27/2003	6.5	Acetone	67641	17	U		
GMP25	GMP25002	5/27/2003	6.5	Benzene	71432	42		7.6E-08	1.0E-03
GMP25	GMP25002	5/27/2003	6.5	Benzyl chloride	100447	37	U		
GMP25	GMP25002	5/27/2003	6.5	Bromodichloromethane	75274	47	U		
GMP25	GMP25002	5/27/2003	6.5	Bromoform	75252	74	U		
GMP25	GMP25002	5/27/2003	6.5	Bromomethane	74839	28	U		
GMP25	GMP25002	5/27/2003	6.5	Carbon disulfide	75150	22	U		
GMP25	GMP25002	5/27/2003	6.5	Carbon tetrachloride	56235	45	U		
GMP25	GMP25002	5/27/2003	6.5	Chloroform	67663	35	U	6.7E-09	9.8E-04
GMP25	GMP25002	5/27/2003	6.5	Chloromethane	74873	15	U		
GMP25	GMP25002	5/27/2003	6.5	cis-1,2-Dichloroethene	156592	28	U		

ATTACHMENT G-4: MAY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP25	GMP25002	5/27/2003	6.5	cis-1,3-Dichloropropene	542756	32	U		
GMP25	GMP25002	5/27/2003	6.5	Cyclohexane	110827	66	U2		
GMP25	GMP25002	5/27/2003	6.5	Dibromochloromethane	124481	61	U		
GMP25	GMP25002	5/27/2003	6.5	Ethanol	64175	13	U		
GMP25	GMP25002	5/27/2003	6.5	Ethylbenzene	100414	31	U		
GMP25	GMP25002	5/27/2003	6.5	Heptane	142825	29	U		
GMP25	GMP25002	5/27/2003	6.5	Hexachlorobutadiene	87683	76	U		
GMP25	GMP25002	5/27/2003	6.5	Hexane	110543	25	U		
GMP25	GMP25002	5/27/2003	6.5	Isopropyl alcohol	67630	17	U		
GMP25	GMP25002	5/27/2003	6.5	m,p-xylenes	106423	31	U		
GMP25	GMP25002	5/27/2003	6.5	Methylene chloride	75092	25	U		
GMP25	GMP25002	5/27/2003	6.5	o-xylene	95476	31	U		
GMP25	GMP25002	5/27/2003	6.5	Propylene	95476	12	U		
GMP25	GMP25002	5/27/2003	6.5	Styrene	100425	30	U		
GMP25	GMP25002	5/27/2003	6.5	Tert-butyl methyl ether	1634044	26	U		
GMP25	GMP25002	5/27/2003	6.5	Tetrachloroethene	127184	48	U		
GMP25	GMP25002	5/27/2003	6.5	Tetrahydrofuran	109999	21	U		
GMP25	GMP25002	5/27/2003	6.5	Toluene	108883	27	U		
GMP25	GMP25002	5/27/2003	6.5	trans-1,2-Dichloroethene	156605	28	U		
GMP25	GMP25002	5/27/2003	6.5	trans-1,3-Dichloropropene	542756	32	U		
GMP25	GMP25002	5/27/2003	6.5	Trichloroethene	79016	39	U		
GMP25	GMP25002	5/27/2003	6.5	Trichlorofluoromethane	75694	40	U		
GMP25	GMP25002	5/27/2003	6.5	Vinyl acetate	108054	25	U		
GMP25	GMP25002	5/27/2003	6.5	Vinyl chloride	75014	18	U		
GMP25DUP	GMP25003	5/27/2003	6.5	Chlorobenzene	108907	94	J3	NA	2.0E-04
GMP25DUP	GMP25003	5/27/2003	6.5	Chloroethane	75003	230	J3	NA	4.8E-04
GMP25DUP	GMP25003	5/27/2003	6.5	Dichlorodifluoromethane	75718	23	J3	NA	1.3E-05
						GMP25 Total Risk:		**8.7E-08**	**2.7E-03**
GMP26	GMP26003	5/27/2003	6	1,1,1-Trichloroethane	71556	8	U		
GMP26	GMP26003	5/27/2003	6	1,1,2,2-Tetrachloroethane	79345	10	U		
GMP26	GMP26003	5/27/2003	6	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	11	U		
GMP26	GMP26003	5/27/2003	6	1,1,2-Trichloroethane	79005	8	U		
GMP26	GMP26003	5/27/2003	6	1,1-Dichloroethane	75343	6	U		
GMP26	GMP26003	5/27/2003	6	1,1-Dichloroethene	75354	6	U		
GMP26	GMP26003	5/27/2003	6	1,2,4-Trichlorobenzene	120821	11	U		
GMP26	GMP26003	5/27/2003	6	1,2,4-Trimethylbenzene	95636	7	U		

ATTACHMENT G-4: MAY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP26	GMP26003	5/27/2003	6	1,2-Dibromoethane	106934	11	U		
GMP26	GMP26003	5/27/2003	6	1,2-Dichloro-1,1,2,2-Tetrafluoroethane	76142	21			
GMP26	GMP26003	5/27/2003	6	1,2-Dichlorobenzene	95501	9	U		
GMP26	GMP26003	5/27/2003	6	1,2-Dichloroethane	107062	6	U		
GMP26	GMP26003	5/27/2003	6	1,2-Dichloropropane	78875	7	U		
GMP26	GMP26003	5/27/2003	6	1,3,5-Trimethylbenzene	108678	7	U		
GMP26	GMP26003	5/27/2003	6	1,3-Butadiene	106990	3	U		
GMP26	GMP26003	5/27/2003	6	1,3-Dichlorobenzene	541731	9	U		
GMP26	GMP26003	5/27/2003	6	1,4-Dichlorobenzene	106467	9	U		
GMP26	GMP26003	5/27/2003	6	1,4-Dioxane	123911	5	U		
GMP26	GMP26003	5/27/2003	6	2-Butanone	78933	4	U		
GMP26	GMP26003	5/27/2003	6	2-Hexanone	591786	6	U		
GMP26	GMP26003	5/27/2003	6	4-Ethyltoluene	622968	6	U		
GMP26	GMP26003	5/27/2003	6	4-Methyl-2-pentanone	108101	6	U		
GMP26	GMP26003	5/27/2003	6	Acetone	67641	3	U		
GMP26	GMP26003	5/27/2003	6	Benzene	71432	5	U		
GMP26	GMP26003	5/27/2003	6	Benzyl chloride	100447	7	U	1.1E-08	5.5E-05
GMP26	GMP26003	5/27/2003	6	Bromodichloromethane	75274	9	U		
GMP26	GMP26003	5/27/2003	6	Bromoform	75252	15	U		
GMP26	GMP26003	5/27/2003	6	Bromomethane	74839	6	U		
GMP26	GMP26003	5/27/2003	6	Carbon disulfide	75150	4	U		
GMP26	GMP26003	5/27/2003	6	Carbon tetrachloride	56235	9	U		
GMP26	GMP26003	5/27/2003	6	Chlorobenzene	108907	7	U		
GMP26	GMP26003	5/27/2003	6	Chloroethane	75003	4	U		
GMP26	GMP26003	5/27/2003	6	Chloroform	67663	19		3.8E-09	5.6E-04
GMP26	GMP26003	5/27/2003	6	Chloromethane	74873	3	U		
GMP26	GMP26003	5/27/2003	6	cis-1,2-Dichloroethene	156592	6	U		
GMP26	GMP26003	5/27/2003	6	cis-1,3-Dichloropropene	542756	6	U		
GMP26	GMP26003	5/27/2003	6	Cyclohexane	110827	5	U		
GMP26	GMP26003	5/27/2003	6	Dibromochloromethane	124481	12	U		
GMP26	GMP26003	5/27/2003	6	Dichlorodifluoromethane	75718	7	U		
GMP26	GMP26003	5/27/2003	6	Ethanol	64175	3	U		
GMP26	GMP26003	5/27/2003	6	Ethylbenzene	100414	6	U		
GMP26	GMP26003	5/27/2003	6	Heptane	142825	6	U		
GMP26	GMP26003	5/27/2003	6	Hexachlorobutadiene	87683	15	U		
GMP26	GMP26003	5/27/2003	6	Hexane	110543	5	U		

ATTACHMENT G-4: MAY 2003 GMP ANALYTICAL RESULTS AND RESIDENTIAL RISK ESTIMATES (Continued)

Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Hunters Point Shipyard, San Francisco, California

Point Identification No.	Sample Identification No.	Sample Date	Depth to Top of Screen (feet)	Analyte	Chemical Abstract Service No.	Result (µg/m3)	Qualifier	Risk (JEM)	Hazard Quotient (JEM)
GMP26	GMP26003	5/27/2003	6	Isopropyl alcohol	67630	3	U		
GMP26	GMP26003	5/27/2003	6	m,p-xylenes	106423	6	U		
GMP26	GMP26003	5/27/2003	6	Methylene chloride	75092	5	U		
GMP26	GMP26003	5/27/2003	6	o-xylene	95476	6	U		
GMP26	GMP26003	5/27/2003	6	Propylene	95476	2	U		
GMP26	GMP26003	5/27/2003	6	Styrene	100425	6	U		
GMP26	GMP26003	5/27/2003	6	Tert-butyl methyl ether	1634044	5	U		
GMP26	GMP26003	5/27/2003	6	Tetrachloroethene	127184	10	U		
GMP26	GMP26003	5/27/2003	6	Tetrahydrofuran	109999	4	U		
GMP26	GMP26003	5/27/2003	6	Toluene	108883	5	U		
GMP26	GMP26003	5/27/2003	6	trans-1,2-Dichloroethene	156605	6	U		
GMP26	GMP26003	5/27/2003	6	trans-1,3-Dichloropropene	542756	6	U		
GMP26	GMP26003	5/27/2003	6	Trichloroethene	79016	8	U		
GMP26	GMP26003	5/27/2003	6	Trichlorofluoromethane	75694	8	U		
GMP26	GMP26003	5/27/2003	6	Vinyl acetate	108054	5	U		
GMP26	GMP26003	5/27/2003	6	Vinyl chloride	75014	4	U		
						GMP26 Total Risk:		**1.5E-08**	**6.2E-04**

Notes:

µg/m3	Micrograms per cubic meter
GMP	Gas monitoring probe
J	Estimated value
JEM	Johnson-Ettinger Model
NA	Not analyzed
U	Not detected

28	**Assumptions and uncertainties**	Section 2.5.1	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix K, Section K9.0, pages K-34 through K-36. Record No. 4237. Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. Appendix B, Section B6, pages B-14 and B-15. Record No. 4260.

Varying degrees of uncertainty at each stage of the HHRA arise from assumptions made in the risk assessment and the limitations of the data used to calculate risks. Uncertainty and variability are also inherent in the exposure assessment, toxicity values, and risk characterization. Table K-18 lists both general and site-specific uncertainties associated with this HHRA.

The effect of uncertainties is overestimation or underestimation of the actual cancer risk or HI. In general, the risk assessment process is based on use of conservative (health-protective) assumptions that when combined, are intended to overestimate the actual risk. However, a small possibility exists that risks were underestimated.

The remainder of this discussion focuses on the following uncertainties specific to this HHRA:

- The influence of metals in soil at or below ambient levels on this HHRA
- Use of an SF for TCE developed by Cal/EPA, rather than the EPA provisional SF for TCE
- Dermal contact with groundwater for the residential exposure scenario
- Detection limits for soil and groundwater data

K9.1 METALS IN SOIL BELOW AMBIENT LEVELS

To account for the contribution of naturally occurring concentrations of metals at HPS, both total risks and incremental risks were assessed for exposure to soil. The total risk evaluation for soil included all chemicals regardless of concentration, except for the essential nutrients calcium, magnesium, potassium, and sodium. For the incremental risk evaluation, the above essential nutrients and metals with maximum measured concentrations below HPALs were excluded as COPCs.

The differences in risk and hazard results between the total risk evaluation and the incremental risk evaluation are attributed to the risks and hazards associated with ambient levels of metals at HPS. At ambient concentrations (that is, HPALs), some metals at HPS are associated with cancer risks exceeding 1E-06 and noncancer hazards exceeding 1.0. Table K-19 presents the cancer risks and noncancer hazards associated with exposure to metals at concentrations equal to HPALs; risks and hazards are presented in this table for the recreational exposure scenario, which is the only exposure scenario associated with the planned reuse of Parcel E-2. As shown in Table K-19, the contribution of ambient levels of metals to cancer risk and HI estimates is significant. For example, the cancer risk associated with recreational exposure to arsenic at a concentration equal to the HPAL for arsenic (11.1 mg/kg) is 3E-05. Collectively, all metals at ambient levels contribute to a cancer risk of 3E-05 for recreational receptors. For noncancer hazards, metals at ambient levels collectively contribute to an HI of 0.7 for recreational receptors.

This evaluation of risks and hazards associated with metals at HPALs shows that the total risk evaluation, which includes metals present at concentrations at or below HPALs, likely overestimates risks and hazards associated with Navy releases of chemicals, as concentrations of metals are at or below HPALs in many exposure areas at Parcel E-2. While the incremental risk evaluation excludes risks and hazards from metals for which maximum concentrations do not exceed HPALs, the results of the incremental evaluation should be considered with the information contained in Table K-19, as the contribution of ambient levels to risks and hazards at HPS is significant for some metals.

K9.2 SLOPE FACTOR FOR TRICHLOROETHENE

As discussed in Section K6.0, the provisional cancer SFs derived by EPA (2001) for TCE, although more conservative than the SFs derived by Cal/EPA, were not used in the HHRA. The draft risk assessment that is the basis for the provisional EPA SFs for TCE is being reviewed currently by the National Academy of Sciences, and as such, does not represent EPA policy. For this HHRA, the SFs developed by Cal/EPA were used to evaluate cancer risks from exposure to TCE. Uncertainties specific to the provisional cancer SFs for TCE were analyzed in this HHRA because the difference between the provisional SFs for TCE and the Cal/EPA SFs for TCE is significant, and can affect the risk results. Attachment K6 contains a detailed discussion of the uncertainties associated with the SFs for TCE.

K9.3 DERMAL CONTACT WITH GROUNDWATER FOR RESIDENTIAL SCENARIO

As discussed in Section K7.2, tap water PRGs were used in this HHRA to evaluate domestic use of groundwater. The tap water PRGs are used to evaluate domestic use of groundwater from ingestion and from inhalation of VOCs released from groundwater to indoor air during household use. The tap water PRGs are limited to an assessment of exposure to groundwater from the oral and inhalation exposure pathways, and do not account for exposure from the dermal exposure pathway.

To address the uncertainties associated with exclusion of the dermal exposure pathway on the risk results for domestic use of groundwater, the potential for intake of COPCs from the dermal exposure pathway relative to intake of COPCs from the oral exposure pathway was evaluated using information provided in the guidance from EPA (2004d) on the relative percentage of dermal exposure compared to oral exposures for non-volatile COPCs. This information is presented in Table K-20 for the non-volatile COPCs identified for the B-aquifer. In this table, exposure from the oral route is represented by ingestion of two liters of water per day (EPA 2004d). Although volatile COPCs were identified for the B-aquifer, partitioning risks between oral and dermal exposures for volatile COPCs is not necessary because the tap water PRGs account for the inhalation route of exposure.

This evaluation shows that risks from domestic use of groundwater in the B-aquifer, which were calculated using a risk-based screening assessment and EPA Region 9 tap water PRGs that exclude the dermal exposure pathway, may be slightly to highly underestimated for some chemicals in the B-aquifer (from 0.52 for thallium to 3,388 percent for dibenz[a,h]anthracene). However, the overall effect of this underestimate is not significant because the overall cancer

risk and noncancer HI for domestic use of groundwater in the B-aquifer were found to exceed the risk and hazards thresholds of 1E-06 and 1.0, respectively.

K9.4 DETECTION LIMITS FOR SOIL AND GROUNDWATER DATA

In some cases, detection limits (that is, sample quantitation limits) for soil and groundwater monitoring data exceeded risk-based screening concentrations for human health (for example, EPA [2004a] Region 9 PRGs). Tables K1-1 and K1-2 and Tables K3-1 through K3-3 summarize the soil and groundwater data evaluated in the HHRA for Parcel E-2. The data summaries presented in these tables include information on chemical detection frequencies and the range of detection limits for nondetected results (that is U- and UJ-qualified data).

For each exposure area evaluated in the HHRA (grids for surface and subsurface soil; parcel-wide for A- and B-aquifer groundwater), chemicals for which all results are nondetected are not included as COPCs in the HHRA. If results for a chemical are nondetected in all samples, but the detection limit for the chemical consistently exceeds a risk-based screening concentration, then it is possible that the chemical may be present at concentrations associated with health risks, but was not identified as a COPC for evaluation in the HHRA. In these cases, a small possibility exists that the exclusion of these chemicals as COPCs may result in an underestimation of potential risks. However, the overall HHRA process is based on use of conservative, health-protective assumptions that, when combined, are intended to overestimate the actual risk.

Section B6. Uncertainty Analysis

Any comprehensive risk analysis must also consider the effects of uncertainty on input parameters. This analysis is no different; however, rather than perform explicit uncertainty analyses, which would have required countless additional RESRAD runs, an approach was taken that minimized the need for additional modeling computations. The uncertainty analysis was based on a probabilistic analysis of the RESRAD code (ANL, 2000).

The probabilistic analysis studied the effect of various parameter distributions on the final results of RESRAD analyses. As part of the ANL study, multiple RESRAD runs were conducted for selected isotopes while varying a single parameter (ANL, 2000).

The RESRAD modeling is based on the radiological data collected during the Phase I and Phase V investigations. The data collected during these investigations were analyzed to meet acceptance criteria (such as minimum detectable activity levels) that were based on the release criteria current at the time the investigations were performed; however, the current release criteria for certain ROCs are more conservative. The most notable example is ^{226}Ra, for which the release criterion at the time of the Phase V investigation was 5 pCi/g. The current release criterion for ^{226}Ra is 1 pCi/g above background (the background ^{226}Ra level for the Phase V investigation was 0.82 pCi/g). Because of the differences in release criteria, the accuracy of the data for certain ROCs may not meet current acceptance criteria and results in some degree of uncertainty for the risk screening analysis. However, the degree of uncertainty is acceptable for the risk screening analysis because the analysis was only intended to provide a general estimate of radiological risks for ROCs that, in the case of ^{226}Ra, were known to consistently exceed current release criteria and warrant analysis of remedial alternatives in the FS.

Since the isotopes included in the ANL study cover most of the ROCs at Hunters Point Shipyard, it was determined that the conclusions of the ANL study could be used as the basis for the uncertainty analysis for the modeling done as part of the radiological addendum. The uncertainty considerations for each affected ROC are discussed separately below.

B6.1. STRONTIUM-90

The most critical parameter affecting dose and subsequent risk from ^{90}Sr used in these analyses is the contaminated zone thickness. No other parameters used in this analysis had the potential to have any substantial impact on the results. As previously mentioned, the contaminated zone was dependent on the

particular scenario being modeled. In all cases, however, the thickness was selected to be very conservative, and it is fully expected that the results presented in this analysis bound the actual case. It is therefore concluded that the conservatism built into this analysis eliminates the need to run additional uncertainty cases for ^{90}Sr.

B6.2. CESIUM-137

Dose and subsequent risk from ^{137}Cs is primarily due to the external radiation pathway. The density and thickness of the cover material are the key parameters used in the RESRAD analysis that affect the risk associated with ^{137}Cs. Changes to the external gamma shielding factor also can affect the results to a lesser extent.

The RESRAD default cover material density was used for all analyses performed. The default was designed to be representative of the body of soil types. In some cases, an asphalt cover was modeled with the same default soil density. In reality, asphalt would have a greater density than the default soil value. The specific density is dependent upon the asphalt-laying process. By underestimating the density of asphalt, a certain measure of conservatism has been built into the results presented in this appendix. It is therefore reasonable to assume that any uncertainty associated with the cover material density is minimal and a full uncertainty analysis for a range of cover material densities is not necessary.

The 24-inch cover thickness was selected based on information in the Parcel E-2 RI/FS Report (ERRG and Shaw, 2011). No additional runs are required to evaluate the uncertainty with this parameter.

The external gamma-shielding factor is a measure of how much shielding is offered by the building structures for a site receptor. None of the potential receptor scenarios assumed that the receptor would spend any period of time indoors; therefore, the external gamma-shielding factor is immaterial to this analysis.

B6.3. RADIUM-226

^{226}Ra is another nuclide with the majority of dose (for this analysis) resulting from the external radiation pathway. ^{226}Ra has a relatively long half-life of 1,600 years. Because of its longevity, the most important parameters affecting dose from ^{226}Ra, in order from highest to lowest, are thickness and density of the contaminated zone.

As noted for ^{90}Sr, the contaminated zone thickness has conservatism built in and thus does not require further uncertainty analysis. The density of the contaminated zone was modeled as the RESRAD default. All RESRAD default values are selected to provide conservative but reasonable estimates to a wider range of analyses. There is no added benefit to conducting more detailed uncertainty calculations for the ^{226}Ra dose-based risk with varying contaminated zone densities.

29	**Screening-level ecological risk assessment**	Section 2.5.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 7.2, pages 7-11 through 7-15; Appendix L, Table L-7. Record No. 4237. Draft Parcels E and E-2 Shoreline Characterization Technical Memorandum, Hunters Point Shipyard, San Francisco, California. SulTech. June 2007. Appendix G, Table G-18. *(note: this document was accepted as final and was provided as Appendix G to the Final Remedial Investigation/Feasibility Study Report for Parcel E-2; Record No. 4237)*

For organic COCs, the chemical-specific ARAR is used as the remediation goal, if applicable, and when available. In the absence of chemical-specific ARARs, the chemical-specific RBC is used as the remediation goal for organic COCs. However, the remediation goal defaults to the laboratory PQL if the ARAR- or RBC-based concentration is lower than the PQL, because the ARAR or RBC would not be detectable at concentrations below the PQL. For inorganic chemicals, this same hierarchy applies for selection of remediation goals, except that the HGAL (metals only) is selected as the remediation goal if it exceeds either the chemical-specific ARAR or the RBC and is greater than the laboratory PQL. HGALs for two inorganic COCs (arsenic and thallium) in the B-aquifer exceed their respective RBCs. These exceedances show that domestic use exposure to ambient levels of arsenic and thallium in the B-aquifer is associated with a cancer risk that exceeds 1E-06 and a noncancer HI that exceeds 1, respectively. However, MCLs are available for both of these chemicals; therefore, remediation goals for arsenic and thallium are based on MCLs.

7.1.4. Sample Locations with Chemical Concentrations Exceeding Remediation Goals

A list of soil sampling locations with chemical concentrations exceeding remediation goals was compiled to identify the locations at Parcel E-2 for which remedial action is required, based on its reasonably anticipated reuse as open space. Table 7-16 shows the soil sampling locations with concentrations of COCs exceeding remediation goals for surface soil.

7.2. SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENTS

A SLERA was conducted to update the previous ecological assessments at Parcel E-2. A summary of the Parcel E-2 SLERA (also referred to as the "onshore" SLERA) is presented in Section 7.2.1. A separate SLERA was performed to evaluate potential risk to aquatic wildlife exposed to intertidal sediment within the Shoreline Area of Parcel E-2. The shoreline SLERA is presented in Appendix G and is summarized in Section 7.2.2.

7.2.1. Onshore Screening-Level Ecological Risk Assessment

The SLERA was necessitated by the collection of additional data during the SDGI which resulted in the identification of new COPECs and calculation of corresponding PSCs. The objective of the SLERA is to determine the potential for significant risk to terrestrial receptors exposed to soil from 0 to 3 feet bgs at Parcel E-2 within the onshore area.

This subsection provides an overview of the findings of the onshore SLERA. A complete copy of the assessment is provided in Appendix L. The SLERA was performed in accordance with the EPA and Navy guidance (EPA, 1997; Navy, 1999).

7.2.1.1. Summary of SLERA Process

EPA guidance separates the ERA process into eight steps, three of which apply to the current ecological assessment at Parcel E-2:

- Step 1: Screening-level problem formulation and evaluation of ecological effects
- Step 2: Screening-level preliminary exposure estimate and risk calculation
- Step 3: BERA problem formulation

The substantive elements of Steps 1 and 2 constitute the SLERA. The onshore SLERA extends into the initial phase of Step 3, which corresponds to Step 3a "Refinement of Conservative Exposure Assumptions" of the Navy's ERA process. Step 3a focuses on refining the list of COPECs based on comparison with HPALs. Further refinement of the ecological risks, using food chain modeling for birds and mammals, was not considered necessary given several factors:

- The onshore environment at Parcel E-2 has undergone several phases of ecological risk assessment, including a baseline ERA (1997) and a validation study (1999). These past studies are discussed in Section 3.5 of this RI/FS Report. As discussed in Section L1 of Appendix L, this SLERA was necessitated by the collection of additional data during a soil data gaps investigation in 2002, which resulted in the identification of new COPECs and the calculation of corresponding PSCs.
- The purpose of including quantitative risk assessments in the Parcel E-2 RI/FS was, as discussed in Section 1.4, to identify areas that require remedial action to protect human health and the environment.
- The site conceptual model, as discussed in Sections 6.2.1 and 6.3.1, identifies solid waste throughout the Landfill Area and heterogeneous soil contamination throughout the Panhandle and East Adjacent Areas, as posing a potential risk to terrestrial ecological receptors.

The SLERA performed for Parcel E-2 (through Step 3a) conservatively depicts the potential ecological risk in the onshore environment at Parcel E-2. Considering the heterogeneous contaminant distribution within the Landfill, Panhandle, and East Adjacent Areas, this conservative evaluation meets the overall goal of the RI/FS process and, when coupled with the results of the human health risk assessment, provides an adequate basis for developing a focused set of remedial alternatives for Parcel E-2.

As described in detail in Appendix L, the Parcel E-2 onshore SLERA characterizes the risk to terrestrial ecological receptors exposed to near-surface soil at Parcel E-2, inland of the narrow "intertidal zone" along the Parcel E-2 shoreline. The intertidal zone is the area that is marked between the low- and high-

water lines. The onshore SLERA focused on birds and mammals that were identified in previous ecological studies at Parcel E and E-2.

The onshore SLERA performed for this report used all soil data collected from 0 to 3 feet bgs from all locations within Parcel E-2. A simple HQ approach was used to determine if any COPECs, on a sample-by-sample basis, present a potential risk at the site. The HQ is the ratio of the maximum detected soil concentration for a given COPEC to its calculated PSC. The HQ approach is typical of Step 2 of a SLERA and has been used in other HPS ERAs. Any HQ greater than 1.0 is considered to indicate potential risk. In the risk characterization step, chemicals were also compared with HPALs, where appropriate.

7.2.1.2. Onshore SLERA Results

The estimation of potential risk to terrestrial receptors exposed to COPECs was calculated for each of the three subareas (the Landfill Area, East Adjacent Area, and Panhandle Area) of Parcel E-2. In these areas, some potentially toxic chemicals were detected at concentrations exceeding HPALs and PSCs, indicating a potentially significant risk to terrestrial receptors. Based on concentrations exceeding PSCs (HQ greater than 1) and HPALs, the following chemicals (or groups of chemicals) pose a potential threat to birds and mammals exposed to soil in one or more onshore study areas of Parcel E-2:

- Metals: cadmium, copper, lead, manganese, mercury, nickel, vanadium, and zinc;
- Total DDT: sum of detected concentrations of 2.4'-DDT and 4,4'-DDT;
- Total PCBs: sum of detected concentrations of all Aroclor compounds; and
- Total high molecular weight (HMW) polycyclic aromatic hydrocarbons (PAHs): sum of detected concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, and pyrene.

Figure 7-5 shows the locations where soil concentrations exceeded PSCs for any chemical within Parcel E-2. Table 7-17 presents a statistical summary of samples analyzed as part of the SLERA. HPALs, PSCs, maximum concentrations in soil, and the number of samples exceeding respective PSCs are shown in Table 7-17.

7.2.2. Shoreline Screening-Level Ecological Risk Assessment

A shoreline investigation was performed in 2002 as part of the SDGI, because the Parcel F validation study hypothesized that metals and PCBs along the shoreline were a source of contamination to Parcel F sediments. Intertidal sediment data collected during the shoreline investigation were evaluated in the Shoreline Characterization Technical Memorandum (Appendix G to this report), which included a shoreline SLERA. The objective of the shoreline SLERA was to evaluate whether contamination at

suspected source areas along the shoreline of Parcel E-2 poses an unacceptable risk to ecological receptors exposed to sediment at the Shoreline Area.

This subsection provides an overview of the findings of the shoreline SLERA. A complete copy of the shoreline SLERA is provided as Appendix G to this report. The SLERA was performed in accordance with the EPA and Navy guidance (EPA, 1997; Navy, 1999).

7.2.2.1. Summary of Shoreline SLERA Process

The shoreline SLERA characterized risk to ecological receptors exposed to the narrow intertidal zone of Parcels E and E-2. The intertidal zone is the area that is marked between the low- and high-water lines. The SLERA focuses on benthic invertebrates, birds, and mammals that forage along the Parcels E and E-2 shoreline in the intertidal zone. To meet the objective of the SLERA, concentrations of chemicals in surface and subsurface sediment samples collected from the Parcels E and E-2 shoreline were screened against toxicological benchmarks for invertebrates, birds, and mammals.

The shoreline SLERA evaluated surface shoreline sediment samples (collected from 0 to 0.5 feet bgs) and subsurface sediment samples (collected from 2.0 to 2.5 feet bgs). All chemicals detected in sediment samples from the shoreline area were screened to identify COPECs, except for essential mineral nutrients such as sodium, chloride, potassium, phosphorous, magnesium, and calcium. COPECs for benthic invertebrates were identified as those chemicals with concentrations exceeding their effects range-median (ER-M) values (Long and Morgan, 1991; National Oceanic and Atmospheric Administration, 1993).

In the evaluation of birds and mammals, chemicals were screened using food chain modeling against TRV. Selected COPECs also were compared against HPALs (PRC, 1995a) and ambient sediment concentrations of selected chemicals in San Francisco Bay (RWQCB, 1998 and 2003a). Similar to the onshore SLERA, HQs were calculated on a sample-by-sample basis for each COPEC. In the shoreline SLERA, the HQ is defined as the ratio of EPCs in surface sediment to ER-M values. All detected inorganic and organic chemicals in surface and subsurface sediment were evaluated in the toxicological screen by evaluating the HQ. Chemicals with HQs greater than 1.0 were considered COPECs for benthic invertebrates.

7.2.2.2. Shoreline SLERA Results for Benthic Invertebrates

Benthic invertebrates are at risk from exposure to PCBs in surface and subsurface sediment along the Parcels E and E-2 shoreline. Benthic invertebrates in surface and subsurface sediment may be adversely affected by exposure to copper, lead, zinc, and DDTs. In subsurface sediment, mercury may pose an additional risk to benthic invertebrates. Appendix G of this RI/FS Report presents the complete results for benthic invertebrates in the shoreline SLERA.

7.2.2.3. Shoreline SLERA Results for Birds and Mammals

Significant risk to birds is indicated only for the willet exposed to PCBs. No significant risk to either the surf scoter or the red-tailed hawk was indicated by the food-chain modeling. Other chemicals for which potential risk to birds is suggested included cadmium, copper, lead, mercury, PCBs, total DDTs, and dieldrin.

Birds and mammals are at risk from exposure to PCBs in surface and subsurface sediment along the Parcels E and E-2 shoreline. Ingestion of sediment and prey that contain cadmium, copper, molybdenum, zinc, and PCBs may pose a risk to the house mouse. The greatest significant risk (high TRV HQ) for mammals was indicated for PCBs ingested by the house mouse. Appendix G of this RI/FS Report presents the complete results for birds and mammals in the shoreline SLERA.

7.3. ECOLOGICAL RISK ASSESSMENT FOR EXPOSURE TO GROUNDWATER

A screening-level assessment of ecological risk to aquatic wildlife exposed to potentially contaminated groundwater at Parcel E-2 is provided in Appendix M. The assessment consists of the following general steps:

- Aquatic evaluation criteria were selected based on surface water quality criteria (Basin Plan Table 3-3; California Toxics Rule [CTR]; National Recommended Water Quality Criteria [NRWQC]; and National Ambient Water Quality Criteria [NAWQC]). All of these standards apply to surface water; none of them applies to groundwater. Therefore, these potential ARARs for surface water would be applied to the surface water at the interface of the A-aquifer groundwater, but would not be used to set cleanup standards for in-situ A-aquifer groundwater at Parcel E-2.
- The Navy developed trigger levels for various inland locations to ensure surface water quality criteria are not exceeded if groundwater at Parcel E-2 discharges to the Bay. The trigger levels are intended to serve as conservative comparison values for groundwater to indicate when additional evaluation may be necessary. The development of the trigger levels was initially performed in the Parcel D FS, and has also been applied at HPS Parcels B and D (now referred to as Parcels D-1, D-2, G, and UC-1). The development of the trigger levels is discussed in Attachment M-1.
- Chemical concentrations in groundwater were screened against the assigned aquatic evaluation criteria, mainly comprised of saltwater aquatic criteria, to identify COPECs for surface water quality.
- Site-specific data for select COPECs were then evaluated against trigger levels, where appropriate, to confirm if the COPECs posed a potential risk to aquatic receptors requiring remedial option analysis.

Table L-7. Hazard Quotients for Birds and Mammals at Parcel E-2
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Chemical	HPAL (mg/kg)	PSC (mg/kg)	Maximum Soil Concentrations (mg/kg)			Hazard Quotient[a]		
			Landfill Area	East Adjacent Area	Panhandle Area	Landfill Area	East Adjacent Area	Panhandle Area
Beryllium	0.71	135	1.4	1.1	1.18	0.0104	0.00815	0.00874
Cadmium	3.14	4	12	11.82	37	**3.00**	**2.96**	**9.25**
Chromium VI	SS	669	0.06	1.5	10	0.0000897	0.00224	0.0149
Copper	124.3	470	2,300	7,700	27,000	**4.89**	**16.38**	**57.45**
Lead	8.99	197	9,700	11,215.9	9,300	**49.24**	**56.93**	**47.21**
Manganese	1,431.2	2,433	1,547.58	2,400	12,000	0.636	0.986	**4.93**
Mercury	2.28	1	7.4	46.67	190	**7.4**	**46.67**	**190**
Nickel	SS	1,941	982	2,000	1,600	0.506	**1.03**	0.824
Selenium	1.95	10	3.4	6.2	6.4	0.340	0.620	0.640
Silver	1.43	15	1	1.51	11	0.0667	0.101	0.733
Thallium	0.81	88	0.6	6.9	7.2	0.00682	0.0784	0.0814
Vanadium	117.2	117	410	520	2,100	**3.50**	**4.44**	**17.95**
Zinc	109.9	719	4,100	4,104.96	7,100	**5.70**	**5.71**	**9.87**
Dieldrin	NA	18	0.71	2.7	6.4	0.0394	0.150	0.356
Methoxychlor	NA	509	0.36	3.3	4.2	0.00707	0.00648	0.00825
Total DDT	NA	4	0.77	5.8	0.087	0.193	**1.45**	0.0218
Total PCBs	NA	37	380	640	20	**10.27**	**17.30**	0.541
HMW PAHs	NA	231	29.45	35	382.3	0.127	0.152	**1.65**
LMW PAHs	NA	10,056	8.33	5.4	50.6	0.000828	0.000537	0.00503
Toluene	NA	4,577	0.019	0.12	0.019	0.000	0.000	0.000
Trichloroethene	NA	123	ND	0.013	ND	0.000	0.000	0.000
Total Xylenes	NA	369	0.004	0.056	ND	0.000	0.000	0.000

Table L-7. Hazard Quotients for Birds and Mammals at Parcel E-2 *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Notes:

a The hazard quotient for each Parcel E-2 subarea is calculated by dividing the maximum soil concentration for each chemical by the respective PSC.

4 Bold font indicates a hazard quotient greater than 1.0, which identifies site-related chemicals that may pose risks to receptors present at Parcel E-2

DDT	Dichlorodiphenyltrichloroethane
HMW	high-molecular-weight
HPAL	Hunters Point ambient level
LMW	low-molecular-weight
mg/kg	milligrams per kilogram
NA	not applicable
ND	nondetected
PAHs	polycylic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PSC	protective soil concentration
SS	sample specific

TABLE G-18: SUMMARY OF BIRD AND MAMMAL HAZARD QUOTIENTS

Draft Parcels E and E-2 Shoreline Characterization Technical Memorandum, Hunters Point Shipyard, San Francisco, California

COPEC	Surf Scoter		Willet (SBI)		Willet (*Macoma*)		Red-Tailed Hawk		House Mouse	
	(0 - 0.5 foot)	(2 - 2.5 feet)	(0 - 0.5 foot)	(2 - 2.5 feet)	(0 - 0.5 foot)	(2 - 2.5 feet)	(0 - 0.5 foot)	(2 - 2.5 feet)	(0 - 0.5 foot)	(2 - 2.5 feet)
METALS										
Aluminum										
Dose/High TRV	3.54E-04	3.13E-04	7.34E-03	6.48E-03	1.10E-03	9.69E-04	3.48E-05	3.07E-05	3.06E+00	7.72E+00
Dose/Low TRV	3.54E-03	3.13E-03	7.34E-02	6.48E-02	1.10E-02	9.69E-03	3.48E-04	3.07E-04	8.75E+01	7.72E+01
Antimony										
Dose/High TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	1.34E+00	5.39E+00
Dose/Low TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	1.34E+01	5.39E+01
Barium										
Dose/High TRV	1.72E-04	1.39E-04	2.61E-03	2.11E-03	5.34E-04	4.32E-04	1.44E-05	1.16E-05	2.54E-01	2.06E-01
Dose/Low TRV	3.45E-04	2.79E-04	5.23E-03	4.23E-03	1.07E-03	8.65E-04	2.88E-05	2.33E-05	9.75E-01	7.88E-01
Beryllium										
Dose/High TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV
Dose/Low TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV
Cadmium										
Dose/High TRV	1.00E-03	4.05E-04	1.09E-02	4.39E-03	3.12E-03	1.26E-03	3.80E-05	1.53E-05	1.18E+00	4.76E-01
Dose/Low TRV	2.05E-01	8.28E-02	2.23E+00	8.98E-01	6.37E-01	2.57E-01	7.78E-03	3.13E-03	5.19E+01	2.09E+01
Chromium										
Dose/High TRV	3.33E-03	4.37E-03	2.88E-02	3.79E-02	1.03E-02	1.36E-02	1.98E-04	2.60E-04	2.44E-05	3.21E-05
Dose/Low TRV	1.66E-02	2.19E-02	1.44E-01	1.89E-01	5.16E-02	6.78E-02	9.90E-04	1.30E-03	2.44E-04	3.21E-04
Cobalt										
Dose/High TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	1.08E-02	1.15E-02
Dose/Low TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	1.77E-01	1.87E-01
Copper										
Dose/High TRV	5.38E-03	3.45E-02	4.68E-02	3.00E-01	1.67E-02	1.07E-01	6.81E-03	4.37E-02	1.85E-01	1.18E+00
Dose/Low TRV	1.34E-01	8.58E-01	1.16E+00	7.46E+00	4.15E-01	2.66E+00	1.69E-01	1.09E+00	4.32E+01	2.77E+02
Lead										
Dose/High TRV	7.30E-03	2.25E-02	8.29E-02	2.56E-01	2.26E-02	6.98E-02	9.12E-03	2.81E-02	2.85E-02	8.78E-02
Dose/Low TRV	2.91E+00	8.96E+00	3.30E+01	1.02E+02	9.02E+00	2.78E+01	3.63E+00	1.12E+01	5.89E+00	1.82E+01
Magnesium										
Dose/High TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV
Dose/Low TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV
Manganese										
Dose/High TRV	7.43E-05	7.86E-05	1.02E-03	1.08E-03	2.30E-04	2.44E-04	6.05E-05	6.41E-05	1.44E-01	1.53E-01
Dose/Low TRV	7.43E-04	7.86E-04	1.02E-02	1.08E-02	2.30E-03	2.44E-03	6.05E-04	6.41E-04	1.66E+00	1.76E+00
Nickel										
Dose/High TRV	5.08E-04	4.19E-04	4.79E-03	3.95E-03	1.58E-03	1.30E-03	3.22E-05	2.66E-05	7.71E-02	6.36E-02
Dose/Low TRV	2.05E-02	1.69E-02	1.93E-01	1.60E-01	6.37E-02	5.25E-02	1.30E-03	1.07E-03	1.83E+01	1.51E+01

TABLE G-18: SUMMARY OF BIRD AND MAMMAL HAZARD QUOTIENTS (CONTINUED)
Draft Parcels E and E-2 Shoreline Characterization Technical Memorandum, Hunters Point Shipyard, San Francisco, California

	Surf Scoter		Willet (SBI)		Willet (*Macoma*)		Red-Tailed Hawk		House Mouse	
COPEC	**(0 - 0.5 foot)**	**(2 - 2.5 feet)**	**(0 - 0.5 foot)**	**(2 - 2.5 feet)**	**(0 - 0.5 foot)**	**(2 - 2.5 feet)**	**(0 - 0.5 foot)**	**(2 - 2.5 feet)**	**(0 - 0.5 foot)**	**(2 - 2.5 feet)**
METALS (Continued)										
Selenium										
Dose/High TRV	1.38E-02	1.52E-02	6.10E-02	6.71E-02	4.29E-02	4.71E-02	4.33E-03	4.76E-03	6.78E-01	7.46E-01
Dose/Low TRV	5.59E-02	6.14E-02	2.47E-01	2.71E-01	1.73E-01	1.91E-01	1.75E-02	1.93E-02	2.74E+00	3.02E+00
Silver										
Dose/High TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV
Dose/Low TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV
Thallium										
Dose/High TRV	4.91E-04	3.60E-04	1.52E-03	1.12E-03	1.52E-03	1.12E-03	1.79E-03	1.32E-03	1.27E-02	9.14E-03
Dose/Low TRV	4.91E-04	3.60E-04	1.52E-03	1.12E-03	1.52E-03	1.12E-03	1.79E-03	1.32E-03	3.80E-02	2.72E-02
Vanadium										
Dose/High TRV	5.84E-05	5.11E-05	6.74E-04	5.90E-04	1.81E-04	1.58E-04	3.60E-06	3.15E-06	1.30E+00	8.31E-01
Dose/Low TRV	5.84E-04	5.11E-04	6.74E-03	5.90E-03	1.81E-03	1.58E-03	3.60E-05	3.15E-05	1.30E+01	8.31E+00
Zinc										
Dose/High TRV	4.19E-03	1.70E-02	1.48E-02	6.02E-02	1.30E-02	5.29E-02	2.91E-03	1.18E-02	2.56E-01	1.04E+00
Dose/Low TRV	4.19E-02	1.70E-01	1.48E-01	6.02E-01	1.30E-01	5.29E-01	2.91E-02	1.18E-01	1.23E+01	5.00E+01
ORGANOTINS										
Dibutyltin										
Dose/High TRV	2.85E-06	ND	6.42E-05	ND	8.85E-06	ND	7.81E-09	ND	1.81E-05	ND
Dose/Low TRV	1.79E-04	ND	4.03E-03	ND	5.56E-04	ND	4.90E-07	ND	1.10E-03	ND
Monobutyltin										
Dose/High TRV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dose/Low TRV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrabutyltin										
Dose/High TRV	7.56E-09	ND	2.34E-08	ND	2.34E-08	ND	1.30E-09	ND	3.02E-06	ND
Dose/Low TRV	4.75E-07	ND	1.47E-06	ND	1.47E-06	ND	8.17E-08	ND	1.84E-04	ND
Tributyltin										
Dose/High TRV	3.63E-05	1.09E-06	2.31E-04	6.93E-06	1.13E-04	3.38E-06	3.90E-08	1.17E-09	9.07E-05	2.72E-06
Dose/Low TRV	2.28E-03	6.84E-05	1.45E-02	4.35E-04	7.07E-03	2.12E-04	2.45E-06	7.36E-08	5.52E-03	1.66E-04
PCBs										
Total PCBs (Congeners)										
Dose/High TRV	1.80E-01	NA	1.93E+00	NA	5.60E-01	NA	2.55E-02	NA	1.55E+02	NA
Dose/Low TRV	2.19E+00	NA	2.33E+01	NA	6.78E+00	NA	3.09E-01	NA	5.55E+02	NA

TABLE G-18: SUMMARY OF BIRD AND MAMMAL HAZARD QUOTIENTS (CONTINUED)

Draft Parcels E and E-2 Shoreline Characterization Technical Memorandum, Hunters Point Shipyard, San Francisco, California

	Surf Scoter		Willet (SBI)		Willet (*Macoma*)		Red-Tailed Hawk		House Mouse	
COPEC	**(0 - 0.5 foot)**	**(2 - 2.5 feet)**	**(0 - 0.5 foot)**	**(2 - 2.5 feet)**	**(0 - 0.5 foot)**	**(2 - 2.5 feet)**	**(0 - 0.5 foot)**	**(2 - 2.5 feet)**	**(0 - 0.5 foot)**	**(2 - 2.5 feet)**
PCBs (Continued)										
Total Aroclors										
Dose/High TRV	2.71E-02	7.61E-01	2.89E-01	8.12E+00	8.39E-02	2.36E+00	3.82E-03	1.07E-01	2.33E+01	5.84E+02
Dose/Low TRV	3.28E-01	9.22E+00	3.50E+00	9.84E+01	1.02E+00	2.86E+01	4.63E-02	1.30E+00	8.32E+01	2.09E+03
PESTICIDES										
Total DDTs										
Dose/High TRV	7.67E-04	1.00E-02	9.66E-03	1.26E-01	2.38E-03	3.10E-02	1.81E-05	2.36E-04	3.24E-02	4.22E-01
Dose/Low TRV	1.64E-01	2.14E+00	2.07E+00	2.70E+01	5.09E-01	6.64E+00	3.87E-03	5.05E-02	6.47E-01	8.44E+00
alpha-Chlordane										
Dose/High TRV	5.82E-06	2.45E-05	2.89E-05	1.22E-04	1.80E-05	7.60E-05	6.34E-07	2.67E-06	9.25E-03	3.89E-02
Dose/Low TRV	2.91E-05	1.23E-04	1.44E-04	6.08E-04	9.02E-05	3.80E-04	3.17E-06	1.34E-05	5.05E-01	2.13E+00
Gamma Chlordane										
Dose/High TRV	1.14E-05	3.83E-05	4.66E-05	1.57E-04	3.54E-05	1.19E-04	1.43E-06	4.79E-06	2.08E-02	6.99E-02
Dose/Low TRV	5.70E-05	1.92E-04	2.33E-04	7.83E-04	1.77E-04	5.95E-04	7.13E-06	2.40E-05	1.13E+00	3.81E+00
Dieldrin										
Dose/High TRV	9.37E-04	7.97E-03	1.26E-02	1.08E-01	2.90E-03	2.47E-02	9.98E-07	8.49E-06	2.08E-03	1.77E-02
Dose/Low TRV	9.37E-03	7.97E-02	1.26E-01	1.08E+00	2.90E-02	2.47E-01	9.98E-06	8.49E-05	2.08E-02	1.77E-01
DIOXINS/FURANS										
Dose/High TRV	5.76E-06	NA	1.79E-05	NA	1.79E-05	NA	9.98E-07	NA	6.27E-03	NA
Dose/Low TRV	5.76E-03	NA	1.79E-02	NA	1.79E-02	NA	9.98E-06	NA	6.27E-01	NA
PAHs										
LMW PAH										
Dose/High TRV	NO TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	1.58E-03	4.87E-03
Dose/Low TRV	NO TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	4.73E-03	1.46E-02
HMW PAH										
Dose/High TRV	NO TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	3.51E-02	4.55E-02
Dose/Low TRV	NO TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	No TRV	8.78E-01	1.14E+00

Notes:

bgs	Below ground surface	ND	Not detected
COPEC	Chemical of potential ecological concern	PAH	Polynuclear aromatic hydrocarbon
DDT	Dichlorodiphenyltrichloroethane	PCB	Polychlorinated biphenyl
HMW	High molecular-weight	SBI	Soft-bodied invertebrate
LMW	Low molecular-weight	TRV	Toxicity reference value
NA	Not applicable		

30	Risks to aquatic wildlife	Section 2.5.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 7.3, pages 7-15 and 7-16; Table 7-18. Record No. 4237.

7.2.2.3. Shoreline SLERA Results for Birds and Mammals

Significant risk to birds is indicated only for the willet exposed to PCBs. No significant risk to either the surf scoter or the red-tailed hawk was indicated by the food-chain modeling. Other chemicals for which potential risk to birds is suggested included cadmium, copper, lead, mercury, PCBs, total DDTs, and dieldrin.

Birds and mammals are at risk from exposure to PCBs in surface and subsurface sediment along the Parcels E and E-2 shoreline. Ingestion of sediment and prey that contain cadmium, copper, molybdenum, zinc, and PCBs may pose a risk to the house mouse. The greatest significant risk (high TRV HQ) for mammals was indicated for PCBs ingested by the house mouse. Appendix G of this RI/FS Report presents the complete results for birds and mammals in the shoreline SLERA.

7.3. ECOLOGICAL RISK ASSESSMENT FOR EXPOSURE TO GROUNDWATER

A screening-level assessment of ecological risk to aquatic wildlife exposed to potentially contaminated groundwater at Parcel E-2 is provided in Appendix M. The assessment consists of the following general steps:

- Aquatic evaluation criteria were selected based on surface water quality criteria (Basin Plan Table 3-3; California Toxics Rule [CTR]; National Recommended Water Quality Criteria [NRWQC]; and National Ambient Water Quality Criteria [NAWQC]). All of these standards apply to surface water; none of them applies to groundwater. Therefore, these potential ARARs for surface water would be applied to the surface water at the interface of the A-aquifer groundwater, but would not be used to set cleanup standards for in-situ A-aquifer groundwater at Parcel E-2.
- The Navy developed trigger levels for various inland locations to ensure surface water quality criteria are not exceeded if groundwater at Parcel E-2 discharges to the Bay. The trigger levels are intended to serve as conservative comparison values for groundwater to indicate when additional evaluation may be necessary. The development of the trigger levels was initially performed in the Parcel D FS, and has also been applied at HPS Parcels B and D (now referred to as Parcels D-1, D-2, G, and UC-1). The development of the trigger levels is discussed in Attachment M-1.
- Chemical concentrations in groundwater were screened against the assigned aquatic evaluation criteria, mainly comprised of saltwater aquatic criteria, to identify COPECs for surface water quality.
- Site-specific data for select COPECs were then evaluated against trigger levels, where appropriate, to confirm if the COPECs posed a potential risk to aquatic receptors requiring remedial option analysis.

Based on concentrations exceeding trigger levels (as adjusted based on HGALs), the following chemicals (or groups of chemicals) pose a potential threat to aquatic wildlife through exposure to surface water impacted by contaminated groundwater at Parcel E-2:

- Metals: copper, lead, and zinc;
- Anions: un-ionized ammonia, sulfide, and cyanide;
- Total PCBs: sum of detected concentrations of all Aroclor compounds; and
- Total TPH: sum of detected concentrations of all TPH ranges (gasoline-range, diesel-range, and motor-oil range).

Figure 7-6 shows the locations where groundwater concentrations exceeded their respective trigger levels. Table 7-18 summarizes the specific COPECs at the locations identified on Figure 7-6.

Table 7-18. Groundwater COPECs for Aquatic Wildlife
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

		Screening Evaluation		Trigger Level Evaluation (for Inland Areas > 250 feet from shoreline)		
Chemical Group	COPEC	Aquatic Evaluation Criterion (µg/L)[a]	Nearshore Wells Recommended for Further Monitoring and Evaluation[b],[c]	Attenuation Factor Selected for Inland Area[d]	Calculated Trigger Level (µg/L)[e]	Inland Areas (Where Trigger Levels are Exceeded) Recommended for Further Monitoring and Evaluation[c],[f]
Anions	Un-ionized Ammonia	25	IR01MW38A, IR01MW48A, IR01MW47B, IR01MW43A[g], TW053, TW023, TW024, TW002, TW045, TW003, TW013, TW014, TW016, TW032, TW031, TW040, TW039, and PZ150D	1	25	TW001, TW007, TW009, TW010, TW011, TW025, TW049, and TW055
	Cyanide	1	IR01MW38A, IR01MW48A, IR01MW60A, IR01MW62A, and IR01MW63A	NA	NA	NA
	Sulfide	2[h],[i]	IR01MW43A[g], IR01MW48A, IR01MW53B, IR01MW60A, IR01MW64A, and IR01MWI-3	NA	NA	NA
Metals	Copper	28[j]	IR01MW53B, TW018, TW019, TW020, and TW045	2	56	TW004, TW005, and PZ131F
	Lead	14.4[j]	IR01MW43A[g], TW021, TW028B, and TW029	NA	NA	NA
	Zinc	81	IR01MW43A[g], IR01MW44A, TW020, TW021, TW029, and TW006	NA	NA	NA
Pesticides and PCBs	PCBs (Total)	0.03[i]	IR01MW43A[g], IR01MW44A,TW036, TW038, TW047, TW021, TW031, TW040, TW039, and PZ150D	2	0.06	TW005 and PZ131F
Petroleum Hydrocarbons	TPH (Total)	1,400 - 20,000[k]	IR01MWI-3[g], IR01MW43A[g], TW033, TW032, TW031, PZ150E, TW016, TW013, TW042, and TW041	NA	NA	NA

Notes:

(a) References for the aquatic evaluation criteria are included in Appendix M.

(b) Nearshore wells are located within 250 feet of the Parcel E-2 shoreline. Most nearshore wells are located within the tidally influenced zone (where the maximum tidal fluctuation exceeds 0.10 foot in the A-aquifer based on data collected during the Phase III groundwater data gaps investigation [TtEMI, 2004a]).

(c) Temporary wells (denoted by the prefix TW in the table above) were installed as part of a data gaps investigation and are not available for long-term monitoring; however, they were included in this table to guide well placement during the development of the groundwater remedial action monitoring plan.

(d) Attenuation factor assigned based on nomographs developed specifically for HPS groundwater (see Appendix M, Attachment M-1).

(e) Value calculated by multiplying the aquatic evaluation criterion by the attenuation factor.

(f) Inland monitoring wells are located more than 250 feet inland from the Parcel E-2 shoreline.

(g) Wells IR01MWI-3 and IR01MW43A were decommissioned prior to the PCB Hot Spot Area removal action; these wells were replaced with IR01MW60A and IR01MW64A, respectively.

(h) Criterion shown applies to hydrogen sulfide, not total sulfide

(i) Criterion is significantly lower (at least 10 times less) than reporting limit for current, routinely used analytical methods

(j) Value shown has been HGAL-adjusted and is applicable to the A-aquifer.

(k) Range of values shown; total TPH aquatic criteria assigned as a function of distance from shoreline; the source of these criteria is the "Final New Preliminary Screening Criteria and Petroleum Program Strategy, Hunters Point Shipyard, San Francisco, California" (Shaw Environmental, Inc., 2007)

µg/L micrograms per liter

COEPCs chemicals of potential ecological concern

NA not applicable

PCBs polychlorinated biphenyls

TPH total petroleum hydrocarbons

31	Trigger levels	Section 2.5.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix M, Section M2.5, pages M-2-5 through M-2-8. Record No. 4237.

wells. All A-aquifer wells, except well IR01MWI-9, within the TIZ are part of the well network used in the BGMP (Shaw Environmental, Inc., 2007).

The data evaluation was supplemented by data from a group of temporary wells and piezometers that were installed mainly within the TIZ, as well and in the northern inland portion of the Panhandle Area, adjacent to the western side of the Landfill Area (Figure M-1). These temporary wells were installed and sampled in early 2008 as part of a data gaps investigation conducted along the Parcel E-2 shoreline. Samples from the temporary wells were analyzed for un-ionized ammonia, metals, PCBs, and TPH.

The screening evaluation provided in Section M3 conservatively identifies COPECs that warrant further evaluation and monitoring to assess the potential effects on San Francisco Bay. For COPECs with apparently persistent and definable source areas, additional screening was performed against trigger levels developed for HPS to further evaluate the potential effects on the bay.

M2.5. TRIGGER LEVEL EVALUATION

The nearest surface water body to Parcel E-2, where CTR is applicable, is San Francisco Bay. Elevated concentrations of chemicals in groundwater at Parcel E-2 could affect surface water quality as contaminated groundwater migrates and discharges to the bay.

To address the potential effects of groundwater discharging to the bay, the Navy developed trigger levels for various inland locations to ensure surface water quality criteria are not exceeded where groundwater at Parcel E-2 discharges to the bay. The trigger levels are intended to serve as conservative comparison values for groundwater to indicate when additional evaluation may be necessary. The development of trigger levels was initially performed for Parcel D evaluations (Parcel D FS; SulTech, 2007). The trigger level evaluation methodology has also been applied at Parcel C (Parcel C FS; SulTech, 2008). The development of the trigger levels is discussed in Attachment M1.

Site-specific data for select COPECs were evaluated against trigger levels, where appropriate, to determine the need to address these COPECs in the remedial design. The trigger level evaluation was originally developed to evaluate inland plume source areas. No definable plumes, however, are present at Parcel E-2, thus the trigger level evaluation was applied to chemicals exhibiting definable source areas with potentially persistent concentrations.

The trigger level evaluation, including the theoretical assumptions behind the evaluation and the evaluation methodology, are described in the following subsections.

M2.5.1. Trigger Level Evaluation Theory

At HPS, attenuation of chemical and metal concentrations occurs in groundwater as it migrates through three different zones: (1) the area of groundwater transport to the TMZ, which includes the TIZ, (2) the TMZ, and (3) the bay discharge zone.

As chemicals migrate from an inland source area through soil and groundwater, they are subjected to physical, chemical, and biological processes that tend to reduce their concentrations. These processes include sorption of chemicals to soil particles, volatilization, hydrodynamic dispersion and molecular diffusion, and chemical and biological transformations. The magnitudes by which chemical concentrations are reduced depend on a number of physical, chemical, and biological factors, including groundwater flow gradients, which may vary across Parcel E-2. For example, as groundwater moves through the TIZ and approaches the TMZ, the tidal influence would be expected to decrease the groundwater flow gradient, and consequently increase the residence time during which chemical concentrations would be reduced through physical, chemical, and biological processes. For simplicity and conservatism, the trigger level evaluation presented herein does not account for potential reductions in groundwater flow gradients within the TIZ and further study would be needed to evaluate its potential effect. Such studies are not needed to support the Parcel E-2 RI/FS, but may be considered during the remedial design.

Additional reduction in chemical concentrations takes place in the TMZ near the shoreline. The TMZ is where bay waters move inland through the aquifer, mixing with groundwater. The net discharge of groundwater may not be changed by tidal influence, but rising tides introduce surface water into the aquifer so that concentrations of chemicals in groundwater that discharge during low tide are reduced by mixing of bay water and groundwater in the aquifer in this zone.

Finally, as groundwater discharges to the bay, concentrations of chemicals are further reduced due to dilution with bay water.

The processes described above needed to be accounted for to compare groundwater concentrations originating from inland source areas with aquatic evaluation criteria. To make this comparison, the Navy developed HPS-specific trigger levels. The development of trigger levels takes an extremely conservative approach because it does not account for attenuation in the TMZ or attenuation from discharge to the surface water body. Only hydrodynamic dispersion in the inland contaminant transport zone is used to establish attenuation factors (AFs), which are used to calculate the trigger levels. Therefore, the resulting trigger levels likely overestimate the potential for effects from COPECs migrating in groundwater to San Francisco Bay.

For the purposes of this evaluation, and to maintain consistency with past HPS trigger level evaluations (Parcels D and C), the AFs for the TMZ and for the bay discharge zone were assumed to be 1 (no attenuation). These assumptions provide a highly conservative approach that conforms to agreements made with regulatory agencies.

As part of the development of the Revised Parcel D FS Report (SulTech, 2007), the Navy developed a modeling approach to provide conservative estimates of the maximum concentrations in groundwater expected at the point of discharge (San Francisco Bay). The analytical solute transport model BIOSCREEN (EPA, 1997) was used to predict these maximum discharge concentrations and to then

calculate AFs. The summary of the modeling evaluation from the Revised Parcel D FS is included as Attachment M1.

The modeling confirmed that the amount of attenuation caused by hydrodynamic dispersion during groundwater transport can be significant at HPS, and that the greater the travel distance to the ecological receptor, the greater the AF. Results of the groundwater modeling effort were nomographs (Attachment M1, Figure G-1) that assign specific AFs for any chemical or metal found in HPS groundwater based on plume width and distance to the aquatic wildlife in San Francisco Bay. The nomograph information presented in Attachment M1 was used to assign AFs and calculate trigger levels for this evaluation.

M2.5.2. Trigger Level Evaluation Methodology

The approach for assigning AFs and trigger levels and evaluating COPEC against trigger levels for Parcel E-2 is presented below.

1. As established in the nature and extent evaluation for groundwater at HPS (Section 5 of the RI/FS Report), most contamination in Parcel E-2 groundwater is not predictably distributed, contiguous, or temporally consistent. This conclusion is especially true in the Landfill Area, where discrete sources of contamination can be widespread, and where concentrations of chemicals at a single location can fluctuate significantly over time. For the Landfill Area, chemical data within A-aquifer wells located inland of the TIZ and other nearshore areas within 250 feet of the shoreline (Figure M-1) were not considered during selection of AFs for calculation of aquatic trigger levels. This decision was made because the landfill is a know source of a variety of inconsistently distributed chemicals; as a result, an assessment of attenuation within the landfill waste would make the evaluation complex and unreliable. Additionally, the trigger level evaluation was not meant to be applied to migration of groundwater chemicals through waste. The nomographs developed to estimate AFs for groundwater at HPS were based on groundwater flow and chemical transport through HPS soils (uniform porous media), not landfill waste.

   For these reasons, the Landfill Area evaluation was focused on the TIZ wells (and other wells within 250 feet of the shoreline) because they are more indicative of potential chemical migration to the bay than inland wells. Within the TIZ and other nearshore areas, the nomographs specify AFs of 1 at small distances from the shoreline (less than 250 feet), so the evaluation performed during the initial screening evaluation (against saltwater aquatic evaluation criteria) remains unchanged. In other words, results for trigger level evaluation of the nearshore areas match the screening evaluation results because little to no attenuation is assumed within 250 feet of the shoreline, based on the assumed attenuation dynamics along the shoreline.

2. In the Panhandle and East Adjacent Areas, chemical data within all A-aquifer wells were considered during selection of AFs for calculation of aquatic trigger levels. As with the Landfill Area, chemical data within the TIZ and other nearshore areas within 250 feet of the shoreline were not reevaluated because the nomographs specify AFs of 1 for small distances from the shoreline, which produces an evaluation corresponding to the initial screening evaluation (aquatic evaluation criteria). For chemical data farther inland than the TIZ and other nearshore areas, AFs were assigned to groundwater concentrations measured in areas where detections are persistent and constitute a definable source area.

3. Because no discrete contamination plumes are present in Parcel E-2 groundwater, the source area width for each chemical was estimated using the following methodology:
    a. If contamination is persistent and limited to a single well, the plume width was assumed to be 40 feet (the narrowest plume width represented by the nomographs). Also, the centerline of the plume was assumed to be perpendicular to the shoreline and passing through the center of the well.
    b. If contamination is present in multiple adjacent wells extending a long distance (greater than 360 feet) along the shoreline, the plume width was assumed to be 360 feet, which corresponds to the widest plume width represented by the nomographs. Also, the center of the plume was assumed to be perpendicular to the shoreline and passing through the well with the highest and most persistent detected concentrations.
    c. If contamination is present in multiple wells (more than one) adjacent to each other, but is limited to a source area width of less than 360 feet, then the plume width is assumed to be the distance between the wells at the edges of the contamination, plus an additional 20 feet on either side. Also, the center of the plume was assumed to be perpendicular to the shoreline and passing through the well with the highest and most persistent detected concentrations.
4. The chemical migration distance was measured as the distance from the source area to the TMZ, which was conservatively assumed to be located 50 feet inland from the shoreline. As stated above, an AF of 1 was assumed for the area between the TMZ boundary and the bay shoreline; therefore, that distance was not included in the measurement of the transport zone, where attenuation is assumed to occur.
5. Using the nomograph curve for the chosen source area width, the AF was selected by finding the intercept of the migration distance along the curve and reading off the associated AF along the y (vertical) axis.
6. Once the AF was determined, it was rounded down to the nearest whole number to produce a conservative usable AF.
7. The trigger level for each defined chemical or metal source area was then calculated by multiplying the AF by the applicable aquatic evaluation criterion.
8. Groundwater data in the identified source area were then rescreened against the associated trigger level, and results were evaluated to determine if the source area could potentially pose negative effects to surface water quality and aquatic wildlife.

The approach for assigning attenuation factors described above is consistent with the approach used to evaluate other parcels at HPS, but it has been adapted for use with Parcel E-2 data. The only notable adaptation to the previously applied HPS trigger level methodology is that a qualitative method was used for assigning source area widths for Parcel E-2, whereas at other parcels defined plume widths were used.

The trigger level evaluation is considered overly conservative because trigger levels only account for hydrodynamic dispersion in groundwater transport and ignore attenuation in the TMZ or attenuation from discharge to the surface water body. For this reason, trigger levels are only intended to serve as comparison values for groundwater to COPECs in groundwater that may pose a risk to aquatic organisms. During future remedial design efforts for Parcel E-2, the Navy may choose to perform more quantitative analyses and modeling to refine the identification of COPECs and specify risk-based remediation goals for groundwater affecting surface water.

32	**Nonradioactive chemicals in soil**	Section 2.5.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Figures 4-4, 4-5, 4-6, 4-7, 4-17, 4-19, 4-22, 4-23, 4-24, 4-38, 4-43, 4-44, 4-56, and 4-69. Record No. 4237.

Evaluation Criteria Summary	mg/kg
HPAL	8.99
SDGI Industrial Criteria	750
EPA Region 9 Industrial PRG 2004	800
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**800**

IR01B368
9,300 J2 mg/kg
2 ft bgs

IR01B367
1,600 J3 mg/kg
2 ft bgs

IR01B366
810 J2 mg/kg
2 ft bgs

IR01B369
6,500 J2 mg/kg
2 ft bgs

IR01SW2
6,270 mg/kg
0 ft bgs

GRID 86 SIDEWALL
2,000 mg/kg
1 ft bgs

GRID 71
8,600 mg/kg
0 ft bgs

GRID 70 SIDEWALL
1,000 mg/kg
0 ft bgs

GRID 87
1,000 mg/kg
2 ft bgs

GRID 96
1,700 mg/kg
2 ft bgs

GRID 68/69 SIDE2WALL
1,500 mg/kg
0.5 ft bgs

GRID 91
1,000 mg/kg
0 ft bgs

GRID 94
1,800 mg/kg
0.5 ft bgs

GRID 92/93 SIDE2WALL
1,600 mg/kg
1 ft bgs

GRID 165 SIDEWALL
9,700 mg/kg
1.3 ft bgs

IR04B030
6,915.16 mg/kg
1 ft bgs

IR04B047
11,215.9 mg/kg
1 ft bgs

IR01TA06B
5,760 mg/kg
1 ft bgs

IR04B025
2,412.29 mg/kg
1.7 ft bgs

IR04B015
3,165.72 mg/kg
1 ft bgs

IR04B028
4,179.44 mg/kg
1 ft bgs

IR04MW13A
4,915.46 mg/kg
1.7 ft bgs

IR12B042
1,500 J24 mg/kg
0.7 ft bgs

IR04B017
9,001.96 mg/kg
1.7 ft bgs

N

200 0 200

Scale in Feet

- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

Results are shown for locations where data have exceeded the RIEC.

EPA = Environmental Protection Agency
ESL = environmental screening level
ft bgs = feet below ground surface
HPAL = Hunters Point ambient level
J = estimated value
mg/kg = milligram per kilogram
NE = not established
PCB = polychlorinated biphenyl
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation
UCSF = University of California, San Francisco

Numbers associated with qualifiers are further defined in Appendix J.

IR01B275
150 J mg/kg
3.93 ft bgs
- Location ID
- Concentration and Qualifier
- Depth

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

FIGURE 4-4

LEAD IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	0.27
EPA Region 9 Industrial PRG 2004	0.19
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	0.31
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.19**

IR01B390
<2.1 mg/kg
1 ft bgs

IR01B394
<0.24 mg/kg
1 ft bgs

IR01SS350
<0.21 mg/kg
0.5 ft bgs

GRID 165 SIDEWALL
0.39 mg/kg
1.3 ft bgs

GRID 86 SIDEWALL
0.55 mg/kg
1 ft bgs

GRID 110 SIDEWALL
3.2 mg/kg
1.8 ft bgs

200 0 200
Scale in Feet

- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

Results are shown for locations where data have exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.

EPA = Environmental Protection Agency
ESL = environmental screening level
ft bgs = feet below ground surface
HPAL = Hunters Point ambient level
mg/kg = milligram per kilogram
NE = not established
PCB = polychlorinated biphenyl
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation
UCSF = University of California, San Francisco

IR01B275
150 J mg/kg
3.93 ft bgs
— Location ID
— Concentration and Qualifier
— Depth

IR04B025
<37 mg/kg
2.0 ft bgs
— Location ID
— Reporting Limit
— Depth

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

FIGURE 4-5

HEPTACHLOR EPOXIDE IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1
EPA Region 9 Industrial PRG 2004	0.74
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.74**

IR01MW02B
<1.7 mg/kg
3.64 ft bgs

IR01MW03A
<0.9 mg/kg
0.68 ft bgs

IR01MW16A
<0.83 mg/kg
1.25 ft bgs

IR01MW05A
<1.7 mg/kg
0.81 ft bgs

IR01SS351
<0.9 mg/kg
0.5 ft bgs

IR01SS350
1.4 mg/kg
0.5 ft bgs

IR04B002
<0.89 mg/kg
1.25 ft bgs

IR04B007
<0.82 mg/kg
1.75 ft bgs

IR01B386
12 mg/kg
1 ft bgs

IR01B029
<0.86 mg/kg
1.25 ft bgs

IR01B394
0.82 mg/kg
1 ft bgs

IR01B373
0.9 mg/kg
2 ft bgs

IR01MW53B
<0.84 mg/kg
1.25 ft bgs

IR01B390
17 mg/kg
2 ft bgs

IR01MW38A
<0.88 mg/kg
1 ft bgs

IR04B030
8.89 mg/kg
1.25 ft bgs

IR04B047
2.62 mg/kg
1.25 ft bgs

IR04B028
3.67 mg/kg
1.25 ft bgs

IR01TA06B
<17 mg/kg
1 ft bgs

IR01B374
14 mg/kg
1 ft bgs

IR01B372
20 mg/kg
1 ft bgs

IR04B025
0.983 mg/kg
1.75 ft bgs

IR04MW13A
25.1 mg/kg
1.75 ft bgs

IR04B015
14.3 mg/kg
1.25 ft bgs

IR01B368
0.78 mg/kg
2 ft bgs

IR12B042
37 mg/kg
0.77 ft bgs

IR04B017
2.78 mg/kg
1.75 ft bgs

IR12B041
26 mg/kg
0.72 ft bgs

IR12B038
1.3 mg/kg
1.3 ft bgs

IR12SS19
2.35 mg/kg
0 ft bgs

IR02TA11A
1.3 mg/kg
1.56 ft bgs

IR12B037
1.4 mg/kg
0.55 ft bgs

GRID 94
0.84 mg/kg
0.5 ft bgs

See Figure 4-7
For PCB Hot Spot Area Detail

200 0 200
Scale in Feet

- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

Results are shown for locations where data have exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.

EPA = Environmental Protection Agency
ESL = environmental screening level
ft bgs = feet below ground surface
HPAL = Hunters Point ambient level
mg/kg = milligram per kilogram
NE = not established
PCB = polychlorinated biphenyl
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation
UCSF = University of California, San Francisco

IR01B275
150 J mg/kg
3.93 ft bgs
— Location ID
— Concentration and Qualifier
— Depth

IR04B025
<37 mg/kg
2.0 ft bgs
— Location ID
— Reporting Limit
— Depth

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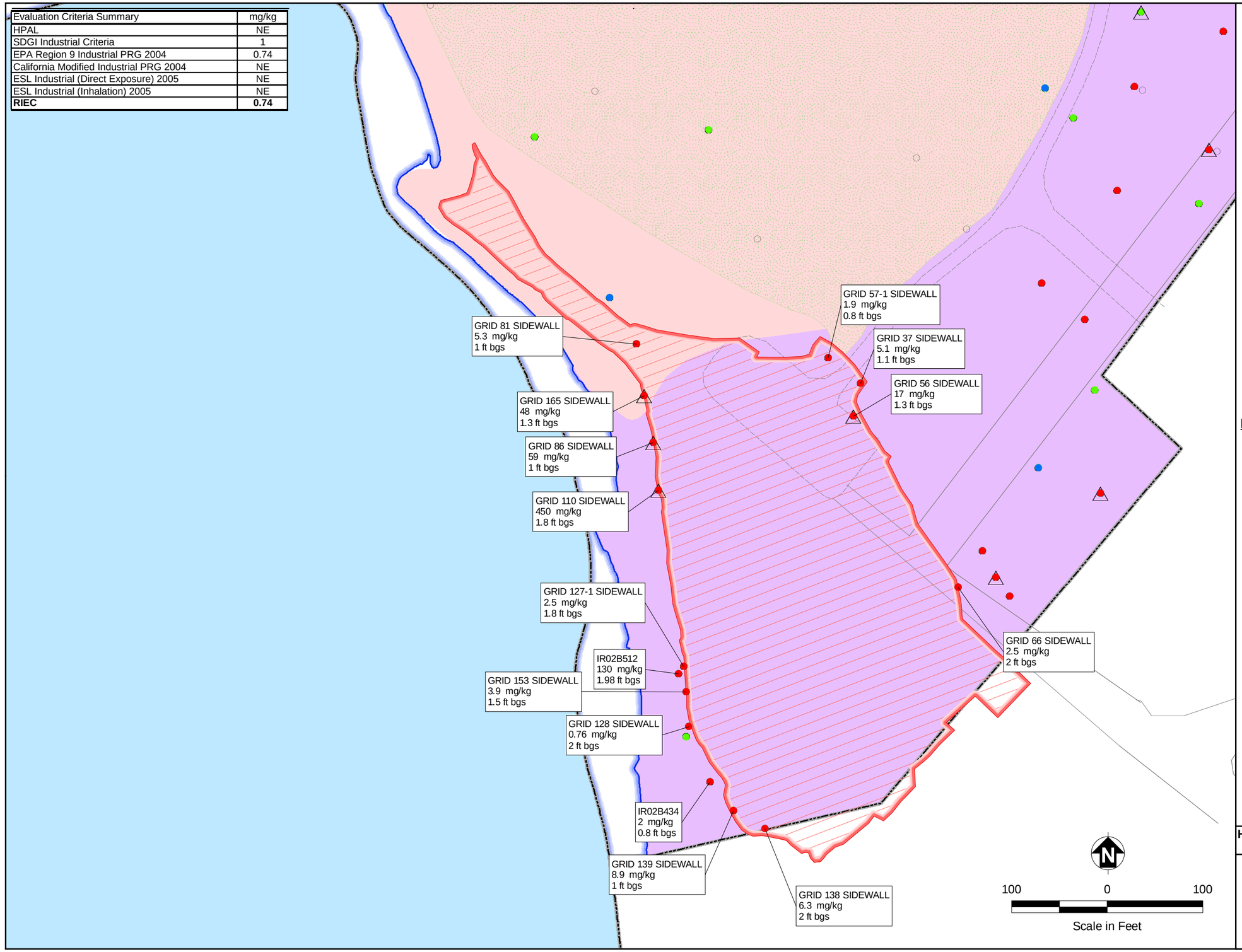
U.S. Department of the Navy, BRAC PMO West, San Diego, California

FIGURE 4-6

TOTAL PCBS (HIGH RISK) IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1
EPA Region 9 Industrial PRG 2004	0.74
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.74**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Landfill Area
- East Adjacent Area
- Shoreline Area
- San Francisco Bay

Notes:

[a] The post-excavation boundary in the PCB Hot Spot Area is consistent with information presented in final removal action completion report (Tetra Tech EC Inc., 2007a).

Results are shown for locations where data have exceeded the RIEC.

EPA = Environmental Protection Agency
ESL = environmental screening level
ft bgs = feet below ground surface
HPAL = Hunters Point ambient level
mg/kg = milligram per kilogram
NE = not established
PCB = polychlorinated biphenyl
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

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

FIGURE 4-7

TOTAL PCBS (HIGH RISK)
PCB HOT SPOT AREA
IN 0 - 2' SOIL
Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	124.3
SDGI Industrial Criteria	NE
EPA Region 9 Industrial PRG 2004	41,000
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	38,000
ESL Industrial (Inhalation) 2005	NE
RIEC	**38,000**

IR01B018G
167,000 mg/kg
8.75 ft bgs

IR01B021
42,200 mg/kg
8.75 ft bgs

IR01B021A
175,000 mg/kg
5.75 ft bgs

200 0 200
Scale in Feet

- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

Results are shown for locations where data have exceeded the RIEC.

EPA = Environmental Protection Agency
ESL = environmental screening level
ft bgs = feet below ground surface
HPAL = Hunters Point ambient level
mg/kg = milligram per kilogram
NE = not established
PCB = polychlorinated biphenyl
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation
UCSF = University of California, San Francisco

Numbers associated with qualifiers are further defined in Appendix J.

IR01B275
150 J mg/kg
3.93 ft bgs
- Location ID
- Concentration and Qualifier
- Depth

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FIGURE 4-17

COPPER IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	8.99
SDGI Industrial Criteria	750
EPA Region 9 Industrial PRG 2004	800
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**800**

IR01MW03A
869 mg/kg
5.68 ft bgs

IR01MW16A
1,020 mg/kg
8.75 ft bgs

IR01B029
3,840 mg/kg
8.75 ft bgs

IR72B037
893 mg/kg
4.04 ft bgs

IR01B021A
3,720 mg/kg
5.75 ft bgs

IR01B021
2,250 mg/kg
8.75 ft bgs

IR04B026
813.75 mg/kg
4.22 ft bgs

IR04B020
113,153 mg/kg
4.16 ft/bgs

IR04B025
255,684 mg/kg
3.75 ft bgs

IR01TA07A
1,540 mg/kg
4.19 ft bgs

IR04B019
5,565.2 mg/kg
4.75 ft bgs

IR01TA07B
2,150 mg/kg
3.93 ft bgs

GRID 177 SIDEWALL
1,800 mg/kg
6 ft bgs

GRID 172 SIDEWALL
1,300 mg/kg
2.9 ft bgs

GRID 174 SIDEWALL
1,400 J mg/kg
3 ft bgs

GRID 170 SIDEWALL
2,200 J mg/kg
3 ft bgs

GRID 85 SIDEWALL
1,200 J mg/kg
3 ft bgs

GRID 167 SIDEWALL
930 mg/kg
4.6 ft bgs

GRID 59-1 SIDEWALL
840 mg/kg
5 ft bgs

GRID 81 SIDEWALL
930 J mg/kg
5.9 ft bgs

IR01SH033
840 J3 mg/kg
10 ft bgs

GRID 86 SIDEWALL
9,300 J mg/kg
7 ft bgs

GRID 110 SIDEWALL
950 mg/kg
6 ft bgs

GRID 109 SIDEWALL
1,000 mg/kg
2.5 ft bgs

IR01MW58A
4,740 mg/kg
6.25 ft bgs

MS-12A
1,900 mg/kg
7.5 ft bgs

GRID 59 SIDEWALL
1,900 mg/kg
3 ft bgs

GRID 60
5,400 mg/kg
3 ft bgs

MS-15
940 mg/kg
10 ft bgs

MS-14
4,500 mg/kg
7.5 ft bgs

MS-13B(1)
1,900 mg/kg
2.5 ft bgs

MS-09
1,000 mg/kg
5 ft bgs

MS-08
5,600 mg/kg
7.5 ft bgs

MS-07A
3,000 mg/kg
5 ft bgs

200 0 200
Scale in Feet

- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

Results are shown for locations where data have exceeded the RIEC.

EPA = Environmental Protection Agency
ESL = environmental screening level
ft bgs = feet below ground surface
HPAL = Hunters Point ambient level
J = estimated value
mg/kg = milligram per kilogram
NE = not established
PCB = polychlorinated biphenyl
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation
UCSF = University of California, San Francisco

Numbers associated with qualifiers are further defined in Appendix J.

IR01B275
150 J mg/kg
3.93 ft bgs
- Location ID
- Concentration and Qualifier
- Depth

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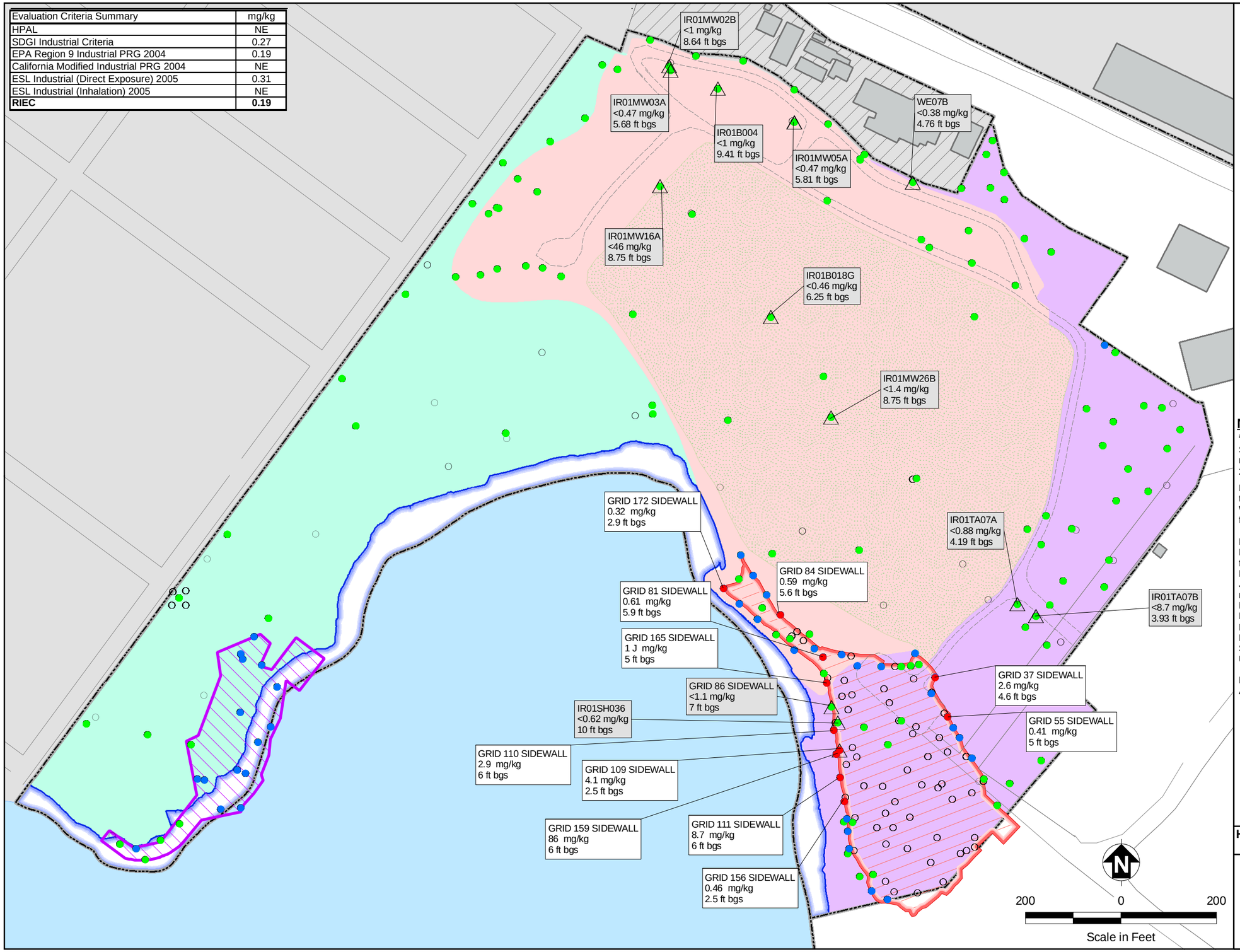
U.S. Department of the Navy, BRAC PMO West, San Diego, California

FIGURE 4-19

LEAD IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	0.27
EPA Region 9 Industrial PRG 2004	0.19
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	0.31
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.19**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

Results are shown for locations where data have exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.

EPA = Environmental Protection Agency
ESL = environmental screening level
ft bgs = feet below ground surface
HPAL = Hunters Point ambient level
J = estimated value
mg/kg = milligram per kilogram
NE = not established
PCB = polychlorinated biphenyl
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation
UCSF = University of California, San Francisco

Numbers associated with qualifiers are further defined in Appendix J.

IR01B275
150 J mg/kg
3.93 ft bgs
— Location ID
— Concentration and Qualifier
— Depth

IR04B025
<37 mg/kg
2.0 ft bgs
— Location ID
— Reporting Limit
— Depth

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FIGURE 4-22

HEPTACHLOR EPOXIDE IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1
EPA Region 9 Industrial PRG 2004	0.74
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.74**

IR01MW02B
<10 mg/kg
8.64 ft bgs

IR01B004
24 mg/kg
9.41 ft bgs

WE20B
1.8 mg/kg
10 ft bgs

IR01MW03A
<4.7 mg/kg
5.68 ft bgs

IR01MW05A
370 mg/kg
8.31 ft bgs

IR01MW05A
<4.7 mg/kg
5.81 ft bgs

WE07B
7.2 mg/kg
4.76 ft bgs

IR01MW31A
2.3 mg/kg
8.75 ft bgs

WE18C
1.8 mg/kg
4 ft bgs

IR01MW16A
<460 mg/kg
8.75 ft bgs

IR01B029
1.2 mg/kg
3.75 ft bgs

IR01B029
<0.98 mg/kg
6.25 ft bgs

IR01B018G
9.3 mg/kg
6.25 ft bgs

WE10
0.93 mg/kg
4.76 ft bgs

IR01B011
1.5 mg/kg
8.75 ft bgs

IR01B028
<0.95 mg/kg
6.25 ft bgs

IR01MW38A
<0.95 mg/kg
3.5 ft bgs

IR01MW26B
<14 mg/kg
8.75 ft bgs

IR01MW367A
1.8 mg/kg
2.77 ft bgs

IR01MW53B
<1.6 mg/kg
6.25 ft bgs

IR04B016
1.47 mg/kg
7.39 ft bgs

IR01B275
5.9 mg/kg
2.75 ft bgs

IR04B025
3.41 mg/kg
3.75 ft bgs

IR04B019
11.5 mg/kg
2.75 ft bgs

IR01TA07B
150 mg/kg
3.93 ft bgs

IR01TA07A
75 mg/kg
4.19 ft bgs

IR01B024
<0.94 mg/kg
8.75 ft bgs

IR01B024
3.4 mg/kg
6.25 ft bgs

MS-13B(1)
2.1 mg/kg
5 ft bgs

GRID 101
3.9 mg/kg
4.5 ft bgs

MS-09
1.04 mg/kg
5 ft bgs

GRID 99
1.01 mg/kg
5 ft bgs

See Figure 4-24
For PCB Hot Spot Area Detail

200 0 200
Scale in Feet

- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

Results are shown for locations where data have exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.

EPA = Environmental Protection Agency
ESL = environmental screening level
ft bgs = feet below ground surface
HPAL = Hunters Point ambient level
mg/kg = milligram per kilogram
NE = not established
PCB = polychlorinated biphenyl
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation
UCSF = University of California, San Francisco

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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FIGURE 4-23

TOTAL PCBS (HIGH RISK) IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1
EPA Region 9 Industrial PRG 2004	0.74
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.74**

GRID 174 SIDEWALL 18.8 mg/kg 3 ft bgs
GRID 85 SIDEWALL 1.83 mg/kg 3 ft bgs
GRID 81 SIDEWALL 51 mg/kg 5.9 ft bgs
GRID 84 SIDEWALL 14.9 mg/kg 3 ft bgs
GRID 59-1 SIDEWALL 19 mg/kg 8.1 ft bgs
GRID 177 SIDEWALL 2.35 mg/kg 6 ft bgs
GRID 83 BOTTOM 2 mg/kg 3.09 ft bgs
GRID 172 SIDEWALL 5.6 mg/kg 3.6 ft bgs
GRID 83 SIDEWALL 9.9 mg/kg 3 ft bgs
GRID 59 SIDEWALL 2.17 mg/kg 8.6 ft bgs
GRID 58 SIDEWALL 34 mg/kg 2.1 ft bgs
GRID 171 SIDEWALL 380 mg/kg 3 ft bgs
GRID 60 SIDEWALL 26 mg/kg 2.8 ft bgs
GRID 58-1 SIDEWALL 2.2 mg/kg 2.2 ft bgs
GRID 170 SIDEWALL 1.5 mg/kg 3 ft bgs
IR01TA08B 1.4 mg/kg 2.03 ft bgs
IR01TA08B <0.86 mg/kg 1.4 ft bgs
GRID 169 SIDEWALL 1.6 mg/kg 3 ft bgs
IR01SH030 9.3 mg/kg 10 ft bgs
GRID 37 SIDEWALL 200 mg/kg 4.6 ft bgs
GRID 82 BOTTOM 11 mg/kg 6.61 ft bgs
GRID 56 SIDEWALL 15 mg/kg 7.4 ft bgs
GRID 167 SIDEWALL 1.9 mg/kg 4.6 ft bgs
IR01SH033 8 mg/kg 10 ft bgs
GRID 56 BOTTOM 1.6 mg/kg 8 ft bgs
GRID 165 BOTTOM 19 mg/kg 6 ft bgs
GRID 77 BOTTOM 41 mg/kg 3 ft bgs
GRID 77 BOTTOM <2.3 mg/kg 8 ft bgs
GRID 165 SIDEWALL 99 mg/kg 5 ft bgs
GRID 55 SIDEWALL 51 mg/kg 5 ft bgs
GRID 86 BOTTOM <2.8 mg/kg 8.4 ft bgs
GRID 86 BOTTOM 43 mg/kg 8.4 ft bgs
GRID 86 SIDEWALL 1,500 mg/kg 7 ft bgs
GRID 54 SIDEWALL 24 mg/kg 3 ft bgs
IR01SH036 <87 mg/kg 10 ft bgs
IR01SH036 1,300 mg/kg 10 ft bgs
IR01B045 16.7 mg/kg 5.02 ft bgs
GRID 76 BOTTOM 22 mg/kg 8 ft bgs
GRID 110 SIDEWALL <26 mg/kg 6 ft bgs
GRID 110 SIDEWALL 400 mg/kg 6 ft bgs
GRID 64 SIDEWALL 1.8 mg/kg 2.9 ft bgs
GRID 109 BOTTOM 0.9 mg/kg 8 ft bgs
GRID 90 BOTTOM 1.7 mg/kg 5 ft bgs
GRID 109 SIDEWALL 640 mg/kg 2.5 ft bgs
GRID 65 SIDEWALL 1.8 mg/kg 3 ft bgs
GRID 159 SIDEWALL 12,000 mg/kg 6 ft bgs
GRID 65 BOTTOM 240 mg/kg 5.5 ft bgs
GRID 108 BOTTOM <2.9 mg/kg 10 ft bgs
GRID 108 BOTTOM 39 mg/kg 10 ft bgs
GRID 107 BOTTOM 4.3 mg/kg 6 ft bgs
GRID 66 BOTTOM 8.2 mg/kg 5.6 ft bgs
GRID 159 BOTTOM 950 mg/kg 7 ft bgs
GRID 74 BOTTOM 12 mg/kg 3 ft bgs
GRID 111 SIDEWALL 750 mg/kg 6 ft bgs
GRID 104 BOTTOM 3 mg/kg 4 ft bgs
GRID 105 BOTTOM 5.5 mg/kg 3 ft bgs
GRID 156 SIDEWALL 52 mg/kg 2.5 ft bgs
IR02B452 120 mg/kg 3.27 ft bgs
GRID 116 BOTTOM 0.75 mg/kg 3 ft bgs
GRID 112 BOTTOM 57 mg/kg 5 ft bgs
GRID 127-1 SIDEWALL 4.3 mg/kg 8 ft bgs
GRID 131 BOTTOM 1.07 mg/kg 9.34 ft bgs
IR02B512 220 mg/kg 2.98 ft bgs
IR02SH001 2.1 mg/kg 10 ft bgs
GRID 128 BOTTOM 6.2 mg/kg 7.75 ft bgs
GRID 130 BOTTOM 6.3 mg/kg 9.8 ft bgs
GRID 153 SIDEWALL 8 mg/kg 7 ft bgs
GRID 127 BOTTOM 35 mg/kg 3 ft bgs
IR02B434 0.82 mg/kg 2.3 ft bgs
GRID 139 SIDEWALL 9.8 mg/kg 8 ft bgs
GRID 138 SIDEWALL 21 mg/kg 6 ft bgs

100 0 100
Scale in Feet

- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Landfill Area
- East Adjacent Area
- Shoreline Area
- San Francisco Bay

Notes:

[a] The post-excavation boundary in the PCB Hot Spot Area is consistent with information presented in final removal action completion report (Tetra Tech EC Inc., 2007a).

Results are shown for locations where data have exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.

EPA = Environmental Protection Agency
ESL = environmental screening level
ft bgs = feet below ground surface
HPAL = Hunters Point ambient level
mg/kg = milligram per kilogram
NE = not established
PCB = polychlorinated biphenyl
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

IR01B275
150 J mg/kg
3.93 ft bgs
— Location ID
— Concentration and Qualifier
— Depth

IR04B025
<37 mg/kg
2.0 ft bgs
— Location ID
— Reporting Limit
— Depth

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FIGURE 4-24

TOTAL PCBS (HIGH RISK)
PCB HOTSPOT AREA
IN 2 - 10' SOIL
Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	NE
EPA Region 9 Industrial PRG 2004	NE
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**3,500**

IR01MW03A
4,200 mg/kg
6 ft bgs

IR01MW16A
4,600 mg/kg
9 ft bgs

IR01B011
11,360 mg/kg
9 ft bgs

IR01B019
5,223 mg/kg
8 ft bgs

GRID 172 SIDEWALL
4,380 mg/kg
3.6 ft bgs

IR01SH027
3,981 mg/kg
10 ft bgs

GRID 84 SIDEWALL
7,913 mg/kg
3 ft bgs

IR01B024
5,500 mg/kg
9 ft bgs

GRID 60 SIDEWALL
22,300 mg/kg
4.6 ft bgs

GRID 58-1 SIDEWALL
5,600 mg/kg
2.2 ft bgs

GRID 83 SIDEWALL
5,349 mg/kg
3 ft bgs

IR01TA07A
9,900 mg/kg
4 ft bgs

GRID 171 SIDEWALL
4,050 mg/kg
3 ft bgs

GRID 82 BOTTOM
4,901 mg/kg
6.61 ft bgs

GRID 165 BOTTOM
13,149 mg/kg
6 ft bgs

GRID 57-1 SIDEWALL
16,844 mg/kg
8 ft bgs

GRID 165 SIDEWALL
22,080 mg/kg
5 ft bgs

GRID 37 SIDEWALL
3,900 mg/kg
4.6 ft bgs

GRID 86 SIDEWALL
13,931 mg/kg
7 ft bgs

GRID 110 SIDEWALL
33,550 mg/kg
6 ft bgs

GRID 58 SIDEWALL
26,902 mg/kg
6 ft bgs

GRID 109 SIDEWALL
25,080 mg/kg
6.5 ft bgs

IR01B045
7,800 mg/kg
5.02 ft bgs

GRID 159 SIDEWALL
34,120 mg/kg
6 ft bgs

GRID 107 BOTTOM
5,460 mg/kg
6 ft bgs

GRID 111 SIDEWALL
20,271 mg/kg
6 ft bgs

IR02B512
3,900 mg/kg
2.98 ft bgs

GRID 156 SIDEWALL
12,001 mg/kg
7 ft bgs

GRID 153 SIDEWALL
18,102 mg/kg
7 ft bgs

GRID 128 BOTTOM
16,812 mg/kg
7.75 ft bgs

N

200 0 200

Scale in Feet

- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

Results are shown for locations where data have exceeded the RIEC.

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ESL = environmental screening level
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PCB = polychlorinated biphenyl
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation
UCSF = University of California, San Francisco

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

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FIGURE 4-38

TOTAL TPH IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	8.99
SDGI Industrial Criteria	750
EPA Region 9 Industrial PRG 2004	800
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	750
ESL Industrial (Inhalation) 2005	NE
RIEC	**800**

IR01B006
15,700 mg/kg
11.27 ft bgs

IR01MW18A
1,850 mg/kg
11.25 ft bgs

IR01B011
1,720 mg/kg
11.25 ft bgs

IR01MW26B
14,500 J3 mg/kg
21.25 ft bgs

IR01B021
2,070 mg/kg
21.25 ft bgs

IR04B025
24,600 mg/kg
11.25 ft bgs

IR01MW58A
991 mg/kg
16.25 ft bgs

MS-12A
3,200 mg/kg
15 ft bgs

IR01MW62A
1,150 mg/kg
11.25 ft bgs

MS-08
1,100 mg/kg
19.5 ft bgs

N

200 0 200

Scale in Feet

- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

Results are shown for locations where data have exceeded the RIEC.

EPA = Environmental Protection Agency
ESL = environmental screening level
ft bgs = feet below ground surface
HPAL = Hunters Point ambient level
J = estimated value
mg/kg = milligram per kilogram
NE = not established
PCB = polychlorinated biphenyl
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation
UCSF = University of California, San Francisco

Numbers associated with qualifiers are further defined in Appendix J.

IR01B275
150 J mg/kg
3.93 ft bgs
- Location ID
- Concentration and Qualifier
- Depth

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

FIGURE 4-43

LEAD IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1
EPA Region 9 Industrial PRG 2004	0.74
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.74**

IR01MW02B
<11 mg/kg
23.14 ft bgs

IR01B004
<0.92 mg/kg
4.41 ft bgs

IR01MW05A
0.88 mg/kg
26.81 ft bgs

WE20A
3.7 mg/kg
11 ft bgs

IR01MW03A
<1.1 mg/kg
25.68 ft bgs

IR01B006
5.45 mg/kg
11.27 ft bgs

WE19B
6.3 mg/kg
11 ft bgs

IR01B013
5.94 mg/kg
10.24 ft bgs

IR01B012
103.9 mg/kg
16.97 ft bgs

WE19A
12 mg/kg
16 ft bgs

WE18B
1.9 mg/kg
13 ft bgs

IR01MW16A
<87 mg/kg
11.25 ft bgs

IR01MW17B
2,540 mg/kg
11.25 ft bgs

IR01MW18A
2.43 mg/kg
11.25 ft bgs

WE17C
5.4 mg/kg
16 ft bgs

IR01B011
45.18 mg/kg
21.25 ft bgs

IR01MW38A
<1.7 mg/kg
19 ft bgs

IR01B019
32,000 mg/kg
16.25 ft bgs

IR01MW53B
<0.93 mg/kg
13.75 ft bgs

IR01MW26B
<25 mg/kg
21.25 ft bgs

TPBWE14
1.2 mg/kg
15.5 ft bgs

IR01B275
1.9 mg/kg
11.25 ft bgs

GRID 177 BOTTOM
16.8 mg/kg
10.5 ft bgs

IR01B024
16.2 mg/kg
16.25 ft bgs

IR01MW58A
<1 mg/kg
11.25 ft bgs

GRID 172 BOTTOM
2.79 mg/kg
10.5 ft bgs

GRID 173 BOTTOM
1.6 mg/kg
10.5 ft bgs

GRID 84 BOTTOM
6.9 mg/kg
10.5 ft bgs

GRID 171 BOTTOM
2.32 mg/kg
10.5 ft bgs

GRID 83 BOTTOM
14.2 mg/kg
10.5 ft bgs

IR01SH030
8.6 mg/kg
18 ft bgs

IR01MW63A
<0.92 mg/kg
11.25 ft bgs

IR01MW47B
0.84 mg/kg
26.82 ft bgs

GRID 61 BOTTOM
4.7 mg/kg
15.1 ft bgs

IR01MW44A
8.6 mg/kg
12.11 ft bgs

200 0 200
Scale in Feet

- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

Results are shown for locations where data have exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.

EPA = Environmental Protection Agency
ESL = environmental screening level
ft bgs = feet below ground surface
HPAL = Hunters Point ambient level
mg/kg = milligram per kilogram
NE = not established
PCB = polychlorinated biphenyl
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation
UCSF = University of California, San Francisco

Numbers associated with qualifiers are further defined in Appendix J.

IR01B275
150 J mg/kg
3.93 ft bgs
— Location ID
— Concentration and Qualifier
— Depth

IR04B025
<37 mg/kg
2.0 ft bgs
— Location ID
— Reporting Limit
— Depth

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

FIGURE 4-44

TOTAL PCBS (HIGH RISK) IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	NE
EPA Region 9 Industrial PRG 2004	NE
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**3,500**

IR01MW16A
4,000 mg/kg
11 ft bgs

IR01MW17B
3,925 mg/kg
11 ft bgs

IR01B019
9,740 mg/kg
11 ft bgs

IR01B011
9,360 mg/kg
11 ft bgs

GRID 177 BOTTOM
4,200 mg/kg
11 ft bgs

GRID 84 BOTTOM
4,411 mg/kg
11 ft bgs

IR01SH030
7,800 mg/kg
11 ft bgs

IR01MW63A
6,700 mg/kg
11 ft bgs

200 0 200
Scale in Feet

N

- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

Results are shown for locations where data have exceeded the RIEC.

EPA = Environmental Protection Agency
ESL = environmental screening level
ft bgs = feet below ground surface
HPAL = Hunters Point ambient level
mg/kg = milligram per kilogram
NE = not established
PCB = polychlorinated biphenyl
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation
UCSF = University of California, San Francisco

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

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

FIGURE 4-56

TOTAL TPH IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	NE
EPA Region 9 Industrial PRG 2004	NE
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**3,500**

IR72SS24
5,130 mg/kg
0 ft bgs

IR72SS22
83,500 mg/kg
0 ft bgs

IR72B037
6,900 mg/kg
1.04 ft bgs

IR01B368
7,000 mg/kg
2 ft bgs

IR01B366
5,600 mg/kg
2 ft bgs

IR01B369
3,900 mg/kg
2 ft bgs

GRID 57-1 SIDEWALL
4,000 mg/kg
0.8 ft bgs

IR12B042
23,000 mg/kg
0.77 ft bgs

GRID 37 SIDEWALL
3,600 mg/kg
1.1 ft bgs

GRID 139 SIDEWALL
4,584 mg/kg
1 ft bgs

N

200 0 200

Scale in Feet

- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

Results are shown for locations where data have exceeded the RIEC.

EPA = Environmental Protection Agency
ESL = environmental screening level
ft bgs = feet below ground surface
HPAL = Hunters Point ambient level
mg/kg = milligram per kilogram
NE = not established
PCB = polychlorinated biphenyl
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation
UCSF = University of California, San Francisco

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

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

FIGURE 4-69

TOTAL TPH IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

33	Groundwater	Section 2.5.3	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Figures 5-1, 5-5, 5-6, 5-16, 5-17, 5-24, 5-29, and 5-53. Record No. 4237.

Evaluation Criteria Summary	A-Aquifer ug/L	B-Aquifer ug/L
ESL - Drinking Water	NE	1
ESL - Non Drinking Water	1	NE
Surface Water Criteria	1	1
Federal MCL	NE	200
State MCL	NE	150
HGAL	NE	NE
RIEC	**1**	**1**

200 0 200

Scale in Feet

IR01MW63A

Date	Conc.
01/92	<10 UJ3
08/92	<10 U
03/01	NA
07/02	NA
09/02	NA
06/04	<10 U
09/04	<10 U
11/04	<10 U
03/05	<10 U
06/05	<10 U
09/05	<10 U
09/05	<10 U
06/06	18 J
06/06	<10 U
09/06	<10 U
12/06	12.3
02/07	9.5 J
05/07	22.3
08/07	18.4
10/07	12.2

IR01MWLF1A

Date	Conc.
07/04	<10 UJ3
09/04	<10 U
11/04	<10 U
03/05	<10 U
06/05	<10 U
09/05	<10 U
01/06	<10 U
03/06	<10 U
05/06	<10 U
09/06	<10 U
12/06	17.8
02/07	18
05/07	29.9
08/07	25.1
10/07	23.2

IR01MW31A

Date	Conc.
08/92	<10 U
08/92	<10 U
08/02	80
09/02	<3 U
09/02	<3 U
06/04	<10 U
09/04	<10 U
11/04	<10 U
03/05	<10 U
06/05	<10 U
09/05	<10 U
01/06	<10 U
03/06	<10 U
05/06	<10 U
08/06	<10 U
11/06	<10 U
11/06	5.6 J
02/07	<10 U
05/07	<10 U
08/07	<10 U
10/07	<10 U

IR01MW403B

Date	Conc.
07/04	<10 U
09/04	<10 U
12/04	<10 U
06/05	<10 U
09/05	<10 U
06/06	<10 U
08/06	<10 U
12/06	<10 U
05/07	<10 U
08/07	<10 U
10/07	5.8 J

IR01MWLF2A

Date	Conc.
07/04	<10 UJ3
09/04	<10 U
11/04	<10 U
03/05	<10 U
06/05	<10 U
09/05	<10 U
01/06	<10 U
03/06	<10 U
06/06	<10 U
08/06	<10 U
12/06	<10 U
02/07	<10 U
05/07	<10 U
08/07	<10 U
10/07	5.8 J

IR01MW05A

Date	Conc.
05/92	1.69
05/92	2.25
07/92	<10 U
08/92	<10 U
07/95	NA
07/95	NA
07/95	NA
07/95	NA
03/01	NA
08/02	40
09/02	<3 U
01/06	<10 U
03/06	<10 U
05/06	<10 U
08/06	<10 U
12/06	<10 U
02/07	<10 U
05/07	<10 U
08/07	<10 U
10/07	<10 U

IR01MW03A

Date	Conc.
05/91	<10 U
08/92	<10 U
08/92	<10 U
07/02	<10 U
09/02	<3 U
06/04	<10 UJ3
09/04	<10 U
11/04	<10 U
06/05	<10 U
09/05	<10 U
01/06	<10 U
03/06	<10 U
05/06	<10 U
08/06	<10 U
12/06	<10 U
02/07	5.3 J
05/07	<10 U
08/07	<10 U
10/07	<10 U

IR01MW02B

Date	Conc.
05/91	<10 U
05/91	<10 U
01/92	<10 U
08/92	<10 U
07/02	<3 U
09/02	<3 U
06/04	<10 U
08/04	<10 U
11/04	<10 U
06/05	<10 U
09/05	<10 U
01/06	<10 U
03/06	<10 U
05/06	<10 U
08/06	<10 U
12/06	<10 U
02/07	5.9 J
05/07	<10 U
08/07	<10 U
10/07	<10 U

IR01MW10A

Date	Conc.
09/04	<10 U
09/04	<10 U
11/04	<10 U
06/05	<10 U
09/05	<10 U
01/06	<10 U
03/06	<10 U
05/06	<10 U
08/06	<10 U
12/06	<10 U
02/07	6.5 J
05/07	<10 U
08/07	<10 U
10/07	<10 U

IR01MW09B

Date	Conc.
01/92	<10 UJ3
07/92	<10 U
08/92	<10 U
07/02	20
09/02	<3 U
06/04	<10 U
09/04	<10 U
11/04	<10 U
06/05	<10 U
09/05	<10 U
01/06	<10 U
03/06	<10 U
05/06	<10 U
08/06	<10 U
11/06	<10 U
02/07	5.9 J
02/07	<10 U
05/07	<10 U
08/07	<10 U
10/07	<10 U

IR01MW16A

Date	Conc.
05/92	1.41
08/92	11
07/02	<3 U
09/02	20

IR01MW18A

Date	Conc.
05/92	2.81 J5
05/92	1.12 J5
05/92	0.84 J5
07/92	<10 U
07/92	<10 U
08/92	<10 U
07/02	<3 U
07/02	<3 U
09/02	<3 U

IR01MW60A

Date	Conc.
05/07	<10 U
08/07	5.1 J
10/07	<10 U

IR01MWI-5

Date	Conc.
01/92	10
07/92	<10 U
07/92	<10 U
08/92	<10 U
07/02	10
07/02	10
09/02	9 J

IR01MWI 6

Date	Conc.
07/92	17
08/92	<10 U

IR01MW62A

Date	Conc.
01/92	23 J3
01/92	12 J3
08/92	<10 U
03/01	NA
03/01	NA
07/02	NA
09/02	NA
06/04	<10 U
09/04	<10 U
09/04	<10 U
11/04	<10 U
06/05	<10 U
09/05	<10 U
01/06	<10 U
03/06	<10 U
06/06	<10 U
09/06	<10 U
12/06	5.8 J
02/07	<10 UJ
05/07	<10 U
08/07	10
10/07	8.2 J

IR01MW48A

Date	Conc.
01/92	<10 UJ3
01/92	<10 UJ3
07/92	<10 U
08/92	<10 U
07/02	<10 U
09/02	9 J
06/04	<10 UJ3
09/04	<10 U
11/04	<10 U
03/05	<10 U
06/05	<10 U
09/05	<10 U
01/06	<10 U
03/06	<10 U
05/06	<10 U
08/06	<10 U
11/06	<10 U
03/07	<10 U
05/07	<10 U
08/07	<10 U
10/07	9.1 J

IR01MW38A

Date	Conc.
05/91	17
01/92	20
01/92	20
08/92	<10 U
04/01	NA
08/02	<3 U
09/02	10
06/04	<10 U
09/04	<10 U
11/04	<10 U
03/05	<10 U
06/05	<10 U
09/05	<10 U
01/06	<10 U
03/06	<10 U
05/06	<10 U
08/06	7 J
12/06	<10 U
02/07	12
05/07	6.9 J
08/07	7.8 J
10/07	8.5 J

IR01MW47B

Date	Conc.
01/92	<10 U
08/92	<10 U
06/04	<10 U
06/04	<10 U
09/04	<10 U
12/04	7.3 J
06/05	<10 U

IR01MWLF4B

Date	Conc.
07/04	<10 UJ3
09/04	<10 U
12/04	5.4 J
06/05	<10 U
09/05	<10 U
01/06	<10 U
03/06	<10 U
05/06	<10 U
08/06	<10 U
12/06	<10 U
02/07	<10 UJ
05/07	<10 U
10/07	<10 U

IR75MW05B, IR76MW13A, IR01MWLF2A, IR01MW02B, IR01MW03A, IR01MW05A, IR01MW403A, IR01MW403B, IR01MW16A, IR01MW17B, IR01MW31A, IR01MWLF1A, IR01MW18A, IR01MW07A, IR01MW10A, IR01MW11A, IR01MW12A, 809, IR72MW32A, IR04MW37A, IR01MW367A, IR01MW09B, IR04MW36A, IR04MW09A, IR04MW40A, IR04MW35A, IR01MW402A, IR01MWI-6, IR01MW48A, IR01MW53B, IR01MW38A, IR01MW26B, IR01MWI-5, IR01MWI-2, IR01MWI-9, IR01MWI-7, IR01MW401A, IR01MW58A, IR01MW60A, IR01MW366A, IR01MW366B, IR04MW18A, IR12MW21A, IR01MW42A, IR12MW14A, IR04MW31A, IR01MW400A, IR01MW63A, IR01MW62A, IR01MWI-8, IR01MW64A, IR01MW43A, IR01MWLF4B, IR01MW47B, PZ150E, PZ144E, PZ138F, PZ150D, PZ138E, PZ131F, IR01MWI-3, IR12MW19A, IR12MW13A, IR12MW17A, IR12MW11A, IR12MW12A, IR02MW87A, IR01MW44A, TW001–TW061, PZ150E, PZ144E, PZ138F, PZ150D, PZ138E, PZ131F

Reporting Limit Exceeds RIEC (for at least one sample)

A-aquifer Well

B-aquifer Well

Not Analyzed for Analyte

Analyte Not Detected

Analyte Exceeds Reporting Limit

Analyte Exceeds Criterion

Road

Gravel Road

Metal Slag Area (2007 excavation limit)[a]

PCB Hot Spot Area (2007 excavation limit)[a]

Limit of Landfill Cap

Parcel Boundary

Building

UCSF Compound

Landfill Area

Adjacent Area

Panhandle Area

Shoreline Area

San Francisco Bay

Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b). Soil removal in these areas (up to depths of 14 feet bgs) are expected to reduce groundwater concentrations (to be verified by ongoing monitoring).

Results are shown for locations where data has exceeded the RIEC. Red text indicates results that exceed the RIEC. Where results are shown as non-detect (<), the reporting limit follows.

bgs = below ground surface
Conc. = concentration
ESL = environmental screening level
HGAL = Hunters Point groundwater ambient level
J = estimated
MCL = Maximum Contaminant Level
NE = not established
PCB = polychlorinated biphenyl
RIEC = Remedial Investigation Evaluation Criterion
U = value was not detected above the reporting limit
UCSF = University of California, San Francisco
UJ = Analyte is considered not present above the level of the associated value; the associated value is considered quantitatively estimated.
µg/L = microgram per liter

Numbers associated with qualifiers are further defined in Appendix J.

Well ID → IR01MW60A (Date / Conc.: 05/07 527; 08/07 646; 10/07 633 J) ← Chemical Concentration (µg/L) and Qualifier

Sample Date (mm/yy) →

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Hunters Point Shipyard, San Francisco, California

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

FIGURE 5-1

CYANIDE IN GROUNDWATER

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	A-Aquifer ug/L	B-Aquifer ug/L
ESL - Drinking Water	NE	NE
ESL - Non Drinking Water	NE	NE
Surface Water Criteria	2	2
Federal MCL	NE	NE
State MCL	NE	NE
HGAL	NE	NE
RIEC	**2**	**2**

IR01MWI-9

Date	Conc.
03/01	78,200

IR01MWI-7

Date	Conc.
03/01	598,000

IR01MWI-8

Date	Conc.
03/01	1,510,000

IR01MW38A

Date	Conc.
04/01	10,600
08/02	<400 U
08/02	220 J3
09/02	1,300
09/02	140
06/04	<5,000 U
06/04	<1,000 U
09/04	11,700
09/04	<1,000 U
11/04	<11,800 U1
11/04	<1,000 U
03/05	<1,000 U
06/05	<1,000 U
09/05	<1,000 U
01/06	<1,000 U
03/06	<1,000 U
05/06	1,300
08/06	<1,000 U
12/06	<1,000 UJ
02/07	<1,000 U
05/07	<1,000 U
08/07	2,800
10/07	<1,200 U

IR01MW60A

Date	Conc.
05/07	850 J
08/07	2,500
10/07	900 J

IR01MWI-3

Date	Conc.
03/96	720
03/01	76,900
08/02	<400 U
08/02	30 J3
09/02	<400 U
09/02	<3 U
12/04	24,900
12/04	<1,000 U
03/05	<1,000 U

IR01MW53B

Date	Conc.
07/02	160,000
07/02	<40 UJ5
09/02	286,000
09/02	<3 U
06/04	148,000
06/04	<1,000 U
09/04	181,000
09/04	<1000 UJ5
12/04	251,000
12/04	<1,000 U
03/05	<1,000 U
06/05	<1,000 U
09/05	<1,000 U
09/05	<1,000 U
01/06	950 J
03/06	1,000
05/06	<1,000 U
08/06	<1,000 U
11/06	2,100
03/07	660 J
05/07	<1,000 U
08/07	<1,000 U
10/07	2,200 J

IR01MW48A

Date	Conc.
03/01	11,000
03/01	10,500
07/02	1,300
07/02	80 J3
09/02	2,000
09/02	50
06/04	24,700
06/04	740 J
09/04	13,800
09/04	1,300
11/04	28,300
11/04	<1,000 U
03/05	<1,000 U
06/05	620 J
09/05	<1,000 U
01/06	<1,000 U
03/06	920 J
05/06	<1,000 U
08/06	1,400
11/06	3,700
03/07	2,800
05/07	<1,000 U
08/07	1,100
10/07	3,200 J

IR01MW43A

Date	Conc.
03/96	6,900
03/01	7,000
07/02	3,000 J
09/02	1,900 J
06/04	<5,000 U
06/04	<1,000 U
06/04	11,300
06/04	3,700
11/04	45,300
11/04	1,100
03/05	2,800

IR01MW62A

Date	Conc.
03/01	2,400
07/02	<2,500 U
09/02	4,000

IR01MW47B

Date	Conc.
03/01	500
03/01	<200 U
07/02	<5,000 U
09/02	<400 U
06/04	<5,000 U
06/04	<1,000 U
06/04	<2,000 U
06/04	<1,000 U
09/04	12,400
09/04	<1,000 U
12/04	<5,000 U
12/04	<1,000 U
03/05	<1,000 U
06/05	<1,000 U

IR01MW64A

Date	Conc.
05/07	1,100
08/07	2,100
10/07	2,000

IR01MW44A

Date	Conc.
03/96	289,000
03/01	3,200
06/04	210,000
06/04	<1,000 U
09/04	16,100
09/04	1,500
12/04	37,000
12/04	<1,000 U
03/05	<1,000 U

Crisp Avenue

809

Reporting Limit Exceeds Aquatic Criterion (for at least one sample)
A-aquifer Well
B-aquifer Well
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds Criterion
Road
Gravel Road
Metal Slag Area (2007 excavation limit)[a]
PCB Hot Spot Area (2007 excavation limit)[a]
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
East Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property
−50'− Distance from Shoreline (in feet)

200 0 200
Scale in Feet

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b). Soil removal in these areas (up to depths of 14 feet bgs) are expected to reduce groundwater concentrations (to be verified by ongoing monitoring).

Results are shown for locations where data has exceeded the RIEC. Red text indicates results that exceed the RIEC. Where results are shown as non-detect (<), the reporting limit follows.

bgs = below ground surface
Conc. = concentration
ESL = environmental screening level
HGAL = Hunters Point groundwater ambient level
J = estimated
MCL = Maximum Contaminant Level
NE = not established
PCB = polychlorinated biphenyl
RIEC = Remedial Investigation Evaluation Criterion
U = value was not detected above the reporting limit
UCSF = University of California, San Francisco
UJ = Analyte is considered not present above the level of the associated value; the associated value is considered quantitatively estimated.
µg/L = microgram per liter

Numbers associated with qualifiers are further defined in Appendix J.

Well ID → IR01MW60A
Sample Date (mm/yy) → Date / Conc.
05/07 527
08/07 646
10/07 633 J
← Chemical Concentration (µg/L) and Qualifier

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

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

FIGURE 5-5

SULFIDE IN GROUNDWATER

Remedial Investigation/Feasibility Study for Parcel E-2

P:\2005_Projects\25-049_Navy_HPS_E-2_RI-FS\N_Maps&Drawings\GIS\Projects\Landfill\Section 4\Water\Anions\Sulfide_Wells.mxd

Evaluation Criteria Summary	A-Aquifer µg/L	B-Aquifer µg/L
Cal EPA Criterion	35	35
Basin Plan Annual Median	25	25
Basin Plan Maximum, Lower Bay	400	400
HGAL	NE	NE
RIEC	**25**	**25**

Crisp Avenue

SAN FRANCISCO BAY

809

IR01MW38A
Date	Conc.
08/02	281
09/02	29
06/04	237
09/04	27
11/04	113
03/05	140
06/05	100
09/05	105
01/06	106
03/06	169
05/06	118
08/06	144
12/06	88
02/07	214
05/07	111
08/07	7
10/07	88

TW025
Date	Conc.
03/08	236

TW055
Date	Conc.
03/08	63

TW010
Date	Conc.
03/08	83

TW009
Date	Conc.
03/08	163

TW011
Date	Conc.
03/08	1,348;1,522

TW024
Date	Conc.
03/08	285

TW007
Date	Conc.
03/08	65

TW023
Date	Conc.
03/08	188

TW049
Date	Conc.
03/08	105

TW045
Date	Conc.
03/08	33

TW002
Date	Conc.
03/08	250

TW003
Date	Conc.
03/08	2,953

TW001
Date	Conc.
03/08	95

TW053
Date	Conc.
03/08	30

TW032
Date	Conc.
03/08	30

TW039
Date	Conc.
03/08	26

TW057B
Date	Conc.
03/08	102

TW031
Date	Conc.
03/08	27;27

TW043
Date	Conc.
03/08	57

TW040
Date	Conc.
03/08	38;31

TW016
Date	Conc.
03/08	77

TW014
Date	Conc.
03/08	153

PZ150D
Date	Conc.
03/08	33

TW013
Date	Conc.
03/08	200

IR01MW48A
Date	Conc.
07/02	206
09/02	425
06/04	177
09/04	114
11/04	789
03/05	192
06/05	228
09/05	171
01/06	105
03/06	75
05/06	417
08/06	700
11/06	727
03/07	74
05/07	466
08/07	434
10/07	707

IR01MWI-3
Date	Conc.
08/02	28
09/02	34
12/04	9
03/05	16

IR01MW47B
Date	Conc.
06/04	14
09/04	128
12/04	104 J3
03/05	95
06/05	122

IR01MW43A
Date	Conc.
06/04	21
09/04	10
11/04	23
03/05	498

IR75MW05B, IR76MW13A, IR01MW02B, IR01MWLF2A, IR01MW03A, IR01MW05A, IR01MW403A, IR01MW403B, IR01MW16A, IR01MW31A, IR01MW17B, IR74MW01A, IR01MW07A, IR01MW10A, IR01MW11A, IR01MW12A, IR01MWLF1A, IR01MW18A, IR72MW32A, IR04MW37A, IR04MW36A, IR01MW367A, IR01MW09B, IR04MW09A, IR04MW40A, IR01MW402A, IR01MW53B, IR01MW48A, IR01MW26B, IR01MW38A, IR01MWI-5, IR01MWI-6, IR01MWI-2, IR04MW35A, IR01MWI-9, IR01MWI-7, IR01MW401A, IR01MW366A, IR01MW366B, IR12MW21A, IR12MW15A, IR01MW56A, IR01MW60A, IR01MWI-8, PZ150E, PZ138F, PZ144E, PZ150D, PZ138E, PZ131F, IR01MW42A, IR12MW14A, IR01MWLF4B, IR04MW31A, IR01MW400A, IR01MW43A, IR01MW64A, IR01MW47B, IR01MWLF4A, IR12MW19A, IR01MW63A, IR01MW62A, IR12MW13A, IR12MW17A, IR12MW11A, IR01MW44A, IR02MW87A, IR12MW12A

TW001, TW002, TW003, TW004, TW005, TW006, TW007, TW008, TW009, TW010, TW011, TW012, TW013, TW014, TW015, TW016, TW017, TW018, TW019, TW020, TW021, TW022, TW023, TW024, TW025, TW026B, TW027B, TW028B, TW029, TW030B, TW031, TW032, TW033, TW034, TW035, TW036, TW037, TW038, TW039, TW040, TW041, TW042, TW043, TW044, TW045, TW046, TW047, TW048, TW049, TW050, TW051, TW052, TW053, TW054, TW055, TW056, TW057B, TW058, TW059, TW060, TW061

250', 200', 150', 100', 50'

200 0 200
Scale in Feet

N

Reporting Limit Exceeds Aquatic Criterion (for at least one sample)
A-aquifer Well
B-aquifer Well
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds Criterion
Road
Gravel Road
Metal Slag Area (2007 excavation limit)[a]
PCB Hot Spot Area (2007 excavation limit)[a]
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property
-50'- Distance from Shoreline (in feet)

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b). Soil removal in these areas (up to depths of 14 feet bgs) are expected to reduce groundwater concentrations (to be verified by ongoing monitoring).

Results are shown for locations where data has exceeded the RIEC. Red text indicates results that exceed the RIEC. Where results are shown as non-detect (<), the reporting limit follows.

bgs = below ground surface
Conc. = concentration
EPA = Environmental Protection Agency
HGAL = Hunters Point groundwater ambient level
NE = not established
PCB = polychlorinated biphenyl
RIEC = Remedial Investigation Evaluation Criterion
UCSF = University of California, San Francisco
µg/L = microgram per liter

Well ID → IR01MW60A
Date	Conc.
05/07	527
08/07	646
10/07	633 J

Sample Date (mm/yy) ←
← Chemical Concentration (µg/L) and Qualifier

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

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

FIGURE 5-6

UN-IONIZED AMMONIA IN GROUNDWATER

Remedial Investigation/Feasibility Study for Parcel E-2

P:\2005_Projects\25-049_Navy_HPS_E-2_RI-FS\N_Maps&Drawings\GIS\Projects\Landfill\Section 4\Water\Unionized AmmoniaTI-wells.mxd

Evaluation Criteria Summary	A-Aquifer ug/L	B-Aquifer ug/L
ESL - Drinking Water	NE	3.1
ESL - Non Drinking Water	3.1	NE
Surface Water Criteria	3.1	3.1
Federal MCL	NE	1,300
State MCL	NE	1,300
HGAL	28.0	NE
RIEC	**28.0**	**3.1**

200 0 200

Scale in Feet

IR01MW02B

Date	Conc.
05/91	<7.3 U1
05/91	<7.9 U1
01/92	6.3
08/92	11.8
07/02	<8 U
09/02	<8 U
06/04	<5 U
08/04	3 J
11/04	<5 U
03/05	11.6
03/05	2.2 J
06/05	2 J
09/05	<5 U
01/06	1.5 J
03/06	5.8
05/06	1.4 J
08/06	<1.9 U
12/06	1.3 J
02/07	<2.2 U
05/07	<3.4 U
08/07	1.8 J
10/07	<5 U

IR01MW05A

Date	Conc.
05/92	<1.3 U
05/92	<1.3 U
07/92	1,240
08/92	3
07/95	<4.09 U1
07/95	<4.36 U1
07/95	466
07/95	<0.8 U
03/01	10 J
08/02	<8 U
09/02	<8 U
01/06	2.8 J
03/06	<2.5 U
05/06	1.7 J
08/06	<1.7 U
12/06	<5 U
02/07	<2.1 U
05/07	<5 U
08/07	<5 U
10/07	<5 U

IR01MW09B

Date	Conc.
01/92	3.2
07/92	<2 U1
08/92	<1.8 U
07/02	<5 U
09/02	8 J
06/04	<5 U
09/04	<5 U
11/04	<5 U
03/05	<5.4 U2
06/05	<5 U
09/05	<5 U
01/06	<5 U
03/06	<4.2 U
05/06	<5 U
08/06	<5 U
11/06	<5 U
02/07	<5 U
02/07	<5 U
05/07	<5 U
08/07	<1.1 U
10/07	<5 U

IR01MW03A

Date	Conc.
05/91	<6.5 U1
01/92	<4.3 U1
08/92	<1.8 U
08/92	40.9
03/01	5 J
07/02	48
09/02	<8 U
06/04	12.9
09/04	4.9 J
11/04	<5 U
03/05	1.6 J
06/05	2.4 J
09/05	<5 U
01/06	0.97 J
03/06	4 J
05/06	1.4 J
08/06	<1.1 U
12/06	<5 U
02/07	<1.1 U
05/07	<2.5 U
08/07	<5 U
10/07	<5 U

IR01MW16A

Date	Conc.
05/92	<1.3 U
07/92	<1.8 U
07/92	45.5 J3
08/92	<1.8 U
07/02	<8 U
09/02	<8 U

IR01MW17B

Date	Conc.
01/92	1.7
07/92	<3.6 U1
08/92	10.1

IR01MW18A

Date	Conc.
05/92	<1.3 U
05/92	<1.3 U
05/92	<1.3 U
07/92	579
07/92	<1.8 U
08/92	12.4
04/01	<2.5 U
07/02	<4 U
07/02	<4 U
09/02	<8 U

IR01MW366A

Date	Conc.
12/95	27.4
03/96	482
05/96	607
03/01	2,740
06/04	15,900
06/04	13,700
11/04	1,240
03/05	45.7
06/05	679
01/06	1,080
03/06	399
06/06	165
12/06	<5 U
03/07	<5 U
05/07	38.5

IR01MWI-2

Date	Conc.
01/92	<6.1 U1
07/92	399 J23
08/92	<5.4 U1
03/01	<1.5 U
08/02	<8 U
09/02	<8 U

TW004

Date	Conc.
03/08	1,580

TW005

Date	Conc.
03/08	31.1

TW019

Date	Conc.
03/08	57.5

TW020

Date	Conc.
03/08	41.4

TW045

Date	Conc.
03/08	224

TW018

Date	Conc.
03/08	41.6

IR01MWI-9

Date	Conc.
01/92	3.8
07/92	794 J23
08/92	<3.6 U1
08/92	<1.8 U
03/01	<2.5 U
07/02	<8 U
09/02	1.72 J

IR01MW62A

Date	Conc.
01/92	4.2
01/92	<1.6 U
07/92	940 J3
08/92	<1.8 U
03/01	<2.5 U
03/01	<2.5 U
07/02	<3.4 U1
09/02	2.06
06/04	<3.8 U1
09/04	<5 U
09/04	<5 U
11/04	<5 U
03/05	<6 U2
06/05	<5 U
09/05	<5 U
01/06	1.2 J
03/06	<4.6 UJ
06/06	<5 U
09/06	<5 U
12/06	<5 U
02/07	<3.5 U
05/07	<5 U
08/07	<2.6 U
10/07	1.3 J

IR01MW53B

Date	Conc.
05/91	<16 U1
01/92	10.7
08/92	<10.8 U1
03/01	NA
07/02	<4.2 U1
09/02	<8 U
06/04	<5 U
09/04	3.7 J9
12/04	<5 UJ9
03/05	<3.2 U1
06/05	6.3
09/05	<5 U
09/05	<5 U
01/06	2.3 J
03/06	<9.9 U
05/06	9.8
08/06	<5 U
11/06	1.2 J
03/07	5.2
05/07	9.5
08/07	10.7
10/07	5.2

IR01MW48A

Date	Conc.
01/92	3.7
01/92	<1.6 U
07/92	52.4
08/92	<1.9 U1
03/01	<2.5 U
03/01	NA
07/02	<5 U
09/02	<8 U
06/04	<.97 U1
09/04	<5 U
11/04	<5 U
03/05	<5 U
06/05	1.5 J
09/05	<5 U
01/06	<5 U
03/06	3.8 J
05/06	<5 U
08/06	<5 U
11/06	<5 U
03/07	<5 U
05/07	<1.4 U
08/07	<2.3 U
10/07	<5 U

IR01MW26B

Date	Conc.
05/91	<25.6 U1
01/92	5
01/92	<2 U
08/92	<4.1 U1
07/02	<4 U
09/02	8.7 J
06/04	<5 U
09/04	3.2 J
12/04	<5 U
03/05	1.3 J
06/05	2.1 J
09/05	<5 UJ
01/06	<5 UJ
06/06	<5 U
08/06	<5 U
12/06	<5 U
02/07	<5 U
05/07	<5 U
08/07	<2.6 U
10/07	<5 U

IR01MW44A

Date	Conc.
03/91	<20.6 U1
03/91	<15.9 U1
01/92	2.2
08/92	<1.8 U
08/92	<1.8 U
03/96	<2.7 U1
03/01	NA
07/02	NA
09/02	NA
06/04	2,590
09/04	2.1 J
12/04	<5.6 U1
03/05	<3.9 U1

PZ131F

Date	Conc.
03/08	1,630

IR01MW366B

Date	Conc.
01/92	<2.3 U1J9
07/92	1,780
07/92	1,260
08/92	<2 U1
04/01	11.6 J
07/02	11.2
07/02	<4 U
09/02	<8 U

IR01MWLF4B

Date	Conc.
07/04	<5 UJ9
09/04	1.1 J9
12/04	<5 U
03/05	<5 U
03/05	3.6 J4
06/05	1.5 J
09/05	<5 U
01/06	<5 U
03/06	<4.5 U
05/06	1.5 J
08/06	<5 U
12/06	<5 U
02/07	<5 UJ
05/07	<5 U
08/07	<2.8 U
10/07	<5 U

TW029

Date	Conc.
03/08	528

TW010 03/08 1,580

TW019 03/08 57.5

TW020 03/08 41.4

TW005 03/08 31.1

TW045 03/08 224

TW018 03/08 41.6

TW029 03/08 528

PZ131F 03/08 1,630

IR75MW05B
IR76MW13A
IR01MW02B
IR01MW03A
IR01MWLF2A
IR01MW403B
IR01MW403A
IR01MW05A
IR01MW16A
IR01MW31A
IR01MW17B
IR01MWLF1A
IR01MW18A
IR01MW07A
IR01MW10A
IR01MW11A
IR01MW12A
IR74MW01A
IR72MW32A
IR04MW37A
IR04MW36A
IR04MW09A
IR01MW09B
IR01MWI-2
IR01MW367A
IR04MW35A
IR01MW366A
IR12MW21A
IR04MW18A
IR12MW14A
IR01MW42A
IR04MW31A
IR12MW19A
IR12MW13A
IR12MW17A
IR12MW11A
IR02MW87A
IR12MW12A
IR01MW26B
IR01MW38A
IR01MWI-5
IR01MWI 5
IR01MW60A
IR01MWI-3
PZ138F
PZ150E
PZ144E
PZ150D
PZ138E
PZ131F
IR01MW43A
IR01MW64A
IR01MW47B
IR01MWLF4B
IR01MWLF4A
IR01MW44A
TW034
TW035
TW036
TW037
TW039
IR01MW62A
IR01MW53B
IR01MW48A
IR01MW48A
IR01MWI-6
IR01MWI-9
IR01MWI-7
IR01MW401A
IR01MW58A
IR01MW400A
IR01MW63A
IR01MW62A
IR01MWI-8
IR01MW402A
TW061
TW060
TW059
TW058
TW057B
TW056
TW028B
TW029
TW027B
TW026B
TW030B
TW054
TW055
TW012
TW010
TW009
TW008
TW007
TW011
TW004
TW025
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TW045
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TW016
TW015
TW014
TW013
TW012
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TW006
TW005
TW004
TW003
TW002
TW001
Crisp Avenue

- Reporting Limit Exceeds Aquatic Criterion (for at least one sample)
- A-aquifer Well
- B-aquifer Well
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds Criterion
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b). Soil removal in these areas (up to depths of 14 feet bgs) are expected to reduce groundwater concentrations (to be verified by ongoing monitoring).

Results are shown for locations where data has exceeded the RIEC. Red text indicates results that exceed the RIEC. Where results are shown as non-detect (<), the reporting limit follows.

bgs = below ground surface
Conc. = concentration
ESL = environmental screening level
HGAL = Hunters Point groundwater ambient level
J = estimated
MCL = Maximum Contaminant Level
NE = not established
PCB = polychlorinated biphenyl
RIEC = Remedial Investigation Evaluation Criterion
U = value was not detected above the reporting limit
UCSF = University of California, San Francisco
UJ = Analyte is considered not present above the level of the associated value; the associated value is considered quantitatively estimated.
µg/L = microgram per liter

Numbers associated with qualifiers are further defined in Appendix J.

Well ID → IR01MW60A

Date	Conc.
05/07	527
08/07	646
10/07	633 J

Sample Date (mm/yy) → ← Chemical Concentration (µg/L) and Qualifier

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

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

FIGURE 5-16

COPPER IN GROUNDWATER

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	A-Aquifer ug/L	B-Aquifer ug/L
ESL - Drinking Water	NE	2.5
ESL - Non Drinking Water	2.5	NE
Surface Water Criteria	8.1	8.1
Federal MCL	NE	15
State MCL	NE	15
HGAL	14.4	NE
RIEC	**14.4**	**8.1**

200 0 200

Scale in Feet

IR01MW05A

Date	Conc.
05/92	<2.61 U1
05/92	<2.9 U1
07/92	1,960
08/92	<1.6 U
07/95	72.2
07/95	1.71
07/95	1,280
07/95	2.49
03/01	<1.3 UJ3
08/02	<0.06 U2J2
09/02	<0.14 U2J2
01/06	3.1 J
03/06	<5 U
05/06	<5 U
08/06	<4 U
12/06	<5 U
02/07	<5 U
05/07	<5 U
08/07	<5 U
10/07	<5 U

IR01MW31A

Date	Conc.
05/92	<0.8 U
05/92	<0.9 U1
07/92	<1.6 U
08/92	27.1
08/92	22.5
03/01	<1.5 U1
08/02	0.1 J
09/02	<0.07 U1
06/04	<5 U
09/04	9
11/04	<5 U
03/05	<5 U
06/05	<5 U
09/05	8.2
01/06	<5 U
03/06	<5 U
05/06	<5 U
08/06	<4.5 U
11/06	<5 U
11/06	<5 U
02/07	<5 U
05/07	<5 U
08/07	<5 U
10/07	<5 U

IR01MW62A

Date	Conc.
01/92	0.9
01/92	0.9
07/92	3,740
08/92	<1.6 U
03/01	<1.3 U
03/01	<1.3 U
07/02	<1 U
09/02	<0.14 U2J2
06/04	35.1
09/04	<3.7 U1J9
09/04	<2.3 U1J9
11/04	<5 U
03/05	<5 UJ3
06/05	<5 U
09/05	<5 U
01/06	<5 U
03/06	<5 U
06/06	<5 U
09/06	<5 U
12/06	<5 U
02/07	<5 U
05/07	<5 U
08/07	<5 U
10/07	<5 UJ

IR01MW16A

Date	Conc.
05/92	<8.31 U1
07/92	<1.6 U
07/92	358
08/92	<1.6 U
07/02	0.08 J
09/02	<0.05 U2

TW004

Date	Conc.
03/08	15.2 J

IR01MW18A

Date	Conc.
05/92	<1.93 U1
05/92	<1.54 U1
05/92	<1.23 U1
07/92	666
07/92	<1.6 U
08/92	10.6
04/01	<1.3 U
04/01	NA
07/02	0.18 J
07/02	0.18 J
09/02	0.14 J

IR01MWI 5

Date	Conc.
01/92	<1 U
07/92	1,430
07/92	994
08/92	<1.6 U
04/01	25.6
07/02	27.6
07/02	17.9
09/02	0.84

IR01MW42A

Date	Conc.
01/92	91.8
01/92	100
07/92	<3.4 U1
08/92	13.8
03/01	<1.6 U
08/02	0.69
09/02	0.34 J
06/04	2 J3
09/04	<5 U
11/04	<5 U
03/05	<5 UJ3
06/05	<5 U
09/05	3.7 J
01/06	<5 U
03/06	<5 U
05/06	2.9 J
08/06	<2.8 U
12/06	<5 U
02/07	<5 U
05/07	<5 U
08/07	<5 U
10/07	<5 U

IR01MW03A

Date	Conc.
05/91	<2.1 U
01/92	1.2
08/92	<1.6 U
08/92	24.4
03/01	<1.3 UJ3
07/02	<1 U
09/02	0.09 J
06/04	8 J3
09/04	<7.2 U1
11/04	<5 U
03/05	<5 UJ3
06/05	<5 U
09/05	4.3 J
01/06	<5 U
03/06	<5 U
05/06	<5 U
08/06	<3.6 U
12/06	<5 U
02/07	<5 U
05/07	<5 U
08/07	<5 UJ
10/07	<5 U

IR01MW02B

Date	Conc.
05/91	<2.1 U
05/91	<2.1 U
01/92	<1 U
08/92	4.1
07/02	0.07 J
09/02	<0.12 U2
06/04	<5 U
08/04	4.4 J
11/04	<5 U
03/05	<5 UJ3
03/05	<5 UJ3
06/05	<5 U
09/05	3.2 J
01/06	<5 U
03/06	14.2
05/06	<5 U
08/06	<3.1 U
12/06	<5 U
02/07	<5 U
05/07	<5 U
08/07	<5 UJ
10/07	<5 U

IR04MW40A

Date	Conc.
11/91	<2 U
11/91	<2 U
02/92	15.4
06/92	<1.6 U
03/01	<1.3 UJ3
07/02	0.142 J
09/02	<0.162 U2

IR01MWLF4B

Date	Conc.
07/04	<5 UJ9
09/04	<5 U
12/04	<5 U
03/05	<5 U
03/05	<5 U
06/05	<5 U
09/05	<5 U
01/06	<5 U
03/06	<5 U
05/06	<5 U
08/06	<5 U
12/06	<5 U
02/07	10
05/07	<5 U
08/07	<5 U
10/07	<5 U

IR01MW366A

Date	Conc.
12/95	<1.2 U
03/96	<4.1 U1J3
05/96	1.4
06/04	587
06/04	429
11/04	6.7 J9
03/05	<5 U
06/05	25.1
01/06	22.8
03/06	12.3
06/06	4.2 J
12/06	<5 U
03/07	10
05/07	<2.2 U

IR01MW366B

Date	Conc.
07/04	<5 U
07/04	<5 U
09/04	11.5 J9
09/04	11.2 J9
12/04	<5 U
03/05	<5 U
06/05	<5 U
09/05	7.9
01/06	<5 U
01/06	<5 U
03/06	<5 U
06/06	<5 U
08/06	<4.1 U
12/06	<5 U
02/07	6.1
05/07	<5 U
08/07	<5 U
10/07	<5 U

IR01MWI 2

Date	Conc.
01/92	<1 U
07/92	128
08/92	<1.6 U
03/01	<1.6 U
08/02	0.16 J2
09/02	0.13

IR01MW48A

Date	Conc.
01/92	1
01/92	1
07/92	61.2
08/92	<1.6 U
03/01	<1.3 U
07/02	<1 U
09/02	<0.1 U2
06/04	<5 U
09/04	<5 U
11/04	<5 U
03/05	<5 U
06/05	<5 U
09/05	<5 U
01/06	<5 U
03/06	<5 U
05/06	<5 U
08/06	<5 U
11/06	<5 U
03/07	<5 U
05/07	<5 U
08/07	<5 U
10/07	<5 U

IR01MW38A

Date	Conc.
05/91	<2.1 U
01/92	<1 U
01/92	<1 U
08/92	<1.6 U
08/02	0.14
09/02	0.04 J
06/04	<5 U
09/04	15.2
11/04	<5 U
03/05	<5 UJ3
06/05	<5 U
09/05	12.4
01/06	<5 U
03/06	<5 U
05/06	1.9 J
08/06	<6.6 U
12/06	<5 U
02/07	9.2
05/07	<5 U
08/07	<5 U
10/07	<5 U

IR01MW26B

Date	Conc.
05/91	<2.1 U
01/92	<1 U
01/92	<1 U
08/92	<1.6 U
07/02	0.13
09/02	1.02
06/04	<5 U
09/04	13.6
12/04	<5 UJ3
03/05	<5 U
06/05	<5 U
09/05	2.2 J
01/06	<5 U
06/06	<5 U
08/06	<2 U
12/06	<5 U
02/07	9.1
05/07	<5 U
08/07	<5 U
10/07	<5 U

IR01MW43A

Date	Conc.
03/91	<2.1 U
01/92	<1 U
08/92	<1.6 U
08/92	<1.6 U
03/96	<0.8 UJ9
09/02	0.08 J
06/04	6.7 J3
09/04	14.8
11/04	26.6
03/05	<5 U

IR01MW44A

Date	Conc.
03/91	<2.1 U
03/91	<2.1 U
01/92	<2 U
08/92	<1.6 U
08/92	<1.6 U
03/96	<0.8 U
06/04	154
09/04	9.3
12/04	<5 U
03/05	<5 U

TW021

Date	Conc.
03/08	25.5
03/08	23.1

TW028B

Date	Conc.
03/08	27.2

TW029

Date	Conc.
03/08	1,110

IR01MWI 9

Date	Conc.
01/92	1.2
07/92	6,520
08/92	<1.6 U
08/92	<1.6 U
03/01	<1.3 U
07/02	0.11
09/02	<0.13 U2

IR75MW05B, IR76MW13A, IR01MW02B, IR01MW03A, IR01MWLF2A, IR01MW403B, IR01MW05A, IR01MW16A, IR01MW17B, IR01MW18A, IR01MW31A, IR01MWLF1A, IR01MW10A, IR01MW07A, IR01MW11A, IR01MW12A, IR74MW01A, IR72MW32A, IR04MW37A, IR04MW36A, IR04MW09A, IR01MW09B, IR01MW367A, IR04MW40A, IR01MW402A, IR01MWI-6, IR01MW53B, IR01MW48A, IR01MW38A, IR01MW26B, IR01MWI-5, IR01MWI-2, IR04MW35A, IR12MW21A, IR01MW366A, IR01MW366B, IR04MW13A, IR01MW42A, IR12MW14A, IR04MW31A, IR12MW19A, IR01MWLF4B, IR01MW43A, IR01MW64A, IR01MW47B, IR01MWLF4A, IR12MW13A, IR12MW17A, IR12MW11A, IR02MW87A, IR12MW12A, IR01MW401A, IR01MWI-7, IR01MW58A, IR01MW400A, IR01MW63A, IR01MW62A, IR01MWI-8, IR01MWI-9, IR01MW60A, IR01MWI-3, PZ150E, PZ138F, PZ144E, PZ150D, PZ138E, PZ131E, TW054, TW055, TW012, TW010, TW009, TW008, TW007, TW011, TW004, TW050, TW025, TW049, TW002, TW045, TW005, TW006, TW003, TW024, TW023, TW001, TW044, TW043, TW013, TW042, TW046, TW022, TW053, TW021, TW019, TW018, TW015, TW014, TW041, TW033, TW016, TW017, TW032, TW047, TW020, TW052, TW051, TW048, TW031, TW040, TW039, TW058, TW057B, TW056, TW028B, TW029, TW027B, TW026B, TW030B, TW061, TW060, TW059, TW034, TW035, TW036, TW037, TW038

Avenue

Legend

- Reporting Limit Exceeds Aquatic Criterion (for at least one sample)
- A-aquifer Well
- B-aquifer Well
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds Criterion
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b). Soil removal in these areas (up to depths of 14 feet bgs) are expected to reduce groundwater concentrations (to be verified by ongoing monitoring).

Results are shown for locations where data has exceeded the RIEC. Red text indicates results that exceed the RIEC. Where results are shown as non-detect (<), the reporting limit follows.

bgs = below ground surface
Conc. = concentration
ESL = environmental screening level
HGAL = Hunters Point groundwater ambient level
J = estimated
MCL = Maximum Contaminant Level
NE = not established
PCB = polychlorinated biphenyl
RIEC = Remedial Investigation Evaluation Criterion
U = value was not detected above the reporting limit
UCSF = University of California, San Francisco
UJ = Analyte is considered not present above the level of the associated value; the associated value is considered quantitatively estimated.
µg/L = microgram per liter

Numbers associated with qualifiers are further defined in Appendix J.

Well ID → IR01MW60A

Date	Conc.
05/07	527
08/07	646
10/07	633 J

Sample Date (mm/yy) → ← Chemical Concentration (µg/L) and Qualifier

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

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

FIGURE 5-17

LEAD IN GROUNDWATER

Remedial Investigation/Feasibility Study for Parcel E-2

2005-12-16 P:\2005_Projects\25-049_Navy_HPS_E-2_RI-FS\N_Maps&Drawings\GIS\Projects\Landfill\Section 4\Water\Metals\Lead-Wells.mxd

Evaluation Criteria Summary	A-Aquifer ug/L	B-Aquifer ug/L
ESL - Drinking Water	NE	81
ESL - Non Drinking Water	81	NE
Surface Water Criteria	81	81
Federal MCL	NE	NE
State MCL	NE	NE
HGAL	75.7	NE
RIEC	**81**	**81**

200 0 200

Scale in Feet

IR01MW03A

Date	Conc.
05/91	16.6
01/92	<30.8 U1
08/92	<16.5 U
08/92	152
03/01	16.5 J
07/02	97
09/02	<8 U1
06/04	<50 UJ3
09/04	<50 U
11/04	<50 U
03/05	<50 UJ3
06/05	<50 U
09/05	<50 U
01/06	<50 UJ
03/06	<50 U
05/06	<50 U
08/06	<50 U
12/06	<4.5 U
02/07	<50 U
05/07	<50 U
08/07	<50 UJ
10/07	<13.3 U

IR01MW05A

Date	Conc.
05/92	114
05/92	108
07/92	3920
08/92	128
07/95	551 J4
07/95	61.7 J4
07/95	2480 J4
07/95	71.7 J4
03/01	45.5
08/02	9.6 J
09/02	<5.5 U2
01/06	<50 U
03/06	<50 U
05/06	<50 U
08/06	<50 U
12/06	<50 UJ
02/07	<50 U
05/07	<50 U
08/07	<50 U
10/07	<50 U

IR01MW18A

Date	Conc.
05/92	28.5
05/92	20.3
05/92	27.2
07/92	1,060
07/92	<16.5 U
08/92	52.6
04/01	<4.8 U
07/02	<2 U
07/02	2.7 J
09/02	<3.3 U1

IR01MW16A

Date	Conc.
05/92	22.9
07/92	<16.5 U
07/92	255
08/92	<16.5 U
07/02	<3.7 U2
09/02	<2.3 U2

IR01MW62A

Date	Conc.
01/92	<1.9 U
01/92	<3 U1
07/92	5,050
08/92	<16.5 U
03/01	<4.8 U
03/01	<4.8 U
07/02	<10 U
09/02	<2 U
06/04	<50 UJ3
09/04	<50 U
09/04	<50 U
11/04	<50 U
03/05	<50 UJ3
06/05	<50 U
09/05	<50 U
01/06	<50 U
03/06	<50 UJ
06/06	<50 U
09/06	285 J
12/06	<50 U
02/07	30.4 J
05/07	4.4 J
08/07	<50 U
10/07	<50 UJ

IR01MWI-9

Date	Conc.
01/92	<2.6 U1
07/92	2,560 J2
08/92	<16.5 U
08/92	<16.5 U
03/01	<4.8 U
07/02	<2.6 U2
09/02	<3.3 U2

TW020

Date	Conc.
03/08	98.6

TW021

Date	Conc.
03/08	105
03/08	30.5 J

TW029

Date	Conc.
03/08	1,280

TW006

Date	Conc.
03/08	105

IR01MW48A

Date	Conc.
01/92	<3.8 U1
01/92	<2.6 U1
07/92	164
08/92	<16.5 U
03/01	<4.8 U
07/02	<10 U
09/02	<2 U
06/04	<50 U
09/04	<50 U
11/04	<50 U
03/05	<50 U
06/05	<50 U
09/05	<50 U
01/06	<50 U
03/06	<50 U
05/06	<50 U
08/06	<50 U
11/06	<50 U
03/07	<50 U
05/07	<50 U
08/07	<50 U
10/07	27.8 J

IR01MWI-5

Date	Conc.
01/92	<11.2 U1J9
07/92	3,540
07/92	2,510
08/92	<16.5 U
04/01	5.1 J
07/02	28.8
07/02	12.8
09/02	<7.3 U1

IR01MWI_3

Date	Conc.
01/92	19
07/92	<16.5 U
07/92	<16.5 U
08/92	<16.5 U
03/96	323
03/01	<4.8 U
08/02	12.2
09/02	13.9
12/04	<50 U
03/05	<50 U

IR01MW43A

Date	Conc.
03/91	66.3
01/92	36.1
08/92	<16.5 U
08/92	18.7
03/96	<8.4 U1J9
09/02	2.7 J
06/04	<50 UJ3
09/04	<50 U
11/04	136
03/05	<50 U

PZ131F

Date	Conc.
03/08	5,530

IR01MW366A

Date	Conc.
12/95	<34.2 U2
03/96	682
05/96	537
03/01	6840
06/04	3870
06/04	2740
11/04	243
03/05	<50 U
06/05	175
01/06	152
03/06	49.2 J
06/06	<50 U
12/06	<50 U
03/07	<50 U
05/07	48.2 J

IR01MW367A

Date	Conc.
11/95	111
03/96	<14.7 U1
05/96	<7.3 U1
03/01	5.8 J
07/02	<6.5 U2
09/02	<2.2 U1

IR01MW-2

Date	Conc.
01/92	<4.7 U1
07/92	632 J2
08/92	<16.5 U
03/01	9.3 J
08/02	<2 U
09/02	9.6 J

IR01MW44A

Date	Conc.
03/91	235
03/91	226
01/92	<8.4 U1
08/92	22.8
08/92	20.5
03/96	<19 U1
03/01	34.4
07/02	44.5
09/02	136
06/04	1,980
09/04	<50 U
12/04	143
03/05	<50 U

IR75MW05B, IR76MW13A, IR01MW02B, IR01MWLF2A, IR01MW03A, IR01MW05A, IR01MW403B, IR01MW403A, IR01MW16A, IR01MW31A, IR01MW17B, IR01MWLF1A, IR01MW18A, IR74MW01A, IR01MW97A, IR01MW10A, IR01MW11A, IR01MW12A, IR72MW32A, IR04MW37A, IR01MW367A, IR04MW36A, IR01MW09B, IR04MW09A, IR01MW38A, IR01MW26B, IR01MW53B, IR01MW48A, IR01MW43A, IR01MWI-5, IR01MW402A, IR01MWI-6, IR01MWI-9, IR01MW401A, IR01MWI-7, IR01MW58A, IR01MW400A, IR01MW63A, IR01MW62A, IR01MWI-8, IR01MW60A, IR01MWI-3, IR01MW64A, IR01MW47B, IR01MW44A, IR01MW42A, IR01MWLF4B, IR01MWLF4A, IR01MW366A, IR01MW366B, IR04MW13A, IR04MW31A, IR12MW19A, IR12MW13A, IR12MW17A, IR12MW11A, IR02MW87A, IR12MW12A, IR04MW40A, IR01MWI-2, IR04MW35A, IR12MW21A, IR12MW14A, PZ150E, PZ144E, PZ138F, PZ150D, PZ138E, PZ131F, TW001, TW002, TW003, TW004, TW005, TW006, TW007, TW008, TW009, TW010, TW011, TW012, TW013, TW014, TW015, TW016, TW017, TW018, TW019, TW020, TW021, TW022, TW023, TW024, TW025, TW026B, TW027B, TW028B, TW029, TW030B, TW031, TW032, TW033, TW034, TW035, TW036, TW037, TW038, TW039, TW040, TW041, TW042, TW043, TW044, TW045, TW046, TW047, TW048, TW049, TW050, TW051, TW052, TW053, TW054, TW055, TW056, TW057B, TW058, TW059, TW060, TW061

SAN FRANCISCO BAY

- Reporting Limit Exceeds Aquatic Criterion (for at least one sample)
- A-aquifer Well
- B-aquifer Well
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds Criterion
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b). Soil removal in these areas (up to depths of 14 feet bgs) are expected to reduce groundwater concentrations (to be verified by ongoing monitoring).

Results are shown for locations where data has exceeded the RIEC. Red text indicates results that exceed the RIEC. Where results are shown as non-detect (<), the reporting limit follows.

bgs = below ground surface
Conc. = concentration
ESL = environmental screening level
HGAL = Hunters Point groundwater ambient level
J = estimated
MCL = Maximum Contaminant Level
NE = not established
PCB = polychlorinated biphenyl
RIEC = Remedial Investigation Evaluation Criterion
U = value was not detected above the reporting limit
UCSF = University of California, San Francisco
UJ = Analyte is considered not present above the level of the associated value; the associated value is considered quantitatively estimated.
µg/L = microgram per liter

Numbers associated with qualifiers are further defined in Appendix J.

Well ID → IR01MW60A (Date / Conc.: 05/07 527; 08/07 646; 10/07 633 J) ← Chemical Concentration (µg/L) and Qualifier

Sample Date (mm/yy) →

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

Hunters Point Shipyard, San Francisco, California

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

FIGURE 5-24

ZINC IN GROUNDWATER

Remedial Investigation/Feasibility Study for Parcel E-2

P:\2005_Projects\25-049_Navy_HPS_E-2_RI-FS\N_Maps&Drawings\GIS\Projects\Landfill\Section 4\Water\Metals\Zinc-Wells.mxd

Evaluation Criteria Summary	A-Aquifer ug/L	B-Aquifer ug/L
ESL - Drinking Water	NE	0.014
ESL - Non Drinking Water	16	NE
Surface Water Criteria	0.03	0.03
Federal MCL	NE	500
State MCL	NE	NE
HGAL	NE	NE
RIEC	**0.03**	**0.03**

IR01MW03A

Date	Conc.
05/91	<5 U
01/92	<1 U
08/92	2
08/92	2
03/01	<0.2 U
07/02	<0.94 U
09/02	0.1
06/04	0.2
09/04	<0.5 U
11/04	<0.5 U
03/05	<0.5 U
06/05	<0.5 U
09/05	<0.5 U
01/06	<0.5 U
03/06	<0.5 U
05/06	<0.5 U
08/06	<0.5 U
12/06	<0.5 U
02/07	<0.5 U
05/07	<0.5 U
08/07	<0.5 UJ
10/07	<0.5 U

IR01MW31A

Date	Conc.
05/92	2.8
05/92	7
07/92	<5
08/92	NA
08/92	NA
03/01	<0.2
03/01	NA
08/02	<1
09/02	<0.94
09/02	NA
06/04	<0.5
09/04	<0.5
11/04	<0.5
03/05	<0.5
06/05	0.14
09/05	<0.5 U
01/06	<0.5 U
03/06	<0.5 U
05/06	<0.5 U
08/06	<0.5 U
11/06	<0.5 UJ
11/06	<0.5 UJ
02/07	<0.5 U
05/07	<0.5 U
08/07	<0.5 U
10/07	<0.5 U

IR01MWI-9

Date	Conc.
10/90	NA
01/92	<1 U
07/92	2.6
08/92	<10 U
08/92	13.2
03/01	<0.2 U
07/02	<0.94 U
09/02	<0.94 U

IR01MWI-6

Date	Conc.
01/92	<1 U
07/92	<5 U
08/92	0.34

IR01MW401A

Date	Conc.
07/96	<0.5 U
09/96	0.72
11/96	<0.5 U
07/02	<0.47 U
09/02	<0.47 U
09/02	<0.47 U

IR01MW400A

Date	Conc.
09/96	5.2
10/96	1.6
10/96	1.9
11/96	2.3
03/01	0.5
08/02	<0.94 U
09/02	<0.94 UJ5

IR01MW16A

Date	Conc.
05/92	<1 U
07/92	28
07/92	52
08/92	30
07/02	<0.97 U
09/02	<0.94 U

TW005

Date	Conc.
03/08	0.64

IR01MWI-5

Date	Conc.
01/92	<10 U
07/92	<50 U
07/92	9.7
08/92	33
04/01	0.6
07/02	<0.94 U
09/02	<0.94 U
09/02	<0.94 U

IR01MW05A

Date	Conc.
05/92	2.4
05/92	2.6
07/92	74
08/92	17
03/01	<0.2 U
08/02	<0.94 U
09/02	<0.94 U
01/06	2.8
03/06	4.2
05/06	0.5
08/06	<0.5 U
12/06	<0.5 U
02/07	<0.5 U
05/07	<0.5 U
08/07	<0.5 UJ
10/07	<1 U

IR01MW18A

Date	Conc.
05/92	<1 U
05/92	<1 U
05/92	<1 U
07/92	<5 U
07/92	17
08/92	<5 U
04/01	<0.2 U
07/02	<0.94 U
07/02	<0.96 U
09/02	<0.94 U
09/02	<0.94 U

IR01MW336A

Date	Conc.
12/95	<0.5 U
03/96	<0.5 U
05/96	<0.5 U
06/04	<0.5 U
11/04	<0.5 U
03/05	<0.5 U
06/05	<0.5 U
01/06	0.17
03/06	0.18
06/06	0.68
09/06	<0.5 U
12/06	<0.5 U
03/07	<0.5 U
05/07	<0.5 U

IR01MW367A

Date	Conc.
11/95	<0.5 U
03/96	<0.5 U
05/96	<0.5 U
03/01	0.3
07/02	<0.94 U
09/02	<0.94 U

IR72MW32A

Date	Conc.
11/95	<0.5 U
03/96	<0.5 U
05/96	0.28 J35
03/01	<0.2 U

IR01MW38A

Date	Conc.
05/91	<5 U
01/92	<1 U
01/92	<1 U
08/92	<10 U
08/02	<0.96 U
09/02	<0.94 U
06/04	0.52
09/04	<0.5 U
11/04	<0.5 U
03/05	<0.5 U
06/05	<0.5 U
09/05	<0.5 U
01/06	<0.5 U
03/06	<0.5 U
05/06	<0.5 U
08/06	<0.5 U
12/06	<0.5 U
02/07	<0.5 U
05/07	<0.5 U
08/07	<0.5 U
10/07	<0.5 U

TW031

Date	Conc.
03/08	0.99
03/08	0.92

TW021

Date	Conc.
03/08	0.27

IR01MWI-3

Date	Conc.
01/92	11
01/92	2.7
07/92	54
07/92	6.2
08/92	11
03/96	<5 U
03/01	0.3
08/02	<0.99 U
09/02	<0.94 U
12/04	<0.5 U
03/05	<0.5 U

TW047

Date	Conc.
03/08	1

IR01MW58A

Date	Conc.
03/91	<1 U
01/92	<1 U
01/92	<1 U
08/92	0.5
07/02	<0.94 U
09/02	<0.94 U
06/04	<0.5 U
09/04	<0.5 U
11/04	<0.5 U
03/05	<0.5 U
06/05	<0.5 U
09/05	<0.5 UJ

IR01MW43A

Date	Conc.
03/91	37
01/92	<1 U
08/92	32
08/92	<50 U
03/96	5
03/01	2
03/01	5
07/02	<0.99 U
09/02	1.6
06/04	0.66
09/04	3.9
11/04	7.2
03/05	5.2

TW040

Date	Conc.
03/08	2
03/08	2

TW039

Date	Conc.
03/08	0.92

PZ131F

Date	Conc.
03/08	7.2

PZ150D

Date	Conc.
03/08	1.1

IR01MW44A

Date	Conc.
03/91	20
03/91	34
01/92	13
08/92	<10 U
08/92	19
03/96	5
03/01	2
07/02	1.12
09/02	<0.94 U
06/04	5.8
09/04	4.4
12/04	1
03/05	1.1

TW036

Date	Conc.
03/08	0.28

TW038

Date	Conc.
03/08	2.6

IR01MW42A

Date	Conc.
01/92	<1 U
01/92	1.4
08/92	<1 U
08/02	<0.98 U
09/02	<0.94 U
06/04	<0.5 U
09/04	<0.5 U
11/04	<0.5 U
03/05	<0.5 U
06/05	<0.5 U
09/05	<0.5 U
01/06	0.27
03/06	<0.5 U
05/06	<0.5 U
08/06	<0.5 U
12/06	<0.5 U
02/07	<0.5 U
05/07	<0.5 U
08/07	<0.5 U
10/07	<0.5 U

IR01MW60A

Date	Conc.
05/07	527
08/07	646
10/07	633 J

IR75MW05B
IR76MW13A
IR01MW02B
IR01MW03A
IR01MWLF2A
IR01MW05A
IR01MW403B
IR01MW403A
IR01MW31A
IR01MW16A
IR01MW17B
IR01MWLF1A
IR01MW18A
IR74MW01A
IR01MW07A
IR01MW10A
IR01MW11A
IR01MW12A
IR72MW32A
IR01MW367A
IR04MW37A
IR04MW36A
IR01MW09B
IR04MW09A
IR04MW40A
IR01MW26B
IR01MW38A
IR01MWI-5
IR01MWI-2
IR04MW35A
IR01MW366A
IR01MW366B
IR04MW13A
IR12MW21A
IR12MW14A
IR04MW31A
IR12MW19A
IR12MW13A
IR12MW17A
IR12MW11A
IR02MW87A
IR12MW12A
IR01MW42A
IR01MWLF4B
IR01MWLF4A
IR01MW64A
IR01MW47B
IR01MW43A
IR01MW44A
IR01MW48A
IR01MW53B
IR01MW402A
IR01MWI-6
IR01MWI-9
IR01MWI-7
IR01MW401A
IR01MW400A
IR01MW58A
IR01MW63A
IR01MW62A
IR01MWI-8
IR01MW57B
IR01MW60A
IR01MWI-3
PZ150E
PZ138F
PZ150D
PZ144E
PZ138E
PZ131F
TW001
TW002
TW003
TW004
TW005
TW006
TW007
TW008
TW009
TW010
TW011
TW012
TW013
TW014
TW015
TW016
TW017
TW018
TW019
TW020
TW021
TW022
TW023
TW024
TW025
TW026B
TW027B
TW028B
TW029
TW030B
TW031
TW032
TW033
TW034
TW035
TW036
TW037
TW038
TW039
TW040
TW041
TW042
TW043
TW044
TW045
TW046
TW047
TW048
TW049
TW050
TW051
TW052
TW053
TW054
TW055
TW056
TW057B
TW058
TW059
TW060
TW061
Crisp Avenue
SAN FRANCISCO BAY
200 0 200
Scale in Feet

Reporting Limit Exceeds Aquatic Criterion (for at least one sample)
A-aquifer Well
B-aquifer Well
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds Criterion
Road
Gravel Road
Metal Slag Area (2007 excavation limit)[a]
PCB Hot Spot Area (2007 excavation limit)[a]
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
East Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b). Soil removal in these areas (up to depths of 14 feet bgs) are expected to reduce groundwater concentrations (to be verified by ongoing monitoring).

Results are shown for locations where data has exceeded the RIEC. Red text indicates results that exceed the RIEC. Where results are shown as non-detect (<), the reporting limit follows.

bgs = below ground surface
Conc. = concentration
ESL = environmental screening level
HGAL = Hunters Point groundwater ambient level
MCL = Maximum Contaminant Level
NE = not established
PCB = polychlorinated biphenyl
RIEC = Remedial Investigation Evaluation Criterion
U = value was not detected above the reporting limit
UCSF = University of California, San Francisco
µg/L = microgram per liter

Well ID → IR01MW60A (Date / Conc.: 05/07 527; 08/07 646; 10/07 633 J)
Sample Date (mm/yy) →
← Chemical Concentration (µg/L) and Qualifier

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

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

FIGURE 5-29

TOTAL PCBs IN GROUNDWATER

Remedial Investigation/Feasibility Study for Parcel E-2

P:\2005_Projects\25-049_Navy_HPS_E-2_RI-FS\N_Maps&Drawings\GIS\Projects\Landfill\Section 4\Water\PCB\Total PCB-wells.mxd

Evaluation Criteria Summary	A-Aquifer (ug/L)	B-Aquifer (ug/L)
GW TPH 0-25 ft from Shoreline	1,400	1,400
GW TPH 25-50 ft from Shoreline	1,467	1,467
GW TPH 50-75 ft from Shoreline	2,092	2,092
GW TPH 75-100 ft from Shoreline	3,216	3,216
GW TPH 100-125 ft from Shoreline	4,839	4,839
GW TPH 125-150 ft from Shoreline	6,949	6,949
GW TPH 150-175 ft from Shoreline	9,539	9,539
GW TPH 175-200 ft from Shoreline	12,604	12,604
GW TPH 200-225 ft from Shoreline	16,145	16,145
GW TPH 225-250 ft from Shoreline	20,000	20,000
GW TPH >250 ft from Shoreline	20,000	20,000

N

200 0 200

Scale in Feet

Crisp Avenue

IR75MW05B
IR76MW13A
IR01MW02B
IR01MW03A
IR01MWLF2A
IR01MW05A
IR01MW403B
IR01MW403A
IR01MW16A
IR01MW17B
IR01MW31A
IR74MW01A
IR01MW07A
IR01MW10A
IR01MW11A
IR01MW12A
IR01MWLF1A
IR01MW18A
IR72MW32A
IR04MW37A
IR04MW36A
IR01MW09B
IR04MW09A
IR04MW40A
IR04MW35A
IR01MW367A
IR01MW26B
IR01MW38A
IR01MWI-5
IR01MW402A
IR01MW53B
IR01MW48A
IR01MWI-6
IR01MWI-2
IR01MWI-9
IR01MWI-7
IR01MW401A
IR01MW366A
IR01MW366B
IR12MW21A
IR01MW60A
IR01MW58A
IR01MWI-3
IR01MW42A
IR04MW13A
IR12MW14A
IR04MW31A
IR01MW400A
IR01MW43A
IR01MW64A
IR01MWLF4B
IR12MW19A
IR01MW62A
IR01MW47B
IR01MWLF4A
IR12MW13A
IR01MW63A
IR12MW17A
IR12MW11A
IR01MWI-8
IR02MW87A
IR01MW44A
IR12MW12A

TW001 TW002 TW003 TW004 TW005 TW006 TW007 TW008 TW009 TW010 TW011 TW012 TW013 TW014 TW015 TW016 TW017 TW018 TW019 TW020 TW021 TW022 TW023 TW024 TW025 TW026B TW027B TW028B TW029 TW030B TW031 TW032 TW033 TW034 TW035 TW036 TW037 TW038 TW039 TW040 TW041 TW042 TW043 TW044 TW045 TW046 TW047 TW048 TW049 TW050 TW051 TW052 TW053 TW054 TW055 TW056 TW057B TW058 TW059 TW060 TW061

TW013 Date	Conc.
03/08	5,000

TW042 Date	Conc.
03/08	10,321

TW032 Date	Conc.
03/08	15,667

TW016 Date	Conc.
03/08	4,300

TW041 Date	Conc.
03/08	11,147

PZ150E Date	Conc.
03/08	8,194

TW033 Date	Conc.
03/08	8,148
03/08	8,439

TW031 Date	Conc.
03/08	3,590
03/08	3,380

IR01MWI-3 Date	Conc.
01/92	4,000
07/92	<500 U
07/92	<500 U
08/92	<3,800 U
03/96	11,010
03/01	60
03/01	90
12/04	2,643
03/05	1,827

IR01MW43A Date	Conc.
03/91	2,200
01/92	6,300
08/92	5,800
08/92	5,700
03/96	11,890
03/01	887
06/04	9,862
09/04	10,500
11/04	4,892
03/05	16,400

IR12MW21A Date	Conc.
08/92	<150,000 U
09/92	400,000
04/96	4,800
05/96	4,400
04/02	14,490

50' 100' 150' 200' 250'

SAN FRANCISCO BAY

- Reporting Limit Exceeds Aquatic Criterion (for at least one sample)
- A-aquifer Well
- B-aquifer Well
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds Criterion
- Road
- Gravel Road
- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property
- 50' Distance from Shoreline (in feet)

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b). Soil removal in these areas (up to depths of 14 feet bgs) are expected to reduce groundwater concentrations (to be verified by ongoing monitoring).

Results are shown for locations where data has exceeded the RIEC. Red text indicates results that exceed the RIEC. Where results are shown as non-detect (<), the reporting limit follows.

bgs = below ground surface
Conc. = concentration
ESL = environmental screening level
HGAL = Hunters Point groundwater ambient level
MCL = Maximum Contaminant Level
NE = not established
PCB = polychlorinated biphenyl
RIEC = Remedial Investigation Evaluation Criterion
U = value was not detected above the reporting limit
UCSF = University of California, San Francisco
µg/L = microgram per liter

Well ID → IR01MW60A (Date / Conc.: 05/07 527; 08/07 646; 10/07 633 J)
Sample Date (mm/yy) → Chemical Concentration (µg/L) and Qualifier

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

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

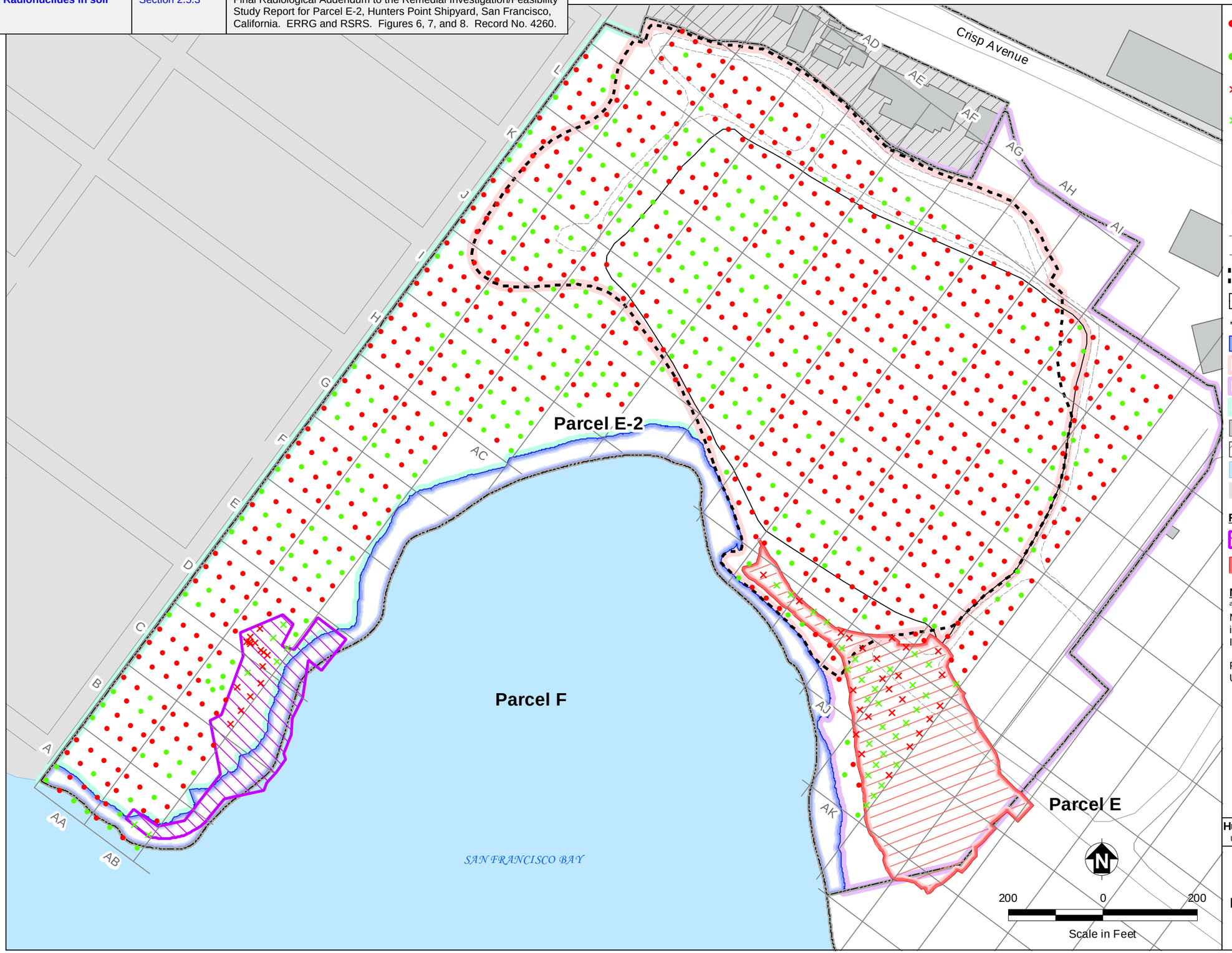
FIGURE 5-53

TOTAL TPH IN GROUNDWATER

Remedial Investigation/Feasibility Study for Parcel E-2

P:\2005_Projects\25-049_Navy_HPS_E-2_RI-FS\N_Maps&Drawings\GIS\Projects\Landfill\Section 4\Water\SumTPH-Wells.mxd

34	**Radionuclides in soil**	Section 2.5.3	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. Figures 6, 7, and 8. Record No. 4260.



- Phase V systematic soil sample location exceeding release criteria for radium-226
- Phase V soil sample location less than the release criteria for radium-226
- Removed Phase V systematic soil sample location exceeding release criteria for radium-226
- Removed Phase V soil sample location less than the release criteria for radium-226
- Phase V Survey Grid
- Road
- Gravel Road
- Estimate of Solid Waste Extent
- Interim Landfill Cap Extent
- Parcel Boundary
- Shoreline Area
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Building
- UCSF Compound
- San Francisco Bay
- Non-Navy Property

Removal Actions

- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

PCB = polychlorinated biphenyl
UCSF = University of California, San Francisco

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

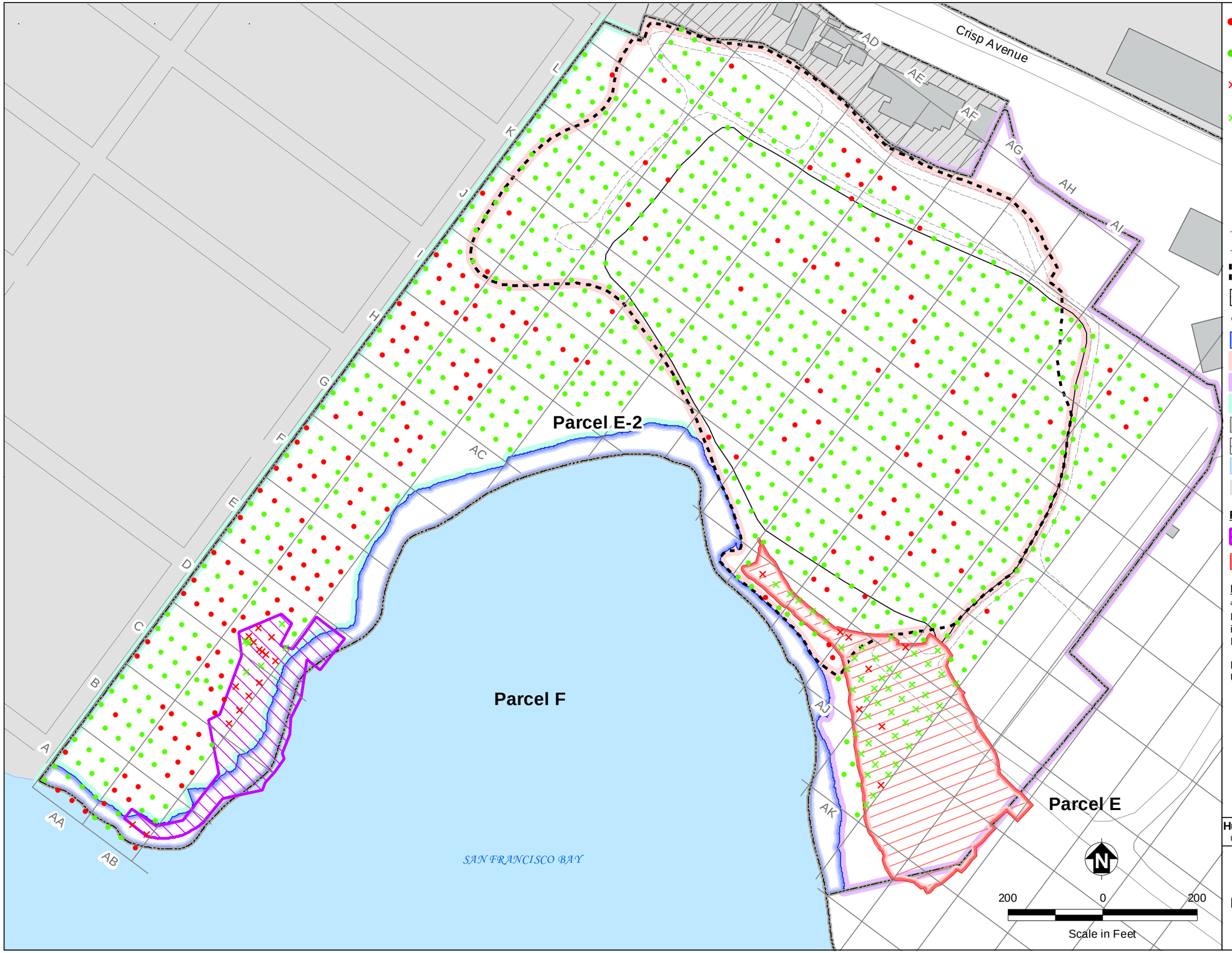
Hunters Point Shipyard, San Francisco, California
U.S. Department of the Navy, BRAC PMO West, San Diego, California

FIGURE 6

PHASE V SOIL SAMPLE LOCATIONS EXCEEDING RADIUM-226 RELEASE CRITERION

Radiological Addendum to
Remedial Investigation/Feasibility Study Report for Parcel E-2

N:\projects\2005 Projects\25-049_Navy_HPS_E-2_RI-FS\N_Maps&Drawings\GIS\Projects\Radiation\PhaseV_Rad_Survey_Rd_Results.mxd



- Phase V systematic soil sample location exceeding release criteria for cesium-137
- Phase V soil sample location less than the release criteria for cesium-137
- Removed Phase V systematic soil sample location exceeding release criteria for cesium-137
- Removed Phase V soil sample location less than the release criteria for cesium-137
- Phase V Survey Grid
- Road
- Gravel Road
- Estimate of Solid Waste Extent
- Interim Landfill Cap Extent
- Parcel Boundary
- Shoreline Area
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Building
- UCSF Compound
- San Francisco Bay
- Non-Navy Property

Removal Actions

- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

PCB = polychlorinated biphenyl
UCSF = University of California, San Francisco

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

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

FIGURE 7

PHASE V SOIL SAMPLE LOCATIONS EXCEEDING CESIUM-137 RELEASE CRITERION

Radiological Addendum to
Remedial Investigation/Feasibility Study Report for Parcel E-2

N:\projects\2005 Projects\25-049_Navy_HPS_E-2_RI-FS\N_Maps&Drawings\GIS\Projects\Radiation\PhaseV_Rad_Survey_Cs_Results.mxd

Crisp Avenue

Parcel E-2

Parcel F

Parcel E

SAN FRANCISCO BAY

A B C D E F G H I J K L AA AB AC AD AE AF AG AH AI AJ AK

200 0 200

Scale in Feet

- Phase V systematic soil sample location exceeding residential release criteria for cobalt-60
- Phase V soil sample location less than the residential release criteria for cobalt-60
- Removed Phase V systematic soil sample location exceeding residential release criteria for cobalt-60
- Removed Phase V soil sample location less than the residential release criteria for cobalt-60
- Phase V Survey Grid
- Road
- Gravel Road
- Estimate of Solid Waste Extent
- Interim Landfill Cap Extent
- Parcel Boundary
- Shoreline Area
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Building
- UCSF Compound
- San Francisco Bay
- Non-Navy Property

Removal Actions

- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

PCB = polychlorinated biphenyl
UCSF = University of California, San Francisco

Only Phase V Survey Units in the vicinity of the former Experimental Ship Shielding Area, where colbalt-60 is a radionuclide of potential concern, are shown. The vast majority of cobalt-60 data was qualified by the laboratory because the reported activities were less than the minimum detectable activity.

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

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

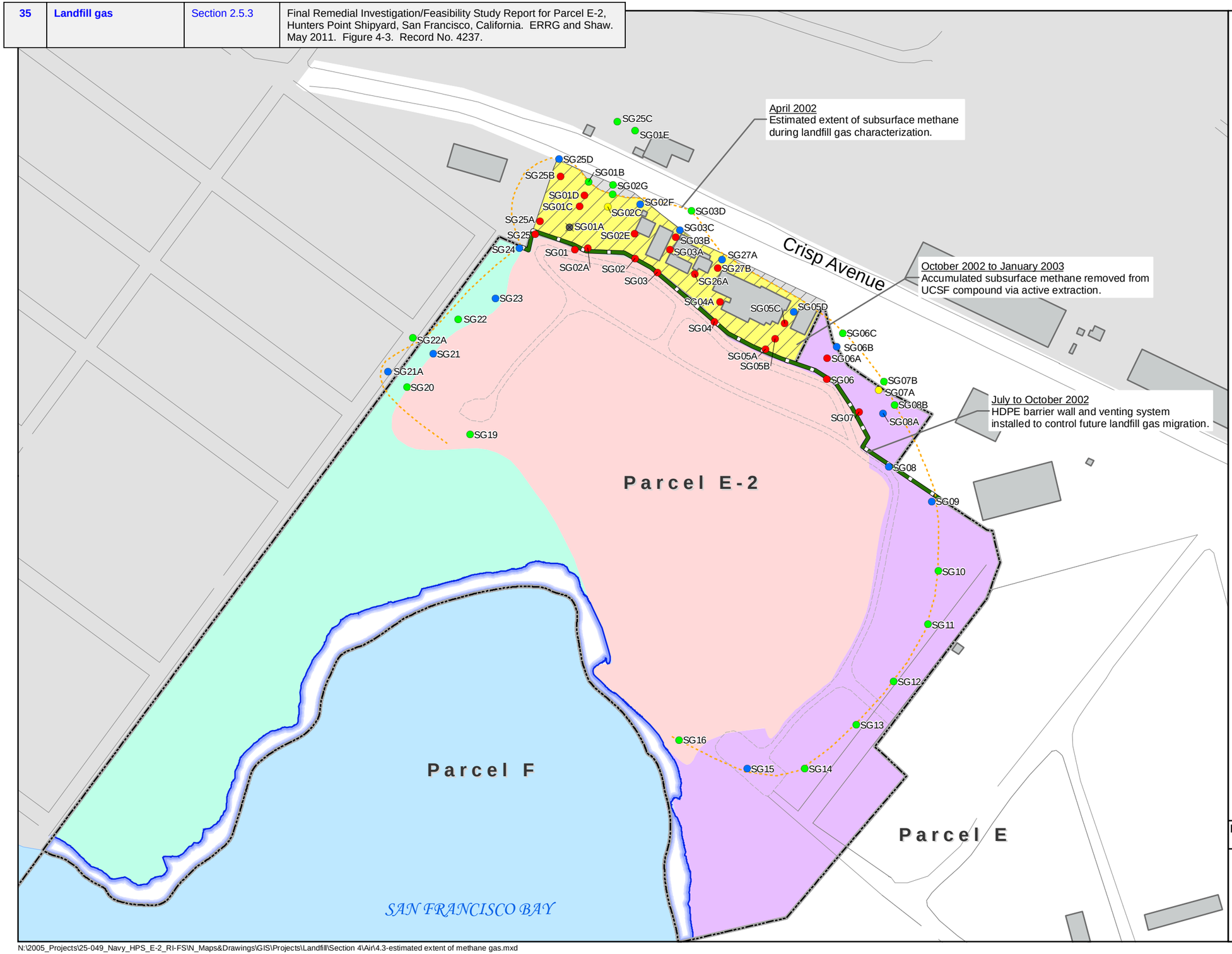
FIGURE 8

PHASE V SOIL SAMPLE LOCATIONS EXCEEDING COBALT-60 RELEASE CRITERION

Radiological Addendum to
Remedial Investigation/Feasibility Study Report for Parcel E-2

N:\projects\2005 Projects\25-049_Navy_HPS_E-2_RI-FS\N_Maps&Drawings\GIS\Projects\Radiation\PhaseV_Rad_Survey_Co_Results.mxd

35	**Landfill gas**	Section 2.5.3	Final Remedial Investigation/Feasibility Study for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Figure 4-3. Record No. 4237.



April 2002 Soil Gas Survey*

- No Survey Conducted
- Methane Not Detected
- Methane Less Than 25% LEL
- Methane Equal to or Greater than 25% LEL and Less than 100% LEL
- Methane Greater Than 100% LEL
- Estimated Extent of Methane Detected During April 2002 Field Survey
- HDPE Barrier Wall
- Area within UCSF Compound Targeted for Active Gas Extraction
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- Parcel Boundary
- Non-Navy Property
- UCSF Compound
- Building
- Road
- Gravel Road

Notes:
EPA = U.S. Environmental Protection Agency
HDPE = high-density polyethylene
LEL = lower explosive limit
UCSF = University of California, San Francisco

LEL for methane is 5 percent by volume

* Soil gas survey performed using field instruments (with lower quantitation limit for methane at 0.5% of the LEL) and supplemented with laboratory data (analyzed for methane by EPA Method 3C).

250 0 250

Scale in Feet

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

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

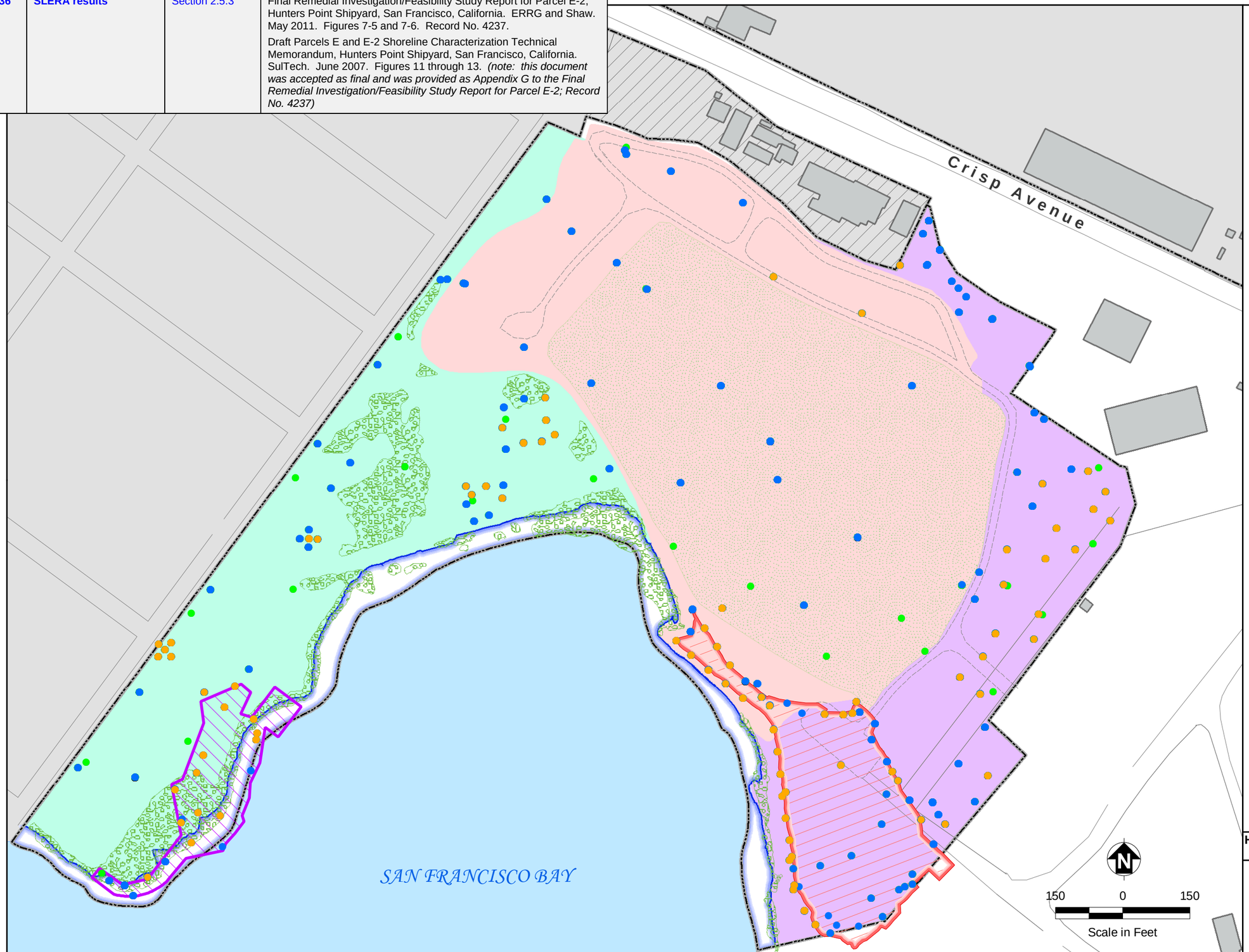
FIGURE 4-3

EXTENT OF SUBSURFACE METHANE PRIOR TO REMOVAL ACTION

Remedial Investigation/Feasibility Study for Parcel E-2

N:\2005_Projects\25-049_Navy_HPS_E-2_RI-FS\N_Maps&Drawings\GIS\Projects\Landfill\Section 4\Air\4.3-estimated extent of methane gas.mxd

36	**SLERA results**	Section 2.5.3	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Figures 7-5 and 7-6. Record No. 4237. Draft Parcels E and E-2 Shoreline Characterization Technical Memorandum, Hunters Point Shipyard, San Francisco, California. SulTech. June 2007. Figures 11 through 13. *(note: this document was accepted as final and was provided as Appendix G to the Final Remedial Investigation/Feasibility Study Report for Parcel E-2; Record No. 4237)*



Analyte Not Detected
Concentration Less Than PSC
Concentration Greater Than PSC
Road
Gravel Road
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
East Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property
Metal Slag Area (2007 excavation limit)[a]
PCB Hot Spot Area (2007 excavation limit)[a]
Wetland Area

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

ft bgs = feet below ground surface
mg/kg = milligrams per kilogram
PSC = protective soil concentration
UCSF = University of California, San Francisco

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

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

FIGURE 7-5
LOCATIONS WITH CHEMICAL CONCENTRATIONS EXCEEDING THE PROTECTIVE SOIL CONCENTRATION IN 0 - 3' SOIL
Remedial Investigation/Feasibility Study for Parcel E-2

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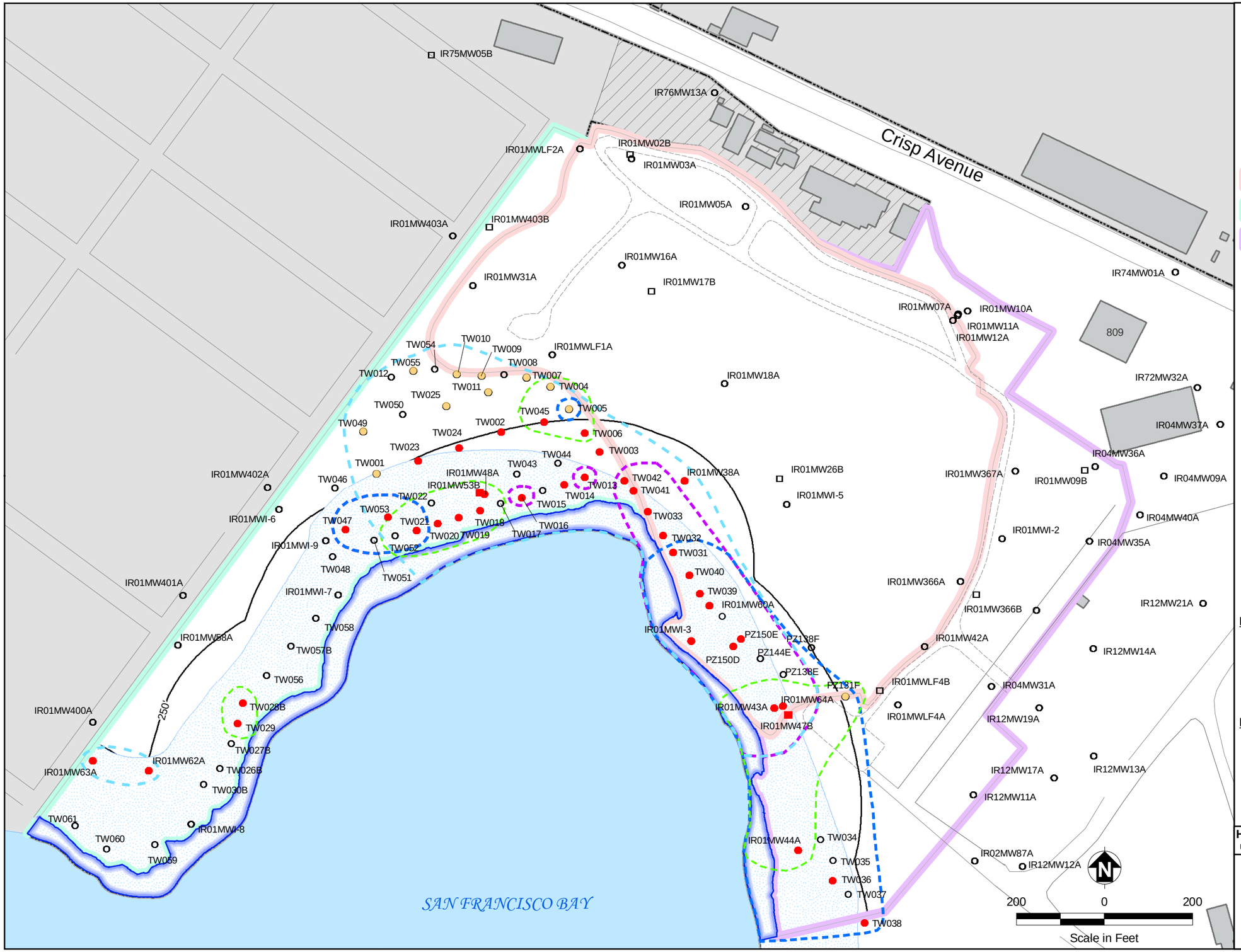

Notes:

The tidal influence study was conducted May 20 to June 3, 2002. (Tetra Tech EM Inc. 2004a.)

COPECs = chemicals of potential ecological concern
PCBs = polychlorinated biphenyls
TPH = total petroleum hydrocarbons
UCSF = University of California, San Francisco

Reference

Tetra Tech EM Inc. 2004a. "Revised Final Parcel E Groundwater Summary Report, Phase III Groundwater Data Gaps Investigation, Hunters Point Shipyard, San Francisco, California." October 17.

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

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

FIGURE 7-6

SCREENING- AND TRIGGER-LEVEL GROUNDWATER EVALUATION FOR AQUATIC LIFE
Remedial Investigation/Feasibility Study for Parcel E-2

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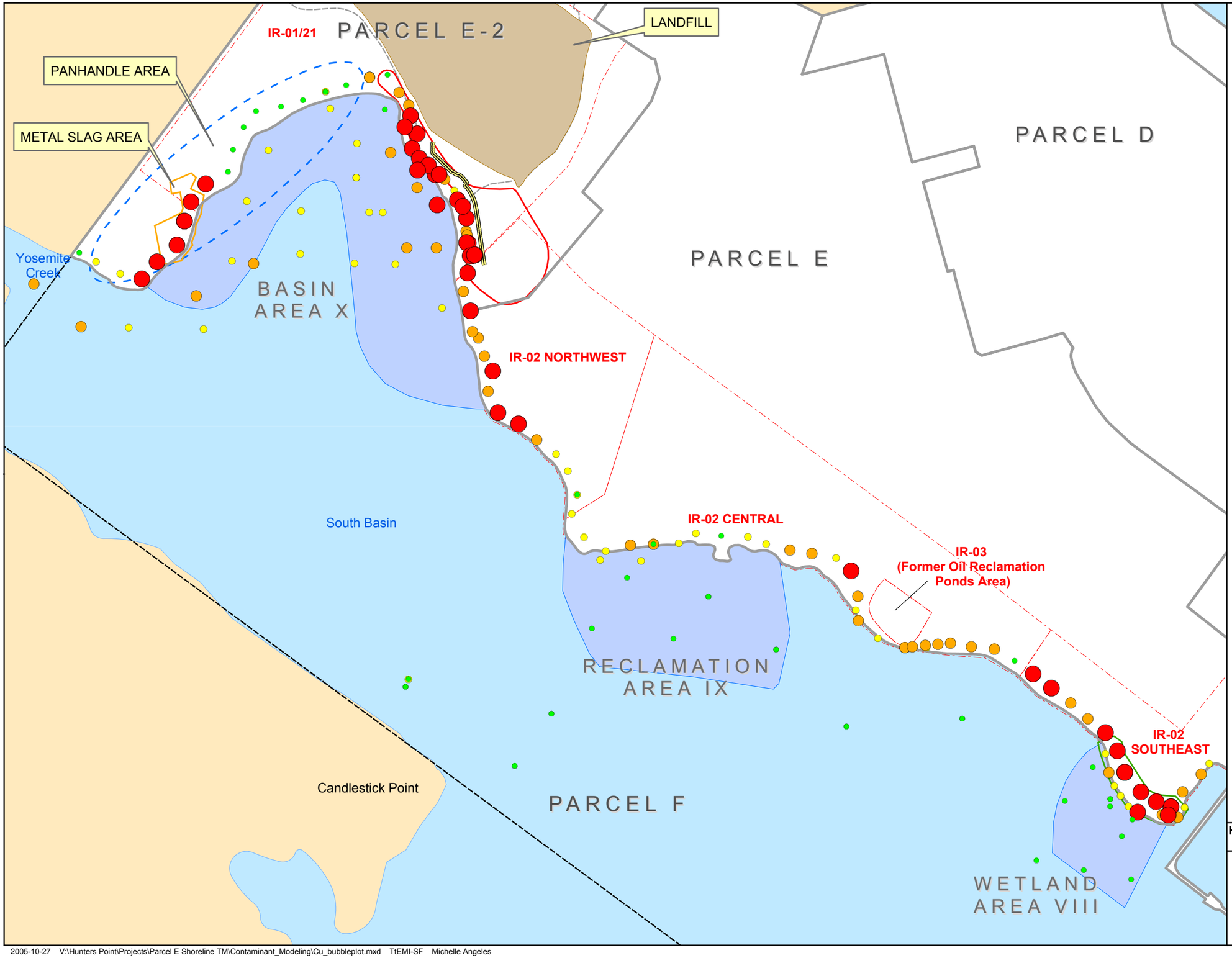

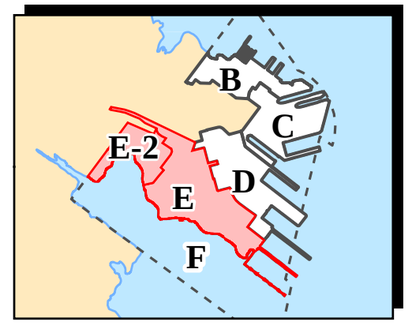

Location Map

Copper Results: 0-2 ft bgs

- Results Above ER-M
- Results Above HPAL but Below ER-M (≤270 mg/kg)
- Results Above SF Bay Ambient but Below HPAL (≤124.0 mg/kg)
- Results Below SF Bay Ambient (≤ 68.0 mg/kg)
- PCB Hotspot
- Metal Slag Area
- Panhandle Area
- Metal Debris Reef Area
- Offshore Areas
- Landfill Cap Extent
- Extent of Solid Waste
- Parcel Boundary
- Parcel F Boundary
- IR Site
- Non-Navy Property
- Sheet-Pile Wall

N

400 0 400

Scale in Feet

SulTech

Hunters Point Shipyard, San Francisco, California

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

FIGURE 11

SHORELINE AND OFFSHORE COPPER RESULTS

Draft Parcels E and E-2 Shoreline Characterization Technical Memorandum

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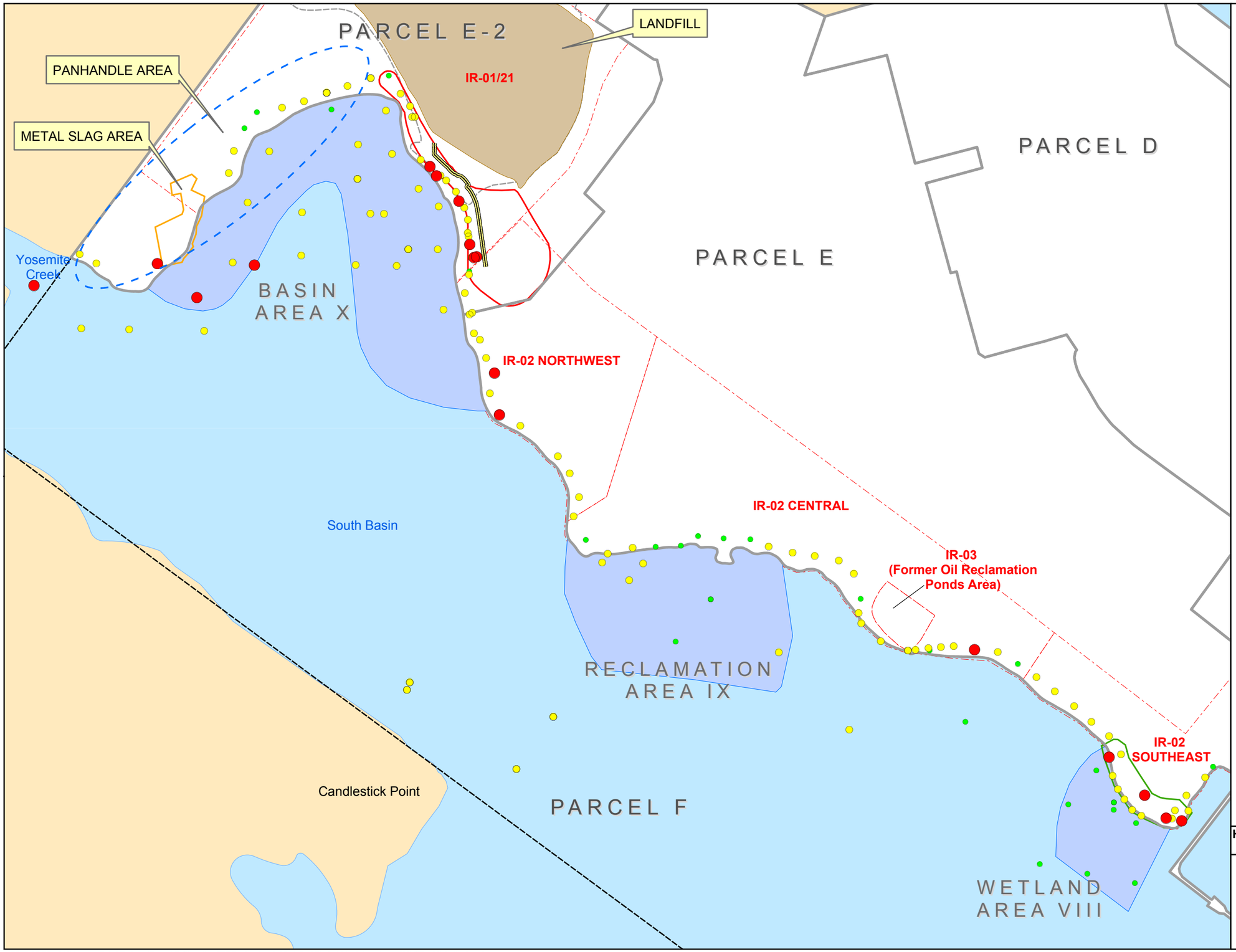
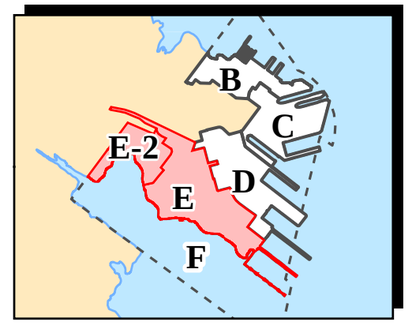




Location Map

Lead Results: 0-2 ft bgs

- Results Above ER-M
- Results Above SF Bay Ambient but Below ER-M (≤218.0 mg/kg)
- Results Below SF Bay Ambient (≤ 43.0 mg/kg)
- PCB Hotspot
- Metal Slag Area
- Panhandle Area
- Metal Debris Reef Area
- IR Site
- Offshore Areas
- Landfill Cap Extent
- Extent of Solid Waste
- Parcel Boundary
- Parcel F Boundary
- Non-Navy Property
- Sheet-Pile Wall

N

400 0 400

Scale in Feet

SulTech

Hunters Point Shipyard, San Francisco, California

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

FIGURE 12

SHORELINE AND OFFSHORE LEAD RESULTS

Draft Parcels E and E-2 Shoreline Characterization Technical Memorandum

PARCEL E-2

LANDFILL

IR-01/21

PANHANDLE AREA

METAL SLAG AREA

PARCEL D

PARCEL E

Yosemite Creek

BASIN AREA X

IR-02 NORTHWEST

IR-02 CENTRAL

South Basin

IR-03 (Former Oil Reclamation Ponds Area)

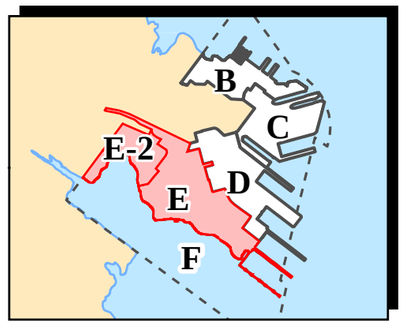
RECLAMATION AREA IX

IR-02 SOUTHEAST

Candlestick Point

PARCEL F

WETLAND AREA VIII



Location Map

PCB Results: 0-2 ft bgs

- Result > 300 mg/kg
- 50.0 ppm< Result ≤ 300 mg/kg
- 5.0 ppm< Result ≤ 50.0 mg/kg
- 1.0 ppm< Result ≤ 5.0 mg/kg
- 0.2 ppm< Result ≤ 1.0 mg/kg
- Result ≤ 0.2 mg/kg
- Result Not Detected
- PCB Hotspot
- Metal Slag Area
- Panhandle Area
- Metal Debris Reef Area
- Offshore Areas
- Landfill Cap Extent
- Extent of Solid Waste
- Parcel Boundary
- Parcel F Boundary
- IR Sites
- Non-Navy Property
- Sheet-Pile Wall

N

400 0 400

Scale in Feet

SulTech

Hunters Point Shipyard, San Francisco, California

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

FIGURE 13

SHORELINE AND OFFSHORE PCB RESULTS

Draft Parcels E and E-2 Shoreline Characterization Technical Memorandum

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37	**Remediation goals**	Section 2.5.3	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 7.1.3.1, page 7-10; Table 7-13. Record No. 4237.

HGALs have been developed for groundwater in the A-aquifer at HPS and are likely applicable for groundwater in the B-aquifer. However, data for inorganic chemicals in the B-aquifer were not compared with HGALs in the HHRA as a conservative approach and incremental risks were not assessed for the groundwater domestic use evaluation.

7.1.3. Remediation Goals

Remediation goals were developed for the COCs identified for soil and groundwater, using the methodology described in the subsections below. The development of remediation goals for soil was limited to COCs identified for soil based on the incremental risk evaluation results, which excludes the risks posed by metals at concentrations below ambient levels, in accordance with EPA guidance.

7.1.3.1. Soil

Remediation goals for COCs in soil were selected based on a comparison of the COC-specific RBC, laboratory practical quantitation limit (PQL) based on standard EPA analytical methods, and HPAL (inorganic chemicals only). For each COC, the highest of these three concentrations was selected as the remediation goal. With the exception of lead, exposure scenario-specific RBCs were calculated based on a target cancer risk level of 1E-06 and target noncancer HI of 1. This is consistent with the exposure pathways and assumptions described in Appendix K that were used to assess human health risks. For lead, the exposure scenario-specific RBCs were based on modeled blood lead concentrations, as discussed in Section K7.4 of Appendix K. Table 7-13 presents the remediation goals for COCs in soil.

Remediation goals for recreational visitors and construction workers for one inorganic chemical (arsenic) were based on the HPAL for arsenic. Comparison of the HPAL for arsenic with the RBCs for arsenic for recreational visitors and construction workers shows that the ambient level for arsenic in soil exceeds the respective RBCs. Section K9.1 of Appendix K addresses the risks and hazards associated with exposure to metals in soil at ambient levels at HPS.

7.1.3.2. Groundwater

Remediation goals for COCs in groundwater in the A- and B-aquifers, as identified by the HHRA, are shown in Tables 7-14 and 7-15. Development of the remediation goals for groundwater was based on consideration of chemical-specific ARARs (that is, state of California and federal MCLs), exposure-scenario-specific RBCs, laboratory PQLs, and HGALs (for metals only). Chemical-specific ARARs are discussed further and identified in Section 10.1.1. Chemical-specific ARARs were only considered in the development of the remediation goals for the B-aquifer; no ARARs are available to address the construction worker scenario assessed for the A-aquifer. When available, project-required quantitation limits from the BGMP (CE2-Kleinfelder Joint Venture, 2009c) were used as PQLs; otherwise, PQLs were based on standard EPA analytical methods. Exposure scenario-specific concentrations based on a target

Table 7-13. Remediation Goals for Chemicals of Concern in Soil
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Exposure Scenario	Chemical of Concern[a]	Risk-Based Concentration	Hunters Point Ambient Level	Practical Quantitation Limit	Remediation Goal
Recreational	Antimony	270	9.05	0.5	270
	Aroclor-1242	0.74	--	0.01	0.74
	Aroclor-1248	0.74	--	0.01	0.74
	Aroclor-1254	0.74	--	0.01	0.74
	Aroclor-1260	0.74	--	0.01	0.74
	Arsenic	0.37	11.1	0.2	11.1
	Benzo(a)anthracene	1.3	--	0.33	1.3
	Benzo(a)pyrene	0.13	--	0.33	0.33
	Benzo(b)fluoranthene	1.3	--	0.33	1.3
	Benzo(k)fluoranthene	1.3	--	0.33	1.3
	Dieldrin	0.12	--	0.004	0.12
	Heptachlor epoxide	0.21	--	0.0017	0.21
	Indeno(1,2,3-cd)pyrene	1.3	--	0.33	1.3
	Lead	155	8.99	0.6	155
	Total PCBs (Non-Dioxin) [b]	0.74	--	0.01	0.74
Construction Worker	4,4'-DDT	45	--	0.004	45
	Antimony	120	9.05	0.5	120
	Aroclor-1016	7.4	--	0.01	7.4
	Aroclor-1242	2.1	--	0.01	2.1
	Aroclor-1248	2.1	--	0.01	2.1
	Aroclor-1254	2.1	--	0.01	2.1
	Aroclor-1260	2.1	--	0.01	2.1
	Arsenic	1.62	11.1	0.2	11.1
	Benzo(a)anthracene	6.5	--	0.33	6.5
	Benzo(a)pyrene	0.65	--	0.33	0.65
	Benzo(b)fluoranthene	6.5	--	0.33	6.5
	Benzo(k)fluoranthene	6.5	--	0.33	6.5
	Cadmium	150	3.14	0.04	150
	Copper	11,000	124.31	0.1	11,000
	Dibenz(a,h)anthracene	1.1	--	0.33	1.1
	Dieldrin	0.57	--	0.004	0.57
	Dioxin (TEQ) [c]	0.000023	--	0.000001	0.000023
	Heptachlor epoxide	1	--	0.0017	1
	Indeno(1,2,3-cd)pyrene	6.5	--	0.33	6.5
	Iron	93,000	58,000	0.6	93,000
	Lead	800	8.99	0.6	800
	Manganese	6,900	1,431	0.5	6,900
	Naphthalene	75	--	0.004	75
	Total PCBs (Non-Dioxin) [b]	2.1	--	0.01	2.1
	Vanadium	310	117.17	0.1	310

Notes: All concentrations shown in milligrams per kilogram.

a Chemicals of concern are based on the results of the incremental risk evaluation for soil.
b Aroclor-1254 was used as a surrogate.
c 2,3,7,8-Tetrachlorodibenzo-p-dioxin was used as a surrogate.

-- Not applicable
DDT Dichlorodiphenyltrichloroethane
PCB Polychlorinated biphenyl
TEQ Toxic equivalency quotient

38	Hot spots	Section 2.5.3	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.1.6, pages 12-10 through 12-13; Figures 12-7 through 12-9. Record No. 4237.

The CCSF proposed, as part of the environmental impact report for the Phase II development at HPS and Candlestick Point, building a roadway along the western portion of Parcel E-2 (SFRA, 2009). The footprint of the proposed roadway is adjacent to the proposed wetlands restoration areas, as shown on Figures 12-1 and 12-12. The proposed roadway is designated as a "local street" in the SFRA's 2010 amended Redevelopment Plan and is subject to adjustment based on detailed engineering studies prior to actual physical development (SFRA, 2010). Based upon the available information, the Navy does not believe that the proposed roadway is fundamentally incompatible with the excavation or restoration plans for this portion of Parcel E-2. As a result, the Navy has not adjusted the proposed excavation or restoration plans in this portion of Parcel E-2. The Navy recognizes that pertinent elements of the RD (such as surface water drainage) will need to be integrated with future infrastructure along the western property boundary; however, the Navy anticipates that this design integration process would only result in minor refinements of the conceptual designs presented on Figures 12-1 and 12-12 and would not alter the fundamental components of the remedial action.

12.1.5.3. Offshore Feasibility Study

An FS was prepared for Parcel F to evaluate remediation alternatives for the contaminated sediment offshore of Parcel E-2 (Barajas & Associates, Inc., 2008a). As described in the Parcel F FS Report, the remedial alternatives evaluated for Parcel E-2 constitute source control measures for offshore contamination at Areas IX and X because contaminated sediment along the Parcel E-2 shoreline has been a source of contamination to the offshore Areas IX and X. In addition, the Parcel F FS Report notes that source control measures at Parcel E-2 should be completed before or simultaneously with any remediation work at Areas IX and X, which are located offshore of Parcel E-2 (Barajas & Associates, Inc., 2008a). During the RD, the selected shoreline remediation approach for Parcel E-2 will be refined, as needed, to integrate with the remediation approach for Parcel F and the overall site restoration plans. For example, the current alignment of the shoreline protection system for Alternatives 3, 4, and 5 (Figure 12-1) does not contain all contaminated sediment within the Shoreline Area. This alignment was selected to follow the existing shoreline and minimize filling of the bay. Alternatives 3, 4 and 5 assume that the remediation approach selected for the Parcel F FS will be used in the Shoreline Area not currently covered by the shoreline protection system.

12.1.6. Hot Spot Removal in the Panhandle, East Adjacent, and Shoreline Areas

Alternatives 2, 3, 4, and 5 would involve, to varying degrees, removal of identified hot spots in the Panhandle, East Adjacent, and Shoreline Areas. Although hot spot removal is not required to achieve the RAOs for soil, sediment, and solid waste, it constitutes removal of known or likely sources to groundwater contamination; therefore, it contributes to the remedial performance relative to the RAOs for groundwater. Hot spots were identified using existing soil and groundwater data (evaluated in Sections 4 and 5), as well as field observations from recent removal actions (for example, exploratory potholes

excavated between the PCB Hot Spot Area excavation and the bay identified oil staining and free-phase product). Based on this information, the Navy assessed the benefit of hot spot removal (that is, enhancing the performance of a remedial alternative relative to the RAOs) based on the following factors:

- The potential for soil hot spots to be a continuing source to groundwater contamination (e.g., chemicals that were identified in both soil and groundwater at concentrations exceeding RIECs)
- The magnitude of soil concentrations relative to RIECs (or alternative ecological risk-based criteria)
- The proximity of the potential hot spot relative to San Francisco Bay (which increases the likelihood of its affect on aquatic wildlife)

Based on these factors, the Navy identified five tiers of hot spots for removal at Parcel E-2 (Figure 12-7) that are discussed below.

- Tier 1 hot spots consist of nearshore locations (within the TIZ) where soil concentrations are greater than 10 times the RIECs (or alternative ecological risk-based criteria) and corresponding groundwater concentrations in monitoring wells consistently exceed aquatic evaluation criteria. As shown on Figure 12-7, Tier 1 hot spots were identified at the shoreline portion of the PCB Hot Spot Area. Proposed excavation boundaries, with estimated depths and volumes, for the Tier 1 hot spots are shown on Figure 12-8.
- Tier 2 hot spots consist of nearshore locations (within the TIZ) where soil concentrations are greater than 10 times the RIEC (or alternative ecological risk-based criteria) and corresponding groundwater concentrations in temporary wells exceeded aquatic evaluation criteria. As shown on Figure 12-7, Tier 2 hot spots were identified at the Metal Slag Area and northwest of the PCB Hot Spot Area. Proposed excavation boundaries, with estimated depths and volumes, for the Tier 2 hot spots are shown on Figures 12-8 and 12-9.
- Tier 3 hot spots consist of locations (inland of the TIZ) where soil concentrations are greater than 100 times the RIECs. Tier 3 hot spots were identified along the northern sidewall of the PCB Hot Spot Area excavation and in the central portion of the East Adjacent Area (Figure 12-7). Proposed excavation boundaries, with estimated depths and volumes, for the Tier 3 hot spots are shown on Figure 12-8.
- Tier 4 hot spots consist of nearshore locations (within the TIZ) where groundwater concentrations in temporary wells exceeded aquatic evaluation criteria and no corresponding soil data were available. Tier 4 hot spots were identified in the northern portion of the Panhandle Area (Figure 12-7). Proposed excavation boundaries, with estimated depths and volumes, for the Tier 4 hot spots are shown on Figure 12-9.

- Tier 5 hot spots consist of locations (inland the TIZ) where soil concentrations are greater than 10 times the RIECs (or alternative ecological risk-based criteria) and corresponding groundwater concentrations in downgradient temporary wells exceeded aquatic evaluation criteria. Tier 5 hot spots were identified in the southern portion of the Panhandle Area (Figure 12-7). Additional Tier 5 hot spots were identified in the East Adjacent Area as part of a 2009 investigation (associated with a groundwater treatability study at Parcel E [Shaw, 2009a]) and were incorporated into an interim removal action at Parcel E-2 (Navy, 2010); these two locations (IR12B029 and IR04MW13A) contain elevated VOC concentrations that pose a risk to future site occupants (via the vapor intrusion pathway) in the adjoining Parcel E. Proposed excavation boundaries, with estimated depths and volumes, for the Tier 5 hot spots are shown on Figures 12-8 and 12-9.

Tier 1 and 2 hot spots are considered most important to enhancing the performance of a remedial alternative relative to the RAOs. As a result, removal of Tier 1 and 2 hot spots are included under Alternatives 2, 3, 4, and 5. Tier 3, 4, and 5 hot spots are considered less important to enhancing the performance of a remedial alternative relative to the RAOs; these hot spots are included only in Alternatives 2, 4, and 5. The Tier 4 hot spots, located primarily along the northern portion of the Panhandle Area between temporary well locations TW013 to TW047, pose a potential risk to aquatic wildlife in the bay because of their location within the TIZ. However, the Tier 4 hot spots were not included in Alternative 3 because of uncertainty related to whether source removal at the locations is necessary to protect aquatic wildlife in the bay. The following factors contributed to the uncertainty: (1) no collocated soil data were available to verify that residual concentrations exceeded the identified hot spot goals; (2) the magnitude of most exceedances (metals and petroleum hydrocarbons) was less than two times the corresponding surface water criteria; and (3) the fate and transport properties of PCBs (which exceed the corresponding surface water criteria by more than eight times) result in very slow contaminant transport rates (IT, 2001). As described in Section 12.1.3, Alternative 3 includes the following actions in close proximity to the Tier 4 hot spots that will minimize potential impact to aquatic wildlife in the bay: (1) excavation of nearshore sediment and soil prior to construction of the shoreline revetment, and (2) installation of a geosynthetic liner under the rock revetment wall.

The lateral and vertical extent of hot spots would be refined through pre-excavation characterization to be performed during the RD. This characterization effort would be guided by specific DQOs to better delineate hot spot contamination. This report assumes that individual hot spots would be excavated to meet the chemical-specific goals presented in Table 12-2; however, the RD may refine these goals to more accurately define the soil concentrations that could leach to groundwater at concentrations exceeding aquatic evaluation criteria. Refined goals, if deemed necessary, would be supported with technical information (such as modeling or site-specific leaching analyses) in the RD.

For Alternative 2, the hot spot removal would consist of extending the planned excavation deeper, as needed, to remove the hot spot contamination. Additional information on the planned hot spot removal under Alternative 2 is provided in Section 12.2.2.4. As discussed in Section 12.2.2, all material excavated under Alternative 2, including the hot spot removal, would be characterized and disposed of off site, following screening for and segregation of radiologically impacted material (which would also be disposed of off site). Any industrial debris (such as drums and associated liquid wastes) and MDAS (such as empty shell casings) would be disposed of off site with LLRW and soil containing chemicals at concentrations exceeding hot spot goals.

For Alternatives 3, 4, and 5, the hot spot removal would consist of targeted excavations and would be implemented as part of the grading process prior to capping. Removal of Tier 1 and 2 hot spots, which are located within or close to the Shoreline Area, would be implemented with the shoreline excavation process described in Section 12.1.3. Additional information on the planned hot spot removal under Alternatives 3, 4, and 5 is provided in Sections 12.2.3.3 and 12.2.4.1. As discussed in Section 12.2.3, following screening for and segregation of radiologically contaminated material (which would be disposed of off site), hot spots would be excavated and disposed of off site; material excavated as part of the overall grading process would be incorporated into the landfill under the new cap extension.

For Alternatives 2, 3, 4, and 5, post-excavation confirmation samples would be collected for analysis to verify that residual chemical concentrations were less than the hot spot goals. Upon receipt of acceptable confirmation sampling results, the excavations would be backfilled with clean imported soil in accordance with the final grading plan (discussed in Sections 12.2.2.6 and 12.2.3.4).

12.2. REMEDIAL ALTERNATIVES DEVELOPED FOR PARCEL E-2

This section describes each of the remedial alternatives selected for Parcel E-2. Common components for each alternative are discussed in Section 12.1, and are only referred to in the following sections as appropriate. Appendix R of this report contains the cost estimates associated with each alternative.

12.2.1. Alternative 1: No Action

For this alternative, no remedial action would be taken. Solid waste, soil, sediment, surface water, and groundwater would be left in place without implementation of any response actions (including monitoring, institutional controls, containment, removal, treatment, or other mitigating actions). The no action alternative is included throughout the FS process as required by the NCP to provide a baseline for comparison with and evaluation of other alternatives.

Evaluation Tier	Location ID	Chemical	Concentration	Units	Depth (ft bgs)	Criterion Type	Criterion	Exceedance Level
1	Grid 109 Sidewall	Total PCBs	640	mg/kg	2.5	PRG	0.74	100X
1	Grid 110 Sidewall	Total PCBs	450	mg/kg	1.8	PRG	0.74	100X
1	Grid 110 Sidewall	Total PCBs	400	mg/kg	6	PRG	0.74	100X
1	Grid 111 Sidewall	Total PCBs	120	mg/kg	2.8	PRG	0.74	100X
1	Grid 111 Sidewall	Total PCBs	750	mg/kg	6	PRG	0.74	100X
1	Grid 139 Sidewall	Total PCBs	8.9	mg/kg	1	PRG	0.74	10X
1	Grid 139 Sidewall	Total PCBs	9.8	mg/kg	8	PRG	0.74	10X
1	Grid 153 Sidewall	Total PCBs	8	mg/kg	7	PRG	0.74	10X
1	Grid 156 Sidewall	Total PCBs	52	mg/kg	2.5	PRG	0.74	10X
1	Grid 159 Bottom	Total PCBs	950	mg/kg	7	PRG	0.74	100X
1	Grid 159 Sidewall	Heptachlor Epoxide	86	mg/kg	6	PRG	0.19	100X
1	Grid 159 Sidewall	Total PCBs	120	mg/kg	3	PRG	0.74	100X
1	Grid 159 Sidewall	Total PCBs	12,000	mg/kg	6	PRG	0.74	100X
1	Grid 165 Bottom	Total PCBs	19	mg/kg	6	PRG	0.74	100X
1	Grid 165 Sidewall	Lead	9,700	mg/kg	1.3	PSC	197	10X
1	Grid 165 Sidewall	Total PCBs	48	mg/kg	1.3	PRG	0.74	10X
1	Grid 165 Sidewall	Total PCBs	99	mg/kg	5	PRG	0.74	100X
1	Grid 170 Sidewall	Lead	2,200	mg/kg	3	PSC	197	10X
1	Grid 171 Sidewall	Total PCBs	380	mg/kg	3	PRG	0.74	100X
1	Grid 86 Sidewall	Lead	9,300	mg/kg	7	PSC	197	10X
1	Grid 86 Sidewall	Total PCBs	1,500	mg/kg	7	PRG	0.74	100X
1	Grid 86 Sidewall	Total PCBs	59	mg/kg	1	PRG	0.74	10X
1	IR01MW44A	Total PCBs	8.6	mg/kg	12	PRG	0.74	10X
1	IR01SH025	Total PCBs	9.6	mg/kg	0.5	ER-M	0.18	10X
1	IR01SH026	Lead	4,400	mg/kg	2.5	ER-M	218	10X
1	IR01SH026	Total PCBs	9.4	mg/kg	0.5	ER-M	0.18	10X
1	IR01SH026	Total PCBs	10	mg/kg	2.5	ER-M	0.18	10X
1	IR01SH028	Total PCBs	19.4	mg/kg	2.5	ER-M	0.18	100X
1	IR01SH028	Total PCBs*	8.8	mg/kg	0.5	ER-M	0.18	10X
1	IR01SH029	Total PCBs	9.4	mg/kg	0.5	ER-M	0.18	10X
1	IR01SH029	Total PCBs	1.9	mg/kg	2.5	ER-M	0.18	10X
1	IR01SH031	Total PCBs*	3.4	mg/kg	0.5	ER-M	0.18	10X
1	IR01SH032	Total PCBs	2	mg/kg	0.5	ER-M	0.18	10X
1	IR01SH032	Total PCBs	4.1	mg/kg	2.5	ER-M	0.18	10X
1	IR01SH034	Total PCBs*	7.6	mg/kg	0.5	ER-M	0.18	10X
1	IR01SH034	Total PCBs*	3.7	mg/kg	2.5	ER-M	0.18	10X
1	IR01SH035	Total PCBs	6.5	mg/kg	0.5	ER-M	0.18	10X
1	IR01SH035	Total PCBs	9.3	mg/kg	2.5	ER-M	0.18	10X
1	IR01SH036	Total PCBs	1,300	mg/kg	10	PRG	0.74	100X
1	IR01SH037	Total PCBs*	3.5	mg/kg	0.5	ER-M	0.18	10X
1	IR01SH037	Total PCBs*	8.2	mg/kg	2.5	ER-M	0.18	10X
1	IR01SH038	Total PCBs	12	mg/kg	2.5	ER-M	0.18	10X
1	IR01SH040	Total PCBs	150	mg/kg	2.5	ER-M	0.18	100X
1	IR01SH040	Total PCBs*	11.8	mg/kg	0.5	ER-M	0.18	100X

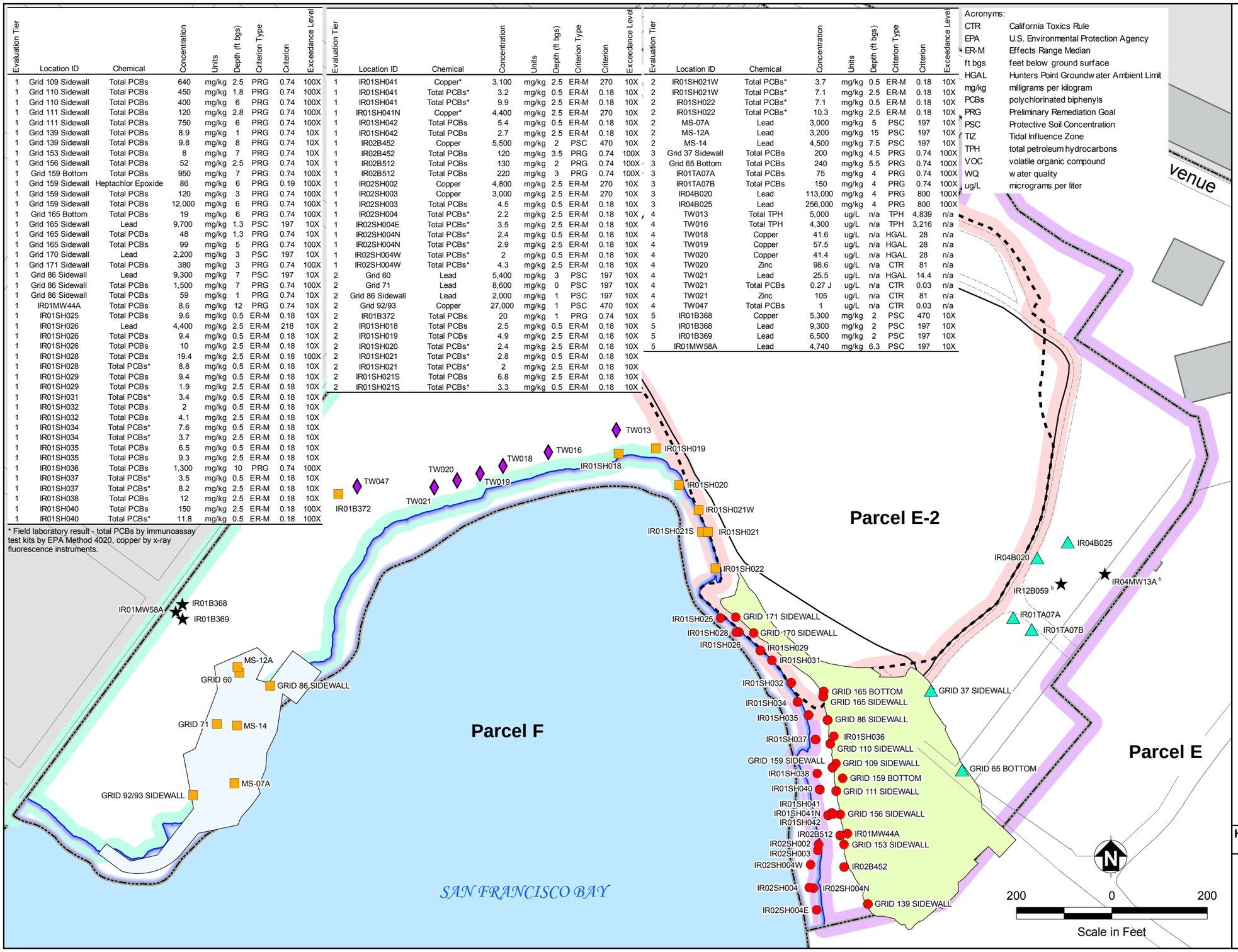
* Field laboratory result - total PCBs by immunoassay test kits by EPA Method 4020, copper by x-ray fluorescence instruments.

Evaluation Tier	Location ID	Chemical	Concentration	Units	Depth (ft bgs)	Criterion Type	Criterion	Exceedance Level
1	IR01SH041	Copper*	3,100	mg/kg	2.5	ER-M	270	10X
1	IR01SH041	Total PCBs*	3.2	mg/kg	0.5	ER-M	0.18	10X
1	IR01SH041	Total PCBs*	9.9	mg/kg	2.5	ER-M	0.18	10X
1	IR01SH041N	Copper*	4,400	mg/kg	2.5	ER-M	270	10X
1	IR01SH042	Total PCBs	5.4	mg/kg	0.5	ER-M	0.18	10X
1	IR01SH042	Total PCBs	2.7	mg/kg	2.5	ER-M	0.18	10X
1	IR02B452	Copper	5,500	mg/kg	2	PSC	470	10X
1	IR02B452	Total PCBs	120	mg/kg	3.5	PRG	0.74	100X
1	IR02B512	Total PCBs	130	mg/kg	2	PRG	0.74	100X
1	IR02B512	Total PCBs	220	mg/kg	3	PRG	0.74	100X
1	IR02SH002	Copper	4,800	mg/kg	2.5	ER-M	270	10X
1	IR02SH003	Copper	3,000	mg/kg	2.5	ER-M	270	10X
1	IR02SH003	Total PCBs	4.5	mg/kg	0.5	ER-M	0.18	10X
1	IR02SH004	Total PCBs*	2.2	mg/kg	2.5	ER-M	0.18	10X
1	IR02SH004E	Total PCBs*	3.5	mg/kg	2.5	ER-M	0.18	10X
1	IR02SH004N	Total PCBs*	2.4	mg/kg	0.5	ER-M	0.18	10X
1	IR02SH004N	Total PCBs*	2.9	mg/kg	2.5	ER-M	0.18	10X
1	IR02SH004W	Total PCBs*	2	mg/kg	0.5	ER-M	0.18	10X
1	IR02SH004W	Total PCBs*	4.3	mg/kg	2.5	ER-M	0.18	10X
2	Grid 60	Lead	5,400	mg/kg	3	PSC	197	10X
2	Grid 71	Lead	8,600	mg/kg	0	PSC	197	10X
2	Grid 86 Sidewall	Lead	2,000	mg/kg	1	PSC	197	10X
2	Grid 92/93	Copper	27,000	mg/kg	1	PSC	470	10X
2	IR01B372	Total PCBs	20	mg/kg	1	PRG	0.74	10X
2	IR01SH018	Total PCBs	2.5	mg/kg	0.5	ER-M	0.18	10X
2	IR01SH019	Total PCBs	4.9	mg/kg	2.5	ER-M	0.18	10X
2	IR01SH020	Total PCBs*	2.4	mg/kg	2.5	ER-M	0.18	10X
2	IR01SH021	Total PCBs*	2.8	mg/kg	0.5	ER-M	0.18	10X
2	IR01SH021	Total PCBs*	2	mg/kg	2.5	ER-M	0.18	10X
2	IR01SH021S	Total PCBs	6.8	mg/kg	2.5	ER-M	0.18	10X
2	IR01SH021S	Total PCBs*	3.3	mg/kg	0.5	ER-M	0.18	10X

Evaluation Tier	Location ID	Chemical	Concentration	Units	Depth (ft bgs)	Criterion Type	Criterion	Exceedance Level
2	IR01SH021W	Total PCBs*	3.7	mg/kg	0.5	ER-M	0.18	10X
2	IR01SH021W	Total PCBs*	7.1	mg/kg	2.5	ER-M	0.18	10X
2	IR01SH022	Total PCBs*	7.1	mg/kg	0.5	ER-M	0.18	10X
2	IR01SH022	Total PCBs*	10.3	mg/kg	2.5	ER-M	0.18	10X
2	MS-07A	Lead	3,000	mg/kg	5	PSC	197	10X
2	MS-12A	Lead	3,200	mg/kg	15	PSC	197	10X
2	MS-14	Lead	4,500	mg/kg	7.5	PSC	197	10X
3	Grid 37 Sidewall	Total PCBs	200	mg/kg	4.5	PRG	0.74	100X
3	Grid 65 Bottom	Total PCBs	240	mg/kg	5.5	PRG	0.74	100X
3	IR01TA07A	Total PCBs	75	mg/kg	4	PRG	0.74	100X
3	IR01TA07B	Total PCBs	150	mg/kg	4	PRG	0.74	100X
3	IR04B020	Lead	113,000	mg/kg	4	PRG	800	100X
3	IR04B025	Lead	256,000	mg/kg	4	PRG	800	100X
4	TW013	Total TPH	5,000	ug/L	n/a	TPH	4,839	n/a
4	TW016	Total TPH	4,300	ug/L	n/a	TPH	3,216	n/a
4	TW018	Copper	41.6	ug/L	n/a	HGAL	28	n/a
4	TW019	Copper	57.5	ug/L	n/a	HGAL	28	n/a
4	TW020	Copper	41.4	ug/L	n/a	HGAL	28	n/a
4	TW020	Zinc	98.6	ug/L	n/a	CTR	81	n/a
4	TW021	Lead	25.5	ug/L	n/a	HGAL	14.4	n/a
4	TW021	Total PCBs	0.27 J	ug/L	n/a	CTR	0.03	n/a
4	TW021	Zinc	105	ug/L	n/a	CTR	81	n/a
4	TW047	Total PCBs	1	ug/L	n/a	CTR	0.03	n/a
5	IR01B368	Copper	5,300	mg/kg	2	PSC	470	10X
5	IR01B368	Lead	9,300	mg/kg	2	PSC	197	10X
5	IR01B369	Lead	6,500	mg/kg	2	PSC	197	10X
5	IR01MW58A	Lead	4,740	mg/kg	6.3	PSC	197	10X

Acronyms:

CTR	California Toxics Rule
EPA	U.S. Environmental Protection Agency
ER-M	Effects Range Median
ft bgs	feet below ground surface
HGAL	Hunters Point Groundwater Ambient Limit
mg/kg	milligrams per kilogram
PCBs	polychlorinated biphenyls
PRG	Preliminary Remediation Goal
PSC	Protective Soil Concentration
TIZ	Tidal Influence Zone
TPH	total petroleum hydrocarbons
VOC	volatile organic compound
WQ	water quality
ug/L	micrograms per liter



Legend

- Evaluation Tier 1 - Soil concentrations 10 times > evaluation criteria at near-shore locations (within TIZ) with corresponding groundwater concentrations consistently exceeding aquatic WQ goals.
- Evaluation Tier 2 - Soil concentrations 10 times > evaluation criteria at near-shore locations (within TIZ) with corresponding grab groundwater concentrations exceeding aquatic WQ goals.
- Evaluation Tier 3 - Soil concentrations 100 times > evaluation criteria.
- Evaluation Tier 4 - Grab groundwater concentrations (within Panhandle Area TIZ) exceeding aquatic WQ goals at locations with no corresponding soil data.
- Evaluation Tier 5 - Soil concentrations 10 times > evaluation criteria at near-shore locations (within 200 feet of TIZ) with downgradient grab groundwater concentrations exceeding aquatic WQ goals*

- Road
- Estimate of Solid Waste Extent
- Gravel Road
- Interim Landfill Cap Extent
- Shoreline Area
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Building
- UCSF Compound
- Parcel Boundary
- San Francisco Bay
- Non-Navy Property
- Tidal Influence Zone (Maximum Tidal Fluctuation ≥ 0.10 foot)

Removal Actions

- Metal Slag Area (2007 excavation limit)[a]
- PCB Hot Spot Area (2007 excavation limit)[a]

Notes:

[a] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech EC Inc., 2007a and 2007b).

[b] Tier 5 hot spots include two locations (IR12B059 and IR04MW13A) identified as VOC source areas that impact groundwater at Parcel E.

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FIGURE 12-7

SOIL HOT SPOT EVALUATION

Remedial Investigation/Feasibility Study for Parcel E-2

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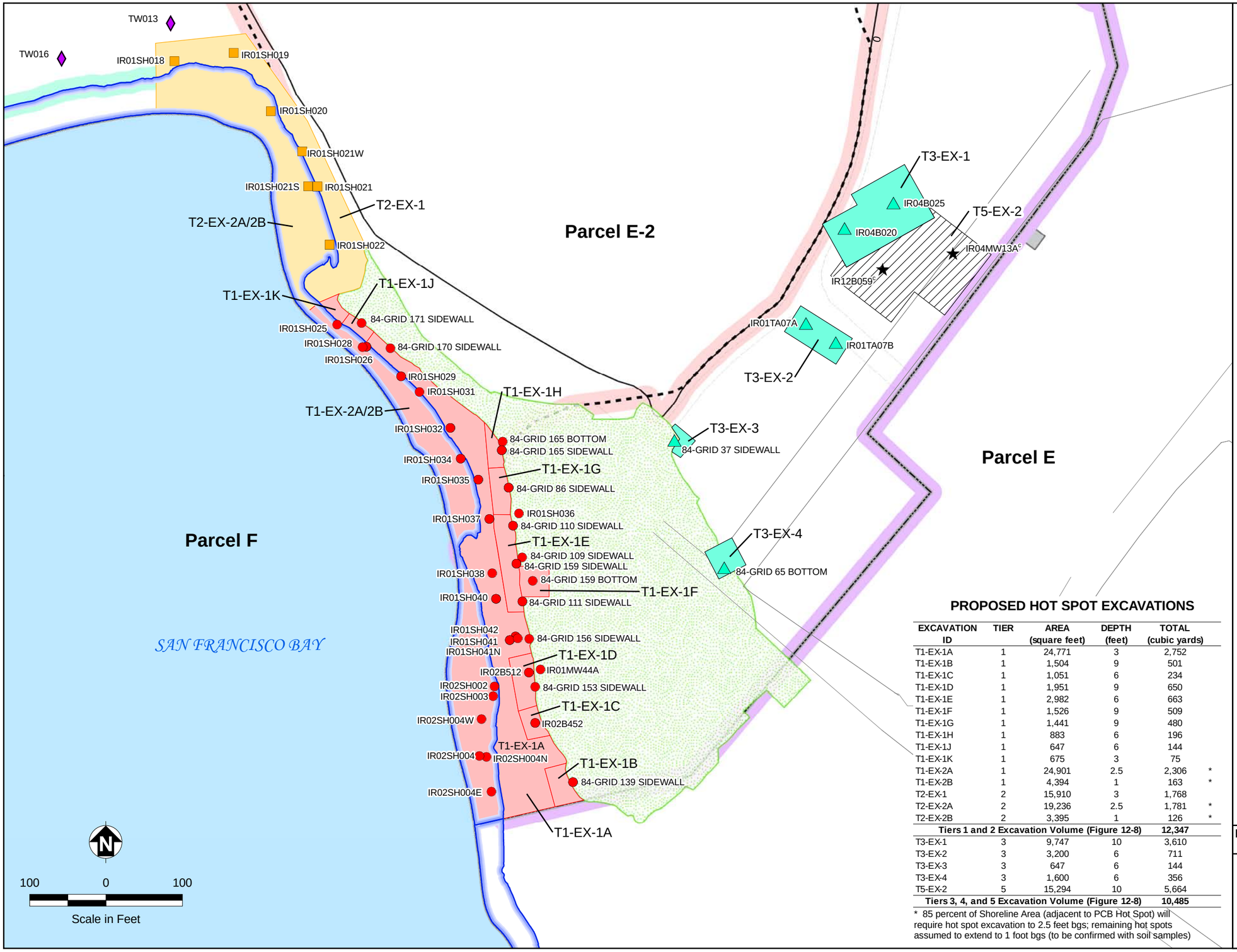

PROPOSED HOT SPOT EXCAVATIONS

EXCAVATION ID	TIER	AREA (square feet)	DEPTH (feet)	TOTAL (cubic yards)	
T1-EX-1A	1	24,771	3	2,752	
T1-EX-1B	1	1,504	9	501	
T1-EX-1C	1	1,051	6	234	
T1-EX-1D	1	1,951	9	650	
T1-EX-1E	1	2,982	6	663	
T1-EX-1F	1	1,526	9	509	
T1-EX-1G	1	1,441	9	480	
T1-EX-1H	1	883	6	196	
T1-EX-1J	1	647	6	144	
T1-EX-1K	1	675	3	75	
T1-EX-2A	1	24,901	2.5	2,306	*
T1-EX-2B	1	4,394	1	163	*
T2-EX-1	2	15,910	3	1,768	
T2-EX-2A	2	19,236	2.5	1,781	*
T2-EX-2B	2	3,395	1	126	*
Tiers 1 and 2 Excavation Volume (Figure 12-8)				**12,347**	
T3-EX-1	3	9,747	10	3,610	
T3-EX-2	3	3,200	6	711	
T3-EX-3	3	647	6	144	
T3-EX-4	3	1,600	6	356	
T5-EX-2	5	15,294	10	5,664	
Tiers 3, 4, and 5 Excavation Volume (Figure 12-8)				**10,485**	

* 85 percent of Shoreline Area (adjacent to PCB Hot Spot) will require hot spot excavation to 2.5 feet bgs; remaining hot spots assumed to extend to 1 foot bgs (to be confirmed with soil samples)

Legend

- Evaluation Tier 1 - Soil concentrations 10 times > evaluation criteria at near-shore locations (within TIZ) with corresponding groundwater concentrations consistently exceeding aquatic WQ goals.
- Evaluation Tier 2 - Soil concentrations 10 times > evaluation criteria at near-shore locations (within TIZ) with corresponding grab groundwater concentrations exceeding aquatic WQ goals.
- Evaluation Tier 3 - Soil concentrations 100 times > evaluation criteria.
- Evaluation Tier 4 - Grab groundwater concentrations (within Panhandle Area TIZ) exceeding aquatic WQ goals at locations with no corresponding soil data.
- Evaluation Tier 5 - Soil concentrations 10 times > evaluation criteria at near-shore locations (within 200 feet of TIZ) with downgradient grab groundwater concentrations exceeding aquatic WQ goals*

- Tier 1 Hot Spot Excavation Boundaries[a]
- Tier 2 Hot Spot Excavation Boundaries[a]
- Tier 3 Hot Spot Excavation Boundaries[a]
- Tier 5 Hot Spot Excavation Boundaries[a]
- Road
- Gravel Road
- Estimate of Solid Waste Extent
- Interim Landfill Cap Extent
- Shoreline Area
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Building
- Parcel Boundary
- San Francisco Bay

Removal Actions

- PCB Hot Spot Area (2007 excavation limit)[b]

Notes:

TIZ tidal influence zone
VOC volatile organic compound
WQ water quality

[a] Soil/sediment would be excavated and disposed of off-site.
[b] Post- excavation boundary in PCB Hot Spot Area is consistent with information presented in final removal action completion reports (Tetra Tech EC, Inc. 2007a).
[c] Tier 5 hot spots include two locations (IR12B059 and IR04MW13A) identified as VOC source areas that impact groundwater at Parcel E.

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FIGURE 12-8
PROPOSED SOIL HOT SPOT EXCAVATIONS IN SHORELINE AND EAST ADJACENT AREAS

Remedial Investigation/Feasibility Study for Parcel E-2

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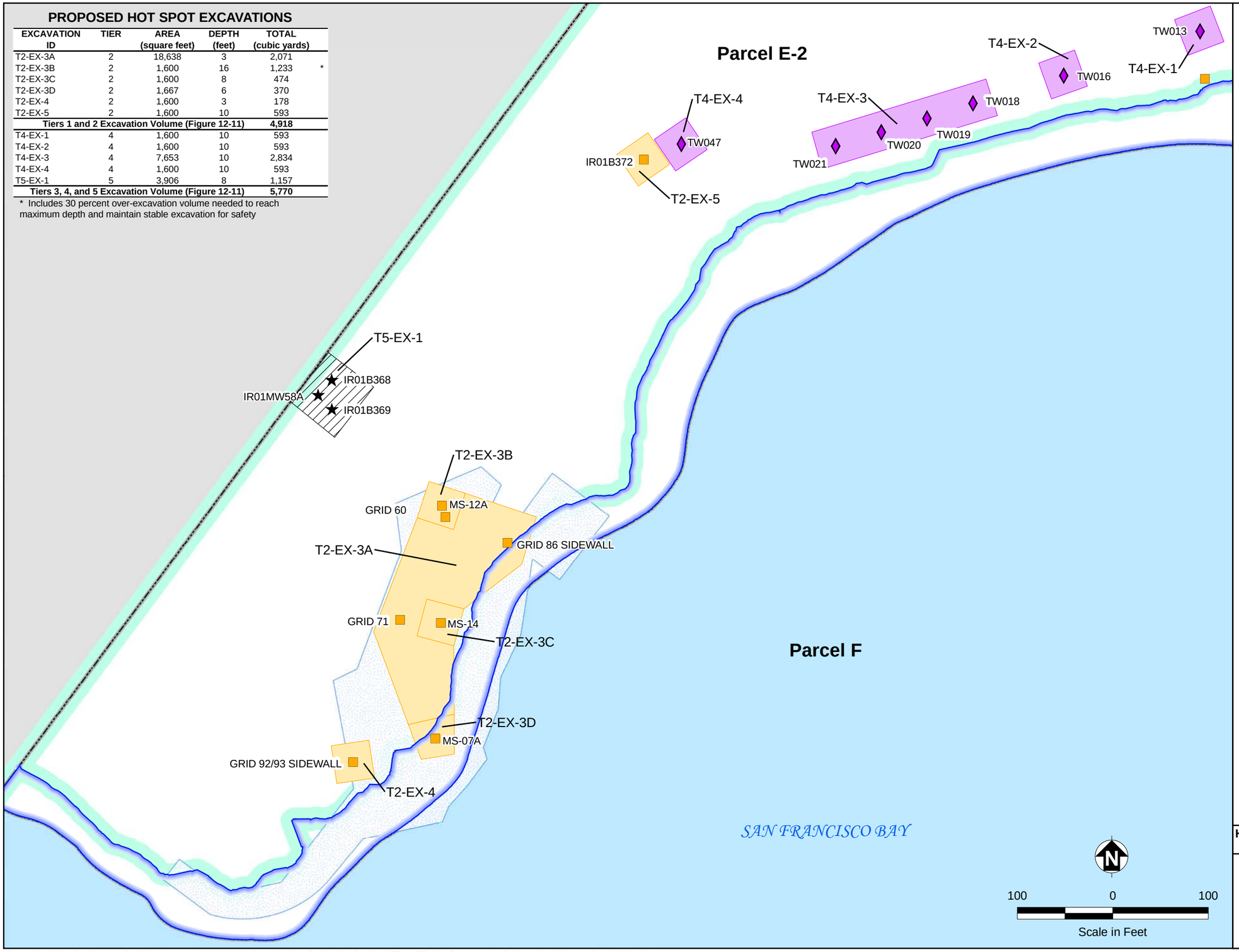
PROPOSED HOT SPOT EXCAVATIONS

EXCAVATION ID	TIER	AREA (square feet)	DEPTH (feet)	TOTAL (cubic yards)	
T2-EX-3A	2	18,638	3	2,071	
T2-EX-3B	2	1,600	16	1,233	*
T2-EX-3C	2	1,600	8	474	
T2-EX-3D	2	1,667	6	370	
T2-EX-4	2	1,600	3	178	
T2-EX-5	2	1,600	10	593	
Tiers 1 and 2 Excavation Volume (Figure 12-11)				**4,918**	
T4-EX-1	4	1,600	10	593	
T4-EX-2	4	1,600	10	593	
T4-EX-3	4	7,653	10	2,834	
T4-EX-4	4	1,600	10	593	
T5-EX-1	5	3,906	8	1,157	
Tiers 3, 4, and 5 Excavation Volume (Figure 12-11)				**5,770**	

* Includes 30 percent over-excavation volume needed to reach maximum depth and maintain stable excavation for safety



Legend

- Evaluation Tier 1 - Soil concentrations 10 times > evaluation criteria at near-shore locations (within TIZ) with corresponding groundwater concentrations consistently exceeding aquatic WQ goals.
- Evaluation Tier 2 - Soil concentrations 10 times > evaluation criteria at near-shore locations (within TIZ) with corresponding grab groundwater concentrations exceeding aquatic WQ goals.
- Evaluation Tier 3 - Soil concentrations 100 times > evaluation criteria.
- Evaluation Tier 4 - Grab groundwater concentrations (within Panhandle Area TIZ) exceeding aquatic WQ goals at locations with no corresponding soil data.
- Evaluation Tier 5 - Soil concentrations 10 times > evaluation criteria at near-shore locations (within 200 feet of TIZ) with downgradient grab groundwater concentrations exceeding aquatic WQ goals

Tier 2 Hot Spot Excavation Boundaries[a]
Tier 4 Hot Spot Excavation Boundaries[a]
Tier 5 Hot Spot Excavation Boundaries[a]
Shoreline Area
Panhandle Area
Building
Parcel Boundary
San Francisco Bay
Non-Navy Property

Removal Actions

Metal Slag Area (2007 excavation limit)[b]

Notes:

TIZ Tidal Influence Zone
WQ water quality

[a] Soil/sediment would be excavated and disposed of off-site.
[b] Post- excavation boundaries in PCB Hot Spot Area and Metal Slag Area are consistent with information presented in final removal action completion reports (Tetra Tech, 2007b).

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FIGURE 12-9
PROPOSED SOIL HOT SPOT EXCAVATIONS IN PANHANDLE AREA

Remedial Investigation/Feasibility Study for Parcel E-2

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39	**Potential hot spots within the Parcel E-2 Landfill**	Section 2.6	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 4.5.3.1, page 4-73; Section 8.2.3.2, pages 8-15 and 8-16. Record No. 4237.

with municipal wastes, which is one evaluation factor outlined in EPA presumptive remedy guidance (provided in Appendix H of this report). Based on the information presented in Section 4.2.4, nearly all of the hazardous substances detected in Landfill Area soil were of a limited extent relative to the overall waste volume. Several SVOCs and PCBs, such as benzo(a)pyrene and total high risk PCBs, were detected throughout a large portion of the Landfill Area at concentrations exceeding the RIEC but at concentrations that were not indicative of hot spots. These findings demonstrate that lesser quantities of hazardous wastes are present in the landfill as compared with municipal-type waste and construction debris.

4.5.3.1. Identification of Potential Hot Spots

As discussed in Section 4.1.3.4, soil hot spots are defined as locations containing chemical concentrations 100 times greater than the corresponding RIEC. Based on the information presented in Sections 4.2.4, 4.3.2, and 4.4.2, the following potential hot spots were identified at Parcel E-2:

- Edges of PCB Hot Spot Area excavation within Landfill and East Adjacent Areas (0 to 10 feet bgs): 19 samples (18 locations) contained total high risk PCBs at concentrations greater than 100 times the RIEC (0.74 mg/kg). The majority of these locations were along the western and southwestern sidewall of the PCB Hot Spot Area excavation. As discussed in Section 3.8.8, oil-stained soil and free-phase product were observed along and adjacent to this sidewall during the removal action. In addition, one of these 18 locations (Grid 159 sidewall) also contained heptachlor epoxide at a concentration greater than 100 times the RIEC (0.19 mg/kg).
- East Adjacent Area (2 to 10 feet bgs): Two samples (IR01TA07A and IR01TA07B, 4 feet bgs) contained total high risk PCBs at concentrations greater than 100 times the RIEC (0.74 mg/kg). IR01TA07A and IR01TA07B are located about 50 feet apart. Also, two samples (IR04B020 and IR04B025; both at a depth of 4 feet bgs) contained lead at concentrations greater than 100 times the RIEC (800 mg/kg). IR04B020 and IR04B025 are located about 70 feet apart.
- Landfill Area (2 to 10 feet bgs): One sample (IR01MW05A, 8 feet bgs) contained total high risk PCBs at a concentration greater than 100 times the RIEC (0.74 mg/kg). In addition, one sample (IR01MW02B, 9 feet bgs) contained 1,4-DCB at a concentration greater than 100 times the RIEC (0.13 mg/kg). Also, one sample (IR01B021A, 9 feet bgs) contained naphthalene at a concentration greater than 100 times the RIEC (1.5 mg/kg). These locations are over 300 feet apart.
- Landfill Area (greater than 10 feet bgs): Three samples (IR01MW17B, 11 feet bgs; IR01B012, 17 feet bgs; IR01B019, 16 feet bgs) contained total high risk PCBs at concentrations greater than 100 times the RIEC (0.74 mg/kg). These locations are more than 400 apart from each other.

The potential hot spots within the Landfill Area will be analyzed in further detail in Section 8.2.3.2. The potential hot spots within the East Adjacent Area, as well as the western and southwestern sidewall of the PCB Hot Spot Area excavation, will be further evaluated in the FS portions of this report (Sections 11 through 14). Because of the inadequate delineation of most RIEC exceedances in the East Adjacent Area, additional characterization may be required for potential hot spots considered for removal in the FS.

practice bomb (TtECI, 2010). Of the 41 MPPEH items discovered in the removal area, 20 items were verified to not present an explosive hazard and were reclassified as MDAS. The remaining 21 MPPEH items appeared to have been subject to previous demilitarization actions and could not be completely inspected by UXO technicians for possible explosive hazards. Although the type, age, and condition of these 21 MPPEH items did not suggest a high potential for residual energetic material, the Navy, as a precautionary measure, properly handled, transported, and disposed of these items as either material documented as an explosive hazard (MDEH) (20 items consisting of expended cartridge casings of various calibers) or munitions and explosives of concern (MEC) (1 item. 3-pound practice bomb) (TtECI, 2010). The only reported munitions storage was at Building S-807 (located in the former Parcel A). This building was a bunker like concrete structure approximately 10 feet wide, 3 feet deep, and 5 feet high that was reportedly used by the Navy to store small caliber munitions for hand-held weapons (AFA and Golder, 1996). Based on this information, decontamination kits and munitions hardware, if present at all, likely would only be found in low proportion relative to other waste types and would be no more hazardous than some wastes found in municipal landfills.

The "low-hazard" military-specific wastes discussed above are distinct from "high-hazard" military-specific wastes, which include chemical warfare agents, artillery, bombs, and other military chemicals. Such high-hazard military-specific wastes may possess unique safety, risk, and toxicity characteristics that require special consideration (EPA, 1996). No anecdotal information, documentation, or physical evidence has been identified that such high-hazard military-specific wastes were ever used at HPS. Further, the shipyard's primary mission of fleet repair and maintenance did not include weapons storage.

8.2.3.2. Conclusions for Characterization of Potential Hot Spots

Existing data are used to identify hot spots within a landfill and to determine if additional characterization and treatment of these hot spots is warranted. EPA guidance poses four specific questions for determining whether or not hot spots require characterization and treatment. If all of the questions can be answered in the affirmative, it is likely that characterization and treatment of hot spots is warranted (EPA, 1993a). The four questions outlined below include the Navy's answers on the potential hot spots in the northern and central portions of the Landfill Area.

Does evidence exist to indicate the presence and approximate location of waste?: Yes. PCBs, 1,4-DCB, and naphthalene have been detected at concentrations greater than 100 times the RIEC at several locations within the Landfill Area.

Is the hot spot known to be a principal threat waste?: No. According to EPA guidance entitled "A Guide to Principal Threat and Low Level Threat Wastes" (EPA, 1991b), principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. The potential

hot spots identified within the northern and central portions of the Landfill Area were found to (1) be located at relatively deep depths (8 to 17 feet bgs); (2) not have migrated to A- or B-aquifer groundwater; (3) be located far from the Parcel E-2 shoreline (390 to 780 feet); and (4) not be connected with the PCB Hot Spot Area (where post-excavation conditions will prompt further analysis as recommended in the FS portions of this report). Based on this information, these potential hot spots are not highly mobile and can be reliably contained based on their depth and relative distance from the shoreline.

Is the waste in a discrete, accessible part of the landfill?: No. The potential hot spots in the northern and central portions of the Landfill Area are located at relatively deep depths (8 to 17 feet bgs) and within the solid waste (rather than at the edge of the waste).

Is the hot spot known to be large enough that its remediation will reduce the threat posed by the overall site, but small enough to consider removal?: No. Based on soil and groundwater data from surrounding areas, the potential hot spots in the northern and central portions of the Landfill Area are not considered large enough that remediation will reduce the potential risk posed by the Landfill Area. Further, these potential hot spots do not drive risk to human health or the environment because of their depth and lack of migration to groundwater.

These findings demonstrate that characterization and treatment of the potential hot spots within the northern and central portions of the Landfill Area is not warranted.

8.2.3.3. Conclusions for Risk Evaluations in Landfill Area

The quantitative HHRA and onshore SLERA determined that several locations in the Landfill Area contain chemical concentrations in soil that result in unacceptable levels of risk to human and ecological receptors. However, most of these areas (excluding the potential hot spots discussed in Section 8.2.3.2) contain chemical concentrations that are low relative to their corresponding risk-based thresholds (such as, human-health RBCs or ecological PSCs). In addition, areas with no data may contain chemical concentrations that would result in risks of the same relative magnitude as found elsewhere in the Landfill Area. Therefore, the solid waste and soil throughout the Landfill Area warrants analysis in the FS but this analysis can be focused, consistent with EPA's RI/FS process for CERCLA landfills, which includes guidance specific to military landfills (EPA, 1996).

As discussed in Section 8.2.1.3, there are portions of the PCB Hot Spot Area that after the TCRA (1) extend into the Landfill Area and contain PCB concentrations in soil greater than 100 times the RIEC, (2) are in close proximity to San Francisco Bay, and (3) have affected groundwater conditions. Based on this information, conditions within the PCB Hot Spot Area are recommended for further analysis in the FS portions of this report. This evaluation may include hot spot removal and waste consolidation actions.

40	**Remedial action objectives**	Section 2.7	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 9, page 9-1. Record No. 4237.

Section 9. Remedial Action Objectives

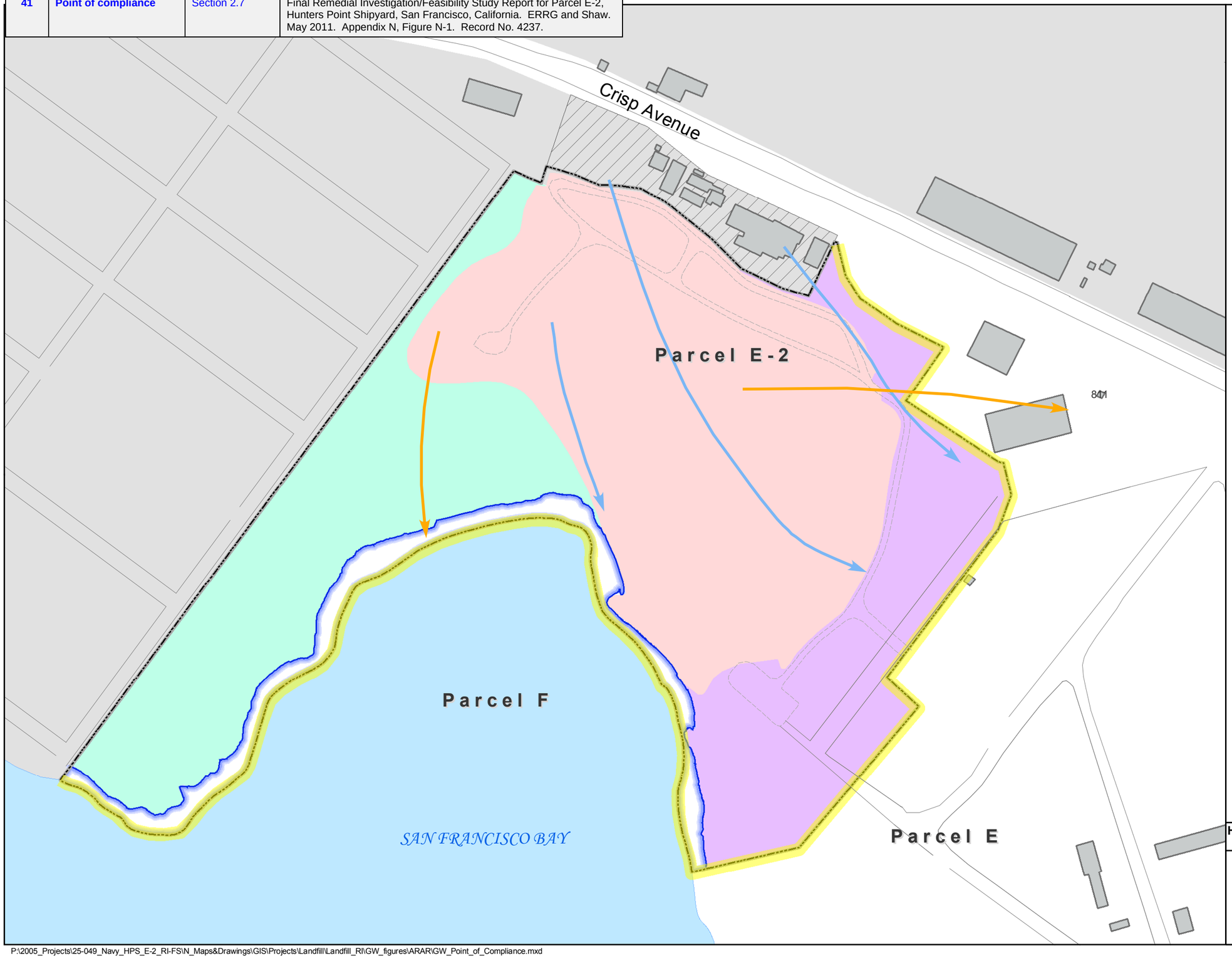
This section identifies RAOs for contaminated media at Parcel E-2, as identified in Section 8, that will satisfy the remedial action goals for protecting human health and the environment. RAOs are medium-specific goals that specify (1) the COCs, (2) the exposure route(s) and receptor(s), and (3) an acceptable chemical concentration or range of concentrations for each exposure pathway and medium. RAOs include both an exposure pathway and a chemical concentration for a given medium because protectiveness can be achieved by either limiting (or eliminating) the pathway or by reducing (or eliminating) the chemical.

The RAO evaluation for Parcel E-2 is based on information from the RI field activities, subsequent environmental investigations, and risk assessments for human health and the environment. The NCP details the expectations for remedy selection in 40 CFR § 300.430 (a)(1)(iii). These expectations were used to evaluate RAOs for Parcel E-2. In addition, the U.S. Department of Defense integrates these NCP expectations with BRAC program objectives for expediting the transfer of U.S. Department of Defense property for reuse and development.

An important component of developing RAOs is the determination of future land use. According to EPA's land use directive (EPA, 1995a), RAOs "...should reflect the reasonably anticipated future land use or uses...," thereby allowing for the development of "alternatives that would achieve cleanup levels associated with the reasonably anticipated future land use..." of the site. The EPA land use directive states that "in cases where future land use is relatively certain, the RAOs generally should reflect this land use..." and "...need not include alternative land use scenarios..." (EPA, 1995a).

RAOs developed for Parcel E-2 are based on the city's reasonably anticipated future use of the property as described in the HHRA. According to the 2010 amended Redevelopment Plan, most of the planned reuse for Parcel E-2 is open space; however, a small area (about 0.42 acres) in the East Adjacent Area is designated as part of the Shipyard South Multi-Use District, which includes potential recreational, industrial, and residential reuse (SFRA, 2010). As discussed in Section 1.8 and documented in the previous versions of the RI/FS Report published in 2007 and 2009, land uses other than open space were not anticipated prior to publication of the 2010 amended Redevelopment Plan. Based on the risk assessment results discussed in Section 7.1.2.1, contamination is present in the 0.42-acre area at concentrations that pose an unacceptable risk for future recreational users, and a risk evaluation using more conservative exposure factors associated with potential residential reuse would have reached the same conclusion. Accordingly, this report evaluates remedial actions to address this potential risk.

41	**Point of compliance**	Section 2.7	Final Remedial Investigation/Feasibility Study for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix N, Figure N-1. Record No. 4237.



A-Aquifer Flow Direction (June 2004)

B-Aquifer Flow Direction (February 2002)

Groundwater Point of Compliance (A- and B-Aquifers)

Parcel Boundary

Landfill Area

East Adjacent Area

Panhandle Area

Shoreline Area

Non-Navy Property

UCSF Compound

Building

Road

Gravel Road

Notes:

1. Point of compliance is the vertical surface located at the hydraulically downgradient limit of Parcel E-2 that extends through the B-aquifer.

2. In areas where the point of compliance is located in an area with tidal mixing (e.g. A-aquifer areas at Parcel E-2 shoreline), the point of monitoring will be adjusted to ensure that groundwater quality is accurately monitored.

N

250 0 250

Scale in Feet

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

Hunters Point Shipyard, San Francisco, California

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

FIGURE N-1

GROUNDWATER POINT OF COMPLIANCE

Remedial Investigation/Feasibility Study for Parcel E-2

P:\2005_Projects\25-049_Navy_HPS_E-2_RI-FS\N_Maps&Drawings\GIS\Projects\Landfill\Landfill_RI\GW_figures\ARAR\GW_Point_of_Compliance.mxd

Table M-1. Surface Water Screening Criteria
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Analyte Monitored Under Hunters Point Shipyard Groundwater Program	San Francisco Bay Basin Plan[a] (µg/L)		California Toxics Rule Criteria for Enclosed Bays and Estuaries[e] (µg/L)								National Recommended Water Quality Criteria[k] (µg/L) Saltwater Aquatic Life					National Ambient Water Quality Criteria (AWQC) for Protection of Saltwater Aquatic Life[l] (µg/L) Lowest Observed Effect Level (LOEL)								Other Criteria (footnotes indicate source) (µg/L)		Surface Water Criteria Selected for Aquatic Evaluation (µg/L)
			Chronic[g]		Acute[g]			Instantaneous Maximum			Chronic[g]		Acute[g]			Chronic[h]		Acute[l]			Other[j]			Other		
	Concentration	Footnotes	Concentration	Footnotes	Concentration	20% of Concentration[f]	Footnotes	Concentration	10% of Concentration[f]	Footnotes	Concentration	Footnotes	Concentration	20% of Concentration[f]	Footnotes	Concentration	Footnotes	Concentration	20% of Concentration[f]	Footnotes	Concentration	Footnotes	Other	Footnotes	
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	31,200	6,240	--	--	--	--	--	6,240
1,1,2,2-Tetrachloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9,020	1,804	--	--	--	--	--	1,804
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	224,000	44,800	(27)	--	--	--	--	44,800
1,2,4,5-Tetrachlorobenzene	--	--	--	--	--	--	--	--	--	--		--	--	--	--	129	(22)	160	--	(22)	--	--	--	--	129
1,2,4-Trichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	129	(22)	160	--	(22)	--	--	--	--	129
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	129	(22)	1,970	--	(24)	--	--	--	--	129
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	113,000	22,600	--	--	--	--	--	22,600
1,2-Dichloroethene (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	224,000	44,800	(27)	--	--	--	--	44,800
1,2-Dichloropropane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,040	(28)	10,300	--	(28)	--	--	--	--	3,040
1,3-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	129	(22)	1,970	--	(24)	--	--	--	--	129
1,3-Dichloropropene (total)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	790	158	(29)	--	--	--	--	158
1,4-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	129	(22)	1,970	--	(24)	--	--	--	--	129
2,4-Dinitrophenol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,850	970	(88)	--	--	--	--	970
2,4-Dinitrotoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	590	118	(53)	370	(53, 82)	--	--	118
2,6-Dinitrotoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	590	118	(53)	370	(53, 82)	--	--	118
2-Chloronaphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.5	1.5	(48)	--	--	--	--	1.5
2-Nitrophenol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,850	970	(88)	--	--	--	--	970
4,4'-DDD	--	--	--	--	--	--	--	--	--	--	0.001	(114,172)	--	--	--	--	--	3.6	0.72	--	--	--	--	--	0.001
4,4'-DDE	--	--	--	--	--	--	--	--	--	--	0.001	(114,172)	--	--	--	--	--	14	2.8	--	--	--	--	--	0.001
4,4'-DDT	--	--	0.001	(114)	--	--	--	0.13	--	--	0.001	,aa,ii,(114, 17	0.13	--	G,ii	--	--	--	--	--	--	--	--	--	0.001
4,6-Dinitro-2-methylpheno	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,850	970	(88)	--	--	--	--	970
4-Amino-2,6-dinitrotoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	590	118	--	370	(82)	--	--	118
4-Nitrophenol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,850	970	(88)	--	--	--	--	970
Acenaphthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	710	--	970	--	--	--	--	--	--	710
Acenaphthylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	60	(52)	--	--	--	--	60
Aldrin	--	--	--	--	--	--	--	1.3	--	II	--	--	1.3	0.26	G	--	--	--	--	--	--	--	--	--	0.26
Alpha-chlordane	--	--	0.004	(114)	--	--	--	0.09	--	--	0.004	G,aa,o	0.09	--	G,o	--	--	--	--	--	--	--	--	--	0.004
Ammonia (un-ionized)	25	s	--	--	--	--	--	--	--	--	35	(112)	223	--	(112)	--	--	--	--	--	--	--	400	t	25
Anthracene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	60	(52)	--	--	--	--	60
Aroclor 1016	--	--	0.03	(114, 116) rr	--	--	--	--	--	--	0.03	(114,173)	--	--	--	--	--	10	2	--	--	--	--	--	0.03
Aroclor 1221	--	--	0.03	(114, 116) rr	--	--	--	--	--	--	0.03	(114,173)	--	--	--	--	--	10	2	--	--	--	--	--	0.03
Aroclor 1232	--	--	0.03	(114, 116) rr	--	--	--	--	--	--	0.03	(114,173)	--	--	--	--	--	10	2	--	--	--	--	--	0.03
Aroclor 1242	--	--	0.03	(114, 116) rr	--	--	--	--	--	--	0.03	(114,173)	--	--	--	--	--	10	2	--	--	--	--	--	0.03
Aroclor 1248	--	--	0.03	(114, 116) rr	--	--	--	--	--	--	0.03	(114,173)	--	--	--	--	--	10	2	--	--	--	--	--	0.03
Aroclor 1254	--	--	0.03	(114, 116) rr	--	--	--	--	--	--	0.03	(114,173)	--	--	--	--	--	10	2	--	--	--	--	--	0.03
Aroclor 1260	--	--	0.03	(114, 116) rr	--	--	--	--	--	--	0.03	(114,173)	--	--	--	--	--	10	2	--	--	--	--	--	0.03
Arsenic	36	b	36	(142, 1) oo	69	--	oo	--	--	--	36	(1) A,D,bb	69	--	(1) A,D,bb	--	--	--	--	--	--	--	--	--	36
Atrazine	--	--	--	--	--	--	--	--	--	--	17	r,(68, 179)	760	--	r,(68, 179)	--	--	--	--	--	--	--	--	--	17
Benzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5,100	1,020	--	700	(83)	--	--	700
Benzo(a)anthracene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	60	(52)	--	--	--	--	60
Benzo(a)pyrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	60	(52)	--	--	--	--	60
Benzo(b)fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	60	(52)	--	--	--	--	60
Benzo(g,h,i)perylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	60	(52)	--	--	--	--	60
Benzo(k)fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	60	(52)	--	--	--	--	60
Bromochloromethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6,400	(20)	12,000	--	(20)	--	--	--	--	6,400
Bromodichloromethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6,400	(20)	12,000	--	(20)	--	--	--	--	6,400
Bromoform	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6,400	(20)	12,000	--	(20)	--	(20, 82)	--	--	6,400
Bromomethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6,400	(20)	12,000	--	(20)	--	(20, 82)	--	--	6,400
Butylbenzylphthalate	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,944	589	(45)	3.4	(38, 45)	--	--	3.4
Cadmium	9.3	b	9.3	(1, 142)	42	--	(1, 142)	--	--	--	8.8	D,bb,gg	40	--	D,bb,gg	--	--	--	--	--	--	--	--	--	8.8
Carbon tetrachloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6,400	(20)	50,000	--	--	11,500	(20, 82)	--	--	6,400
Chlordane		--	0.004	(114)	--	--	--	0.09	--	--	0.004	G,aa	0.09	--	G	--	--	--	--	--	--	--	--	--	0.004
Chlorobenzene	--	--	--	--	--		--				--	--	--	--	--	129	(22)	160	--	(22)	--	--	--	--	129
Chloroform	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6,400	(20)	12,000	--	(20)	11,500	(20, 82)	--	--	6,400
Chloromethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6,400	(20)	12,000	--	(20)	11,500	(20, 82)	--	--	6,400
Chromium VI	50 (VI)	b,o	50 (VI)	o, (1, 142)	1100 (VI)	--	(1,142)	--	--	--	50 (VI)	(1) D,bb,o	1100 (VI)	--	(1) D,bb,o	--	--	--	--	--	--	--	--	--	50
Chrysene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	60	(52)	--	--	--	--	60
Cis-1,2-dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	224,000	44,800	(27)	--	--	--	--	44,800
Copper	3.1	e	3.1	oo	4.8	--	oo	--	--	--	3.1	D,cc,ff	4.8	--	(1) D,cc,ff	--	--	--	--	--	--	--	--	--	3.1
Cyanide	1	e	1	pp	1	--	pp	--	--	--	1	(137) Q,bb	1	--	(137) Q,bb	--	--	--	--	--	--	--	--	--	1
Dibenz(a,h)anthracene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	60	(52)	--	--	--	--	60
Dibromochloromethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6,400	(20)	12,000	--	(20)	11,500	(20, 82)	--	--	6,400
Dichlorodiflouromethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6,400	(20)	12,000	--	(20)	11,500	(20, 82)	--	--	6,400
Dieldrin	--	--	0.0019	(114), II	--	--	--	0.71	--	II	0.0019	(114) G,aa	0.71	--	G	--	--	--	--	--	--	--	--	--	0.0019
Diethylphthalate	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,944	589	(45)	3.4	(38, 45)	--	--	3.4
Dimethylphthalate	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,944	589	(45)	3.4	(38, 45)	--	--	3.4
Di-n-butylphthalate	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,944	589	(45)	3.4	(38, 45)	--	--	3.4
Di-n-octylphthalate	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,944	589	(45)	3.4	(38, 45)	--	--	3.4
Endosulfan I	--	--	0.0087	(114, 115), II	--	--	--	0.034	--	(115), II	0.0087	G,Y,o	0.034	--	G,Y,o	--	--	--	--	--	--	--	--	--	0.0087
Endosulfan II	--	--	0.0087	(114, 115), II	--	--	--	0.034	--	(115), II	0.0087	G,Y,o	0.034	--	G,Y,o	--	--	--	--	--	--	--	--	--	0.0087
Endrin	--	--	0.0023	(114), II	--	--	--	0.037	--	II	0.0023	(114) G,aa	0.037	--	G	--	--	--	--	--	--	--	--	--	0.0023
Ethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	430	86	--	--	--	--	--	86
Fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	16	--	40	--	--	--	--	--	--	16

Table M-1. Surface Water Screening Criteria *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Analyte Monitored Under Hunters Point Shipyard Groundwater Program	San Francisco Bay Basin Plan[a] (µg/L)		California Toxics Rule Criteria for Enclosed Bays and Estuaries[e] (µg/L)								National Recommended Water Quality Criteria[k] (µg/L) Saltwater Aquatic Life					National Ambient Water Quality Criteria (AWQC) for Protection of Saltwater Aquatic Life[l] (µg/L) Lowest Observed Effect Level (LOEL)								Other Criteria (footnotes indicate source) (µg/L)		Surface Water Criteria Selected for Aquatic Evaluation (µg/L)
			Chronic[g]		Acute[g]			Instantaneous Maximum			Chronic[g]		Acute[g]			Chronic[h]		Acute[i]			Other[j]					
	Concentration	Footnotes	Concentration	Footnotes	Concentration	20% of Concentration[f]	Footnotes	Concentration	10% of Concentration[f]	Footnotes	Concentration	Footnotes	Concentration	20% of Concentration[f]	Footnotes	Concentration	Footnotes	Concentration	20% of Concentration[f]	Footnotes	Concentration	Footnotes	Other	Footnotes	
Fluorene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	60	(52)	--	--	--	--	60
Gamma-BHC (lindane)	--	--	--	--	--	--	--	0.16	0.016	II	--	--	0.16	0.032	G	--	--	--	--	--	--	--	--	--	0.032
Gamma-chlordane	--	--	0.004	(114)	--	--	--	0.09	0.009	--	0.004	G,aa,o	0.09	--	G,o	--	--	--	--	--	--	--	--	--	0.004
Heptachlor	--	--	0.0036	(114)	II	--	--	0.053	0.005	II	0.0036	(114) G,aa	--	--	--	--	--	--	--	--	--	--	--	--	0.0036
Heptachlor epoxide	--	--	0.0036	(114)	II		--	0.053	0.005	II	0.0036	(114) G,V,aa	--	--	--	--	--	--	--	--	--	--	--	--	0.0036
Hexachlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	129	(22)	160	--	(22)	--	--	--	--	129
Hexachlorobutadiene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	32	6.4	--	--	--	--	--	6.4
Hexachlorocyclopentadiene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.0	1.4	--	--	--	--	--	1.4
Hexachloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	940	188	--	--	--	--	--	188
Indeno(1,2,3-cd)pyrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	60	(52)	--	--	--	--	60
Isophorone	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12,900	2,580	--	--	--	--	--	2,580
Lead	8.1	b	8.1	(1, 142), m	210	--	(1, 142), m	--	--	--	8.1	(1) D,bb	210	--	(1) D,bb	--	--	--	--	--	--	--	--	--	8.1
Mercury	0.025	b	--	--	--	--	--	--	--	--	0.94	D,ee,hh	1.8	--	D,ee,hh	--	--	--	--	--	--	--	--	--	0.025
Methoxychlor	--	--	--	--	--	--	--	--	--	--	0.03	F	--	--	--	--	--	--	--	--	--	--	--	--	0.03
Methyl-tert-butyl-ether	--	--	--	--	--	--	--	--	--	--	18,000	--	53,000	--	--	--	--	--	--	--	--	--	8,000	p	8,000
Methylene chloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6,400	(20)	12,000	--	(20)	11,500	(20, 82)	--	--	6,400
Mirex	--	--	--	--	--	--	--	--	--	--	0.001	F	--	--	--	--	--	--	--	--	--	--	--	--	0.001
Naphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,350	470	--	--	--	--	--	470
Nickel	8.2	b	8.2	(2, 142), oo	74	--	(1, 142), oo	--	--	--	8.2	(1, 142) D,bb	74	--	(1, 142) D,bb	--	--	--	--	--	--	--	--	--	8.2
Nitrobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6,680	1,336	--	--	--	--	--	1,336
N-Nitroso-di-methylamine	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,300,000	660,000	(56)	--	--	--	--	660,000
N-Nitroso-di-n-propylamine	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,300,000	660,000	(56)	--	--	--	--	660,000
N-nitrosodiphenylamine	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3,300,000	660,000	(56)	--	--	--	--	660,000
Pentachlorophenol	--	--	7.9	--	13	--	--	--	--	--	7.9	bb	13	--	bb	--	--	--	--	--	--	--	--	--	7.9
Phenanthrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	60	(52)	--	--	--	--	60
Phenol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5,800	1,160	--	--	--	--	--	1,160
Pyrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	60	(52)	--	--	--	--	60
Selenium	--	--	71	(1, 142)	290	--	(1, 142)	--	--	--	71	1, 136) D,bb,d	290	--	(1) D,bb,dd	--	--	--	--	--	--	--	--	--	71
Silver	1.9	c	--	--	1.9	0.38	(1, 142)	--	--	--	--	--	1.9	0.38	D,G	--	--	--	--	--	--	--	--	--	0.38
Sulfide-Hydrogen sulfide	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	(51)	2
Tetrachloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	450	--	10,200	--	--	--	--	--	--	450
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,130	426	--	--	--	--	--	426
Toluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5,000	--	6,300	--	--	--	--	--	--	5,000
Toxaphene	--	--	0.0002	--	0.21	--	--	--	--	--	0.0002	aa	0.21	--	--	--	--	--	--	--	--	--	--	--	0.0002
TPH-Diesel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,400 - 20,000	q,v	1,400 - 20,000
TPH-Gasoline	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,400 - 20,000	q,v	1,400 - 20,000
TPH-Motor Oil	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,400 - 20,000	q,v	1,400 - 20,000
trans-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	224,000	44,800	(27)	--	--	--	--	44,800
Tributyl Tin	--	--	--	--	--	--	--	--	--	--	0.0047	--	0.42	--	--	--	--	--	--	--	--	--	--	--	0.0047
Trichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,000	400	--	--	--	--	--	400
Zinc	81	b	81	mm, oo	90	--	mm, oo	--	--	--	81	(1) D,bb	90	--	(1) D,bb	--	--	--	--	--	--	--	--	--	81

Notes:

Footnotes and references are detailed below.

--	No criterion available	DDD	Dichlorodiphenyldichloroethane	Fed Reg	Federal Register
µg/L	Microgram per liter	DDE	Dichlorodiphenyldichloroethene	RWQCB	Regional Water Quality Control Board, San Francisco Bay
CFR	Code of Federal Regulations	DDT	Dichlorodiphenyltrichloroethane	TPH	Total petroleum hydrocarbons
BHC	Hexachlorocyclohexane	EPA	U.S. Environmental Protection Agency	TtEMI	Tetra Tech EM, Inc.

Footnotes:

a	California Environmental Protection Agency, Regional Water Quality Control Board, San Francisco Bay Area Region (RWQCB). 2007. "San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)." January. Table 3-3 Marine Water Quality Objectives for Toxic Pollutants for Surface Waters.
b	From RWQCB "Basin Plan" 4-Day Average (Chronic)
c	From RWQCB "Basin Plan" 24-Hour and 1-Hour Average (Acute)
d	From RWQCB "Basin Plan" Instantaneous Maximum
e	From "Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California" (CTR) (EPA 2000) and "Water Quality Control Plan, San Francisco Bay Basin Region" (RWQCB 2007a). The most appropriate criteria were used.
f	Criterion made more suitably protective by means of standard convention of lowering acute values by 80 percent and instantaneous values by 90 percent to make them more appropriate for use under chronic exposure scenarios.
g	An acute criterion (EPA identified as Criteria Maximum Concentration [CMC]) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect. The chronic concentration (EPA identified as Criterion Continuous Concentration [CCC]) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect. The CMC and CCC are just two of the six parts of an aquatic life criterion; the other four parts are the acute averaging period, chronic averaging period, acute frequency of allowed exceedence, and chronic frequency of allowed exceedence. Because 304(a) aquatic life criteria are national guidance, they are intended to be protective of the vast majority of the aquatic communities in the United States.
h	EPA National "AWQC Lowest Observed Effect Level (Chronic)" (RWQCB 2007b)
i	EPA National "AWQC Lowest Observed Effect Level (Acute)" (RWQCB 2007b)
j	EPA National "AWQC Lowest Observed Effect Level (Other)" (RWQCB 2007b)
k	From "National Recommended Water Quality Criteria" (EPA 2006), unless otherwise noted.
l	From "Final Technical Memorandum Estimation of Ambient Concentrations of Metals in Groundwater" (TtEMI 2001)
m	In instances where criteria from "Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California" (EPA 2000) refer to the "Water Quality Control Plan, San Francisco Bay Basin Region" (RWQCB 2006), RWQCB 2006 criteria were used.
o	Detailed application of this toxicity criterion may require the review and/or summation of analyte isomer, congener, or speciation results, as applicable. Please see applicable regulatory agency source document for additional detail.
p	RWQCB 1998
q	TtEMI 1999
r	RWQCB 2007b
s	From RWQCB 2007a, "Basin Plan" Annual Median
t	From RWQCB 2007a "Basin Plan" Maximum, Lower Bay
u	EPA National "AWQC for Saltwater Aquatic Life Protection, Recommended Criteria, Continuous Concentration (4-Day Average)" (RWQCB 2007b)
v	Total TPH aquatic criteria assigned as a function of distance from shoreline; the source of these criteria is the "Final New Preliminary Screening Criteria and Petroleum Program Strategy, Hunters Point Shipyard, San Francisco, California." December 21. (Shaw Environmental, Inc. 2007)

Footnotes (Continued):

The following lettered footnotes are derived from EPA "National Recommended Water Quality Criteria" (EPA 2006), Table 1 - Priority Toxic Pollutants (unless otherwise noted):

A	This recommended water quality criterion was derived from data for arsenic (III), but is applied here to total arsenic, which might imply that arsenic (III) and arsenic (V) are equally toxic to aquatic life and that their toxicities are additive. In the arsenic criteria document (EPA 440/5-84-033, January 1985), Species Mean Acute Values are given for both arsenic (III) and arsenic (V) for five species and the ratios of the SMAVs for each species range from 0.6 to 1.7. Chronic values are available for both arsenic (III) and arsenic (V) for one species; for the fathead minnow, the chronic value for arsenic (V) is 0.29 times the chronic value for arsenic (III). No data are known to be available concerning whether the toxicities of the forms of arsenic to aquatic organisms are additive.
B	This criterion has been revised to reflect The Environmental Protection Agency's q1* or RfD (Reference Dose), as contained in the Integrated Risk Information System (IRIS) as of May 17, 2002. The fish tissue bioconcentration factor (BCF) from the 1980 Am
C	This criterion is based on carcinogenicity of 10^{-6} risk. Alternate risk levels may be obtained by moving the decimal point (e.g., for a risk level of 10^{-5}, move the decimal point in the recommended criterion one place to the right).
D	Freshwater and saltwater criteria for metals are expressed in terms of the dissolved metal in the water column. The recommended water quality criteria value was calculated by using the previous 304(a) aquatic life criteria expressed in terms of total recoverable metal, and multiplying it by a conversion factor (CF). The term "Conversion Factor" (CF) represents the recommended conversion factor for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column. (Conversion Factors for saltwater CCCs are not currently available. Conversion factors derived for saltwater CMCs have been used for both saltwater CMCs and CCCs). See "Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria,@ October 1, 1993, by Martha G. Prothro, Acting Assistant Administrator for Water, available from the Water Resource center, USEPA, 401 M St., SW, mail code RC4100, Washington, DC 20460; and 40CFR'131.36(b)(1). Conversion Factors applied in the table can be found in Appendix A to the Preamble- Conversion Factors for Dissolved Metals.
F	Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC = exp(1.005□(pH)-4.869); CCC = exp(1.005(pH)-5.134). Values displayed in table correspond to a pH of 7.8.
G	This Criterion is based on 304(a) aquatic life criterion issued in 1980, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80- 019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endosulfan (EPA 440/5-80-046), Endrin (EPA 440/5-80-047), Heptachlor (EPA 440/5-80-052), Hexachlorocyclohexane (EPA 440/5-80-054), Silver (EPA 440/5-80-071). The Minimum Data Requirements and derivation procedures were different in the 1980 Guidelines than in the 1985 Guidelines. For example, a CMC derived using the 1980 Guidelines was derived to be used as an instantaneous maximum. If assessment is to be done using an averaging period, the values given should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.
N	This criterion applies to total polychlorinated biphenyls (e.g. the sum of all congener or all isomer or homolog or Aroclor analyses.)
Q	This recommended water quality criterion is expressed as mg free cyanide (as CN)/L.
S	This recommended water quality criterion for arsenic refers to the inorganic form only.
U	The organoleptic effect criterion is more stringent than the value for priority toxic pollutants.
V	This value was derived from data for heptachlor, and the criteria document provides insufficient data to estimate the relative toxicities of heptachlor and heptachlor epoxide.
Y	This value was derived from data for endosulfan and is most appropriately applied to the sum of alpha-endosulfan and beta-endosulfan.
aa	This criterion is based on a 304(a) aquatic life criterion issued in 1980 or 1986, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endrin (EPA 440/5-80-047), Heptachlor (EPA 440/5-80-052), Polychlorinated biphenyls (EPA 440/5-80-068), Toxaphene (EPA 440/5-86-006). This CCC is currently based on the Final Residue Value (FRV) procedure. Since the publication of the Great Lakes Aquatic Life Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the Final Residue Value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria. Therefore, the Agency anticipates that future revisions of this CCC will not be based on the FRV procedure.
bb	This water quality criterion is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses, PB85-227049, January 1985) and was issued in one of the following criteria documents: Arsenic (EPA 440/5-84-033), Cadmium (EPA-822-R-01-001), Chromium (EPA 440/5-84-029), Copper (EPA 440/5-84-031), Cyanide (EPA 440/5- 84-028), Lead (EPA 440/5-84-027), Nickel (EPA 440/5-86-004), Pentachlorophenol (EPA 440/5-86-009), Toxaphene, (EPA 440/5-86-006), Zinc (EPA 440/5-87- 003).
cc	When the concentration of dissolved organic carbon is elevated, copper is substantially less toxic, and use of Water-Effect Ratios might be appropriate.
dd	The selenium criteria document (EPA 440/5-87-006, September 1987) provides that if selenium is as toxic to saltwater fishes in the field as it is to freshwater fishes in the field, the status of the fish community should be monitored whenever the concentration of selenium exceeds 5.0 Fg/L in salt water because the saltwater CCC does not take into account uptake via the food chain.
ee	This recommended water quality criterion was derived on page 43 of the mercury criteria document (EPA 440/5-84-026, January 1985). The saltwater CCC of 0.025 ug/L given on page 23 of the criteria document is based on the Final Residue Value procedure in the 1985 Guidelines. Since the publication of the Great Lakes Aquatic Life Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the Final Residue Value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria.
ff	This recommended water quality criterion was derived in *Ambient Water Quality Criteria Saltwater Copper Addendum* (draft, April 14, 1995) and was promulgated in the Interim final National Toxics Rule (60 FR 22228-222237, May 4, 1995).
gg	EPA is actively working on this criterion, and so this recommended water quality criterion may change substantially in the near future.
hh	This recommended water quality criterion was derived from data for inorganic mercury (II), but is applied here to total mercury. If a substantial portion of the mercury in the water column is methylmercury, this criterion will probably be under protective. In addition, even though inorganic mercury is converted to methylmercury and methylmercury bioaccumulates to a great extent, this criterion does not account for uptake via the food chain because sufficient data were not available when the criterion was derived.
ii	This criterion applies to DDT and its metabolites (that is, the total concentration of DDT and its metabolites should not exceed this value.)

The following lettered footnotes are derived from EPA "Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California" (EPA 2000).

jj	Criteria revised to reflect the EPA q1* or RfD, as contained in the Integrated Risk of RfD, as contained in the IRIS as of October 1, 1996. The fish tissue bioconcentration factor (BCF) from the 1980 documents was retained in each case (originally footno
kk	Criteria are based on carcinogenicity of 10 (-6) risk. (Originally footnote c in CTR)
ll	This criterion is based on 304(a) aquatic life criterion issued in 1980, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5–80–019), Chlordane (EPA 440/5–80–027), DDT (EPA 440/5–80–038), Endosulfan (EPA 440/5–80–046), Endrin (EPA 440/5–80–047), Heptachlor (440/5–80–052), Hexachlorocyclohexane (EPA 440/5–80–054), Silver (EPA 440/5–80–071). The Minimum Data Requirements and derivation procedures were different in the 1980 Guidelines than in the 1985 Guidelines. For example, a ''CMC'' derived using the 1980 Guidelines was derived to be used as an instantaneous maximum. If assessment is to be done using an averaging period, the values given should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines (originally footnote g in the CTR).
mm	Criteria for these metals are expressed as a function of the water-effect ratio (WER) (originally footnote i in the CTR).
nn	No criterion for protection of human health from consumption of aquatic organisms (excluding water) was presented in the 1980 criteria document or in the 1986 Quality Criteria for Water. Nevertheless, sufficient information was presented in the 1980 document to allow a calculation of a criterion, even though the results of such a calculation were not shown in the document (originally footnote j in the CTR).
oo	These freshwater and saltwater criteria for metals are expressed in terms of the dissolved fraction of the metal in the water column. Criterion values were calculated by using EPA's Clean Water Act 304(a) guidance values (described in the total recoverable fraction) and then applying the conversion factors in § 131.36(b)(1) and (2) (originally footnote m in the CTR).
pp	These criteria were promulgated for specific waters in California in the National Toxics Rule (''NTR''), at § 131.36. The specific waters to which the NTR criteria apply include: Waters of the State defined as bays or estuaries and waters of the State defined as inland, i.e., all surface waters of the State not ocean waters. These waters specifically include the San Francisco Bay upstream to and including Suisun Bay and the Sacramento-San Joaquin Delta. This section does not apply instead of the NTR for this criterion (originally footnote o in the CTR).
qq	These criteria were promulgated for specific waters in California in the NTR. The specific waters to which the NTR criteria apply included: Waters of the State defined as bays or estuaries including the San Francisco Bay upstream to and including Suisun
rr	PCBs are a class of chemicals that include Aroclors 1242,1254,1221,1232,1248,1260, and 1016. The aquatic life criteria apply to the sum of this set of seven Aroclors (originally footnote u in the CTR).
ss	This criterion has been recalculated pursuant of all congener or isomer or homolog or Aroclor analyses.

The following numbered footnotes are derived from "A Compilation of Water Quality Goals" (RWQCB 2007b). These footnotes directly correlate with the source document.

1	Expressed as dissolved
2	Expressed as total recoverable.
2	Expressed as total recoverable
6	Pentavalent arsenic [As(V)] effects on plants.
18	Applies separately to Endrin and Endrin aldehyde.
20	For halomethanes
22	For chlorinated benzenes
23	Toxicity to a fish species exposed for 7.5 days
24	For dichlorobenzenes
27	For dichloroethylenes
28	For dichloropropanes
29	For dichloropropenes
38	Toxicity to algae occurs
45	For sum of phthalate esters
48	For chlorinated naphthalenes
51	From U.S. Environmental Protection Agency, *Quality Criteria for Water* (1976) "The Red Book," and also appears in current list of recommended criteria.
52	For polynuclear aromatic hydrocarbons
53	For dinitrotoluenes
56	For nitrosamines
68	Draft / tentative / provisional; applies only to second value if two separate values are listed; applies to range if a range of values is listed.
82	A decrease in the number of algal cells occurs.
83	Adverse effects on a fish species exposed for 168 days.
88	For nitrophenols
95	For the pentavalent form
113	Based on carcinogenicity at 1-in-a-million risk level.
114	Developed as 24-hour average using 1980 EPA guidelines, but applied as 4-day average in the National Toxics Rule.

Table M-1. Surface Water Screening Criteria *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Footnotes (Continued):

115 Criterion most appropriately applied to the sum of alpha-endosulfan and beta-endosulfan.
116 Applies separately to Aroclors 1242, 1254, 1221, 1232, 1248, 1260, and 1016; based on carcinogenicity at 1-in-a-million risk level.
136 Draft Chronic Criterion: The concentration of selenium in whole-body fish tissue should not exceed 7.91 ug/g dw (dry weight). In addition, if whole-body fish tissue concentrations exceed 5.85 ug/g dw during summer or fall, fish tissue should be monitored during the winter to determine whether the selenium concentration exceeds 7.91 ug/g dw.
137 Expressed as free cyanide (as CN).
140 Criterion derived from data for inorganic mercury (II), but is applied to total mercury. It will probably be underprotective if a substantial portion of mercury in the water column is methylmercury. Derivation of criterion did not consider exposure through the diet, which is probably important for aquatic life occupying upper trophic levels.
142 Criteria do not apply to waters subject to water quality objectives in Tables III-2A and III-2B of the San Francisco Bay Regional Water Quality Control Board's 1986 Basin Plan.
143 These criteria were promulgated for specific California waters in the National Toxics Rule.
144 The ambient level was set at or below the minimum reported detection limit.
145 The ambient concentration represents the 95th percentile of the distribution. Additionally, the 95th percentile of the distribution was calculated using distribution dependent formulae. For normal and lognormal distributions, the 95th percentile calcula

References:

Gilbert, R.O. 1987 *Statistical Methods for Environmental Pollution Monitoring* . Van Nostrand Reinhold, New York.
Regional Water Quality Control Board (RWQCB). 1998. "Recommended Interim Water Quality Objectives (or Aquatic Life Criteria) for Methyl Tertiary-Butyl Ether (MTBE)." San Francisco Bay Region. October 1.
RWQCB. 2007a. "San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan)." San Francisco Bay Region. January.
RWQCB. 2007b. "A Compilation of Water Quality Goals." Prepared by Jon B. Marshack, Central Valley Region. August.
Shaw Environmental, Inc. 2007. "Final New Preliminary Screening Criteria and Petroleum Program Strategy, Hunters Point Shipyard, San Francisco, California." December 21.
TtEMI 1999. "Draft Remedial Investigation Report, Site 12 Operable Unit, Naval Station Treasure Island, San Francisco, California." June 1.
TtEMI 2001. "Final Technical Memorandum Estimation of Ambient Concentrations of Metals in Groundwater, Naval Station Treasure Island, San Francisco, California." March 30.
U.S. Environmental Protection Agency (EPA). 2000. "Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California." 40 CFR Part 131, RIN 2040-AC44. May 18.
EPA. 2006. "National Recommended Water Quality Criteria."

Table M-2. Hunters Point Groundwater Ambient Levels

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

Metal	HGAL[(1)] (µg/L)
Aluminum	NA
Antimony	43.3
Arsenic	27.3
Barium	504
Beryllium	1.40
Cadmium	5.08
Calcium	NA
Chromium	15.7
Chromium VI	NA
Cobalt	20.8
Copper	28.0
Iron	2,380
Lead	14.4
Mangesium	1,440,000
Manganese	8,140
Mercury	0.60
Molybdenum	61.9
Nickel	96.5
Potassium	448,000
Selenium	14.5
Silver	7.43
Sodium	9,240,000
Thallium	13.0
Vanadium	26.6
Zinc	75.7

Notes:

µg/L micrograms per liter

HGAL Hunters Point groundwater ambient level

NA Not available

1 PRC Environmental Management, Inc. 1996. "Estimation of Hunters Point Shipyard Groundwater Ambient Levels Technical Memorandum." September 16.

Table M-3. Groundwater COPECs for Aquatic Wildlife

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard

		Screening Evaluation		Trigger Level Evaluation (for Inland Areas > 250 feet from shoreline)		
Chemical Group	COPEC	Aquatic Evaluation Criterion (µg/L)[a]	Nearshore Wells Recommended for Further Monitoring and Evaluation [b],[c]	Attenuation Factor Selected for Inland Area[d]	Calculated Trigger Level (µg/L)[e]	Inland Areas (Where Trigger Levels are Exceeded) Recommended for Further Monitoring and Evaluation [c],[f]
Anions	Un-ionized Ammonia	25	IR01MW38A, IR01MW48A, IR01MW47B, IR01MW43A[g], TW053, TW023, TW024, TW002, TW045, TW003, TW013, TW014, TW016, TW032, TW031, TW040, TW039, and PZ150D	1	25	TW001, TW007, TW009, TW010, TW011, TW025, TW049, and TW055
	Cyanide	1	IR01MW38A, IR01MW48A, IR01MW60A, IR01MW62A, and IR01MW63A	NA	NA	NA
	Sulfide	2[h],[i]	IR01MW43A[g], IR01MW48A, IR01MW53B, IR01MW60A, IR01MW64A, and IR01MWI-3	NA	NA	NA
Metals	Copper	28[j]	IR01MW53B, TW018, TW019, TW020, and TW045	2	56	TW004, TW005, and PZ131F
	Lead	14.4[j]	IR01MW43A[g], TW021, TW028B, and TW029	NA	NA	NA
	Zinc	81	IR01MW43A[g], IR01MW44A, TW020, TW021, TW029, and TW006	NA	NA	NA
Pesticides and PCBs	PCBs (Total)	0.03[i]	IR01MW43A[g], IR01MW44A,TW036, TW038, TW047, TW021, TW031, TW040, TW039, and PZ150D	2	0.06	TW005 and PZ131F
Petroleum Hydrocarbons	TPH (Total)	1,400 - 20,000[k]	IR01MWI-3[g], IR01MW43A[g], TW033, TW032, TW031, PZ150E, TW016, TW013, TW042, and TW041	NA	NA	NA

Notes:

(a) References for the aquatic evaluation criteria are included in Appendix M.

(b) Nearshore wells are located within 250 feet of the Parcel E-2 shoreline. Most nearshore wells are located within the tidally influenced zone (where the maximum tidal fluctuation exceeds 0.10 foot in the A-aquifer based on data collected during the Phase III groundwater data gaps investigation [TtEMI, 2004a]).

(c) Temporary wells (denoted by the prefix TW in the table above) were installed as part of a data gaps investigation and are not available for long-term monitoring; however, they were included in this table to guide well placement during the development of the groundwater remedial action monitoring plan.

(d) Attenuation factor assigned based on nomographs developed specifically for HPS groundwater (see Appendix M, Attachment M-1).

(e) Value calculated by multiplying the aquatic evaluation criterion by the attenuation factor.

(f) Inland monitoring wells are located more than 250 feet inland from the Parcel E-2 shoreline.

(g) Wells IR01MWI-3 and IR01MW43A were decommissioned prior to the PCB Hot Spot Area removal action; these wells were replaced with IR01MW60A and IR01MW64A, respectively.

(h) Criterion shown applies to hydrogen sulfide, not total sulfide

(i) Criterion is significantly lower (at least 10 times less) than reporting limit for current, routinely used analytical methods

(j) Value shown has been HGAL-adjusted and is applicable to the A-aquifer.

(k) Range of values shown; total TPH aquatic criteria assigned as a function of distance from shoreline; the source of these criteria is the "Final New Preliminary Screening Criteria and Petroleum Program Strategy, Hunters Point Shipyard, San Francisco, California" (Shaw Environmental, Inc., 2007)

µg/L micrograms per liter

COEPCs chemicals of potential ecological concern

NA not applicable

PCBs polychlorinated biphenyls

TPH total petroleum hydrocarbons

43	**General response actions and remedial technologies**	Section 2.8	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Sections 11.1 and 11.2, pages 11-3 through 11-6; Figure 11-1. Record No. 4237.

In the Application of the CERCLA Municipal Presumptive Remedy to Military Landfills (provided in Appendix H to this RI/FS Report), EPA examined 31 RODs that document the remedial decisions for 51 landfills at military installations (EPA, 1996). Of the 51 landfills, only 41 required remedial action. Of the 41 landfills, containment was the remedy at 23 landfills (56 percent of the sites). At the 18 landfills where other remedies were selected, institutional controls were implemented at 3 sites, excavation and on-site consolidation was selected for 4 sites, and excavation and off-site disposal was selected for 11 sites. The military also reports that, of the 41 landfill sites evaluated, 27 were greater than 1 acre in size and of those 27 sites, containment was recommended for 23 sites (85 percent). This information suggests that the size of the landfill is an important factor in determining whether containment is implemented.

As presented in Section 8.8, the Parcel E-2 Landfill meets all of the criteria specified in EPA guidance (EPA, 1996) for application of the containment presumptive remedy. However, the Navy has agreed to evaluate excavation of the landfill as part of this report to provide information to support the community's review of potential remedial alternatives for Parcel E-2. Therefore, the remedial technologies and process options identified and screened in this section are limited to those related to the containment and removal GRAs.

Evaluation of the containment GRA also includes addressing groundwater in Parcel E-2 and leachate emanating from the Parcel E-2 Landfill. This evaluation is provided for completeness, despite the uncertainty of the risk to humans and wildlife from exposure to groundwater, and as a formal evaluation of the current GES in the southeast portion of Parcel E-2 (that was installed as part of an interim action).

11.1. APPLICABLE GENERAL RESPONSE ACTIONS

This subsection describes the GRAs to be evaluated for achieving the Parcel E-2 RAOs (Section 9). The RAOs were established to address potential exposure pathways that could affect human health and the environment from affected media at Parcel E-2. The GRAs presented on the following page have been selected for Parcel E-2 media.

As shown in the table on the following page, all affected media are evaluated for both the institutional action and containment action GRAs, except for surface water. As discussed in Section 6.2.5, surface water runoff (including runoff from freshwater wetlands located in the Panhandle Area) can be contaminated through surface erosion and could result in unacceptable exposures to aquatic life in the San Francisco Bay. However, this potential exposure can be effectively controlled by management (through implementation of BMPs), and monitoring of surface water runoff should be evaluated as part of any remedial alternative that leaves contaminated soil in place. Therefore, only institutional actions are evaluated for potentially affected surface water at Parcel E-2.

GRA	General Description	Applicable Media
No Action	No-action GRA is required by the NCP; used as a baseline for comparison	Solid waste, soil, sediment, landfill gas, groundwater, and surface water
Institutional Actions	Includes institutional controls, engineering controls, and site monitoring	Solid waste, soil, sediment, landfill gas, groundwater, and surface water
Containment Actions (with or without collection, treatment, and/or disposal)	Includes technologies that isolate media to reduce or eliminate exposure to, and off-site migration of surface and subsurface contaminants	Solid waste, soil, sediment, landfill gas, and groundwater
Removal Actions	Includes removal of contaminated media for treatment and/or disposal on or off site; exposure risk and migration potential are diminished by eliminating or reducing the contaminant source	Solid waste, soil, and sediment

The following subsections describe the GRAs appropriate for addressing contaminated media at Parcel E-2 in more detail.

11.1.1. No Action

Consideration of the no action GRA is required by the NCP and is used as a baseline against which other remedial actions are compared.

11.1.2. Institutional Actions

Actions that can be taken to limit exposure to hazardous chemicals in media at Parcel E-2 include both institutional and engineering controls. In addition, site monitoring can be used to track the effectiveness of the remedy alternative or to verify that hazardous chemicals in media at the site do not migrate and affect human or ecological receptors.

Institutional controls, as defined by the U.S. Department of Defense (DoD) (2001), are nonengineering measures limiting potential exposures to a site or medium of concern or ensuring that engineering measures designed to remediate a site, or limit access to a site, remain in place. Similarly, EPA defines institutional controls as "non-engineering measures designed to prevent or limit exposure to hazardous substances left in place at a site, or assure effectiveness of a selected remedy" (EPA, 2000c).

Engineering controls are implemented technologies that serve to reduce exposure to chemicals in media. Examples of engineering controls include fencing and other physical barriers, which can be effective in limiting access to contaminated media.

Under CERCLA, site monitoring is a required component for any site remedy. Short-term monitoring is conducted to ensure that potential risks to human health and the environment are controlled while a site remedy is being implemented. Long-term monitoring can be used to track site chemicals after an active remedial technology has been used or to ensure that hazardous chemicals are not migrating off site at concentrations that might affect humans or the environment.

11.1.3. Containment Actions (With or Without Collection, Treatment, and Disposal)

Containment actions include technologies that isolate contaminated media from humans and wildlife. For contaminated solid waste, soil, and sediment, containment technologies are meant to minimize disturbance to the surfaces of those media and to reduce or eliminate off-site migration of surface and subsurface chemicals. These actions are effective at preventing direct contact with these media, as well as their migration by surface water, air (wind erosion), subsurface air (landfill gas), or groundwater.

Containment technologies for unlined landfill waste and soil typically include surface controls, such as runoff controls, erosion controls, and capping. Process options include the various types of caps, shoreline protection options, and drainage enhancements.

Containment of landfill gas is typically achieved by collection and treatment of landfill gas through a gas control system, which can minimize or prevent off-site subsurface migration and accumulation of the gas above explosive concentrations. Process options include passive gas venting and active gas collection.

Containment actions for groundwater refer to actions that isolate the chemical source or affected groundwater from downgradient areas to prevent further migration of chemicals. Technologies typically used for groundwater containment include physical barriers (such as sheet pile or slurry walls), hydraulic barriers (groundwater flow diversion structures or such as extraction wells), and reactive walls (such as permeable reactive barriers [PRB]). Depending on the chemical concentrations present, groundwater collected with hydraulic barriers can be disposed of off site, discharged to the surface, discharged to a publicly owned treatment facility for additional treatment, or reinjected into the ground after treatment. Numerous technologies are used for water treatment, most of which are chemical- and site-specific.

11.1.4. Removal Actions

Removal actions refer to removing contaminated media from a site to significantly reduce or eliminate the risk of exposure to humans and wildlife. Removal actions for contaminated solid waste, soil, and sediment would require excavation and disposal at an off-site facility approved to receive the waste, or consolidation with the existing on-site waste.

11.2. EVALUATION CRITERIA FOR TECHNOLOGIES AND PROCESS OPTIONS

Technologies and associated process options selected for this evaluation were screened using the following three criteria:

- Effectiveness: Effectiveness is a judgment regarding the potential for the technology and process options to address the area and volume of contaminated media adequately and reliably. It also identifies any effects to human health and the environment caused by implementation of the technology.
- Implementability: Implementability is an evaluation of the technical appropriateness and the administrative implementability of the technology for the contaminated media.
- Cost: Cost is an approximation of the dollar value of the project; it is neither a bid cost nor an engineer's estimate and, in some cases, is a relative cost (high, medium, or low) rather than a quantified value.

Two issues in evaluating effectiveness and implementability of all of the technologies and process options are future land use and local climate. According to the 2010 amended Redevelopment Plan, most of the planned reuse for Parcel E-2 is open space. A small area (about 0.42 acres) in the East Adjacent Area is designated as part of the Shipyard South Multi-Use District, which includes potential recreational, industrial, and residential reuse (SFRA, 2010).

The following subsections describe remedial technologies and process options under each GRA that are appropriate for addressing solid waste, soil, sediment, landfill gas, groundwater, and surface water at Parcel E-2. The GRAs evaluated are no action (Section 11.3), institutional actions (Section 11.4), containment (with or without collection, treatment, and disposal) (Section 11.5), and removal (Section 11.6). Each process option within the GRA is discussed for each media if applicable. The evaluation of the remedial technologies and process options is presented on Figure 11-1.

11.3. NO ACTION

As discussed above, the NCP requires evaluation of the no action response for all media to provide a baseline for comparison with other response actions. Under this GRA, no additional action would be taken to address:

- Contaminated solid waste and soil in the Landfill Area and isolated solid waste, soil, and sediment in the Panhandle Area, East Adjacent Area, and Shoreline Area (as described in Section 2, a portion of the Landfill Area has been capped with an engineered multilayer cap, and the remainder has been covered with an approximately 2-foot-thick layer of soil)
- Landfill gas
- Groundwater
- Surface water

Medium	General Response Action	Remedial Technology	Process Options	Description	Comments	Effectiveness	Implementability	Cost	Retained for Analysis?
Solid Waste and Soil in Landfill, Panhandle, and East Adjacent Areas; Sediment in Shoreline Area	No Action	None	None	No additional action would be taken to address solid waste and soil in the Landfill Area, Panhandle Area or East Adjacent Area, or sediment in the Shoreline Area.	Required by the NCP and is used as a baseline against which other response actions are compared - would not meet RAOs.	Low	High	No Cost	Yes
	Institutional Actions	Institutional Controls	Legal Mechanisms (Restrictive Covenants, Negative Easements, Deed Notifications); Administrative Mechanisms (Land Use Plans, Soil & Groundwater Procedures & Policies, Construction Permitting, Public Notices & Educational Materials)	Legal and administrative mechanisms used in combination to enforce various land use restrictions such as: • Restrict the use of the parcel to open space • Require maintenance of control systems • Maintain the integrity of covers (or access restrictions where covers are not present) • Require development of a soil and groundwater management plan to be implemented during all intrusive site activities (such as, subsurface construction)	Institutional controls would be integral to and highly effective at maintaining the integrity of any final remedy, and are likely to be included as a part of any alternative that leaves landfill solid waste or other hazardous substances in place.	High	High	Low	Yes
		Engineering Controls (i.e. to limit/restrict access)	Signs (Warning & No Trespassing); Traffic Barriers & Perimeter Fencing	Engineering controls are physical mechanisms that serve to restrict access and potential exposure to contaminated media. Process options include warning and no trespassing signs, engineered barriers to vehicular traffic and perimeter fencing to reduce the potential for direct human contact with contaminated media.	Access restrictions conflict with future open space reuse; to be used during implementation of other remedial technologies.	Low (if used as part of a permanent remedy) High (if used during implementation of an active remediation technology)	Low (if used as part of a permanent remedy) High (if used during implementation of an active remediation technology)	Low	No (not effective as part of permanent remedy; conflicts with planned open space reuse)
		Site Monitoring	Short-Term Monitoring; Long-Term Monitoring	Short-term monitoring involves outdoor air monitoring during construction that may disturb contaminated solid waste, soil, or sediment. Long-term monitoring includes operation and maintenance of control systems (such as, inspection and maintenance of caps/covers).	Although monitoring alone would not achieve RAOs, short-term and long-term monitoring would be integral components in any remedial alternative implemented at Parcel E-2.	Low	High	Low	Yes
	Containment	Caps/Covers	Low-Permeability Soil Cap	The low-permeability soil cap system (Title 27 cover, prescriptive standard) includes a low-permeability soil layer (such as clay) at least 12 inches thick with a maximum permeability of $1x10^{-6}$ cm/sec or equal to the hydraulic conductivity of the base liner system.	Limited local sources of low-permeability soil; costly to purchase and import large volumes of suitable low-permeability soils.	High	Moderate-High	Moderate-High	Yes (for potential focused application at freshwater wetlands)
			Geosynthetic Cap	The geosynthetic cap system (Title 27 cover, engineered alternative) would include a 60-mil-thick HDPE geomembrane in place of the low-permeability soil layer (typical permeability is $1x10^{-13}$ cm/sec)	Highly effective and implementable with proper QA/QC, skilled labor, and appropriate supplies and equipment.	High	High	Moderate	Yes
			Multilayer Geosynthetic Cap	The multilayer geosynthetic cap system includes a composite low-permeability layer consisting of an HDPE geomembrane at least 60 mils thick over a GCL (typical permeability of GCL is $5x10^{-9}$ cm/sec)	Already installed over a portion of the waste area; highly effective and implementable with proper QA/QC, skilled labor, and appropriate supplies and equipment.	High	High	Moderate-High	Yes
			Evapotranspiration Cap	An evapotranspiration cap is typically a 4- to 6-foot-thick soil layer over a soil foundation layer; it acts to store moisture within the cap thickness, while minimizing infiltration, until the moisture is removed through vegetative uptake or evaporation.	Diminished effectiveness in temperate climates; ideal in arid or semi-arid climates; would require importation of a significant amount of cover soil and may encroach on neighboring property.	Moderate	Low	Moderate to High	No (not implementable given limited space and temperate climate)
		Shoreline Protection *	Armoring	Armoring includes seawalls, bulkheads, and protective revetments.	Armoring would protect the containment systems from erosion, and allow freshwater wetlands to be established in the Panhandle Area.	High	High	High	Yes
			Shoreline Stabilization	Shoreline stabilization includes man-made structures (such as nearshore breakwaters and reefs) or natural material (such as vegetation or sand fill) used to moderate the coastal sediment transport processes and reduce the local erosion rate.	Shoreline stabilization would be effective In areas planned for tidal wetlands restoration.	Moderate	High	Moderate to High	Yes
			Shoreline Nourishment	Shoreline nourishment can include berms, dunes, feeder beach, nearshore berm, dune stabilization, or structural stabilization.	Inadequate area for proper implementation; would not prevent erosion.	Low	Low	Moderate	No (not implementable within narrow Shoreline Area)
	Removal	Excavation	Excavation/Off-Site Disposal 1. Landfill Area 2. Soil in adjacent areas	Excavation and off-site disposal of all solid waste and contaminated soil in the Landfill Area, and contaminated soil/sediment in Panhandle, East Adjacent, and Shoreline Areas that may pose a risk to human health and the environment	Multiple issues associated with excavation and transport of such a large volume of landfill solid waste and soil.	Moderate-High	Low-Moderate	Very High	Yes (to support community review of potential remedies)
			Excavation/Off-Site Disposal 1. Hot spots in adjacent areas 2. Incidental LLRW	Excavation and off-site disposal of hot spots in Panhandle, East Adjacent, and Shoreline Areas (including LLRW encountered during hot spot excavation activities)	Primary hot spots consist of liquid and highly toxic wastes in the PCB Hot Spot shoreline; additional removal at other locations in the Panhandle and East Adjacent Areas to enhance performance of remedy..	High	High	Moderate to High	Yes
			Excavation/On-Site Consolidation of hot spots in adjacent areas (with off-site disposal of incidental LLRW)	Excavation of hot spots in Panhandle, East Adjacent, and Shoreline Areas with off-site disposal of LLRW and on-site consolidation of non-radiological hot spot material	Hot spots are not mobile and planned leachate collection/treatment system is considered adequate but not as robust as off-site disposal facilities	Moderate	Moderate	Moderate	No (potential issues with administrative implementability)
			Excavation/On-Site Consolidation of contaminated material in adjacent areas (with off-site disposal of incidental LLRW)	Excavation of solid waste and contaminated soil/sediment in Panhandle, East Adjacent, and Shoreline Areas, as needed to meet design requirements of a containment process option (for example, stable slopes along shoreline and altered topography to support wetlands restoration), with off-site disposal of LLRW and on-site consolidation of non-radiological material	Specific hot spot removal areas include surface soils in the Metal Slag Area, soils along the PCB Hot Spot shoreline, soils along the Landfill Area Shoreline, and soils from various inland locations in the Panhandle and East Adjacent Areas.	High	High	Moderate	Yes

Legend

- Retained for use in Remedial Alternatives
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- Eliminated from consideration

Notes:

* Required in Shoreline Area

Acronyms defined on page 4

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FIGURE 11-1
Results of Remedial Technologies and Process Options Evaluation

Remedial Investigation/Feasibility Study for Parcel E-2

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Medium	General Response Action	Remedial Technology	Process Options	Description	Comments	Effectiveness	Implementability	Cost	Retained for Analysis?
Landfill Gas in Parcel E-2	No Action	None	None	No additional action would be taken to remove or treat landfill gas.	Required by the NCP and is used as a baseline against which other response actions are compared – would not meet RAOs.	Low	High	No Cost	Yes
	Institutional Actions	Institutional Controls	Legal Mechanisms (Restrictive Covenants, Negative Easements, Deed Notifications); Administrative Mechanisms (Land Use Plans, Soil & Groundwater Procedures & Policies, Construction Permitting, Public Notices & Educational Materials)	Legal and administrative mechanisms used in combination to enforce various land use restrictions such as: • Require maintenance of control systems • Ensure compliance with 27 CCR requirements for construction within 1,000 feet of a landfill, such as the requirement for gas control systems on any installed subsurface structures or other areas in which landfill gas may accumulate	Institutional controls would be integral to and highly effective at maintaining the integrity of any final remedy, and are likely to be included as a part of any alternative that leaves landfill solid waste or other hazardous substances in place.	High	High	Low	Yes
		Engineering Controls (i.e. to limit/restrict access)	Signs (Warning & No Trespassing); Traffic Barriers & Perimeter Fencing	Engineering controls are physical mechanisms that serve to restrict access and potential exposure to contaminated media. Process options include warning and no trespassing signs, engineered barriers to vehicular traffic and perimeter fencing to reduce the potential for direct human contact with contaminated media.	Access restrictions conflict with future open space reuse; to be used during implementation of other remedial technologies.	Low (if used as part of a permanent remedy) High (if used during implementation of an active remediation technology)	Low (if used as part of a permanent remedy) High (if used during implementation of an active remediation technology)	Low	No (not effective as part of permanent remedy; conflicts with planned open space reuse)
		Site Monitoring	Short-Term Monitoring; Long-Term Monitoring	Short-term monitoring involves outdoor air monitoring during construction that may affect landfill gas migration. Long-term monitoring includes monitoring of gas monitoring probes, subsurface structures, and site structures; also includes operation and maintenance of gas control systems.	Although monitoring alone would not achieve RAOs, short-term and long-term monitoring would be integral components in any remedial alternative implemented at Parcel E-2.	Low	High	Low	Yes
	Containment	Landfill Gas Collection	Passive Venting	A passive system at Parcel E-2 would include a series of venting wells extending from below the historic low water table elevation through the cap and discharging to the atmosphere above the surface of the cap.	Diminished effectiveness at landfills with no bottom and sidewall liner system, or landfills with insufficient buffer space between the edge of waste and the compliance points; if NMOC treatment is required at the discharge points, the required treatment systems could restrict landfill gas venting, rendering venting less effective.	Moderate	High	Low	Yes
			Active Collection	Active landfill gas collection uses vacuum blowers to extract landfill gas through vertical extraction wells installed and plumbed together; gases are drawn to a central collection point to create an inward pressure gradient to prevent outward landfill gas migration.	More effective with geosynthetic caps in shallow landfills because geosynthetic materials offer a better barrier against vacuum short-circuiting to the surface.	High	High	Moderate	Yes
	Treatment (gas treatment and/or destruction) *	Adsorption (via GAC and Hydrosil®)	GAC	GAC would remove SVOCs and most VOCs; could be used with either passive or active collection systems.	Treatment units could restrict the airflow of passive venting systems, rendering them less effective.	High	High	Low (if NMOC concentrations are low) High (if NMOC concentrations are high, following capping of the entire landfill)	Yes
			Hydrosil® (permanganate-impregnated zeolite medium)	Hydrosil® would remove lighter VOCs such as vinyl chloride; could be used with either passive or active collection systems.					
		Destruction (via combustion)	Enclosed Flare	An enclosed flare would destroy landfill gas, including NMOCs and methane, through combustion; primary chemical by-products from flares are carbon dioxide and nitrogen oxide compounds.	Operating conditions would reduce the possibility of dioxin formation by promoting the destruction of organics, operating at temperatures above those that would allow dioxin formation followed by rapid quenching, and extending the combustion residence time.	High	Moderate to High	Low to Moderate	Yes
			Open Flare	Eliminated from consideration due to poor system controls (relative to enclosed flares).		N/A	N/A	N/A	N/A
			Internal Combustion Engine	Eliminated from consideration because volume of gas generated by the Parcel E-2 Landfill is not anticipated to be sufficient to support the cost-effective implementation of internal combustion engines.		N/A	N/A	N/A	N/A
		Destruction (via non-combustion processes)	Energy Recovery	Energy recovery technologies, such as fuel cells, use landfill gas to produce energy directly.	Effectiveness of energy recovery and gas-to-product systems at Parcel E-2 is unknown due to the lack of information on gas concentration generation rates (assumed moderate to high, depending on implementability).	Likely Low (assumed moderate to high, if implementable at Parcel E-2)	Likely Low (site-specific conditions need to be better defined)	High	Yes
			Gas-to-Product	Gas-to-product conversion technologies focus on converting landfill gas into commercial products, such as compressed natural gas, methanol, purified carbon dioxide and methane, or liquefied natural gas.					

Legend

- Retained for use in Remedial Alternatives
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- Eliminated from consideration

Notes:

* Additional data are needed to determine the type(s) of treatment required for landfill gas at Parcel E-2.

Acronyms defined on page 4

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FIGURE 11-1 (cont.)
Results of Remedial Technologies and Process Options Evaluation

Remedial Investigation/Feasibility Study for Parcel E-2

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Medium	General Response Action	Remedial Technology	Process Options	Description	Comments	Effectiveness	Implementability	Cost	Retained for Analysis?
Groundwater in Parcel E-2	No Action	None	None	No action would be taken to remove, contain or treat groundwater; no institutional controls would be established to prevent exposure, and no monitoring would be required.	Required by the NCP and is used as a baseline against which other response actions are compared – would not meet RAOs.	Low	High	No Cost	Yes
	Institutional Actions	Institutional Controls	Legal Mechanisms (Restrictive Covenants, Negative Easements, Deed Notifications)	Legal and administrative mechanisms used in combination to enforce various land use restrictions such as: • Require development of a soil and groundwater management plan to be implemented during all intrusive site activities (such as subsurface construction • Restrict the use of groundwater within the Parcel E-2 boundaries • Prohibit the installation of wells that have the potential to affect the migration of contaminated groundwater within Parcel E-2.	Institutional controls would be integral to and highly effective at maintaining the integrity of any final remedy, and would be required to prevent exposure to groundwater within the Parcel E-2 boundaries.	High	High	Low	Yes
			Administrative Mechanisms (Land Use Plans, Soil & Groundwater Procedures & Policies, Construction Permitting, Public Notices & Educational Materials)						
		Engineering Controls (i.e. to limit/restrict access)	Signs (Warning & No Trespassing)	Engineering controls are physical mechanisms that serve to restrict access and potential exposure to contaminated media. Process options include warning and no trespassing signs, engineered barriers to vehicular traffic and perimeter fencing to reduce the potential for direct human contact with contaminated media.	Access restrictions conflict with future open space reuse; to be used during implementation of other remedial technologies.	Low (if used as part of a permanent remedy) High (if used during implementation of an active remediation technology)	Low (if used as part of a permanent remedy) High (if used during implementation of an active remediation technology)	Low	No (not effective as part of permanent remedy; conflicts with planned open space reuse)
			Traffic Barriers & Perimeter Fencing						
		Site Monitoring	Short-Term Monitoring	Short-term monitoring involves outdoor air monitoring during construction of groundwater control systems. Long-term monitoring includes groundwater monitoring and operation and maintenance of groundwater control systems.	Although monitoring alone would not achieve RAOs, short-term and long-term monitoring would be integral components in any remedial alternative implemented at Parcel E-2.	Low	High	Low	Yes
			Long-Term Monitoring						
	Containment	Physical Barrier	Slurry Wall	Physical barrier would be installed to cut off and/or redirect groundwater flow.	Physical barrier may need to be complemented with hydraulic barrier to prevent excessive groundwater mounding.	Moderate to High	Moderate to High	Moderate to High	Yes
			Grout Curtain	Physical barrier would be installed to cut off and/or redirect groundwater flow.	Site-specific conditions limit the implementability of these options.	Moderate to High	Low to Moderate	Moderate to High	No (not implementable given site-specific conditions)
			Vertical Geomembrane		Physical barrier may need to be complemented with a hydraulic barrier to prevent excessive groundwater mounding. Corrosion potential limits effectiveness and presence of large debris limits implementability.	Moderate	Moderate	Moderate to High	No (issues regarding effectiveness and implementability)
			Sheet Pile Wall	Physical barrier would be installed to cut off and/or redirect groundwater flow.					
		Hydraulic Barrier	Flow Diversion Drain	Flow diversion drain coupled with a physical barrier would be installed on the upgradient side of the landfill to reduce groundwater flow through the waste. Drain would divert flow to reduce groundwater mounding behind the physical barrier.	Flow diversion drain is a passive technology requiring no operation, and minimal maintenance after installation.	Moderate to High	High	Low	Yes
			Extraction from Wells & Off-Site Discharge	System would extract groundwater through pumping wells to contain groundwater and achieve RAOs at compliance points; extracted groundwater could be discharged to the sanitary sewer system, treated and reinjected, or treated and discharged to the Bay.	Groundwater modeling would be required to optimize extraction well placement and pumping rates, and to minimize the volume of water pumped from the Parcel E-2 aquifers; the required level of treatment would greatly influence cost.	Moderate to High	High	High	Yes
			Phytoremediation / Phytohydraulics	Phytohydraulics would use of plants to control rainfall infiltration and groundwater levels and movement; plants would remove water through evapotranspiration. In addition to hydraulic control, phytoremediation could potentially help reduce chemical concentrations in subsurface soils and groundwater.	Further studies would be required to identify plant species that could tolerate brackish groundwater, determine required planting area size and plant density. Space requirements may be incompatible with site conditions.	Moderate to High	Low	Low to Moderate	No (issues regarding implementability)
	Treatment	Reactive Barrier	Permeable Reactive Barrier	Permeable reactive barrier would be installed along the shoreline to breakdown contaminants in groundwater flowing off site.	Permeable reactive barrier is a passive technology that may require periodic reinjection of reagent to maintain effectiveness. Technology is unproven for treatment of landfill leachate in a tidal environment.	Undetermined in the short term; Low in the long term	Low	High	No (issues regarding effectiveness, implementability, and cost)

Legend

- Retained for use in Remedial Alternatives
- Retained for possible future incorporation (based on future site data)
- Eliminated from consideration

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FIGURE 11-1 (cont.)
Results of Remedial Technologies and Process Options Evaluation

Remedial Investigation/Feasibility Study for Parcel E-2

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Medium	General Response Action	Remedial Technology	Process Options	Description	Comments	Effectiveness	Implementability	Cost	Retained for Analysis?
Surface Water in Parcel E-2	No Action	None	None	No action would be taken to monitor or manage stormwater runoff and groundwater discharges to wetlands and the Bay at Parcel E-2; no institutional controls would be established to prevent exposure to surface water.	Required by the NCP and is used as a baseline against which other response actions are compared – would not meet RAOs.	Low	High	No Cost	Yes
	Institutional Actions	Institutional Controls	Legal Mechanisms (Restrictive Covenants, Negative Easements, Deed Notifications) Administrative Mechanisms (Land Use Plans, Soil & Groundwater Procedures & Policies, Construction Permitting, Public Notices & Educational Materials)	Legal and administrative mechanisms used in combination to enforce various land use restrictions such as: • Restrict the use of the parcel to open space • Require maintenance of stormwater BMPs • Require development of a soil and groundwater management plan to be implemented during all intrusive site activities (such as, subsurface construction)	Institutional controls would be integral to and highly effective at maintaining the integrity of any final remedy, and are likely to be included as a part of any alternative that leaves landfill solid waste or other hazardous substances in place.	High	High	Low	Yes
		Engineering Controls (i.e. to limit/restrict access)	Signs (Warning & No Trespassing) Traffic Barriers & Perimeter Fencing	Engineering controls are physical mechanisms that serve to restrict access and potential exposure to contaminated media. Process options include warning and no trespassing signs, engineered barriers to vehicular traffic and perimeter fencing to reduce the potential for direct human contact with contaminated media.	Access restrictions conflict with future open space reuse; to be used during implementation of other remedial technologies.	Low (if used as part of a permanent remedy) High (if used during implementation of an active remediation technology)	Low (if used as part of a permanent remedy) High (if used during implementation of an active remediation technology)	Low	No (not effective as part of permanent remedy; conflicts with planned open space reuse)
		Site Monitoring	Short-Term Monitoring Long-Term Monitoring Stormwater BMPs	Short-term monitoring involves stormwater monitoring during construction. Long-term monitoring includes surface water monitoring and inspection and maintenance of stormwater BMPs. Monitoring of surface water is used to demonstrate compliance with RAOs designed to prevent unacceptable exposures to aquatic receptors in the bay.	Although monitoring alone would not achieve RAOs, a stormwater monitoring program, including stormwater BMPs, would be implemented in conjunction with an inspection and maintenance for any containment systems.	Low	High	Low	Yes

Legend

- Retained for use in Remedial Alternatives
- Retained for possible future incorporation (based on future site data)
- Eliminated from consideration

Acronyms

BMP	best management practice
CCR	California Code of Regulations
cm/sec	centimeters per second
GAC	granular activated carbon
GCL	geosynthetic clay liner
GRA	general response action
HDPE	high-density polyethylene
LLRW	low-level radioactive waste
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NMOC	nonmethane organic compound
PCB	polychlorinated biphenyl
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
QA	quality assurance
QC	quality control
SVOC	semivolatile organic compound
VOC	volatile organic compound

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FIGURE 11-1 (cont.)
Results of Remedial Technologies and Process Options Evaluation

Remedial Investigation/Feasibility Study for Parcel E-2

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44	**Presumptive remedy guidance**	Section 2.8	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 8.2.3.4, pages 8-17 through 8-19. Record No. 4237.

8.2.3.4. Application of the Containment Presumptive Remedy

As discussed in Section 1.4.1, the EPA has developed a specialized RI/FS process for landfill sites (EPA, 1991a, 1993a, 1993b, 1994, and 1996) that, provided certain conditions are met, supports selection of a containment presumptive remedy. EPA guidance includes a decision framework for evaluating the applicability of the containment presumptive remedy to military landfills (EPA, 1996). The six-step process includes the following considerations:

- What information should be collected?
- How may land reuse affect remedy selection?
- Do landfill contents meet municipal landfill-type waste definition? (discussed in Section 8.2.3.1)
- Are military-specific wastes present? (discussed in Section 8.2.3.1)
- Is excavation of contents practical?
- Can the presumptive remedy be used?

The following paragraphs present the Navy's assessment of the applicability of the containment presumptive remedy relative to the above six steps. The results of the assessment are presented graphically on Figure 8-1.

Step 1 – What information should be collected?

Available information on the waste types, operating history, and estimated size and volume of the Parcel E-2 Landfill were compiled and are summarized in Section 8.2.1.

Step 2 – How may land reuse affect remedy selection?

According to the 2010 amended Redevelopment Plan, most of the planned reuse for Parcel E-2 is open space, including all of the Parcel E-2 Landfill. Therefore, the planned reuse of the Parcel E-2 Landfill is compatible with the containment presumption.

Step 3 – Do landfill contents meet municipal-type waste definition?

The landfill contents meet the municipal-type waste definition, as summarized in Section 8.2.3.1. Although wastes within the Parcel E-2 Landfill meet the municipal-type waste definition outlined in EPA guidance, the presence of military-specific wastes warrants an additional evaluation step, which is discussed below.

Step 4 – Are military-specific wastes present?

As discussed in Section 8.2.3.1, military-specific wastes present (or potentially present) in and around the Parcel E-2 Landfill are considered "low-hazard military-specific wastes," that is "generally are no more hazardous than some wastes found in municipal landfills" (EPA, 1996). As shown on Figure 8-1, EPA

guidance supports the application of the containment presumptive remedy when such low-hazard military-specific wastes are present.

Step 5 – Is excavation of contents practical?

The effectiveness, implementability, and cost of excavating the Parcel E-2 Landfill was evaluated, consistent with EPA guidance (1996) and the NCP (55 Federal Register 8849, March 8, 1990), in order to answer this question. The estimated excavation volume of 1,008,250 cubic yards, includes the solid waste volume (473,000 cubic yards), the volume of overlying soil cover (393,500 cubic yards), and the volume of the soil below the solid waste (as deep as 13 feet below msl) that would be removed to support "clean closure" of the waste disposal unit (141,750 cubic yards). Experience from removal actions in Parcel E-2 has provided useful information for evaluating potential waste excavation, including field production rates, types of wastes encountered, and level of effort to implement site-specific requirements (e.g., the requirement to screen all material excavated in Parcel E-2 for radioactivity). However, the volume of the Parcel E-2 Landfill and surrounding soil fill is nearly 20 times the total volume of material removed at the Metal Slag Area and PCB Hot Spot Area (52,700 cubic yards).

Excavation is possible but may be very difficult to implement because of the depth of waste at the landfill, the proximity to surface water (the bay), and the proximity to adjacent non-Navy property. Difficulties associated with the removal of solid waste and soil from the landfill include:

- Slope stability during excavation
- Surface water control to prevent inundation resulting from tides or stormwater
- Groundwater inflow control for excavation below the water table
- Radiological screening, characterization, and confirmation sampling of all soil and debris transported from the site (for disposal and treatment) and to the site (for backfill and restoration)
- Locating and importing multiple, large-volume sources of backfill material that are free of contamination and do not contain metals concentrations in excess of existing ambient levels
- Control of potential releases of chemicals from waste and soil during removal and transport through the surrounding neighborhood

The implementation issues cited above also reflect issues regarding the short-term effectiveness of excavating the Parcel E-2 Landfill. For example, worker safety could be affected detrimentally by any problems in maintaining a stable excavation and controlling water inflow, considering the proximity of the deep excavations (down to 13 feet below msl) to the bay. In addition, excavation of the landfill would likely require multiple years of continuous construction to complete, and the resulting traffic, noise, and emissions from heavy equipment operation would affect the local population. Also, these implementation issues directly correspond to the high projected costs. The primary factors that result in the high costs of excavation and disposal are:

- Large volume of solid waste, soil, and sediment to be excavated and disposed of off site
- Large volume of solid waste, soil, and sediment to be screened for radiological contamination, sampled for characterization, and transported and treated or disposed of off site
- Extensive controls required to minimize, manage, treat (if necessary), and dispose of contaminated water during excavation and waste segregation processes
- Large volume of imported clean fill required for backfill to restore the site

Overall, the issues regarding the short-term effectiveness, implementation, and cost of excavating the Parcel E-2 Landfill do not offset the long-term effectiveness of such an action. This assessment is supported by EPA guidance (EPA, 1996), which states that "although no set excavation volume limit exists, landfills with a content of more than 100,000 cubic yards (approximately 2 acres, 30 feet deep) would normally not be considered for excavation."

Step 6 – Can the presumptive remedy be used?

Based on the information outlined in the paragraphs above, the containment presumptive remedy meets all of the criteria specified in EPA guidance; therefore, it is well-suited to prevent exposure to solid waste and soil in the Landfill Area. In addition, the containment presumption also can be applied to landfill gas and contaminated A-aquifer groundwater or leachate emanating from the landfill.

Some members of the local community have expressed a strong desire for the Navy to thoroughly evaluate excavation of the landfill. To provide information to support the community's review of potential remedial alternatives for Parcel E-2, the Navy has agreed to evaluate excavation of the landfill as part of this report.

8.3. LANDFILL GAS

The following subsections summarize the nature and extent of landfill gas (Sections 8.3.1 and 8.3.2), the results of the landfill gas risk evaluations (Section 8.3.3), and the overall RI conclusions for the landfill gas (Section 8.3.4).

8.3.1. Landfill Gas Characterization

The initial landfill gas characterization, consisting of temporary soil gas borings and 21 permanent GMPs, determined that methane was present at concentrations exceeding 25 percent of the LEL along the northern side of the Parcel E-2 Landfill. Methane was also detected on the UCSF compound, located north of the landfill, at concentrations exceeding the LEL. Methane was not detected at concentrations exceeding 25 percent of the LEL in locations along Crisp Avenue (north of the UCSF compound) or to the east, south, and west of the Landfill.

45	Capital Cost: $363.2M	Table 8	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix R, Tables R-1, R-3, R-4, R-6, and R-7. Record No. 4237.

Table R-1. Cost Estimate Summary for Alternative 2 [1]

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Remedial Alternative	Total Capital Cost	Total O&M Cost	Total Periodic Cost	Period of Analysis[2]	Total Cost	Present Value[3]
2	$ 357,651,507	$ 3,831,834	$ 139,285	34 years	$ 361,622,626	$ 346,465,203

Notes:

[1] Appended tables summarize backup calculations for all cost estimates provided

[2] Period of analysis includes a 4-year construction period and 30 subsequent years of long-term monitoring, including 5 years of stormwater discharge and wetlands monitoring and 30 years of groundwater monitoring

[3] Based on a 2.8% discount factor, as specified for federal facility sites in Appendix C of Office of Management and Budget Circular A-94 (effective January 2008, http://www.whitehouse.gov/omb/circulars/a094/a94_appx-c.html)

45	Capital Cost: $363.2M	Table 8	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix R, Tables R-1, R-3, R-4, R-6, and R-7. Record No. 4237.

Table R-3. Alternative 2 - Capital Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

San Francisco Location Factors		Means 2005
Material		112.60%
Labor and Equipment		133.80%
Assemblies		122%
Construction Project Duration:	1,062	days
48.0 months or 1,062 working days	48	months
Operations and Maintenance / Monitoring Period	7,965	days
	360	months

Description	Quantity	Unit	Unit Price	Cost	Project Years	Comments
DISTRIBUTIVE COSTS	**DISTRIBUTIVE COSTS SUBTOTAL =**			**$ 42,392,790**	**0-4**	Includes labor and temporary facilities
Labor	**Labor Subtotal =**			**$ 42,072,617**		
Total project labor cost				$ 42,072,617	0-4	See backup worksheet "LABOR"
Temporary Facilities	**Temporary Facilities Costs Subtotal =**			**$ 320,173**		
Furnished Field Office Trailer (50' x 10' w/ air conditioning) (2)	48	mo	$ 789.34	$ 37,888	0-4	Means 2005 Heavy Construction. Page 13. 01520 500 0450 + 0700
Office Equipment Rental	48	mo	$ 1,089.33	$ 52,288	0-4	See Backup Worksheet "OFFICE EQUIPMENT COST"
Office Supplies	48	mo	$ 114.07	$ 5,475	0-4	Means 2005 Heavy Construction. Page 13. 01520 550 0120
City Water Supply	48	mo	$ 76.86	$ 3,689	0-4	Means 2005 Heavy Construction. Page 12, 01510 800 0700
Telephone Bill	48	mo	$ 273.28	$ 13,117	0-4	Means 2005 Heavy Construction. Page 13. 01520 550 0140
Field Office Electrical Bill	48	mo	$ 131.76	$ 6,324	0-4	Means 2005 Heavy Construction. Page 13. 01520 550 0160
Portable Toilets (6)	48	mo	$ 2,515.64	$ 120,751	0-4	Means 2005 Heavy Construction. Page 24. 01590 400 6410
Rental Trucks (8) (for supervisory staff)	48	mo	$ 1,680.00	$ 80,640	0-4	Hertz Equipment Rental (http://www.hertzequip.com)
CAPITAL COSTS						
Mobilization and Demobilization	**Mobilization and Demobilization Subtotal =**			**$ 26,362**		Assume cost split equally between project years 0 and 4
Excavator, diesel hydraulic, crawler mounted, 2.5 CY capacity (6)	6	ea	$ 505.08	$ 3,030	0,4	Means 2005 Heavy Construction. Page 51. 02305 250 0020 (unit cost multiplied by 2 to account for mob and demob)
Backhoe-loader, 80 hp, 1.25 CY capacity (1)	1	ea	$ 505.08	$ 505	0,4	Means 2005 Heavy Construction. Page 51. 02305 250 0020 (unit cost multiplied by 2 to account for mob and demob)
Grader, self-propelled, 30,000 lb. (3)	3	ea	$ 757.62	$ 2,273	0,4	Means 2005 Heavy Construction. Page 51. 02305 250 0020 (unit cost multiplied by 2 to account for mob and demob)
Dump truck, 8.5 CY (12 ton payload) (8)	50	mi	$ 16.80	$ 840	0,4	Means 2005 Heavy Construction, Page 61. 02315 490 4700 (unit cost multiplied by 2 to account for mob and demob)
Office Trailers (assumed 100 mile haul) (2)	2	ea	$ 204.96	$ 410	0,4	Means 2005 Heavy Construction. Page 13. 01520 500 0800 (unit cost multiplied by 2 to account for mob and demob)
Modular tank, 21,000 gal. (5)	4	hr	$ 850.00	$ 2,975	0,4	Quote from Baker Tanks, 1/12/06; (925) 439-8251 (unit cost multiplied by 2 to account for mob and demob)
Crawler-mounted crane 100 ton capacity (for lifting large debris) (1)	4	ea	$ 1,683.60	$ 6,734	0,4	Means 2005 Heavy Construction. Page 52. 02305 250 2200 (unit cost multiplied by 2 to account for mob and demob)
Feed pump (submersible 300-gpm 3-in outlet) (1)	1	ea	$ 250.00	$ 250	0,4	Quote from Wayne Friesell, TIGG Corporation (wfriesell@tigg.com), Jan 13, 2006
Conveyer system with misters and radiological detectors (6)	6	ea	$ 1,515.24	$ 9,091	0,4	Means 2005 Heavy Construction. Page 51. 02305 250 0020 (unit cost multiplied by 2 to account for mob and demob)
Water truck for dust suppression, 6,000-gallon capacity (1)	1	ea	$ 252.54	$ 253	0,4	Means 2005 Heavy Construction. Page 51. 02305 250 0020 (unit cost multiplied by 2 to account for mob and demob)
Equipment Rental	**Equipment Rental Subtotal =**			**$ 7,780,356**		
Excavator, diesel hydraulic, crawler-mounted, 2.5 CY capacity (6)	48	mo	$ 69,000.00	$ 3,312,000	0-4	Means 2005 Heavy Construction. Pg 21; 01590 200 0320
Backhoe-loader, 80 hp, 1.25 CY capacity (1)	48	mo	$ 2,250.00	$ 108,000	0-4	Means 2005 Heavy Construction. Pg 19; 01590 200 0460
Grader, self-propelled, 30,000 lb. (3)	12	mo	$ 13,125.00	$ 157,500	3-4	Means 2005 Heavy Construction. Pg 19; 01590 200 1910
Dump truck, 8.5 CY (12 ton payload) (8)	48	mo	$ 19,600.00	$ 940,800	0-4	Means 2005 Heavy Construction. Pg 21; 01590 200 5250
Modular tank, 21,000 gal. (5)	48	mo	$ 5,500.00	$ 264,000	0-4	Quote from Baker Tanks, 1/12/06; (925) 439-8251
Crawler-mounted crane 100 ton capacity (for lifting large debris) (1)	6	mo	$ 15,300.00	$ 91,800	0-3	Assumed 2 months per year during years 1,2,3 Means 2005 Heavy Construction. Pg 26; 01590 600 1200
Feed pump (submersible 300 gpm 3-in outlet) (1)	48	mo	$ 300.00	$ 14,400	0-4	Means 2005 Heavy Construction. Pg 23; 01590 400 4800
Water truck for dust suppression, 6,000 gallon capacity (2)	48	mo	$ 12,550.00	$ 602,400	0-4	Means 2005 Heavy Construction. Pg 24; 01590 400 6950
Well points 25' with fittings and riser pipes, 2" diameter (12)	48	day	$ 372.00	$ 17,856	0-4	Means 2005 Heavy Construction. Pg 27; 01590 700 1100
Well point pump, 10-in suction, 75 hp	48	mo	$ 1,425.00	$ 68,400	0-4	Means 2005 Heavy Construction. Pg 27; 01590 700 1200
Well point header pipe, 4-in diameter, 150 gpm (max) (1,500 LF)	48	mo	$ 5,400.00	$ 259,200	0-4	Means 2005 Heavy Construction. Pg 27; 01590 700 0400
Conveyer system with misters and radiological detectors (6)	48	mo	$ 6,300.00	$ 302,400	0-4	Means 2005 Heavy Construction. Pg 18; 01590 100 0800
Radiological monitoring equipment (16) for pre-excavation screening	48	mo	$ 7,200.00	$ 345,600	0-4	Ludlum Model 44-2 1"x 1" NaI GAMMA Scintillator (unit rental cost provided by Suntrac Services, 1-800-579-4513, 03-23-2006)
Radiological monitoring equipment (6) for post-excavation conveyor screening	48	mo	$ 27,000.00	$ 1,296,000	0-4	Assumed to be 10 times the cost of the portable scintillator
Health and Safety Equipment	**Health and Safety Equipment Subtotal =**			**$ 3,186,000**		
Includes PPE, first-aid equipment, fire safety equipment, and spill control equipment	1,062	ea	$ 3,000.00	$ 3,186,000	0-4	Assumed $50 per field worker per day
Site Preparation	**Site Preparation Subtotal =**			**$ 2,362,287**		
Sump pump, 25 gpm	1	ea	$ 3,423.32	$ 3,423	0-1	Means 2005 Environmental Remediation - Assemblies; Pg 3-91; 33 29 0401: Safety Level C
Soil staging area grading, 3 acres	14,520	sy	$ 1.46	$ 21,257	0-1	Means 2005 Heavy Construction. Pg 52; 02310 100 1100
Soil staging area liner, includes rad screening and stockpiling areas (3-acre, 80-mil HDPE)	130,680	sf	$ 5.01	$ 655,256	0-1	Means 2005 Environmental Remediation - Assemblies; Pg 3-90; 33 08 0573; Safety Level C
Laydown area grading (200 x 100 ft)	2,222	sy	$ 0.77	$ 1,708	0-1	Means 2005 Heavy Construction. Pg 52; 02310 100 0100
Granular cover over laydown area (6-inch-thick crushed stone)	2,222	sy	$ 8.30	$ 18,434	0-1	Means 2005 Heavy Construction. Pg 102; 02720 200 0100
Fence replacement/repair (6-ft galvanized chain link fence)	800	ft	$ 32.12	$ 25,698	0-1	Means 2005 Environmental Remediation - Assemblies; Pg 4-24; 18 04 0107; Safety Level C
Site security (24-hours uniformed watchman at entrance)	34,560	hr	$ 19.52	$ 674,611	0-1	Means 2005 Heavy Construction. Pg 17; 01560 800 0100
Railroad extension (assumes 110 lb. new rail, steel ties in concrete, incl. fasteners and	4,000	lf	$ 218.00	$ 872,000	0-1	Means 2005 Heavy Construction. Pg 203; 05655 700 1035
Rehabilitation of existing railroad track	1	ea	$ 87,200.00	$ 87,200	0-1	Assume to be 5-10% of cost for railroad extension
Land surveying (three-person crew)	1	day	$ 1,450.00	$ 1,450	0-1	Means 2005 Heavy Construction. Pg 6; 01100 700 1200
Subsurface utility surveying	10	hr	$ 125.00	$ 1,250	0-1	Quote from Cruz Brothers Surveying (831) 461-1467 and Subtronic Surveying (800) 998-3463, February 2006.

Table R-3. Alternative 2 - Capital Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

San Francisco Location Factors		Means 2005
Material		112.60%
Labor and Equipment		133.80%
Assemblies		122%
Construction Project Duration:	1,062	days
48.0 months or 1,062 working days	48	months
Operations and Maintenance / Monitoring Period	7,965	days
	360	months

Description	Quantity	Unit	Unit Price	Cost	Project Years	Comments
Pre-Construction Demolition	**Pre-Construction Demolition Subtotal =**			**$ 23,089**		
Monitoring well abandonment	1.00	ea	$ 3,809.50	$ 3,810	0-1	See Backup Worksheet "LONG TERM GW MONITORING"
Size reduction for oversized debris (assumed 5% of total landfill volume)	58,530	cf	$ 0.33	$ 19,280	0-3	Means 2005 Heavy Construction. Pg 35; 02220 110 0650; assumed similar to masonry
Excavation (Operations)	**Excavation Subtotal =**			**$ 25,306,131**		
Sheet-pile installation (around waste to 50-ft depth), removal, and salvage	4,324	lf	$ 1,494.50	$ 6,462,218	0,4	Means 2005 Heavy Construction. Pg 44; 02250 400 0900; includes penetration below 40 ft.
Well points 25' with fittings and riser pipes, 2" diameter (12)	1,062	day	$ 29.40	$ 31,223	0-4	Means 2005 Heavy Construction. Pg 27; 01590 700 1100
Dewatering with contractor's pump (4-inch-diameter, 300 gpm)	1,062	day	$ 111.28	$ 118,175	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 4-31; 17 03 1004; Safety Level C
Land Surveying (three-person crew)	5	day	$ 1,450.00	$ 7,250	0-1	Means 2005 Heavy Construction. Pg 6; 01100 700 1200
Excavator, diesel hydraulic, crawler mounted, 2.5 CY capacity (6)	1,062	day	$ 7,290.00	$ 7,741,980	0-4	Means 2005 Heavy Construction. Pg 19; 01590 200 0320
Backhoe-loader, 80 hp, 1.25 CY capacity (1)	1,062	day	$ 256.40	$ 272,297	0-4	Means 2005 Heavy Construction. Pg 19; 01590 200 0460
Grader, self-propelled, 30,000 lb. (3)	266	day	$ 1,369.80	$ 364,367	3-4	Means 2005 Heavy Construction. Pg 19; 01590 200 1910
Dump truck, 8.5 CY (12 ton payload) (8)	1,062	day	$ 2,612.80	$ 2,774,794	0-4	Means 2005 Heavy Construction. Pg 21; 01590 200 5250
Modular tank, 21,000 gal. (5)	1,062	day	$ 5,500.00	$ 5,841,000	0-4	Quote from Baker Tanks, 1/12/06; (925) 439-8251
Crawler-mounted crane 100 ton capacity (for lifting large debris) (1)	212	day	$ 1,519.00	$ 322,636	0-3	Means 2005 Heavy Construction. Pg 26; 01590 600 1200
Feed pump (submersible 300 gpm 3-in outlet) (1)	1,062	day	$ 27.20	$ 28,886	0-4	Means 2005 Heavy Construction. Pg 23; 01590 400 4800
Water truck for dust suppression, 6,000 gallon capacity (1)	1,062	day	$ 813.00	$ 863,406	0-4	Means 2005 Heavy Construction. Pg 24; 01590 400 6950
Well point header pipe, 4-inch diameter, 150 gpm (max) (1,500 LF)	1,062	day	$ 450.00	$ 477,900	0-4	Means 2005 Heavy Construction. Pg 27; 01590 700 0400
Air Monitoring	**Monitoring Subtotal =**			**$ 1,796,152**		
Ambient air monitors (12 total–placement frequency biased toward prevailing winds and residential areas)	48	mo	$ 10,614.00	$ 509,472	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-10; 33 02 0315
Analysis - principal organic hazardous constituents (1 per monitor per week)	2,304	ea	$ 315.98	$ 728,018	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-38; 33 02 1802
Analysis - hydrocarbons (1 per monitor per week)	2,304	ea	$ 109.80	$ 252,979	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-39; 33 02 1811
Analysis - mercury (1 per monitor per week)	2,304	ea	$ 37.21	$ 85,732	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-39; 33 02 1815
Analysis - cyanide (1 per monitor per week)	2,304	ea	$ 45.14	$ 104,003	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-39; 33 02 1816
Portable ambient air analyzer	48	mo	$ 1,952.00	$ 93,696	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-10; 33 02 0328
Portable combustible gas/oxygen indicator	48	mo	$ 463.60	$ 22,253	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-11; 33 02 0330
Soil Confirmation Sampling	**Confirmation Sampling Subtotal =**			**$ 1,104,235**		
Sample collection (1 sample per grid cell + 10% QC samples)	792	ea	$ 58.50	$ 46,332	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-24; 33 02 0648
TAL metals soil analysis	792	ea	$ 417.51	$ 330,667	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-33; 33 02 1707
Pesticides/PCB analysis	792	ea	$ 205.34	$ 162,628	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-34; 33 02 1717
PAH analysis	792	ea	$ 143.73	$ 113,833	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-34; 33 02 1722
VOC analysis	792	ea	$ 169.58	$ 134,307	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-34; 33 02 1720
SVOC analysis	792	ea	$ 305.00	$ 241,560	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-34; 33 02 1721
Waste extraction procedure	792	ea	$ 75.00	$ 59,400	0-4	Quote from Surinder Sidhu at STL, (925) 484-1919; See "SOIL LAB COST" Worksheet for Detail
Radioactivity screening	792	ea	$ 19.58	$ 15,508	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-9; 33 02 0223
Stormwater Control	**Stormwater Control Subtotal =**			**$ 47,290**		
2-foot-high and 2-foot-wide berm around open excavation (assume 100x100 feet)	30	cy	$ 9.24	$ 277	0-1	Means 2005 Environmental Remediation - Unit Price; Pg 4-31; 17 03 9911; Safety Level C
Silt fences (vinyl, 3 feet high with 7.5-foot posts)	4,138	ft	$ 4.11	$ 17,013	0-1	Means 2005 Environmental Remediation - Unit Price; Pg 5-18, 18 05 0206; Safety Level C
Construction SWPPP implementation	1	ea	$ 30,000.00	$ 30,000	0-4	
Decontamination	**Decontamination Subtotal =**			**$ 92,944**		
Pressure washer (1,800 psi, 5 gpm)	48	mo	$ 146.87	$ 7,050	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-167; 33 17 0814 (purchase price + localization, markup, maintenance
Pressure washer operation (assume 2 hr/day, including cleaning exiting trucks)	2,124	hr	$ 40.44	$ 85,895	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-168; 33 17 0823
Contaminated Water Treatment	**Contaminated Water Treatment Subtotal =**			**$ 2,887,855**		
Structural slab on grade (8 inches thick; 60 x 40 feet)	2,400	sf	$ 11.15	$ 26,762	0-1	Means 2005 Environmental Remediation - Assemblies; Pg 3-60; 18 02 0322
Feed pump (submersible 300 gpm 3-in outlet)	48	mo	$ 366.00	$ 17,568	0-4	Means 2005 Heavy Construction. Pg 23; 01590 400 4800
Bag filters (300 gpm; 3 parallel filter system)	48	mo	$ 475.00	$ 22,800	0-4	Quote from Wayne Friesell, TIGG Corporation (wfriesell@tigg.com). Jan 13, 2006
Filter bag changeout (assumed 1 changeout per week; 3 bags per changeout; 1, 10 or 25 micron bags)	576	ea	$ 18.00	$ 10,368	0-4	Quote from Wayne Friesell, TIGG Corporation (wfriesell@tigg.com). Jan 13, 2006
Carbon adsorption units (HP1020) rental (first month)	1	ls	$ 46,200.00	$ 46,200	0-1	Quote from Keith Jones, USFilter (510)639-7274. Jan 20, 2006
Carbon adsorption units rental (subsequent months)	47	mo	$ 3,300.00	$ 155,100	0-4	Quote from Keith Jones, USFilter (510)639-7274. Jan 20, 2006
Carbon changeouts (one year of operation with 490 lbs/day estimated usage)	18	ea	$ 26,400.00	$ 475,200	0-4	Quote from Keith Jones, USFilter (510)639-7274. Jan 20, 2006
Metals removal system rental (ion exchange)	48	mo	$ 8,250.00	$ 396,000	0-4	Quote from Keith Jones, USFilter (510)639-7274. Jan 20, 2006
Resin regeneration (assumed 2 per year)	8	ea	$ 88,000.00	$ 704,000	0-4	Quote from Keith Jones, USFilter (510)639-7274. Jan 20, 2006
Wastewater analysis (1 sample per day + 10% QC samples)	1,168	ea	$ 885.00	$ 1,033,857	0-4	Quote from Surinder Sidhu at STL, (925) 484-1919; See "DISCHARGE SAMPLE COST" Worksheet for Detail

Table R-3. Alternative 2 - Capital Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

San Francisco Location Factors		Means 2005
Material		112.60%
Labor and Equipment		133.80%
Assemblies		122%
Construction Project Duration:	1,062	days
48.0 months or 1,062 working days	48	months
Operations and Maintenance / Monitoring Period	7,965	days
	360	months

Description		Quantity	Unit	Unit Price	Cost	Project Years	Comments
Waste Analysis (4 point composite samples)				**Waste Analysis Subtotal =**	**$ 2,481,688**		
Pesticides/PCBs analysis (1 sample per 500 cy)		2,341	ea	$ 160.00	$ 374,594	0-4	Means 2005 Environmental Remediation - Unit Price; Pg 9-34; 33 02 1717
Waste extraction test (WET) (1 sample per 500 cy)		2,341	ea	$ 75.00	$ 175,591	0-4	Quote from Surinder Sidhu at STL, (925) 484-1919; See "SOIL LAB COST" Worksheet for Detail
WET leachate analysis (Metals, PCBs, PAHs, VOCs, SVOCs)		2,341	ea	$ 825.00	$ 1,931,502	0-4	Quote from Surinder Sidhu at STL, (925) 484-1919; See "SOIL LAB COST" Worksheet for Detail
Waste Hauling				**Waste Hauling Subtotal =**	**$ 135,205,156**		
Hauling by rail car		1,638,850	ton	$ 82.50	$ 135,205,156	0-4	Rate based on transportation estimates provided by various facilities that are accessible by rail and can accept the anticipated waste types 6/2009
Waste Disposal	**Assumed Waste Fractions**			**Waste Disposal Subtotal =**	**$ 103,124,660**		
RCRA hazardous waste (D008 - Lead)	35%	573598	ton	$ 82.50	$ 47,321,805	0-4	Rates based on disposal estimates provided by various facilities that are accessible by rail and can accept the
Non-RCRA hazardous waste	50%	819425	ton	$ 54.00	$ 44,248,960	0-4	anticipated waste types; pricing adjusted to include taxes and fees 6/2009
Nonhazardous waste	10%	163885	ton	$ 35.00	$ 5,735,976	0-4	
Low-level radiological waste (<200 pCi/g)	5%	81943	ton	$ 71.00	$ 5,817,919	0-4	
Backfilling				**Backfilling Subtotal =**	**$ 4,641,227**		
Backfill landfill with unclassified fill (delivered, spread, compacted in 6-in. lifts)		270,123	cy	$ 11.87	$ 3,206,521	3-4	Means 2005 Environmental Remediation - Unit Price; Pg 4-23; 17 03 0423
Backfill adjacent areas (upland or wetland) with unclassified fill (delivered, spread, compacted in 6-in. lifts)		120,862	cy	$ 11.87	$ 1,434,706	3-4	Means 2005 Environmental Remediation - Unit Price; Pg 4-23; 17 03 0423
Site Restoration				**Site Restoration Subtotal =**	**$ 4,948,859**		
Fine grading and soil preparation		48	ac	$ 88.66	$ 4,252	3-4	Means 2005 Environmental Remediation - Unit Price; Pg 5-17; 18 05 0101
Spread imported topsoil (6 inches thick)		38,690	cy	$ 34.43	$ 1,332,050	3-4	Means 2005 Environmental Remediation - Unit Price; Pg 5-18; 18 05 0301
Seeding and vegetative cover		44	ac	$ 4,623.80	$ 204,898	3-4	Means 2005 Environmental Remediation - Unit Price; Pg 5-18; 18 05 0402
Soil staging area liner removal (assumed 1/2 of construction cost)		130,680	sf	$ 2.51	$ 327,628	3-4	Assumed half of installation cost
Treatment system slab removal (assumed 1/2 of construction cost)		2,400	sf	$ 5.58	$ 13,381	3-4	Assumed half of installation cost
Wetland restoration		3.65	ac	$ 631,800.00	$ 2,306,070	3-4	Unit cost derived from cost estimated by Shaw Environmental, Inc. (Alternatives 3 and 4)
Shoreline revetment		1.00	ea	$ 648,230.00	$ 648,230	3-4	See Backup Worksheet "SHORELINE REVETMENT"
Replacement monitoring well installation with development		1.00	ea	$ 88,690.00	$ 88,690	3-4	See Backup Worksheet "LONG TERM GW MONITORING"
Land Surveying (topographical)		52	ac	$ 455.00	$ 23,660	3-4	Means 2005 Heavy Construction. Pg 6; 01100 700 0010
				Construction Subtotal =	**$ 337,407,082**		
Design				**Design Subtotal =**	**$ 20,244,425**		
Design assumed to be 6% of construction cost (including permitting)				$ 20,244,425		0-1	Includes: Remedial Design, Design Basis Report, HandS Plan, Contingency Plan, QA/QC Plan, QAPP, and Cost Estimates; consistent with EPA guidance (pp. 5-13, EPA, 2000)
TOTAL PROJECT CAPITAL COST	**TOTAL PROJECT CAPITAL COST =**				**$ 357,651,507**		
Total Construction Cost					$ 337,407,082		
Total Design Cost					$ 20,244,425		
	TOTAL COST PER CY OF SOIL EXCAVATED =				**$ 306**		

General Assumptions:

Four-year project duration
Work will be performed in Level D PPE
Temporary sheet piling will be installed around entire perimeter of landfill (extent of waste)
Sheet pile will be keyed in at 2/3 of total depth (approx. 60 ft.)
Excavation dewatering will be implemented as needed using a skid-mounted pump through dewatering points
Water from decontamination and dewatering activities will require treatment and discharge to a sanitary sewer line, or to San Francisco Bay under NPDES permit
Dewatering and treatment volume estimates provided in worksheet "DEWATER"
Waste excavation will include removal of approximately 3 to 5 feet of clay or sand below waste
Waste fractions estimated based on PCB Hotspot TCRA and Metal Slag TCRA data
Contaminated water quality assumed to be average of samples obtained from wells IR01MW63A, 43A, 13A, 38A, 03A and IR01MWI-5
Carbon usage rate based on removal of 1,1-DCE and 1,1-DCA
Stripped landfill cap can be used as fill material
Finish grade will slope evenly from north to south in Landfill Area; backfill volume estimated by proposed grading plan, and includes a 20% contingency and a 20% fluff factor to account for compaction and consolidation
Assumed soil density of 1.4 ton/cy

Table R-4. Alternative 2 - Operation and Maintenance Cost Estimate

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	20% Contingency	Cost Including 20% Contingency	Remarks
Groundwater Monitoring (30 years)	ls	1	$ 1,650,125	$ 1,650,125	$ 330,025	$ 1,980,150	For details, see "LONG-TERM GW MONITORING" worksheet
Institutional Controls (30 years)	ls	1	$ 1,080,000	$ 1,080,000	$ 216,000	$ 1,296,000	Includes monitoring, enforcement, and reporting
Stormwater Monitoring (5 years)	ls	1	$ 299,650	$ 299,650	$ 59,930	$ 359,580	For details, see "LONG-TERM SW MONITORING" worksheet
Wetlands Monitoring (5 years)	ls	1	$ 163,420	$ 163,420	$ 32,684	$ 196,104	For details, see "LONG-TERM WL MONITORING" worksheet
Totals				**$ 3,193,195**	**$ 638,639**	**$ 3,831,834**	

Notes:

(1) O&M present value is based on 3% discount rate for 30 years for groundwater monitoring and 5 years for stormwater and wetland monitoring.

Table R-6. Alternative 2 - Excavation Volume Estimate

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Area Name	Area (sf)	Avg Depth (feet)	Volume (cy)	
Estimated Excavation Volumes - Landfill, Panhandle, East Adjacent, and Shoreline Areas				
Landfill Area (see supporting calculations below)	958,313	28.4	**1,008,250**	
Panhandle Area	38,162	3	4,240	
	521,673	4	77,285	
	31,894	10	11,813	
			5,679	Additional volume for hot spot removal
		Subtotal	**99,016**	
East Adjacent Area	288,310	3	32,034	
			14,369	Additional volume for hot spot removal
		Subtotal	**46,403**	
Shoreline Area	96,443	3.5	12,502	
			4,435	Additional volume for hot spot removal
		Subtotal	**16,937**	
Totals			**1,170,607**	**= TOTAL EXCAVATION VOLUME**
Waste Layer Volume Calculations - Landfill Area				
	37,375	4	5,537	
	31,903	12	14,179	
	72,037	17	45,357	
	7,406	22	6,035	
	8,444	23	7,193	
	51,006	7	13,224	
	118,150	15	65,639	
	76,685	18	51,123	
	47,183	20	34,950	
	82,454	8	24,431	
	425,532	13	204,886	
		Subtotal	**472,553**	
Cover Layer Volume Calculations - Landfill Area				
	42,825	3	4,758	
	162,603	7	42,156	
	112,787	20	83,546	
	53,296	21	41,452	
	84,207	4	12,475	
	502,457	11.25	209,357	
		Subtotal	**393,745**	
Excavated Volume Below Waste - Landfill Area				
	958,175	4	**141,952**	Assume overexcavation by 4 ft into layer below waste
Total Volume of Material Excavated from Landfill Area			**1,008,250**	

Table R-7. Alternative 2 - Backfill Volume Estimate [1]

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Area	Average Initial Elevation (feet)	Average Excavation Depth (feet bgs)	Average Final Elevation (feet)	Approximate Balance (feet)	Area (square feet)	Volume (cubic feet)	Volume (cy, with 20% fluff factor)
Landfill Area							
1	17	25	15	23	7,591	174,593	7,760
2	25	20	10	5	72,084	360,419	16,019
3	21	15	10	4	36,357	145,427	6,463
4	21	25	6.5	10.5	13,579	142,577	6,337
5	21	20	6.5	5.5	14,380	79,091	3,515
6	13	10	7.5	4.5	33,141	149,134	6,628
7	16.5	15	8.5	7	41,364	289,551	12,869
8	23	10	14	1	22,645	22,645	1,006
9	21	20	12	11	99,141	1,090,546	48,469
10	22	15	11	4	83,686	334,745	14,878
11	21	20	8.5	7.5	79,818	598,635	26,606
12	17	15	8	6	89,234	535,405	23,796
13	17	10	12	5	8,887	44,436	1,975
14	23	15	10	2	548,800	1,097,600	48,782
						Total	**225,102**
						Total + 20% contingency	**270,123**
Adjacent Areas							
15	6	4	5	3	521,673	1,565,019	69,556
16	8	3	9.5	4.5	38,162	171,729	7,632
17	12	3	10	1	288,310	288,310	12,814
18	3	3.5	2	2.5	96,443	241,108	10,716
hot spot excavations backfill volume						656,170	29,163
						Total	**100,718**
						Total + 20% contingency	**120,862**

Notes:

[1] Approximate backfill volumes calcualted based on estimated excavation depths and average final grades; see figures 12-13 and 12-14 in the Parcel E-2 RI/FS, Section 12.

46	**$5.5M for radiological actions**	Table 8	Final Radiological Addendum to the Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and RSRS. Appendix D, Section D4, pages D-4 and D-5. Record No. 4260.

Section D4. Cost Estimate Assumptions

This section identifies the assumptions and parameters used in developing cost estimates in support of the radiological addendum to the Final RI/FS Report for Parcel E-2. Alternatives 2, 3, 4, and 5 were developed to address nonradioactive chemical contamination throughout Parcel E-2, and proposed varying amounts intrusive work within radiologically impacted areas. As a result, Alternatives 2, 3, 4, and 5, as presented in the Final RI/FS Report, specify radiological control procedures to properly screen, segregate, characterize, and dispose of radioactive materials. The remedial alternatives evaluated in this radiological addendum are consistent with the remedial alternatives evaluated in the RI/FS Report, but also identify additional components of these alternatives that are needed to meet the remedial action objective for radioactively contaminated media. These additional components are:

- Removal and remediation of sanitary sewer, storm drain, and septic sewer lines that may contain radioactive contamination
- Removal and remediation of the ship-shielding berm in the Panhandle Area
- Final status surveys of the excavated subgrade of Parcel E-2 prior to backfilling with soil meeting the radiological acceptance criteria

These radiological-specific tasks are common to Alternatives 2, 3, 4, and 5, and the estimated level of effort to perform these tasks is independent of the extent of other remediation proposed under Alternatives 2, 3, 4, and 5. The cost estimate components and specific assumptions are presented for the three radiological-specific tasks are common to Alternatives 2, 3, 4, and 5. The cost to properly screen, segregate, characterize, and dispose of radioactive materials encountered during intrusive activities associated with the capping and excavation tasks were incorporated into Alternatives 2, 3, 4, and 5 and were presented in the Final RI/FS Report; these costs are not repeated in this radiological addendum.

The following assumptions apply to the radiological-specific tasks common to Alternatives 2, 3, 4, and 5:

1. Removal of the Parcel E-2 sewer and storm drain systems (approximately 1,500 linear feet excluding portions within the Landfill Area that will not be removed) is estimated to result in 5,000 cubic yards (cy) of material to be excavated at an estimated cost of $330 per cy of material excavated. This results in a total excavation cost of $1,650,000.

2. The ship-shielding berm has an estimated volume of 3,700 cy of soil. Assuming the excavation cost, $330 per cy, will be similar to those of the storm drain systems excavations, the total excavation cost is estimated to be $1,221,000.
3. The radiological surface survey of Parcel E-2 areas not excavated and postexcavation survey of excavated areas is assumed to cover the entire 47.4 acres of Parcel E-2. Parcel E-2 will be divided into 1,000 square-meter survey units, resulting in approximately 192 survey units. The cost of performing the survey in each survey unit is assumed to be $6,500, resulting in a survey cost of $1,248,000. Each survey unit is assumed to have two elevated areas resulting in the generation of 10 cubic feet (ft^3) of radiologically impacted soil from each survey unit. The total volume of radiologically impacted soil is estimated to be 1,920 ft^3 (71 cy). The cost of disposal is assumed to be $11,880 per bin, and based on 14 cy of soil per bin, the total disposal cost is estimated to be $59,400. The total cost for survey and waste disposal is estimated to be $1,307,400.

The table below provides a breakdown of the estimated cost for the radiological-specific tasks common to Alternatives 2, 3, 4, and 5.

Sewer, Storm Drain, and Septic System Drain Lines Removal and Survey	$1,650,000
Ship-Shielding Berm Removal	$1,221,000
Parcel E-2 Radiological Surface Survey and Anomaly Removal	$1,307,400
Design, Oversight, Management, and Administrative Cost (10%)	$417,840
Subtotal Costs:	$4,596,240
20% Contingency:	$919,248
Total Estimated Cost:	$5,515,000*

Note: * = Total estimated cost has been rounded to the nearest thousand.

47	**Capital Cost: $62.4M**	Table 8	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix R, Tables R-17, R-19, R-20, R-23, and R-24. Record No. 4237.

Table R-17. Cost Estimate Summary for Alternative 3 [1,2,3]

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Alternative 3A

Cap the Landfill and Adjacent Areas
Install an active Gas Control and Collection System (GCCS) and treat landfill gas with a flare unit
Close northern landfill gas control system
Remove hot spots in adjacent areas
Install surface water control
Restore wetlands
Install groundwater relief and diversion systems

Items	Estimated Cost
Capital Cost	$57,723,835
Inspection, Maintenance, and GCCS operation and maintenance (O&M)	$21,714,480
Groundwater Monitoring Cost	$1,980,150
Periodic Cost	$675,298
Total Cost for Alternative 3A (Flare Unit)	**$82,093,763**
Present Value for Alternative 3A (Flare Unit)[3]	**$72,243,536**

Alternative 3B

Cap the Landfill and Adjacent Areas
Install an active GCCS and treat the landfill gas with a GAC/KMnO4 adsorption unit
Close northern landfill gas control system
Remove hot spots in adjacent areas
Install surface water control
Restore wetlands
Install groundwater relief and diversion systems

Items	Estimated Cost
Capital Cost	$56,904,200
Inspection, Maintenance, and GCCS O&M	$23,982,480
Groundwater Monitoring Cost	$1,980,150
Periodic Cost	$675,298
Total Cost for Alternative 3B (Adsorption)	**$83,542,127**
Present Value for Alternative 3B (Adsorption)(3)	**$72,925,647**

Notes:

[1] Appended tables summarize backup calculations for all cost estimates provided

[2] Period of analysis is 32 years, which includes 2 years of engineering, permitting and construction periods, and 30 years of long-term monitoring.

[3] Based on a 2.8% discount factor, as specified for federal facility sites in Appendix C of Office of Management and Budget Circular A-94 (effective January 2008, http://www.whitehouse.gov/omb/circulars/a094/a94_appx-c.html)

Table R-19. Alternative 3A - Backup Cost Estimate

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
General					
Mobilization and Demobilization	ls	1	$ 2,172,000.00	$ 2,172,000.00	Based on 5% of construction cost excluding CQA, permitting, H&S, and SWPPP implementation costs
Health and Safety	ls	1	$ 50,000.00	$ 50,000.00	
Engineering and Regulatory Compliance	ls	1	$ 1,303,400.00	$ 1,303,400.00	Includes preparation of construction documents, construction certification report, regulatory coordination, and local permits
Temporary Erosion Control and SWPPP Implementation	ls	1	$ 30,000.00	$ 30,000.00	
Demolition					
Remove existing drainage structures	ls	1	$ 10,000.00	$ 10,000.00	Dispose of spoils on site at northwest area of IR-01/21
Remove concrete rubble, riprap, bricks, etc.	cy	9,921	$ 10.00	$ 99,210.00	Existing shoreline protection along the southern boundary of the Landfill and East Adjacent Areas and Panhandle Area; dispose of spoils on site at IR-01/21
Temporary Works					
Sheet-pile installation	lf	3,360	$ 1,495.00	$ 5,023,200.00	Along Landfill and Panhandle Areas shoreline
Dewatering	days	120	$ 5,640.00	$ 676,800.00	
Air Monitoring					
Ambient air monitors	mo	4	$ 10,614.00	$ 42,456.00	
Portable ambient air analyzer	mo	4	$ 1,952.00	$ 7,808.00	
Portable combustible gas/oxygen indicator	mo	4	$ 464.00	$ 1,856.00	
Landfill IR-01/21					Includes the north, west, and southeast section of IR-01/21
Earthwork					
Excavated waste, existing ground and debris consolidation	cy	78,471	$ 30.00	$ 2,354,130.00	Stripped soil, waste, and concrete rubble excavation along the southern limit of the Landfill and Adjacent Areas bordering San Francisco Bay minus chemical hot spots and LLRW; place excavated material on site at IR-01/21
Earthfill	cy	11,916	$ 5.00	$ 59,578.85	Moisture condition and compact
Import soil	cy	84,949	$ 25.00	$ 2,123,724.74	Purchase and site delivery; includes fluff factor
Geosynthetic cover subgrade preparation	sf	395,686	$ 0.10	$ 39,568.58	Remove rock protrusions and level ground surface prior to geosynthetics placement
2.0' foundation layer	cy	29,066	$ 5.00	$ 145,328.66	Moisture condition and compact
2.0' vegetative soil cover	cy	29,809	$ 5.00	$ 149,046.61	Moisture condition and compact
Final grading	ac	22	$ 2,000.00	$ 44,400.00	Track walk prior to hydroseeding
Geosynthetic Final Cover					
Geosynthetic clay liner (GCL)	sf	405,278	$ 0.85	$ 344,486.17	Includes additional landfill closure area only
60-mil HDPE geomembrane	sf	417,125	$ 0.60	$ 250,274.91	Includes additional landfill closure area only
Drainage geocomposite	sf	403,530	$ 0.80	$ 322,823.88	Includes additional landfill closure area only
Demarcation layer	sf	405,278	$ 0.20	$ 81,055.60	
4"perforated HDPE pipe, SDR 11, including pipe fittings, and geotextile wrap	lf	3,440	$ 12.00	$ 41,280.00	
Toe of slope gravel fill	cy	382	$ 30.00	$ 11,466.67	Includes geotextile filter fabric
Gravel blanket drain	lf	700	$ 100.00	$ 70,000.00	Blanket drain for groundwater relief system

Table R-19. Alternative 3A - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Landfill IR-01/21 *(continued)*					Includes the north, west, and southeast section of IR-01/21
Geosynthetic Termination and Tie-ins					
North and west perimeter final cover termination	lf	1,570	$ 12.00	$ 18,840.00	
South perimeter final cover termination	lf	700	$ 15.00	$ 10,500.00	
North and west tie-ins to existing geosynthetic cover	lf	1,000	$ 20.00	$ 20,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
South tie-in to existing geosynthetic cover	lf	300	$ 20.00	$ 6,000.00	Same as above
Surface Water Drainage System					
ECM/grass-lined swale	lf	700	$ 14.00	$ 9,800.00	Install at north finish grade tie-in
Top deck diversion berm with ECM/grass-lined ditch	lf	1,210	$ 10.00	$ 12,100.00	Install at deck area of landfill
ECM/grass-lined ditch	lf	300	$ 14.00	$ 4,200.00	Install at northwest perimeter of landfill
Concrete-lined ditch	lf	700	$ 30.00	$ 21,000.00	Install at toe of slope at south landfill perimeter
Rock-lined downchute	ea	1	$ 20,000.00	$ 20,000.00	Remove and reestablish existing rock gabion drainage swale and downchute lining
Pipe downdrain	lf	180	$ 50.00	$ 9,000.00	Install at sideslope areas
Pipe crossdrain	lf	100	$ 70.00	$ 7,000.00	Install across south perimeter access road
Drainage Inlet	ea	2	$ 3,000.00	$ 6,000.00	Install at south perimeter access road
East Adjacent Area					Includes PCB remediation area
Earthwork					
Earthfill	cy	31,641	$ 5.00	$ 158,205.00	Moisture condition and compact
Import soil	cy	99,038	$ 25.00	$ 2,475,939.72	Purchase and site delivery. Includes fluff factor.
1.0' foundation layer	cy	16,210	$ 5.00	$ 81,051.82	Moisture condition and compact
2.0' vegetative soil cover	cy	33,983	$ 5.00	$ 169,915.00	Moisture condition and compact
Geosynthetic subgrade preparation	sf	474,782	$ 0.10	$ 47,478.18	Remove rock protrusions and level ground surface prior to geosynthetics placement
Final grading	ac	9.7	$ 2,000.00	$ 19,320.00	Track walk prior to hydroseeding
Geosynthetic Final Cap					
60-mil HDPE geomembrane	sf	474,782	$ 0.60	$ 284,869.09	
Drainage geocomposite	sf	466,957	$ 0.80	$ 373,565.60	
Demarcation layer	sf	466,957	$ 0.20	$ 93,391.40	
North and east final cover termination	lf	2,285	$ 12.00	$ 27,420.00	4" perforated HDPE pipe, SDR 11, including pipe fittings, and geotextile wrap
South perimeter final cover termination	lf	500	$ 15.00	$ 7,500.00	
Final cover tie-in to existing geosynthetic cover	lf	1,000	$ 20.00	$ 20,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
Surface Water Drainage System					
ECM/Grass-lined ditch	lf	2,260	$ 14.00	$ 31,640.00	Install at north and east boundary
Concrete-lined ditch	lf	450	$ 30.00	$ 13,500.00	Install at north and east boundary
Pipe downdrain	lf	200	$ 50.00	$ 10,000.00	Install across access road
Pipe culvert	lf	50	$ 75.00	$ 3,750.00	Install across access road
Drainage inlet	ea	2	$ 3,000.00	$ 6,000.00	Install across access road
Ditch outlet	ls	1	$ 5,000.00	$ 5,000.00	Perimeter ditch outlet to San Francisco Bay

Table R-19. Alternative 3A - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Panhandle Area					
Earthwork					
Earthfill	cy	18,752	$ 5.00	$ 93,760.00	Moisture condition and compact
Import soil	cy	63,144	$ 25.00	$ 1,578,600.00	Purchase and site delivery; includes fluff factor
Import hydric soil	cy	26,547	$ 35.00	$ 929,155.50	Purchase and site delivery; includes fluff factor
2.0' upland soil layer	cy	20,177	$ 5.00	$ 100,885.00	Moisture condition and compact
Hydric soil layer	cy	20,421	$ 6.00	$ 122,526.00	Moisture condition and compact
2.0' bridge soil layer	cy	13,691	$ 5.00	$ 68,455.00	Moisture condition and compact
Geosynthetic subgrade preparation	sf	216,792	$ 0.10	$ 21,679.20	Remove rock protrusions and level ground surface prior to geosynthetics placement
Final grading	ac	9.0	$ 2,000.00	$ 18,060.00	Track walk prior to hydroseeding
Geosynthetic Cap					
Drainage geocomposite	sf	284,422	$ 0.80	$ 227,537.60	
Clay import	cy	2,881	$ 30.00	$ 86,430.00	
Clay placement	cy	2,505	$ 5.00	$ 12,525.00	
60-mil HDPE geomembrane	sf	216,792	$ 0.60	$ 130,075.20	
Final cover termination (west boundary)	lf	1,355	$ 8.00	$ 10,840.00	Geosynthetic cap termination, trench excavation and backfill
North tie-in to existing and new Landfill geosynthetics	lf	450	$ 20.00	$ 9,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
Surface Water Control System		-			
ECM/grass-lined ditch	lf	1,355	$ 14.00	$ 18,970.00	Drainage ditch west side of west perimeter access road
Pipe culvert	lf	100	$ 75.00	$ 7,500.00	West perimeter ditch inlet to freshwater wetland
Drainage ditch outlet	ls	1	$ 5,000.00	$ 5,000.00	West perimeter ditch outlet to San Francisco Bay
Wetlands Outlet Structures					
Freshwater wetland outlet structure	ls	1	$ 60,800.00	$ 60,800.00	Remove and replace existing outlet structure; for details, see Outlet worksheet.
Wetlands Restoration	ls	1	$ 616,798.00	$ 616,800.00	For details, see BKUP Wetlands worksheet
Shoreline Protection					
Rock riprap	tons	41,518	$ 100.00	$ 4,151,761.19	Shoreline protection along the south perimeter of the Landfill and Adjacent Areas.
Earthfill	cy	9,663	$ 4.50	$ 43,483.50	Soil backfill along the southern perimeter of the Landfill and Adjacent Area; moisture condition and compact
Import soil	cy	11,596	$ 25.00	$ 289,890.00	Purchase and site delivery; includes fluff factor
Geosynthetic subgrade preparation	sf	53,043	$ 0.10	$ 5,304.30	Remove rock protrusions and level ground surface prior to geosynthetics placement
60-mil HDPE	sf	53,043	$ 0.50	$ 26,521.50	Protective cover for soil backing
Cushion geotextile (12 oz/sy)	sf	53,043	$ 0.20	$ 10,608.60	Cushion fabric between rock riprap and HDPE protective cover
Geogrid	sf	28,380	$ 2.00	$ 56,760.00	For soil reinforcement
Access Road					
Class 2 Aggregate Base	cy	3,920	$ 25.00	$ 98,007.41	12" thick AB; includes service road for the Landfill and Adjacent Areas

Table R-19. Alternative 3A - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Shoreline Protection *(continued)*					
Revegetation					
Hydroseeding	ac	32	$ 2,000.00	$ 63,080.00	Includes Landfill and Adjacent Areas
Temporary Fence	lf	2,400	$ 24.00	$ 57,600.00	Based on $4/lf per month rental
Hot Spot Excavation					
Hot spot soil excavation (Tier 1)	cy	8,673	$ 30.00	$ 260,177.92	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	13,182	$ 135.50	$ 1,786,208.12	Cost includes transportation, disposal, and TSCA tax
Hot spot soil excavation (Tier 2)	cy	13,603	$ 30.00	$ 408,090.00	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	20,677	$ 143.55	$ 2,968,120.19	Cost includes transportation, disposal, and TSCA tax
PCB-impacted groundwater	ls	1	$ 153,374.48	$ 153,374.48	Disposal option based on previous PCB TCRA; cost includes groundwater pretreatment system maintenance and temporary pipeline to discharge point and disposal fee to POTW
Dewatering					Includes wetlands excavation at Panhandle Area
Disposal cost	gal	6,011,280	$ 0.006	$ 36,070.00	
Equipment rental	mo	4	$ 17,000.00	$ 68,000.00	Based on 4 months equipment rental; includes settling tanks, filtration system, pumps, and pipeline to sewer manhole
Floating Barrier	ls	1	$ 174,000.00	$ 174,000.00	Floating barrier with skimmer on San Francisco Bay; includes material, deployment, and operation for 90 days
Decontamination Pad	ea	3	$ 19,000.00	$ 57,000.00	Includes sump pump and discharge pipe to settling tank
Groundwater Monitoring					
Existing well abandonment	ls	1	$ 40,360.00	$ 40,360.00	For details, see BKUP GW worksheet
New well installation	ls	1	$ 46,414.00	$ 46,410.00	Same as above
Landfill Gas (LFG) System - Option 3A					
LFG active system with flare unit	ls	1	$ 971,000.00	$ 971,000.00	For details, see BKUP LFG-4A worksheet
Groundwater Relief System					Proposed at south perimeter of landfill
Transmission pipeline	lf	2,100	$ 50.00	$ 105,000.00	Along south perimeter to sewer manhole tie-in
Force main tie-in to existing sewer manhole	ls	1	$ 20,000.00	$ 20,000.00	Manhole tie-in near northwest corner of landfill
Pumps and electrical	ls	1	$ 70,000.00	$ 70,000.00	Includes submersible pumps, control panels and electrical works
Groundwater treatment	ls	1	$ 200,000.00	$ 200,000.00	Design build contingency for groundwater treatment package unit
Groundwater Diversion System					Proposed at west perimeter of Landfill
Slurry wall (soil/bentonite)	ls	1	$ 1,050,500.00	$ 1,050,500.00	For details, see BKUP GW Diversion worksheet
Excavation and Radiation Screening/Disposal					Includes Adjacent Areas and Shoreline excavation
Pre-Containment LLRW Surface Anomalies Removal					
Pre-clearing, grubbing, and stripping screening	days	38	$ 11,888.00	$ 455,460.00	Based on 50'x50' grid at 16 grids per day production rate (~613 equivalent grids)
Clearing, grubbing, and stripping	days	38	$ 20,095.00	$ 766,260.00	For quantity estimate, depth of stripping is assumed 1'; number of days based on 1,488-cy/day production rate, or rad screening rate, whichever is greater

Table R-19. Alternative 3A - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Excavation and Radiation Screening/Disposal *(continued)*					Includes Adjacent Areas and Shoreline excavation
Pre-excavation screening	days	108	$ 11,888.00	$ 1,288,360.00	Based on 50'x50' grid at 16 grids per day production rate (~1,734 equivalent grids)
Excavation	days	108	$ 20,095.00	$ 2,177,800.00	Excavation includes soil, waste, concrete rubble after clearing, grubbing, and stripping; number of days based on 1,488-cy/day production rate or rad screening rate, whichever is greater
Secondary radiation screening	days	123	$ 5,616.00	$ 690,770.00	Based on 1,500-cy/day production rate
Soil confirmation sampling	ea	898	$ 572.00	$ 513,460.00	One sample per grid plus 10% QC sample; analytical includes TAL and WET testing
Post-excavation screening	days	38	$ 11,888.00	$ 455,460.00	Based on 50'x50' grid at 16 grids per day production rate
Disposal of LLRW	cy	12,385	$ 153.50	$ 1,901,050.00	10% of clear, grub, stripped materials and 5% of additional excavation
Additional LLRW Anomalies Removal					
Pre-clearing, grubbing, and stripping screening	days	15	$ 11,888.00	$ 173,120.00	Based on 50'x50' grid at 16 grids per day production rate (~233 equivalent grids)
Clearing, grubbing, and stripping	days	15	$ 20,095.00	$ 292,630.00	For quantity estimate, depth of stripping is assumed 1'; number of days based on 1,488-cy/day production rate, or rad screening rate, whichever is greater
Pre-excavation screening	days	15	$ 11,888.00	$ 173,120.00	Based on 50'x50' grid at 16 grids per day production rate (~233 equivalent grids)
Excavation	days	15	$ 20,095.00	$ 292,630.00	Excavation includes soil, waste, concrete rubble after clearing, grubbing, and stripping; number of days based on 1,488-cy/day production rate or rad screening rate, whichever is greater
Secondary radiation screening	days	30	$ 5,616.00	$ 166,010.00	Based on 1,500-cy/day production rate
Soil confirmation sampling	ea	288	$ 572.00	$ 164,930.00	One sample per grid plus 10% QC sample; analytical includes TAL and WET testing
Post-excavation screening	days	15	$ 11,888.00	$ 173,120.00	Based on 50'x50' grid at 16 grids per day production rate
Disposal of LLRW	cy	3,617	$ 153.50	$ 555,210.00	10% of clear, grub, stripped materials, and 5% of additional excavation
Construction Quality Assurance					
Landfill and Adjacent Areas	days	327	$ 3,000.00	$ 981,000.00	CQA services for landfill closure and adjacent areas remediation based on 320 working days construction schedule.
LFG well field and flare unit	days	120	$ 1,000.00	$ 120,000.00	CQA services for gas field and flare unit based on 120 working days construction schedule.

Subtotal Capital Cost	**$**	**48,103,196.19**
20% Contingency	**$**	**9,620,639.24**
Total Capital Cost	**$**	**57,723,835.42**

Table R-19. Alternative 3A - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Notes:

1. Capital cost is in 2008 dollars.
2. Cost estimates for LFG control system, groundwater monitoring system, and wetlands restoration were obtained from backup spreadsheets.
3. Assumes infrastructure and building demolition will be completed (by others) prior to final cover installation for Adjacent Area at the east side of the Landfill.
4. Cost for other construction items were obtained from vendor quotes and similar landfill closure and/or remedial projects.

AB = aggregate base
ac = acres
CQA = Construction Quality Assurance
cy = cubic yard
ea = each
GCL = geosynthetic clay liner
HDPE = high-density polyethylene
H&S = Health and Safety
lf = linear feet
LFG = landfill gas
LLRW = low-level radioactive waste
ls = lump sum
mo = months
PCB = polychlorinated biphenyl
RC = reinforced concrete
sf = square feet
SWPPP = Storm Water Pollution Prevention Plan

Table R-20. Alternative 3A - Operation and Maintenance Cost Estimate

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Final Cover	lump sum (ls)	1	$ 69,000.00	$ 69,000.00	Repair of final cover due to settlement, slope failure, or erosion
Vegetation	ls	1	$ 12,600.00	$ 12,600.00	Maintenance of vegetation
LFG System - Option 3A	ls	1	$ 262,500.00	$ 262,500.00	For details, see BKUP LFG-3A worksheet
Stormwater Monitoring	ls	1	$ 60,980.00	$ 60,980.00	For details, see BKUP SW worksheet
LFG Condensate Disposal	ls	1	$ 55,800.00	$ 55,800.00	Assumes 60 gpd condensate, off-site disposal to Class I facility
Groundwater Relief System	ls	1	$ 67,700.00	$ 67,700.00	Assumes 20-gpm extraction rate for discharge to POTW via transmission pipeline; includes monthly inspection and reporting and pump replacement every 3 years
Drainage	ls	1	$ 5,000.00	$ 5,000.00	Maintenance of drainage control system, including clearing of materials blocking drainage conveyances
Site Security	ls	1	$ 9,600.00	$ 9,600.00	Periodic inspection of point of access to the landfill and environmental control systems
Emergency Response	ls	1	$ 5,000.00	$ 5,000.00	Includes landfill inspection after major earthquake, storm, or fire that may exceed site design that could require emergency response actions
Periodic Inspection, Documentation, Reporting, and Regulatory Compliance	ls	1	$ 19,000.00	$ 19,000.00	Includes preparation of iso-settlement maps and 5-year site review
Institutional Control	ls	1	$ 36,000.00	$ 36,000.00	Includes monitoring, enforcement, and reporting
Subtotal O&M Cost				**$ 603,180.00**	
20% Contingency				**$ 120,636.00**	
Annual Average O&M Cost				**$ 723,816.00**	
30 Year O&M Present Value				**$ 12,205,099.68**	

Table R-23. Alternative 3B - Backup Cost Estimate

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
General					
Mobilization and Demobilization	ls	1	$ 2,141,000.00	$ 2,141,000.00	Based on 5% of construction cost, excluding CQA, Permitting, H&S, and SWPPP implementation costs
Health and Safety	ls	1	$ 50,000.00	$ 50,000.00	
Engineering and Regulatory Compliance	ls	1	$ 1,284,400.00	$ 1,284,400.00	Includes preparation of construction documents, construction certification report, regulatory coordination, and local permits
Temporary Erosion Control and SWPPP Implementation	ls	1	$ 30,000.00	$ 30,000.00	
Demolition					
Remove existing drainage structures	ls	1	$ 10,000.00	$ 10,000.00	Dispose of spoils on site at northwest area of IR-01/21
Remove concrete rubble, riprap, bricks, etc.	cy	9,921	$ 10.00	$ 99,210.00	Existing shoreline protection along the southern boundary of the Landfill and East Adjacent Areas and Panhandle Area; dispose of spoils on site at IR-01/21
Temporary Works					
Sheet-pile installation	lf	3,360	$ 1,495.00	$ 5,023,200.00	Along Landfill and Panhandle Areas shoreline
Dewatering	days	120	$ 5,640.00	$ 676,800.00	
Air Monitoring					
Ambient air monitors	mo	4	$ 10,614.00	$ 42,456.00	
Portable ambient air analyzer	mo	4	$ 1,952.00	$ 7,808.00	
Portable combustible gas/oxygen indicator	mo	4	$ 464.00	$ 1,856.00	
Landfill IR-01/21					Includes the north, west, and southeast section of IR-01/21
Earthwork					
Excavated waste and debris consolidation	cy	72,991	$ 30.00	$ 2,189,718.89	Stripped soil, waste, and concrete rubble excavation along the southern limit of the Landfill and Adjacent Areas bordering San Francisco Bay minus chemical hot spots and LLRW; place excavated material on site at IR-01/21
Earthfill	cy	11,916	$ 5.00	$ 59,578.85	Moisture condition and compact
Import soil	cy	84,949	$ 25.00	$ 2,123,724.74	Purchase and site delivery; includes fluff factor
Geosynthetic cover subgrade preparation	sf	395,686	$ 0.10	$ 39,568.58	Remove rock protrusions and level ground surface prior to geosynthetics placement
2.0' foundation layer	cy	29,066	$ 5.00	$ 145,328.66	Moisture condition and compact
2.0' vegetative soil cover	cy	29,809	$ 5.00	$ 149,046.61	Moisture condition and compact
Final grading	ac	22	$ 2,000.00	$ 44,400.00	Track walk prior to hydroseeding
Geosynthetic Final Cover					
Geosynthetic clay liner (GCL)	sf	405,278	$ 0.85	$ 344,486.17	Includes additional landfill closure area only
60-mil HDPE geomembrane	sf	417,125	$ 0.60	$ 250,274.91	Includes additional landfill closure area only
Drainage geocomposite	sf	403,530	$ 0.80	$ 322,823.88	Includes additional landfill closure area only
Demarcation layer	sf	360,422	$ 0.20	$ 72,084.40	
4"perforated HDPE pipe, SDR 11, including pipe fittings,	lf	3,440	$ 12.00	$ 41,280.00	
Toe of slope gravel fill	cy	382	$ 30.00	$ 11,466.67	Includes geotextile filter fabric
Gravel blanket drain	lf	700	$ 100.00	$ 70,000.00	Blanket drain for groundwater relief system

Table R-23. Alternative 3B - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity		Unit Price		Cost	Remarks
Landfill IR-01/21 *(continued)*							Includes the north, west, and southeast section of IR-01/21
Geosynthetic Termination and Tie-ins							
North and west perimeter final cover termination	lf	1,570	$	12.00	$	18,840.00	
South perimeter final cover termination	lf	700	$	15.00	$	10,500.00	
North and west tie-ins to existing geosynthetic cover	lf	1,000	$	20.00	$	20,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
South tie-in to existing geosynthetic cover	lf	300	$	20.00	$	6,000.00	Same as above
Surface Water Drainage System							
ECM/grass-lined swale	lf	700	$	14.00	$	9,800.00	Install at north finish grade tie-in
Top deck diversion berm with ECM/grass-lined ditch	lf	1,210	$	10.00	$	12,100.00	Install at deck area of landfill
ECM/grass-lined ditch	lf	300	$	14.00	$	4,200.00	Install at northwest perimeter of landfill
Concrete-lined ditch	lf	700	$	30.00	$	21,000.00	Install at toe of slope at south landfill perimeter
Rock-lined downchute	ea	1	$	20,000.00	$	20,000.00	Remove and reestablish existing rock gabion drainage swale and downchute lining
Pipe downdrain	lf	180	$	50.00	$	9,000.00	Install at sideslope areas
Pipe crossdrain	lf	100	$	70.00	$	7,000.00	Install across south perimeter access road
Drainage Inlet	ea	2	$	3,000.00	$	6,000.00	Install at south perimeter access road
East Adjacent Area							Includes PCB remediation area
Earthwork							
Earthfill	cy	31,641	$	5.00	$	158,205.00	Moisture condition and compact
Import soil	cy	99,038	$	25.00	$	2,475,939.72	Purchase and site delivery; includes fluff factor
1.0' foundation layer	cy	16,210	$	5.00	$	81,051.82	Moisture condition and compact
2.0' vegetative soil cover	cy	33,983	$	5.00	$	169,915.00	Moisture condition and compact
Geosynthetic subgrade preparation	sf	474,782	$	0.10	$	47,478.18	Remove rock protrusions and level ground surface prior to geosynthetics placement
Final grading	ac	9.7	$	2,000.00	$	19,320.00	Track walk prior to hydroseeding
Geosynthetic Final Cap							
60-mil HDPE geomembrane	sf	474,782	$	0.60	$	284,869.09	
Drainage geocomposite	sf	466,957	$	0.80	$	373,565.60	
Demarcation layer	sf	466,957	$	0.20	$	93,391.40	
North and east final cover termination	lf	2,285	$	12.00	$	27,420.00	4"-perforated HDPE pipe, SDR 11, including pipe fittings, and geotextile wrap
South perimeter final cover termination	lf	500	$	15.00	$	7,500.00	
Final cover tie-in to existing geosynthetic cover	lf	1,000	$	20.00	$	20,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
Surface Water Drainage System							
ECM/grass-lined ditch	lf	2,260	$	14.00	$	31,640.00	Install at north and east boundary
Concrete-lined ditch	lf	450	$	30.00	$	13,500.00	Install at north and east boundary
Pipe downdrain	lf	200	$	50.00	$	10,000.00	Install across access road

Table R-23. Alternative 3B - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity		Unit Price		Cost	Remarks
East Adjacent Area *(continued)*							Includes PCB remediation area
Pipe culvert	lf	50	$	75.00	$	3,750.00	Install across access road
Drainage inlet	ea	2	$	3,000.00	$	6,000.00	Install across access road
Ditch outlet	ls	1	$	5,000.00	$	5,000.00	Perimeter ditch outlet to San Francisco Bay
Panhandle Area							
Earthwork							
Earthfill	cy	18,752	$	5.00	$	93,760.00	Moisture condition and compact
Import soil	cy	63,144	$	25.00	$	1,578,600.00	Purchase and site delivery; includes fluff factor
Import hydric soil	cy	26,547	$	35.00	$	929,155.50	Purchase and site delivery; includes fluff factor
2.0' upland soil layer	cy	20,177	$	5.00	$	100,885.00	Moisture condition and compact
Hydric soil layer	cy	20,421	$	6.00	$	122,526.00	Moisture condition and compact
2.0' bridge soil layer	cy	13,691	$	5.00	$	68,455.00	Moisture condition and compact
Geosynthetic subgrade preparation	sf	216,792	$	0.10	$	21,679.20	Remove rock protrusions and level ground surface prior to geosynthetics placement
Final grading	ac	9.0	$	2,000.00	$	18,060.00	Track walk prior to hydroseeding
Geosynthetic Cap							
Clay import	cy	2,881.0	$	30.00	$	86,430.00	For cap within wetlands area
Clay placement	cy	2,505.0	$	5.00	$	12,525.00	Cap within wetlands area
60-mil HDPE geomembrane	sf	216,792	$	0.60	$	130,075.20	
Final cover termination (west boundary)	lf	1,355	$	8.00	$	10,840.00	Geosynthetic cap termination, trench excavation, and backfill
North tie-in to existing and new Landfill geosynthetics	lf	450	$	20.00	$	9,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
Surface Water Control System		-					
ECM/grass-lined ditch	lf	1,355	$	14.00	$	18,970.00	Drainage ditch west side of west perimeter access road
Pipe culvert	lf	100	$	75.00	$	7,500.00	West perimeter ditch inlet to freshwater wetland
Drainage ditch outlet	ls	1	$	5,000.00	$	5,000.00	West perimeter ditch outlet to San Francisco Bay
Wetlands Outlet Structures							
Freshwater wetland outlet structure	ls	1	$	60,800.00	$	60,800.00	Remove and replace existing outlet structure; for details, see Outlet worksheet
Wetlands Restoration	ls	1	$	616,798.00	$	616,800.00	For details, See BKUP Wetlands worksheet
Shoreline Protection							
Rock riprap	tons	41,518	$	100.00	$	4,151,761.19	Shoreline protection along the south perimeter of the Landfill and Adjacent Areas
Earthfill	cy	9,663	$	4.50	$	43,483.50	Soil backfill along the southern perimeter of the Landfill and Adjacent Areas; moisture condition and compact
Import soil	cy	11,596	$	25.00	$	289,890.00	Purchase and deliver soil for earthfill; includes fluff factor
Geosynthetic subgrade preparation	sf	53,043	$	0.10	$	5,304.30	Remove rock protrusions and level ground surface prior to geosynthetics placement
60-mil HDPE	sf	53,043	$	0.50	$	26,521.50	Protective cover for soil backing

Table R-23. Alternative 3B - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity		Unit Price		Cost	Remarks
Shoreline Protection *(continued)*							
Cushion geotextile (12 oz/sy)	sf	53,043	$	0.20	$	10,608.60	Cushion fabric between rock riprap and HDPE protective cover
Geogrid	sf	28,380	$	2.00	$	56,760.00	For soil reinforcement
Access Road							
Class 2 aggregate base	cy	3,920	$	25.00	$	98,007.41	12"-thick AB; includes service road for the Landfill and Adjacent Areas
Revegetation							
Hydroseeding	ac	32	$	2,000.00	$	63,080.00	Includes Landfill and Adjacent Areas
Temporary Fence	lf	2,400	$	24.00	$	57,600.00	Based on $4/lf per month rental
Hotspot Excavation							
Hotspot soil excavation (Tier 1)	cy	8,673	$	30.00	$	260,177.92	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	13,182	$	135.50	$	1,786,208.12	Cost includes transportation, disposal, and TSCA tax
Hotspot soil excavation (Tier 2)	cy	13,603	$	30.00	$	408,090.00	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	20,677	$	143.55	$	2,968,120.19	Cost includes transportation, disposal, and TSCA tax
PCB-impacted groundwater	ls	1	$	153,374.48	$	153,374.48	Disposal option based on previous PCB TCRA; cost includes groundwater pre-treatment system maintenance, temporary pipeline to discharge point and disposal fee to POTW
Dewatering							Includes wetlands excavation at Panhandle Area
Disposal cost	gal	6,011,280	$	0.006	$	36,070.00	
Equipment rental	mo	4	$	17,000.00	$	68,000.00	Based on 4 months equipment rental; includes settling tanks, filtration system, pumps, and pipeline to sewer manhole
Floating Barrier	ls	1	$	174,000.00	$	174,000.00	Floating barrier with skimmer on San Francisco Bay; includes material, deployment, and operation for 90 days
Decontamination Pad	ea	3	$	19,000.00	$	57,000.00	Includes sump pump and discharge pipe to settling tank
Groundwater Monitoring							
Existing well abandonment	ls	1	$	40,360.00	$	40,360.00	For details, see BKUP GW worksheet
New well installation	ls	1	$	46,414.00	$	46,410.00	Same as above
Landfill Gas (LFG) System - Option 3B							
LFG active system with GAC	ls	1	$	756,000.00	$	756,000.00	For details, see BKUP LFG-Option B worksheet
Groundwater Relief System							Proposed at south perimeter of landfill
Transmission pipeline	lf	2,100	$	50.00	$	105,000.00	Along south perimeter to sewer manhole tie-in
Force main tie-in to existing sewer manhole	ls	1	$	20,000.00	$	20,000.00	Manhole tie-in near northwest corner of landfill
Pumps and electrical	ls	1	$	70,000.00	$	70,000.00	Includes submersible pumps, control panels, and electrical
Groundwater treatment	ls	1	$	200,000.00	$	200,000.00	Design build contingency for groundwater treatment package unit.
Groundwater Diversion System							Proposed at west perimeter of Landfill Area
Slurry wall (soil/bentonite)	ls	1	$	1,050,500.00	$	1,050,500.00	For details, see BKUP GW Diversion worksheet

Table R-23. Alternative 3B - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity		Unit Price		Cost	Remarks
Excavation and Radiation Screening/Disposal							Includes Adjacent Area and Shoreline excavation
Pre-Containment LLRW Surface Anomalies Removal							
Pre-clearing, grubbing, and stripping screening	days	38	$	11,888.00	$	455,460.00	Based on 50'x50' grid at 16 grids per day production rate (~613 equivalent grids)
Clearing, grubbing, and stripping	days	38	$	20,095.00	$	766,260.00	For quantity estimate, depth of stripping is assumed 1'; number of days based on 1,488-cy/day production rate, or rad screening rate, whichever is greater
Pre-excavation screening	days	108	$	11,888.00	$	1,288,360.00	Based on 50'x50' grid at 16 grids per day production rate (~1,734 equivalent grids)
Excavation	days	108	$	20,095.00	$	2,177,800.00	Excavation includes soil, waste, concrete rubble after clearing, grubbing, and stripping. Number of days based on 1,488-cy/day production rate or rad screening rate, whichever is greater
Secondary radiation screening	days	120	$	5,616.00	$	673,660.00	Based on 1,500-cy/day production rate
Soil confirmation sampling	ea	898	$	572.00	$	513,460.00	One sample per grid plus 10% QC sample; analytical includes TAL and WET testing
Post-excavation screening	days	38	$	11,888.00	$	455,460.00	Based on 50'x50' grid at 16 grids per day production rate
Disposal of LLRW	cy	12,385	$	153.50	$	1,901,050.00	10% of clear, grub, stripped materials, and 5% of additional excavation
Additional LLRW Anomalies Removal							
Pre-clearing, grubbing, and stripping screening	days	15	$	11,888.00	$	173,120.00	Based on 50'x50' grid at 16 grids per day production rate (~233 equivalent grids)
Clearing, grubbing, and stripping	days	15	$	20,095.00	$	292,630.00	For quantity estimate, depth of stripping is assumed 1'; number of days based on 1,488-cy/day production rate, or rad screening rate, whichever is greater
Pre-excavation screening	days	15	$	11,888.00	$	173,120.00	Based on 50'x50' grid at 16 grids per day production rate (~233 equivalent grids)
Excavation	days	15	$	20,095.00	$	292,630.00	Excavation includes soil, waste, concrete rubble after clearing, grubbing, and stripping; number of days based on 1,488-cy/day production rate or rad screening rate, whichever is greater
Secondary radiation screening	days	30	$	5,616.00	$	166,010.00	Based on 1,500-cy/day production rate
Soil confirmation sampling	ea	288	$	572.00	$	164,930.00	One sample per grid plus 10% QC sample; analytical includes TAL and WET testing
Post-excavation screening	days	15	$	11,888.00	$	173,120.00	Based on 50'x50' grid at 16 grids per day production rate
Disposal of LLRW	cy	3,617	$	153.50	$	555,210.00	10% of clear, grub, stripped materials, and 5% of additional excavation

Table R-23. Alternative 3B - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity		Unit Price		Cost	Remarks
Construction Quality Assurance							
Landfill and Adjacent Areas	days	327	$	3,000.00	$	981,000.00	CQA services for landfill closure and adjacent areas remediation based on 320 working days construction schedule
LFG well field and flare unit	days	120	$	1,000.00	$	120,000.00	CQA services for gas field and flare unit based on 120 working days construction schedule
Subtotal Capital Cost					**$**	**47,420,166.27**	
20% Contingency					**$**	**9,484,033.25**	
Total Capital Cost					**$**	**56,904,199.53**	

Notes:

1. Capital cost is in 2008 dollars.
2. Cost estimates for LFG control system, groundwater monitoring system, and wetlands restoration were obtained from backup spreadsheets.
3. Assumes infrastructure and building demolition will be completed (by others) prior to final cover installation for Adjacent Area at the east side of the Landfill Area.
4. Cost for other construction items were obtained from vendor quotes and similar landfill closure and remedial projects.

AB = aggregate base
ac = acres
CQA = Construction Quality Assurance
cy = cubic yard
ea = each
GCL = geosynthetic clay liner
HDPE = high density polyethylene
H&S = Health and Safety
lf = linear feet
LFG = landfill gas
LLRW = low-level radioactive waste
ls = lump sum
mo = months
PCB = polychlorinated biphenyl
RC = reinforced concrete
sf = square feet
SWPPP = Storm Water Pollution Prevention Plan
WET = waste extraction test

Table R-24. Alternative 3B - Operation and Maintenance Cost Estimate

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Final Cover	lump sum (ls)	1	$ 69,000.00	$ 69,000.00	Repair of final cover due to settlement, slope failure, or erosion
Vegetation	ls	1	$ 12,600.00	$ 12,600.00	Maintenance of vegetation
LFG System - Option 3B	ls	1	$ 325,500.00	$ 325,500.00	For details, see BKUP LFG-3B worksheet
Stormwater Monitoring	ls	1	$ 60,980.00	$ 60,980.00	For details, see BKUP SW worksheet
LFG Condensate Disposal	ls	1	$ 55,800.00	$ 55,800.00	Assumes 60 gpd condensate, off-site disposal to Class I facility
Groundwater Relief System	ls	1	$ 67,700.00	$ 67,700.00	Groundwater relief system based on 20 gpm discharge to POTW via transmission pipeline; includes monthly inspection and reporting; assumed pump replacement every 3 years
Drainage	ls	1	$ 5,000.00	$ 5,000.00	Maintenance of drainage control system, including clearing of materials blocking drainage conveyances
Site Security	ls	1	$ 9,600.00	$ 9,600.00	Periodic inspection of point of access to the landfill and environmental control systems
Emergency Response	ls	1	$ 5,000.00	$ 5,000.00	Includes landfill inspection after major earthquake, storm, or fire that may exceed site design, which could require emergency response actions
Periodic Inspection, Documentation, Reporting and Regulatory Compliance	ls	1	$ 19,000.00	$ 19,000.00	Includes preparation of iso-settlement maps and 5-year site review
Institutional Control	ls	1	$ 36,000.00	$ 36,000.00	Includes monitoring, enforcement, and reporting
Subtotal O&M Cost				**$ 666,180.00**	
20% Contingency				**$ 133,236.00**	
Annual Average O&M Cost				**$ 799,416.00**	
30 Year O&M Present Value				**$ 12,205,099.68**	

48	**Capital Cost: $70.8M**	Table 8	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix R, Tables R-33, R-35, R-36, R-39, and R-40. Record No. 4237.

Table R-33. Cost Estimate Summary for Alternative 4 [1,2]

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Alternative 4A

Cap the Landfill and Adjacent Areas
Install an active Gas Control and Collection System (GCCS) and treat the landfill gas with a flare unit
Close northern landfill gas control system
Remove hot spots in adjacent areas
Install surface water control
Restore wetlands
Install groundwater relief, diversion, and containment systems

Items	Estimated Cost
Capital Cost	$65,603,596
Inspection, Maintenance, and GCCS O&M	$21,714,480
Groundwater Monitoring Cost	$1,980,150
Periodic Cost	$675,298
Total Cost for Alternative 4A (Flare Unit)	**$89,973,524**
Present Value for Alternative 4A (Flare Unit)	**$79,914,634**

Alternative 4B

Cap the Landfill and Adjacent Areas
Install an active GCCS and treat the landfill gas with a GAC/KMnO4 adsorption unit
Close northern landfill gas control system
Remove hot spots in adjacent areas
Install surface water control
Restore wetlands
Install groundwater relief, diversion, and containment systems

Items	Estimated Cost
Capital Cost	$65,325,916
Inspection, Maintenance, and GCCS O&M	$23,982,480
Groundwater Monitoring Cost	$1,980,150
Periodic Cost	$675,298
Total Cost for Alternative 4B (Adsorption)	**$91,963,844**
Present Value for Alternative 4B (Adsorption)	**$81,123,731**

Notes:

(1) Appended tables summarize backup calculations for all cost estimates provided.

(2) Period of analysis is 32 years, which includes 2 years of engineering, permitting and construction periods, and 30 years of long-term monitoring.

(3) Based on a 2.8% discount factor, as specified for Federal facility sites in Appendix C of Office of Management and Budget Circular A-94 (effective January 2008, http://www.whitehouse.gov/omb/circulars/a094/a94_appx-c.html).

Table R-35. Alternative 4A - Backup Cost Estimate
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
General					
Mobilization and Demobilization	ls	1	$ 2,476,000.00	$ 2,476,000.00	Based on 5% of construction cost, excluding CQA, permitting, H&S, and SWPPP implementation costs
Health and Safety	ls	1	$ 50,000.00	$ 50,000.00	
Engineering and Regulatory Compliance	ls	1	$ 1,485,800.00	$ 1,485,800.00	Includes preparation of construction documents, construction certification report, regulatory coordination, and local permits
Temporary Erosion Control and SWPPP Implementation	ls	1	$ 30,000.00	$ 30,000.00	
Demolition					
Remove existing drainage structures	ls	1	$ 10,000.00	$ 10,000.00	Dispose of spoils on site northwest area of IR-01/21
Remove concrete rubble, riprap, bricks, etc.	cy	9,921	$ 10.00	$ 99,210.00	Existing shoreline protection along the southern boundary of the Landfill and East Adjacent Areas and Panhandle Area; dispose of spoils on site at IR-01/21
Temporary Works					
Sheet-pile installation	lf	3,360	$ 1,495.00	$ 5,023,200.00	Along Landfill and Panhandle shoreline
Dewatering	days	120	$ 5,640.00	$ 676,800.00	
Air Monitoring					
Ambient air monitors	mo	4	$ 10,614.00	$ 42,456.00	
Portable ambient air analyzer	mo	4	$ 1,952.00	$ 7,808.00	
Portable combustible gas/oxygen indicator	mo	4	$ 464.00	$ 1,856.00	
Landfill IR-01/21					Includes the north, west, and southeast section of IR-01/21
Earthwork					
Excavated waste, existing ground, and debris consolidation	cy	67,786	$ 30.00	$ 2,033,586.50	Stripped soil, waste, and concrete rubble excavation along the southern limit of the Landfill and Adjacent Areas bordering San Francisco Bay, minus chemical hot spots and LLRW; place excavated material on site at IR-01/21
Earthfill	cy	11,916	$ 5.00	$ 59,578.85	Moisture condition and compact
Import soil	cy	84,949	$ 25.00	$ 2,123,724.74	Purchase and site delivery; includes fluff factor
Geosynthetic cover subgrade preparation	sf	395,686	$ 0.10	$ 39,568.58	Remove rock protrusions and level ground surface prior to geosynthetics placement
2.0' foundation layer	cy	29,066	$ 5.00	$ 145,328.66	Moisture condition and compact
2.0' vegetative soil cover	cy	29,809	$ 5.00	$ 149,046.61	Moisture condition and compact
Final grading	ac	22	$ 2,000.00	$ 44,400.00	Track walk prior to hydroseeding
Geosynthetic Final Cover					
Geosynthetic clay liner (GCL)	sf	405,278	$ 0.85	$ 344,486.17	Includes additional landfill closure area only
60-mil HDPE geomembrane	sf	417,125	$ 0.60	$ 250,274.91	Includes additional landfill closure area only
Drainage geocomposite	sf	403,530	$ 0.80	$ 322,823.88	Includes additional landfill closure area only
Demarcation layer	sf	360,422	$ 0.20	$ 72,084.40	
4"perforated HDPE pipe, SDR 11, including pipe fittings, and geotextile wrap	lf	3,440	$ 12.00	$ 41,280.00	
Toe of slope gravel fill	cy	382	$ 30.00	$ 11,466.67	Includes geotextile filter fabric
Gravel blanket drain	lf	700	$ 100.00	$ 70,000.00	Blanket drain for groundwater relief system

Table R-35. Alternative 4A - Backup Cost Estimate *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Landfill IR-01/21 *(continued)*					Includes the north, west, and southeast section of IR-01/21
Geosynthetic Termination and Tie-ins					
North and west perimeter final cover termination	lf	1,570	$ 12.00	$ 18,840.00	
South perimeter final cover termination	lf	700	$ 15.00	$ 10,500.00	
North and west tie-ins to existing geosynthetic cover	lf	1,000	$ 20.00	$ 20,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
South tie-in to existing geosynthetic cover	lf	300	$ 20.00	$ 6,000.00	Same as above
Surface Water Drainage System					
ECM/grass-lined swale	lf	700	$ 14.00	$ 9,800.00	Install at north finish grade tie-in
Top deck diversion berm with ECM/grass-lined ditch	lf	1,210	$ 10.00	$ 12,100.00	Install at deck area of landfill
ECM/grass-lined ditch	lf	300	$ 14.00	$ 4,200.00	Install at northwest perimeter of landfill
Concrete-lined ditch	lf	700	$ 30.00	$ 21,000.00	Install at toe of slope at south landfill perimeter
Rock-lined downchute	ea	1	$ 20,000.00	$ 20,000.00	Remove and reestablish existing rock gabion drainage swale and downchute lining
Pipe downdrain	lf	180	$ 50.00	$ 9,000.00	Install at sideslope areas
Pipe crossdrain	lf	100	$ 70.00	$ 7,000.00	Install across south perimeter access road
Drainage inlet	ea	2	$ 3,000.00	$ 6,000.00	Install at south perimeter access road
East Adjacent Area					Includes PCB removal area
Earthwork					
Earthfill	cy	31,641	$ 5.00	$ 158,205.00	Moisture condition and compact
Import soil	cy	99,038	$ 25.00	$ 2,475,939.72	Purchase and site delivery; includes fluff factor
1.0' foundation layer	cy	16,210	$ 5.00	$ 81,051.82	Moisture condition and compact
2.0' vegetative soil cover	cy	33,983	$ 5.00	$ 169,915.00	Moisture condition and compact
Geosynthetic subgrade preparation	sf	474,782	$ 0.10	$ 47,478.18	Remove rock protrusions and level ground surface prior to geosynthetics placement
Final grading	ac	9.7	$ 2,000.00	$ 19,320.00	Track walk prior to hydroseeding
Geosynthetic Final Cap					
60-mil HDPE geomembrane	sf	474,782	$ 0.60	$ 284,869.09	
Drainage geocomposite	sf	466,957	$ 0.80	$ 373,565.60	
Demarcation layer	sf	466,957	$ 0.20	$ 93,391.40	
North and east final cover termination	lf	2,285	$ 12.00	$ 27,420.00	4" perforated HDPE pipe, SDR 11, including pipe fittings, and geotextile wrap
South perimeter final cover termination	lf	500	$ 15.00	$ 7,500.00	
Final cover tie-in to existing geosynthetic cover	lf	1,000	$ 20.00	$ 20,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
Surface Water Drainage System					
ECM/grass-lined ditch	lf	2,260	$ 14.00	$ 31,640.00	Install at north and east boundary
Concrete-lined ditch	lf	450	$ 30.00	$ 13,500.00	Install at north and east boundary
Pipe downdrain	lf	200	$ 50.00	$ 10,000.00	Install across access road
Pipe culvert	lf	50	$ 75.00	$ 3,750.00	Install across access road
Drainage inlet	ea	2	$ 3,000.00	$ 6,000.00	Install across access road
Ditch outlet	ls	1	$ 5,000.00	$ 5,000.00	Perimeter ditch outlet to San Francisco Bay

Table R-35. Alternative 4A - Backup Cost Estimate *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Panhandle Area					
Earthwork					
Earthfill	cy	18,752	$ 5.00	$ 93,760.00	Moisture condition and compact
Import soil	cy	63,144	$ 25.00	$ 1,578,600.00	Purchase and site delivery; includes fluff factor
Import hydric soil	cy	26,547	$ 35.00	$ 929,155.50	Purchase and site delivery; includes fluff factor
2.0' upland soil layer	cy	20,177	$ 5.00	$ 100,885.00	Moisture condition and compact
Hydric soil layer	cy	20,421	$ 6.00	$ 122,526.00	Moisture condition and compact
2.0' bridge soil layer	cy	13,691	$ 5.00	$ 68,455.00	Moisture condition and compact
Geosynthetic subgrade preparation	sf	216,792	$ 0.10	$ 21,679.20	Remove rock protrusions and level ground surface prior to geosynthetics placement
Final grading	ac	9.0	$ 2,000.00	$ 18,060.00	Track walk prior to hydroseeding
Geosynthetic Cap					
Drainage geocomposite	sf	284,422	$ 0.80	$ 227,537.60	
Clay import	cy	2,881	$ 30.00	$ 86,430.00	For cap within wetlands area
Clay placement	cy	2,505	$ 5.00	$ 12,525.00	Cap within wetlands area
60-mil HDPE geomembrane	sf	216,792	$ 0.60	$ 130,075.20	
Final cover termination (west boundary)	lf	1,355	$ 8.00	$ 10,840.00	Geosynthetic cap termination, trench excavation, and backfill
North tie-in to existing and new landfill geosynthetics	lf	450	$ 20.00	$ 9,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
Surface Water Control System		-			
ECM/grass-lined ditch	lf	1,355	$ 14.00	$ 18,970.00	Drainage ditch west side of west perimeter access road
Pipe culvert	lf	100	$ 75.00	$ 7,500.00	West perimeter ditch inlet to freshwater wetland
Drainage ditch outlet	ls	1	$ 5,000.00	$ 5,000.00	West perimeter ditch outlet to San Francisco Bay
Wetlands Outlet Structures					
Freshwater wetland outlet structure	ls	1	$ 60,800.00	$ 60,800.00	Remove and replace existing outlet structure; for details, see Outlet worksheet
Wetlands Restoration	ls	1	$ 616,798.00	$ 616,800.00	For details, see BKUP Wetlands worksheet
Shoreline Protection					
Rock riprap	tons	41,518	$ 100.00	$ 4,151,761.19	Shoreline protection along the south perimeter of the Landfill and Adjacent Areas
Earthfill	cy	9,663	$ 4.50	$ 43,483.50	Soil backfill along the southern perimeter of the Landfill and Adjacent Area; moisture condition and compact
Import soil	cy	11,596	$ 25.00	$ 289,890.00	Purchase and site delivery; includes fluff factor
Geosynthetic subgrade preparation	sf	53,043	$ 0.10	$ 5,304.30	Remove rock protrusions and level ground surface prior to geosynthetics placement
60-mil HDPE	sf	53,043	$ 0.50	$ 26,521.50	Protective cover for soil backing
Cushion geotextile (12 oz/sy)	sf	53,043	$ 0.20	$ 10,608.60	Cushion fabric between rock riprap and HDPE protective cover
Geogrid	sf	28,380	$ 2.00	$ 56,760.00	For soil reinforcement
Access Road					
Class 2 aggregate base	cy	3,920	$ 25.00	$ 98,007.41	12" thick AB; includes service road for the Landfill and Adjacent Areas

Table R-35. Alternative 4A - Backup Cost Estimate *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Shoreline Protection *(continued)*					
Revegetation					
Hydroseeding	ac	32	$ 2,000.00	$ 63,080.00	Includes Landfill and Adjacent Areas
Temporary Fence	lf	2,400	$ 24.00	$ 57,600.00	Based on $4/lf per month rental
Hot Spot Excavation					
Hot spot soil excavation (Tier 1)	cy	9,753	$ 30.00	$ 292,580.69	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	14,824	$ 136.50	$ 2,023,488.08	Cost includes transportation, disposal, and TSCA tax
Hot spot soil excavation (Tier 2 through 4)	cy	23,036	$ 30.00	$ 691,070.00	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	35,014	$ 156.09	$ 5,465,368.56	Cost includes transportation, disposal, and TSCA tax
Hot spot soil excavation (Tier 5)	cy	6,822	$ 30.00	$ 204,653.33	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	10,369	$ 181.00	$ 1,876,807.50	Cost includes transportation, disposal, and TSCA tax
PCB-impacted groundwater	ls	1	$ 153,374.48	$ 153,374.48	Disposal option based on previous PCB TCRA; cost includes groundwater pretreatment system maintenance, temporary pipeline to discharge point, and disposal fee to POTW
Dewatering					Includes wetlands excavation at Panhandle Area
Disposal cost	gal	6,011,280	$ 0.006	$ 36,070.00	
Equipment rental	mo	4	$ 17,000.00	$ 68,000.00	Based on 4 months equipment rental; includes settling tanks, filtration system, pumps, and pipeline to sewer manhole
Floating Barrier	ls	1	$ 174,000.00	$ 174,000.00	Floating barrier with skimmer on San Francisco Bay; includes material, deployment, and operation for 90 days
Decontamination Pad	ea	3	$ 19,000.00	$ 57,000.00	Includes sump pump and discharge pipe to settling tank
Groundwater Monitoring					
Existing well abandonment	ls	1	$ 40,360.00	$ 40,360.00	For details, see BKUP GW rolled-up worksheet
New well installation	ls	1	$ 46,414.00	$ 46,410.00	Same as above
Landfill Gas (LFG) System - Option 4A					
LFG active system with flare unit	ls	1	$ 971,000.00	$ 971,000.00	For details, see BKUP LFG-4A worksheet
Groundwater Relief System					Proposed at south perimeter of Landfill
Transmission pipeline	lf	2,100	$ 50.00	$ 105,000.00	Along south perimeter to sewer manhole tie-in
Force main tie-in to existing sewer manhole	ls	1	$ 20,000.00	$ 20,000.00	Manhole tie-in near northwest corner of landfill
Pumps and electrical	ls	1	$ 70,000.00	$ 70,000.00	Includes submersible pumps, control panels, and electrical works
Groundwater treatment	ls	1	$ 200,000.00	$ 200,000.00	Design build contingeny for groundwater treatment package unit
Groundwater Containment System					Proposed at south and west perimeter of Landfill
Slurry wall (soil/bentonite)	ls	1	$ 2,264,580.00	$ 2,264,580.00	For details, see BKUP GW Containment System worksheet
Excavation and Radiation Screening/Disposal					Includes Adjacent Areas and Shoreline excavation
Pre-Containment LLRW Surface Anomalies Removal					
Pre-clearing, grubbing, and stripping screening	days	38	$ 11,888.00	$ 455,460.00	Based on 50'x50' grid at 16 grids per day production rate (~613 equivalent grids)
Clearing, grubbing, and stripping	days	38	$ 20,095.00	$ 766,260.00	For quantity estimate, depth of stripping is assumed 1'; number of days based on 1,488-cy/day production rate, or rad screening rate, whichever is greater
Pre-excavation screening	days	108	$ 11,888.00	$ 1,288,360.00	Based on 50'x50' grid at 16 grids per day production rate (~1,734 equivalent grids)

Table R-35. Alternative 4A - Backup Cost Estimate *(continued)*
Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Excavation and Radiation Screening/Disposal *(continued)*					Includes Adjacent Areas and Shoreline excavation
Excavation	days	108	$ 20,095.00	$ 2,177,800.00	Excavation includes soil, waste, concrete rubble after clearing, grubbing, and stripping; number of days based on 1488cy/day production rate or rad screening rate, whichever is greater
Secondary radiation screening	days	123	$ 5,616.00	$ 690,770.00	Based on 1,500-cy/day production rate
Soil confirmation sampling	ea	898	$ 572.00	$ 513,460.00	One sample per grid plus 10% QC sample; analytical incldes TAL and WET testing
Post-excavation screening	days	38	$ 11,888.00	$ 455,460.00	Based on 50'x50' grid at 16 grids per day production rate
Disposal of LLRW	cy	12,802	$ 153.50	$ 1,965,180.00	10% of clear,grub,stripped materials, and 5% of additional excavation
Additional LLRW Anomalies Removal					
Pre-clearing, grubbing, and stripping screening	days	15	$ 11,888.00	$ 173,120.00	Based on 50'x50' grid at 16 grids per day production rate (~233 equivalent grids)
Clearing, grubbing, and stripping	days	15	$ 20,095.00	$ 292,630.00	For quantity estimate, depth of stripping is assumed 1'; number of days based on 1,488-cy/day production rate, or rad screening rate, whichever is greater
Pre-excavation screening	days	15	$ 11,888.00	$ 173,120.00	Based on 50'x50' grid at 16 grids per day production rate (~233 equivalent grids)
Excavation	days	15	$ 20,095.00	$ 292,630.00	Excavation includes soil, waste, concrete rubble after clearing, grubbing, and stripping; number of days based on 1,488-cy/day production rate or rad screening rate, whichever is greater
Secondary radiation screening	days	30	$ 5,616.00	$ 166,010.00	Based on 1,500-cy/day production rate
Soil confirmation sampling	ea	288	$ 572.00	$ 164,930.00	One sample per grid plus 10% QC sample; analytical includes TAL and WET testing
Post-excavation screening	days	15	$ 11,888.00	$ 173,120.00	Based on 50'x50' grid at 16 grids per day production rate
Disposal of LLRW	cy	3,617	$ 153.50	$ 555,210.00	10% of clear, grub, stripped materials and 5% of additional excavation
Construction Quality Assurance					
Landfill and Adjacent Areas	days	327	$ 3,000.00	$ 981,000.00	CQA services for landfill closure and adjacent areas remediation based on 320 working days construction schedule
LFG well field and flare unit	days	120	$ 1,000.00	$ 120,000.00	CQA services for gas field and flare unit based on 120 working days construction schedule
Subtotal Capital Cost				**$ 54,669,663.43**	
20% Contingency				**$ 10,933,932.69**	
Total Capital Cost				**$ 65,603,596.11**	

Notes:
1. Capital cost is in 2008 dollars.
2. Cost estimates for LFG control system, groundwater monitoring system, and wetlands restoration were obtained from backup spreadsheets.
3. Assumes infrastructure and building demolition will be completed (by others) prior to final cover installation for Adjacent Area at the east side of the Landfill.
4. Cost for other construction items were obtained from vendor quotes and similar landfill closure and/or remedial projects.

AB = aggregate base
ac = acres
CQA = Construction Quality Assurance
cy = cubic yard
ea = each
GCL = geosynthetic clay liner
HDPE = high-density polyethylene
H&S = Health and Safety
lf = linear feet
LFG = landfill gas
LLRW = low-level radioactive waste
ls = lump sum
mo = months
PCB = polychlorinated biphenyl
RC = reinforced concrete
sf = square feet
SWPPP = Storm Water Pollution Prevention Plan
TAL = Target Analyte List
WET = Waste Extraction Test

Table R-36. Alternative 4A - Operation and Maintenance Cost Estimate

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity		Unit Price		Cost	Remarks
Final Cover	lump sum (ls)	1	$	69,000.00	$	69,000.00	Repair of final cover due to settlement, slope failure, or erosion
Vegetation	ls	1	$	12,600.00	$	12,600.00	Maintenance of vegetation
LFG System - Option 3A	ls	1	$	262,500.00	$	262,500.00	For details, see BKUP LFG-3A worksheet
Stormwater Monitoring	ls	1	$	60,980.00	$	60,980.00	For details, see BKUP SW worksheet
LFG Condensate Disposal	ls	1	$	55,800.00	$	55,800.00	Assumes 60-gpd condensate, off-site disposal to Class I facility
Groundwater Relief System	ls	1	$	67,700.00	$	67,700.00	Assumes 20-gpm extraction rate for discharge to POTW via transmission pipeline; includes monthly inspection and reporting and pump replacement every 3 years
Drainage	ls	1	$	5,000.00	$	5,000.00	Maintenance of drainage control system, including clearing of materials blocking drainage conveyances
Site Security	ls	1	$	9,600.00	$	9,600.00	Periodic inspection of point of access to the landfill and environmental control systems
Emergency Response	ls	1	$	5,000.00	$	5,000.00	Includes landfill inspection after major earthquake, storm, or fire that may exceed site design, which could require emergency response actions
Periodic Inspection, Documentation, Reporting and Regulatory Compliance	ls	1	$	19,000.00	$	19,000.00	Includes preparation of iso-settlement maps and 5-year site review
Institutional Control	ls	1	$	36,000.00	$	36,000.00	Includes monitoring, enforcement, and reporting
Subtotal O&M Cost					**$**	**603,180.00**	
20% Contingency					**$**	**120,636.00**	
Annual Average O&M Cost					**$**	**723,816.00**	
30 Year O&M Present Value					**$**	**12,205,099.68**	

Table R-39. Alternative 4B - Backup Cost Estimate

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
General					
Mobilization and Demobilization	ls	1	$ 2,466,000.00	$ 2,466,000.00	Based on 5% of construction cost excluding CQA, Permitting, H&S, and SWPPP implementation costs
Health and Safety	ls	1	$ 50,000.00	$ 50,000.00	
Engineering and Regulatory Compliance	ls	1	$ 1,479,400.00	$ 1,479,400.00	Includes preparation of construction documents, construction certification report, regulatory coordination, and local permits
Temporary Erosion Control and SWPPP Implementatio	ls	1	$ 30,000.00	$ 30,000.00	
Demolition					
Remove existing drainage structures	ls	1	$ 10,000.00	$ 10,000.00	Dispose of spoils on site at northeast area of IR-01/21
Remove existing concrete rubble, riprap, bricks, etc.	cy	9,921	$ 10.00	$ 99,210.00	Existing shoreline protection along the southern boundary of the Landfill and East Adjacent Area and Panhandle Area; dispose of spoils on site at IR-01/21
Temporary Works					
Sheet-pile installation	lf	3,360	$ 1,495.00	$ 5,023,200.00	Along Landfill and Panhandle shoreline
Dewatering	days	120	$ 5,640.00	$ 676,800.00	
Air Monitoring					
Ambient air monitors	mo	4	$ 10,614.00	$ 42,456.00	
Portable ambient air analyzer	mo	4	$ 1,952.00	$ 7,808.00	
Portable combustible gas/oxygen indicator	mo	4	$ 464.00	$ 1,856.00	
Landfill IR-01/21					Includes the north, west, and southeast section of IR-01/21
Earthwork					
Excavated waste and debris consolidation	cy	67,786	$ 30.00	$ 2,033,586.50	Stripped soils, waste, and concrete rubble excavation along the southern limit of the Landfill and Adjacent Areas bordering San Francisco Bay minus chemical hot spots and LLRW; place excavated material on site at IR-01/21
Earthfill	cy	11,916	$ 5.00	$ 59,578.85	Moisture condition and compact
Import soil	cy	84,949	$ 25.00	$ 2,123,724.74	Purchase and site delivery; includes fluff factor
Geosynthetic cover subgrade preparation	sf	395,686	$ 0.10	$ 39,568.58	Remove rock protrusions and level ground surface prior to geosynthetics placement
2.0' foundation layer	cy	29,066	$ 5.00	$ 145,328.66	Moisture condition and compact
2.0' vegetative soil cover	cy	29,809	$ 5.00	$ 149,046.61	Moisture condition and compact
Final grading	ac	22	$ 2,000.00	$ 44,400.00	Track walk prior to hydroseeding
Geosynthetic Final Cover					
Geosynthetic clay liner (GCL)	sf	405,278	$ 0.85	$ 344,486.17	Includes additional landfill closure area only
60-mil HDPE geomembrane	sf	417,125	$ 0.60	$ 250,274.91	Includes additional landfill closure area only
Drainage geocomposite	sf	403,530	$ 0.80	$ 322,823.88	Includes additional landfill closure area only
Demarcation layer	sf	360,422	$ 0.20	$ 72,084.40	
4"-perforated HDPE pipe, SDR 11, including pipe fittings,	lf	3,440	$ 12.00	$ 41,280.00	
Toe of slope gravel fill	cy	382	$ 30.00	$ 11,466.67	Includes geotextile filter fabric
Gravel blanket drain	lf	700	$ 100.00	$ 70,000.00	Blanket drain for groundwater relief system
Geosynthetic Termination and Tie-ins					
North and west perimeter final cover termination	lf	1,570	$ 12.00	$ 18,840.00	
South perimeter final cover termination	lf	700	$ 15.00	$ 10,500.00	

Table R-39. Alternative 4B - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Landfill IR-01/21 *(continued)*					Includes the north, west, and southeast section of IR-01/21
North and west tie-ins to existing geosynthetic cover	lf	1,000	$ 20.00	$ 20,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
South tie-in to existing geosynthetic cover	lf	300	$ 20.00	$ 6,000.00	Same as above
Surface Water Drainage System					
ECM/grass-lined swale	lf	700	$ 14.00	$ 9,800.00	Install at north finish grade tie-in
Top deck diversion berm with ECM/grass-lined ditch	lf	1,210	$ 10.00	$ 12,100.00	Install at deck area of landfill
ECM/grass-lined ditch	lf	300	$ 14.00	$ 4,200.00	Install at northwest perimeter of landfill
Concrete-lined ditch	lf	700	$ 30.00	$ 21,000.00	Install at toe of slope at south landfill perimeter
Rock-lined downchute	ea	1	$ 20,000.00	$ 20,000.00	Remove and reestablish existing rock gabion drainage swale and downchute lining
Pipe downdrain	lf	180	$ 50.00	$ 9,000.00	Install at sideslope areas
Pipe crossdrain	lf	100	$ 70.00	$ 7,000.00	Install across south perimeter access road
Drainage inlet	ea	2	$ 3,000.00	$ 6,000.00	Install at south perimeter access road
East Adjacent Area					Includes PCB remediation area
Earthwork					
Earthfill	cy	31,641	$ 5.00	$ 158,205.00	Moisture condition and compact
Import soil	cy	99,038	$ 25.00	$ 2,475,939.72	Purchase and site delivery; includes fluff factor
1.0' foundation layer	cy	16,210	$ 5.00	$ 81,051.82	Moisture condition and compact
2.0' vegetative soil cover	cy	33,983	$ 5.00	$ 169,915.00	Moisture condition and compact
Geosynthetic subgrade preparation	sf	474,782	$ 0.10	$ 47,478.18	Remove rock protrusions and level ground surface prior to geosynthetics placement
Final grading	ac	9.7	$ 2,000.00	$ 19,320.00	Track walk prior to hydroseeding
Geosynthetic Final Cap					
60-mil HDPE geomembrane	sf	474,782	$ 0.60	$ 284,869.09	
Drainage geocomposite	sf	466,957	$ 0.80	$ 373,565.60	
Demarcation layer	sf	466,957	$ 0.20	$ 93,391.40	
North and east final cover termination	lf	2,285	$ 12.00	$ 27,420.00	4"-perforated HDPE pipe, SDR 11, including pipe fittings, and geotextile wrap
South perimeter final cover termination	lf	500	$ 15.00	$ 7,500.00	
Final cover tie-in to existing geosynthetic cover	lf	1,000	$ 20.00	$ 20,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
Surface Water Drainage System					
ECM/grass-lined ditch	lf	2,260	$ 14.00	$ 31,640.00	Install at north and east boundary
Concrete-lined ditch	lf	450	$ 30.00	$ 13,500.00	Install at north and east boundary
Pipe downdrain	lf	200	$ 50.00	$ 10,000.00	Install across access road
Pipe culvert	lf	50	$ 75.00	$ 3,750.00	Install across access road
Drainage inlet	ea	2	$ 3,000.00	$ 6,000.00	Install across access road
Ditch outlet	ls	1	$ 5,000.00	$ 5,000.00	Perimeter ditch outlet to San Francisco Bay
Panhandle Area					
Earthwork					
Earthfill	cy	18,752	$ 5.00	$ 93,760.00	Moisture condition and compact
Import soil	cy	63,144	$ 25.00	$ 1,578,600.00	Purchase and site delivery; includes fluff factor
Import hydric soil	cy	26,547	$ 35.00	$ 929,155.50	Purchase and site delivery; includes fluff factor

Table R-39. Alternative 4B - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Panhandle Area *(continued)*					
2.0' upland soil layer	cy	20,177	$ 5.00	$ 100,885.00	Moisture condition and compact
Hydric soil layer	cy	20,421	$ 6.00	$ 122,526.00	Moisture condition and compact
2.0' bridge soil layer	cy	13,691	$ 5.00	$ 68,455.00	Moisture condition and compact
Geosynthetic subgrade preparation	sf	216,792	$ 0.10	$ 21,679.20	Remove rock protrusions and level ground surface prior to geosynthetics placement
Final grading	ac	9.0	$ 2,000.00	$ 18,060.00	Track walk prior to hydroseeding
Geosynthetic Cap					
Drainage geocomposite	sf	284,422	$ 0.80	$ 227,537.60	
Clay import	cy	2,881	$ 30.00	$ 86,430.00	For cap within wetlands area
Clay placement	cy	2,505	$ 5.00	$ 12,525.00	Cap within wetlands area
60-mil HDPE geomembrane	sf	216,792	$ 0.60	$ 130,075.20	
Final cover termination (west boundary)	lf	1,355	$ 8.00	$ 10,840.00	Geosynthetic cap termination, trench excavation, and backfill
North tie-in to existing and new landfill geosynthetics	lf	450	$ 20.00	$ 9,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
Surface Water Control System		-			
ECM/grass-lined ditch	lf	1,355	$ 14.00	$ 18,970.00	Drainage ditch west side of west perimeter access road
Pipe culvert	lf	100	$ 75.00	$ 7,500.00	West perimeter ditch inlet to freshwater wetland
Drainage ditch outlet	ls	1	$ 5,000.00	$ 5,000.00	West perimeter ditch outlet to San Francisco Bay
Wetlands Outlet Structures					
Freshwater wetland outlet structure	ls	1	$ 60,800.00	$ 60,800.00	Remove and replace existing outlet structure; for details, see Outlet worksheet
Wetlands Restoration	ls	1	$ 616,798.00	$ 616,800.00	For details, see BKUP Wetlands worksheet
Shoreline Protection					
Rock riprap	tons	41,518	$ 100.00	$ 4,151,761.19	Shoreline protection along the south perimeter of the Landfill and Adjacent Areas
Earthfill	cy	9,663	$ 4.50	$ 43,483.50	Soil backing along the southern perimeter of the Landfill and Adjacent Area; moisture condition and compact
Import soil	cy	11,596	$ 25.00	$ 289,890.00	Purchase and site delivery; includes fluff factor
Geosynthetic subgrade preparation	sf	53,043	$ 0.10	$ 5,304.30	Remove rock protrusions and level ground surface prior to geosynthetics placement
60-mil HDPE	sf	53,043	$ 0.50	$ 26,521.50	Protective cover for soil backing
Cushion geotextile (12 oz/sy)	sf	53,043	$ 0.20	$ 10,608.60	Cushion fabric between rock riprap and HDPE protective cover
Geogrid	sf	28,380	$ 2.00	$ 56,760.00	For soil reinforcement
Access Road					
Class 2 aggregate base	cy	3,920	$ 25.00	$ 98,007.41	12"-thick AB; includes service road for the Landfill and Adjacent Areas
Revegetation					
Hydroseeding	ac	32	$ 2,000.00	$ 63,080.00	Includes Landfill and Adjacent Areas
Temporary Fence	lf	2,400	$ 24.00	$ 57,600.00	Based on $4/lf per month rental
Hot Spot Excavation					
Hot spot soil excavation (Tier 1)	cy	9,753	$ 30.00	$ 292,580.69	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	14,824	$ 136.50	$ 2,023,488.08	Cost includes transportation, disposal, and TSCA tax
Hot spot soil excavation (Tier 2 through 4)	cy	23,036	$ 30.00	$ 691,070.00	Direct to dump truck to LLRW screening pad

Table R-39. Alternative 4B - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity		Unit Price		Cost	Remarks
Shoreline Protection *(continued)*							
Off-site disposal	tons	35,014	$	156.09	$	5,465,368.56	Cost includes transportation, disposal, and TSCA tax
Hot spot soil excavation (Tier 5)	cy	6,822	$	30.00	$	204,653.33	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	10,369	$	181.00	$	1,876,807.50	Cost includes transportation, disposal, and TSCA tax
PCB-impacted groundwater	ls	1	$	153,374.48	$	153,374.48	Disposal option based on previous PCB TCRA; cost includes groundwater pretreatment system maintenance, temporary pipeline to discharge point, and disposal fee to POTW
Dewatering							Includes wetlands excavation at Panhandle Area
Disposal cost	gal	6,011,280	$	0.006	$	36,070.00	
Equipment rental	mo	4	$	17,000.00	$	68,000.00	Based on 4 months equipment rental; includes settling tanks, filtration system, pumps, and pipeline to sewer manhole
Floating Barrier	ls	1	$	174,000.00	$	174,000.00	Floating barrier with skimmer on San Francisco Bay; includes material, deployment, and operation for 90 days
Decontamination Pad	ea	3	$	19,000.00	$	57,000.00	Includes sump pump and discharge pipe to settling tank
Groundwater Monitoring							
Existing well abandonment	ls	1	$	40,360.00	$	40,360.00	For details, see BKUP GW worksheet
New well installation	ls	1	$	46,414.00	$	46,410.00	Same as above
Landfill Gas (LFG) System - Option 4B							
LFG active system with GAC	ls	1	$	756,000.00	$	756,000.00	For details, see BKUP LFG-4B worksheet
Groundwater Relief System							Proposed at south perimeter of landfill
Transmission pipeline	lf	2,100	$	50.00	$	105,000.00	Along south perimeter to sewer manhole tie-in
Force main tie-in to existing sewer manhole	ls	1	$	20,000.00	$	20,000.00	Manhole tie-in near northwest corner of landfill
Pumps and electrical	ls	1	$	70,000.00	$	70,000.00	Includes submersible pumps, control panels, and electrical works
Groundwater treatment	ls	1	$	200,000.00	$	200,000.00	Design build contingency for groundwater treatment package unit
Groundwater Containment System							Proposed at south and west perimeter of landfill
Slurry wall (soil/bentonite)	ls	1	$	2,264,580.00	$	2,264,580.00	For details, see BKUP GW Containment System worksheet
Excavation and Radiation Screening/Disposal							Includes Adjacent Areas and Shoreline excavation
Pre-Containment LLRW Surface Anomalies Removal							
Pre-clearing, grubbing, and stripping screening	days	38	$	11,888.00	$	455,460.00	Based on 50'x50' grid at 16 grids per day production rate (~613 equivalent grids)
Clearing, grubbing, and stripping	days	38	$	20,095.00	$	766,260.00	For quantity estimate, depth of stripping is assumed 1'; number of days based on 1,488-cy/day production rate, or rad screening rate, whichever is greater
Pre-excavation screening	days	108	$	11,888.00	$	1,288,360.00	Based on 50'x50' grid at 16 grids per day production rate (~1,734 equivalent grids)
Excavation	days	108	$	20,095.00	$	2,177,800.00	Excavation includes soil, waste, concrete rubble after clearing, grubbing, and stripping; number of days based on 1,488-cy/day production rate or rad screening rate, whichever is greater
Secondary radiation screening	days	123	$	5,616.00	$	690,770.00	Based on 1,500-cy/day production rate
Soil confirmation sampling	ea	898	$	572.00	$	513,460.00	One sample per grid plus 10% QC sample; analytical includes TAL and WET testing
Post-excavation screening	days	38	$	11,888.00	$	455,460.00	Based on 50'x50' grid at 16 grids per day production rate
Disposal of LLRW	cy	12,802	$	153.50	$	1,965,180.00	10% of clear, grub, stripped materials and 5% of additional excavation

Table R-39. Alternative 4B - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity		Unit Price		Cost	Remarks
Excavation and Radiation Screening/Disposal							Includes Adjacent Area and shoreline excavation
Additional LLRW Anomalies Removal							
Pre-Clearing, grubbing, and stripping screening	days	15	$	11,888.00	$	173,120.00	Based on 50'x50' grid at 16 grids per day production rate (~233 equivalent grids)
Clearing, grubbing, and stripping	days	15	$	20,095.00	$	292,630.00	For quantity estimate, depth of stripping is assumed 1'; number of days based on 1,488-cy/day production rate, or rad screening rate, whichever is greater
Pre-excavation screening	days	15	$	11,888.00	$	173,120.00	Based on 50'x50' grid at 16 grids per day production rate (~233 equivalent grids)
Excavation	days	15	$	20,095.00	$	292,630.00	Excavation includes soil, waste, concrete rubble after clearing, grubbing, and stripping; number of days based on 1,488-cy/day production rate or rad screening rate, whichever is greater
Secondary radiation screening	days	30	$	5,616.00	$	166,010.00	Based on 1,500-cy/day production rate
Soil confirmation sampling	ea	288	$	572.00	$	164,930.00	One sample per grid plus 10% QC sample; analytical includes TAL and WET testing
Post-excavation screening	days	15	$	11,888.00	$	173,120.00	Based on 50'x50' grid at 16 grids per day production rate
Disposal of LLRW	cy	3,617	$	153.50	$	555,210.00	10% of clear, grub, stripped materials, and 5% of additional excavation
Construction Quality Assurance							
Landfill and Adjacent Areas	days	327	$	3,000.00	$	981,000.00	CQA services for landfill closure and Adjacent Area remediation based on 320 working days construction schedule
LFG well field and flare unit	days	120	$	1,000.00	$	120,000.00	CQA services for gas field and flare unit based on 120 working days construction schedule
Subtotal Capital Cost					**$**	**54,438,263.43**	
20% Contingency					**$**	**10,887,652.69**	
Total Capital Cost					**$**	**65,325,916.11**	

Notes:

1. Capital cost is in 2008 dollars.
2. Cost estimates for LFG control system, groundwater monitoring system, and wetlands restoration were obtained from backup spreadsheets.
3. Assumes infrastructure and building demolition will be completed (by others) prior to final cover installation for Adjacent Area at the east side of the Landfill.
4. Cost for other construction items were obtained from vendor quotes and similar landfill closure and/or remedial projects.

AB = aggregate base
ac = acres
CQA = Construction Quality Assurance
cy = cubic yard
ea = each
GCL = geosynthetic clay liner
HDPE = high-density polyethylene
H&S = Health and Safety
lf = linear feet
LFG = landfill gas
LLRW = low-level radioactive waste
ls = lump sum
mo = months
PCB = polychlorinated biphenyl
RC = reinforced concrete
sf = square feet
SWPPP = Stormwater Pollution Prevention Plan
WET = Waste Extraction Test

Table R-40. Alternative 4B - Operation and Maintenance Cost Estimate

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Final Cover	lump sum (ls)	1	$ 69,000.00	$ 69,000.00	Repair of final cover due to settlement, slope failure, or erosion
Vegetation	ls	1	$ 12,600.00	$ 12,600.00	Maintenance of vegetation
LFG System - Option 3B	ls	1	$ 325,500.00	$ 325,500.00	For details, see BKUP LFG-3B worksheet
Stormwater Monitoring	ls	1	$ 60,980.00	$ 60,980.00	For details, see BKUP SW worksheet
LFG Condensate Disposal	ls	1	$ 55,800.00	$ 55,800.00	Assumes 60-gpd condensate, off-site disposal to Class I facility
Groundwater Relief System	ls	1	$ 67,700.00	$ 67,700.00	Groundwater relief system based on 20-gpm discharge to POTW via transmission pipeline; includes monthly inspection and reporting; assumed pump replacement every 3 years
Drainage	ls	1	$ 5,000.00	$ 5,000.00	Maintenance of drainage control system, including clearing of materials blocking drainage conveyances
Site Security	ls	1	$ 9,600.00	$ 9,600.00	Periodic inspection of point of access to the landfill and environmental control systems
Emergency Response	ls	1	$ 5,000.00	$ 5,000.00	Includes landfill inspection after major earthquake, storm, or fire that may exceed site design, which could require emergency response actions
Periodic Inspection, Documentation, Reporting, and Regulatory Compliance	ls	1	$ 19,000.00	$ 19,000.00	Includes preparation of iso-settlement maps and 5-year site review
Institutional Control	ls	1	$ 36,000.00	$ 36,000.00	Includes monitoring, enforcement, and reporting
Subtotal O&M Cost				**$ 666,180.00**	
20% Contingency				**$ 133,236.00**	
Annual Average O&M Cost				**$ 799,416.00**	
30 Year O&M Present Value				**$ 12,205,099.68**	

49	**Capital Cost: $70.9M**	Table 8	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Appendix R, Tables R-49, R-51, R-52, R-55, and R-56. Record No. 4237.

Table R-49. Cost Estimate Summary for Alternative 5 [1,2]

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Alternative 5A

Cap the Landfill and Adjacent Areas
Install an active Gas Control and Collection System (GCCS) and treat the landfill gas with a flare unit
Close northern landfill gas control system
Remove hot spots in adjacent areas
Install surface water control
Restore wetlands
Install groundwater relief, diversion, and containment systems

Items	Estimated Cost
Capital Cost	$65,643,139
Inspection, Maintenance, and GCCS O&M	$21,714,480
Groundwater Monitoring Cost	$1,980,150
Periodic Cost	$675,298
Total Cost for Alternative 5A (Flare Unit)	**$90,013,067**
Present Value for Alternative 5A (Flare Unit)	**$79,953,130**

Alternative 5B

Cap the Landfill and Adjacent Areas
Install an active GCCS and treat the landfill gas with a GAC/KMnO4 adsorption unit
Close northern landfill gas control system
Remove hot spots in adjacent areas
Install surface water control
Restore wetlands
Install groundwater relief, diversion, and containment systems

Items	Estimated Cost
Capital Cost	$65,364,259
Inspection, Maintenance, and GCCS O&M	$23,982,480
Groundwater Monitoring Cost	$1,980,150
Periodic Cost	$675,298
Total Cost for Alternative 5B (Adsorption)	**$92,002,187**
Present Value for Alternative 5B (Adsorption)	**$81,161,059**

Notes:

(1) Appended tables summarize backup calculations for all cost estimates provided.

(2) Period of analysis is 32 years, which includes 2 years of engineering, permitting, and construction periods and 30 years of long-term monitoring.

(3) Based on a 2.8% discount factor, as specified for Federal facility sites in Appendix C of Office of Management and Budget Circular A-94 (effective January 2008, http://www.whitehouse.gov/omb/circulars/a094/a94_appx-c.html).

Table R-51. Alternative 5A - Backup Cost Estimate

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
General					
Mobilization and Demobilization	ls	1	$ 2,478,000.00	$ 2,478,000.00	Based on 5% of construction cost excluding CQA, permitting, H&S, and SWPPP implementation costs
Health and Safety	ls	1	$ 50,000.00	$ 50,000.00	
Engineering and Regulatory Compliance	ls	1	$ 1,486,700.00	$ 1,486,700.00	Includes preparation of construction documents, construction certification report, regulatory coordination, and local permits
Temporary Erosion Control and SWPPP Implementation	ls	1	$ 30,000.00	$ 30,000.00	
Demolition					
Remove existing drainage structures	ls	1	$ 10,000.00	$ 10,000.00	Dispose of spoils on site northwest area of IR01/21
Remove concrete rubble, riprap, bricks, etc.	cy	9,921	$ 10.00	$ 99,210.00	Existing shoreline protection along the southern boundary of the Landfill and East Adjacent Areas and Panhandle Area; dispose of spoils on site at IR-01/21
Temporary Works					
Sheet-pile installation	lf	3,360	$ 1,495.00	$ 5,023,200.00	Along Landfill and Panhandle shoreline
Dewatering	days	120	$ 5,640.00	$ 676,800.00	
Air Monitoring					
Ambient air monitors	mo	4	$ 10,614.00	$ 42,456.00	
Portable ambient air analyzer	mo	4	$ 1,952.00	$ 7,808.00	
Portable combustible gas/oxygen indicator	mo	4	$ 464.00	$ 1,856.00	
Landfill IR-01/21					Includes the north, west, and southeast section of IR-01/21
Earthwork					
Excavated waste, existing ground, and debris consolidation	cy	67,786	$ 30.00	$ 2,033,586.50	Stripped soil, waste, and concrete rubble excavation along the southern limit of the Landfill and Adjacent Areas bordering San Francisco Bay minus chemical hot spots and LLRW; place excavated material on site at IR-01/21
Earthfill	cy	11,916	$ 5.00	$ 59,578.85	Moisture condition and compact
Import soil	cy	84,949	$ 25.00	$ 2,123,724.74	Purchase and site delivery; includes fluff factor
Geosynthetic cover subgrade preparation	sf	395,686	$ 0.10	$ 39,568.58	Remove rock protrusions and level ground surface prior to geosynthetics placement
2.0' foundation layer	cy	29,066	$ 5.00	$ 145,328.66	Moisture condition and compact
2.0' vegetative soil cover	cy	29,809	$ 5.00	$ 149,046.61	Moisture condition and compact
Final grading	ac	22	$ 2,000.00	$ 44,400.00	Track walk prior to hydroseeding
Geosynthetic Final Cover					
Geosynthetic clay liner (GCL)	sf	405,278	$ 0.85	$ 344,486.17	Includes additional landfill closure area only
60-mil HDPE geomembrane	sf	417,125	$ 0.60	$ 250,274.91	Includes additional landfill closure area only
Drainage geocomposite	sf	403,530	$ 0.80	$ 322,823.88	Includes additional landfill closure area only
Demarcation layer	sf	360,422	$ 0.20	$ 72,084.40	
4"-perforated HDPE pipe, SDR 11, including pipe fittings, and geotextile wrap	lf	3,440	$ 12.00	$ 41,280.00	
Toe of slope gravel fill	cy	382	$ 30.00	$ 11,466.67	Includes geotextile filter fabric
Gravel blanket drain	lf	700	$ 100.00	$ 70,000.00	Blanket drain for groundwater relief system

Table R-51. Alternative 5A - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Landfill IR-01/21 (continued)					Includes the north, west, and southeast section of IR-01/21
Geosynthetic Termination and Tie-ins					
North and west perimeter final cover termination	lf	1,570	$ 12.00	$ 18,840.00	
South perimeter final cover termination	lf	700	$ 15.00	$ 10,500.00	
North and west tie-ins to existing geosynthetic cover	lf	1,000	$ 20.00	$ 20,000.00	Includes potholing, exposing and cleaning of existing geosynthetic cover material
South tie-in to existing geosynthetic cover	lf	300	$ 20.00	$ 6,000.00	Same as above
Surface Water Drainage System					
ECM/grass-lined swale	lf	700	$ 14.00	$ 9,800.00	Install at north finish grade tie-in
Top deck diversion berm with ECM/grass-lined ditch	lf	1,210	$ 10.00	$ 12,100.00	Install at deck area of landfill
ECM/grass-lined ditch	lf	300	$ 14.00	$ 4,200.00	Install at northwest perimeter of landfill
Concrete-lined ditch	lf	700	$ 30.00	$ 21,000.00	Install at toe of slope at south landfill perimeter
Rock-lined downchute	ea	1	$ 20,000.00	$ 20,000.00	Remove and reestablish existing rock gabion drainage swale and downchute lining
Pipe downdrain	lf	180	$ 50.00	$ 9,000.00	Install at sideslope areas
Pipe crossdrain	lf	100	$ 70.00	$ 7,000.00	Install across south perimeter access road
Drainage Inlet	ea	2	$ 3,000.00	$ 6,000.00	Install at south perimeter access road
East Adjacent Area					Includes PCB removal area
Earthwork					
Earthfill	cy	31,641	$ 5.00	$ 158,205.00	Moisture condition and compact
Import soil	cy	99,038	$ 25.00	$ 2,475,939.72	Purchase and site delivery; includes fluff factor
1.0' foundation layer	cy	16,210	$ 5.00	$ 81,051.82	Moisture condition and compact
2.0' vegetative soil cover	cy	33,983	$ 5.00	$ 169,915.00	Moisture condition and compact
Geosynthetic subgrade preparation	sf	474,782	$ 0.10	$ 47,478.18	Remove rock protrusions and level ground surface prior to geosynthetics placement
Final grading	ac	9.7	$ 2,000.00	$ 19,320.00	Track walk prior to hydroseeding
Geosynthetic Final Cap					
60-mil HDPE geomembrane	sf	474,782	$ 0.60	$ 284,869.09	
Drainage geocomposite	sf	466,957	$ 0.80	$ 373,565.60	
Demarcation layer	sf	466,957	$ 0.20	$ 93,391.40	
North and east final cover termination	lf	2,285	$ 12.00	$ 27,420.00	4" perforated HDPE pipe, SDR 11, including pipe fittings, and geotextile wrap
South perimeter final cover termination	lf	500	$ 15.00	$ 7,500.00	
Final cover tie-in to existing geosynthetic cover	lf	1,000	$ 20.00	$ 20,000.00	Includes potholing, exposing and cleaning of existing geosynthetic cover material
Surface Water Drainage System					
ECM/grass-lined ditch	lf	2,260	$ 14.00	$ 31,640.00	Install at north and east boundary
Concrete-lined ditch	lf	450	$ 30.00	$ 13,500.00	Install at north and east boundary
Pipe downdrain	lf	200	$ 50.00	$ 10,000.00	Install across access road
Pipe culvert	lf	50	$ 75.00	$ 3,750.00	Install across access road
Drainage inlet	ea	2	$ 3,000.00	$ 6,000.00	Install across access road
Ditch outlet	ls	1	$ 5,000.00	$ 5,000.00	Perimeter ditch outlet to San Francisco Bay

Table R-51. Alternative 5A - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Panhandle Area					
Earthwork					
Earthfill	cy	18,752	$ 5.00	$ 93,760.00	Moisture condition and compact
Import soil	cy	63,144	$ 25.00	$ 1,578,600.00	Purchase and site delivery; includes fluff factor
Import hydric soil	cy	29,804	$ 35.00	$ 1,043,133.00	Purchase and site delivery; includes fluff factor
2.0' upland soil layer	cy	20,177	$ 5.00	$ 100,885.00	Moisture condition and compact
3.0' hydric soil layer	cy	22,926	$ 6.00	$ 137,556.00	Moisture condition and compact
2.0' bridge soil layer	cy	13,691	$ 5.00	$ 68,455.00	Moisture condition and compact
Geosynthetic subgrade preparation	sf	216,792	$ 0.10	$ 21,679.20	Remove rock protrusions and level ground surface prior to geosynthetics placement
Final grading	ac	9.0	$ 2,000.00	$ 18,060.00	Track walk prior to hydroseeding
Geosynthetic Cap					
Drainage geocomposite	sf	284,422	$ 0.80	$ 227,537.60	
60-mil HDPE geomembrane	sf	216,792	$ 0.60	$ 130,075.20	
Final cover termination (west boundary)	lf	1,355	$ 8.00	$ 10,840.00	Geosynthetic cap termination, trench excavation, and backfill
North tie-in to existing and new landfill geosynthetics	lf	450	$ 20.00	$ 9,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
Surface Water Control System		-			
ECM/grass-lined ditch	lf	1,355	$ 14.00	$ 18,970.00	Drainage ditch west side of west perimeter access road
Pipe culvert	lf	100	$ 75.00	$ 7,500.00	West perimeter ditch inlet to freshwater wetland
Drainage ditch outlet	ls	1	$ 5,000.00	$ 5,000.00	West perimeter ditch outlet to San Francisco Bay
Wetlands Outlet Structures					
Freshwater wetland outlet structure	ls	1	$ 60,800.00	$ 60,800.00	Remove and replace existing outlet structure; for details, see Outlet worksheet
Wetlands Restoration	ls	1	$ 616,798.00	$ 616,800.00	For details, see BKUP Wetlands worksheet
Shoreline Protection					
Rock riprap	tons	41,518	$ 100.00	$ 4,151,761.19	Shoreline protection along the south perimeter of the Landfill and Adjacent Areas
Earthfill	cy	9,663	$ 4.50	$ 43,483.50	Soil backfill along the southern perimeter of the Landfill and Adjacent Area; moisture condition and compact
Import soil	cy	11,596	$ 25.00	$ 289,890.00	Purchase and site delivery; includes fluff factor
Geosynthetic subgrade preparation	sf	53,043	$ 0.10	$ 5,304.30	Remove rock protrusions and level ground surface prior to geosynthetics placement
60-mil HDPE	sf	53,043	$ 0.50	$ 26,521.50	Protective cover for soil backing
Cushion geotextile (12 oz/sy)	sf	53,043	$ 0.20	$ 10,608.60	Cushion fabric between rock riprap and HDPE protective cover
Geogrid	sf	28,380	$ 2.00	$ 56,760.00	For soil reinforcement
Access Road					
Class 2 aggregate base	cy	3,920	$ 25.00	$ 98,007.41	12" thick AB; includes service road for the Landfill and Adjacent Areas
Revegetation					
Hydroseeding	ac	32	$ 2,000.00	$ 63,080.00	Includes Landfill and Adjacent Areas

Table R-51. Alternative 5A - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Shoreline Protection *(continued)*					
Temporary Fence	lf	2,400	$ 24.00	$ 57,600.00	Based on $4/lf per month rental
Hot Spot Excavation					
Hot spot soil excavation (Tier 1)	cy	9,753	$ 30.00	$ 292,580.69	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	14,824	$ 136.50	$ 2,023,488.08	Cost includes transportation, disposal, and TSCA tax
Hot spot soil excavation (Tier 2 through 4)	cy	23,036	$ 30.00	$ 691,070.00	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	35,014	$ 156.09	$ 5,465,368.56	Cost includes transportation, disposal, and TSCA tax
Hot spot soil excavation (Tier 5)	cy	6,822	$ 30.00	$ 204,653.33	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	10,369	$ 181.00	$ 1,876,807.50	Cost includes transportation, disposal, and TSCA tax
PCB-impacted groundwater	ls	1	$ 153,374.48	$ 153,374.48	Disposal option based on previous PCB TCRA; cost includes groundwater pretreatment system maintenance, temporary pipeline to discharge point, and disposal fee to POTW
Dewatering					Includes wetlands excavation at Panhandle Area
Disposal cost	gal	6,011,280	$ 0.006	$ 36,070.00	
Equipment rental	mo	4	$ 17,000.00	$ 68,000.00	Based on 4 months equipment rental; includes settling tanks, filtration system, pumps, and pipeline to sewer manhole
Floating Barrier	ls	1	$ 174,000.00	$ 174,000.00	Floating barrier with skimmer on San Francisco Bay; includes material, deployment, and operation for 90 days
Decontamination Pad	ea	3	$ 19,000.00	$ 57,000.00	Includes sump pump and discharge pipe to settling tank
Groundwater Monitoring					
Existing well abandonment	ls	1	$ 40,360.00	$ 40,360.00	For details, see BKUP GW rolled-up worksheet
New well installation	ls	1	$ 46,414.00	$ 46,410.00	Same as above
Landfill Gas (LFG) System - Option 4A					
LFG active system with flare unit	ls	1	$ 971,000.00	$ 971,000.00	For details, see BKUP LFG-4A worksheet
Groundwater Relief System					Proposed at south perimeter of Landfill
Transmission pipeline	lf	2,100	$ 50.00	$ 105,000.00	Along south perimeter to sewer manhole tie-in
Force main tie-in to existing sewer manhole	ls	1	$ 20,000.00	$ 20,000.00	Manhole tie-in near northwest corner of landfill
Pumps and electrical	ls	1	$ 70,000.00	$ 70,000.00	Includes submersible pumps, control panels, and electrical works
Groundwater treatment	ls	1	$ 200,000.00	$ 200,000.00	Design build contingeny for groundwater treatment package unit
Groundwater Containment System					Proposed at south and west perimeter of Landfill
Slurry wall (soil/bentonite)	ls	1	$ 2,264,580.00	$ 2,264,580.00	For details, see BKUP GW Containment System worksheet
Excavation and Radiation Screening/Disposal					Includes Adjacent Areas and Shoreline excavation
Pre-Containment LLRW Surface Anomalies Removal					
Pre-clearing, grubbing, and stripping screening	days	38	$ 11,888.00	$ 455,460.00	Based on 50'x50' grid at 16 grids per day production rate (~613 equivalent grids)
Clearing, grubbing, and stripping	days	38	$ 20,095.00	$ 766,260.00	For quantity estimate, depth of stripping is assumed 1'; number of days based on 1,488-cy/day production rate, or rad screening rate, whichever is greater
Pre-excavation screening	days	108	$ 11,888.00	$ 1,288,360.00	Based on 50'x50' grid at 16 grids per day production rate (~1,734 equivalent grids)

Table R-51. Alternative 5A - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Excavation and Radiation Screening/Disposal*(continued)*					Includes Adjacent Areas and Shoreline excavation
Excavation	days	108	$ 20,095.00	$ 2,177,800.00	Excavation includes soil, waste, concrete rubble after clearing, grubbing, and stripping; number of days based on 1,488-cy/day production rate or rad screening rate, whichever is greater
Secondary radiation screening	days	123	$ 5,616.00	$ 690,770.00	Based on 1,500-cy/day production rate
Soil confirmation sampling	ea	898	$ 572.00	$ 513,460.00	One sample per grid plus 10% QC sample; analytical incldes TAL and WET testing
Post-excavation screening	days	38	$ 11,888.00	$ 455,460.00	Based on 50'x50' grid at 16 grids per day production rate
Disposal of LLRW	cy	12,802	$ 153.50	$ 1,965,180.00	10% of clear, grub, stripped materials, and 5% of additional excavation
Additional LLRW Anomalies Removal					
Pre-clearing, grubbing, and stripping screening	days	15	$ 11,888.00	$ 173,120.00	Based on 50'x50' grid at 16 grids per day production rate (~233 equivalent grids)
Clearing, grubbing, and stripping	days	15	$ 20,095.00	$ 292,630.00	For quantity estimate, depth of stripping is assumed 1'; number of days based on 1,488-cy/day production rate, or rad screening rate, whichever is greater
Pre-excavation screening	days	15	$ 11,888.00	$ 173,120.00	Based on 50'x50' grid at 16 grids per day production rate (~233 equivalent grids)
Excavation	days	15	$ 20,095.00	$ 292,630.00	Excavation includes soil, waste, concrete rubble after clearing, grubbing, and stripping; number of days based on 1,488-cy/day production rate or rad screening rate, whichever is greater
Secondary radiation screening	days	30	$ 5,616.00	$ 166,010.00	Based on 1,500-cy/day production rate
Soil confirmation sampling	ea	288	$ 572.00	$ 164,930.00	One sample per grid plus 10% QC sample; analytical incldes TAL and WET testing
Post-excavation screening	days	15	$ 11,888.00	$ 173,120.00	Based on 50'x50' grid at 16 grids per day production rate
Disposal of LLRW	cy	3,617	$ 153.50	$ 555,210.00	10% of clear, grub, stripped materials, and 5% of additional excavation
Construction Quality Assurance					
Landfill and Adjacent Areas	days	327	$ 3,000.00	$ 981,000.00	CQA services for landfill closure and adjacent areas remediation based on 320 working days construction schedule
LFG well field and flare unit	days	120	$ 1,000.00	$ 120,000.00	CQA services for gas field and flare unit based on 120 working days construction schedule
Subtotal Capital Cost				**$ 54,702,615.93**	
20% Contingency				**$ 10,940,523.19**	
Total Capital Cost				**$ 65,643,139.11**	

Notes:

1. Capital cost is in 2008 dollars.
2. Cost estimates for LFG control system, groundwater monitoring system, and wetlands restoration were obtained from backup spreadsheets.
3. Assumes infrastructure and building demolition will be completed (by others) prior to final cover installation for Adjacent Area at the east side of the Landfill.
4. Cost for other construction items were obtained from vendor quotes and similar landfill closure and/or remedial projects.

AB = aggregate base
ac = acres
CQA = Construction Quality Assurance
cy = cubic yard
ea = each
GCL = geosynthetic clay liner
HDPE = high-density polyethylene
H&S = Health and Safety
lf = linear feet
LFG = landfill gas
LLRW = low-level radioactive waste
ls = lump sum
mo = months
PCB = polychlorinated biphenyl
RC = reinforced concrete
sf = square feet
SWPPP = Stormwater Pollution Prevention Plan
TAL = Target Analyte List
WET = Waste Extraction Test

Table R-52. Alternative 5A - Operation and Maintenance Cost Estimate

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity		Unit Price		Cost	Remarks
Final Cover	lump sum (ls)	1	$	69,000.00	$	69,000.00	Repair of final cover due to settlement, slope failure, or erosion
Vegetation	ls	1	$	12,600.00	$	12,600.00	Maintenance of vegetation
LFG System - Option 3A	ls	1	$	262,500.00	$	262,500.00	For details, see BKUP LFG-3A worksheet
Stormwater Monitoring	ls	1	$	60,980.00	$	60,980.00	For details, see BKUP SW worksheet
LFG Condensate Disposal	ls	1	$	55,800.00	$	55,800.00	Assumes 60-gpd condensate, off-site disposal to Class I facility
Groundwater Relief System	ls	1	$	67,700.00	$	67,700.00	Assumes 20-gpm extraction rate for discharge to POTW via transmission pipeline; includes monthly inspection and reporting and pump replacement every 3 years
Drainage	ls	1	$	5,000.00	$	5,000.00	Maintenance of drainage control system, including clearing of materials blocking drainage conveyances
Site Security	ls	1	$	9,600.00	$	9,600.00	Periodic inspection of point of access to the landfill and environmental control systems
Emergency Response	ls	1	$	5,000.00	$	5,000.00	Includes landfill inspection after major earthquake, storm, or fire that may exceed site design, which could require emergency response actions
Periodic Inspection, Documentation, Reporting, and Regulatory Compliance	ls	1	$	19,000.00	$	19,000.00	Includes preparation of iso-settlement maps and 5-year site review
Institutional Control	ls	1	$	36,000.00	$	36,000.00	Includes monitoring, enforcement, and reporting
Subtotal O&M Cost					**$**	**603,180.00**	
20% Contingency					**$**	**120,636.00**	
Annual Average O&M Cost					**$**	**723,816.00**	
30-Year O&M Present Value					**$**	**12,205,099.68**	

Table R-55. Alternative 5B - Backup Cost Estimate

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
General					
Mobilization and Demobilization	ls	1	$ 2,467,000.00	$ 2,467,000.00	Based on 5% of construction cost excluding CQA, permitting, H&S, and SWPPP implementation costs
Health and Safety	ls	1	$ 50,000.00	$ 50,000.00	
Engineering and Regulatory Compliance	ls	1	$ 1,480,300.00	$ 1,480,300.00	Includes preparation of construction documents, construction certification report, regulatory coordination, and local permits
Temporary Erosion Control and SWPPP Implementation	ls	1	$ 30,000.00	$ 30,000.00	
Demolition					
Remove existing drainage structures	ls	1	$ 10,000.00	$ 10,000.00	Dispose of spoils on site at northeast area of IR-01/21
Remove existing concrete rubble, riprap, bricks, etc.	cy	9,921	$ 10.00	$ 99,210.00	Existing shoreline protection along the southern boundary of the Landfill and East Adjacent Area and Panhandle Area; dispose of spoils on site at IR-01/21
Temporary Works					
Sheet-pile installation	lf	3,360	$ 1,495.00	$ 5,023,200.00	Along Landfill and Panhandle shoreline
Dewatering	days	120	$ 5,640.00	$ 676,800.00	
Air Monitoring					
Ambient air monitors	mo	4	$ 10,614.00	$ 42,456.00	
Portable ambient air analyzer	mo	4	$ 1,952.00	$ 7,808.00	
Portable combustible gas/oxygen indicator	mo	4	$ 464.00	$ 1,856.00	
Landfill IR-01/21					Includes the north, west, and southeast section of IR-01/21
Earthwork					
Excavated waste and debris consolidation	cy	67,786	$ 30.00	$ 2,033,586.50	Stripped soils, waste, and concrete rubble excavation along the southern limit of the Landfill and adjacent areas bordering San Francisco Bay, minus chemical hot spots and LLRW; place excavated material on site at IR-01/21
Earthfill	cy	11,916	$ 5.00	$ 59,578.85	Moisture condition and compact
Import soil	cy	84,949	$ 25.00	$ 2,123,724.74	Purchase and site delivery; includes fluff factor
Geosynthetic cover subgrade preparation	sf	395,686	$ 0.10	$ 39,568.58	Remove rock protrusions and level ground surface prior to geosynthetics placement
2.0' foundation layer	cy	29,066	$ 5.00	$ 145,328.66	Moisture condition and compact
2.0' vegetative soil cover	cy	29,809	$ 5.00	$ 149,046.61	Moisture condition and compact
Final grading	ac	22	$ 2,000.00	$ 44,400.00	Track walk prior to hydroseeding
Geosynthetic Final Cover					
Geosynthetic clay liner (GCL)	sf	405,278	$ 0.85	$ 344,486.17	Includes additional landfill closure area only
60-mil HDPE geomembrane	sf	417,125	$ 0.60	$ 250,274.91	Includes additional landfill closure area only
Drainage geocomposite	sf	403,530	$ 0.80	$ 322,823.88	Includes additional landfill closure area only
Demarcation layer	sf	360,422	$ 0.20	$ 72,084.40	
4"perforated HDPE pipe, SDR 11, including pipe fittings, and geotextile wrap	lf	3,440	$ 12.00	$ 41,280.00	
Toe of slope gravel fill	cy	382	$ 30.00	$ 11,466.67	Includes geotextile filter fabric
Gravel blanket drain	lf	700	$ 100.00	$ 70,000.00	Blanket drain for groundwater relief system

Table R-55. Alternative 5B - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Landfill IR-01/21 *(continued)*					Includes the north, west, and southeast section of IR-01/21
Geosynthetic Termination and Tie-ins					
North and west perimeter final cover termination	lf	1,570	$ 12.00	$ 18,840.00	
South perimeter final cover termination	lf	700	$ 15.00	$ 10,500.00	
North and west tie-ins to existing geosynthetic cover	lf	1,000	$ 20.00	$ 20,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
South tie-in to existing geosynthetic cover	lf	300	$ 20.00	$ 6,000.00	Same as above
Surface Water Drainage System					
ECM/grass-lined swale	lf	700	$ 14.00	$ 9,800.00	Install at north finish grade tie-in
Top deck diversion berm with ECM/grass-lined ditch	lf	1,210	$ 10.00	$ 12,100.00	Install at deck area of landfill
ECM/grass-lined ditch	lf	300	$ 14.00	$ 4,200.00	Install at northwest perimeter of landfill
Concrete-lined ditch	lf	700	$ 30.00	$ 21,000.00	Install at toe of slope at south landfill perimeter
Rock-lined downchute	ea	1	$ 20,000.00	$ 20,000.00	Remove and reestablish existing rock gabion drainage swale and downchute lining
Pipe downdrain	lf	180	$ 50.00	$ 9,000.00	Install at sideslope areas
Pipe crossdrain	lf	100	$ 70.00	$ 7,000.00	Install across south perimeter access road
Drainage inlet	ea	2	$ 3,000.00	$ 6,000.00	Install at south perimeter access road
East Adjacent Area					Includes PCB remediation area
Earthwork					
Earthfill	cy	31,641	$ 5.00	$ 158,205.00	Moisture condition and compact
Import soil	cy	99,038	$ 25.00	$ 2,475,939.72	Purchase and site delivery; includes fluff factor
1.0' foundation layer	cy	16,210	$ 5.00	$ 81,051.82	Moisture condition and compact
2.0' vegetative soil cover	cy	33,983	$ 5.00	$ 169,915.00	Moisture condition and compact
Geosynthetic subgrade preparation	sf	474,782	$ 0.10	$ 47,478.18	Remove rock protrusions and level ground surface prior to geosynthetics placement
Final grading	ac	9.7	$ 2,000.00	$ 19,320.00	Track walk prior to hydroseeding
Geosynthetic Final Cap					
60-mil HDPE geomembrane	sf	474,782	$ 0.60	$ 284,869.09	
Drainage geocomposite	sf	466,957	$ 0.80	$ 373,565.60	
Demarcation layer	sf	466,957	$ 0.20	$ 93,391.40	
North and east final cover termination	lf	2,285	$ 12.00	$ 27,420.00	4" perforated HDPE pipe, SDR 11, including pipe fittings, and geotextile wrap
South perimeter final cover termination	lf	500	$ 15.00	$ 7,500.00	
Final cover tie-in to existing geosynthetic cover	lf	1,000	$ 20.00	$ 20,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
Surface Water Drainage System					
ECM/grass-lined ditch	lf	2,260	$ 14.00	$ 31,640.00	Install at north and east boundary
Concrete-lined ditch	lf	450	$ 30.00	$ 13,500.00	Install at north and east boundary
Pipe downdrain	lf	200	$ 50.00	$ 10,000.00	Install across access road
Pipe culvert	lf	50	$ 75.00	$ 3,750.00	Install across access road
Drainage inlet	ea	2	$ 3,000.00	$ 6,000.00	Install across access road
Ditch outlet	ls	1	$ 5,000.00	$ 5,000.00	Perimeter ditch outlet to San Francisco Bay

Table R-55. Alternative 5B - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Panhandle Area					
Earthwork					
Earthfill	cy	18,752	$ 5.00	$ 93,760.00	Moisture condition and compact
Import soil	cy	63,144	$ 25.00	$ 1,578,600.00	Purchase and site delivery; includes fluff factor
Import hydric soil	cy	29,804	$ 35.00	$ 1,043,133.00	Purchase and site delivery; includes fluff factor
2.0' upland soil layer	cy	20,177	$ 5.00	$ 100,885.00	Moisture condition and compact
3.0 ' hydric soil layer	cy	22,926	$ 6.00	$ 137,556.00	Moisture condition and compact
2.0' bridge soil layer	cy	13,691	$ 5.00	$ 68,455.00	Moisture condition and compact
Geosynthetic subgrade preparation	sf	216,792	$ 0.10	$ 21,679.20	Remove rock protrusions and level ground surface prior to geosynthetics placement
Final grading	ac	9.0	$ 2,000.00	$ 18,060.00	Track walk prior to hydroseeding
Geosynthetic Cap					
Drainage geocomposite	sf	284,422	$ 0.80	$ 227,537.60	
60-mil HDPE geomembrane	sf	216,792	$ 0.60	$ 130,075.20	
Final cover termination (west boundary)	lf	1,355	$ 8.00	$ 10,840.00	Geosynthetic cap termination, trench excavation, and backfill
North tie-in to existing and new landfill geosynthetics	lf	450	$ 20.00	$ 9,000.00	Includes potholing, exposing, and cleaning of existing geosynthetic cover material
Surface Water Control System		-			
ECM/grass-lined ditch	lf	1,355	$ 14.00	$ 18,970.00	Drainage ditch west side of west perimeter access road
Pipe culvert	lf	100	$ 75.00	$ 7,500.00	West perimeter ditch inlet to freshwater wetland
Drainage ditch outlet	ls	1	$ 5,000.00	$ 5,000.00	West perimeter ditch outlet to San Francisco Bay
Wetlands Outlet Structures					
Freshwater wetland outlet structure	ls	1	$ 60,800.00	$ 60,800.00	Remove and replace existing outlet structure; for details, see Outlet worksheet
Wetlands Restoration	ls	1	$ 616,798.00	$ 616,800.00	For details, see BKUP Wetlands worksheet
Shoreline Protection					
Rock riprap	tons	41,518	$ 100.00	$ 4,151,761.19	Shoreline protection along the south perimeter of the Landfill and Adjacent Areas
Earthfill	cy	9,663	$ 4.50	$ 43,483.50	Soil backing along the southern perimeter of the Landfill and Adjacent Areas; moisture condition and compact
Import soil	cy	11,596	$ 25.00	$ 289,890.00	Purchase and site delivery; includes fluff factor
Geosynthetic subgrade preparation	sf	53,043	$ 0.10	$ 5,304.30	Remove rock protrusions and level ground surface prior to geosynthetics placement
60-mil HDPE	sf	53,043	$ 0.50	$ 26,521.50	Protective cover for soil backing
Cushion geotextile (12 oz/sy)	sf	53,043	$ 0.20	$ 10,608.60	Cushion fabric between rock riprap and HDPE protective cover
Geogrid	sf	28,380	$ 2.00	$ 56,760.00	For soil reinforcement
Access Road					
Class 2 aggregate base	cy	3,920	$ 25.00	$ 98,007.41	12"-thick AB; includes service road for the Landfill and Adjacent Areas
Revegetation					
Hydroseeding	ac	32	$ 2,000.00	$ 63,080.00	Includes Landfill and Adjacent Areas
Temporary Fence	lf	2,400	$ 24.00	$ 57,600.00	Based on $4/lf per month rental

Table R-55. Alternative 5B - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity		Unit Price		Cost	Remarks
Shoreline Protection *(continued)*							
Hot Spot Excavation							
Hot spot soil excavation (Tier 1)	cy	9,753	$	30.00	$	292,580.69	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	14,824	$	136.50	$	2,023,488.08	Cost includes transportation, disposal, and TSCA tax
Hot spot soil excavation (Tier 2 through 4)	cy	23,036	$	30.00	$	691,070.00	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	35,014	$	156.09	$	5,465,368.56	Cost includes transportation, disposal, and TSCA tax
Hot spot soil excavation (Tier 5)	cy	6,822	$	30.00	$	204,653.33	Direct to dump truck to LLRW screening pad
Off-site disposal	tons	10,369	$	181.00	$	1,876,807.50	Cost includes transportation, disposal, and TSCA tax
PCB-impacted groundwater	ls	1	$	153,374.48	$	153,374.48	Disposal option based on previous PCB TCRA; cost includes groundwater pretreatment system maintenance, temporary pipeline to discharge point, and disposal fee to POTW
Dewatering							Includes wetlands excavation at Panhandle Area
Disposal cost	gal	6,011,280	$	0.006	$	36,070.00	
Equipment rental	mo	4	$	17,000.00	$	68,000.00	Based on 4 months equipment rental; includes settling tanks, filtration system, pumps, and pipeline to sewer manhole
Floating Barrier	ls	1	$	174,000.00	$	174,000.00	Floating barrier with skimmer on San Francisco Bay; includes material, deployment, and operation for 90 days
Decontamination Pad	ea	3	$	19,000.00	$	57,000.00	Includes sump pump and discharge pipe to settling tank
Groundwater Monitoring							
Existing well abandonment	ls	1	$	40,360.00	$	40,360.00	For details, see BKUP GW worksheet
New well installation	ls	1	$	46,414.00	$	46,410.00	Same as above
Landfill Gas (LFG) System - Option 4B							
LFG active system with GAC	ls	1	$	756,000.00	$	756,000.00	For details, see BKUP LFG-4B worksheet
Groundwater Relief System							Proposed at south perimeter of landfill
Transmission pipeline	lf	2,100	$	50.00	$	105,000.00	Along south perimeter to sewer manhole tie-in
Force main tie-in to existing sewer manhole	ls	1	$	20,000.00	$	20,000.00	Manhole tie-in near northwest corner of landfill
Pumps and electrical	ls	1	$	70,000.00	$	70,000.00	Includes submersible pumps, control panels, and electrical works
Groundwater treatment	ls	1	$	200,000.00	$	200,000.00	Design build contingency for groundwater treatment package unit
Groundwater Containment System							Proposed at south and west perimeter of landfill
Slurry wall (soil/bentonite)	ls	1	$	2,264,580.00	$	2,264,580.00	For details, see BKUP GW Containment System worksheet
Excavation and Radiation Screening/Disposal							Includes Adjacent Areas and Shoreline excavation
Pre-Containment LLRW Surface Anomalies Removal							
Pre-clearing, grubbing, and stripping screening	days	38	$	11,888.00	$	455,460.00	Based on 50'x50' grid at 16 grids per day production rate (~613 equivalent grids)
Clearing, grubbing, and stripping	days	38	$	20,095.00	$	766,260.00	For quantity estimate, depth of stripping is assumed 1'; number of days based on 1,488-cy/day production rate, or rad screening rate, whichever is greater
Pre-excavation screening	days	108	$	11,888.00	$	1,288,360.00	Based on 50'x50' grid at 16 grids per day production rate (~1,734 equivalent grids)
Excavation	days	108	$	20,095.00	$	2,177,800.00	Excavation includes soil, waste, concrete rubble after clearing, grubbing, and stripping; number of days based on 1,488-cy/day production rate or rad screening rate, whichever is greater
Secondary radiation screening	days	123	$	5,616.00	$	690,770.00	Based on 1,500-cy/day production rate

Table R-55. Alternative 5B - Backup Cost Estimate *(continued)*

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Excavation and Radiation Screening/Disposal *(continued)*					Includes Adjacent Areas and Shoreline excavation
Soil confirmation sampling	ea	898	$ 572.00	$ 513,460.00	One sample per grid plus 10% QC sample; analytical includes TAL and WET testing
Post-excavation screening	days	38	$ 11,888.00	$ 455,460.00	Based on 50'x50' grid at 16 grids per day production rate
Disposal of LLRW	cy	12,802	$ 153.50	$ 1,965,180.00	10% of clear, grub, stripped materials, and 5% of additional excavation
Additional LLRW Anomalies Removal					
Pre-clearing, grubbing, and stripping screening	days	15	$ 11,888.00	$ 173,120.00	Based on 50'x50' grid at 16 grids per day production rate (~233 equivalent grids)
Clearing, grubbing, and stripping	days	15	$ 20,095.00	$ 292,630.00	For quantity estimate, depth of stripping is assumed 1'; number of days based on 1,488-cy/day production rate, or rad screening rate, whichever is greater
Pre-excavation screening	days	15	$ 11,888.00	$ 173,120.00	Based on 50'x50' grid at 16 grids per day production rate (~233 equivalent grids)
Excavation	days	15	$ 20,095.00	$ 292,630.00	Excavation includes soil, waste, concrete rubble after clearing, grubbing, and stripping; number of days based on 1,488-cy/day production rate or rad screening rate, whichever is greater
Secondary radiation screening	days	30	$ 5,616.00	$ 166,010.00	Based on 1,500-cy/day production rate
Soil confirmation sampling	ea	288	$ 572.00	$ 164,930.00	One sample per grid plus 10% QC sample; analytical includes TAL and WET testing
Post-excavation screening	days	15	$ 11,888.00	$ 173,120.00	Based on 50'x50' grid at 16 grids per day production rate
Disposal of LLRW	cy	3,617	$ 153.50	$ 555,210.00	10% of clear, grub, stripped materials, and 5% of additional excavation
Construction Quality Assurance					
Landfill and Adjacent Areas	days	327	$ 3,000.00	$ 981,000.00	CQA services for landfill closure and adjacent areas remediation based on 320 working days construction schedule
LFG well field and flare unit	days	120	$ 1,000.00	$ 120,000.00	CQA services for gas field and flare unit based on 120 working days construction schedule
Subtotal Capital Cost				**$ 54,470,215.93**	
20% Contingency				**$ 10,894,043.19**	
Total Capital Cost				**$ 65,364,259.11**	

Notes:

1. Capital cost is in 2008 dollars.
2. Cost estimates for LFG control system, groundwater monitoring system, and wetlands restoration were obtained from backup spreadsheets.
3. Assumes infrastructure and building demolition will be completed (by others) prior to final cover installation for Adjacent Area at the east side of the Landfill.
4. Cost for other construction items were obtained from vendor quotes and similar landfill closure and/or remedial projects.

AB = aggregate base
ac = acres
CQA = Construction Quality Assurance
cy = cubic yard
ea = each
GCL = geosynthetic clay liner
HDPE = high-density polyethylene
H&S = Health and Safety
lf = linear feet
LFG = landfill gas
LLRW = low-level radioactive waste
ls = lump sum
mo = months
PCB = polychlorinated biphenyl
RC = reinforced concrete
sf = square feet
SWPPP = Stormwater Pollution Prevention Plan
WET = Waste Extraction Test

Table R-56. Alternative 5B - Operation and Maintenance Cost Estimate

Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California

Description	Unit	Quantity	Unit Price	Cost	Remarks
Final Cover	lump sum	1	$ 69,000.00	$ 69,000.00	Repair of final cover due to settlement, slope failure, or erosion
Vegetation	ls	1	$ 12,600.00	$ 12,600.00	Maintenance of vegetation
LFG System - Option 3B	ls	1	$ 325,500.00	$ 325,500.00	For details, see BKUP LFG-3B worksheet
Stormwater Monitoring	ls	1	$ 60,980.00	$ 60,980.00	For details, see BKUP SW worksheet
LFG Condensate Disposal	ls	1	$ 55,800.00	$ 55,800.00	Assumes 60-gpd condensate, off-site disposal to Class I facility
Groundwater Relief System	ls	1	$ 67,700.00	$ 67,700.00	Groundwater relief system based on 20-gpm discharge to POTW via transmission pipeline; includes monthly inspection and reporting; assumed pump replacement every 3 years
Drainage	ls	1	$ 5,000.00	$ 5,000.00	Maintenance of drainage control system, including clearing of materials blocking drainage conveyances
Site Security	ls	1	$ 9,600.00	$ 9,600.00	Periodic inspection of point of access to the landfill and environmental control systems
Emergency Response	ls	1	$ 5,000.00	$ 5,000.00	Includes landfill inspection after major earthquake, storm, or fire that may exceed site design, which could require emergency response actions
Periodic Inspection, Documentation, Reporting, and Regulatory Compliance	ls	1	$ 19,000.00	$ 19,000.00	Includes preparation of iso-settlement maps and 5-year site review
Institutional Control	ls	1	$ 36,000.00	$ 36,000.00	Includes monitoring, enforcement, and reporting
Subtotal O&M Cost				**$ 666,180.00**	
20% Contingency				**$ 133,236.00**	
Annual Average O&M Cost				**$ 799,416.00**	
30-Year O&M Present Value				**$ 12,205,099.68**	

50	Nine evaluation criteria	Section 2.8.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 13, pages 13-1 through 13-3. Record No. 4237.

Section 13. Detailed Analysis of Remedial Alternatives

NCP § 300.430(e) and the guidance for conducting RI/FS activities under CERCLA (EPA, 1988a) requires a remedial alternative evaluation based on nine criteria. This section evaluates each alternative described in Section 12 against the nine criteria, which are summarized below.

1. Overall Protection of Human Health and the Environment. This criterion provides an overall assessment of whether the alternative provides adequate protection of human health and the environment. The overall protection assessment draws upon other evaluation criteria, especially compliance with ARARs, long-term effectiveness and permanence, and short-term effectiveness. The protectiveness evaluation focuses on how site risks would be reduced or eliminated by the alternative, specifically how effectively an alternative meets the RAOs. This criterion is considered a threshold criterion and must be met by the selected alternative to be considered for use at Parcel E-2.

2. Compliance with ARARs. This criterion is used to determine whether the alternative will meet all identified federal and state ARARs and, if not, whether justification exists for waiving one or more of the ARARs. This criterion is also a threshold criterion that must be met by the selected alternative to be considered for use at Parcel E-2. Section 10 summarizes potential chemical-, location-, and action-specific ARARs associated with the remedial alternatives for Parcel E-2.

3. Long-Term Effectiveness and Permanence. The alternative is evaluated in terms of risk remaining at a site after RAOs have been met. The primary focus of this evaluation is the extent and effectiveness of controls used to manage the risk posed by treatment residuals or untreated wastes. The following factors are considered under this criterion:

- Adequacy of mitigation controls
- Reliability of mitigation controls
- Magnitude of the residual risk

4. Reduction in Toxicity, Mobility, or Volume through Treatment. This criterion addresses the statutory preference for treatment options that permanently and significantly reduce the toxicity, mobility, or volume of chemicals. This preference is satisfied when treatment reduces the principal threats through the following:

- Destruction of toxic chemicals
- Reduction in chemical mobility
- Reduction of the total mass of toxic chemicals
- Reduction of total volume of contaminated media

5. Short-Term Effectiveness. This criterion addresses the effects of the alternative during the implementation and construction phase until RAOs are met. Under this criterion, the alternative is evaluated with respect to its effects on human health and the environment during implementation of the remedial action. The following factors are considered:

- Exposure of the community during implementation
- Exposure of workers during construction
- Environmental effects
- Time required to achieve RAOs

6. Implementability. This criterion addresses the technical and administrative feasibility of implementing the alternative and the availability of various services and materials required during its implementation. The following factors are considered:

- Ability to construct the technology
- Reliability of the technology
- Monitoring considerations
- Availability of equipment and specialists
- Ability to obtain approvals from regulatory agencies

7. Cost. This criterion is based on estimates of capital and O&M costs for the alternative. Capital costs consist of direct and indirect costs. Direct costs include equipment, labor, and materials purchased as necessary to implement the alternative. Indirect costs include engineering, financial, and other services such as testing and monitoring. Annual O&M costs for each alternative include operating labor, maintenance materials and labor, auxiliary materials, and energy costs.

The cost estimate for each alternative is projected to range from 50 percent above to 30 percent below the actual cost. For estimating purposes, the post-closure O&M period is assumed to be 30 years based on landfill post-closure requirements. All costs are converted to a present value cost to allow comparison between alternatives with varying cash flow requirements over time.

8. State Acceptance. State acceptance is a modifying criterion used to evaluate technical and administrative issues and concerns of the state regarding the alternative. This criterion will be addressed in the ROD following comments on the RI/FS Report and the proposed plan.

9. Community Acceptance. Community acceptance is a modifying criterion used to evaluate technical and administrative issues and public concerns associated with the alternative. This criterion will be addressed in the ROD following comment on the RI/FS Report and the proposed plan.

The subsections below evaluate each alternative against these nine criteria. Table 13-1 provides a cost comparison of all the alternatives, and Appendix R provides detailed cost estimates and assumptions for each alternative.

13.1. ALTERNATIVE 1: NO ACTION

Under the no action alternative, no remedial action would take place. Solid waste, soil, and sediment would be left in place; groundwater and surface water would not be contained or treated. The no action alternative would not involve any response actions (e.g., monitoring, institutional controls, containment, removal, treatment, or other mitigating actions). The no action alternative is included throughout the FS process as required by the NCP to provide a baseline for comparison with and evaluation of other alternatives.

13.1.1. Overall Protection of Human Health and the Environment

This alternative would not provide adequate protection of human health and the environment because solid waste, soil, and sediment contributing risks to humans and wildlife would not be removed, contained, or treated. Migration of soil contamination to off-site locations through stormwater erosion would be possible. In addition, erosion could expose additional solid waste, increasing potential risks to humans and wildlife through direct contact. The potential for generation of leachate and migration from infiltration would not change from existing conditions under this alternative. The lack of institutional controls would provide no means of implementing various land use restrictions needed to control unacceptable exposure to the known COCs and COECs at the site. Furthermore, this alternative does not provide any mechanisms for monitoring potential migration of chemicals in landfill gas, surface water, or groundwater. Therefore, the no action alternative does not meet this threshold criterion.

13.1.2. Compliance with ARARs

There is no need to identify ARARs for the no action alternative because ARARs apply to "any removal or remedial action conducted entirely on-site" and "no action" is not a removal or remedial action. CERCLA § 121 (42 USC § 9621) cleanup standards for selection of a Superfund remedy, including the requirements to meet ARARs, are not triggered by the no action alternative (EPA, 1991a). Therefore, a discussion of compliance with ARARs is not appropriate for this alternative.

51	New wetlands	Section 2.9.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.2.3.11, pages 12-30 and 12-31. Record No. 4237.

using field instruments and will include, to the extent practical, comparisons of regularly collected field instrument data for NMOCs with periodic laboratory sample analysis for NMOCs. The data will be used to verify that, in accordance with 27 CCR § 20921, exposure to residual NMOCs does not pose an unacceptable risk to future site users. The anticipated minimum monitoring period is 30 years, or until it is demonstrated that landfill gas no longer poses a threat to human health or the environment.

Several general assumptions were made to develop the FS costs for the landfill gas monitoring component. Landfill gas will not migrate below the groundwater table, which is between 6 and 20 feet bgs, so GMPs would not be screened below the water table; rather, GMPs would be screened from 5 feet bgs (above the historic high groundwater elevation at Parcel E-2) to the historic low groundwater elevation, which varies across Parcel E-2 to a maximum depth of 16 feet bgs (north of landfill). Existing GMPs are located approximately 150 feet apart on the Parcel E-2 boundary north of the landfill and would continue to be used under Alternative 3. Under Alternative 3, it is assumed that additional GMPs would be installed at 150-foot intervals along the western Parcel E-2 boundary and along the eastern edge of the existing multilayer geosynthetic cap. Along the southern boundary of Parcel E-2, the landfill is bounded by San Francisco Bay; thus, landfill gas migration cannot occur in this direction and GMPs would not be required.

In addition, the cap across Parcel E-2 would be inspected and maintained to ensure the integrity of the cap and the vegetative layer. Inspection and maintenance procedures will be detailed in the post-closure maintenance plan for Parcel E-2, consistent with requirements as provided in 27 CCR, and submitted for regulatory agency review in conjunction with the RD. The inspection and maintenance procedures will be developed based upon the Navy's experience to date in maintaining the interim cover at the Parcel E-2 Landfill, as well as at similar sites in the San Francisco Bay area. Inspection procedures would involve checking various site conditions, including searching for evidence of burrowing animals. Maintenance actions would include prompt repair of any damage and use of animal control measures to control burrowing animals. Low-impact control measures, such as the installation of raptor perches, would be preferable as opposed to higher impact control measures, such as the use of poisons, to control burrowing animals at Parcel E-2. Similar inspection and maintenance procedures, coupled with low-impact animal control measures, are being implemented at the Site 1 Landfill at the former Naval Air Station Moffett Field and have been demonstrated to be effective in protecting human health and the environment (EPA, 2009).

12.2.3.11. Wetlands Restoration

Tidal wetlands would be restored along the shoreline of the Panhandle Area and made ecologically contiguous with the tidal wetlands being restored at the adjacent property (Yosemite Slough restoration project). Tidal water would be allowed to flow freely across the shoreline in the Panhandle Area to create a tidal wetland. Any potential scouring of the mudflat would be controlled through design features,

including shallow slopes and installation of vegetation. Freshwater wetlands would be restored at a similar location as the existing freshwater wetlands (which will be destroyed during the remedial action), would be underlain by hydric soil and a clay liner, as shown on Figures 12-13 and 12-14. Existing surface drainage that provides hydrologic support for the freshwater wetland would be maintained, and the freshwater supply would be supplemented by the groundwater diversion system (Section 12.2.3.7). It is anticipated that sufficient water would be available to replace the existing freshwater wetland at the selected 1:1 ratio (Appendix O). The freshwater wetlands would include a surface outfall to the drainage ditch along the western Parcel E-2 boundary that would be designed to minimize flooding during storm events.

Wetlands vegetation used for restoration would meet the requirements for the vegetative layer (for example, capable of sustained growth, root depth can be designed not to exceed the top of the low hydraulic conductivity layer, compatible with post-closure land use, and can tolerate soil conditions). Wetlands vegetation is resistant to adverse conditions of climate, disease, and pests; is self propagating; has a high percentage of surface area coverage; and minimizes the need for irrigation and maintenance. However, sustained freshwater and tidal wetlands are dependent on water and the seasonal freshwater wetland requires saturation within 12 inches of the surface to sustain the wetland vegetation.

Stormwater flowing toward Parcel E-2 from the UCSF compound would be intercepted by a drainage ditch north of the new cap, and either diverted to the existing storm sewer system north of Parcel E-2 or conveyed to a discharge point into the freshwater wetlands. Most of the stormwater flowing from the cap would flow south toward San Francisco Bay and be collected in perimeter ditches. The ditches would flow toward inlets located on the southern perimeter of the final cap for discharge to the bay through culverts or for discharge to the freshwater wetlands. Wetlands would be maintained and monitored in accordance with the wetlands mitigation and monitoring plan (Shaw, 2009b).

12.2.4. Alternative 4: Contain Solid Waste, Soil, Sediment, and Groundwater with Hot Spot Removal (including monitoring, institutional controls, and lined freshwater wetlands)

Alternative 4 involves all of the components of Alternative 3, but also includes (1) excavation and off-site disposal of Tier 3, 4, and 5 hot spots (in addition to Tier 1 and 2 hot spots; see Section 12.1.6); (2) containment of contaminated groundwater with a nearshore slurry wall in areas where the landfill waste is within 100 feet of San Francisco Bay; and (3) the contingency to extend the nearshore slurry wall south into the PCB Hot Spot Area. The need for extending the nearshore slurry wall will be assessed in the RD using updated groundwater monitoring data from wells in and around the excavated portion of the PCB Hot Spot Area, which is currently being collected under the BGMP. The groundwater diversion system (consisting of an upgradient slurry wall and subsurface drain) along the west side of the landfill, as proposed under Alternative 3, would minimize hydraulic head buildup behind the nearshore slurry wall.

52	Landfill gas controls	Section 2.9.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.2.3.9, pages 12-28 and 12-29. Record No. 4237.

Data from two groundwater monitoring wells (IR01MW403A and IR01MW403B, located within 100 feet of the proposed subsurface drain, Figure M-1) were reviewed to preliminarily assess the quality of groundwater proposed for diversion to the freshwater wetlands; the RD will refine this assessment, as appropriate. Maps presented in Appendix M indicate that most chemical concentrations at wells IR01MW403A and IR01MW403B do not exceed aquatic evaluation criteria. Low concentrations of several chemicals (cyanide, 4,4'-DDD, and dieldrin) were sporadically detected below laboratory reporting limits but greater than aquatic evaluation criteria; these trends do not suggest that cyanide, 4,4'-DDD, or dieldrin are COECs for the freshwater wetlands. Un-ionized ammonia and sulfide have been consistently detected at concentrations exceeding aquatic evaluation criteria and are considered COECs for the freshwater wetlands. As discussed in Appendix M, both of these anions readily transform to non-toxic compounds upon discharge to oxygenated surface water. The subsurface drain will be designed to ensure that groundwater flow is sufficiently aerated prior to discharge into the freshwater wetlands.

12.2.3.8. Subsurface Drainage System along Southern Perimeter of Landfill Area

Groundwater flow modeling was performed to determine the pumping rate that would be required to prevent head buildup against the proposed shoreline protection along the southern perimeter of the Landfill Area. Based on the groundwater modeling results, a 1-foot thick subdrain gravel blanket and a 6-inch drain pipe would prevent hydraulic build-up against the toe berm underlying the shoreline protection system (Figure 12-4). The drainage system and associated groundwater extraction components would meet leachate collection and control requirements at 22 CCR § 66264.310(b)(2).

The subsurface drainage system would be designed to handle the expected flow rate from groundwater upgradient flow recharge. The system would be equipped with riser pipes, submersible pumps, and a transmission pipeline for discharge to an on-site sanitary sewer manhole (Figure 12-16). A permit to discharge to a publicly owned treatment plant (POTW) would be prepared and submitted prior to construction. A contingency plan for installing a groundwater treatment system unit near Parcel E-2 would also be considered in the event that discharge to the POTW is required to meet pre-treatment standards (outlined in 40 CFR § 403); however, this is considered unlikely considering that, based on over 6 years of operational data, no pre-treatment of extracted groundwater was required for the former GES at the PCB Hot Spot Area (see Section 3.8.3).

12.2.3.9. Landfill Gas Control

Future landfill gas generated within the Landfill Area would be controlled by an active landfill gas collection system that would prevent landfill gas from exceeding regulatory thresholds at compliance points. In the adjacent areas (Panhandle, East Adjacent, and Shoreline Areas), landfill gas is not expected to be generated to a degree that requires collection; however, an investigation will be conducted during

the RD to more thoroughly evaluate soil gas concentrations in the Panhandle, East Adjacent, and Shoreline Areas to determine if gas collection and control (such as passive subsurface venting) is required. Further, it should be noted that wetlands and bay mud are natural sources of methane, hydrogen sulfide, and other gases similar in composition to landfill gases; if not attributed to in-place waste, these gases would not be subject to gas collection requirements.

As stated above, a landfill gas collection system would be installed to actively collect landfill gas from the Landfill Area. The appropriate landfill gas treatment technology, if necessary, will be determined during the RD based on landfill gas data collected from within the landfill. Landfill gas treatment by flare is assumed for costing and evaluating Alternative 3A, and GAC and potassium permanganate treatment is assumed for Alternative 3B. Figure 12-19 shows the conceptual landfill gas collection system. This system would draw landfill gas from the landfill and away from the landfill perimeter to control gas migration. The system would consist of a series of vertical extraction wells spaced sufficiently close together to ensure removal of landfill gas from all solid waste areas, especially near the landfill perimeter. The vertical extraction wells would be connected to a header pipe that would tie the wells together. A blower assembly would create a vacuum in the header pipe that would draw gas to the central collection point located in the southeast corner of the landfill. The collected gas would then be conveyed to the flare or GAC and potassium permanganate treatment system for destruction or treatment, respectively. The header pipe would be installed underground, and all extraction wells would be terminated flush with the ground and have vaults with lockable covers at the surface to discourage vandalism. The subgrade collection header pipe would daylight inside the collection and treatment compound. The area around the gas treatment system would be fenced to restrict public access.

12.2.3.10. Monitoring, Operation, and Maintenance

Landfill gas monitoring is required to meet the RAOs and to demonstrate compliance with 27 CCR §§ 20917 through 20934, "Gas Monitoring and Control at Active and Closed Disposal Sites." The specific landfill gas monitoring program will be determined during the RD and included as part of the Parcel E-2 closure plan. The gas monitoring program will be designed to account for:

- Local soil, rock, and hydrogeological conditions
- Locations of buildings and structures relative to the waste disposal area
- Adjacent land use and inhabitable structures within 1,000 feet of the landfill
- Manmade underground structures, such as vaults
- The nature and age of waste and its potential to generate landfill gas

At a minimum, monitoring would be quarterly for methane and NMOCs at wells around the perimeter of the landfill and at on-site structures, such as buildings, subsurface vaults, utilities, and any other areas where potential gas buildup can occur. The landfill gas monitoring program will primarily be performed

53	**Below-ground barrier and drain along western boundary**	Section 2.9.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.2.3.7, pages 12-27 and 12-28. Record No. 4237.

As discussed above, a geocomposite drainage layer is part of both types of geosynthetic caps for Alternative 3. In addition to providing a drainage path for water infiltrating through the vegetative layer, the geocomposite drainage layer would also deter burrowing animals from penetrating the HDPE geomembrane. The potential for burrowing animals to penetrate a geosynthetic cap is generally considered low by experts in the waste containment industry (Sharma and Lewis, 1992; Karr et al., 1992; Gee and Ward, 1997; AFCEE, 1999); however, this potential cannot be entirely dismissed, thus the geocomposite drainage layer is proposed as an additional deterrent to burrowing animals (to supplement post-closure inspection, maintenance, and animal control measures; see Section 12.2.3.10). The proposed use of a geocomposite drainage layer as an additional deterrent to burrowing animals is similar to approved final designs at several San Francisco Bay area landfill sites (TtEMI, 2005d; IT, 2000; U.S. Department of Energy, 2001). One of the sites, the Site 1 Landfill at the former Naval Air Station Moffett Field, uses regular inspection, maintenance, and low-impact control measures (raptor perches) to effectively manage burrowing animals. The cap at the Site 1 Landfill at the former Naval Air Station Moffett Field has been in place since November 1998 and continues to be protective of human health and the environment (EPA, 2009).

In the restored freshwater wetlands within the Panhandle Area, a 1-foot-thick low-permeability clay liner is proposed to limit potential intrusion of shallow groundwater, which contains chemicals that may be harmful to aquatic wildlife. The clay liner was selected to replace the geosynthetic liner, as proposed in the Draft Final RI/FS Report, because of its improved effectiveness in the presence of shallow groundwater. The geosynthetic cap adjacent to the freshwater wetlands would be keyed into the clay liner to form a continuous low-permeability layer within this portion of the Panhandle Area (Figure 12-2). No cap is proposed for the tidal wetlands area because additional excavation in this area will completely remove contaminated material from 0 to 3 feet bgs, thereby eliminating the exposure pathway for aquatic and terrestrial wildlife and significantly reducing the potential sources to groundwater contamination while integrating the tidal wetlands with the adjoining Yosemite Slough restoration project.

12.2.3.7. Groundwater Diversion System along Western Boundary of Landfill Area

To reduce groundwater flow through the landfill waste, a groundwater diversion system (consisting of an upgradient slurry wall and subsurface drain) would be installed along the western boundary of the Landfill Area, the predominant upgradient source of groundwater entering the landfill. Off-site groundwater would be prevented from flowing directly into the landfill waste by the upgradient slurry wall and would be diverted by the subsurface drain, consisting of a 6-inch-diameter collector pipe buried in a gravel- or sand-filled trench (Figure 12-5). The diverted off-site groundwater would drain by gravity to the newly constructed freshwater wetlands (Figure 12-1). Based on results of preliminary groundwater modeling (Appendix P), the subsurface drain would be placed at approximately 6 feet msl and would drain into the freshwater wetlands, with bottom elevations ranging from 4 to 5 feet msl.

Data from two groundwater monitoring wells (IR01MW403A and IR01MW403B, located within 100 feet of the proposed subsurface drain, Figure M-1) were reviewed to preliminarily assess the quality of groundwater proposed for diversion to the freshwater wetlands; the RD will refine this assessment, as appropriate. Maps presented in Appendix M indicate that most chemical concentrations at wells IR01MW403A and IR01MW403B do not exceed aquatic evaluation criteria. Low concentrations of several chemicals (cyanide, 4,4'-DDD, and dieldrin) were sporadically detected below laboratory reporting limits but greater than aquatic evaluation criteria; these trends do not suggest that cyanide, 4,4'-DDD, or dieldrin are COECs for the freshwater wetlands. Un-ionized ammonia and sulfide have been consistently detected at concentrations exceeding aquatic evaluation criteria and are considered COECs for the freshwater wetlands. As discussed in Appendix M, both of these anions readily transform to non-toxic compounds upon discharge to oxygenated surface water. The subsurface drain will be designed to ensure that groundwater flow is sufficiently aerated prior to discharge into the freshwater wetlands.

12.2.3.8. Subsurface Drainage System along Southern Perimeter of Landfill Area

Groundwater flow modeling was performed to determine the pumping rate that would be required to prevent head buildup against the proposed shoreline protection along the southern perimeter of the Landfill Area. Based on the groundwater modeling results, a 1-foot thick subdrain gravel blanket and a 6-inch drain pipe would prevent hydraulic build-up against the toe berm underlying the shoreline protection system (Figure 12-4). The drainage system and associated groundwater extraction components would meet leachate collection and control requirements at 22 CCR § 66264.310(b)(2).

The subsurface drainage system would be designed to handle the expected flow rate from groundwater upgradient flow recharge. The system would be equipped with riser pipes, submersible pumps, and a transmission pipeline for discharge to an on-site sanitary sewer manhole (Figure 12-16). A permit to discharge to a publicly owned treatment plant (POTW) would be prepared and submitted prior to construction. A contingency plan for installing a groundwater treatment system unit near Parcel E-2 would also be considered in the event that discharge to the POTW is required to meet pre-treatment standards (outlined in 40 CFR § 403); however, this is considered unlikely considering that, based on over 6 years of operational data, no pre-treatment of extracted groundwater was required for the former GES at the PCB Hot Spot Area (see Section 3.8.3).

12.2.3.9. Landfill Gas Control

Future landfill gas generated within the Landfill Area would be controlled by an active landfill gas collection system that would prevent landfill gas from exceeding regulatory thresholds at compliance points. In the adjacent areas (Panhandle, East Adjacent, and Shoreline Areas), landfill gas is not expected to be generated to a degree that requires collection; however, an investigation will be conducted during

54	**Below-ground barrier would be installed near the shoreline**	Section 2.9.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.2.4.2, pages 12-33 and 12-34. Record No. 4237.

- Post-construction monitoring of groundwater and stormwater (discussed in Sections 12.1.2 and 12.1.4, respectively)
- Construction (and subsequent monitoring) of freshwater and tidal wetlands in the Panhandle Area (discussed in Section 12.2.3.11)
- Construction of a groundwater containment system (nearshore slurry wall) to prevent the discharge of contaminated groundwater to the bay (discussed in Section 12.2.4.2)
- Post-construction monitoring of groundwater and stormwater (discussed in Sections 12.1.2 and 12.1.4, respectively)

The subsequent subsections discuss the unique components of this alternative in further detail.

12.2.4.1. Removal of Tiers 1, 2, 3, 4, and 5 Hot Spots

As part of this alternative, Tiers 1, 2, 3, 4, and 5 hot spots would be removed, as shown on Figure 12-20, in conjunction with the shoreline excavation and grading processes described in Sections 12.1.3 and 12.2.3.4, respectively. Following screening for and segregation of radiologically impacted material (which would be disposed of off site), hot spots would be excavated and disposed of off-site; material excavated as part of the overall grading process would be incorporated into the landfill under the new cap extension. The Tier 1 through 5 hot spot excavations entail the removal and off-site disposal of approximately 33,500 cubic yards of contaminated material. Additional information on the identification of Tier 1 through 5 hot spots is provided in Section 12.1.6.

12.2.4.2. Groundwater Containment System

Alternative 4 would involve construction of a groundwater containment system consisting of (1) a nearshore slurry wall hydraulically downgradient of the landfill where wastes are within 100 feet of San Francisco Bay; (2) a groundwater diversion system (consisting of an upgradient slurry wall and subsurface drain) along the west side of the landfill to minimize hydraulic head buildup behind the nearshore slurry wall; and (3) a contingency to extend the nearshore slurry wall into the East Adjacent Area (hydraulically downgradient of the PCB Hot Spot Area). The need to extend the nearshore slurry wall will be assessed in the RD using updated groundwater monitoring data, which are currently being collected under the BGMP from wells in and around the excavated portion of the PCB Hot Spot Area. While the subsurface drainage system and associated groundwater extraction components meet the leachate collection and control requirements at 22 CCR § 66264.310(b)(2), the groundwater containment system is included in Alternative 4 to thoroughly evaluate the potential options needed to prevent discharge of COECs in groundwater at concentrations exceeding the chemical-specific ARARs for surface water (described in Section 10.1.2). As discussed in Section 9.3, the identified chemicals in groundwater that may pose a risk to aquatic wildlife in the bay (Appendix M) are considered COECs (that is, of chemicals of ecological concern) given the conservative nature of the risk analysis performed for that pathway.

The conceptual design for the groundwater containment system is shown on Figure 12-20. The location of the nearshore slurry wall downgradient of the landfill waste is shown, relative to other components of the containment system, on Figure 12-2 (Section B). The location of the contingency nearshore slurry wall downgradient of the PCB Hot Spot Area is shown on Figure 12-2 (Section A). As discussed in Section 12.2.3.7, the groundwater diversion system would consist of an upgradient slurry wall designed to impede upgradient groundwater flowing from off-site and a subsurface drain that would direct the off-site groundwater to the newly constructed freshwater wetlands.

Installation of the slurry walls would require trenching 10 to 15 feet below the groundwater table to key the barrier into the Bay Mud aquitard. The slurry walls could be installed in saturated conditions without extensive dewatering; however, installation would need to account for the potential presence of large debris and irregular subsurface voids by contingency planning; for example, performing pre-design studies to identify subsurface irregularities, planning for potential realignment of the wall if large debris is encountered, and providing surplus slurry material to account for irregular subsurface voids. Such techniques were previously used at Parcel E-2 during construction of the GES and the interim gas control system.

12.2.5. Alternative 5: Contain Solid Waste, Soil, Sediment, and Groundwater with Hot Spot Removal (including monitoring, institutional controls, and unlined freshwater wetlands)

Alternative 5 involves all of the components of Alternative 4, but eliminates the 1-foot-thick clay liner within the proposed freshwater wetland and replaces it with an additional 1 foot of hydric soil (Figures 12-14 and 12-21). Alternative 5 was developed to evaluate the relative advantages of unlined freshwater wetlands as compared with the lined freshwater wetlands proposed under Alternatives 3 and 4. This alternative would provide a comprehensive closure strategy for Parcel E-2 similar to Alternative 4, but would promote a more natural hydrological function within the freshwater wetland (i.e., allowing interaction between surface water and underlying groundwater).

Figures 12-1 and 12-21 show the conceptual grading and excavation plans, respectively, for Alternative 5. The grading of solid waste, soil, and sediment would be required to create stable slopes in the Shoreline Area and allow for wetland creation in the Panhandle Area.

Two variations of Alternative 5 (5A and 5B) are presented in the evaluation and cost tables in Appendix R. Alternatives 5A and 5B are identical to Alternatives 3A and 3B presented in Alternative 3 and, as described in Section 12.2.3, describe two landfill gas treatment options: destruction by flare (Alternative 5A) and adsorption by GAC and a potassium permanganate medium (Alternative 5B).

55	**Groundwater would be pumped and treated if necessary**	Section 2.9.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.2.3.8, page 12-28. Record No. 4237.

Data from two groundwater monitoring wells (IR01MW403A and IR01MW403B, located within 100 feet of the proposed subsurface drain, Figure M-1) were reviewed to preliminarily assess the quality of groundwater proposed for diversion to the freshwater wetlands; the RD will refine this assessment, as appropriate. Maps presented in Appendix M indicate that most chemical concentrations at wells IR01MW403A and IR01MW403B do not exceed aquatic evaluation criteria. Low concentrations of several chemicals (cyanide, 4,4'-DDD, and dieldrin) were sporadically detected below laboratory reporting limits but greater than aquatic evaluation criteria; these trends do not suggest that cyanide, 4,4'-DDD, or dieldrin are COECs for the freshwater wetlands. Un-ionized ammonia and sulfide have been consistently detected at concentrations exceeding aquatic evaluation criteria and are considered COECs for the freshwater wetlands. As discussed in Appendix M, both of these anions readily transform to non-toxic compounds upon discharge to oxygenated surface water. The subsurface drain will be designed to ensure that groundwater flow is sufficiently aerated prior to discharge into the freshwater wetlands.

12.2.3.8. Subsurface Drainage System along Southern Perimeter of Landfill Area

Groundwater flow modeling was performed to determine the pumping rate that would be required to prevent head buildup against the proposed shoreline protection along the southern perimeter of the Landfill Area. Based on the groundwater modeling results, a 1-foot thick subdrain gravel blanket and a 6-inch drain pipe would prevent hydraulic build-up against the toe berm underlying the shoreline protection system (Figure 12-4). The drainage system and associated groundwater extraction components would meet leachate collection and control requirements at 22 CCR § 66264.310(b)(2).

The subsurface drainage system would be designed to handle the expected flow rate from groundwater upgradient flow recharge. The system would be equipped with riser pipes, submersible pumps, and a transmission pipeline for discharge to an on-site sanitary sewer manhole (Figure 12-16). A permit to discharge to a publicly owned treatment plant (POTW) would be prepared and submitted prior to construction. A contingency plan for installing a groundwater treatment system unit near Parcel E-2 would also be considered in the event that discharge to the POTW is required to meet pre-treatment standards (outlined in 40 CFR § 403); however, this is considered unlikely considering that, based on over 6 years of operational data, no pre-treatment of extracted groundwater was required for the former GES at the PCB Hot Spot Area (see Section 3.8.3).

12.2.3.9. Landfill Gas Control

Future landfill gas generated within the Landfill Area would be controlled by an active landfill gas collection system that would prevent landfill gas from exceeding regulatory thresholds at compliance points. In the adjacent areas (Panhandle, East Adjacent, and Shoreline Areas), landfill gas is not expected to be generated to a degree that requires collection; however, an investigation will be conducted during

56	**Control soil movement during maximum probable earthquake**	Section 2.9.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.2.3.1, page 12-23. Record No. 4237.

- Decommissioning of the existing gas control system and installation (and subsequent maintenance) of an active gas collection system with treatment using a flare (Alternative 3A) or GAC and potassium permanganate (Alternative 3B)
- Installation of stormwater and erosion controls (discussed in Section 12.1.4)
- Post-construction landfill cap inspection and maintenance, and monitoring of landfill gas
- Post-construction monitoring of groundwater and stormwater (discussed in Sections 12.1.2 and 12.1.4, respectively)
- Construction (and subsequent monitoring) of freshwater and tidal wetlands in the Panhandle Area

The subsequent subsections discuss the various components of this alternative in further detail.

12.2.3.1. Seismic Design of Containment System

The seismic design of the containment system planned for Alternative 3 will use information from (1) the 2002 liquefaction potential study at Parcel E-2 (Appendix C to this report), and (2) the qualitative slope stability analyses performed as part of this RI/FS Report (Appendix Q). Alternative 3 includes construction of a toe berm along the southern perimeter of the Landfill Area to stabilize the proposed cap (Figure 12-4). As presented in Appendix C, the potential exists for liquefaction of sand and silt fill materials underlying the perimeter of the Landfill Area during the maximum probable earthquake (a magnitude 7.9 earthquake on the San Andreas Fault Peninsula Segment, centered 12 kilometers from Parcel E-2; see Appendix C). Such liquefaction could affect the stability of the proposed toe berm, which in turn could affect the stability of the proposed cap; therefore, a qualitative slope stability analysis was performed for the toe berm based on residual shear strength within sand and silt fill resulting from liquefaction (Appendix Q).

Results of an iterative slope stability analysis determined that a Tensar® UX1500HS or equivalent geogrid with a long-term design tensile strength of 3,100 pounds per foot should be placed under the proposed toe berm, and should extend upslope to an appropriate anchor point within the proposed landfill cap; this conceptual design would meet or exceed design standards prescribed in EPA guidance (EPA, 1995b). This geogrid layer was added under the toe berm proposed for Alternative 3 (Figure 12-4). Because the analyses presented in Appendix Q are a qualitative assessment of the proposed toe berm evaluated in the FS, a quantitative slope stability analysis will be performed as part of the RD. The Navy plans to collect soil samples along the base of the proposed toe berm and to perform shear strength tests (and other appropriate geotechnical analyses) to support the quantitative slope stability analysis in the RD. The proposed sampling and geotechnical analyses would be detailed in a work plan to be reviewed by the regulatory agencies prior to implementation.

57	**Potential rise in sea level**	Section 2.9.2	Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco, California. ERRG and Shaw. May 2011. Section 12.1.3, pages 12-5 through 12-7. Record No. 4237.

suite of monitoring parameters will be made in consultation with the regulatory agencies during either the annual evaluations or the CERCLA 5-year reviews.

For the purposes of costing and evaluating alternatives in this FS, it is assumed that 13 A-aquifer and 3 B-aquifer monitoring wells located in and around the Landfill Area will require long-term monitoring and will be sampled for the same parameters as specified in the current monitoring plan. In addition, it is assumed that 22 A-aquifer and 7 B-aquifer wells in the adjacent areas will require long-term monitoring, and will be sampled for analysis of chemical parameters specific to the area of concern (e.g., metals, PCBs, SVOCs, and TPH). For evaluation purposes, the monitoring frequency is assumed as semiannually for 5 years and annually for 25 years; this assumption would allow for changes to the monitoring frequency to be integrated with the CERCLA 5-year reviews. The 30-year monitoring period was selected based on the assumed post-closure monitoring period; however, this monitoring period may be adjusted, as appropriate, to account for pre-closure monitoring. In addition, groundwater monitoring results for the PCB Hot Spot Area will be evaluated in the RD to determine if the groundwater containment structure needs to be extended south to prevent discharge to the bay.

12.1.3. Completion of the Shoreline Protection (with Removal of Solid Waste, Soil, and Sediment)

Shoreline protection will be required under Alternatives 2, 3, 4, and 5 to control erosion from tidal and wave action from San Francisco Bay. In areas proposed for tidal wetlands restoration (under Alternatives 2, 3, 4, and 5), shoreline protection would consist of a combination of wetland vegetation and low-profile rock structures with the objective of maintaining the integrity of the restored surfaces following remediation. For Alternative 2, which involves extensive excavation throughout Parcel E-2, these shoreline protection measures would be implemented along the entire Shoreline Area. For Alternatives 3, 4, and 5, these shoreline protection measures would be implemented at the southern portion of the Panhandle Area (and adjoining portions of the Shoreline Area), where expanded excavation would be performed to facilitate construction of tidal wetlands.

In areas not proposed for tidal wetlands restoration, Alternatives 3, 4, and 5 include a more extensive shoreline protection system, consisting of rock revetment underlain by compacted soil and a geosynthetic cap, to maintain the integrity of the containment systems (see Figure 12-1). Also, existing solid waste, soil, and sediment along the shoreline would be removed and consolidated on site prior to construction of the shoreline protection system or, in the case of the southern portion of the Panhandle Area, prior to construction of the tidal wetlands. The excavation depths along the shoreline would vary between approximately 2 and 5 feet, as shown on Figures 12-2 and 12-3.

At the southeastern portion of the Landfill Area, solid waste along the shoreline would be removed and consolidated on site prior to construction of the shoreline protection system. The geosynthetic cap

underlying the rock revetment and soil would be tied into the geosynthetic cap to be installed in the Landfill Area, East Adjacent Area, and the portions of the Panhandle Area outside of the tidal wetlands. Figure 12-4 depicts the tie-in of the multilayer geosynthetic cap in the Landfill Area with the shoreline protection system. Figure 12-2 depicts the tie-in of the geosynthetic cap in the Panhandle Area and East Adjacent Area with the shoreline protection system. The toe of the new landfill slope would generally be inward of the existing slope to allow placement of the shoreline protection and minimize filling of the bay. The landfill slope would be reconstructed at a 3:1 (horizontal:vertical) slope extending upward to where it intersects a future perimeter road (Figure 12-1). A 12- to 15-foot-wide bench would be provided for the future perimeter road that will dually serve as a maintenance access road and pedestrian walkway as a connection to the Bay Trail from the adjacent Yosemite Slough Restoration Project. South of the future perimeter road, the slope would be constructed to a 3:1 slope down to existing ground along the bay shoreline in that portion of Parcel E-2. Excavated material from this area would be placed at the northern portion of the landfill before a multilayer cap is installed.

Shoreline protection for Alternatives 3, 4, and 5 would include compacted soil and rock revetment, on the outer face of the soil, to an elevation above the highest observed water level in the bay (approximately 8.16 feet above the mean lower low water; 5.04 feet above msl). As shown on Figure 12-2, the top elevation of the shoreline protection system is approximately 15 feet above msl, or about 12 feet above the mean high tide level. This design provides an adequate level of shoreline protection, which based on the most recent estimates from the Intergovernmental Panel on Climate Change (IPCC) can reasonably accommodate rising sea levels over the next 100 years. The following excerpt from Church et al. (2008) summarizes the most recent IPCC estimates of global sea level rise: "The IPCC provides the most authoritative information on projected sea-level change. The IPCC Third Assessment Report of 2001 (Church et al., 2001) projected a global-averaged sea-level rise of between 20 and 70 centimeters (cm) between 1990 and 2100 using the full range of IPCC greenhouse gas scenarios and a range of climate models. When an additional uncertainty for land-ice changes was included, the full range of projected sea-level rise was 9–88 cm. For the IPCC's Fourth Assessment Report (Meehl et al., 2007), the range of sea-level projections, using a larger range of models, is 18–59 cm (90% confidence limits) over the period from 1980–1999 to 2090–2099 (Meehl et al., 2007)." Based on the IPCC estimates, the estimated maximum sea level rise in 2100 (88 centimeters or 2.9 feet) is much lower than the 11 to 12 vertical feet of shoreline protection provided in the preliminary FS design. The shoreline protection system will be further evaluated in the RD relative to several factors including, but not limited to, potential rise in sea level.

The toe of the shoreline protection system would generally match the existing toe to minimize filling of the bay. The design would also include sufficient soil fill to provide buttress support to the solid waste along the perimeter. The shoreline protection would be designed for stability under static loading

conditions and during earthquakes. Seismic design considerations for Alternatives 3 and 4 are discussed in Section 12.2.3.1.

12.1.4. Stormwater Discharge Management and Monitoring

Existing stormwater discharge from Parcel E-2 is subject to the requirements of the SWDMP (MARRS and MACTEC, 2009b). This plan specifies implementation of BMPs and monitoring to ensure that surface water discharges from the Parcel E-2 Landfill do not pose an unacceptable risk to aquatic life in San Francisco Bay. The SWDMP is updated annually based on site inspection and monitoring results. Under Alternatives 2, 3, 4, and 5, this process is anticipated to continue through remedial action implementation and long-term operation and maintenance.

Additional short-term considerations would be required during the construction phase of Alternatives 2, 3, 4, and 5, in accordance with the substantive provisions of SWRCB Order 99-08 entitled "Stormwater Discharge Associated with Construction Activities" (SWRCB, 1999). These provisions include implementation of BMPs to prevent stormwater from contacting construction pollutants and prevent erosion products from migrating off site. The BMPs likely to be used during construction include minimization of bare soil areas; use of topsoil conservation; placement of straw bale and straw waddle; mulching; seeding; slope cultivation; stabilization of construction entrances; and use of temporary crushed rock roads, temporary berms, filter screens, and sedimentation basins. The specific measures to be used will be determined as part of the RD and associated planning documents (e.g., a stormwater pollution prevention plan).

For Alternative 2, erosion protection in the Shoreline Area was described in Section 12.1.3. Erosion protection and stormwater controls in the Landfill, Panhandle, and East Adjacent Areas include vegetative cover and mats to maintain the integrity of the restored surfaces following remediation. These controls are considered adequate because the final slopes for Alternative 2 would be designed to eliminate areas with steep slopes, thereby minimizing erosion potential.

For Alternatives 3, 4, and 5, stormwater and erosion controls are required for the closed landfill under 27 CCR § 20365(c) and (d), which requires that diversion and drainage facilities be designed, constructed, and maintained to accommodate the anticipated volume of precipitation and peak flows. Solid waste would not be exposed to stormwater in capped areas, and erosion controls would be used to maintain the integrity of the containment structures and prevent sediment discharge above allowable limits. These goals would primarily be accomplished through vegetation and site grading to control stormwater overland flow velocities (slower flow velocities generally have less erosion potential). The final Parcel E-2 grades would be designed to prevent stormwater run-on onto the cap from surrounding areas and to prevent ponding (except in wetland areas) and erosion in other areas. Drainage from capped areas would be directed to designated locations that discharge into the newly constructed freshwater

Final

Community Involvement Plan

Hunters Point Shipyard
San Francisco, California

NAVFAC Southwest CLEAN IV Program

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Base Realignment and Closure (BRAC)
Program Management Office West

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Executive Summary

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An important part of the Department of the Navy's environmental cleanup program at former Hunters Point Shipyard (**HPS**) includes informing and involving the community in cleanup discussions. This Community Involvement Plan (**CIP**) presents the Navy's plans to inform and involve the community in the environmental cleanup program moving forward based on feedback obtained from the HPS community about past communication and community involvement program activities. The activities presented in the CIP for HPS go beyond the minimum requirements for community involvement set forth in the National Oil and Hazardous Substances Pollution Contingency Plan (known as the National Contingency Plan, or **NCP**). The CIP adheres to the applicable regulatory guidance from the Navy and United States Environmental Protection Agency (**U.S. EPA**). The CIP is also a resource for general information on the Navy's cleanup and whom to contact for further information.

From 1994 through 2009, the primary means of community involvement was the Navy's Restoration Advisory Board (**RAB**). Although the RAB was dissolved in December 2009 because it was no longer fulfilling its purpose, the Navy continues to involve the community in the details of the HPS environmental cleanup program. The Navy believes this CIP presents communication and community involvement program activities that will meet the specific needs and desires of the HPS community.

Executive Summary (continued)

Overview of Community Interviews and Feedback

During the summer of 2010, the Navy interviewed 73 members of the HPS community, defined as ZIP codes 94107, 94124, and 94134. Historically, these ZIP codes have been used to define the HPS community for the purpose of local contracting and community involvement efforts, such as establishing a mailing list. These three ZIP codes were used to define the HPS community because they comprise the majority of District 10 in the City and County of San Francisco and are served by one Supervisor. In addition, the Navy is attempting to reach out to as many people impacted by environmental conditions as possible, and these three ZIP codes are nearest to the shipyard.

The Navy went to significant lengths to ensure the most comprehensive survey practicable. The interviews focused on gathering feedback about the community's cleanup interests and concerns, as well as communication needs and preferences to help design this CIP to be more effective for the HPS community. The following six recurring themes surfaced during the interviews:

Theme 1. The Navy's communication with the HPS community about the environmental cleanup program has not been effective.

Theme 2. General information about the Navy's environmental cleanup program at HPS is lacking.

Theme 3. The HPS community is diverse, resulting in varied concerns, communication preferences, and needs.

Theme 4. The difference between the Navy's HPS environmental cleanup program and the San Francisco Redevelopment Agency's (**SFRA's**) redevelopment of HPS has not been made clear.

Theme 5. Health is a primary concern for most segments of the community.

Theme 6. Coordinating with established community members to conduct involvement may be a good way to reach all sectors of the community.

Overview of the Navy's Community Involvement Program Actions and Activities

Prior to developing a plan of action, the Navy considered the themes in the community feedback, reviewed applicable Navy and U.S. EPA guidance for community involvement, and evaluated what works well for other similar environmental cleanup programs. The Navy has developed a plan of action to ensure the success of the CIP for the HPS community. The Navy's objectives in its community involvement activities include the following:

- Work with the community to communicate information in a way that is transparent and in a way that the community wants to receive it
- Get information out early, and make sure it is easy to understand and translated as needed
- Respond to the community's concerns, ideas, and information and show how they are used in making decisions about the environmental cleanup

Executive Summary (continued)

The Navy will track action items at meetings and respond to questions and comments. Frequently asked questions (**FAQs**) and responses will be posted on the Navy's Web site and brought to meetings as a handout, if appropriate. If written formal comments are received on any document, the Navy will respond to those comments in writing and include the responses in the next version of the document that also contains the applicable revisions.

Some of the actions and activities in this updated CIP for improving community involvement in the HPS cleanup include:

- Preparing short fact sheets with general information, such as the status of cleanup, and distributing them on the Internet, in the mail, and by having community members give them to their neighbors
- Conducting regularly scheduled community meetings
- Giving presentations at small group meetings (such as tenant associations and churches)
- Working with established community members to spread information and invite community members to participate in the HPS environmental cleanup discussions (referred to as "grassroots outreach")
- Participating in local radio shows, including multi-lingual shows, and answering questions from call-in listeners
- Providing tours of HPS for those who are curious about what the property currently looks like and to see any ongoing environmental cleanup work
- Using a Web site and social media outlets such as Facebook to reach people who are online regularly and prefer electronic communication
- Publishing a calendar of community involvement program activities so community members can plan ahead to participate
- Providing a telephone hotline with a recorded update of activities, and also allow callers to leave a message

The Navy will seek feedback during community involvement events about whether community members are getting the engagement they need. The goals for each activity will be evaluated on a yearly basis by the Navy's Community Involvement Manager to ensure that they are being met. The Navy will also distribute a survey to the mailing list to evaluate the community involvement program every two years. The findings of this survey will be documented in a memorandum that will be included in the Administrative Record for HPS. The survey and documentation will comply with 32 Code of Federal Regulations (**CFR**) 202.10. The Navy will periodically review this CIP and update it accordingly.

Overview of the Navy's Environmental Cleanup Program at HPS and Opportunities for Public Involvement

A general understanding of the Navy's environmental cleanup program is helpful to the HPS community when providing input on the cleanup. To help the HPS community understand the Navy's cleanup process, this CIP includes a chapter that discusses the historical operations at HPS that resulted in contamination. The Navy is actively conducting environmental investigations and cleanup at HPS to

Executive Summary (continued)

protect human health and the environment and to prepare the property to be transferred to the SFRA. The shipyard is divided into parcels that are in various stages of environmental investigation and cleanup. The cleanup status at these parcels is often discussed during meetings and presented in technical reports.

Overview of Environmental Cleanup Roles and Responsibilities

The Navy is responsible for the environmental cleanup at HPS; however, government agencies oversee the regulations for the cleanup process. These agencies are collectively referred to as "the regulatory agencies," and are important resources for the HPS community. The responsibility of the regulatory agencies is to review the Navy's plans and work at HPS to make sure regulations are followed. The primary regulatory agencies actively involved at HPS include the following:

- U.S. EPA
- California Environmental Protection Agency, Department of Toxic Substances Control (**DTSC**)
- San Francisco Bay Regional Water Quality Control Board (**Water Board**)

In addition, the SFRA is responsible for redeveloping HPS. The San Francisco Department of Public Health (**SFDPH**) is another agency providing input to the Navy's cleanup of HPS.

The HPS community plays an active role in the Navy's environmental cleanup program by providing input to the regulatory agencies and the Navy on cleanup alternatives and selection of remedies. When it comes to concerns and interests related to the current or future redevelopment of the property, the community is responsible for communicating directly with the SFRA.

Chapter 1: Introduction

The Department of the Navy and United States Environmental Protection Agency (**U.S. EPA**) recognize that Americans have the right to be involved in government decisions that affect their lives. Public involvement in the cleanup process results in a better outcome and a more robust cleanup. In addition to meeting the minimum requirements for community involvement set forth in the National Oil and Hazardous Substances Pollution Contingency Plan (known as the National Contingency Plan, or **NCP**), the primary purpose of this Hunters Point Shipyard (**HPS**) Community Involvement Plan (**CIP**) includes the following:

- Summarize concerns found through the community interview process
- Outline the actions that the Navy will use to achieve the community involvement program
- Incorporate community issues and concerns more effectively into cleanup decisions
- Serve as a resource for general information on the HPS environmental cleanup and provide guidance on where to obtain more information

"Environmental justice" is the fair treatment and meaningful involvement of all people in the development, implementation, and enforcement of environmental laws, regulations, and policies. Race, economic status and social status should not be barriers to becoming involved. The Navy is mindful of the diverse community representing numerous racial, economic and social groups that immediately surrounds HPS and takes steps to reach and engage all segments of the community. Demographic information for the HPS community is provided in Appendix D.

At HPS, the Navy has incorporated the principles of environmental justice into the planning and preparation of this Community Involvement Plan. The Navy is addressing environmental justice through its outreach efforts, public participation process, and by providing access to information in a variety of ways. This includes providing information, as needed, in other languages.

Community members are encouraged to be involved in the cleanup process by providing feedback and information on an ongoing basis. The Navy acknowledges that community members, especially long-time residents, have knowledge about HPS activities which may assist the cleanup activities.

From 1994 until 2009, the Navy maintained a Restoration Advisory Board (**RAB**) at HPS. The purpose of the RAB was to (1) provide an expanded opportunity for community involvement in the environmental cleanup process, (2) act as a forum for the discussion and exchange of information about the environmental cleanup program, and (3) provide RAB members an opportunity to review progress and participate in discussions about the environmental cleanup with the cleanup decision makers. At one time, the RAB was a main component of the Navy's community involvement program. On a voluntary basis, RAB members contributed their time and energy to improving the Navy's environmental cleanup program at HPS.

In December 2009, the Navy, in consultation with the government agencies responsible for overseeing the cleanup process at HPS (which include the U.S. EPA, the California Department of Toxic Substances Control [**DTSC**], and the San Francisco Bay Regional Water Quality Control Board [**Water Board**], referred to in this CIP as "the regulatory agencies") determined that the RAB was no longer fulfilling its purpose, and the RAB was dissolved (for more information on the

Chapter 1: Introduction (continued)

dissolution of the RAB, see Appendix E). The Navy Installation Commander is required by the RAB Rule to assess community interest every 24 months to determine (1) if the cause for dissolution has been resolved, and (2) if there is community interest in reestablishing a RAB per the RAB Rule Handbook (2007). This new CIP meets this initial requirement in assessing community interest (for a list of community involvement program actions since the RAB was dissolved, see Appendix E).

The Navy is committed to keeping the community engaged in the environmental cleanup program at HPS. Part of that commitment includes preparing this CIP to plan the path forward for community involvement at HPS. This CIP presents communication and community involvement program activities to meet the specific needs of the HPS community.

The Navy will seek feedback during community involvement events about whether community members are getting the engagement they need. The goals for each activity will be evaluated on a yearly basis by the Navy's Community Involvement Manager to ensure that they are being met. The Navy will also distribute a survey to the HPS community involvement program mailing list to evaluate the program every two years. The findings of this survey will be documented in a memorandum that is included in the Administrative Record for HPS. The survey and documentation will comply with 32 CFR 202.10. The Navy will periodically review this CIP and update it accordingly.

/KI·LJúŜN¢H of this document describes the issues and concerns identified during the community interview process that the Navy conducted in 2010. /KI·LJúŜN¢o outlines the Navy's plans for the community involvement program, including specific activities to be conducted. /KI·LJúŜN¢n provides a history and timeline of HPS and also describes the status of the Navy's environmental cleanup program; it includes maps and a table of planned environmental milestones and related community involvement program activities. /KI·LJúŜN¢p describes the roles and responsibilities of the agencies involved in the environmental cleanup at HPS, including the transfer process. /KI·LJúŜN¢c presents the references cited in this plan.

!LJLJŜyŘλÈ¢! provides various resources for health-related concerns. !LJLJŜyŘλÈ¢. provides contact information so you can directly contact Navy and regulatory agency members working on the HPS project as well as other government officials. !LJLJŜyŘλÈ¢/ provides a list of all the organizations interviewed, the questions they were asked, and selected statements made by interviewees. !LJLJŜyŘλÈ¢5 provides census data on the population, race, age, education, average income, employment, and housing for the HPS community. !LJLJŜyŘλÈ¢9 provides information on the Navy's former RAB, and the details of the dissolution of the RAB. !LJLJŜyŘλÈ¢C provides a list of recent community involvement activities conducted by the Navy. !LJLJŜyŘλÈ¢D provides a list and some details about the regulations and guidance for conducting community involvement. !LJLJŜyŘλÈ¢I provides a list of media useful to reach the HPS community, as well as locations for holding meetings and posting flyers about involvement activities. !LJLJŜyŘλÈ¢L defines the acronyms and abbreviations used in this document. !LJLJŜyŘλÈ¢W provides the Navy's responses to the regulatory agency and public comments received on the draft version of this document. When applicable, the response also provides information on how this CIP was revised to incorpate the comment.

Chapter 2: Community Interviews and Feedback

Community interviews help the Navy to better understand the community's issues and concerns. The Navy went to significant lengths to gather interview candiates for this CIP, mailed postcards to residents, and contacted interested stakeholders to ensure that they had the most comprehensive interview list practicable.

The Navy conducted 73 interviews in 2010 with people who live in, work in, or serve the HPS community—defined as ZIP codes 94107, 94124, and 94134. Appendix C includes a breakdown of the interviewees by ZIP code.

Historically, these ZIP codes have been used to define the HPS community for the purpose of local contracting and community involvement efforts such as establishing a mailing list. These three ZIP codes were used to define the HPS community because they comprise the majority of District 10 in the City and County of San Francisco and are served by one Supervisor. In addition, the Navy is attempting to reach out to as many people impacted by environmental conditions as possible, and these three ZIP codes are nearest to the shipyard.

Interviewees were asked approximately 29 questions from a questionnaire that was created in advance with input from the regulatory agencies. The interviews were conducted in a discussion format. Each interviewee was encouraged to discuss his or her interests, concerns, and ideas, and some questions were occasionally unanswered as a result. A Navy representative and a contractor responsible for taking notes were present at each interview. At least one and up to four regulatory agency representatives were also present during all but one of the 73 interviews. For a list of all of the organizations interviewed and the full list of questions, see Appendix C.

The community wants the cleanup to be completed in a way that protects the current community and all future users and neighbors of HPS. The Navy and regulators share this goal with the community and are committed to involving the community in the cleanup process. The team will work with the community to ensure that the cleanup results are protective for current and future inhabitants and neighbors. The following six themes summarize the community concerns and opinions about public participation in the cleanup process that were revealed in the

Overview of Interviewees

73 interviews conducted from June 15 to September 9, 2010:

- *10 interviews by phone*
- *63 interviews in person*

Average time interviewees have lived or worked in the HPS community area:

- *20 years*

Self-described knowledge of the cleanup program:

- *A little bit: 37*
- *A lot: 26*
- *Nothing/No response: 10*

35 interviewees had attended Navy events or provided input to the Navy on the cleanup program.

Categories of Interviewees:

- *Civic Groups/Clubs and Organizations: 34*
- *Local Residents: 31*
- *Environmental Groups/ Activists: 15*
- *Former RAB Members: 12*
- *Local Business: 11*
- *Educators/Childcare: 6*
- *Media: 3*
- *Health Providers: 2*
- *Elected Official: 1*

(Some interviewees represented multiple categories; therefore, total is greater than 73.)

Chapter 2: Community Interviews and Feedback (continued)

interviews. The Navy's plan to address these themes is discussed in Chapter 3 –Community Involvement Actions and Activities.

Theme 1. **The Navy's communication with the HPS community about the environmental cleanup program has not been effective.** The majority of interviewees said they think the Navy's communication has not been effective; many people said they do not know what is going on at HPS.

Theme 2. **General information about the Navy's environmental cleanup program at HPS is lacking.** Most interviewees said they would like general information about the cleanup at HPS but do not know where to find it. General information includes an overview of the program, the responsibilities of the people working on the cleanup, a timeline, and the status of work.

Theme 3. **The HPS community is diverse, resulting in varied concerns, communication preferences, and needs.** No single involvement method exists to communicate with all of the stakeholders in the HPS community. Various segments of the community include those who:

a. Have Internet access, and those who do not
b. Do not speak English
c. Want general information, and those who want technical details
d. Live right next to the Base, and those who live in the outlying community
e. Prefer discussions and two-way information, and those who just want an update

Theme 4. **The difference between the Navy's HPS environmental cleanup program and the San Francisco Redevelopment Agency's (SFRA's) redevelopment of HPS has not been made clear.** Many interviewees did not know that the Navy is still doing work on HPS; others thought the Navy is conducting the current redevelopment on a transferred parcel (known as Parcel A), when in fact it is the SFRA that now owns and controls development of Parcel A. In addition, confusion exists about the Navy's role in the selection of the SFRA's master developer.

Theme 5. **Health is a primary concern for most segments of the community.** Interviewees were concerned that contamination at HPS is affecting their health, and they noted high rates of cancer and asthma in the area. Interviewees were also concerned that contamination at HPS will have negative health effects in the future, especially for people who will live on former HPS property.

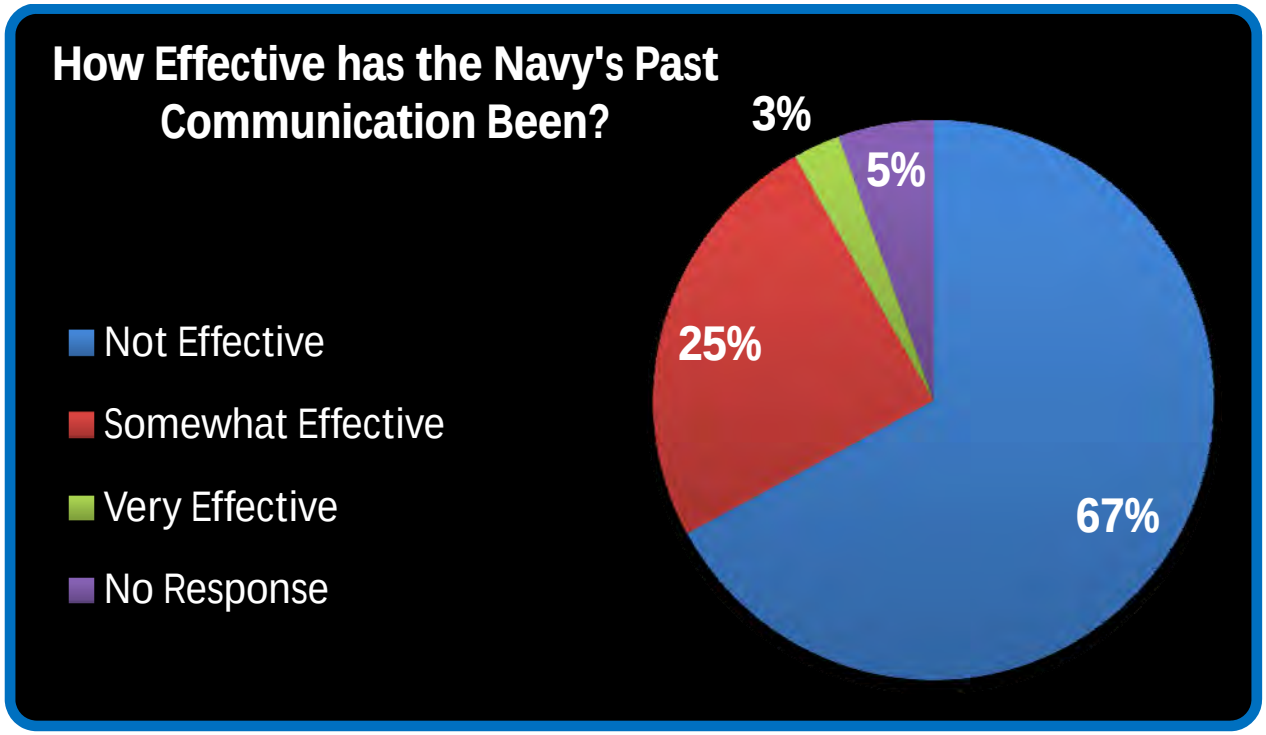
Theme 6. **Coordinating with established community members to conduct involvement activities may be a good way to reach all sectors of the community.** Some interviewees felt that the HPS community distrusts the Navy. It was suggested that the Navy work more closely with members from various sectors of the community who can relay information about the cleanup directly to their neighborhoods. This communication method was identified as the best way to inform members of every part of the community.

Chapter 2: Community Interviews and Feedback (continued)

The following subsections present a summary of the questions asked of the interviewees. Each interviewee was encouraged to discuss his or her interests, concerns, and ideas; some questions were occasionally unanswered as a result.

Effectiveness of the Navy's Communication

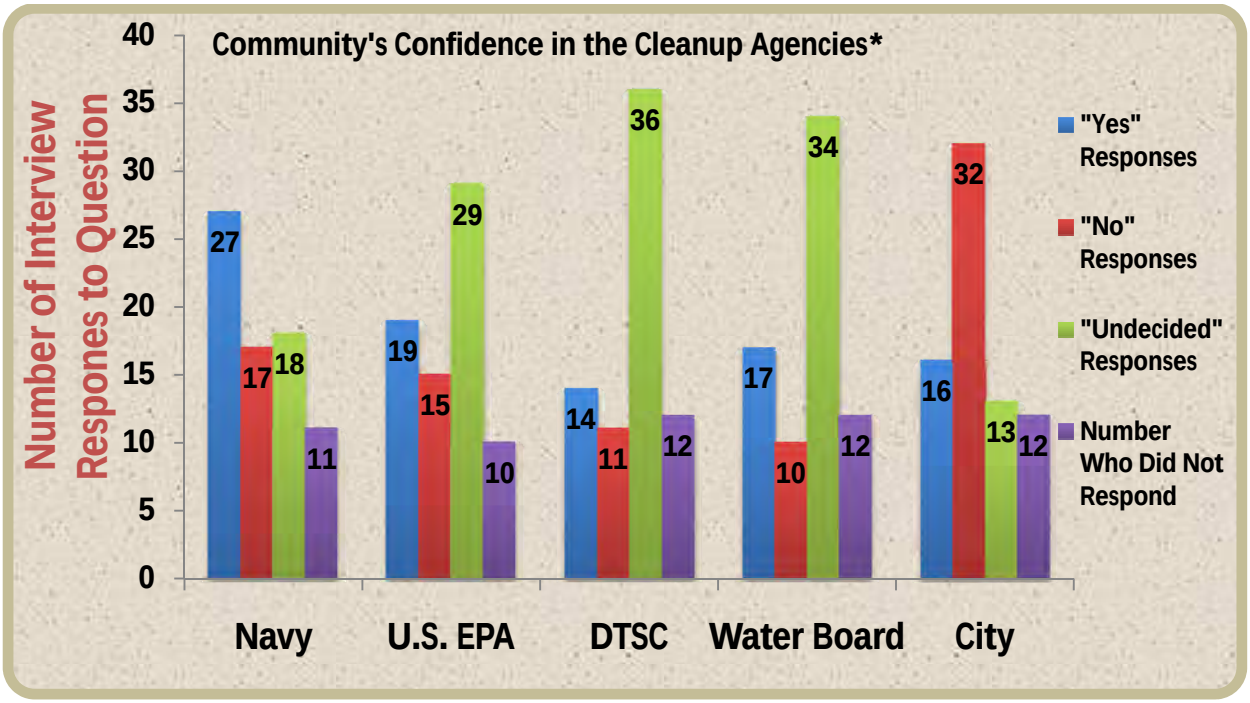
Interviewees were asked if they think the Navy's communication about the environmental cleanup program has been effective. The following chart presents the percentages of interviewees responses. The chart confirms that most interviewees felt the Navy did not effectively communicate with the public in the past.



Chapter 2: Community Interviews and Feedback (continued)

Confidence in the Navy, Regulatory Agencies, and the City of San Francisco

Interviewees were asked if they have confidence in the Navy's ability to conduct the environmental cleanup at HPS. They were also asked if they have confidence in U.S. EPA, DTSC, the Water Board, and the City of San Francisco to oversee the Navy's environmental cleanup (to understand more about these agencies and their responsibilities in the HPS cleanup, see Chapter 5). The following graphic represents the results.



Note:

*"Cleanup agencies" includes the regulatory agencies responsible for oversight of the cleanup. See Chapter 5 for more information about the cleanup agencies.

The "Undecided" category includes responses such as "somewhat" and "depends," as well as the response that an interviewee was not familiar enough with a particular agency to have an opinion. "Number Who Did Not Respond" indicates the number of interviewees who declined to answer that question.

Chapter 2: Community Interviews and Feedback (continued)

Interests and Concerns

Interviewees were asked an open-ended question about whether they have concerns or interests related to the base and the cleanup program, and what all of their concerns and interests might be. The following table represents concerns, listed in order of how frequently they were cited.

Interests and Concerns Listed by Frequency of Response	Number of Responses
Health	54
Redevelopment*	49
Quality or completeness of cleanup	43
Jobs/economics	35
Air quality/dust	30
Schedule and general status of the cleanup	28
Parcel E2 landfill	19
Lack of information going to the community	15
Navy responsibility in the future	<5
Shipyard history, having a museum about shipyard history and cleanup	<5
Politics related to cleanup	<5
Protection of the bay and wildlife	<5
Distrust for the Navy	<5
Budget for cleanup	<5
Yosemite Slough	<5
Concern that there is no RAB	<5
Confusion about cleanup versus redevelopment	<5
Shoreline access	<5

Note:

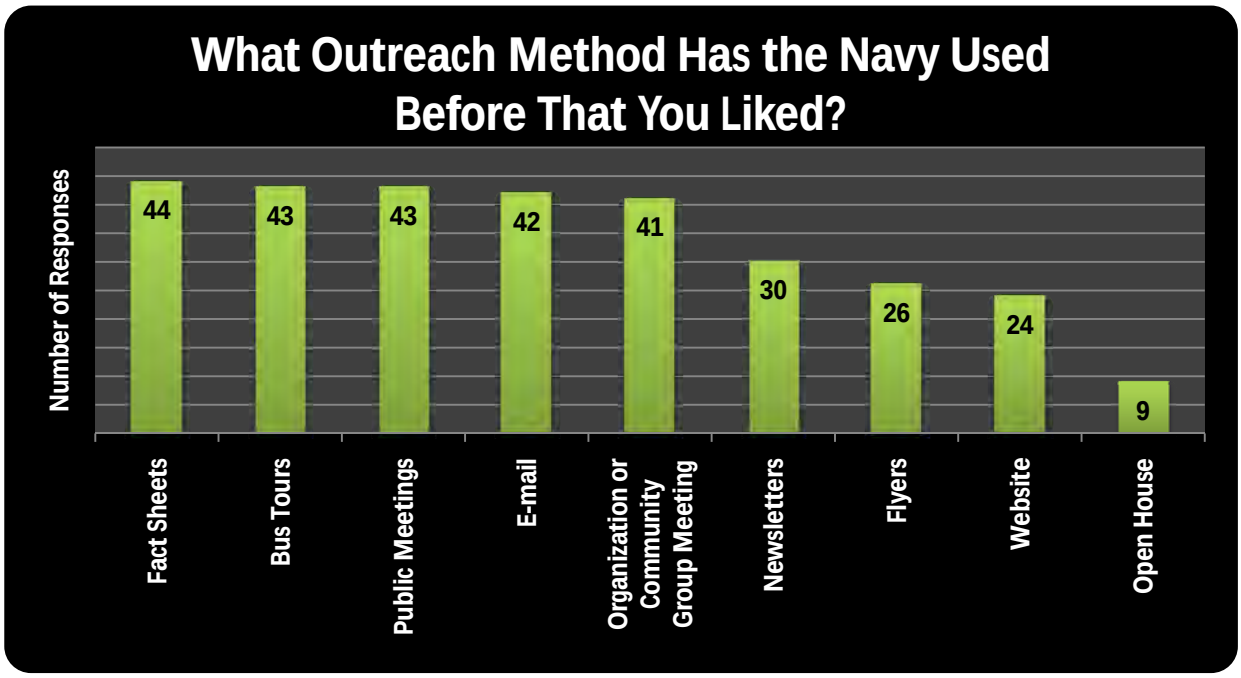
* Although the question was about environmental cleanup, many people voiced concerns about redevelopment.

Community Rating of Navy Communication Methods

A list of nine communication methods the Navy has used in the past was provided during the interview. Interviewees were asked to give their opinions about whether any of these past methods would be useful in the future. People were also asked for other ideas that were not included on the list provided.

Chapter 2: Community Interviews and Feedback (continued)

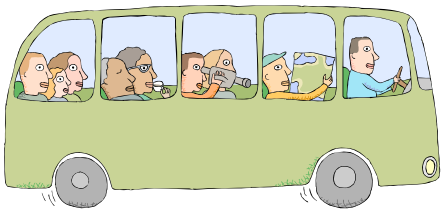
The following chart represents the preferences for established communication methods. The table describes each method and includes some of the reasons people said that a particular method may or may not be effective.



Note: Interviewees were asked to give their opinions about whether any of the nine communication methods the Navy has used in the past would be useful in the future. Some interviewees noted multiple methods in their answer.

Description of the Navy's Standard Involvement Activities and Interviewees' Concerns

Communication Method	Description	Pros and Cons Noted by Interviewees
1. Fact Sheets	One- or two-page mailers typically focused on one topic or site. Hardcopies are distributed via the mail, handed out, and placed at businesses. Electronic copies are distributed by posting on a Web site and e-mailing.	Pro: Easy to read; reaches people with and without e-mail. Con: People do not have time to read them; they are too technical.
2. Bus Tour of Site	Navy staff discusses activities at sites while community members see the sites in person. Typically, the Navy provides the bus; a map or other handout also may be provided.	Pro: People who have never been on the site get to see it; may be more interesting than just a meeting. Con: There is nothing to see; it is dangerous to be at the shipyard.



Chapter 2: Community Interviews and Feedback (continued)

Description of the Navy's Standard Involvement Activities and Interviewees' Concerns

Communication Method	Description	Pros and Cons Noted by Interviewees
3. Public Meeting	An at-large, community-wide meeting advertised to the greater community and held at a large venue. Examples include the current Navy community technical meetings, the former RAB, and Proposed Plan meetings (formal public meetings held per the NCP to obtain public comments on a proposed remedy).	Pro: Many people are informed at once. Con: Many members of the community feel intimidated at a large, centralized meeting. It was stated that it is difficult to have individual questions addressed; there is no single venue where everyone in the community feels comfortable.
4. E-mail	An e-mail message is sent to everyone who has submitted an e-mail address for the Navy's list. E-mail can include an announcement, an attached fact sheet or newsletter, or a link to a Web site containing more information.	Pro: Quick delivery, inexpensive, good way to reach people who check e-mail often. Con: Not everyone has access to e-mail.
5. Organization or Community Group Meeting	The Navy has been added to the agenda of an already-established meeting and presents an update on the environmental cleanup program. Attendees can then ask questions about specific interests. Groups have included or could include homeowners or tenant associations, churches, business groups, parent-teacher associations, and related organizations. Meetings were not open to the public unless the established group meeting was already open to the public.	Pro: Target information for just the interests of that group, more likely to get attendance when combined with a meeting people already attend. Con: Different groups may get different or conflicting messages; may reach fewer people or require too great of an effort on the part of the Navy.
6. Newsletters	Four- to eight-page packet usually on general topics related to cleanup, providing overviews and language that is not overly technical. Hardcopies are distributed via the mail, handed out, and placed at businesses. Electronic copies are distributed by posting on a Web site and e-mailing.	Pro: Familiarize people with various aspects of cleanup, does not need overly technical language. Con: They are too long; people do not have time to read them.

Chapter 2: Community Interviews and Feedback (continued)

Description of the Navy's Standard Involvement Activities and Interviewees' Concerns

Communication Method	Description	Pros and Cons Noted by Interviewees
7. Hardcopy Flyers and Announcements	One-page or smaller, meant to announce an upcoming meeting or document for review and provide contact information. They are usually handed out at community meetings, posted in businesses, mailed, and e-mailed.	Pro: Short, easy to produce quickly to announce meetings in a timely manner. Can be posted in community. Con: May be ignored unless someone from the community discusses the content with whoever receives the flyer.
8. Navy's Web Site	A public Web site that the community can access to review various information about the environmental cleanup program.	Pro: Convenient for Web-savvy community members, people can seek out various information and documents without having to keep track of hardcopy information. Con: Navy's Web site is not up-to-date; not everyone has access; easier to talk to a person.
9. Open House	Multiple poster board stations set up with staff at each location to allow people to drop in any time during open hours and ask questions about topics of interest to them.	Pro: Informal setting makes some people feel more comfortable; people can stay long enough to ask their questions and then leave without having to attend a long meeting. Con: Not everyone hears the same information; there is no single venue where everyone in the community feels comfortable.

Additional Community-Suggested Communication Methods

Interviewees provided many different suggestions for different communication methods, not all of which will end up as part of the Navy's program. Some of the common suggestions provided by interviewees are listed as follows (a complete table of all suggestions made by interviewees is provided in Appendix C):

- Work with churches to share information
- Reestablish the RAB or a similar advisory board
- Give cleanup information on radio talk shows that allow listeners to call in and ask questions
- Collaborate with established community members to convey cleanup information
- Attend established community events and host a booth
- Create social media pages for HPS (Facebook and Twitter)

Chapter 2: Community Interviews and Feedback (continued)

- Hold a community forum or town hall-type of meeting
- Distribute a calendar of Navy involvement events
- Use food or free school supplies as incentive for community members to attend meetings or take information handouts
- Use a public relations firm to engage the community with well-crafted messages and graphics

The interviews were successful with gathering feedback about the community's cleanup interests and concerns, as well as communication needs and preferences. The information obtained during the interviews was used to help design this CIP to be more effective for the HPS community, as discussed in the following chapter.

Chapter 2: Community Interviews and Feedback (continued)

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Chapter 3: Community Involvement—Actions and Activities

The most important part of this CIP identifies the Navy's community involvement program actions and activities. The Navy used numerous resources to prepare the community involvement program actions, including community interview feedback, community census information, Navy and regulatory agency community involvement guidance, and CIPs from various environmental cleanup sites, including Fort Ord, McClellan Air Force Base, and Iron King Mine Site. The Navy considered what works well for other similar environmental cleanup programs; however, the Navy has developed a plan of action to specifically address the needs of the HPS community. The Navy's objectives in conducting activities include the following:

- Work with the community to communicate information in a way that is transparent and how the community wants to receive it
- Get information out early, make sure it is easy to understand, and translated as needed
- Share how community input is used in the cleanup process
- Respond to and show how community's concerns, ideas, and information is used in making decisions about the environmental cleanup

Community Involvement Program Actions and Activities

The following community involvement program activities are designed to meet the communication needs, concerns, and preferences of the various HPS stakeholders in the HPS community. The actions are designed to link with Community Themes 1 through 6 found on Page 8. It is important to also note that the Navy will have to balance its resources and staff to appropriately plan and implement any of these activities.

Feedback from the HPS community on the Navy's environmental cleanup program will be considered and used by the Navy and regulatory agencies. The Navy will track action items at meetings and respond to questions and comments. Frequently asked questions (**FAQs**) and responses will be posted on the Navy's Web site and brought to meetings as a handout, if applicable. If written formal comments are received on any document, the Navy will respond to those comments in writing and include the responses in the next version of the document that also contains the applicable revisions.

Chapter 3: Community Involvement—Actions and Activities (continued)

Linking Interview Feedback Themes With Community Involvement Program Actions

THEME 1: THE NAVY'S COMMUNICATION WITH THE HPS COMMUNITY ABOUT THE ENVIRONMENTAL CLEANUP PROGRAM HAS NOT BEEN EFFECTIVE.

The goal for these actions is to make the Navy's communication with the community more effective. This goal will be measured based on feedback from the community and the regulatory agencies.

Actions to address this theme:

1. **Distribute this CIP**
   - Draft CIP was made available for public comment on March 8, 2011. Comments received on the Draft CIP and the Navy's responses are included in Appendix J.
   - Final copy will be on the Navy's Web site, in the information repositories, and available on request. It will include how the Navy addressed comments received during the public comment period.
2. **Prepare a Calendar of Outreach Events**
   - The event calendar will be created annually and distributed in December for the next year.
   - It will be prominently displayed on the Navy's Web site.
   - The calendar will be designed to show forethought and commitment to activities and to help the public plan community involvement program activities into their schedules.
   - The calendar is intended for wide distribution by mail and e-mail; distribution at community meetings, the Web site, and social media outlets (Facebook); and posted in select neighborhood locations, including churches.
   - At meetings, an updated calendar of events and documents to be released will be distributed for the next 3 months.
3. **Prepare Topic-Specific Fact Sheets**
   - Prepare and distribute fact sheets on specific topics as requested by the community, including topics to address the top interests and concerns noted during the interviews, found on Page 11.
4. **Use a Community Involvement Manager**
   - The Navy will designate a full-time Navy contractor to be the Community Involvement Manager and assist the Base Realignment and Closure (BRAC) Environmental Coordinator with the implementation of this CIP.
   - The Community Involvement Manager will be the main contact for the HPS community, making it easier to communicate with the Navy.
   - The Community Involvement Manager will work with the regulatory agencies to gather feedback to assess the success of this updated involvement program. This could include feedback forms, a community survey every two years, and anecdotal feedback.

Chapter 3: Community Involvement—Actions and Activities (continued)

Linking Interview Feedback Themes With Community Involvement Program Actions

THEME 2: GENERAL INFORMATION ABOUT THE NAVY'S ENVIRONMENTAL CLEANUP PROGRAM AT HPS IS LACKING.

The goal for these actions is to make general information about HPS more available to the community. This goal will be measured by obtaining feedback from the community and the regulatory agencies.

Actions to address this theme:

1. **Prepare a General Fact Sheet**
   - The fact sheet will include HPS history, basic overview of cleanup activities and timeline, how human health is evaluated and addressed, agency roles and responsibilities, FAQs, contact information, and repository locations.
   - The fact sheet will be updated annually.
   - The fact sheet will be distributed at community meetings, posted on Web site and social media outlets (Facebook), and posted in select neighborhood locations (community centers, churches, and local businesses).
   - The fact sheet will be translated into Chinese (Cantonese) and Spanish (other languages to be considered based on need). Based on information provided by the Chinese-American community, Cantonese is the primary Chinese dialect spoken in San Francisco.
2. **Hold Regularly Scheduled Community Meetings**
   - Meetings will be held bimonthly (every other month), or more frequently if deemed appropriate; possibly in various locations so people that live in different parts of the community can attend.
   - Meeting will be facilitated and the agenda will consist of Navy presentations, regulatory agency update, discussion of action items from previous meetings, and public question-and-answer period. The Navy will solicit community input for future agenda items at each meeting.
   - Meetings will have a facilitator, summary notes sent to the e-mail list and placed on the Web site, and a translation provided, if needed.
   - The meeting will be an opportunity for two-way communication between the Navy, regulatory agencies, and the community.
3. **Prepare Progress Reports**
   - Progress reports will be created quarterly, and will be distributed via mail and e-mail, at community meetings, posted on the Web site and social media outlets (Facebook), posted in select neighborhood locations, and handed out by established community members.
   - The reports will be about two pages long, with an update on recent activities and future public comment opportunities.
   - The reports will be translated into Chinese (Cantonese) and Spanish (other languages to be considered based on need). Based on information provided by the Chinese-American community, Cantonese is the primary Chinese dialect spoken in San Francisco.

Chapter 3: Community Involvement—Actions and Activities (continued)

Linking Interview Feedback Themes With Community Involvement Program Actions

THEME 3: THE HPS COMMUNITY IS DIVERSE, RESULTING IN VARIED CONCERNS, COMMUNICATION PREFERENCES, AND NEEDS.

The goal for these actions is to communicate with broader segments of the community, include those with and without computer access, those who do not speak English, those who prefer meetings, and those who prefer written materials. This goal will be measured by obtaining feedback from the community and the regulatory agencies.

Actions to address this theme:

1. **Participate in Local Radio Shows – multi-lingual**
   - Give a presentation and/or answer questions during call-in shows; translation will be provided as necessary
2. **Provide a Telephone Hotline**
   - A recorded message will provide an update of monthly HPS activities such as meeting times and locations. Additional information on specific cleanup actions may also be provided, if timely.
   - Callers will be able to hear the message in English Spanish, or Cantonese
   - Callers will also be able to leave a message if they have a specific question and their call will be returned.
3. **Create a New Web Site**
   - Community members specifically said the current Web site is difficult to use.
   - New Web site will be enhanced for better usability and functionality. The current Web site cannot be enhanced because of Department of Defense restrictions, so a new Web site must be created.
   - The Web site will be updated at least monthly (i.e., when technical documents are released, notices of upcoming community involvement opportunities, etc.).
   - The Web site will have a searchable FAQ of cleanup and site information.
4. **Maintain a Social Media (Facebook) Page**
   - Intended to give quick access to information, and will direct viewers to the new Web site. Those who follow the page will be able to send questions and comments to the Navy.
   - Regularly updated with information on cleanup activities, cleanup photos, and meeting notices.
   - Noted as a good way to reach the younger segments of the community.
5. **Update Mailing and Email Lists**
   - An updated mailing list to reach the full community will be purchased.
   - Anyone can sign up at meetings or on the Web site to be added.
   - The mailing list will be updated after each mailing with any returns; addresses for elected officials and businesses will be checked annually.
   - An email distribution list will be maintained and updated similar to the mailing list.
6. **Print Newspaper Editorial**
   - In interview feedback, use of a newspaper was suggested as a good way to reach the Chinese-American segments of the community, specifically using Sing Tao Daily newspaper.
   - For required public notices, hardcopy newspapers that were highly recommended include the following: *San Francisco Examiner*, *Sing Tao Daily*, *The Potrero View*, and *Visitacion Valley Grapevine* (Note: this newspaper is not currently being published; however, it may be used if publishing resumes)

Chapter 3: Community Involvement—Actions and Activities (continued)

Linking Interview Feedback Themes With Community Involvement Program Actions

THEME 4: THE DIFFERENCE BETWEEN THE NAVY'S HPS ENVIRONMENTAL CLEANUP PROGRAM AND THE SFRA'S REDEVELOPMENT OF HPS HAS NOT BEEN MADE CLEAR.

The goal for these actions is to explain the transfer process and clarify who community members can talk with about cleanup concerns versus redevelopment concerns.

Actions to address this theme:

1. **Hold Bus Tours**
   - Bus tours will be held for the larger community by advanced registration twice a year. Tours will show participants the environmental cleanup progress, provide an understanding of what belongs to the Navy and what belongs to SFRA, and provide an opportunity for dialogue.
   - Tours will be advertised through the active community members, on the Web site, and at meetings, as well as posted on the calendar.
2. **Distribute Topic-specific Fact Sheets**
   - Created bimonthly, these fact sheets will focus on one specific technical topic. The topic of the fact sheet will coincide with the community meetings.
   - Technical fact sheets will not be mailed to the full mailing list. They will be distributed at community meetings, posted on the Web site, e-mailed, and made available at the information repository and by request.
   - The fact sheet will be translated into Chinese (Cantonese) and Spanish (other languages to be considered based on need). Based on information provided by the Chinese-American community, Cantonese is the primary Chinese dialect spoken in San Francisco.

THEME 5: HEALTH IS A PRIMARY CONCERN FOR MOST SEGMENTS OF THE COMMUNITY.

The goal for these actions is to provide the community with the resources to have their health concerns addressed. It is also to communicate the ways the environmental cleanup is intended to be protective of human health.

Actions to address this theme:

1. **Provide Health Contact Information in this CIP**
   - This CIP includes information regarding how health is addressed during a cleanup, a summary of the common health concerns, how the Navy protects the workers and community during active cleanup work, and health officials to contact for more information and assistance. See Appendix A, Health-Related Information, Resources and Contacts.
2. **Use HPS Project Web site**
   - Include health information in FAQ
3. **Hold Regularly Scheduled Community Meetings**
   - The Navy will provide time, as needed, in meeting agendas for presentations by professional health organizations such as the Asthma Task Force for asthma education.
4. **Distribute Topic-specific Fact Sheets**
   - Include health information in a general fact sheet that will be posted on the Web site and available at Navy events.

Linking Interview Feedback Themes With Community Involvement Program Actions

THEME 6: COORDINATING WITH ESTABLISHED COMMUNITY MEMBERS TO CONDUCT INVOLVEMENT MAY BE A GOOD WAY TO REACH ALL SECTORS OF THE COMMUNITY.

The goal for these actions is to use community expertise and work together to communicate with the HPS community.

Actions to address this theme:

1. **Use Grassroots Outreach**
   - Activities will include having residents in the HPS community and community members hand out flyers, post meeting notices on community bulletin boards and at businesses, help improve the site mailing list, and share community feedback with the Navy and regulatory agencies.
   - Grassroots outreach will be timed to coincide with distribution of flyers, fact sheets, or quarterly progress reports and/or the community meetings.
2. **Navy Presentations at Established Community-Organized Meetings**
   - As invited, the Navy and regulators will give the "General Environmental Presentation" or other updates at an established group's meetings. Advertisements for the meeting and the agenda would be the responsibility of the community group.
   - Presentation will consist of general information with time for questions and answers and will focus on the interests of the specific group addressed.
   - The presentation will be intended to reach specific audiences that can then disseminate information through expanded group. Groups could include Parent-Teacher Associations, tenants' associations, Board of Supervisors, and business associations.
   - Regular updates could be given to the San Francisco Citizens Advisory Committee (CAC) and the Project Area Committee (PAC) meetings.
   - To be more transparent, the Navy will develop a FAQs list that will be updated after each meeting and shared as a handout at each event, in newsletters and on the Web site.

Note: Many actions address more than one theme. See the following table for a complete listing of all themes that an action is designed to address.

The purpose of these activities is to inform the community and engage them in cleanup decisions. The Navy will also distribute a survey to the mailing list to evaluate the program every two years. The findings of this survey will be documented in a memorandum that is included in the Administrative Record for HPS. The survey and documentation will comply with 32 CFR 202.10. The Navy will periodically review this CIP and update it accordingly. The goals for the activities will be evaluated on a yearly basis by the Navy's Community Involvement Manager to ensure that they are being met.

Chapter 3: Community Involvement—Actions and Activities (continued)

Table of Navy's Updated Community Involvement Actions and Activities

Actions and Activities	Delivered By	Interview Theme Addressed					
		1. Communication Not Effective	2. Available General Information about the Environmental Cleanup Program Lacking	3. Varied Concerns, Communication Preferences, and Needs among Diverse Community	4. Difference between the Navy's Environmental Cleanup Program and the SFRA Redevelopment has Not Been Made Clear	5. Health is a Primary Concern	6. Coordination with Established Community Members to Conduct Involvement May be A Good Way To Reach All Sectors of the Community
Calendar of Outreach Events, multi lingual: Publish in January for calendar year ahead	Mail, email, post hardcopy, Web site	X	X	X			
Community Involvement Manager: Use a Navy staff member to focus solely on community involvement program activities	N/A	X	X	X	X		X
General Fact Sheet, multi-lingual: Overview of environmental cleanup program, roles and responsibilities, and schedule formatted into brief fact sheet	Mail, e-mail, post hardcopy, Web site	X	X	X	X		
Regularly Scheduled Community Meetings: Held every other month, technical presentations and updates from Navy and regulatory agencies (held at various locations)	In person at Navy-coordinated venue	X	X	X	X	X	
Progress Reports: Quarterly update on recent activities and upcoming opportunities to comment	Mail, e-mail, post hardcopy, post on Web site	X	X	X	X		
HPS Project Web Site: Searchable, with FAQ	Online	X	X	X	X	X	X
Facebook Page: Public relations firm creates and manages HPS page with regular updates on activities, cleanup photos, meetings, and responses to questions	Web site, put links on fact sheets	X	X	X	X	X	
Mailing List Update: Current hardcopy mail and e-mail distribution lists will be reviewed for accuracy	E-mail, hardcopy	X	X	X			X
Newspaper Notices and Editorial Column: Public notices will be created to meet regulatory requirements and to announce community meetings; editorial columns will educate diverse community groups about the environmental cleanup progress	Hardcopy and online newspapers		X	X			
Bus Tours: Community-wide on a larger bus and for smaller groups with a van	In person at HPS	X	X	X	X		X
Topic-Specific Fact Sheets, multi-lingual: Brief update on a technical topic, meant to reach those who already know the basics about the project and want specific details	E-mail, hardcopy handout, not mailed to full list			X	X	X	
Presentations to Existing Groups: Attend an established group meeting and give an update relevant to their members (could include a church, homeowners association, civic group, school, etc.)	Face-to-face presentation	X	X	X	X		X
Grassroots Outreach: Work with community members to hand out outreach materials, post flyers, and give basic information	Face-to-face interaction to promote trust between the community and Navy	X	X	X	X		X
Local Radio Shows, multi-lingual: Give a presentation and/or answer questions during call-in shows.	Radio, internet via podcast if available	X	X	X	X		X
Telephone Hotline: Give a recorded update of activities, and allow callers to leave a message	Telephone	X	X	X			
General Environmental Presentation, multi-lingual: Overview of environmental cleanup program in a 20-minute PowerPoint® presentation with time for questions and answers; appropriate for established community groups (this will also include an FAQ handout)	In person at group meetings	X	X	X	X		X

Chapter 3: Community Involvement—Actions and Activities (continued)

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Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard

To help the community understand the cleanup process at HPS better, this chapter discusses historical operations at HPS that resulted in contamination, presents a timeline of these past activities, and describes the current status of the Navy's environmental cleanup program at HPS. Maps of HPS and its various parcels are also provided. The Navy will take requests for presentations about documents and cleanup actions. Providing these presentations will educate the community about topics of their interest, and will help the community to comment on the related documents.

HPS Timeline

HPS is located in southeastern San Francisco on a peninsula that extends east into the San Francisco Bay. The timeline to the right and paragraphs that follow provide an overview of the history of HPS since the mid-1800s.

From the mid-1800s until 1938, HPS was used as a commercial dry dock. In 1939, the Navy purchased the property. From 1945 to 1974, the Navy was one of the largest employers of the HPS community. HPS was mostly used as a repair facility for Navy ships and submarines, and was partially occupied by the Naval Radiological Defense Laboratory (**NRDL**) from 1948 to 1969. In 1974, the Navy ceased shipyard operations at HPS.

From 1976 until 1986, Triple A Machine Shop, Inc. leased 98 percent of HPS. Triple A Machine Shop was a private ship repair company that used the facility to repair commercial and naval vessels. It also subleased portions of the property to various other businesses for warehousing distribution centers and light industry.

HPS entered the BRAC Program in 1988 (which is the Navy's program for cleaning up and transferring Navy properties that are no longer needed). The 934 acres at HPS were subsequently divided into parcels (see map on Page 30) as a way to organize the environmental investigation and cleanup. In 1989, HPS was evaluated by U.S. EPA and placed on its National Priorities List (**NPL**) based on the presence of hazardous materials from past Navy and private operations at the shipyard. NPL sites, also known as Superfund sites, are sites with hazardous contamination that are prioritized for long-term environmental study and cleanup supervised by U.S. EPA.

In 2004, environmental cleanup on one of the parcels, known as Parcel A, met all the necessary cleanup requirements for residential use and was successfully transferred to the San Francisco Redevelopment Agency. Since the transfer was completed, the SFRA has been responsible for redevelopment of Parcel A.

More information on the current status of other individual parcels and of the overall status of the environmental cleanup program at HPS begins on the following page.

1869 - 1939	Commercial Dry Dock Facility
1939 - 1944	U.S. Naval Dry Dock, Hunters Point
1945 - 1974	U.S. Naval Shipyard, Hunters Point (HPS)
1974	HPS deactivated
1976 - 1986	Triple A Machine Shop leases HPS
1987	U.S. Navy resumes occupancy
1988	HPS enters BRAC Program
1989	HPS placed on National Priorities List (NPL)
2004	First parcel transferred
Ongoing	Remaining parcels being cleaned up

USS Providence at HPS, June 24, 1965

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

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Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Status of the Environmental Cleanup at HPS

The parcels at HPS are in various stages of environmental cleanup. During community interviews, several interviewees asked why HPS is being cleaned up in various stages instead of cleaning up the entire shipyard and then transferring it all at once. The HPS property, some of which is offshore (underwater), has various types and levels of contamination at various locations. The Navy has taken this large cleanup project and divided it into smaller, more manageable tasks. This helps the Navy set priorities and focus on cleanup of sites when timing, regulatory approval, and funding are available to move forward. The Navy is working to prepare land for transfer as soon as possible to allow the SFRA to reuse the property for the benefit of the community (land is ready for transfer when it has been through the required environmental studies and cleanup activities, and has been approved by the Navy and the regulatory agencies as suitable for transfer). By completing the cleanup in stages, the Navy can transfer parts of HPS sooner than waiting for all areas to be done.

The environmental investigation and cleanup underway at HPS on the remaining parcels is grouped into the following three programs:

1. Residual Fuels Program: Focuses on spills and leaks of fuels (diesel and gasoline) and motor oil from former fuel distribution lines and storage tanks.
2. Comprehensive Environmental Response, Compensation, and Liability Act (**CERCLA**)[1] Program-regulated Chemicals: The chemicals regulated under CERCLA include solvents, pesticides, metals (such as mercury and lead), and other chemicals listed on the table on the following page.
3. Radiological Program: Addresses a variety of low-level residual radiological (meaning radioactive) materials, including areas that contain buried World War II-era luminescent (glow-in-the-dark) dials and buttons, sewer and storm drain lines from buildings used for radiological research or maintenance, and these buildings themselves.

A site is placed in a particular environmental cleanup program based on the contaminants found at that location. Following is a table of some common contaminants and uses found at HPS. For more health-related information about these contaminants, go to www.atsdr.cdc.gov/toxfaqs/index.asp or call 1-800-CDC-INFO (232-4636). The link and number are the contacts for the Agency for Toxic Substances and Disease Registry (**ATSDR**), which is a federal government public health agency. Additional information on contaminants is also available from the U.S. EPA at www.epa.gov/wastes/topics.htm.

[1] See the diagram in Appendix G for an explanation of how the CERCLA process, which is also known as the Superfund process, works.

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Common Contaminants in Soil and Groundwater at HPS

Contaminant	Description
Metals	Includes arsenic, chromium, copper, lead, manganese, zinc, and others. These metals can occur naturally in the soil and rock at HPS. Metals are also often present because of the ships that were repaired or cleaned at HPS.
Pesticides	Chemicals designed to kill pests (rodents, insects, or unwanted plants). They may have been sprayed to control pests or weeds on the site.
Polychlorinated Biphenyls (**PCBs**)	A liquid used to cool or lubricate in electrical equipment because it does not burn easily and is a good insulator. The manufacture of PCBs was stopped in the U.S. in 1977 because of evidence they build up in the environment and can cause harmful health effects. Electrical equipment (such as transformers) used before 1977 may have used PCBs.
Polycyclic Aromatic Hydrocarbons (**PAHs**)	Chemicals that are formed when items are burned, such as oil, gasoline, garbage, wood, or coal. Tar and asphalt also contain PAHs.
Radionuclides	A radioactive element, human-made or from natural sources, including radium, cesium, and strontium. Often occurring naturally in the soil in some areas, at HPS they may be present from paint that contained radionuclides so it would glow.
Semi-volatile Organic Compounds (**SVOCs**)	Organic chemicals that do not evaporate as easily as VOCs (see below) and become liquid or solid at low temperatures. Kerosene is an example of an SVOC.
Total Petroleum Hydrocarbons (**TPH**)	TPH is a mixture of chemicals, but they are all made mainly from hydrogen and carbon, called hydrocarbons. These chemicals originally come from crude oil and can be found in gasoline, kerosene, fuel oil, mineral oil, and asphalt.
Volatile Organic Compounds (**VOCs**)	Organic chemicals that easily evaporate into the air and are often easy to smell. Common VOCs are paint thinners and automotive gasoline.

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Following is a map of the region, followed by a map of the entire HPS showing its various parcel boundaries. The following pages provide an overview of the historical use, contamination, and current environmental investigations at each parcel.

Regional Map

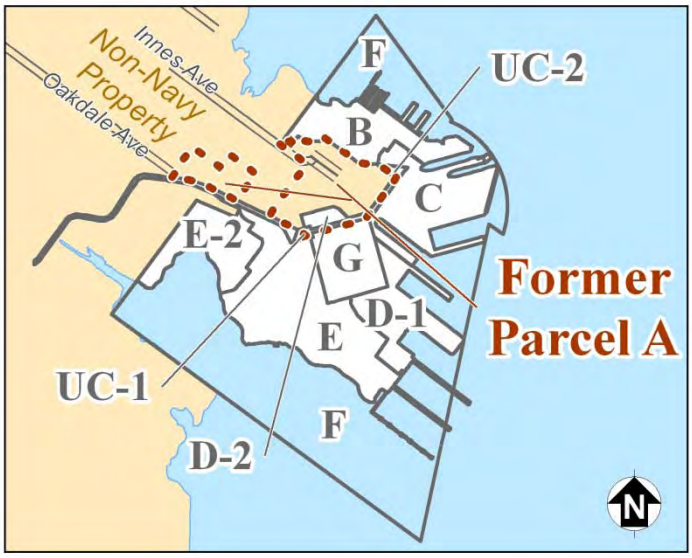
Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Hunters Point Shipyard Map

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Parcel A

Historical use (possible source of contamination)	Residential housing
Contaminants at the site	Low levels of residual fuels
Status of the cleanup	The Navy completed the cleanup to residential standards and transferred the property to the SFRA in December 2004.
Next steps at this site	*Parcel A is no longer Navy property.* The SFRA is working with developers selected by the SFRA to build housing, create parks, and have commercial uses at the former Parcel A location. The redevelopment must comply with standard City and State of California construction and dust control requirements.

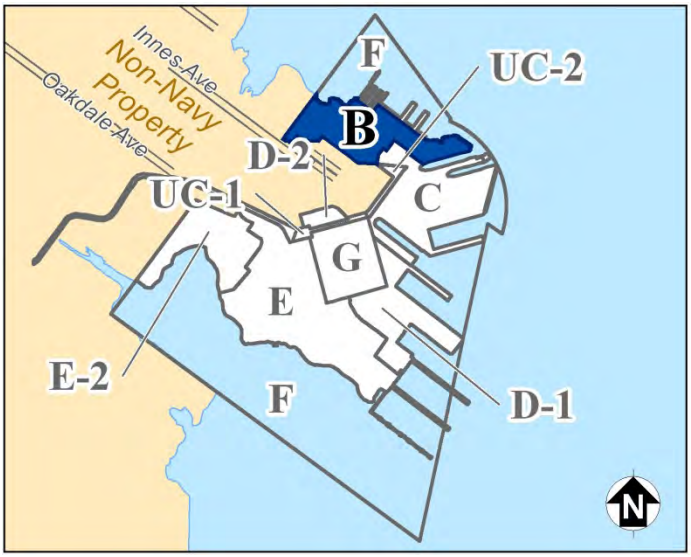


Location of Former Parcel A. For a detailed satellite view, see Page 30.

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Parcel B

Historical use (possible source of contamination)	Shipping, repair, and maintenance
Contaminants at the site	Metals, VOCs, SVOC, pesticides, PCBs, and radionuclides
Status of the cleanup	The Navy has completed the investigations and chosen the cleanup remedy with public input and agency concurrence. The remedy includes removing soil contamination and disposing off-site, placing cover material (e.g., clean soil or asphalt) over specified areas, cleaning up the groundwater plumes, and placing restrictions called land use controls. The land use controls make sure the remedy remains protective of human health and the environment. Over the years, the Navy has removed tens of thousands of cubic yards of contaminated soil and hauled that soil off HPS for disposal at landfill sites. The Navy built a protective wall along the shoreline to hold sediment in place and a protective soil cover has also been placed over a portion of the Parcel. The storm and sewer lines that had the potential to be contaminated with low levels of radiation have been removed and sent off site for disposal. Buildings have also been surveyed and any radiological contamination has been removed.
Next steps at this site	Most of Parcel B is proposed for early transfer to the SFRA in 2011 and SFRA will complete the cleanup. The Navy is completing the cleanup of a smaller portion of Parcel B (IR 07/18) and transferring this portion to SFRA in 2011. The proposed reuse includes educational/cultural use, mixed use (residential and industrial), open space, and research and development.

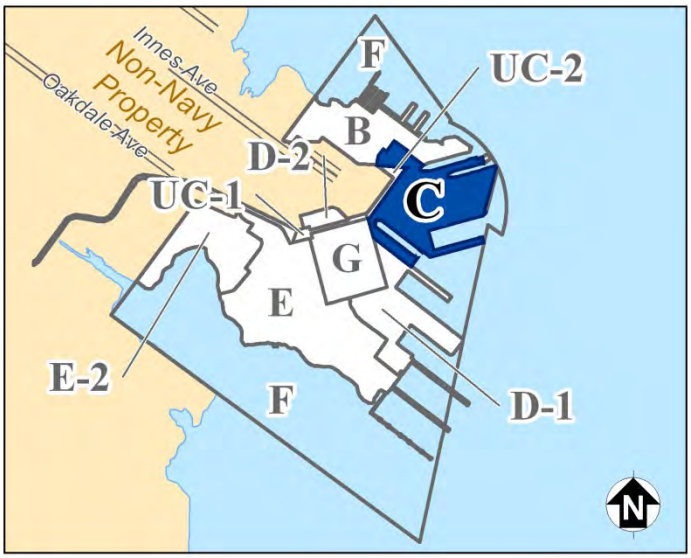


Location of Former Parcel B. For a detailed satellite view, see Page 30.

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Parcel C

Historical use (possible source of contamination)	Ship repair, foundry, power plant, machine shops, paint shops, and radiological research
Contaminants at the site	Metals, PAHs, PCBs, SVOCs, VOCs, pesticides, and radionuclides
Status of the cleanup	The Navy has completed the investigations and chosen the cleanup remedy with public input and agency concurrence. The remedy includes removing soil contamination and disposing offsite, placing cover material over the entire parcel, cleaning up the groundwater plumes, and placing land use controls. The land use controls make sure the remedy remains protective of human health and the environment. The Navy is in the process of developing the remedial design and remedial work plan and treating the groundwater contamination, and is in the process of removing storm and sewer lines that have the potential to be contaminated with low levels of radiation. The Navy will survey the buildings and remove any radiological contamination.
Next steps at this site	The Navy anticipates the transfer of Parcel C to SFRA in 2013. The proposed reuse includes educational/cultural use, maritime/industrial, mixed use (residential and industrial), open space, and research and development.

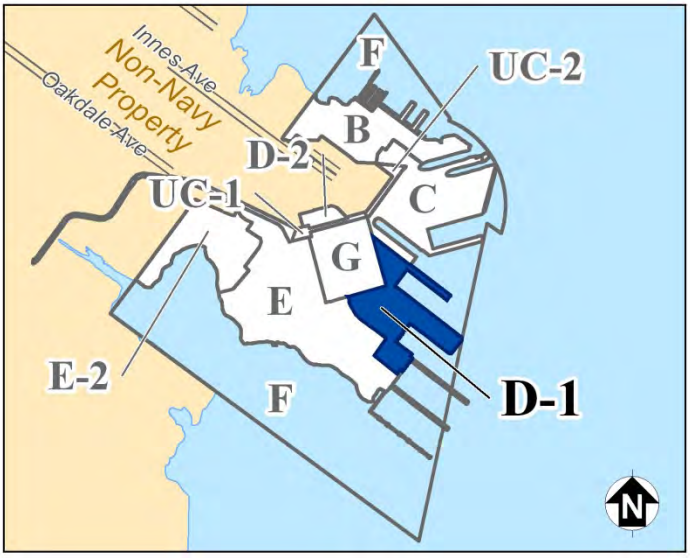


Location of Former Parcel C. For a detailed satellite view, see Page 30.

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Parcel D-1

Historical use (possible source of contamination)	Shipbuilding, repair, and maintenance and radiological research
Contaminants at the site	Metals, PAHs, VOCs, and radionuclides
Status of the cleanup	The Navy has completed the investigations and chosen the cleanup remedy with public input and agency concurrence. The remedy includes removing soil contamination and disposing offsite, placing cover material over the entire parcel, cleaning up the groundwater plumes and placing land use controls. The land use controls make sure the remedy remains protective of human health and the environment. The Navy removed the soil contamination and disposed of it offsite and has treated the contaminated groundwater. The Navy is finalizing the remedial design and is in the process of removing storm and sewer lines that have the potential to be contaminated with low levels of radiation. The Navy is also cleaning up the piers from potential low level radiation.
Next steps at this site	The Navy anticipates the transfer of Parcel D-1 to SFRA in 2012. The proposed reuse includes mixed use (residential and industrial) and industrial.

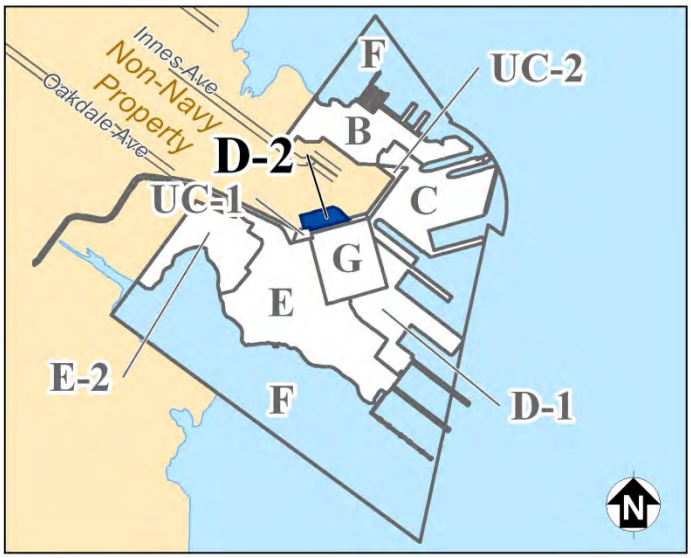


Location of Former Parcel D-1. For a detailed satellite view, see Page 30.

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Parcel D-2

Historical use (possible source of contamination)	Radiological laboratory and former underground storage tank
Contaminants at the site	Radionuclides
Status of the cleanup	The Navy has completed the investigations and with public input and agency concurrence determined that no further action is necessary. Portions of the combined storm and sanitary sewers were removed between 2006 and 2009. After final review of the status of the cleanup, the Navy and agencies concluded that there are no unacceptable risks from hazardous substances or radiological material in this parcel.
Next steps at this site	The Navy anticipates the transfer of Parcel D-2 to SFRA in 2011. The proposed reuse includes residential along with research and development.

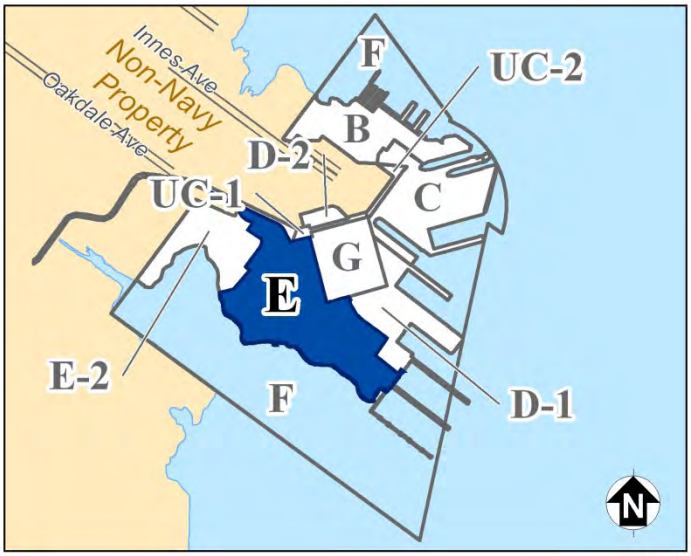


Location of Former Parcel D-2. For a detailed satellite view, see Page 30.

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Parcel E

Historical use (possible source of contamination)	Ship repair and industrial operations
Contaminants at the site	Metals, VOCs, PCBs, TPH, pesticides, and radionuclides
Status of the cleanup	The Navy has completed the investigations and is in the process of completing the feasibility study. The feasibility study evaluates remedies specific to Parcel E. The Navy is also treating the groundwater in specific locations on Parcel E while performing studies on groundwater treatment methods.
Next steps at this site	The Navy will choose the cleanup remedy with agency concurrence and input from the public. The Navy anticipates the transfer of Parcel E to SFRA in 2014. The proposed reuse includes research and development and open space.

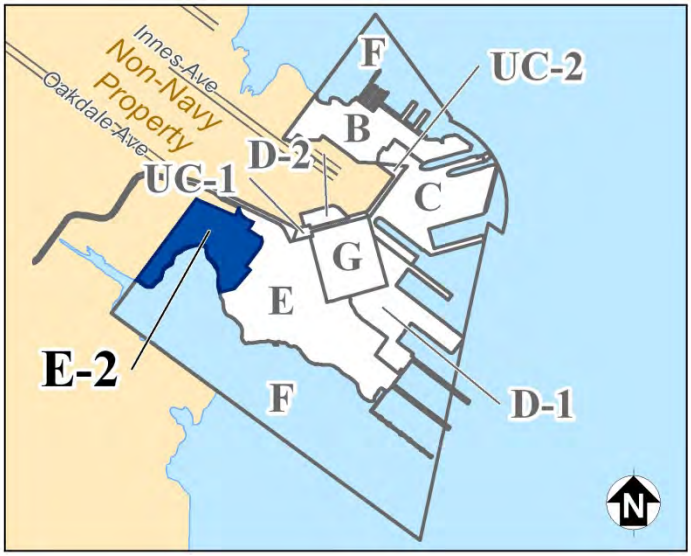


Location of Former Parcel E. For a detailed satellite view, see Page 30.

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Parcel E-2

Historical use (possible source of contamination)	Landfill for HPS industrial operations and construction activities
Contaminants at the site	Metals, VOCs, PCBs, TPH, pesticides, and radionuclides
Status of the cleanup	The remedial investigation and feasibility study is being finalized. The remedial investigation evaluates the contamination and potential risk to human health and the environment. The feasibility study evaluates remedies specific to Parcel E-2. The Navy is also currently removing contaminated soil and debris along the shoreline.
Next steps at this site	The Navy will choose the cleanup remedy with agency concurrence and input from the public. The Navy anticipates the transfer of Parcel E-2 to SFRA in 2017. The proposed reuse includes research and development and open space.

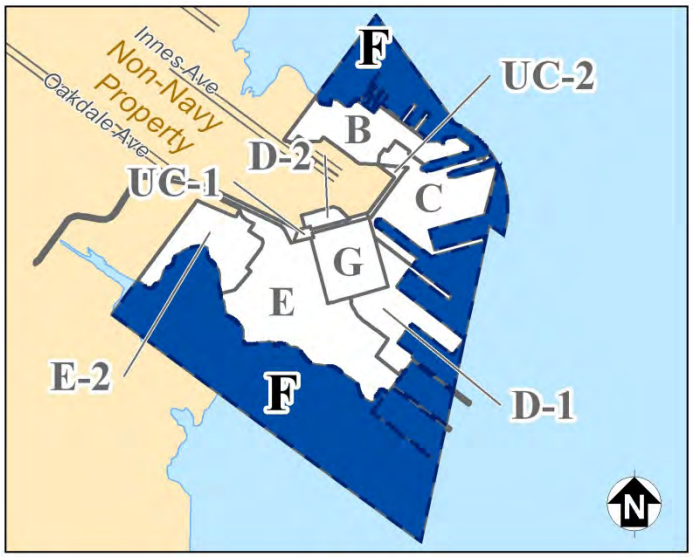


Location of Former Parcel E-2. For a detailed satellite view, see Page 30.

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Parcel F

Historical use (possible source of contamination)	Historical industrial operations (offshore areas)
Contaminants at the site	Metals, PCBs, and radionuclides
Status of the cleanup	The investigation and feasibility study have been completed to address chemical contamination in the sediment. An investigation for evaluating the potential for low-level radiation in Parcel F is being conducted. Piers that pose a navigational hazard are in the process of being removed.
Next steps at this site	Once the radiological evaluation is completed, the Navy will choose the cleanup remedy with agencies' concurrence and input from the public. The Navy anticipates the transfer of Parcel F to SFRA in 2017.

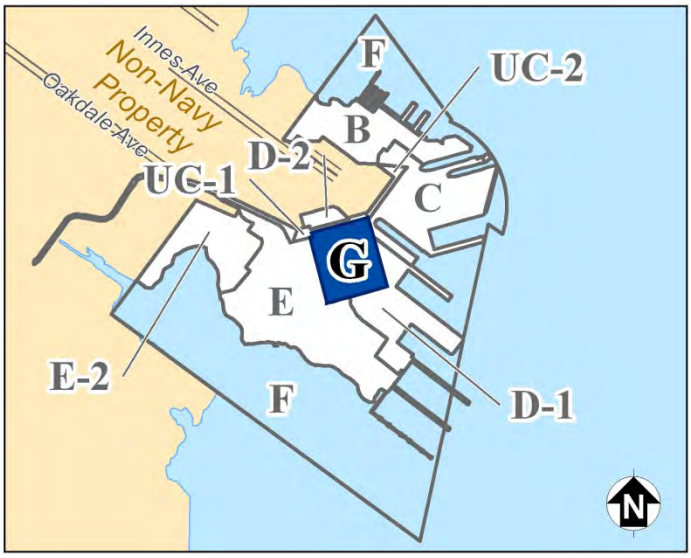


Location of Former Parcel F. For a detailed satellite view, see Page 30.

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Parcel G

Historical use (possible source of contamination)	Shipbuilding, repair, and maintenance
Contaminants at the site	Metals, PAHs, VOCs, and radionuclides
Status of the cleanup	The Navy has completed the investigations and has chosen the remedy with public input and agency concurrence. The remedy consists of removing soil contamination and taking the soil off HPS for disposal at landfill sites, placing cover material over specified areas, monitoring the groundwater, and placing restrictions called land use controls. The land use controls make sure the remedy remains protective of human health and the environment. The storm and sewer lines that had the potential to be contaminated with low levels of radiation have been removed and sent offsite for disposal. Buildings have also been surveyed and any radiological contamination has been removed.
Next steps at this site	Parcel G is proposed for early transfer to the SFRA in 2011 and SFRA will complete the cleanup. The proposed reuse includes education/cultural, industrial and mixed use (residential and industrial) and open space.

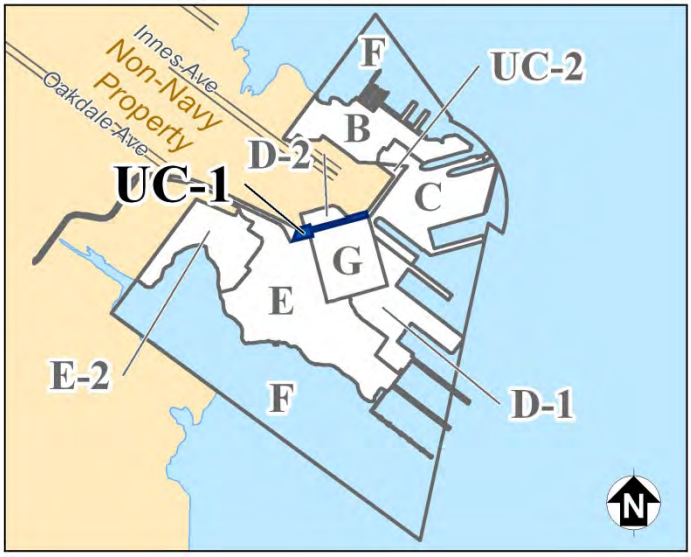


Location of Former Parcel G. For a detailed satellite view, see Page 30.

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Parcel UC-1

Historical use (possible source of contamination)	Storm sewer and sanitary sewer
Contaminants at the site	Metals and radionuclides
Status of the cleanup	The Navy has completed the investigations and has chosen the remedy with public input and agency concurrence. The remedy consists of placing a cover over the entire parcel. Land use controls are also included to make sure the remedy remains protective of human health and the environment. The Navy is finalizing the remedial design and radiological remediation is complete.
Next steps at this site	The Navy anticipates the transfer of Parcel UC-1 to SFRA in 2011. The proposed reuse includes mixed use (residential and industrial) and industrial.

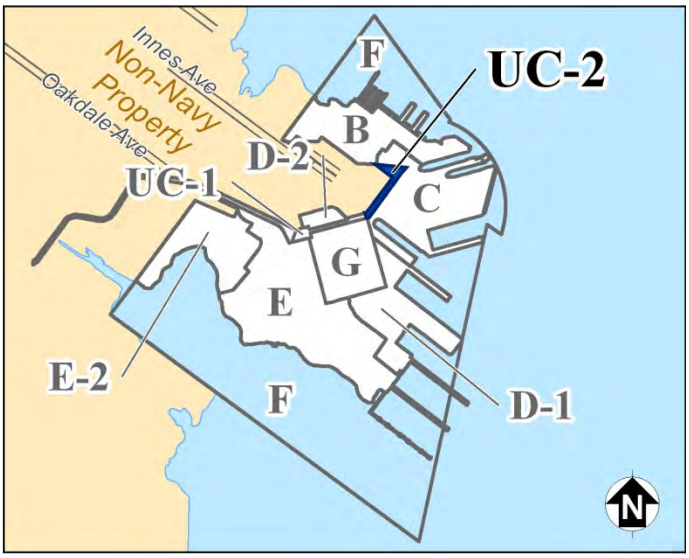


Location of Former Parcel UC-1. For a detailed satellite view, see Page 30.

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Parcel UC-2

Historical use (possible source of contamination)	Storm sewer and sanitary sewer
Contaminants at the site	Metals, VOCs, and radionuclides
Status of the cleanup	The Navy has completed the investigations and has chosen the remedy with public input and agency concurrence. The remedy consists of placing a cover over the entire parcel and groundwater monitoring to evaluate natural reduction of the contaminants in the groundwater. Land use controls are also included to make sure the remedy remains protective of human health and the environment. The Navy is finalizing the remedial design and radiological remediation is complete.
Next steps at this site	The Navy anticipates the transfer of Parcel UC-2 to SFRA in 2011. The proposed reuse includes mixed use (residential and industrial) and industrial.



Location of Former Parcel UC-2. For a detailed satellite view, see Page 30.

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Opportunities for Public Involvement at HPS

In order to manage the multi-year environmental cleanup for the parcels at HPS, the Navy created a schedule of activities that includes the environmental investigations, remediation, and the delivery of technical documents. Below is the estimated schedule of activities and technical documents for each parcel. Opportunities for community involvement throughout these investigations will be announced through community meetings, fact sheets, public notices, and/or the Navy's Web site. Note that some documents have a required formal public review period during which the public can provide comments and input on the document, as per NCP requirements. Others are not required by the NCP to have a public comment period, but the Navy will provide that opportunity upon request.

Schedule of Reports for Cleanup Activities at Each Parcel

Name of Report[a]	Issue Date	Opportunities for Public Involvement
Basewide		
Groundwater Monitoring Program Semiannual Report	Spring 2011	Available upon request for public review and comment
Final Supplemental Environmental Impact Statement	Summer 2011	Available upon request for public review and comment
Groundwater Monitoring Program Semiannual Report	Fall 2011	Available upon request for public review and comment
Groundwater Monitoring Program Semiannual Reports	Two times per year	Available upon request for public review and comment
PARCELS B, D-1, G, UC-2		
Draft Soil Vapor Intrusion[b] Technical Memorandum	Summer 2011	Available upon request for public review and comment
Final Soil Vapor Intrusion[b] Technical Memorandum	Fall 2011	Available upon request for public review and comment
PARCELS C and E		
Draft Work Plan for Soil Vapor Intrusion Survey - Parcels C and E	Summer 2011	Available upon request for public review and comment
Final Work Plan for Soil Vapor Intrusion Survey - Parcels C and E	Summer 2011	Available upon request for public review and comment
Draft Soil Vapor Intrusion Technical Memorandum - Parcels C and E	Fall 2011	Available upon request for public review and comment
Final Soil Vapor Intrusion Technical Memorandum - Parcels C and E	Winter 2011	Available upon request for public review and comment
PARCELS B, D-1, G		
Draft Remedial Action Completion Report for Parcels B, D-1, and G Hot Spots	Summer 2011	Available upon request for public review and comment

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Schedule of Reports for Cleanup Activities at Each Parcel

Name of Report[a]	Issue Date	Opportunities for Public Involvement
Final Remedial Action Completion Report for Parcels B, D-1, and G Hot Spots	Fall 2011	Available upon request for public review and comment
PARCEL B		
Draft Remedial Action Completion Report for IR Site 07/18	Fall 2011	Available upon request for public review and comment
Final Remedial Action Completion Report for IR Site 07/18	Fall 2011	Available upon request for public review and comment
Parcel B Petroleum Program		
Final Total Petroleum Hydrocarbon Closure Report	Spring 2011	Available upon request for public review and comment
PARCEL C		
Draft Remedial Design	Spring 2011	Available upon request for public review and comment
Draft Final Remedial Design	Winter 2011	Available upon request for public review and comment
Final Remedial Design	Spring 2012	Available upon request for public review and comment
Draft Remedial Action Work Plan (RU-C2)	Summer 2011	Available upon request for public review and comment
Final Remedial Action Work Plan (RU-C2)	Summer 2011	Available upon request for public review and comment
Draft Completion Report (RU-C2)	2014	Available upon request for public review and comment
Final Completion Report (RU-C2)	2014	Available upon request for public review and comment
Parcel C Groundwater Treatability Studies		
Draft Final In Situ Anaerobic Bioremediation[c] Treatability Study Report (RU-C1)	Spring 2011	Available upon request for public review and comment
Final In Situ Anaerobic Bioremediation[c] Treatability Study Report (RU-C1)	Summer 2011	Available upon request for public review and comment
Draft Groundwater Treatability Study Report (RU-C5)	Fall 2011	Available upon request for public review and comment
Draft Final Groundwater Treatability Study Report (RU-C5)	Fall 2011	Available upon request for public review and comment
Final Groundwater Treatability Study Report (RU-C5)	Winter 2011	Available upon request for public review and comment

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Schedule of Reports for Cleanup Activities at Each Parcel

Name of Report[a]	Issue Date	Opportunities for Public Involvement
Parcel C Petroleum Program		
Draft Total Petroleum Hydrocarbon Work Plan Addendum	Summer 2011	Available upon request for public review and comment
Final Total Petroleum Hydrocarbon Work Plan Addendum	Summer 2011	Available upon request for public review and comment
Draft Total Petroleum Hydrocarbon Closure Report	2012	Available upon request for public review and comment
Final Total Petroleum Hydrocarbon Closure Report	2012	Available upon request for public review and comment
Parcel C Radiological Program		
Draft Radiological Removal Action Closeout Report	2012	Available upon request for public review and comment
Final Radiological Removal Action Closeout Report	2012	Available upon request for public review and comment
Parcel D-1		
Parcel D-1 Radiological Program		
Draft Radiological Removal Action Closeout Report	2012	Available upon request for public review and comment
Final Radiological Removal Action Closeout Report	2012	Available upon request for public review and comment
Parcel E		
Draft Final Feasibility Study	Summer 2011	Available upon request for public review and comment
Final Feasibility Study	Fall 2011	Available upon request for public review and comment
Draft Final Radiological Addendum to Feasibility Study	Summer 2011	Available upon request for public review and comment
Final Radiological Addendum to Feasibility Study	Fall 2011	Available upon request for public review and comment
Proposed Plan	2012	Formal public review and comment required
Draft Record of Decision with Responsiveness Summary	2012	Available upon request for public review and comment
Draft Final Record of Decision with Responsiveness Summary	2012	Available upon request for public review and comment
Final Record of Decision with Signatures	2012	Available upon request for public review and comment

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Schedule of Reports for Cleanup Activities at Each Parcel

Name of Report[a]	Issue Date	Opportunities for Public Involvement
Parcel E Groundwater Studies		
Final Groundwater Treatability Study Technical Report	Spring 2011	Available upon request for public review and comment
Draft IR-03 Site Characterization and Treatability Study Work Plan	Summer 2011	Available upon request for public review and comment
Final IR-03 Site Characterization and Treatability Study Work Plan	Fall 2011	Available upon request for public review and comment
Draft IR-03 Site Characterization and Treatability Report	2012	Available upon request for public review and comment
Final IR-03 Site Characterization and Treatability Study Report	2012	Available upon request for public review and comment
Parcel E Petroleum Program		
Draft Total Petroleum Hydrocarbon Closure Report	2012	Available upon request for public review and comment
Final Total Petroleum Hydrocarbon Closure Report	2012	Available upon request for public review and comment
Parcel E Radiological Program		
Draft Radiological Removal Action Closeout Report	2012	Available upon request for public review and comment
Final Radiological Removal Action Closeout Report with RTC	2012	Available upon request for public review and comment
Parcel E-2		
Final Remedial Investigation/Feasibility Study	Spring 2011	Available upon request for public review and comment
Final Radiological Addendum to Feasibility Study	Spring 2011	Available upon request for public review and comment
Proposed Plan	Fall 2011	Formal public review and comment required
Draft Record of Decision with Responsiveness Summary	Winter 2011	Available upon request for public review and comment
Draft Final Record of Decision with Responsiveness Summary	2012	Available upon request for public review and comment
Final Record of Decision with Responsiveness Summary	2012	Available upon request for public review and comment

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Schedule of Reports for Cleanup Activities at Each Parcel

Name of Report[a]	Issue Date	Opportunities for Public Involvement
Removal Action Reports for Parcel E-2		
Draft Removal Action Closeout Report for the Phase II PCB Time-Critical Removal Action	Fall 2011	Available upon request for public review and comment
Draft Action Memorandum – Shipshielding[d] Time-Critical Removal Action	Summer 2011	Available upon request for public review and comment
Final Action Memorandum - Shipshielding[d] Time-Critical Removal Action	Fall 2011	Available upon request for public review and comment
Draft Work Plan - Shipshielding[d] Time-Critical Removal Action	Summer 2011	Available upon request for public review and comment
Final Work Plan - Shipshielding[d] Time-Critical Removal Action	Fall 2011	Available upon request for public review and comment
Draft Removal Action Completion Report - Shipshielding[d] Time-Critical Removal Action	2012	Available upon request for public review and comment
Final Removal Action Completion Report - Shipshielding[d] Time-Critical Removal Action	2012	Available upon request for public review and comment
Final Removal Action Closeout Report for the Phase II PCB Time-Critical Removal Action	2012	Available upon request for public review and comment
Design and Remediation Reports for Parcel E-2		
Draft Field Summary Report for Geotechnical Investigation	Summer 2011	Available upon request for public review and comment
Final Field Summary Report for Geotechnical Investigation	Fall 2011	Available upon request for public review and comment
Draft Remedial Design	2012	Available upon request for public review and comment
Draft Final Remedial Design	2012	Available upon request for public review and comment
Final Remedial Design	2013	Available upon request for public review and comment
Draft Work Plans for Remedial Work	2013	Available upon request for public review and comment
Final Work Plans for Remedial Work	2013	Available upon request for public review and comment
Draft Remedial Action Closeout Report	2015	Available upon request for public review and comment
Draft Final Remedial Action Closeout Report	2015	Available upon request for public review and comment
Final Remedial Action Closeout Report	2015	Available upon request for public review and comment

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Schedule of Reports for Cleanup Activities at Each Parcel

Name of Report[a]	Issue Date	Opportunities for Public Involvement
Wetland Mitigation Completion Report	2017	Available upon request for public review and comment
Wetland Mitigation Completion Report	2018	Available upon request for public review and comment
Parcel F		
Pier Removal Project		
Draft Removal Action Completion Report for Pier Removal Project	Fall 2011	Available upon request for public review and comment
Final Removal Action Completion Report for Pier Removal Project	Winter 2011	Available upon request for public review and comment
Sediment Reports and Investigations		
Final Radiological Data Gap Investigation Workplan	Summer 2011	Available upon request for public review and comment
Draft Radiological Data Gap Investigation Report	2012	Available upon request for public review and comment
Draft Final Radiological Data Gap Investigation Report	Fall 2011	Available upon request for public review and comment
Final Radiological Data Gap Investigation Report	Fall 2011	Available upon request for public review and comment
Draft Radiological Addendum to Feasibility Study	Winter 2011	Available upon request for public review and comment
Draft Final Radiological Addendum to Feasibility Study	2012	Available upon request for public review and comment
Final Radiological Addendum to Feasibility Study	2013	Available upon request for public review and comment
Proposed Plan	2013	Formal public review and comment required
Draft Record of Decision	2014	Available upon request for public review and comment
Draft Final Record of Decision	2014	Available upon request for public review and comment
Final Record of Decision with Signatures	2014	Available upon request for public review and comment
Draft Remedial Design	2014	Available upon request for public review and comment
Draft Final Remedial Design	2014	Available upon request for public review and comment

Chapter 4: Navy's Cleanup Program at Hunters Point Shipyard (continued)

Schedule of Reports for Cleanup Activities at Each Parcel

Name of Report[a]	Issue Date	Opportunities for Public Involvement
Final Remedial Design	2014	Available upon request for public review and comment
Draft Work Plan for Remedial Action	2014	Available upon request for public review and comment
Draft Final Work Plan for Remedial Action	2014	Available upon request for public review and comment
Final Work Plan for Remedial Action	2014	Available upon request for public review and comment
Draft Remedial Action Completion Report	2016	Available upon request for public review and comment
Draft Final Remedial Action Completion Report	2017	Available upon request for public review and comment
Final Remedial Action Completion Report	2017	Available upon request for public review and comment
Parcel G		
Draft Removal Action Completion Report	Spring 2011	Available upon request for public review and comment

Notes:

[a] Name of Report: A description of typical CERCLA reports is provided in Appendix G.

[b] Vapor Intrusion: When chemicals in soil or groundwater move into indoor air in buildings.

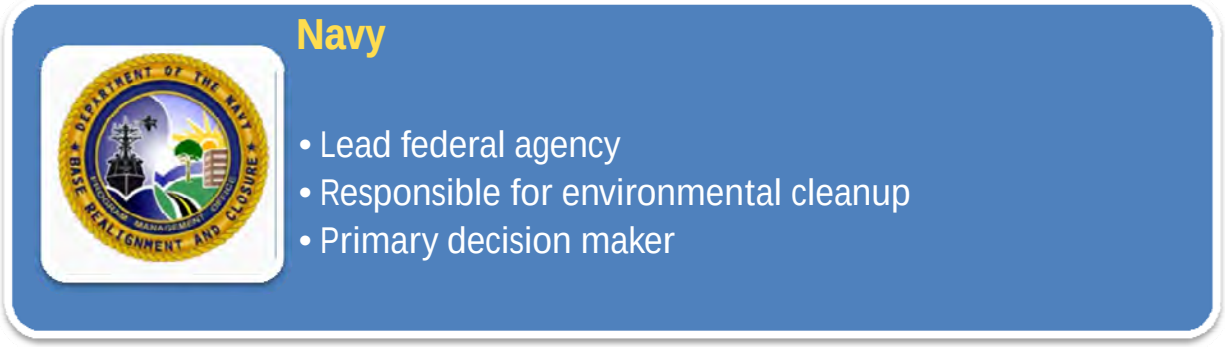
[c] Bioremediation: Removing contamination by having microorganisms (such as bacteria) consume it. *In situ* means treating the contaminated material in place at the site, while *ex situ* means the contaminated material is removed and treated elsewhere.

[d] Shipshielding: A former practice at the shipyard where the Navy tried various ways to shield ships from radiation.

Chapter 5: Cleanup Roles and Responsibilities

The environmental cleanup of HPS is a complex process involving several key state and federal agencies. The state and federal regulatory agencies provide oversight to make sure the Navy's cleanup complies with existing laws and regulations (for more information on the laws and regulations, see Appendix G). This section describes the roles and responsibilities of the Navy, the regulatory agencies, and the key stakeholders involved with the environmental cleanup at HPS. To contact the Navy or any of the regulatory agencies for more information, see the contact list in Appendix B.

Roles and Responsibilities of the Navy



The Navy is the lead federal agency responsible for the environmental cleanup and community involvement program at HPS and is therefore the primary decision maker. The regulatory agencies oversee all key decisions about cleanup and community involvement to ensure that the activities are meeting cleanup laws and regulations.

The Navy's environmental cleanup program at HPS is ongoing. The Navy's ultimate goal of the HPS environmental cleanup program is to make property available for reuse by the San Francisco Redevelopment Authority. Once the Navy has completed cleanup at a parcel and the regulatory agencies have decided that cleanup meets the requirements to protect human health and the environment, the Navy can transfer the land to another landowner, such as the SFRA. The Navy's cleanup program is implemented in accordance with the SFRA's redevelopment plan for HPS. That plan designates the type of reuse planned – areas of residential, commercial, or recreational use – and the cleanup levels meet that reuse plan.

Once land transfer is complete, the Navy is no longer in control of activities on that property. Redevelopment of transferred land, including hiring a land developer, is the responsibility of the new landowner, the SFRA.

For example, in 2004, the Navy transferred Parcel A to SFRA. After the land was transferred, the Navy was no longer in control of activities on that property. Redevelopment of transferred land, including hiring a land developer, is then the responsibility of the new landowner; for Parcel A, it is the responsibility of the SFRA.

Sometimes property can be transferred prior to the completion of all environmental cleanup activities. As part of the Early Transfer process the Navy will prepare a Finding of Suitability for Early Transfer (**FOSET**), which will first be reviewed by U.S. EPA and the state regulators, and then made available to

Chapter 5: Cleanup Roles and Responsibilities (continued)

the public for a 30-day comment period. The purpose of the FOSET is to present the Navy and regulatory agency findings that a parcel is environmentally suitable for transfer prior to completing all remedial action, pursuant to the deferral provisions of CERCLA Section 120(h)(3)(C) (for a graphic of the CERCLA process with early transfer, see Appendix G).

The FOSET will do the following:

1) Describe the remedial actions taken by the Navy, including excavation of "hotspots" of contamination and the treatment of the groundwater

2) Document regulatory approval of the Navy's completion of the excavation of all radiation associated with storm and sanitary sewer lines

3) Document the "free release" of all buildings where radiological contamination was identified, or which were suspected of having radiological contamination (Note: the Navy must meet the requirements of free release prior to issuing the FOSET as it is a condition of transfer)

4) Describe the proposed transfer and the mechanisms to ensure that the remaining elements of the remedial action are properly conducted

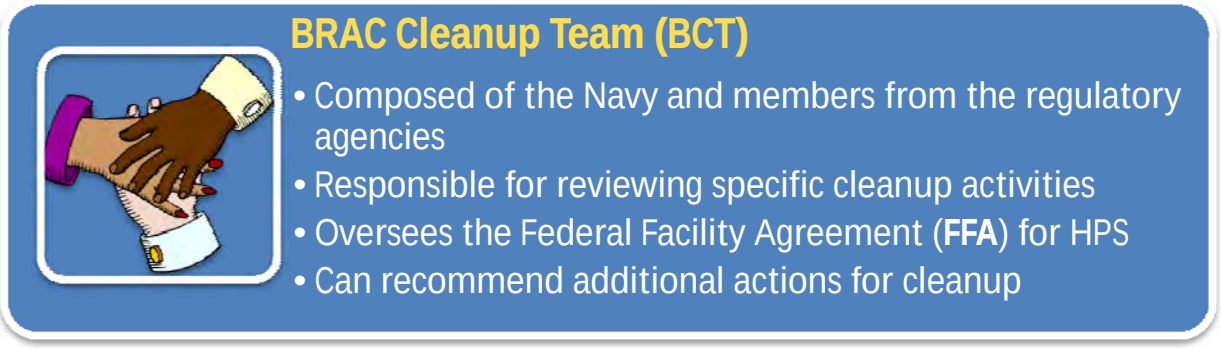
5) Describe the Administrative Order on Consent (**AOC**) under which U.S. EPA and the State of California will oversee the remaining remediation

6) Describe the restrictions which will be established to assure protection of human health and the environment during and after the redevelopment

After the public has commented on the FOSET, the Navy will revise the FOSET in response to comments received before formally presenting it to U.S. EPA and the State as part of the package officially requesting approval of the Early Transfer. The Early Transfer package is called the Covenant Deferral Request (**CDR**). The CDR must be approved by U.S. EPA and by the Governor of the State of California before title to the property can be transferred to the SFRA. See Page 52 for an explanation of the SFRA's responsibilities.

Chapter 5: Cleanup Roles and Responsibilities (continued)

Roles and Responsibilities of the Regulatory Agencies



Several regulatory agencies provide oversight of the Navy's environmental cleanup at HPS. In 1988, HPS entered the BRAC Program, which designated HPS for environmental cleanup and closure. The BCT is made up of Navy staff and several regulatory agencies. The BCT oversees specific environmental cleanup program activities and the environmental closeout process at HPS, which includes meeting legal requirements and regulations designed to protect human health and the environment. In addition to overseeing the environmental cleanup, the BCT ensures that the cleanup meets the legal requirements for public participation.

The primary regulatory agencies (and members of the BCT) actively involved at HPS, as well as their primary responsibilities, are as follows:

- U.S. EPA is the lead regulator agency and provides federal oversight for the environmental cleanup at HPS.
- DTSC is the lead state agency and provides oversight for the environmental cleanup at HPS.
- The Water Board supports DTSC and provides oversight for cleanup activities that affect water and the petroleum program.

The BCT signed a legal document, called the FFA, with the Navy that provides the enforcement mechanisms to do the following:

1. Ensure that the Navy has thoroughly investigated environmental impacts from past and current site activities.
2. Ensure that the Navy takes appropriate response action (such as cleanup activities) needed to protect public health, welfare, and the environment.
3. Ensure that the response actions comply with applicable laws and regulations.
4. Set up a framework and schedule for response actions.
5. Facilitate cooperation, exchange of information, and participation between the Navy and the regulatory agencies.

Chapter 5: Cleanup Roles and Responsibilities (continued)

Other agencies are involved in the environmental cleanup process when cleanup affects resources they regulate. Those agencies include the California Department of Public Health, the California Department of Fish and Game, the U.S. Fish and Wildlife Service, the San Francisco Department of Public Health (**SFDPH**), and the San Francisco Bay Conservation and Development Commission.

Roles and Responsibilities of the San Francisco Redevelopment Agency

San Francisco Redevelopment Agency (SFRA)

- Becomes landowner once cleanup is complete
- Is responsible for redevelopment

The San Francisco Redevelopment Agency, or its successors, is primarily responsible for redeveloping HPS. In 1997, after an extensive multi-year community planning effort, the SFRA adopted the Hunters Point Shipyard Redevelopment Plan. An amendment to the plan was adopted in August 2010.

According to the SFRA Web site, the City selected Lennar/Bayview Hunters Point (**BVHP**) Partners (now known as "HPS Development Co., LP") as the master developer for HPS in March of 1999 (www.sfredevelopment.org/index.aspx?page=57).

Once a parcel meets the cleanup requirements, or an agreement for Early Transfer has been reached, it is transferred from the Navy to the SFRA (refer to the Navy's responsibilities on Pages 49-50 for more details about Early Transfer). After the piece of property has been transferred, the SFRA is fully responsible for redevelopment of the site, including selecting a developer and deciding how the land will be developed.

Roles and Responsibilities of the City and County of San Francisco

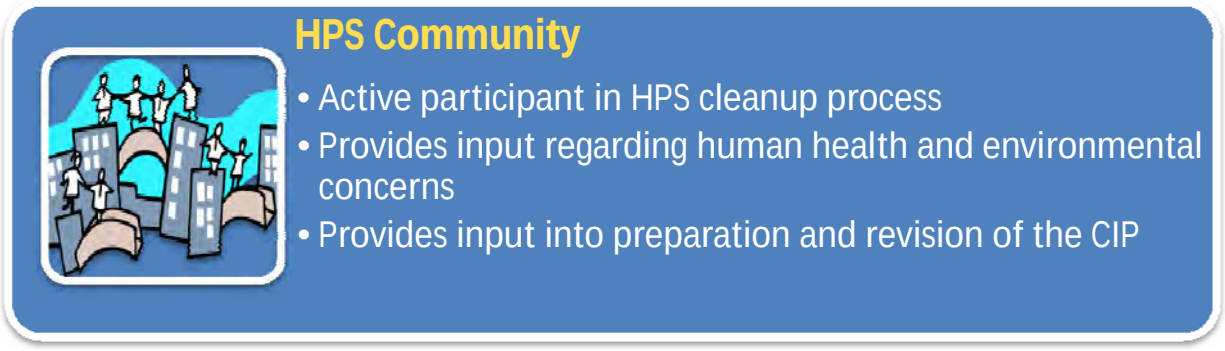
City and County of San Francisco

- Provides input during cleanup as needed

SFDPH is one of the agencies providing input to the Navy's environmental cleanup of HPS. The City is also able to provide input during the cleanup process if it determines that the cleanup activities will be detrimental to the property or in violation of City laws and codes. The City has several mechanisms in place that will require anyone who disturbs soil or other ground cover at HPS to comply with

requirements in the San Francisco Municipal Codes, specifically Health, Building and Public Works Codes. The City also will regulate the construction of new development through its Subdivision Code, which will require construction of public improvements in conjunction with subdivision of land for private development. The City and the SFRA have a formal process to confirm that the improvements were constructed as required by the permits. The City also has a process in its Building Code to confirm that structures are constructed to code. Permitted activities involving the disturbance of soil require the permit applicant to go through a special process set out under Article 31 of the Health Code. The Applicant is required to obtain approval of various plans under Article 31 from SFDPH to assure that environmental restrictions and conditions are appropriately taken into account during the permitted activities. Once the Applicant receives approval of the required plans and meets all other permit requirements the Applicant will receive approval for the building, grading or other permit and can begin grading or construction.

Roles and Responsibilities of the Community



One of the ways the HPS community plays an active role in the Navy's environmental cleanup program is by providing input to the BCT on cleanup alternatives and selection of the remedy. The community fulfills these roles by doing the following:

- Reviewing documents
- Providing comments
- Participating in meetings and other community involvement program activities
- Providing advice and solutions that can be incorporated into the cleanup process and decisions

In addition to any interested stakeholders being involved in the cleanup process through the various community involvement activities, U.S. EPA also offers a Technical Assistance Grant (**TAG**) Program. The U.S. EPA TAG Program awards one grant per site to an eligible citizen group that lives near a Superfund site. This group contracts with an independent technical advisor to help the community interpret and comment on site-related information. In August 2009, a 3-year, $50,000 TAG was awarded to the India Basin Neighborhood Association (**IBNA**). IBNA recently contracted with Arc Ecology, Inc. as its technical advisor. The TAG grant administrator is Alex Lantsberg who can be contacted at (415) 938-6170. The U.S. EPA TAG project officer is Jackie Lane at (415) 972-3236 or e-mail lane.jackie@epa.gov.

Chapter 5: Cleanup Roles and Responsibilities (continued)

The Navy's community involvement program activities, designed to engage the community, are described in Chapter 3 of this document. The Navy plans to involve the IBNA and its technical advisor under the TAG Program in the cleanup process in the following ways:

- Technical advisors, as directed by IBNA, participate at Navy cleanup meetings with the regulators.
- The Navy will respond to technical advisor comments on Navy documents.
- The Navy will provide time on community meeting agendas for TAG updates and to make announcements. Technical advisor presentations can be arranged for when needed.

When it comes to concerns and interests related to the current or future redevelopment of property, the community can communicate directly with the SFRA. The City has set up several methods for doing this, including the Citizens Advisory Committee (CAC), which is made up of community members selected by the mayor to provide input to the redevelopment process, and the Project Area Committee (PAC), a community-based organization providing recommendations to SFRA. For contact information, see Appendix B.

Conclusion

The Navy is committed to providing information and listening to community concerns about the environmental cleanup plans and activities at HPS. Community review comments are incorporated into HPS cleanup-related documents and have had an impact on cleanup activities, such as looking into alternate technologies, increasing air monitoring, adjusting work hours, and varying truck routes.

This CIP is a resource for enabling the Navy to engage with the community better, as well as a tool for the community to use to get information on the environmental cleanup program and get involved in the process. The CIP contains resources for the community, including more detailed information listed in the appendices that follow. Every two years, the Navy will evaluate its community involvement program, and the need for a RAB, including distributing a survey to the community, to ensure that the actions that are implemented continue to meet the needs of the HPS community.

Chapter 6: References

This chapter presents the sources for information referenced in this CIP document.

Agency for Toxic Substances and Disease Registry Web site. 2010. http://www.atsdr.cdc.gov/toxfaqs/index.asp.

California Department of Toxic Substances Control (DTSC). 2001. "Department of Toxic Substances Control Public Participation Manual." Online: http://www.envirolawyer.com/DTSC_PublicParticipationManual_10-01.pdf.

Department of the Army. June 2006. "Final Community Relations Plan Update Number 3, Fort Ord, California."

Department of Defense. 1994. "Restoration Advisory Board (RAB) Implementation Guidelines" Web site. Federal Facilities Restoration and Reuse Office (FFRRO). Online: http://www.epa.gov/fedfac/documents/rab.htm.

Department of the Navy. February 1997. "Navy/Marine Corps Installation Restoration Manual." Naval Facilities Engineering Command, Alexandria, VA. Online: http://web.ead.anl.gov/ecorisk/basis/pdf/navymarineirmanual.pdf.

Department of the Navy. August 2006. "Environmental Restoration Program Manual." Online: https://portal.navfac.navy.mil/portal/page/portal/navfac/navfac_ww_pp/navfac_nfesc_pp/environmental/erb/resourceerb/nerp_manual_2006_0.pdf.

Nielsen Claritas. 2010. Census information.

Office of the Secretary of Defense. March 2007. "Restoration Advisory Board Rule Handbook." Online: http://www.saw.usace.army.mil/campbutner/RAB%20Rule%20Handbook_23%20Jan%202007-v2.pdf.

San Francisco Department of Public Health Web site. 2010. Online: http://www.sfdph.org/dph/EH/default.asp.

San Francisco Redevelopment Agency. July 1997. "Hunters Point Shipyard Redevelopment Plan."

San Francisco Redevelopment Agency. August 2010 (amended). "Hunters Point Shipyard Redevelopment Plan." Online: http://www.sfredevelopment.org/Modules/ShowDocument.aspx?documentid=2429.

Tetra Tech EM Inc. April 2004. "Final Community Involvement Plan, Hunters Point Shipyard, San Francisco, California."

Chapter 6: References (continued)

U.S. Environmental Protection Agency (U.S. EPA). April 2005 (Revision 4). "Superfund Community Involvement Handbook." Online: http://www.epa.gov/superfund/community/cag/pdfs/ci_handbook.pdf.

U.S. EPA. 2005 (revised). "Superfund Community Involvement Toolkit." Online: http://www.epa.gov/superfund/community/toolkit.htm.

U.S. EPA. October 2009. "Iron King Mine – Humboldt Smelter Site Community Involvement Plan, Dewey-Humboldt, Arizona."

Appendix A: Health-Related Information, Resources, and Contacts

Health Resources

Most of the people interviewed for this Community Involvement Plan (**CIP**)—at least 54 of 73—were concerned about health issues. They mentioned concerns for health of former workers, former and current residents who live near the site, and future residents who will live on the site. Many interviewees mentioned high rates of asthma and cancer in the Hunters Point Shipyard (**HPS**) community and their concern that the shipyard may affect these rates. A number of those interviewed have health problems and are curious whether the site caused or contributed to their compromised health.

The Department of the Navy recognizes that health is primary concern for the Bayview community and wants to help address this issue as best it can in this document. The Superfund Law driving the cleanup at HPS does not address health of individuals; but rather, it focuses narrowly on cleaning up contamination to levels that are no longer a threat to human health or the environment. Assistancefor individual health concerns is provided through public health agencies and organizations whose missions are health-based. Nevertheless, to better assist the community, the Navy and regulators compiled pertinent health resource information that includes contact name, roles, and mission focus (see table below beginning on page A-3). Other ways the Navy protects present and future public health are described below.

Health in the Environmental Cleanup Decision-Making Process

According to the U.S. EPA Superfund Law, the Navy is required to consider a number of factors when selecting environmental cleanup program actions to ensure the protection of human health and environment from the effects of contamination at the site. One of those factors is conducting a risk assessment to analyze contamination data from the site and develop a scientific estimate of the level of risk for people who might be exposed to these substances (present exposure and future land use). The risk assessment determines if these levels pose an unacceptable risk that could affect a person's health as defined by regulatory standards and requirements. This information is used to determine the types of environmental cleanup program actions that will reduce that risk. Conservative safety margins are built into this analysis; therefore, people will not necessarily become sick even if they are exposed to materials at higher dose levels than those estimated by the risk assessment. The most vulnerable people (e.g., children and the elderly) are carefully considered to make sure all members of the public will be protected.

Dust Control at the Site

Interviewees also stated they are concerned specifically about dust control. The Navy has an approved Dust Control Plan in place to ensure the safety of workers and the HPS Community. Dust control is important to prevent people being exposed to dust that may contain contaminants of concern. Dust issues are addressed through the following methods:

(1) To prevent dust, work sites and roadways are sprayed with water.

(2) Stockpiles of soil are coated with a substance that works like glue to control windblown dust.

Appendix A: Health-Related Information, Resources, and Contacts (continued)

(3) Trucks carrying soil are covered before leaving the shipyard.

(4) A 15 mile per hour speed limit is required for all vehicles on site, and a 5 mile per hour speed limit is required in work areas.

(5) Air monitoring is done at HPS on a continuous basis during normal business hours and dust levels are monitored in real time—if dust is detected above approved concentrations, operations are immediately shut down and mitigation measures, such as spraying water, are promptly used.

Air Monitoring and Air Quality at the Site

The Navy will continue to monitor air quality (both dust and contaminant levels) during the cleanup process. Should additional health information about air quality issues at HPS become available, the Navy will compile another fact sheet and be prepared to make presentations to the local community about this issue.

You can review air quality data for HPS on the Navy's Web site:

- Go to www.bracpmo.navy.mil
- Click on the Installations Map (on the right)
- Click on the state of California (on the map)
- Click on the label "NSY Hunters Point" (on the map). Now you are on the HPS specific Web page.
- Scroll down to "Air Monitoring Data". Click the "Air Monitoring Data" to expand the list. From there you can click on the link to view air data for various time periods.

Local and federal agencies can answer your questions or give information about health or environmental conditions. See the following table for contacts related to health and asthma specifically, air quality, and health resources in the area.

Appendix A: Health – Related Information, Resources, and Contacts (continued)

Health Contacts/Resources:

Broader Health Concern	Contact Agency/ Organization	Contact Information	Details
City and County of San Francisco, Regional, and State Agencies			
Asthma Concerns and Services	Asthma Task Force	www.sfgov.org/asthma	Created to propose advocacy, legislative action, and citywide strategies to address the City's mounting asthma problem.
Environmental health concerns (including housing issues, asthma in-home assessments)	City of San Francisco Department of Public Health (**SFDPH**) Environmental Health Section	1390 Market St., Suite 210 San Francisco, CA 94102 8:00 a.m. - 5:00 p.m., Monday - Friday (415) 252-3800 FAX: 252-3875 www.sfenvironmentalhealth.org	Promotes health and quality of life in San Francisco by ensuring healthy living and working conditions in the City and County of San Francisco. For an in-home doctor referral form, go to www.sfdph.org/dph/EH/asthma/default.asp
Report on health programs and recommendations for neighborhood residents	SFDPH	Mitchell H. Katz, MD Director of Health, SFDPH 101 Grove Street San Francisco, CA 94102-4593 (415) 554-2600 Mitchell.katz@sfdph.org	*Health Programs in Bayview Hunter's Point & Recommendations for Improving the Health of Bayview Hunter's Point Residents* www.sfdph.org/dph/files/reports/StudiesData/BayviewHlthRpt09192006.pdf
Transportation to medical services	Hunters Point Foundation for Community Improvement	(415) 822-7500 ext. 22 E-mail: transportation@bayviewci.org www.bayviewci.org/transportation.html	Health access has been greatly increased by free hourly shuttle service from Hunters Point low-income housing areas (Alice Griffith and Hunters View Developments) to medical services, including Southeast Health Center, Bayview Child Health Clinic, San Francisco General Hospital, and several other locations
Maternal, Child, and Adolescent Health Coverage	SFDPH – Maternal, Child and Adolescent Health Section	(800) 300-9950	English, Spanish, and Cantonese translation. Afterhours answering machine

Appendix A: Health – Related Information, Resources, and Contacts (continued)

Health Contacts/Resources:

Broader Health Concern	Contact Agency/ Organization	Contact Information	Details
Health Coverage for Uninsured San Francisco Adult Residents	Healthy San Francisco (operated by SFDPH)	(415) 615-4500	
Outdoor Air Quality	Bay Area Air Quality Management District	939 Ellis Street San Francisco, CA 94109 (415) 771-6000 or (800) HELP –AIR www.baaqmd.gov	The BAAQMD is the public agency entrusted with regulating stationary sources of air pollution in the nine counties that surround San Francisco Bay—Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma Counties.
California Department of Public Health (CDPH) Programs in San Francisco County			
Black Infant Health Program	San Francisco City & County Health Department	30 Van Ness Avenue, Suite 260 San Francisco, CA 94102	CDPH provides clinical, preventive, and outreach work For more information about CDPH programs specifically in San Francisco County, see: www.cdph.ca.gov/services/Pages/SanFranciscoCounty.aspx
Childhood Lead Poisoning Prevention Program	San Francisco City & County Health Department	1390 Market Street, Suite 410 San Francisco, CA 94102	CDPH provides clinical, preventive, and outreach work For more information about CDPH programs specifically in San Francisco County, see: www.cdph.ca.gov/services/Pages/SanFranciscoCounty.aspx

Appendix A: Health – Related Information, Resources, and Contacts (continued)

Health Contacts/Resources:

Broader Health Concern	Contact Agency/ Organization	Contact Information	Details
Federal Agencies			
Hazardous waste exposure	U.S. Agency for Toxic Substances and Disease Registry (ATSDR) – Toxic Substance Regional Office and Local Contact for CDC	75 Hawthorne Street, Suite 100-D San Francisco, CA 94803 (415) 947-4323 Muza.susan@epa.gov To request that ATSDR evaluate potential exposure in your community or neighborhood, call (800) CDC-INFO or visit www.atsdr.cdc.gov/HAC/petition.html	Federal public health agency whose mission is to prevent adverse human health effects that result from exposure to hazardous waste. ATSDR performed a "Public Health Assessment" for Hunters Point in September, 1994, located online at www.atsdr.cdc.gov/HAC/pha/PHA.asp?docid=26&pg=0#figures ATSDR also conducted a "Health Consultation: Parcel E Landfill Fire at Hunters Point Shipyard" in March, 2001, found online at www.atsdr.cdc.gov/HAC/pha/PHA.asp?docid=25&pg=0 ATSDR also conducted an asbestos study on Parcel A in September, 2008, found online at www.atsdr.cdc.gov/HAC/pha/ParcelABayviewHuntersPoint/Parcel%20A_Bayview_Hunters_%20Point%20HC%209-30-2008.pdf

Appendix A: Health – Related Information, Resources, and Contacts (continued)

Local Health Service Providers *This is not an exhaustive list but these facilities have asthma expertise*			
Pediatric and Adult Care	Southeast Health Center	2401 Keith Street San Francisco, CA 94124-3231 (415) 671-7000	SFDPH Clinic
Pediatric Care	Bayview Children's Health Center	1335 Evans Avenue San Francisco, CA 94124-1705 (415) 600-1990 www.cpmc.org/about/e-health/2007/g2-Bayview.html	Affiliated with California Pacific Medical Center /Sutter Health
Adolescent Care	Third Street Youth Center and Clinic	5190 Third Street San Francisco, CA 94124 (415) 822-1707	SFDPH Clinic
Adult Care	Dr. Arthur H. Coleman Medical Center	6301 Third Street San Francisco, CA 94124 (415) 467-1400	Private Practice Clinic
Pediatric Care	San Francisco General Hospital and Trauma Center Pediatric Asthma Clinic	1001 Potrero Avenue San Francisco, CA 94110 (415) 206-3844 or 206-4345 www.sfdph.org/dph/comupg/oservices/medSvs/SFGH/pediatricAsthmaClin/default.asp	

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Appendix B: Navy, Federal, State, and Local Government Contacts

The table below provides contact information for Navy and other agency personnel who are involved in the cleanup activities at Hunters Point Shipyard.

Primary Contacts for Navy and Other Agencies Directly Involved with HPS Cleanup Activities

Name	Title/Project Role	Address	Phone and E-mail
Department of the Navy			
Keith Forman	Base Realignment and Closure (**BRAC**) Environmental Coordinator	Department of the Navy Base Realignment and Closure Program Management Office West 1455 Frazee Road, Suite 900 San Diego, CA 92108-4310	Phone: (619) 532-0913 Cell: (415) 308-1458 E-mail: keith.s.forman@navy.mil
United States Environmental Protection Agency (U.S. EPA)			
Mark Ripperda	Lead Remedial Project Manager	U.S. EPA, (SFD-8-3) 75 Hawthorne Street San Francisco, CA 94105-3920	Phone: (415) 972-3028 E-mail: Ripperda.Mark@epa.gov
Jackie Lane	Community Involvement Coordinator	U.S. EPA, (SFD-6-3) 75 Hawthorne Street San Francisco, CA 94105-3920	Phone: (415) 972-3236 E-mail: Lane.Jackie@epa.gov
California Environmental Protection Agency			
Ryan Miya	Lead Remedial Project Manager	Department of Toxic Substances Control (**DTSC**) 700 Heinz Avenue Building F, Suite 200 Berkeley, CA 94710-2721	Phone: (510) 540-3775 E-mail: RMiya@dtsc.ca.gov
Ross Steenson	Lead Remedial Project Manager	San Francisco Bay Regional Water Quality Control Board (**Water Board**) 1515 Clay Street, Suite 1400 Oakland, CA 94612-1482	Phone: (510) 622-2445 E-mail: RSteenson@waterboards.ca.gov

Appendix B: Navy, Federal, State, and Local Government Contacts (continued)

Primary Contacts for Navy and Other Agencies Directly Involved with HPS Cleanup Activities			
Name	**Title/Project Role**	**Address**	**Phone and E-mail**
City of San Francisco			
Amy Brownell	Engineer, Oversight Representative	City of San Francisco Department of Public Health 1390 Market Street, Suite 210 San Francisco, CA 94102-5404	Phone: (415) 252-3967 E-mail: amy.brownell@sfdph.org
Thor Kaslofsky	Project Manager	City of San Francisco Redevelopment Agency One South Van Ness Avenue, 5th Floor San Francisco, CA 94103	Phone: (415) 749-2464 E-mail: Thor.Kaslofsky@sfgov.org
Ed Harrington	General Manager	City of San Francisco Public Utilities Commission 1155 Market Street, 11th floor San Francisco CA 94103	Phone: (415) 554-1600 E-mail: not available
Other Agencies and Organizations Involved with Environmental Cleanup			
Gino Yekta	Waste Management Engineer	CalRecycle 1001 I Street PO Box 4025 Sacramento, CA 95812	Phone: (916) 341-6354 E-mail: Gino.Yekta@CalRecycle.ca.gov
Mike McGowan	Scientist and TAG's Technical Advisor	Arc Ecology 1331 Evans Avenue San Francisco, CA 94124	Phone: (415) 643-1190 E-mail: mikemcgowan@arcecology.org
Laurie Sullivan	Scientist	National Oceanic and Atmospheric Administration c/o U.S. EPA Region 9 75 Hawthorne Street San Francisco, CA 94105	Phone: (415) 972-3210 E-mail: Laurie.sullivan@noaa.gov
James Haas	Scientist	U.S. Fish & Wildlife Service Sacramento Fish and Wildlife Office 2800 Cottage Way, Room W-2605 Sacramento, CA 95825	Phone: (916) 414-6740 E-mail: james_haas@fws.gov

Appendix B: Navy, Federal, State, and Local Government Contacts (continued)

Websites for Additional Information		
Federal		
Navy	The Navy's Base Realignment and Closure Web site	www.bracpmo.navy.mil/basepage.aspx?baseid=45&state=California&name=hps
U.S. EPA	The U.S. EPA's Region 9 Web sites	www.epa.gov/region09/HuntersPointNavalShipyard
State of California		
DTSC	The California EPA DTSC Web site	www.dtsc.ca.gov
Water Board	The California EPA Water Board Web site	www.swrcb.ca.gov/rwqcb2/
City of San Francisco		
Bayview HPS Redevelopment	The Hunters Point Web site giving information about redevelopment, maintained by the SFRA's selected redeveloper, Lennar.	www.hunterspointcommunity.com/
Citizens Advisory Committee (CAC)	"…San Francisco community residents and business owners selected by the mayor to oversee the redevelopment process."	www.hpscac.com/
San Francisco Department of Public Health, Hunters Point Shipyard Redevelopment Web site	Information on SFDPH oversight of Lennar Redevelopment Project at Parcel A (formerly Navy owned Parcel A)	www.sfdph.org/dph/EH/HuntersPoint/
San Francisco Redevelopment Agency (SFRA)	"…incorporated August 10, 1948, [SFRA] is authorized and organized under the provisions of the California Community Redevelopment Law. Seven Commissioners appointed by the Mayor and approved by the Board of Supervisors govern the Agency."	www.sfredevelopment.org/
Project Area Committee (PAC)	"A community-based organization serving the interests of the Bayview Hunters Point District of San Francisco… providing advice, recommendation, and direction to the San Francisco Redevelopment Agency."	www.bvhp-pac.org/

Appendix B: Navy, Federal, State, and Local Government Contacts (continued)

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Appendix B: Navy, Federal, State, and Local Government Contacts (continued)

Online Information

The Navy's Hunters Point Shipyard (**HPS**) Web site:
www.bracpmo.navy.mil/basepage.aspx?baseid=45&state=California&name=hps

The following information is available on this Web site:

- A brief history of HPS and the environmental restoration program
- Updated information on the status of the environmental restoration program
- Access to Navy reference documents and links to related cleanup Web sites
- Fact sheets and quarterly newsletters regarding various topics for the environmental restoration program at HPS
- Recently published documents that are currently available for public review

Note: This is not the new HPS Web site that the Navy will create to involve the community, as discussed in the Actions and Activities section (Chapter 3). A new improved Web site will be created as part of the implementation of this CIP.

Administrative Record Locations

The Administrative Record contains all documents considered or relied on during the process of making environmental cleanup decisions. Due to the large volume of documents required for the Administrative Record and space issues associated with the local Information Repositories, the Bayview/Anna E. Waden Branch Library and the San Francisco Main Public Library only contain the Administrative Records indexes and other pertinent documents for public view (see Pages H-13 and H-14 for addresses). The Bayview/Anna E. Waden Branch Library was closed in April 2011; however, a temporary location for the Information Repository has been established at the HPS Site Trailer, located across the street from the security entrance to the Shipyard.

The complete Administrative Record for HPS is maintained at the Naval Facilities Engineering Command offices in San Diego, California. Copies of documents located at the Information Repository are available for review by appointment only by contacting the Administrative Record Administrator:

Diane Silva, NAVFAC SWDIV Code EV33
NBSD Bldg 3519
2965 Mole Road
San Diego, CA 92136
Phone: (619) 556-1280
diane.silva@navy.mil

Administrative hours are 8:00 a.m. to 5:00 p.m., Monday through Friday. Documents may not be removed from the facility; however, they may be photocopied.

In addition, the U.S. EPA's Administrative Record is located at:

U.S. EPA Superfund Records Center
95 Hawthorne Street San Francisco, CA 94105
Phone: (410) 536-2000
(hours 8:00 a.m. to 5:00 p.m.)

Appendix B: Navy, Federal, State, and Local Government Contacts (continued)

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Appendix C: Community Interview Process and Summary

Interview Process

Conducting community interviews is a key part of preparing an updated Community Involvement Plan (**CIP**). The Department of the Navy began the interview process by compiling a large list of Hunters Point Shipyard (**HPS**) community stakeholders, who were contacted and invited to be interviewed. The Navy also hosted a community meeting in February 2010 to discuss a new CIP. During the meeting, the Navy received comments from the community on a proposed table of contents for the CIP and the interview questionaire. Approximately 35 community members attended the meeting to discuss the CIP.

The Navy mailed a postcard to reach interested stakeholders, inviting all members of the community to participate in the interview process. The postcard was mailed on June 14, 2010, to more than 2,200 people within the HPS community. Those who responded were added to the list of potential interviews. The list also contained the following:

- Existing Navy and United States Environmental Protection Agency (**U.S. EPA**) distribution lists
- Web research conducted to locate appropriate groups
- Suggestions from other interviewees (each interviewee was asked who else they thought should be interviewed)

In total, from June 15 through September 9, 2010, the Navy conducted 73 interviews with people who live in, work in, or serve the HPS community—defined as ZIP codes 94107, 94124, and 94134 (see map in Appendix D). The Navy conducted 40 interviews for the previous HPS CIP, prepared in 2004. The Navy went to significant lengths in 2010 to ensure the most comprehensive survey practicable. Ten of the interviews were conducted via telephone and the rest were conducted in person. Although 73 people were interviewed, not every interviewee responded to every question. In addition, more than one response was offered for some questions; therefore, answers summarized in the following list do not always total 73 responses.

A Navy respresentative and a contractor who took notes were present at each interview. In all but one of the 73 interviews, at least one but as many as four regulatory agency representatives were also present.

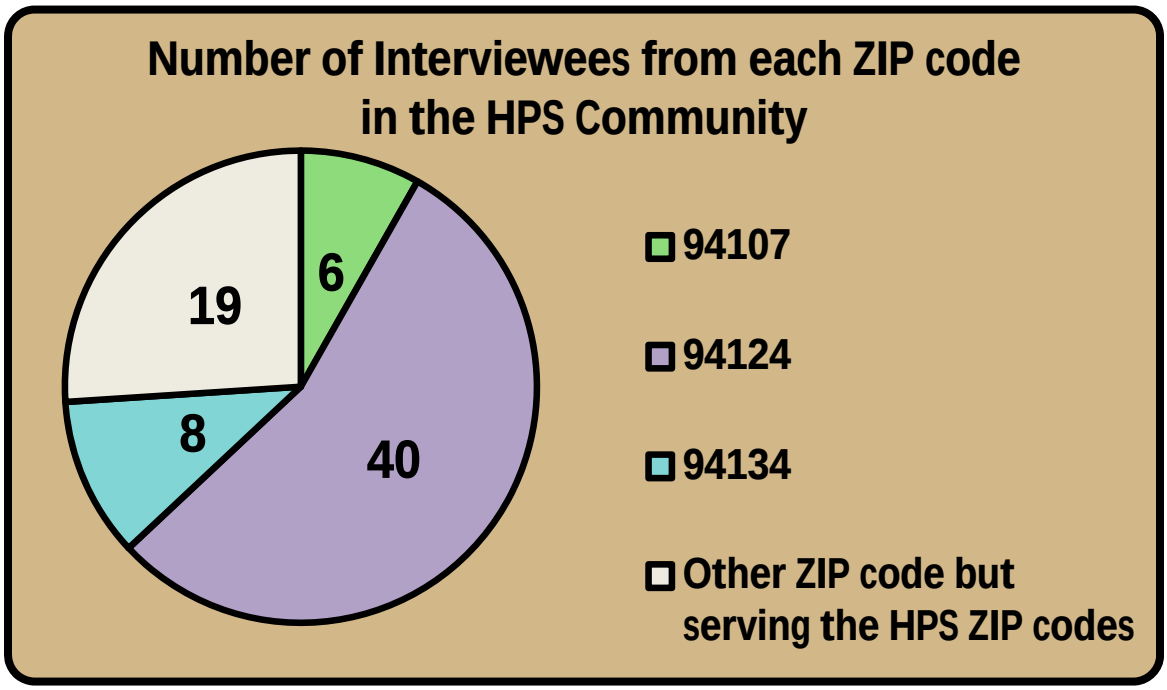
Categories of stakeholders interviewed, and the number from each group is listed as follows:

- Civic Groups/ Clubs and Organizations – 34
- Local Residents – 31
- Environmental Groups/Activists – 15
- Former Restoration Advisory Board (**RAB**) Members – 12
- Local Businesses – 11
- Education and Childcare Providers – 6
- Media – 3
- Elected Officials – 1
- Health Care Providers – 2

Many interviewees respresented more than one of the abovementioned groups; therefore, the total representation is greater than 73 individuals interviewed.

Appendix C: Community Interview Process and Summary (continued)

The Navy tried to interview stakeholders from all segments of the community. The following chart represents the breakdown of the 73 interviewees that work or reside in the 94124, 94107, and 94134 ZIP code areas.



For *Other ZIP code* designation, the physical address is outside of the 3 HPS community ZIP codes. However, the organizations service the 3 HPS ZIP codes. Of these, 7 are civic organizations, 5 are environmental organizations, 4 are media, and 3 are government or elected officials.

The table on the following page lists all of the affiliations of those interviewed, as noted by the interviewee. Some interviewees requested that their organization not be listed specifically by name. Note that most interviewees had numerous affiliations, so the total is more than 73.

Appendix C: Community Interview Process and Summary (continued)

Affiliations of Interviewees
A. Philip Randolph Institute
African American Revitalization Consortium
African Democratic Club
AIDS Youth
All Hallows Catholic Church
All Hollows Tenants Association
Alliance of Californians for Community Empowerment (ACCE)
American Friends Service Committee
American Legion, Cathay Post #384
An unnamed childcare association
An unnamed environmental advocacy organization
An unnamed local union
Arc Ecology
Artist on Shipyard
Asian Community
Asian Pacific American Community Center
Association of Joint Ventures
Bay Area Youth Agency Consortium (BAYAC)
Bay Trail Project
Bayview Beacon
Bayview Heights Neighborhood Association
Bayview Hunters Point (**BVHP**) Community Advocates
BVHP Democratic Club
BVHP Renaissance Center
BVHP Beacon Center
BVHP Foundation for Community Improvement
BVHP Renaissance Center
BVHP Senior Services
Bayview Merchants Association
Bayview Opera House
Bayview Rotary Club
Blue Green Way Task Force
Board of San Francisco Tomorrow
Bret Harte Elementary School
California for Green Action
California Lawyers for the Arts
California Movement for Public Rights
Candlestick View Home Owners Association
Caring Loving Fathers Foundation
Central Democratic Club
Chinatown Business Association
Chinatown Economic Development Group
Chinese American Democratic Club
Citizens Advisory Committee (**CAC**)

Appendix C: Community Interview Process and Summary (continued)

Affiliations of Interviewees
Cleanup in Bayview
Coalition of Environmental and Environmental Justice groups
Communities of Opportunity
Community First Coalition (CFC)
Community for a Better Environment
Council of Neighborhood Libraries
CSU African Initiative Program
Daniel Webster School
Deep Solutions (local business)
Department of the Environment
Disaster Preparedness Group
Double Rock Garden
Elected official
Environmental Justice Advisory Committee (EJAC)
Environmental Justice Advocacy
Environmental Justice Coalition for Water
First Generation
Friends of McClaren Park
George Washington Carver Elementary School
Glide Foundation
Glide Memorial United Methodist Church
Glide Youth Build
Golden Gate Audubon
Good Samaritan Family Resource Center
Green Action
Green Depot – biodiesel service
Harvey Matthews BVHP Democratic Club
Hayes Valley Farm Project
Health and Environmental Resource Center (HERC)
Housing Rights Committee of San Francisco
Hunters Point Community Youth Park
India Basin Neighborhood Association (**IBNA**)
Infinity Productions Drama Group
Instituto Familiar de la Raza
Jamestown Homeowners Association
John Scott Consulting, Inc.
Julani Home for Drug Addicted Pregnant Women
KALX-FM Radio
La Casa de las Madres
La Salle Heights Home Owners Association
Literacy for Environmental Justice (LEJ)
Local politics (running for District 10 Supervisor)
Mariners Village Homeowner's Association
Marine's Memorial Club
Martin Luther King Jr. Middle School

Appendix C: Community Interview Process and Summary (continued)

Affiliations of Interviewees
Mission Bay Citizen's Advisory Committee
Morgan Heights Homeowners Association
Muwekma Ohlone People
National Rifle Association (NRA)
New America Media
Omega Boys Club
Osiris Coalition
Project Area Committee
Pet Camp
Portola Business Group
Positive Direction and Change
Potrero Hill Democratic Club
People Organized to Win Employment Rights (POWER)
Providence Baptist Church
Public Arts Forum for Parcel A
PUC Citizens Advisory Committee
PUC Reaction Task Force for sewer digesters
Quesada Gardens Initiative
Former RAB members
Samoan Communities in Visitation Valley
Samoan Community Development Center
San Francisco Bay Railroad
San Francisco Bay Sierra Club
San Francisco Bay View
San Francisco Department of Public Heath
San Francisco Foundation Faith Board
San Francisco Human Rights Commission (SFHRC)
San Francisco Interfaith Council
San Francisco Municipal Transportation Agency (MUNI)
San Francisco Neighborhood Parks Council
San Francisco Organizing Project (SFOP)
San Francisco Permaculture Guild
San Francisco Ports Southern Waterfront Committee
San Francisco State University
Senior Action Network
Senior groups in Bayview
Shipyard Trust for the Arts (STAR)
Southeast Jobs Coalition
Southeast Community Response Network
Southeast Food Access Working Group (SEFA)
Southeast Jobs Coalition
Southeast Sector Community Development Corporation
Southern Waterfront Advisory Committee (SWAC)
St. Andrews Church
St. Paul of Shipwreck Church

Appendix C: Community Interview Process and Summary (continued)

Affiliations of Interviewees
Starr King Elementary School
Starr Ring Open Space
Sustainable Watershed Alliance (SWALE)
Tabernacle Minister Development Cooperation
Technical Assistant Grantee
The Betterment Association
Transitioning AIDS Youth
True Hope Baptist Church
Union Lead for Stage Hands
United Council
Unity Foundation
Waste Solutions
Whitney Young Child Development Center
Windows on the Shipyard
Women for Genuine Security
Young Men's Christian Association (YMCA)

Interview Questionnaire and Responses

Interviewees were asked approximately 29 questions that were created in advance with input from the regulatory agencies and community. The interviews were conducted in a discussion format. Each interviewee was encouraged to discuss his or her interests, concerns, and ideas during the interview, and so some questions were not answered. The interviewees were not handed the questionnarie to fill out; instead, questions were read by the interviewers and a contractor took notes to capture responses. Following are the questions that were asked.

*****

HUNTERS POINT SHIPYARD COMMUNITY INVOLVEMENT PLAN (CIP)

INTERVIEW QUESTIONNAIRE

Background of Interviewee

1. Do you work or live in the 94124, 94134, 94107, or in the Bayview Hunters Point area?
   a. If yes, how long?
2. Do you belong to a community organization or group?
   a. If so, which one(s)?
3. Have you given input or attended Navy/community outreach events for the environmental program at Hunters Point Shipyard?

General Knowledge about Hunters Point Shipyard

4. How much would you say you know about the Hunters Point Shipyard Environmental Restoration Program:
   a. Nothing; a little bit, a lot

Appendix C: Community Interview Process and Summary (continued)

5. If you know a little bit or a lot, how did you get most of the information you know about Hunters Point Shipyard?
6. Do you have any interests or concerns regarding the base and the cleanup program?
   a. If yes what are they?

Your Information Needs and Resources

7. Are you on the Navy's E-mail or mailing list?
   a. Would you like to be?
8. Do you get Navy newsletters and/or fact sheets?
9. What topics are you most interested in receiving information and updates from the Navy about?
10. The Navy has provided information in various ways.
    a. Have you gotten information by any of these means?
    b. How do you like to receive information?

Choose all that apply or add your own:

Outreach Method:	Yes I have received info this way	Yes I would like to receive info this way
Newsletters (4–8 pages on general topics)		
Fact Sheets (2–4 pages on one specific topic or site)		
Attend a public meeting		
Attend an open house		
Attend a Navy presentation at a group meeting (i.e., Homeowners Association meeting, Rotary Club meeting, etc.)		
Visit a Web site to download information		
Hardcopy announcements		
E-mail announcements		
Bus Tour		
Other		

11. Do you prefer to receive items (such as fact sheets) by E-mail or hardcopy mail?
12. What is the best way for the Navy to provide information about environmental activities at Hunters Point Shipyard? (Something from the list above, or another idea)
    a. How often should it be provided?
13. Have you contacted elected officials, the Navy, regulatory agencies, or community groups about the cleanup activities at Hunters Point Shipyard?
    a. If so, what information were you trying to get?
    b. What kind of response did you receive and was it helpful?
14. If you wanted to contact the Navy about an environmental cleanup question you have, would you know who to contact and how to reach them?
    a. What is your preferred method for contacting the Navy? (E-mail/phone/in-person)

Appendix C: Community Interview Process and Summary (continued)

15. Are there local civic or service clubs that the Navy should contact to provide information to or speak with?
16. What newspaper(s) do you prefer to read for local information and/or news about Hunters Point Shipyard?
17. What websites do you look at for local information and/or news about Hunters Point Shipyard?

The Community

18. What do you think are the issues and concerns of the community, related to environmental cleanup?
19. Do you think the community has the information they need, or know where to get it?
    a. If not, how can the Navy make information available to the community?
20. Are there other organizations providing answers to questions or providing information about Hunters Point Shipyard?

Feedback

21. How effective has the Navy's communication about the cleanup program been? (very effective/somewhat effective/not effective)
22. Do you have confidence in the Navy to adequately cleanup Hunters Point Shipyard?
    a. Why or Why not?
    b. If not, how can the Navy gain your confidence?
23. Do you have confidence in the U.S. Environmental Protection Agency (federal agency) to provide effective oversight of the cleanup activities?
    a. Why or Why not?
    b. If not, how can they gain your confidence?
24. Do you have confidence in the State of California Department of Toxic Substances Control (California EPA) to provide effective oversight of the cleanup activities?
    a. Why or Why not?
    b. If not, how could they gain your confidence?
25. Do you have confidence in the State of California San Francisco Bay Regional Water Quality Control Board to provide effective oversight of the cleanup activities?
    a. Why or Why not?
    b. If not, how could they gain your confidence?
26. Do you have confidence in the City of San Francisco to provide effective oversight of the cleanup activities?
    a. Why or Why not?
    b. If not, how could they gain your confidence?

Thank You and Wrap up

27. Is there anything you would like to add about how the Navy can improve their environmental cleanup program and related community outreach?
28. Who else should we contact for an interview?

29. May we identify you as an interview respondent with the understanding that your name will be kept separate from your answers and comments?

****

Interview Summary

Overall, interviewees felt the Navy's communication about the environmental cleanup has not been effective. See Chapter 2, Community Interviews and Feedback, for additional summary information.

Selected Interviewee Statements

To protect privacy, names and specific affiliations of the participants in the interviews are not published. Some selected statements, intended to show the general tone and variety of responses given during the interviews, are presented in the following subsections. They are not direct quotes, but instead represent a synopsis written during the interview. The category of the interviewee making the statement is included after the statement.

Health

- "If you are doing outreach to the community, they have to know that you care about their health. You will have to address health concerns." —Local Resident, Church Representative, Education Provider
- "My grandkids have had headaches and nosebleeds, their mother died at 28 of cancer. I have concerns about the health of everyone in Hunters Point. Asthma is also a problem." —Local Resident, Environmental Activist
- "People attribute health problems in the community with the shipyard. There are numerous problem sites in areas like Brownfields, but everyone points to the shipyard. It's complex, and hard to say what the Navy is responsible for. You need to clarify that for the community." —Former RAB Member, Education Provider

Quality or Completeness of Cleanup

- "As a resident and environmental engineer, I want to make sure it is cleaned to best possible standards. I want the property cleaned so future use is not constrained too much. Have the land available for the best possible use beyond what is defined by the redevelopment authority." —Former RAB Member, Local Business Owner
- "I'm concerned with how thoroughly it is cleaned. Parcel E-2 is the most crucial; I am interested in how it is cleaned and then developed and re-used." —Former RAB Member, Local Resident
- "Did the Navy really clean it and how would the people in this community know? We have to take your word for it." —Local Resident, Local Business Owner

Appendix C: Community Interview Process and Summary (continued)

Redevelopment

- "I'm concerned about property being transferred to a developer because they aren't having a vested interest in the cleanup of contamination." —Media
- "If the Navy had done better outreach to the community overall to explain the cleanup, people would be more comfortable with the idea of redevelopment."
  — Civic Organizations/Group or Club

Jobs/Economics

- "You may be doing a good job on paper, but I do not see efforts of the Navy to use local businesses and incorporate local contractors more in the cleanup. Have the right people in place to get contractors from the community who do not undermine the program. There are people who can make local contracting programs work, you need to engage them. There are good, strong companies in this area who will do a good job." —Resident, Local Business

Meetings and Getting Out Information

- "I like public meetings, but it depends on the atmosphere of the meeting. The last meeting I went to was so angry and confrontational that I haven't been back." —Shipyard Artist
- "Promote positive information; talk about all the milestones (minor and major) to the community." —Education Provider
- "Sometimes the information that is provided is too technical and just not sufficient." —Former RAB Member, Resident, Local Business
- "Figure out some way to have scheduled, uninterrupted presentations, followed by questions and answers. Then have a detailed technical meeting at a later date that is smaller, gets more into the 'nitty gritty.'" —Former RAB Member, Local Business, Environmentalist
- "I only hear that the Navy is dragging their feet. I don't hear directly from the Navy." —Local Union Representative
- "To reach people, talk to people who already have a connection to those you are trying to reach." —Local Business
- "Recreate the RAB; that is what the people want in the community. They value dialogue. A new format for the RAB is structured presentation, questions and answers, dialogue. Take dialogue when it is given. Need to reformat the RAB so information can get out there. Make sure people chosen for new RAB have open minds and can work within a new structure. This will build confidence in the community and get the Navy to the finish line faster." —Environmental Activist
- "After the RAB dissolved, there were less newsletters and fact sheets coming out. The meetings are stacked with who's running the meeting. The community could not really discuss what was happening. I got tired of the meetings. Whoever runs the meeting, they need to have the respect of the community." —Media, Resident
- "Establish some kind of group, even if it's just five people from the community. Does not have to be a RAB. I would be on that group. Have some meetings just with the group, then a larger

group meeting. Have the group of five rotate, be in the group for awhile, and then get five new people." —Resident, Local Business

- "Informality equals unaccountability. Keep a structure for and records of each meeting. The community should be able to say we do or don't like something or have certain concerns and have that be recorded. It's good to have one big meeting for a decision-making meeting specifically. Do not do that in smaller meetings." —Environmental Activist

General

- "This feedback from us will go into a report and never be addressed or considered again. We are real people who have been affected. We want action, to hold you accountable, and if we feel you are doing good, then we can advocate for you." —Resident, Education Provider
- "The shipyard should be thoroughly cleaned. I don't want people getting sick in the future. In the World War II era, people didn't know the consequences of dumping stuff, but now we know. Families will be living out there, so it needs to be clean. San Francisco needs this to be redeveloped; it's no good to have that empty hole out there. It will be a brand new destination for tourists and will boost the economy." —Civic Organizations/Group or Club
- "The community has a significant level of distrust of all agencies with the cleanup. It will take time to manage trust. There is general paranoia of government agencies and also bad experience with the HPS project."
  —Resident, Civic Organizations/Group or Club
- "What is the status of the cleanup now? What is the current schedule?"
  —Numerous Interviewees

Suggested Communication Methods from Interviewees

Interviewees were presented with a list of several communication methods that the Navy has used in the past to reach out to the community. The feedback on those methods is presented in Chapter 2. Interviewees were also encouraged to suggest communication methods that they thought would be successful in informing and involving the community in the environmental cleanup program at HPS. The following table lists all of the methods that were suggested and notes with more details about the method.

Appendix C: Community Interview Process and Summary (continued)

Interviewee Feedback on Suggested Communication Methods

Method	Interviewees' Critiques of Method
Prepare Calendar of Events	Cross-check against other local events to make sure no conflict
	Publish far in advance
	Include on flyers, fact sheets, and Web site
Prepare Progress Reports	Have professional company, such as Baycat, create them
	Make simple and "cool"
Use Local Churches	Good to reach Samoan and African American Communities
	Use church bulletin boards to post print materials related to HPS cleanup
	Organize meetings with church groups
	Share information with pastors
	Good venues for "town hall" meetings
Collaborate with Established Community Members to Convey HPS Environmental Cleanup Information	Have local community members personally distribute flyers or door hangers
	Use young community developers to hire community members
	Outreach to churches for interested members
	Hire Chinese-American contact to help reach Chinese community
Distribute Flyers	Flyer content could be meeting announcement or brief messaging about general HPS information and Web site; could also be formatted as a postcard
	Door-to-door; educate and train community members to be comfortable to discuss flyer content
	Target churches, YMCA, childcare providers, local businesses (i.e., barber shops, beauty salons)
	Insert in weekly Wednesday packets at Starr King Elementary School and other schools willing to participate
	Mail to every street address in 94124 (Note: also suggested personal distribution more effective than mail)

Appendix C: Community Interview Process and Summary (continued)

Interviewee Feedback on Suggested Communication Methods

Method	Interviewees' Critiques of Method
Conduct Bus Tours	Explain/advertise specific purpose in advance
	Hold technical information-oriented tours and basic information tours
	Include lunch
	Invite K–5 grade students with parents
	Invite high school students
	Invite Health and Environmental Resource Center
	Invite Chinese community (include translator)
	Detriments to Bus Tours: • Cannot cross through neighborhoods because of safety concerns; not safe for members from certain neighborhoods to go into another neighborhood • Too dangerous for people to be on the Navy base • There is nothing to look at
Attend Community Events	Unity Parade (Note: July and August annually)
	Host booth at Earth Day Event (Note: annually April)
Give Navy Presentation at Meeting Hosted by Organization or Community Group	Project Area Committee (especially health and environment subcommittee)
	Bayview Childcare Association (meets quarterly)
	Parent-Teacher Association
	Block or neighborhood groups
	West Point Residents Council
	Bayview Merchants Association
	Misc. groups within the China Town area of San Francisco to reach Chinese community; meeting size small to promote dialogue

Appendix C: Community Interview Process and Summary (continued)

Interviewee Feedback on Suggested Communication Methods

Method	Interviewees' Critiques of Method
Hold a Public Meeting	Open house-style includes poster board stations
	Different meetings for different stakeholder groups
	Bring facilitator to help keep meeting on track
	Limit public comment time period
	Community Mapping Meeting—document community thoughts/issues by writing them on a map
	Town hall meetings
	Community forums
Create Advisory Board	"Bring back the RAB!"
	Have advisory board with technical experts from local colleges, such as University of California, Berkeley; University of San Francisco; San Francisco State
	Have small board made of community leaders with 1-year membership rotations
Use Internet	Facebook and/or Twitter; Good outreach for Samoan community
	Several U.S. EPA cleanup sites have Facebook and Twitter
	Hire public relations firm to assist with messaging and monitoring posts
	Advertise meetings via Web site and e-mail
	Post work notices and traffic impacts that community should be aware of
	Live question-and-answer sessions
	Create online information repository with all current documents
	Current Web site too difficult to use with layers of links to access information; create more user-friendly platform
Use Radio	Commercials on popular stations to announce upcoming meetings
	Air on popular Chinese-American station (1450 AM)
	Air on 30-minute radio show on KALX Radio (University of California, Berkeley) and KZSU (Stanford)

Appendix C: Community Interview Process and Summary (continued)

Interviewee Feedback on Suggested Communication Methods

Method	Interviewees' Critiques of Method
Use Media Publications	Ensure that correct information getting to media
	Newspapers do not have a lot of readership
	Use San Francisco Examiner, San Francisco Bayview, The Potrero View, and Visitacion Valley Grapevine
Use Telephone	Make local hotline number available and advertise (Note: local number currently available)
	Use phone bank to invite community to meetings
	Text message announcements or meeting invites (Note: majority of community members have text capabilities)
Provide Audio Recordings	Record executive summaries of technical documents and put on CDs for information repositories
Create a DVD	Create DVDs with information about HPS environmental cleanup program
	Incentivize barber shops and beauty salons to show DVDs by purchasing televisions and DVD players and paying store for each showing
Use Incentives to Increase Involvement	Give away backpacks with school supplies and HPS environmental cleanup information inside
	Provide food at any public event **(Note: Navy rules do not allow taxpayer funds to be used to provide food or beverage service at public meetings or events)**
Host Job Fair	Host a fair to help identify jobs
Involve High-profile Scientists	To help refute those who are "making a big deal about toxics that are not a big deal"
Hire Public Relations Firm	Use to manage Facebook
	Use to make "cool" factsheets and flyers
	Use to train Navy on how to get their message out

Appendix C: Community Interview Process and Summary (continued)

Postcard Mailed to Community Requesting Participation in the CIP Interview Process

Be a Voice of Your Community – Please Take Part!

We hope you will take part in a Community Involvement Plan interview with the Navy. The purpose of the interviews is to talk to various community members and groups to find out what people are interested in or concerned about when it comes to the environmental cleanup at Hunters Point. The Navy will use the feedback from the interviews to determine how to best involve you in the cleanup decision-making process. To be part of an interview, you DO NOT need to know a lot about Hunters Point Shipyard. **The Navy wants to talk to local residents, business owners, activists, and other interested parties. We are scheduling interviews this summer in-person or via telephone.**

If you would like to be interviewed, please provide your contact information and availability to:
Ms. Carolyn Hunter,
Tetra Tech Community Involvement Manager
carolyn.hunter@tetratech.com, (510) 302-6297

About the Community Involvement Plan: Based on the feedback in the interviews, the Navy will outline how they will inform and involve the community in environmental cleanup decisions at Hunters Point. The document will provide background information about Hunters Point; a list of all environmental sites and their status; demographic information about the local community; a list of past community involvement activities; applicable regulatory requirements; and contact information for the cleanup team. This document will be made available to the public.

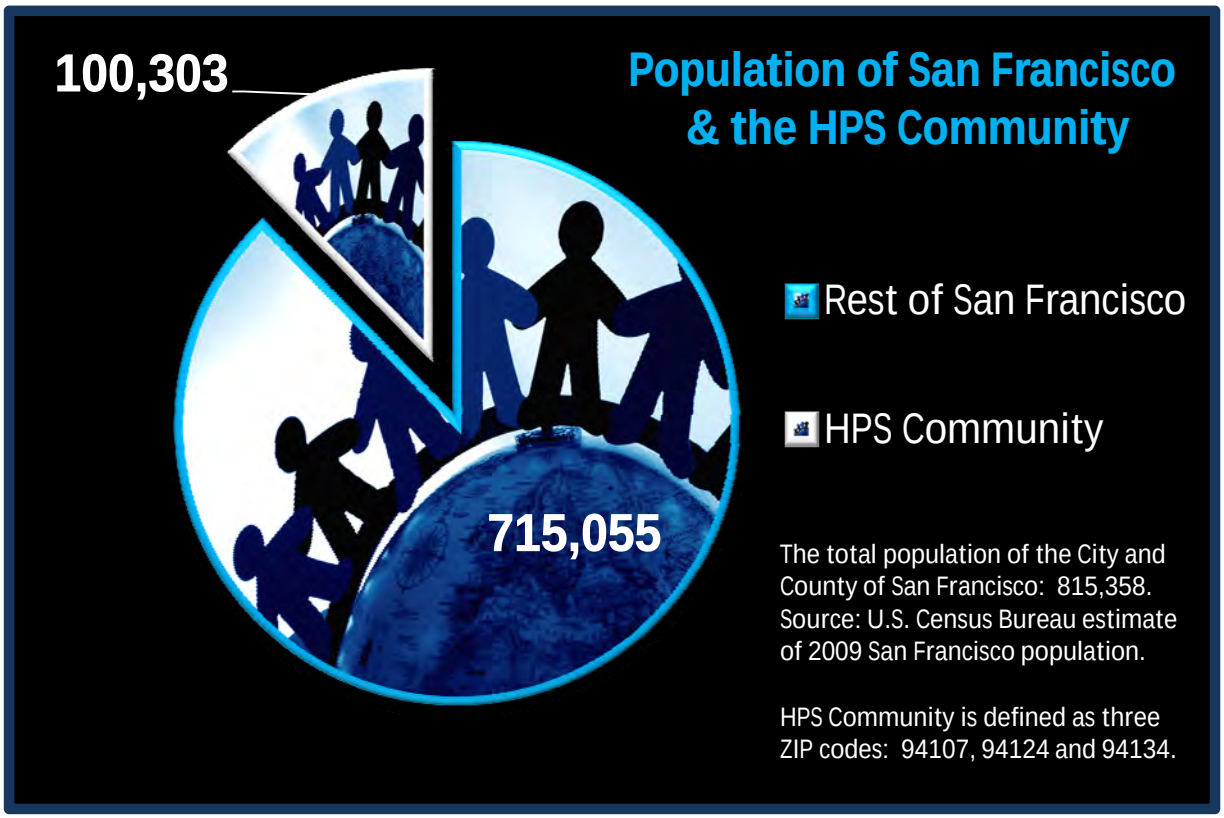
Appendix D: Community Background

The Department of the Navy defines the Hunters Point Shipyard (**HPS**) community as ZIP codes 94107, 94124, and 94134. In 1939, the Navy purchased the HPS property. From 1945 to 1974, the Navy was one of the largest employers of the HPS community. At its peak employment level during the last months of World War II, the shipyard employed over 17,000 civilians. When the shipyard closed in the late 1970s, thousands of people lost their jobs.

Following is information on the population, race, ages, education, average income, employment, and housing for the HPS community. All of the demographic information presented was provided by the Nielsen Company, 2010, unless otherwise noted.

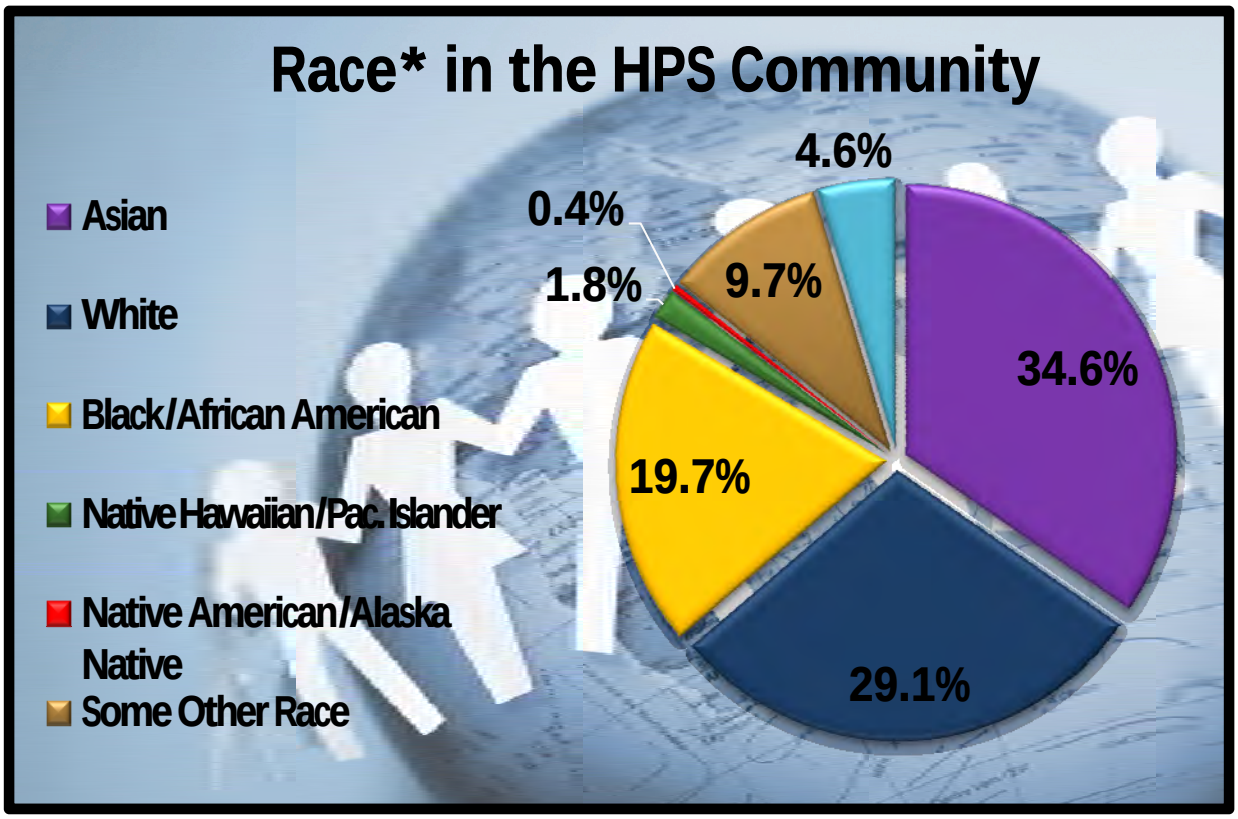
This information helped the Navy know more about the community when planning the involvement program. Age breakdown (see PageD-3) indicated that the Navy could reach the community through schools as well as senior centers. Furthermore, the Navy may choose to use youth-friendly involvement methods such as texting, along with retirement age-friendly daytime meetings.

The census information also indicates there is a high unemployment level, which reinforces concerns that jobs and economic impacts of the environmental cleanup are a top interest for the community. The Navy is addressing this concern by using local vendors, holding job fairs, and creating a fact sheet to direct people to potential hiring opportunities related to the cleanup.



Population by ZIP Code	94107	94124	94134
Population	24,014	34,557	41,732

Appendix D: Community Background (continued)



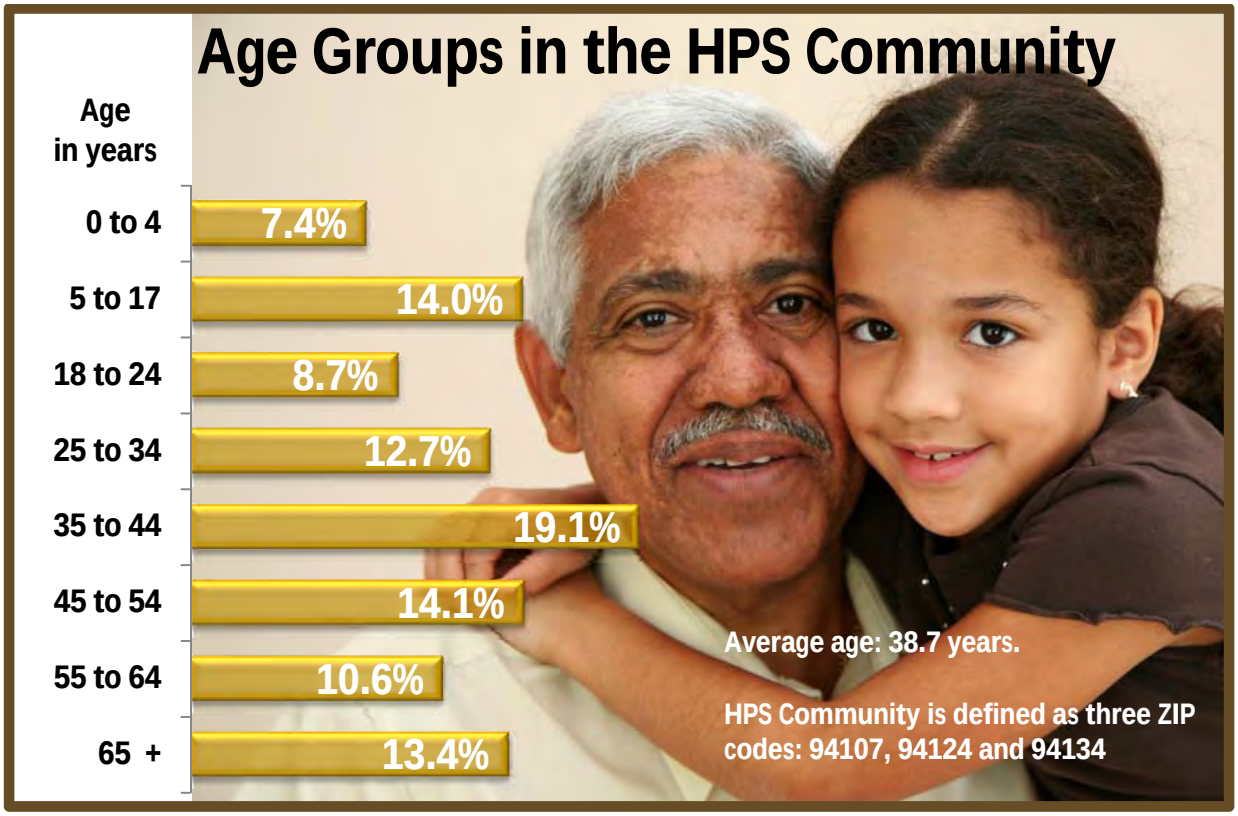
Note:

* The U.S. Census Bureau considers the Hispanic/Latino designation an ethnicity, not a race. The population self-identified as "Hispanic/Latino" is also represented within the categories in the "Race" demographic. In the HPS community, 17.1% defined themselves as Hispanic/Latino.

HPS Community is defined as three ZIP codes: 94107, 94124 and 94134.

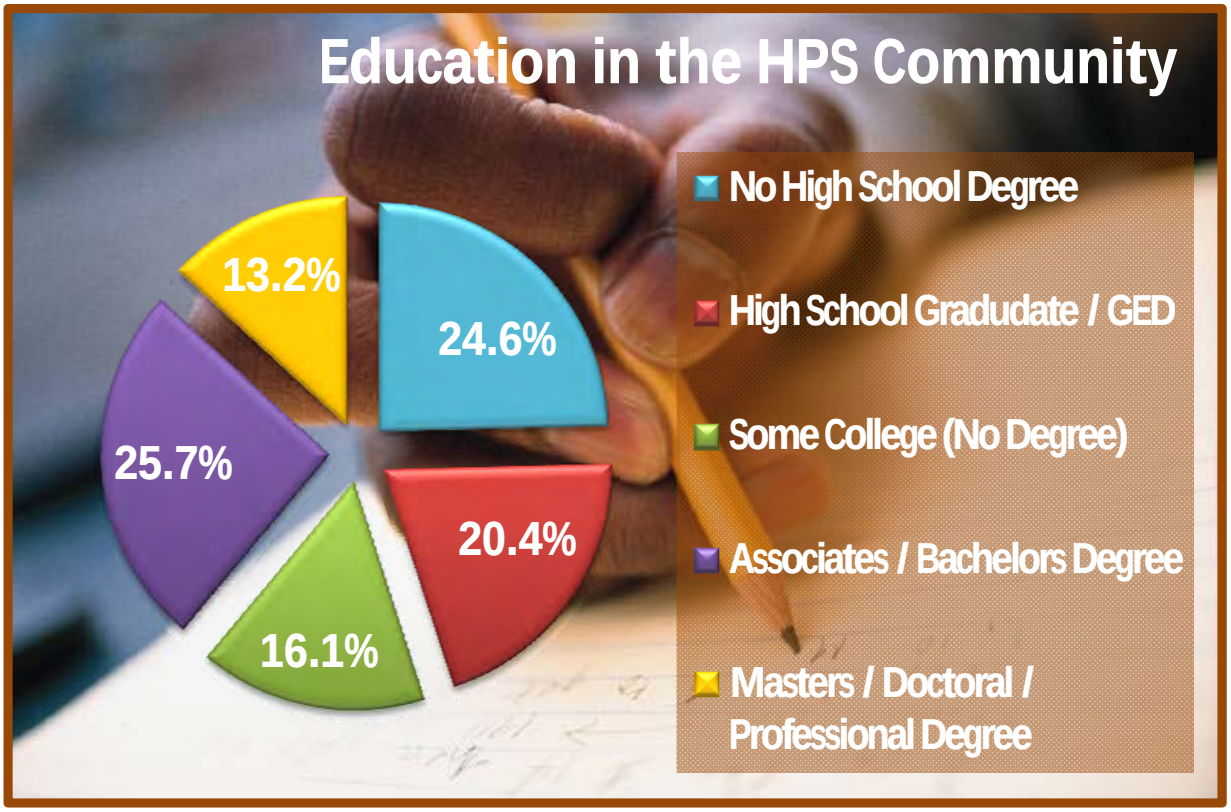
Race By ZIP Code	*94107*	*94124*	*94134*
Asian	19.1%	29.2%	55.5%
White	60.1%	11.0%	16.4%
Black/African American	11.5%	38.0%	9.7%
Native Hawaiian/Pacific Islander	0.6%	3.2%	1.5%
Native American/Alaska Native	0.5%	0.45%	0.3%
Some Other Race	3.5%	13.6%	12.0%
Two or More Races	4.7%	4.6%	4.6%
Ethnicity*			
Hispanic/Latino	8.5%	22.2%	20.7%

Appendix D: Community Background (continued)



Age Groups by ZIP Code	*94107*	*94124*	*94134*
0 to 4 years	4.3%	9.6%	8.2%
5 to 17 years	8.5%	18.6%	15.0%
18 to 24 years	4.7%	11.6%	9.8%
25 to 34 years	16.3%	11.0%	10.7%
35 to 44 years	24.2%	15.6%	17.3%
45 to 54 years	15.7%	13.0%	13.6%
55 to 64 years	11.1%	9.8%	11.1%
65 + years	15.2%	10.8%	14.3%
Average age	42.8 years	34.9 years	38.4 years

Appendix D: Community Background (continued)

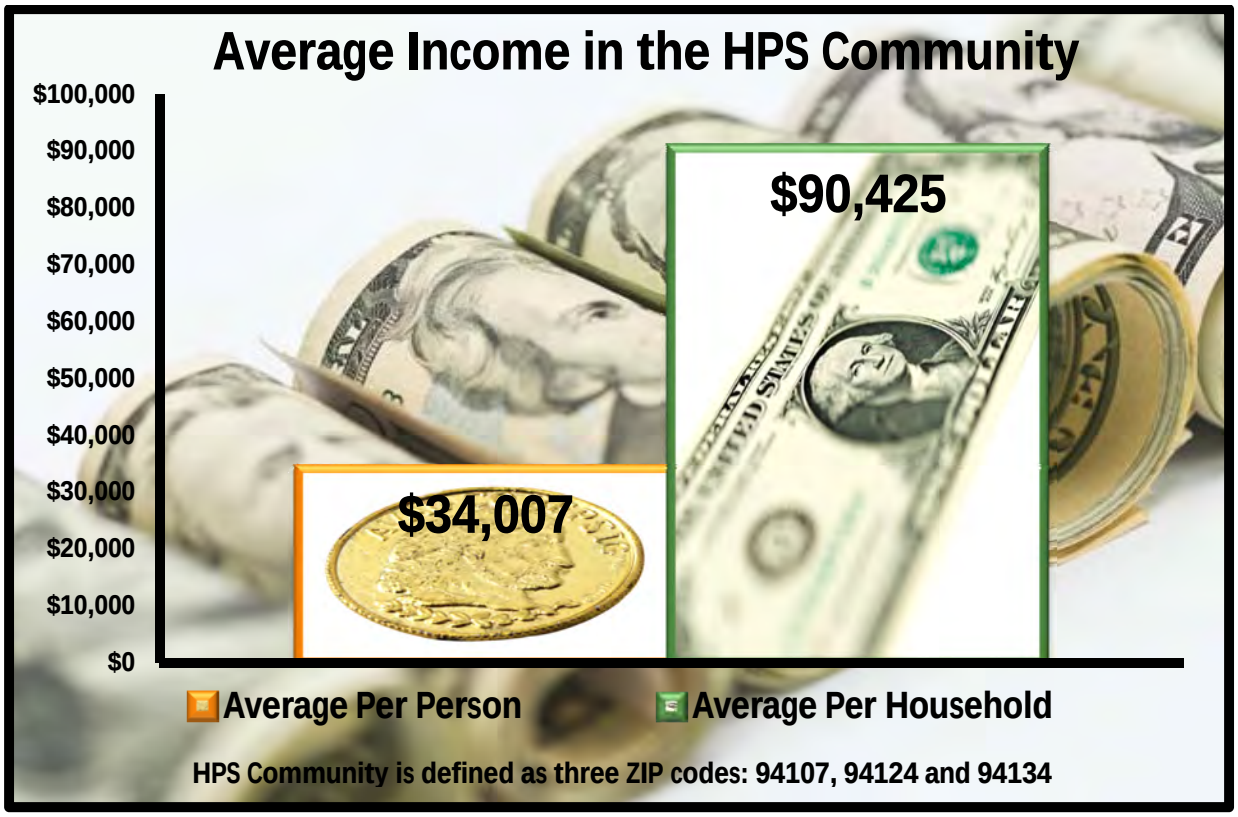


Note: Education level for population age 25 and older. Associates Degrees and Bachelor's Degrees: Typically 2 to 4 year degrees. Masters, Doctoral, and Professional Degrees: Graduate academic or professional degree programs composed of advanced studies. Includes but is not limited to MS, MA, PhD, EdD, DPH, MD, DDS, DSW, DO, JD, and ThD.

HPS Community is defined as three ZIP codes: 94107, 94124 and 94134.

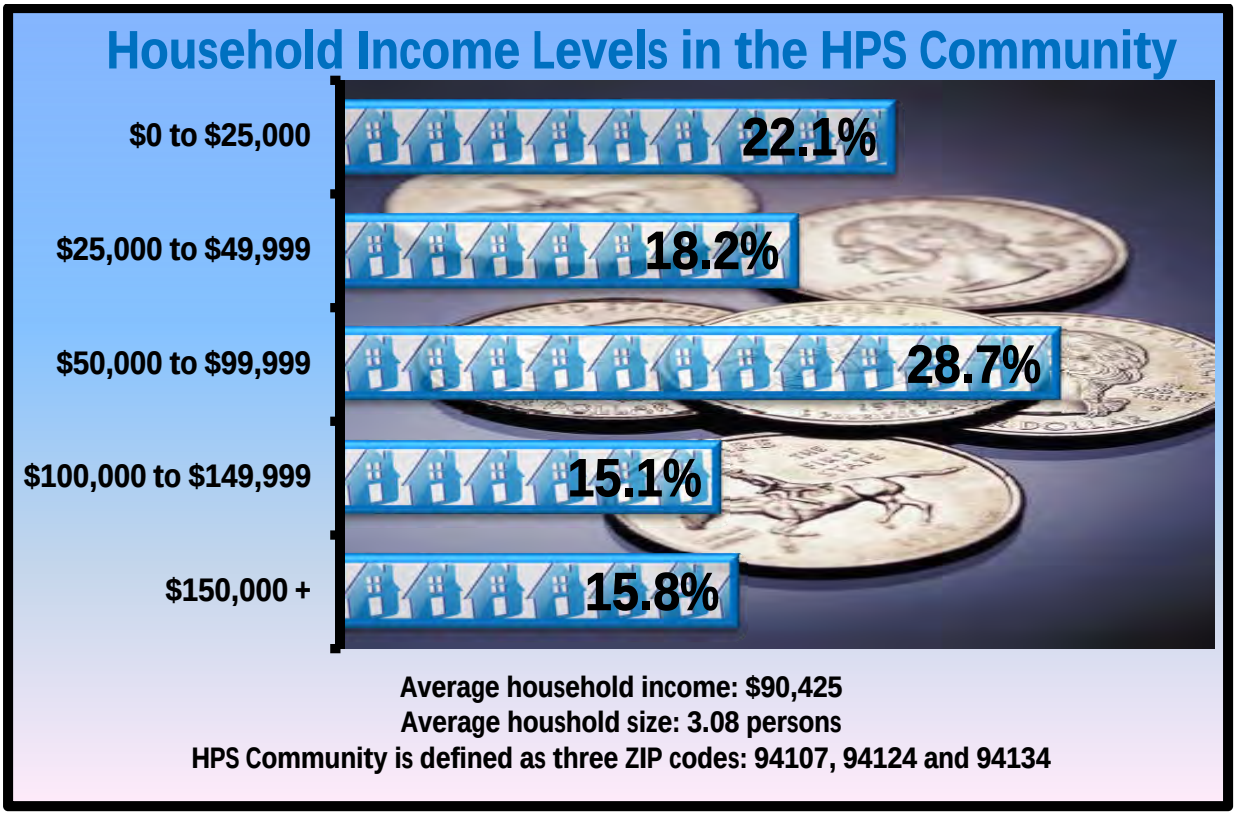
Education by ZIP Code	*94107*	*94124*	*94134*
No High School Degree	10.8%	31.6%	31.4%
High School Graduate/GED	11.2%	26.3%	23.7%
Some College (No Degree)	11.6%	20.4%	16.2%
Associates/Bachelors Degree (2- to 4-year degrees)	38.9%	16.0%	22.2%
Masters/Doctorate/Professional Degree	27.5%	5.7%	6.5%

Appendix D: Community Background (continued)



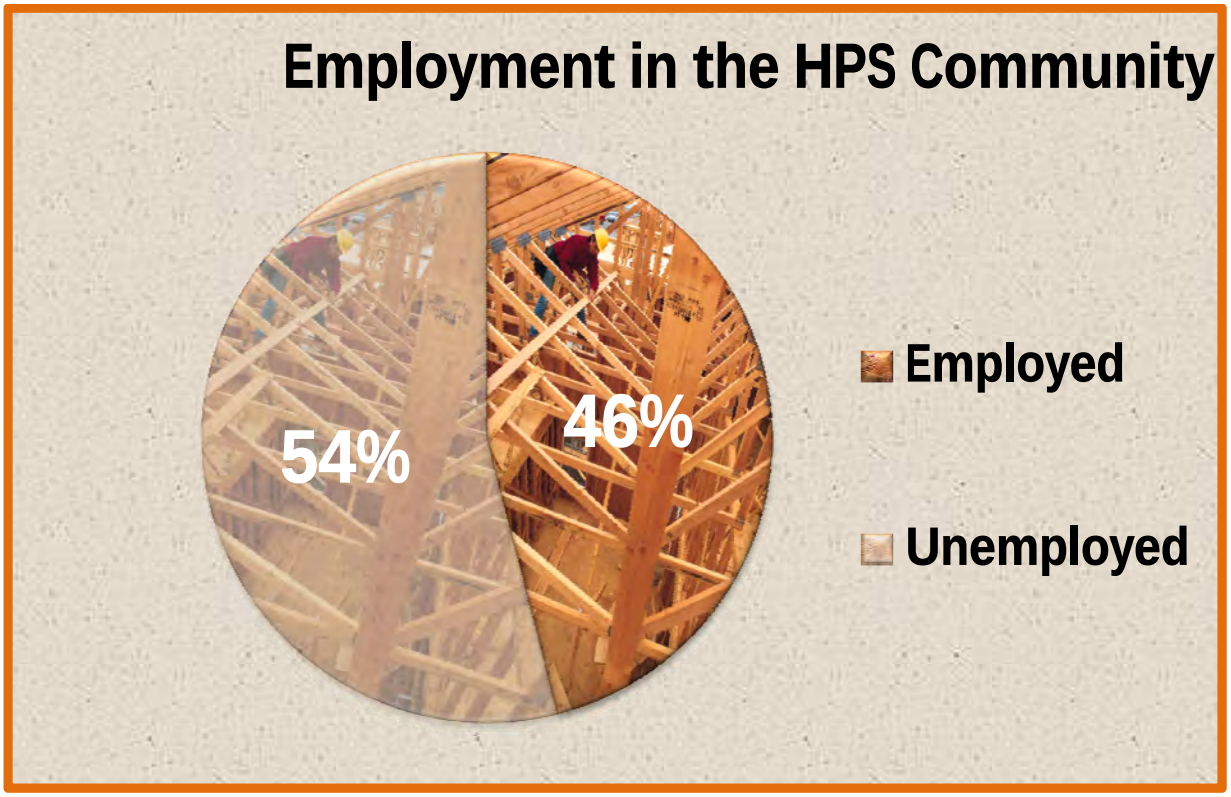
Income by ZIP Code	*94107*	*94124*	*94134*
Average Household Income	$112,344	$69,953	$88,979
Average per Person Income	$58,737	$19,761	$23,524

Appendix D: Community Background (continued)



Household Income by ZIP Code	*94107*	*94124*	*94134*
$0 to $24,999	23.2%	27.4%	15.7%
$25,000 to $49,999	16.4%	21.0%	17.3%
$50,000 to $99,999	22.9%	28.7%	34.7%
$100,000 to $149,999	13.0%	13.7%	18.6%
$150,000 +	24.5%	9.2%	13.7%
Average Household Size	1.87 persons	3.58 persons	3.80 persons

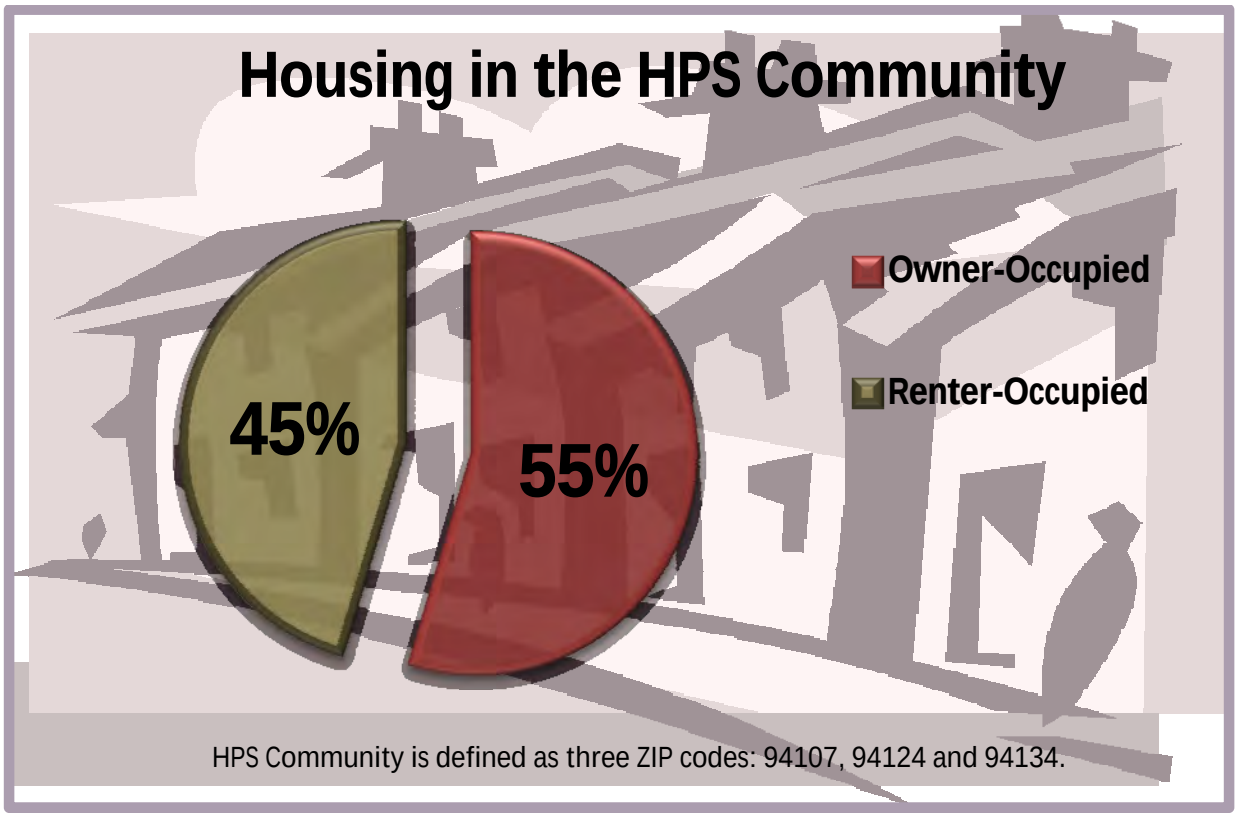
Appendix D: Community Background (continued)



Note:
Employment percentage for population age 16 and older.
HPS community is defined as three ZIP codes: 94107, 94124, and 94134.

Employment by ZIP Code	*94107*	*94124*	*94134*
Employed	59.3%	35.2%	43.7%
Unemployed	40.7%	64.8%	56.3%

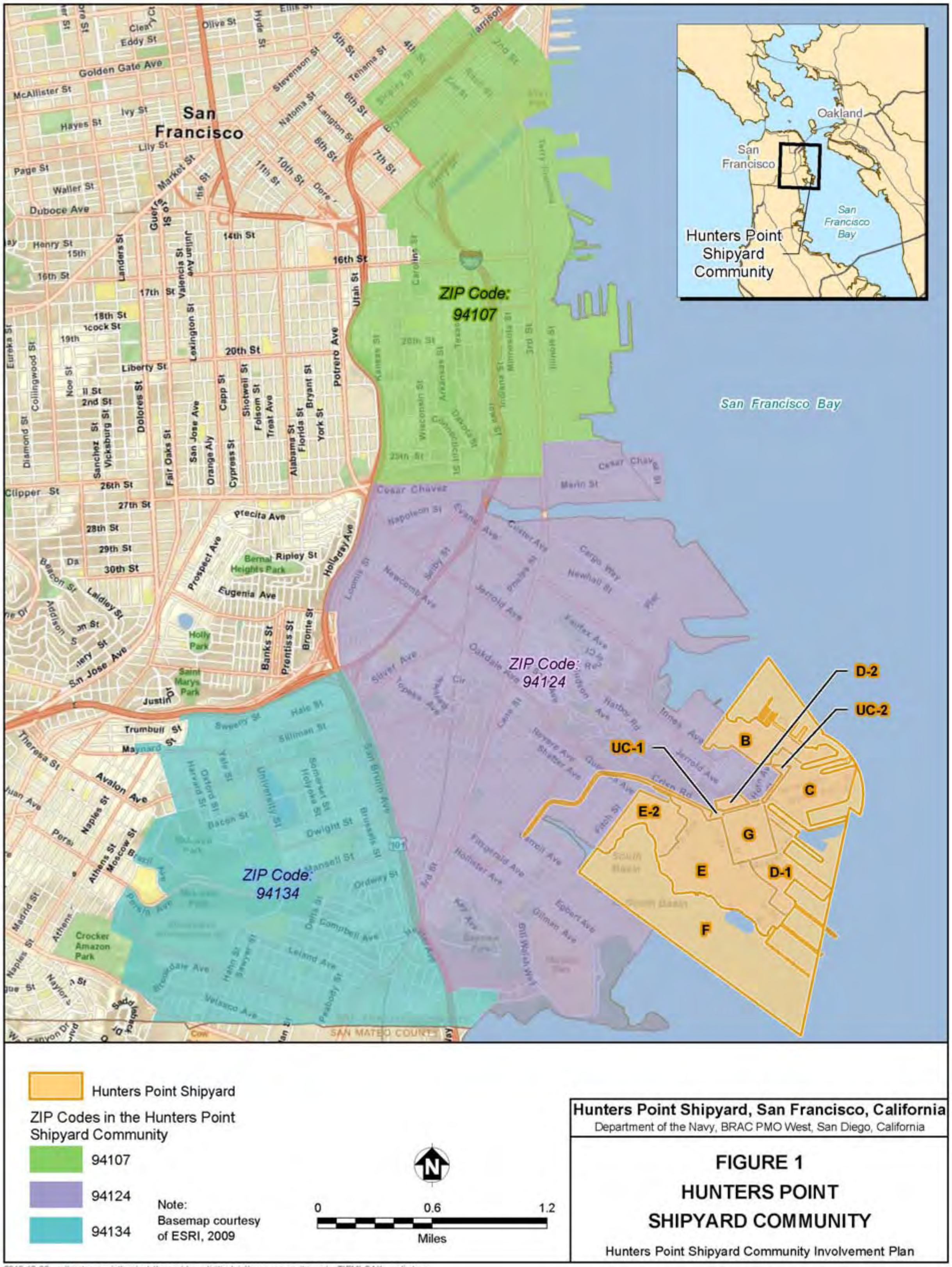
Appendix D: Community Background (continued)



Housing by ZIP Code	*94107*	*94124*	*94134*
Home Owners	34.1%	57.6%	72.0%
Renters	65.9%	42.4%	28.0%

Appendix D: Community Background (continued)

Map of the Hunters Point Shipyard Community



Appendix D: Community Background (continued)

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Appendix E: Former Restoration Advisory Board

This appendix includes information on the Department of the Navy's former Restoration Advisory Board (**RAB**) at Hunters Point Shipyard (**HPS**). The HPS RAB was formed in 1994 and dissolved in 2009. The purpose of the RAB was to review and comment on environmental documents and to provide the Navy and regulatory agencies with input from the community on the environmental cleanup program. The Navy would like to take this opportunity again to acknowledge that service on the RAB was a voluntary effort on the part of community members and to thank those who participated and donated their time. Over the 15 years the RAB existed, there was helpful community input and productive dialogue between the Navy and regulatory agencies and the community. However, in 2009, it was determined that the RAB was no longer fulfilling its objective. This Community Involvement Plan (**CIP**) is a key step in the Navy's goal to explore other means to promote two-way communication with the HPS community.

A letter of intent to dissolve the RAB was issued on May 22, 2009, encouraging public comments on the letter (see Page E-9). The Navy HPS team began discussions with Navy management and the regulatory agencies to dissolve the RAB based on several factors, including the following:

- During RAB meetings, discussions turned into verbal arguments and focus was directed to items not within the scope of or related to the RAB. This resulted in many presentations and discussions about environmental cleanup not being completed.
- Some RAB members and community members who attended meetings confidentially stated they felt the meetings had a volatile tone that made them feel unwelcome and in some cases unsafe.
- The RAB did not provide comments on any Navy environmental documents.
- The RAB was not serving as a liaison between the Navy/regulatory agencies and the community, as it was designed to do.

On December 23, 2009, the Navy officially dissolved the RAB. The letter dissolving the RAB is presented on Page E-15. Per the Department of Defense RAB Rule Handbook, Chapter 7, the Navy will continue to evaluate community interest in a RAB at least every 24 months after the board was dissolved.

Following is additional information, including graphs, presenting the attendance trends at RAB meetings until the last RAB meeting held in January 2009. In addition, information is presented on attendance at technical meetings the Navy has held subsequent to the last RAB meeting in order to continue communication with the HPS community.

Data for Graphs 1 and 2 were compiled from the sign-in sheets for RAB meetings from 2006 (when the last CIP update was finalized) through the last meeting in 2009. In addition, the post-RAB meeting sign-in sheets from 2009 through 2010 were also compiled. Once the data was compiled all "paid" attendees including Navy, regulatory agency, City of San Francisco, and contractor employees were identified and removed from the data set. The resulting graphs represent community member attendees at the meetings. The graphs included RAB members (not eliminated by the previously listed categories) as community members.

Data for Graphs 3 through 6 was compiled from sign-in sheets for RAB meetings from 2005 through 2008. The data set evaluated only included community RAB members.

Appendix E: Former Restoration Advisory Board (continued)

Graph 1: Meeting Attendance over Time, 2006 through 2011

Graph 1 shows community members in attendance at meetings from 2006 through 2011. Meeting attendance in 2006 was relatively low until December 2006, when a large increase occurred. The trend for number of community members in attendance during 2007 was greater than 2006 and trended downward except in August 2007 when the meeting attendance was greatest. 2008 saw some increases and decreases in attendance throughout the year, with the final RAB meeting in January 2009 having a larger attendance than any meeting in 2008. Since the RAB was dissolved, meeting attendance in 2009 and 2010 has continued to be variable with an upward trend since the low during the July 2010 meeting. A few reasons that might have contributed to the variance in attendance during 2009 included the lack of regularly scheduled meetings and the variability in meeting locations.

One item that was not tracked during the meetings was the number of participants present at the end of the meetings. General observations from Navy contractors in attendance at the latter RAB meetings indicate that some participants left during the meetings. Furthermore, during three RAB meetings in September 2007, December 2008, and January 2009, the planned presentations were not given or finished due to disruptions during the meetings. Some individuals provided feedback to the Navy that they did not feel comfortable coming to future meetings because of the aggressive environment during these meetings.

Graph 2: Percentage of New and Existing Community Members at Meetings in 2009 through 2011

Graph 2 shows the percentage of community members who attended post-RAB meetings who had not been involved prior to the last RAB in January 2009. The graph indicates 64% of the meeting participants in 2009 through 2011 had not attended a prior RAB meeting. The post-RAB meetings appear to be reaching out to new members of the HPS community.

Graph 3: Percentage of RAB Members in Attendance from 2005 through 2008

The number of community RAB members varied by month; therefore, the percentage of RAB members in attendance during RAB meetings is shown on Graph 3.

Graph 4: Percentage of RAB Members in Attendance by Month from 2005 through 2008

Graph 4 shows the percentage of community RAB members by month during 2005 through 2008. No specific trends were observed in the graphs, but some decreases in July and September were observed.

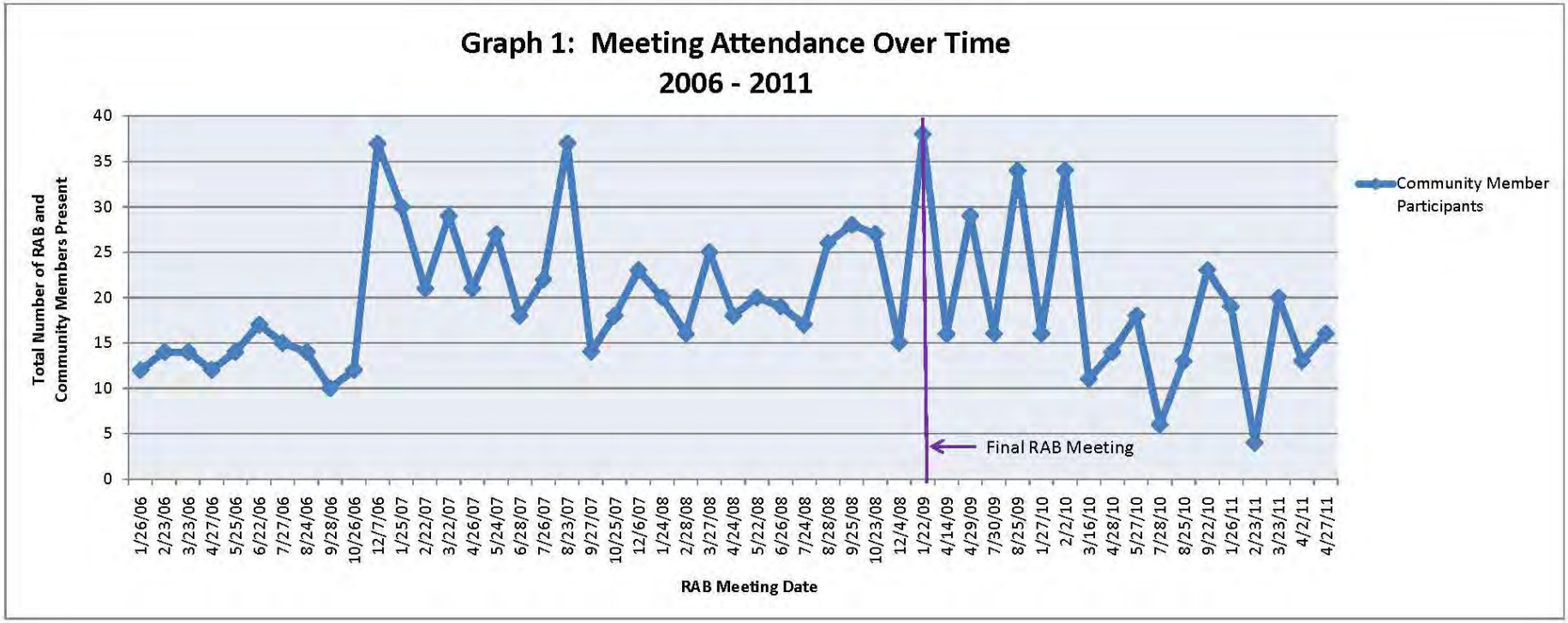
Graph 5: RAB Members in Attendance from 2005 through 2008

Graph 5 indicates the actual number of community RAB members who attended RAB meetings from 2005 through 2008. In general, more RAB members were present in 2007 and 2008 than 2005 and 2006.

Graph 6 Number of New and Resigning RAB Members from 2005 through 2009

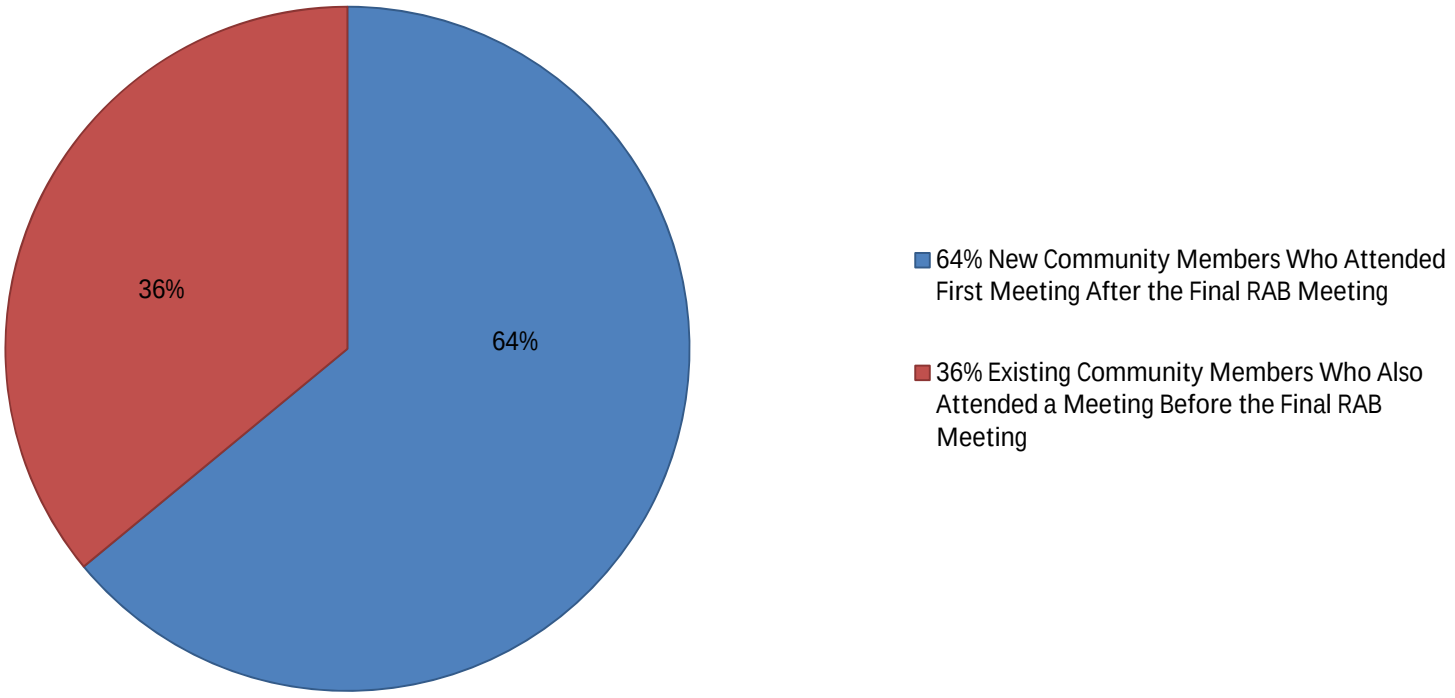
Graph 6 represents the number of new and resigning community RAB members during 2005 through 2009. The most people resigned in 2008 with four RAB members leaving. The most new community RAB members joined in during 2007 and 2009, when nine and seven new members joined, respectively.

Appendix E: Former Restoration Advisory Board (continued)

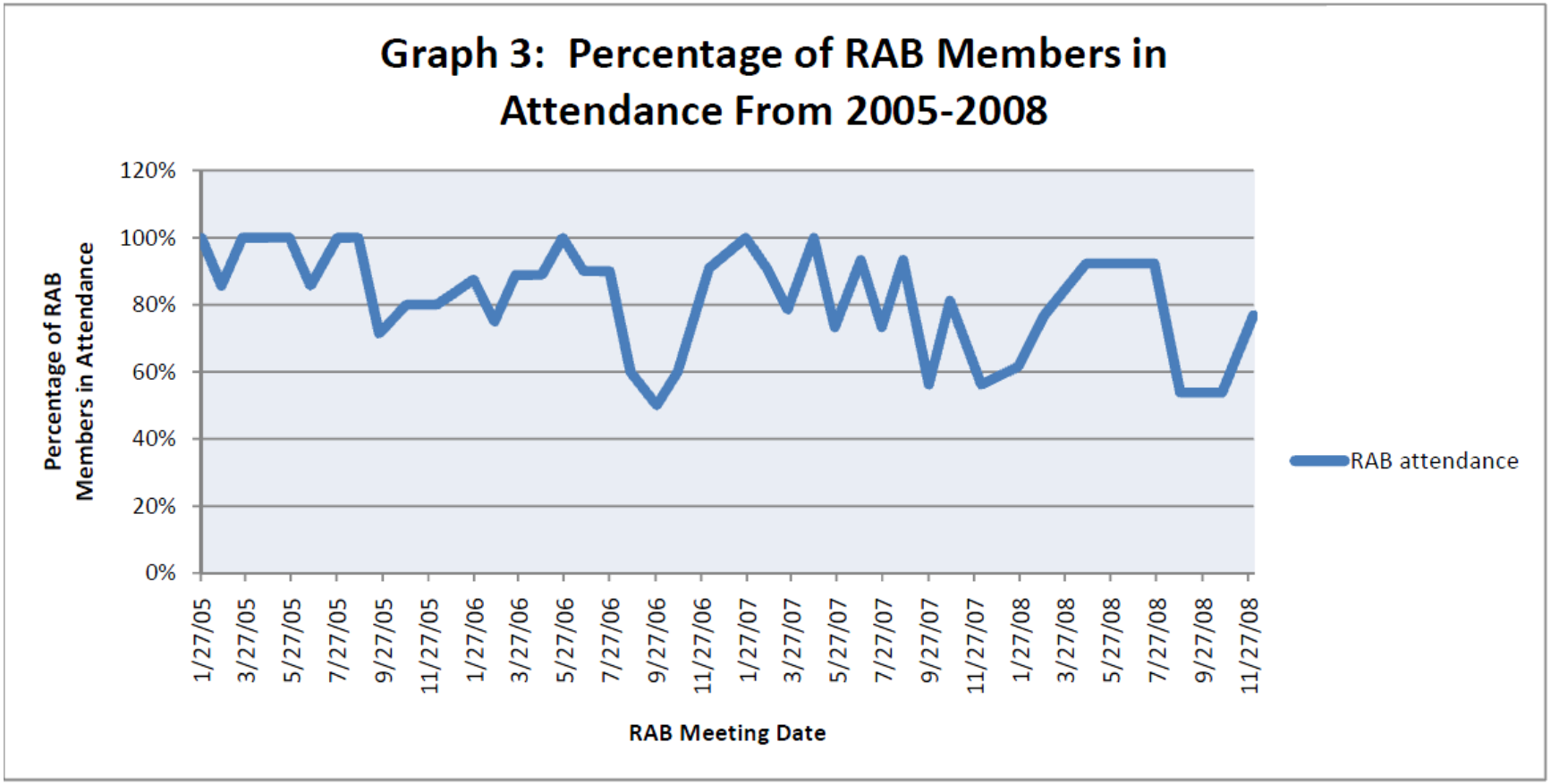


Appendix E: Former Restoration Advisory Board (continued)

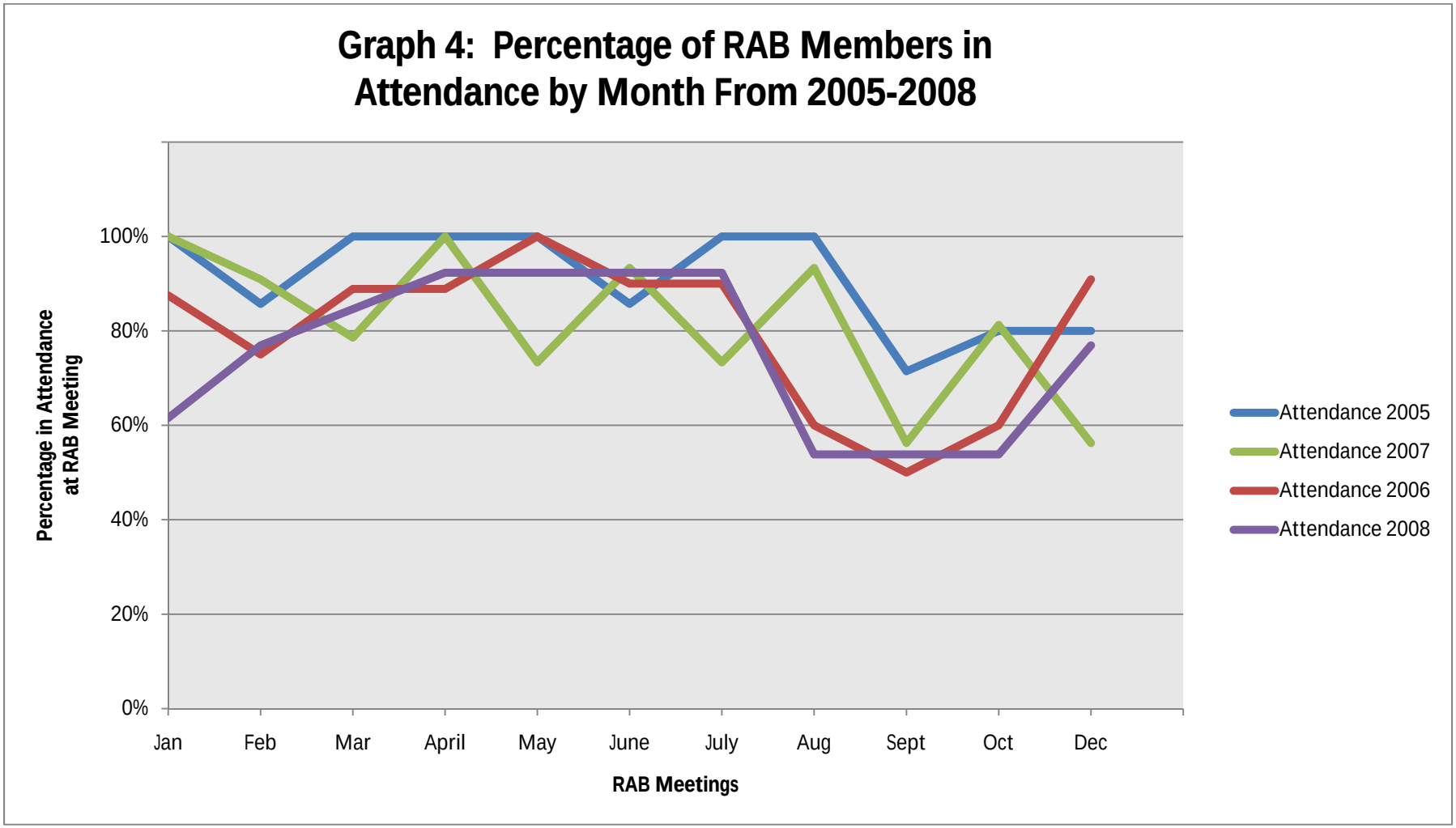
Graph 2: Percentage of New and Existing Community Members at Meetings in 2009 - 2011



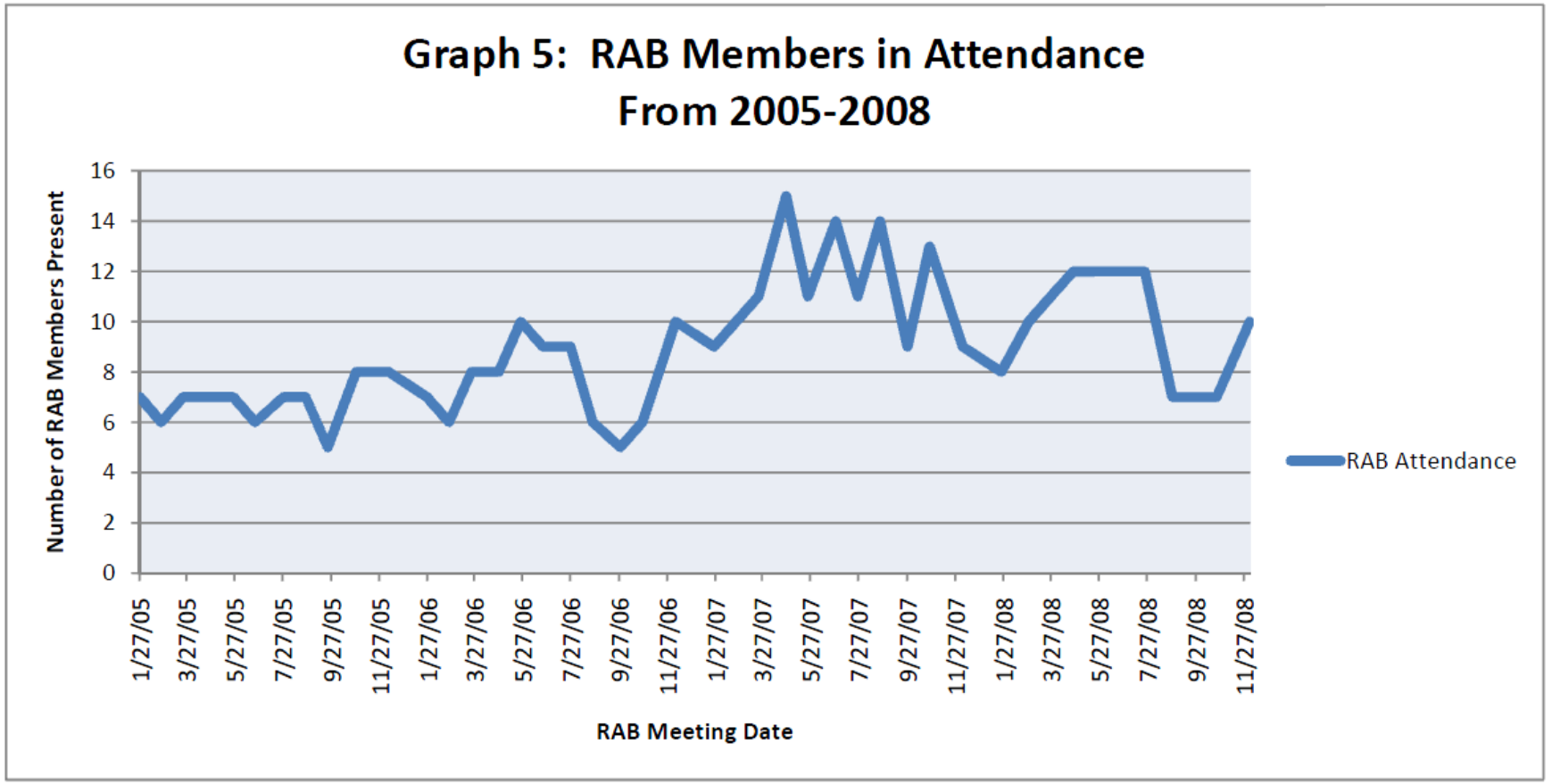
Appendix E: Former Restoration Advisory Board (continued)



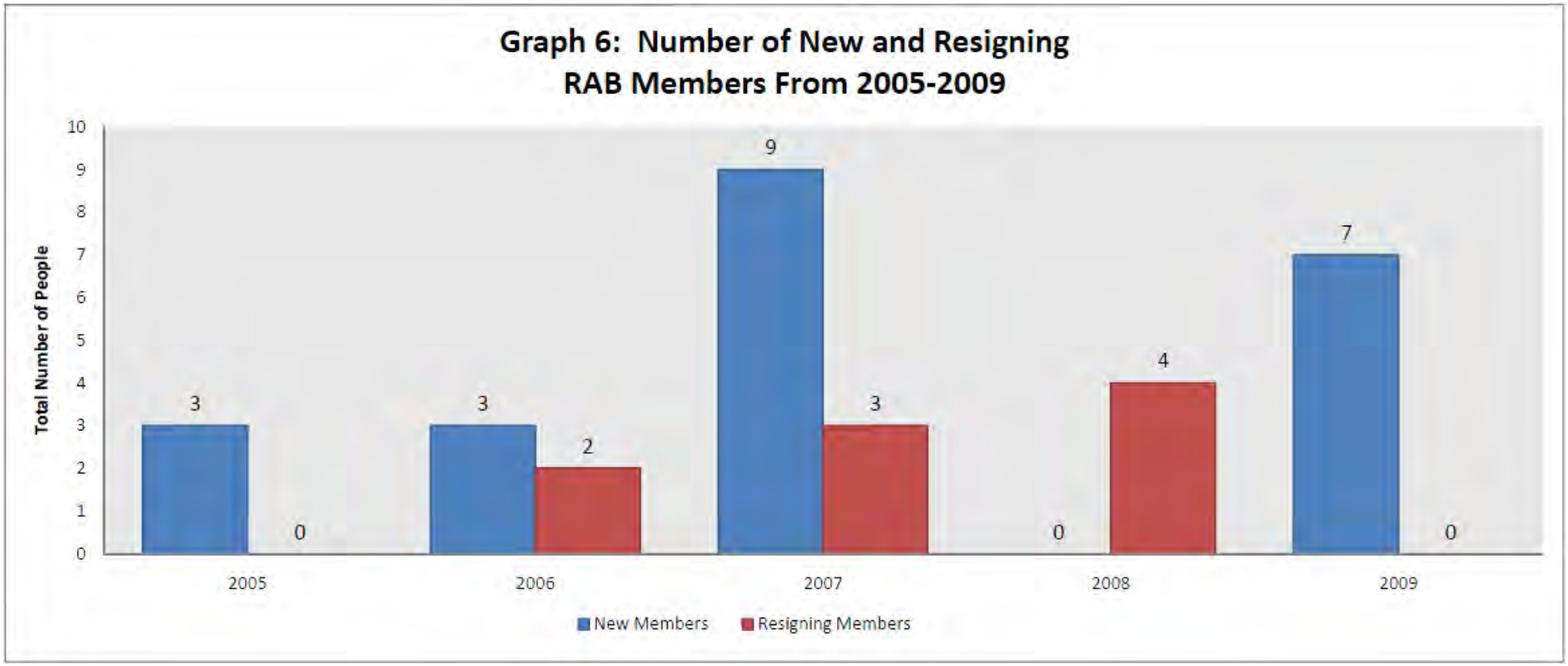
Appendix E: Former Restoration Advisory Board (continued)



Appendix E: Former Restoration Advisory Board (continued)



Appendix E: Former Restoration Advisory Board (continued)



DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
1455 FRAZEE RD, SUITE 900
SAN DIEGO, CA 92108-4310

Ser BPMOW.DG/0317
MAY 22 2009

Dear Hunters Point Naval Shipyard RAB Community Co-Chair and RAB Members:

This letter serves as the Navy's notice of intent to dissolve the Hunters Point Naval Shipyard (HPS) Restoration Advisory Board (RAB) as provided by 32 Code of Federal Regulations (CFR) Part 202. My office has consulted with the Environmental Protection Agency, as well as State, and local government representatives about this proposal. The purpose of a RAB is to ensure community involvement in the environmental cleanup process whereby an open discussion and exchange of information occurs. The Navy fully supports the need for open, meaningful dialogue with the diverse Bayview Hunters Point Community regarding our environmental cleanup actions and decisions. However, the RAB is not fulfilling this objective. Therefore, we will be exploring other means to accomplish this important goal. As the Navy follows the RAB dissolution process (enclosed), my staff will be working with you, the greater Bayview Hunters Point Community, and our regulatory partners to find alternative means to meet these community involvement goals and requirements. I specifically request your ideas for an effective community involvement program which will reach a broad community audience and encourage effective two-way communication between the community and Navy regarding environmental cleanup issues at HPS.

My review of input from the RAB over the last 24 months regarding Navy environmental cleanup matters leads me to conclude that the HPS RAB should be dissolved. To continue holding meetings will not fulfill the RAB's purpose or mission. This conclusion is based on the following:

1. RAB meetings do not provide the diverse Bayview Hunters Point Community's input to the Navy's environmental cleanup program.
   - The Navy has issued over 80 documents for review over the last 24 months and only 3 have received formal written comments from RAB members.
   - The Navy has issued four different Proposed Plan/Record of Decision documents over the past year without receiving any formal written comment from RAB members.
   - RAB meetings are used to discuss non-Navy issues such as redevelopment actions. In fact, RAB members recently voted to stop all work on HPS due to concerns about work on an adjacent City-owned parcel.
   - RAB meetings are used to discuss contracting issues rather than the cleanup program. RAB members recently passed a resolution to pursue a civil grand jury investigation into economic issues at HPS.

While the Navy agrees that redevelopment and contracting issues are important to the community, they are outside the scope of the RAB and there are other appropriate forums for these topics. The Navy has repeated this point to the RAB without a change in RAB performance.

2. The RAB atmosphere is not productive to effective public discourse.
   - Rules of order are often not followed during meetings; interruptions are common; and meeting facilitators are not respected.
   - A number of RAB Community members have complained about the hostile tone of RAB meetings and decline to attend because of the unwillingness of other RAB members to listen to contrasting points of view and/or inability of the RAB to focus on environmental cleanup issues.
   - At the January 22, 2009 RAB meeting, RAB members voted to request replacement of the City's representative, which is not an appropriate RAB function.
   - At a February 18, 2009 "emergency meeting" RAB members voted to request replacement of the Navy RAB Co-Chair, which is not an appropriate RAB function.

As a consequence, valuable information from Navy and other state and Federal agency representatives has not been effectively presented. Instead of fostering discussion on the effectiveness of proposed Navy cleanup actions, RAB discussions focus on matters unrelated to the Navy's clean-up efforts.

3. Navy attempts to work with the Community to improve the RAB process have failed.
   - Over the past 24 months, the Navy RAB Co-Chair and others have attempted to refocus RAB meetings with the help of a professional facilitator.
   - The Navy RAB Co-Chair has had discussions outside of RAB meetings with RAB members to try to refocus the RAB on the environmental program.

These attempts have been unsuccessful in changing the atmosphere or inducing input on the environmental restoration program.

Though I believe the RAB should be dissolved, I remain fully committed to seeking community involvement and input for ongoing and future HPS cleanup actions. While we work through this RAB dissolution process, I will post information such as fact sheets and presentations on the Hunter's Point website (www.bracpmo.navy.mil), as well as provide informational mailings to elicit community member comments and questions.

As stated earlier, the Navy fully supports the need for open, meaningful dialogue with the diverse Bayview Hunters Point Community regarding our environmental cleanup actions and decisions. Should the RAB be dissolved, the revised community involvement program may include community environmental forums, including using internet-based technology to more easily reach a diverse audience; expanded Monthly Progress Reports and facts sheets; and hosting technical discussions and tours of cleanup sites on HPS for interested community members. I solicit your comments on this letter of intent, as well as your ideas regarding more productive community involvement alternatives between the Bayview Hunters Point Community and the Navy. I request you provide your ideas and comments to HPS Base Closure Manager, Mr. Douglas Gilkey, at the address on the letterhead no later than 30 June 2009. Please feel free to contact Mr. Gilkey at (619)-532-0949 if you have any questions about this notice or the dissolution process.

During the interim period between my publishing of this intent letter and a final decision as to the RAB's dissolution, further meetings of the RAB are suspended.

I thank each of you for the effort you have made as a member of the HPS RAB. The Navy places a high priority on obtaining meaningful and timely input from the community in the course of its environmental cleanup activities and hope you will continue to participate in the HPS environmental restoration program in the future. Thank you for your contributions.

Sincerely,

Laura Duchnak

LAURA DUCHNAK
Director, BRAC PMO West

Encl: (1) 32 C.F.R Part 202.10

32 C.F.R Part 202.10

(b) *RAB dissolution*—(1) *Requirements for RAB dissolution.* An Installation Commander may recommend dissolution of a RAB when a RAB is no longer fulfilling the intended purpose of advising and providing community input to an Installation Commander and decision makers on environmental restoration projects as described in §202.1(b).

(2) *Dissolution procedures.* If the Installation Commander is considering dissolving the RAB, the Installation Commander shall:

(i) Consult with EPA, state, tribal and local government representatives, as appropriate, regarding dissolving the RAB.

(ii) Notify the RAB community co-chair and members in writing of the intent to dissolve the RAB and the reasons for doing so and provide the RAB members 30 days to respond in writing. The Installation Commander shall consider RAB member responses, and in consultation with EPA, state, tribal and local government representatives, as appropriate, determine the appropriate actions.

(iii) Notify the public of the proposal to dissolve the RAB and provide a 30-day public comment period on the proposal, if the Installation Commander decides to proceed with dissolution. At the conclusion of the public comment period, the Installation Commander will review the public comments, consult with EPA, state, tribal and local government representatives, as appropriate, and, if the Installation Commander still believes dissolution is appropriate, render a recommendation to that effect.

(iv) Send the recommendation, responsiveness summary, and all supporting documentation via the chain-of-command to the Military Component's Environmental Deputy Assistant Secretary (or equivalent) for approval or disapproval. The Military Component's Environmental Deputy Assistant Secretary (or equivalent) shall notify the Office of the Deputy Under Secretary of Defense (Installations & Environment) (or equivalent) of the decision to approve or disapprove the request to dissolve the RAB and the rationale for that decision.

(v) Document the recommendation, responsiveness summary, and the rationale for dissolution in a memorandum for inclusion in the Administrative Record, notify the public of the decision through written notice to the RAB members and through publication of a notice in a local newspaper of general circulation and describe other ongoing public involvement opportunities that are available, once the Military Component's Environmental Deputy Assistant Secretary (or equivalent) makes a final decision.

(c) *Reestablishing an adjourned or dissolved RAB.* An Installation Commander may reestablish an adjourned or dissolved RAB if there is sufficient and sustained community interest in doing so, and there are environmental restoration activities still ongoing at the installation or that may start up again. Where a RAB is adjourned or dissolved and environmental restoration activities continue, the Installation Commander should reassess community interest at least every 24 months. When all environmental restoration decisions have been made and required remedies are in place and are properly operating at an installation, reassessment of the community interest for reestablishing the RAB is not necessary. When additional environmental restoration decisions have to be made resulting from subsequent actions, such as long-term management and five-year reviews, the installation will reassess community interest for reestablishing the RAB. Where the reassessment finds sufficient and sustained community interest at previously adjourned or dissolved RABs, the Installation Commander should reestablish a RAB. Where the reassessment does not find sufficient and sustained community interest in reestablishing the RAB, the Installation Commander shall document in a memorandum for the record the procedures followed in the reassessment and the findings of the reassessment. This document shall be included in the Administrative Record for the installation. If there is interest in reestablishment at a previously dissolved RAB, but the Installation Commander determines that the same conditions exist that required the original dissolution, he or she will request, through the chain-of-command to the Military Component's Deputy Assistant Secretary, an exception to reestablishing the RAB. If those conditions no longer exist at a previously dissolved RAB, and there is sufficient and sustained interest in reestablishment, the Installation Commander should recommend to the Deputy Assistant Secretary that the RAB be reestablished. The Deputy Assistant Secretary will take the Installation Commander's recommendation under advisement and may approve that RAB for reestablishment.

(d) *Public comment.* If the Installation Commander intends to recommend dissolution of a RAB or reestablish a dissolved RAB, the Installation Commander shall notify the public of the proposal to dissolve or reestablish the RAB and provide a 30-day public comment period on the proposal. At the conclusion of the public comment period, the Installation Commander shall review public comments; consult with EPA and state, tribal, or local government representatives, as appropriate; prepare a responsiveness summary; and render a recommendation. The recommendation, responsiveness summary, and all supporting documentation should be sent via the chain-of-command to the Military Component's Environmental Deputy Assistant Secretary (or equivalent) for approval or disapproval. The Installation Commander shall notify the public of the decision.

DEPARTMENT OF THE NAVY
OFFICE OF THE ASSISTANT SECRETARY
(INSTALLATIONS AND ENVIRONMENT)
1000 NAVY PENTAGON
WASHINGTON DC 20350-1000

DEC 23 2009

MEMORANDUM TO MS. LAURA DUCHNAK, DIRECTOR,
BASE REALIGNMENT AND CLOSURE (BRAC) PROGRAM

SUBJECT: Hunters Point Restoration Advisory Board (RAB)

I received your December 22, 2009 memorandum (Attachment 1) submitted pursuant to the Code of Federal Regulations (CFR) at Title 32, Section 202.10(b) along with the supporting materials, wherein you recommend the dissolution of the Hunters Point Shipyard (HPS) Restoration Advisory Board (RAB). In accordance with Title 32, I considered your recommendation and the content of the administrative record in reaching my decision. I also reviewed the process you undertook to make the public aware of your intentions, as well as attempts made by your staff to resolve issues affecting the RAB's effectiveness. Based on review of that information, I have determined the HPS RAB is unable to fulfill its intended purpose of advising Navy's Environmental Restoration program managers and decision makers, and I therefore approve your request to dissolve the HPS RAB.

The Department of the Navy (DON) establishes RABs to provide stakeholder involvement in the environmental restoration process at Department of Defense (DoD) installations. The RAB is an opportunity for parties who may be affected by environmental restoration activities to review program progress, and participate in a dialogue where they provide comment and advice to environmental restoration program managers and decision makers. I have reviewed documents within the administrative record. I paid particular attention to the minutes of various RAB meetings (Attch. 2, 13, 14 and 20). The meeting minutes revealed a RAB that at times was productive but more often was unproductive. While members of the RAB listened and provided insightful comments at one point, the next moment conversations devolved into acrimony and accusation on issues which had little or nothing to do with HPS environmental restoration. The meeting of January 2009 is a prime example of this inconsistency (Attch. 20). The RAB Community Co-Chair notes in Attachment 22 that the RAB is an advisory board for environmental clean-up decisions; however, in that same note, he demands initiation of a grand jury investigation on economic matters and immediate removal from the RAB of a San Francisco City regulator. Email by current and former members of the RAB was also telling of the wide dichotomy of views within the RAB regarding its continued value (Attach. 30, 34, 35, 37, 39, 40, 41 and 61). Reasonable steps were taken to resolve issues affecting the RAB's effectiveness, as seen by regular use of a meeting facilitator and numerous attempts by Navy personnel to work with RAB members on issues that are outside the RAB's purview (Attch. 62). Nevertheless, it appears clear to me that irresolvable internal issues prevent the HPS RAB from fulfilling its

intended purpose of advising the environmental restoration program managers and decision makers.

Since February 2009, you have taken numerous steps to seek out and implement enhanced community involvement in other forums and through internet technologies. While several actions have shown promise, others may not have been completely successful (Attch.6). I encourage you to continue to provide information to the public, seek their input on the environmental restoration program implementation, and continue to explore other opportunities for meaningful dialogue with the local community. I am directing you to monitor and reassess community interest in the RAB process at least every 24 months. If your reassessment finds sufficient and sustained community interest for reestablishing the HPS RAB, you should reestablish a RAB. However, if the same conditions occurring at the time of this RAB's dissolution still exist, you should notify this office through your chain of command and request an exception to reestablishment.

Richard G. Mach, Jr., P.E.
Acting Deputy Assistant Secretary of the Navy
(Environment)

Appendix F: History of Recent Community Involvement

Date of Meeting	Meeting Topic	Type of Meeting
February 11, 2009	Parcel C Proposed Plan	Public Meeting
April 14, 2009	Dust Control	Community Environmental Forum
April 29, 2009	Basewide Update	Community Environmental Forum
July 30, 2009	Parcel E Draft Feasibility Study	Community Technical Meeting
August 25, 2009	Open House	Open House
January 27, 2010	Parcel E-2 Polychlorinated Biphenyls Hot Spot	Community Technical Meeting
February 2, 2010	Community Involvement Plan Meeting	Community Meeting
March 16, 2010	Navy Update of HPS Clean Up Activities	Community Technical Meeting
April 28, 2010	Parcel C Draft Record of Decision	Community Technical Meeting
May 27, 2010	Radiological Program Update	Community Technical Meeting
June 30, 2010	Business Information	Open House/Fair
July 28, 2010	Parcel C Groundwater Fieldwork	Community Technical Meeting
August 25, 2010	Pier Demolition	Community Technical Meeting
September 22, 2010	Upcoming Radiological Work on Parcel D-1	Community Technical Meeting
October 27, 2010	Parcel B Remediation	Community Technical Meeting
November 18, 2010	Environmental Cleanup Activities	Community Meeting
December 1, 2010	Year in Review – 2010 Environmental Cleanup	Community Meeting
January 26, 2011	Upcoming 2011 Environmental Cleanup Activities	Community Meeting
February 23, 2011	Upcoming 2011 Environmental Cleanup Activities	Community Meeting
March 23, 2011	Draft Community Involvement Plan and the Early Transfer Process	Community Meeting
April 2, 2011	Draft Community Involvement Plan	Community Meeting
April 27, 2011	Update of Environmental Field Projects and Public Involvement	Community Meeting

Appendix F: History of Recent Community Involvement (continued)

Date of Fact Sheet	Fact Sheet Topic
January 22, 2009	Snapshot of HPS (Update on activities basewide)
January 23, 2009	Parcel C Proposed Plan
February 27, 2009	Snapshot of HPS
March 31, 2009	Snapshot of HPS
May 29, 2009	Snapshot of HPS
June 26, 2009	Snapshot of HPS
August 28, 2009	Snapshot of HPS
March 14, 2011	Draft Community Involvement Plan
Date of Other Outreach Activities	**Outreach Activity**
July 12, 2010	Morgan Heights Homeowners Association General Update Presentation
October 13, 2010	Community HPS Bus Tour
February 22, 2011	Hunters Point Shipyard Citizen's Advisory Committee
February 23, 2011	Bayview Hunters Point Senior Center General Update Presentation
February 23, 2011	Sing Tao Chinese Radio Interview Session
March 23, 2011	Sing Tao Chinese Radio Interview Session
March 23, 2011	El Show de Carlos DeMarty Spanish Radio Interview Session
April 26, 2011	KPOO Community Radio Show General overview
April 27, 2011	Sing Tao Chinese Radio Interview Session
April 27, 2011	El Show de Carlos DeMarty Spanish Radio Interview Session

Appendix G: Regulations and Guidance for Community Involvement

The Department of the Navy's Installation Restoration Program is conducted in accordance with federal and state requirements, and its purpose is twofold—(1) to identify, investigate, and clean up or control releases of hazardous substances, and (2) to reduce the risk to human health and the environment. The Navy is the lead federal agency for the Installation Restoration Program at Hunters Point Shipyard (**HPS**). The figure on Page G-2 presents the major phases of the Comprehensive Environmental Response, Compensation, and Liability Act (**CERCLA**) process.

Federal and state environmental statutes and amendments require community involvement for hazardous waste sites, and guidance documents have been created to address these requirements. The United States Environmental Protection Agency (**U.S. EPA**) community involvement documents can be found at www.epa.gov/superfund/community/involvement.htm. The Department of Defense documents can be found at https://portal.navfac.navy.mil/portal/page/portal/NAVFAC/NAVFAC_WW_PP/NAVFAC_NFESC_PP/ENVIRONMENTAL/ERB/COMINV. The Navy's Community Involvement Plan (**CIP**) at HPS meets these requirements. The following state and federal environmental statutes and amendments require community involvement program activities for hazardous waste sites:

- Comprehensive Environmental Response, Compensation, and Liability Act (**CERCLA**) (Title 42, *United States Code*, Section 9601, and following sections), also known as Superfund
- Superfund Amendments and Reauthorization Act of 1986, which amended CERCLA
- Community Environmental Response Facilitation Act of 1992, which also amended CERCLA
- California Health and Safety Code, Division 20
- Title 22, California Code of Regulations, Division 4.5
- *California Public Resources Code*, Section 21000 and the sections that follow Section 21000 in the *Public Resource Code*

The guidelines for conducting community involvement, including preparing a CIP, are set forth in the following:

- "Superfund Community Involvement Handbook" (U.S. EPA, 2005)
- "Superfund Community Involvement Toolkit" (U.S. EPA, 2005)
- "Navy/Marine Corps Installation Restoration Manual" (Naval Facilities Engineering Command, 1997)
- "Department of Defense/EPA Restoration Advisory Board (**RAB**) Implementation Guidelines" (Department of Defense, 1994)
- "State of California Environmental Protection Agency Department of Toxic Substances Control (**DTSC**) Public Participation Manual" (DTSC, 2001)

In addition, the National Oil and Hazardous Substances Pollution Contingency Plan, also called the National Contingency Plan (NCP), contains the federal government's requirements for responding to

Appendix G: Regulations and Guidance for Community Involvement (continued)

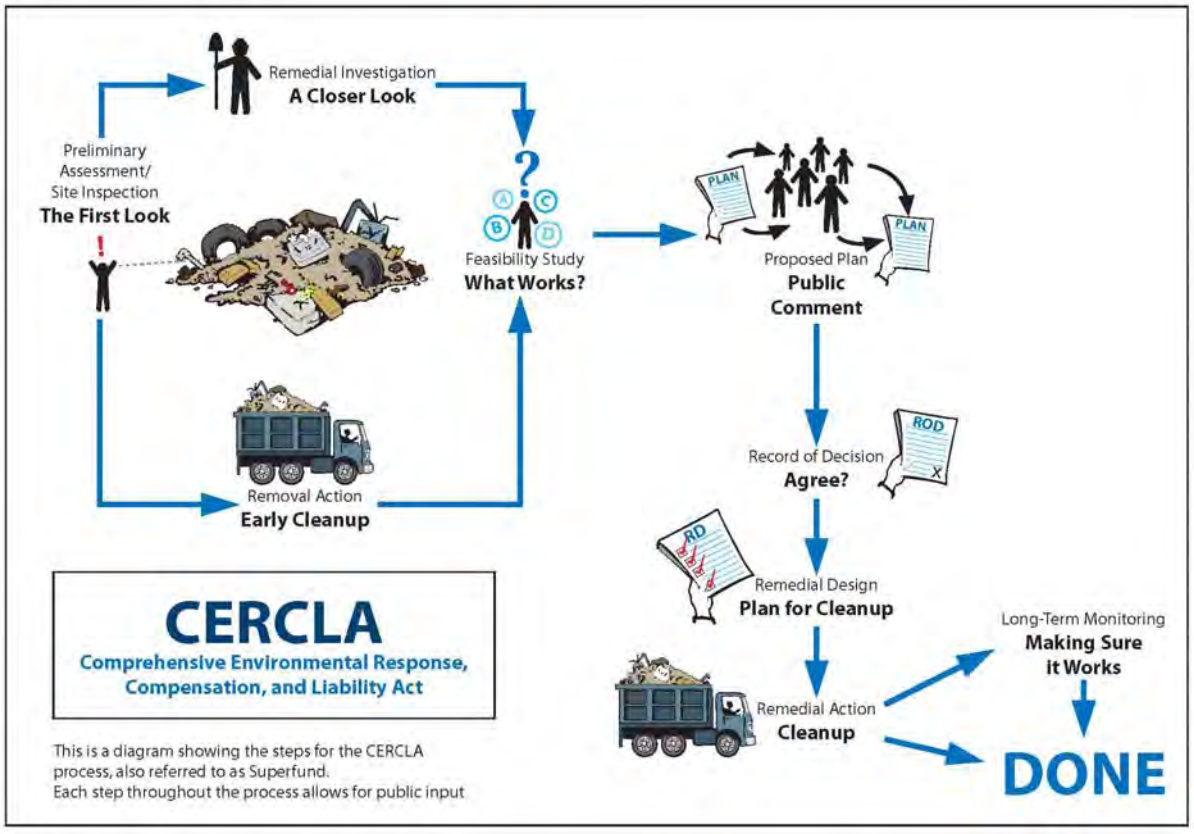
hazardous substance releases. The Navy meets all NCP requirements for public involvement. In addition, the Navy's Installation Restoration Program, described below, exceeds the NCP requirements for public involvement. The relevant text from the NCP (40 CFR 300.430) has been provided below beginning on page G-7.

Installation Restoration Program

The Department of Defense developed the Installation Restoration Program in 1981 to comply with CERCLA and other federal and state requirements at military facilities.

CERCLA requires that a remedial action or removal action process be selected specifically for each Installation Restoration Program site. A removal action is an environmental response that reduces threats to human health and the environment, such as fencing a site or excavating and removing contaminated soil. A removal action may be an interim action or may be the final cleanup for the site. A remedial action is the long-term final cleanup of a site, such as a groundwater treatment system or a landfill cap.

A remedial action or removal action is selected by evaluating the advantages and disadvantages of each alternative to clean up a site and selecting the one that best protects human health and the environment in a cost-effective manner. Illustrated in the following graphic and discussed on the following pages are the stages of each phase of CERCLA, including associated community involvement program activities.



Appendix G: Regulations and Guidance for Community Involvement (continued)

Remedial Action Process

The CERCLA remedial action process, as defined in Title 42 USC Section 9601 and the following sections, specifies the phases to thoroughly evaluate the nature and extent of contamination and to identify and evaluate cleanup alternatives. The various phases of the cleanup process are described below.

Discovery and Notification – Discovery occurs when a hazardous waste site is discovered or a release of hazardous materials into the environment is noticed. The installation Commanding Officer is responsible for notifying the U.S. EPA and state regulatory agencies of the hazardous waste site.

Preliminary Assessment – A preliminary assessment is conducted to evaluate whether current or past waste management practices have resulted in a release of hazardous substances. The preliminary assessment is completed through record searches and visual inspections of the area. This stage results in a list of potential areas of concern that warrant further investigation.

Site Inspection – The site inspection usually requires sampling and analysis of soil, surface water, groundwater, or any combination of the three. Based on the data that result, the site will be (1) slated for no action, (2) recommended for a removal action, or (3) investigated further in the remedial investigation phase. If the area will be investigated further, an Information Repository is established.

Remedial Investigation – The remedial investigation involves a comprehensive study of site soils, surface water, and groundwater to evaluate the lateral and vertical extent of contamination. Risks to human health and the environment are also assessed. Based on the estimated risk posed, the site could be (1) recommended for a removal action, (2) recommended for no action, or (3) entered into the next phase, the feasibility study.

Feasibility Study – The feasibility study uses the data collected during the remedial investigation to develop and evaluate cleanup alternatives. Cleanup alternatives are evaluated based on a variety of criteria, including technical feasibility, cost-effectiveness, and community acceptance.

Proposed Plan – The Proposed Plan is a fact sheet that is developed to describe cleanup alternatives and explain why the preferred alternative was chosen. ***This is the key point at which community members are highly encouraged to provide comments***. The Navy considers all comments received on the Proposed Plan before a final decision is made. The Navy provides a reply to all significant comments in a responsiveness summary in the Record of Decision.

Record of Decision – The selected cleanup alternative is documented in the Record of Decision. The notice of availability of the Record of Decision is ***publicized in a local newspaper of general circulation***.

Remedial Design – The design for the cleanup alternatives is prepared and a fact sheet is distributed before the Navy begins a remedial action (or cleanup). ***The need for updating the CIP will also be assessed at this time.***

Remedial Action – The cleanup alternative is carried out and the ***public is kept informed***. At a minimum, the community will have a point of contact who can be contacted to ask questions or raise concerns.

Post-Project Activities – Post-project activities may include long-term monitoring. Long-term monitoring occurs at sites where hazardous substances, pollutants, or contaminants remain after the remedial action has been completed. Long-term monitoring is also used to confirm that previous site remediation continues to be effective. Every five years the Navy will conduct a review of cleanup where waste is left in place to ensure the remedy remains protective of human health and the environment.

Site Closeout – Site closeout occurs when all necessary remedial action activities are complete and the Navy and regulatory agencies agree no further action is appropriate at the site. Site closeout can also occur during the remedial action process.

Removal Action Process

In some cases, the Navy may conduct a removal action of hazardous substances from a site. The removal action can be implemented at any time during the remedial action process. These removal actions are carried out in accordance with federal and state requirements. The Navy can conduct a removal action if there is an immediate or perceived threat to public health or the environment. Any one or more of the following criteria must be met to implement a removal action:

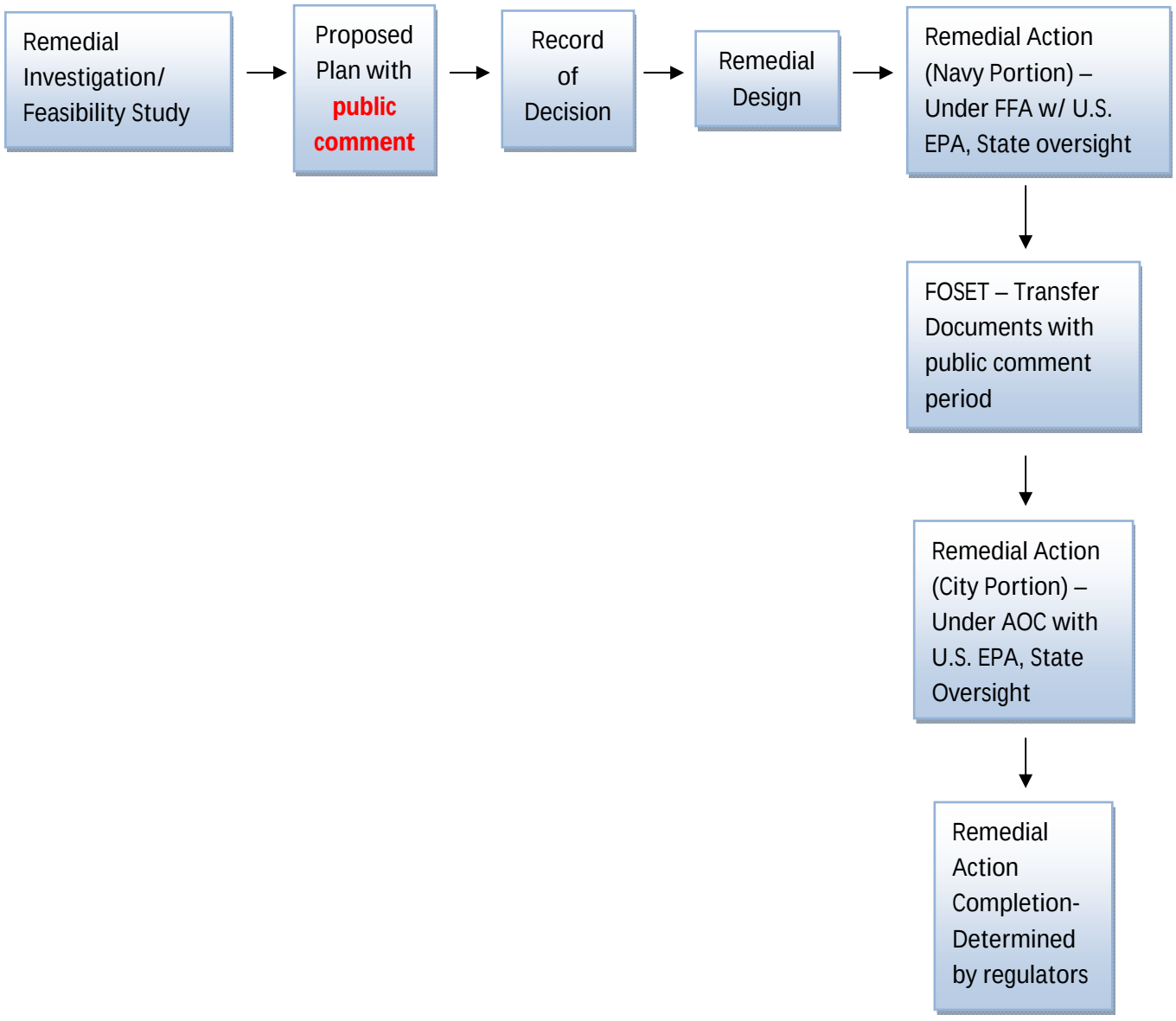
- An imminent threat to human health or the environment exists
- The source of the contamination can be removed quickly and effectively
- Access to contamination can be limited
- A removal action is the fastest way of remediating the site

The U.S. EPA has defined three types of removal actions—emergency, time-critical, and non-time-critical removals. These removal actions types and corresponding documentation are detailed as follows:

- **Emergency Removal Actions:** Emergency removal actions occur when cleanup must begin within 2 weeks after the lead agency concludes that a removal action is necessary.
- **Time-Critical Removal Actions:** Time-critical removal actions occur when cleanup can be initiated within 6 months after the lead agency concludes that a removal action is necessary.
- **Non-Time-Critical Removal Actions:** Non-time-critical removal actions occur when cleanup need not begin within 6 months after the lead agency concludes that a removal action is necessary. Non-time-critical removal actions require preparation of an Engineering Evaluation/Cost Analysis and an Action Memorandum.
- **Engineering Evaluation/Cost Analysis:** An Engineering Evaluation/Cost Analysis is the first step in the non-time-critical removal action process. The Engineering Evaluation/Cost Analysis document evaluates alternatives for cleanup and states the Navy's preferred cleanup alternative.
- **Action Memorandum:** The final decision about the removal action selected is documented in the Action Memorandum. The draft Action Memorandum is normally announced with the Engineering Evaluation/Cost Analysis in a public notice.

Appendix G: Regulations and Guidance for Community Involvement (continued)

CERCLA Process with Early Transfer



Appendix G: Regulations and Guidance for Community Involvement (continued)

Pertinent Passages from the National Contingency Plan (40 CFR 300.430)

The relevant NCP text from the Code of Federal Regulations pertaining to the requirements for community involvement has been provided on the following pages.

requirements of 29 CFR 1910.120 concerning use of an incident command system.

(b) In a response action taken by a responsible party, the responsible party must assure that an occupational safety and health program consistent with 29 CFR 1910.120 is made available for the protection of workers at the response site.

(c) In a response taken under the NCP by a lead agency, an occupational safety and health program should be made available for the protection of workers at the response site, consistent with, and to the extent required by, 29 CFR 1910.120. Contracts relating to a response action under the NCP should contain assurances that the contractor at the response site will comply with this program and with any applicable provisions of the Occupational Safety and Health Act of 1970 (29 U.S.C. 651 et seq.) (OSH Act) and state laws with plans approved under section 18 of the OSH Act.

(d) When a state, or political subdivision of a state, without an OSHA-approved state plan is the lead agency for response, the state or political subdivision must comply with standards in 40 CFR part 311, promulgated by EPA pursuant to section 126(f) of SARA.

(e) Requirements, standards, and regulations of the OSH Act and of state OSH laws not directly referenced in paragraphs (a) through (d) of this section, must be complied with where applicable. Federal OSH Act requirements include, among other things, Construction Standards (29 CFR part 1926), General Industry Standards (29 CFR part 1910), and the general duty requirement of section 5(a)(1) of the OSH Act (29 U.S.C. 654(a)(1)). No action by the lead agency with respect to response activities under the NCP constitutes an exercise of statutory authority within the meaning of section 4(b)(1) of the OSH Act. All governmental agencies and private employers are directly responsible for the health and safety of their own employees.

§ 300.155 Public information and community relations.

(a) When an incident occurs, it is imperative to give the public prompt, accurate information on the nature of the incident and the actions underway to mitigate the damage. OSCs/RPMs and community relations personnel should ensure that all appropriate public and private interests are kept informed and that their concerns are considered throughout a response. They should coordinate with available public affairs/community relations resources to carry out this responsibility by establishing, as appropriate, a Joint Information Center bringing together resources from federal and state agencies and the responsible party.

(b) An on-scene news office may be established to coordinate media relations and to issue official federal information on an incident. Whenever possible, it will be headed by a representative of the lead agency. The OSC/RPM determines the location of the on-scene news office, but every effort should be made to locate it near the scene of the incident. If a participating agency believes public interest warrants the issuance of statements and an on-scene news office has not been established, the affected agency should recommend its establishment. All federal news releases or statements by participating agencies should be cleared through the OSC/RPM. Information dissemination relating to natural resource damage assessment activities shall be coordinated through the lead administrative trustee. The designated lead administrative trustee may assist the OSC/RPM by disseminating information on issues relating to damage assessment activities. Following termination of removal activity, information dissemination on damage assessment activities shall be through the lead administrative trustee.

(c) The community relations requirements specified in §§ 300.415, 300.430, and 300.435 apply to removal, remedial, and enforcement actions and are intended to promote active communication between communities affected by discharges or releases and the lead agency responsible for response actions. Community Relations Plans (CRPs) are required by EPA for certain response actions. The OSC/RPM should ensure coordination with such plans which may be in effect at the scene of a discharge or release or which may need to be developed during follow-up activities.

federal environmental or state environmental or facility siting laws. Waivers described in §300.430(f)(1)(ii)(C) may be used for removal actions. Other federal and state advisories, criteria, or guidance may, as appropriate, be considered in formulating the removal action (see §300.400(g)(3)). In determining whether compliance with ARARs is practicable, the lead agency may consider appropriate factors, including:

(1) The urgency of the situation; and

(2) The scope of the removal action to be conducted.

(k) Removal actions pursuant to section 106 or 122 of CERCLA are not subject to the following requirements of this section:

(1) Section 300.415(a)(2) requirement to locate responsible parties and have them undertake the response;

(2) Section 300.415(b)(2)(vii) requirement to consider the availability of other appropriate federal or state response and enforcement mechanisms to respond to the release;

(3) Section 300.415(b)(5) requirement to terminate response after $2 million has been obligated or 12 months have elapsed from the date of the initial response; and

(4) Section 300.415(g) requirement to assure an orderly transition from removal to remedial action.

(l) To the extent practicable, provision for post-removal site control following a CERCLA Fund-financed removal action at both NPL and non-NPL sites is encouraged to be made prior to the initiation of the removal action. Such post-removal site control includes actions necessary to ensure the effectiveness and integrity of the removal action after the completion of the on-site removal action or after the $2 million or 12-month statutory limits are reached for sites that do not meet the exemption criteria in paragraph (b)(5) of this section. Post-removal site control may be conducted by:

(1) The affected state or political subdivision thereof or local units of government for any removal;

(2) Potentially responsible parties; or

(3) EPA's remedial program for some federal-lead Fund-financed responses at NPL sites.

(m) OSCs/RPMs conducting removal actions shall submit OSC reports to the RRT as required by §300.165.

(n) *Community relations in removal actions.* (1) In the case of all CERCLA removal actions taken pursuant to §300.415 or CERCLA enforcement actions to compel removal response, a spokesperson shall be designated by the lead agency. The spokesperson shall inform the community of actions taken, respond to inquiries, and provide information concerning the release. All news releases or statements made by participating agencies shall be coordinated with the OSC/RPM. The spokesperson shall notify, at a minimum, immediately affected citizens, state and local officials, and, when appropriate, civil defense or emergency management agencies.

(2) For CERCLA actions where, based on the site evaluation, the lead agency determines that a removal is appropriate, and that less than six months exists before on-site removal activity must begin, the lead agency shall:

(i) Publish a notice of availability of the administrative record file established pursuant to §300.820 in a major local newspaper of general circulation within 60 days of initiation of on-site removal activity;

(ii) Provide a public comment period, as appropriate, of not less than 30 days from the time the administrative record file is made available for public inspection, pursuant to §300.820(b)(2); and

(iii) Prepare a written response to significant comments pursuant to §300.820(b)(3).

(3) For CERCLA removal actions where on-site action is expected to extend beyond 120 days from the initiation of on-site removal activities, the lead agency shall by the end of the 120-day period:

(i) Conduct interviews with local officials, community residents, public interest groups, or other interested or affected parties, as appropriate, to solicit their concerns, information needs, and how or when citizens would like to be involved in the Superfund process;

(ii) Prepare a formal community relations plan (CRP) based on the community interviews and other relevant information, specifying the community

relations activities that the lead agency expects to undertake during the response; and

(iii) Establish at least one local information repository at or near the location of the response action. The information repository should contain items made available for public information. Further, an administrative record file established pursuant to subpart I for all removal actions shall be available for public inspection in at least one of the repositories. The lead agency shall inform the public of the establishment of the information repository and provide notice of availability of the administrative record file for public review. All items in the repository shall be available for public inspection and copying.

(4) Where, based on the site evaluation, the lead agency determines that a CERCLA removal action is appropriate and that a planning period of at least six months exists prior to initiation of the on-site removal activities, the lead agency shall at a minimum:

(i) Comply with the requirements set forth in paragraphs (n)(3)(i), (ii), and (iii) of this section, prior to the completion of the EE/CA, or its equivalent, except that the information repository and the administrative record file will be established no later than when the EE/CA approval memorandum is signed;

(ii) Publish a notice of availability and brief description of the EE/CA in a major local newspaper of general circulation pursuant to § 300.820;

(iii) Provide a reasonable opportunity, not less than 30 calendar days, for submission of written and oral comments after completion of the EE/CA pursuant to § 300.820(a). Upon timely request, the lead agency will extend the public comment period by a minimum of 15 days; and

(iv) Prepare a written response to significant comments pursuant to § 300.820(a).

[59 FR 47448, Sept. 15, 1994]

§ 300.420 Remedial site evaluation.

(a) *General.* The purpose of this section is to describe the methods, procedures, and criteria the lead agency shall use to collect data, as required, and evaluate releases of hazardous substances, pollutants, or contaminants. The evaluation may consist of two steps: a remedial preliminary assessment (PA) and a remedial site inspection (SI).

(b) *Remedial preliminary assessment.* (1) The lead agency shall perform a remedial PA on all sites in CERCLIS as defined in § 300.5 to:

(i) Eliminate from further consideration those sites that pose no threat to public health or the environment;

(ii) Determine if there is any potential need for removal action;

(iii) Set priorities for site inspections; and

(iv) Gather existing data to facilitate later evaluation of the release pursuant to the Hazard Ranking System (HRS) if warranted.

(2) A remedial PA shall consist of a review of existing information about a release such as information on the pathways of exposure, exposure targets, and source and nature of release. A remedial PA shall also include an off-site reconnaissance as appropriate. A remedial PA may include an on-site reconnaissance where appropriate.

(3) If the remedial PA indicates that a removal action may be warranted, the lead agency shall initiate removal evaluation pursuant to § 300.410.

(4) In performing a remedial PA, the lead agency may complete the EPA Preliminary Assessment form, available from EPA regional offices, or its equivalent, and shall prepare a PA report, which shall include:

(i) A description of the release;

(ii) A description of the probable nature of the release; and

(iii) A recommendation on whether further action is warranted, which lead agency should conduct further action, and whether an SI or removal action or both should be undertaken.

(5) Any person may petition the lead federal agency (EPA or the appropriate federal agency in the case of a release or suspected release from a federal facility), to perform a PA of a release when such person is, or may be, affected by a release of a hazardous substance, pollutant, or contaminant. Such petitions shall be addressed to the EPA Regional Administrator for

that conforms with 29 CFR 1910.120 (l)(1) and (l)(2).

(7) If natural resources are or may be injured by the release, ensure that state and federal trustees of the affected natural resources have been notified in order that the trustees may initiate appropriate actions, including those identified in subpart G of this part. The lead agency shall seek to coordinate necessary assessments, evaluations, investigations, and planning with such state and federal trustees.

(8) Develop sampling and analysis plans that shall provide a process for obtaining data of sufficient quality and quantity to satisfy data needs. Sampling and analysis plans shall be reviewed and approved by EPA. The sampling and analysis plans shall consist of two parts:

(i) The field sampling plan, which describes the number, type, and location of samples and the type of analyses; and

(ii) The quality assurance project plan, which describes policy, organization, and functional activities and the data quality objectives and measures necessary to achieve adequate data for use in selecting the appropriate remedy.

(9) Initiate the identification of potential federal and state ARARs and, as appropriate, other criteria, advisories, or guidance to be considered.

(c) *Community relations.* (1) The community relations requirements described in this section apply to all remedial activities undertaken pursuant to CERCLA section 104 and to section 106 or section 122 consent orders or decrees, or section 106 administrative orders.

(2) The lead agency shall provide for the conduct of the following community relations activities, to the extent practicable, prior to commencing field work for the remedial investigation:

(i) Conducting interviews with local officials, community residents, public interest groups, or other interested or affected parties, as appropriate, to solicit their concerns and information needs, and to learn how and when citizens would like to be involved in the Superfund process.

(ii) Preparing a formal community relations plan (CRP), based on the community interviews and other relevant information, specifying the community relations activities that the lead agency expects to undertake during the remedial response. The purpose of the CRP is to:

(A) Ensure the public appropriate opportunities for involvement in a wide variety of site-related decisions, including site analysis and characterization, alternatives analysis, and selection of remedy;

(B) Determine, based on community interviews, appropriate activities to ensure such public involvement, and

(C) Provide appropriate opportunities for the community to learn about the site.

(iii) Establishing at least one local information repository at or near the location of the response action. Each information repository should contain a copy of items made available to the public, including information that describes the technical assistance grants application process. The lead agency shall inform interested parties of the establishment of the information repository.

(iv) Informing the community of the availability of technical assistance grants.

(3) For PRP actions, the lead agency shall plan and implement the community relations program at a site. PRPs may participate in aspects of the community relations program at the discretion of and with oversight by the lead agency.

(4) The lead agency may conduct technical discussions involving PRPs and the public. These technical discussions may be held separately from, but contemporaneously with, the negotiations/settlement discussions.

(5) In addition, the following provisions specifically apply to enforcement actions:

(i) Lead agencies entering into an enforcement agreement with de minimis parties under CERCLA section 122(g) or cost recovery settlements under section 122(h) shall publish a notice of the proposed agreement in the FEDERAL REGISTER at least 30 days before the agreement becomes final, as required

by section 122(i). The notice must identify the name of the facility and the parties to the proposed agreement and must allow an opportunity for comment and consideration of comments; and

(ii) Where the enforcement agreement is embodied in a consent decree, public notice and opportunity for public comment shall be provided in accordance with 28 CFR 50.7.

(d) *Remedial investigation.* (1) The purpose of the remedial investigation (RI) is to collect data necessary to adequately characterize the site for the purpose of developing and evaluating effective remedial alternatives. To characterize the site, the lead agency shall, as appropriate, conduct field investigations, including treatability studies, and conduct a baseline risk assessment. The RI provides information to assess the risks to human health and the environment and to support the development, evaluation, and selection of appropriate response alternatives. Site characterization may be conducted in one or more phases to focus sampling efforts and increase the efficiency of the investigation. Because estimates of actual or potential exposures and associated impacts on human and environmental receptors may be refined throughout the phases of the RI as new information is obtained, site characterization activities should be fully integrated with the development and evaluation of alternatives in the feasibility study. Bench- or pilot-scale treatability studies shall be conducted, when appropriate and practicable, to provide additional data for the detailed analysis and to support engineering design of remedial alternatives.

(2) The lead agency shall characterize the nature of and threat posed by the hazardous substances and hazardous materials and gather data necessary to assess the extent to which the release poses a threat to human health or the environment or to support the analysis and design of potential response actions by conducting, as appropriate, field investigations to assess the following factors:

(i) Physical characteristics of the site, including important surface features, soils, geology, hydrogeology, meteorology, and ecology;

(ii) Characteristics or classifications of air, surface water, and ground water;

(iii) The general characteristics of the waste, including quantities, state, concentration, toxicity, propensity to bioaccumulate, persistence, and mobility;

(iv) The extent to which the source can be adequately identified and characterized;

(v) Actual and potential exposure pathways through environmental media;

(vi) Actual and potential exposure routes, for example, inhalation and ingestion; and

(vii) Other factors, such as sensitive populations, that pertain to the characterization of the site or support the analysis of potential remedial action alternatives.

(3) The lead and support agency shall identify their respective potential ARARs related to the location of and contaminants at the site in a timely manner. The lead and support agencies may also, as appropriate, identify other pertinent advisories, criteria, or guidance in a timely manner (see § 300.400(g)(3)).

(4) Using the data developed under paragraphs (d)(1) and (2) of this section, the lead agency shall conduct a site-specific baseline risk assessment to characterize the current and potential threats to human health and the environment that may be posed by contaminants migrating to ground water or surface water, releasing to air, leaching through soil, remaining in the soil, and bioaccumulating in the food chain. The results of the baseline risk assessment will help establish acceptable exposure levels for use in developing remedial alternatives in the FS, as described in paragraph (e) of this section.

(e) *Feasibility study.* (1) The primary objective of the feasibility study (FS) is to ensure that appropriate remedial alternatives are developed and evaluated such that relevant information concerning the remedial action options can be presented to a decision-maker and an appropriate remedy selected. The lead agency may develop a feasibility study to address a specific site problem or the entire site. The development and evaluation of alternatives

(8) The lead agency shall notify the support agency of the alternatives that will be evaluated in detail to facilitate the identification of ARARs and, as appropriate, pertinent advisories, criteria, or guidance to be considered.

(9) *Detailed analysis of alternatives.* (i) A detailed analysis shall be conducted on the limited number of alternatives that represent viable approaches to remedial action after evaluation in the screening stage. The lead and support agencies must identify their ARARs related to specific actions in a timely manner and no later than the early stages of the comparative analysis. The lead and support agencies may also, as appropriate, identify other pertinent advisories, criteria, or guidance in a timely manner.

(ii) The detailed analysis consists of an assessment of individual alternatives against each of nine evaluation criteria and a comparative analysis that focuses upon the relative performance of each alternative against those criteria.

(iii) *Nine criteria for evaluation.* The analysis of alternatives under review shall reflect the scope and complexity of site problems and alternatives being evaluated and consider the relative significance of the factors within each criteria. The nine evaluation criteria are as follows:

(A) *Overall protection of human health and the environment.* Alternatives shall be assessed to determine whether they can adequately protect human health and the environment, in both the short- and long-term, from unacceptable risks posed by hazardous substances, pollutants, or contaminants present at the site by eliminating, reducing, or controlling exposures to levels established during development of remediation goals consistent with § 300.430(e)(2)(i). Overall protection of human health and the environment draws on the assessments of other evaluation criteria, especially long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs.

(B) *Compliance with ARARs.* The alternatives shall be assessed to determine whether they attain applicable or relevant and appropriate requirements under federal environmental laws and state environmental or facility siting laws or provide grounds for invoking one of the waivers under paragraph (f)(1)(ii)(C) of this section.

(C) *Long-term effectiveness and permanence.* Alternatives shall be assessed for the long-term effectiveness and permanence they afford, along with the degree of certainty that the alternative will prove successful. Factors that shall be considered, as appropriate, include the following:

(*1*) Magnitude of residual risk remaining from untreated waste or treatment residuals remaining at the conclusion of the remedial activities. The characteristics of the residuals should be considered to the degree that they remain hazardous, taking into account their volume, toxicity, mobility, and propensity to bioaccumulate.

(*2*) Adequacy and reliability of controls such as containment systems and institutional controls that are necessary to manage treatment residuals and untreated waste. This factor addresses in particular the uncertainties associated with land disposal for providing long-term protection from residuals; the assessment of the potential need to replace technical components of the alternative, such as a cap, a slurry wall, or a treatment system; and the potential exposure pathways and risks posed should the remedial action need replacement.

(D) *Reduction of toxicity, mobility, or volume through treatment.* The degree to which alternatives employ recycling or treatment that reduces toxicity, mobility, or volume shall be assessed, including how treatment is used to address the principal threats posed by the site. Factors that shall be considered, as appropriate, include the following:

(*1*) The treatment or recycling processes the alternatives employ and materials they will treat;

(*2*) The amount of hazardous substances, pollutants, or contaminants that will be destroyed, treated, or recycled;

(*3*) The degree of expected reduction in toxicity, mobility, or volume of the waste due to treatment or recycling and the specification of which reduction(s) are occurring;

(*4*) The degree to which the treatment is irreversible;

(*5*) The type and quantity of residuals that will remain following treatment, considering the persistence, toxicity, mobility, and propensity to bioaccumulate of such hazardous substances and their constituents; and

(*6*) The degree to which treatment reduces the inherent hazards posed by principal threats at the site.

(E) *Short-term effectiveness.* The short-term impacts of alternatives shall be assessed considering the following:

(*1*) Short-term risks that might be posed to the community during implementation of an alternative;

(*2*) Potential impacts on workers during remedial action and the effectiveness and reliability of protective measures;

(*3*) Potential environmental impacts of the remedial action and the effectiveness and reliability of mitigative measures during implementation; and

(*4*) Time until protection is achieved.

(F) *Implementability.* The ease or difficulty of implementing the alternatives shall be assessed by considering the following types of factors as appropriate:

(*1*) Technical feasibility, including technical difficulties and unknowns associated with the construction and operation of a technology, the reliability of the technology, ease of undertaking additional remedial actions, and the ability to monitor the effectiveness of the remedy.

(*2*) Administrative feasibility, including activities needed to coordinate with other offices and agencies and the ability and time required to obtain any necessary approvals and permits from other agencies (for off-site actions);

(*3*) Availability of services and materials, including the availability of adequate off-site treatment, storage capacity, and disposal capacity and services; the availability of necessary equipment and specialists, and provisions to ensure any necessary additional resources; the availability of services and materials; and availability of prospective technologies.

(G) *Cost.* The types of costs that shall be assessed include the following:

(*1*) Capital costs, including both direct and indirect costs;

(*2*) Annual operation and maintenance costs; and

(*3*) Net present value of capital and O&M costs.

(H) *State acceptance.* Assessment of state concerns may not be completed until comments on the RI/FS are received but may be discussed, to the extent possible, in the proposed plan issued for public comment. The state concerns that shall be assessed include the following:

(*1*) The state's position and key concerns related to the preferred alternative and other alternatives; and

(*2*) State comments on ARARs or the proposed use of waivers.

(I) *Community acceptance.* This assessment includes determining which components of the alternatives interested persons in the community support, have reservations about, or oppose. This assessment may not be completed until comments on the proposed plan are received.

(f) *Selection of remedy*—(1) Remedies selected shall reflect the scope and purpose of the actions being undertaken and how the action relates to long-term, comprehensive response at the site.

(i) The criteria noted in paragraph (e)(9)(iii) of this section are used to select a remedy. These criteria are categorized into three groups.

(A) *Threshold criteria.* Overall protection of human health and the environment and compliance with ARARs (unless a specific ARAR is waived) are threshold requirements that each alternative must meet in order to be eligible for selection.

(B) *Primary balancing criteria.* The five primary balancing criteria are long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost.I11(C) *Modifying criteria.* State and community acceptance are modifying criteria that shall be considered in remedy selection.

(ii) The selection of a remedial action is a two-step process and shall proceed in accordance with § 300.515(e). First, the lead agency, in conjunction with the support agency, identifies a preferred alternative and presents it to the public in a proposed plan, for review and comment. Second, the lead

agency shall review the public comments and consult with the state (or support agency) in order to determine if the alternative remains the most appropriate remedial action for the site or site problem. The lead agency, as specified in § 300.515(e), makes the final remedy selection decision, which shall be documented in the ROD. Each remedial alternative selected as a Superfund remedy will employ the criteria as indicated in paragraph (f)(1)(i) of this section to make the following determination:

(A) Each remedial action selected shall be protective of human health and the environment.

(B) On-site remedial actions selected in a ROD must attain those ARARs that are identified at the time of ROD signature or provide grounds for invoking a waiver under § 300.430(f)(1)(ii)(C).

(*1*) Requirements that are promulgated or modified after ROD signature must be attained (or waived) only when determined to be applicable or relevant and appropriate and necessary to ensure that the remedy is protective of human health and the environment.

(*2*) Components of the remedy not described in the ROD must attain (or waive) requirements that are identified as applicable or relevant and appropriate at the time the amendment to the ROD or the explanation of significant difference describing the component is signed.

(C) An alternative that does not meet an ARAR under federal environmental or state environmental or facility siting laws may be selected under the following circumstances:

(*1*) The alternative is an interim measure and will become part of a total remedial action that will attain the applicable or relevant and appropriate federal or state requirement;

(*2*) Compliance with the requirement will result in greater risk to human health and the environment than other alternatives;

(*3*) Compliance with the requirement is technically impracticable from an engineering perspective;

(*4*) The alternative will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, or limitation through use of another method or approach;

(*5*) With respect to a state requirement, the state has not consistently applied, or demonstrated the intention to consistently apply, the promulgated requirement in similar circumstances at other remedial actions within the state; or

(*6*) For Fund-financed response actions only, an alternative that attains the ARAR will not provide a balance between the need for protection of human health and the environment at the site and the availability of Fund monies to respond to other sites that may present a threat to human health and the environment.

(D) Each remedial action selected shall be cost-effective, provided that it first satisfies the threshold criteria set forth in § 300.430(f)(1)(ii)(A) and (B). Cost-effectiveness is determined by evaluating the following three of the five balancing criteria noted in § 300.430(f)(1)(i)(B) to determine overall effectiveness: long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, and short-term effectiveness. Overall effectiveness is then compared to cost to ensure that the remedy is cost-effective. A remedy shall be cost-effective if its costs are proportional to its overall effectiveness.

(E) Each remedial action shall utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. This requirement shall be fulfilled by selecting the alternative that satisfies paragraph (f)(1)(ii)(A) and (B) of this section and provides the best balance of trade-offs among alternatives in terms of the five primary balancing criteria noted in paragraph (f)(1)(i)(B) of this section. The balancing shall emphasize long-term effectiveness and reduction of toxicity, mobility, or volume through treatment. The balancing shall also consider the preference for treatment as a principal element and the bias against off-site land disposal of untreated waste. In making the determination under this paragraph, the modifying criteria of state acceptance and community acceptance described

in paragraph (f)(1)(i)(C) of this section shall also be considered.

(2) *The proposed plan.* In the first step in the remedy selection process, the lead agency shall identify the alternative that best meets the requirements in § 300.430(f)(1), above, and shall present that alternative to the public in a proposed plan. The lead agency, in conjunction with the support agency and consistent with § 300.515(e), shall prepare a proposed plan that briefly describes the remedial alternatives analyzed by the lead agency, proposes a preferred remedial action alternative, and summarizes the information relied upon to select the preferred alternative. The selection of remedy process for an operable unit may be initiated at any time during the remedial action process. The purpose of the proposed plan is to supplement the RI/FS and provide the public with a reasonable opportunity to comment on the preferred alternative for remedial action, as well as alternative plans under consideration, and to participate in the selection of remedial action at a site. At a minimum, the proposed plan shall:

(i) Provide a brief summary description of the remedial alternatives evaluated in the detailed analysis established under paragraph (e)(9) of this section;

(ii) Identify and provide a discussion of the rationale that supports the preferred alternative;

(iii) Provide a summary of any formal comments received from the support agency; and

(iv) Provide a summary explanation of any proposed waiver identified under paragraph (f)(1)(ii)(C) of this section from an ARAR.

(3) *Community relations to support the selection of remedy.* (i) The lead agency, after preparation of the proposed plan and review by the support agency, shall conduct the following activities:

(A) Publish a notice of availability and brief analysis of the proposed plan in a major local newspaper of general circulation;

(B) Make the proposed plan and supporting analysis and information available in the administrative record required under subpart I of this part;

(C) Provide a reasonable opportunity, not less than 30 calendar days, for submission of written and oral comments on the proposed plan and the supporting analysis and information located in the information repository, including the RI/FS. Upon timely request, the lead agency will extend the public comment period by a minimum of 30 additional days;

(D) Provide the opportunity for a public meeting to be held during the public comment period at or near the site at issue regarding the proposed plan and the supporting analysis and information;

(E) Keep a transcript of the public meeting held during the public comment period pursuant to CERCLA section 117(a) and make such transcript available to the public; and

(F) Prepare a written summary of significant comments, criticisms, and new relevant information submitted during the public comment period and the lead agency response to each issue. This responsiveness summary shall be made available with the record of decision.

(ii) After publication of the proposed plan and prior to adoption of the selected remedy in the record of decision, if new information is made available that significantly changes the basic features of the remedy with respect to scope, performance, or cost, such that the remedy significantly differs from the original proposal in the proposed plan and the supporting analysis and information, the lead agency shall:

(A) Include a discussion in the record of decision of the significant changes and reasons for such changes, if the lead agency determines such changes could be reasonably anticipated by the public based on the alternatives and other information available in the proposed plan or the supporting analysis and information in the administrative record; or

(B) Seek additional public comment on a revised proposed plan, when the lead agency determines the change could not have been reasonably anticipated by the public based on the information available in the proposed plan or the supporting analysis and information in the administrative record. The lead agency shall, prior to adoption of the selected remedy in the ROD, issue a revised proposed plan, which

shall include a discussion of the significant changes and the reasons for such changes, in accordance with the public participation requirements described in paragraph (f)(3)(i) of this section.

(4) *Final remedy selection.* (i) In the second and final step in the remedy selection process, the lead agency shall reassess its initial determination that the preferred alternative provides the best balance of trade-offs, now factoring in any new information or points of view expressed by the state (or support agency) and community during the public comment period. The lead agency shall consider state (or support agency) and community comments regarding the lead agency's evaluation of alternatives with respect to the other criteria. These comments may prompt the lead agency to modify aspects of the preferred alternative or decide that another alternative provides a more appropriate balance. The lead agency, as specified in §300.515(e), shall make the final remedy selection decision and document that decision in the ROD.

(ii) If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action.

(iii) The process for selection of a remedial action at a federal facility on the NPL, pursuant to CERCLA section 120, shall entail:

(A) Joint selection of remedial action by the head of the relevant department, agency, or instrumentality and EPA; or

(B) If mutual agreement on the remedy is not reached, selection of the remedy is made by EPA.

(5) *Documenting the decision.* (i) To support the selection of a remedial action, all facts, analyses of facts, and site-specific policy determinations considered in the course of carrying out activities in this section shall be documented, as appropriate, in a record of decision, in a level of detail appropriate to the site situation, for inclusion in the administrative record required under subpart I of this part. Documentation shall explain how the evaluation criteria in paragraph (e)(9)(iii) of this section were used to select the remedy.

(ii) The ROD shall describe the following statutory requirements as they relate to the scope and objectives of the action:

(A) How the selected remedy is protective of human health and the environment, explaining how the remedy eliminates, reduces, or controls exposures to human and environmental receptors;

(B) The federal and state requirements that are applicable or relevant and appropriate to the site that the remedy will attain;

(C) The applicable or relevant and appropriate requirements of other federal and state laws that the remedy will not meet, the waiver invoked, and the justification for invoking the waiver;

(D) How the remedy is cost-effective, i.e., explaining how the remedy provides overall effectiveness proportional to its costs;

(E) How the remedy utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and

(F) Whether the preference for remedies employing treatment which permanently and significantly reduces the toxicity, mobility, or volume of the hazardous substances, pollutants, or contaminants as a principal element is or is not satisfied by the selected remedy. If this preference is not satisfied, the record of decision must explain why a remedial action involving such reductions in toxicity, mobility, or volume was not selected.

(iii) The ROD also shall:

(A) Indicate, as appropriate, the remediation goals, discussed in paragraph (e)(2)(i) of this section, that the remedy is expected to achieve. Performance shall be measured at appropriate locations in the ground water, surface water, soils, air, and other affected environmental media. Measurement relating to the performance of the treatment processes and the engineering controls may also be identified, as appropriate;

(B) Discuss significant changes and the response to comments described in paragraph (f)(3)(i)(F) of this section;

(C) Describe whether hazardous substances, pollutants, or contaminants will remain at the site such that a review of the remedial action under paragraph (f)(4)(ii) of this section no less often than every five years shall be required; and

(D) When appropriate, provide a commitment for further analysis and selection of long-term response measures within an appropriate time-frame.

(6) *Community relations when the record of decision is signed.* After the ROD is signed, the lead agency shall:

(i) Publish a notice of the availability of the ROD in a major local newspaper of general circulation; and

(ii) Make the record of decision available for public inspection and copying at or near the facility at issue prior to the commencement of any remedial action.

§ 300.435 Remedial design/remedial action, operation and maintenance.

(a) *General.* The remedial design/remedial action (RD/RA) stage includes the development of the actual design of the selected remedy and implementation of the remedy through construction. A period of operation and maintenance may follow the RA activities.

(b) *RD/RA activities.* (1) All RD/RA activities shall be in conformance with the remedy selected and set forth in the ROD or other decision document for that site. Those portions of RD/RA sampling and analysis plans describing the QA/QC requirements for chemical and analytical testing and sampling procedures of samples taken for the purpose of determining whether cleanup action levels specified in the ROD are achieved, generally will be consistent with the requirements of § 300.430(b)(8).

(2) During the course of the RD/RA, the lead agency shall be responsible for ensuring that all federal and state requirements that are identified in the ROD as applicable or relevant and appropriate requirements for the action are met. If waivers from any ARARs are involved, the lead agency shall be responsible for ensuring that the conditions of the waivers are met.

(c) *Community relations.* (1) Prior to the initiation of RD, the lead agency shall review the CRP to determine whether it should be revised to describe further public involvement activities during RD/RA that are not already addressed or provided for in the CRP.

(2) After the adoption of the ROD, if the remedial action or enforcement action taken, or the settlement or consent decree entered into, differs significantly from the remedy selected in the ROD with respect to scope, performance, or cost, the lead agency shall consult with the support agency, as appropriate, and shall either:

(i) Publish an explanation of significant differences when the differences in the remedial or enforcement action, settlement, or consent decree significantly change but do not fundamentally alter the remedy selected in the ROD with respect to scope, performance, or cost. To issue an explanation of significant differences, the lead agency shall:

(A) Make the explanation of significant differences and supporting information available to the public in the administrative record established under § 300.815 and the information repository; and

(B) Publish a notice that briefly summarizes the explanation of significant differences, including the reasons for such differences, in a major local newspaper of general circulation; or

(ii) Propose an amendment to the ROD if the differences in the remedial or enforcement action, settlement, or consent decree fundamentally alter the basic features of the selected remedy with respect to scope, performance, or cost. To amend the ROD, the lead agency, in conjunction with the support agency, as provided in § 300.515(e), shall:

(A) Issue a notice of availability and brief description of the proposed amendment to the ROD in a major local newspaper of general circulation;

(B) Make the proposed amendment to the ROD and information supporting the decision available for public comment;

(C) Provide a reasonable opportunity, not less than 30 calendar days, for submission of written or oral comments on the amendment to the ROD. Upon

timely request, the lead agency will extend the public comment period by a minimum of 30 additional days;

(D) Provide the opportunity for a public meeting to be held during the public comment period at or near the facility at issue;

(E) Keep a transcript of comments received at the public meeting held during the public comment period;

(F) Include in the amended ROD a brief explanation of the amendment and the response to each of the significant comments, criticisms, and new relevant information submitted during the public comment period;

(G) Publish a notice of the availability of the amended ROD in a major local newspaper of general circulation; and

(H) Make the amended ROD and supporting information available to the public in the administrative record and information repository prior to the commencement of the remedial action affected by the amendment.

(3) After the completion of the final engineering design, the lead agency shall issue a fact sheet and provide, as appropriate, a public briefing prior to the initiation of the remedial action.

(d) *Contractor conflict of interest.* (1) For Fund-financed RD/RA and O&M activities, the lead agency shall:

(i) Include appropriate language in the solicitation requiring potential prime contractors to submit information on their status, as well as the status of their subcontractors, parent companies, and affiliates, as potentially responsible parties at the site.

(ii) Require potential prime contractors to certify that, to the best of their knowledge, they and their potential subcontractors, parent companies, and affiliates have disclosed all information described in §300.435(d)(1)(i) or that no such information exists, and that any such information discovered after submission of their bid or proposal or contract award will be disclosed immediately.

(2) Prior to contract award, the lead agency shall evaluate the information provided by the potential prime contractors and:

(i) Determine whether they have conflicts of interest that could significantly impact the performance of the contract or the liability of potential prime contractors or subcontractors.

(ii) If a potential prime contractor or subcontractor has a conflict of interest that cannot be avoided or otherwise resolved, and using that potential prime contractor or subcontractor to conduct RD/RA or O&M work under a Fund-financed action would not be in the best interests of the state or federal government, an offeror or bidder contemplating use of that prime contractor or subcontractor may be declared nonresponsible or ineligible for award in accordance with appropriate acquisition regulations, and the contract may be awarded to the next eligible offeror or bidder.

(e) *Recontracting.* (1) If a Fund-financed contract must be terminated because additional work outside the scope of the contract is needed, EPA is authorized to take appropriate steps to continue interim RAs as necessary to reduce risks to public health and the environment. Appropriate steps may include extending an existing contract for a federal-lead RA or amending a cooperative agreement for a state-lead RA. Until the lead agency can reopen the bidding process and recontract to complete the RA, EPA may take such appropriate steps as described above to cover interim work to reduce such risks, where:

(i) Additional work is found to be needed as a result of such unforeseen situations as newly discovered sources, types, or quantities of hazardous substances at a facility; and

(ii) Performance of the complete RA requires the lead agency to rebid the contract because the existing contract does not encompass this newly discovered work.

(2) The cost of such interim actions shall not exceed $2 million.

(f) *Operation and maintenance.* (1) Operation and maintenance (O&M) measures are initiated after the remedy has achieved the remedial action objectives and remediation goals in the ROD, and is determined to be operational and functional, except for ground- or surface-water restoration actions covered under §300.435(f)(4). A state must provide its assurance to assume responsibility for O&M, including, where appropriate, requirements for maintaining

Appendix H: News Media, Potential Event Locations, and Other Contacts

This table provides a list of potential media contacts that may be useful in reaching the Hunters Point Shipyard community. The contacts were compiled based on community interviews, input from other community members during community meetings, local research, and grassroots efforts.

Local News Media Resources

Name	Address	City, State, ZIP Code	Phone	E-mail	Website	Media Type	Language/Audience	Notes/ Distribution Frequency
San Francisco Chronicle	901 Mission Street	San Francisco, CA 94103	(415) 777-1111	Not Available	www.sfgate.com	Newspaper and Internet	English	Daily
San Francisco Examiner	988 Market Street	San Francisco, CA 94102	(415) 359-2600	Not Available	www.examiner.com/san-francisco	Newspaper and Internet	English	Daily
Sing Tao	625 Kearny Street	San Francisco, CA 94108	(415) 989-7111	sf@singtaousa.com	www.singtaousa.com	Newspaper	Chinese	Daily
San Francisco Business Times	275 Battery Street, Suite 940	San Francisco, CA 94111	(415) 989-2522	sanfrancisco@bizjournals.com	http://sanfrancisco.bizjournals.com/sanfrancisco/	Newspaper and Internet	English	Weekly (available on Friday; submit ads by Tuesday)
San Francisco Bay Guardian	135 Mississippi Street	San Francisco, CA 94107	(415) 255-3100	listings@sfbg.com	www.sfbg.com	Newspaper	English	Weekly (available on Wednesday; submit ads 2 weeks prior to publication date)
San Francisco Weekly	185 Berry Street, Lobby 5, Suite 3800	San Francisco, CA 94107	(415) 536-8100; (415) 536-8158	Not Available	www.sfweekly.com	Newspaper	English	Weekly (available on Wednesday; submit ad the Thursday before publication)
Small Business Exchange	703 Market Street Suite 1000	San Francisco, CA 94103	(415) 778-6250	sbe@sbeinc.com	www.sbeinc.com	Newspaper and Internet	English	Weekly (available on Thursday)
Sun Reporter	1791 Bancroft Avenue	San Francisco, CA 94124	(415) 671-1000	sunmedia97@aol.com	www.sunreporter.com	Newspaper	English/African American	Weekly (available Thursday)
Asian Week	Unavailable	Unavailable	Unavailable	Not Available	www.asianweek.com	Newspaper	Multiple/Asian	Weekly
El Tecolote	2958 24th Street	San Francisco, CA 94110	(415) 648-1045	rdaza@eltecolote.org	http://eltecolote.org/content/	Newspaper	Spanish/Latino	Bi-weekly (every other Wednesday)
San Francisco Bay View	4917 Third Street	San Francisco, CA 94124-2309	(415) 671-0789	publisher@sfbayview.com	www.sfbayview.com	Newspaper	English/African American	Monthly
The Potrero View	2325 3rd Street, Suite 344	San Francisco, CA 94107	(415) 626-8723	editor@potreroview.net	http://potreroview.net/index.php	Newspaper	English	Monthly
Visitacion Valley Grapevine (not currently in print)	Visitacion Valley Community Center, 50 Raymond Avenue	San Francisco, CA 94134	(415) 467-9300	visvalley@earthlink.net	www.visvalleygrapevine.com	Newspaper and Internet	English	Monthly
The Western Edition	225 Bush Street, 16th Floor	San Francisco, CA 94104	(415) 439-8319	editor@thewesternedition.com	www.thewesternedition.com	Newspaper	English	Monthly
Bayview Footprints	Unavailable	Unavailable	(415) 822-0800	info@quesadagardens.org	www.bayviewfootprints.org	Newsletter and Internet	English	
Quesada Gardens	1747 Quesada Avenue	San Francisco, CA 94124	(415) 822-0800	Not Available	www.quesadagardens.org	Newsletter and Internet	English	

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

Local News Media Resources								
Name	**Address**	**City, State, ZIP Code**	**Phone**	**E-mail**	**Website**	**Media Type**	**Language/Audience**	**Notes/ Distribution Frequency**
New America Media	275 9th Street	San Francisco, CA 94103	(415) 503-4170	Not Available	http://newamericamedia.org/about/	Multi-Media Agency	Multi-lingual (Arabic, Spanish, Chinese, and Korean)	
KPOO – San Francisco 89.5 FM	1329 Divisadero Street	San Francisco, CA 94115	(415) 346-5373	Not Available	www.kpoo.com	Radio	English	Community Worker show every other Tuesday, 4:00 p.m. with Eric Smith and Roland Washington
Sing Tao Chinese Radio (1400 AM, 1450 AM, and 96.1 FM)	625 Kearny Street	San Francisco, CA 94108	(415) 989-7111	sf@singtaousa.com	www.singtaousa.com and www.sanfranciscochinatown.com/culture/radio.html	Radio	Cantonese and Mandarin/Asian	
KALX Radio, University of California, Berkeley	University of California, 26 Barrows Hall #5650	Berkeley, CA 94720-5650	(510) 642-1111	mail@kalx.berkeley.edu	http://kalx.berkeley.edu	Radio	English	
Access San Francisco (Channel 29)	1720 Market Street	San Francisco, CA 94102	(415) 575-4949	info@accessf.org	www.freepress.net/node/29931	Public Access Television	English	
KTSF (Channel 26)	100 Valley Drive	Brisbane, CA 94005	(415) 468-2626		www.ktsf.com	Public Access Television	Cantonese and Mandarin/Asian	
KRON (Channel 4)	1001 Van Ness Avenue	San Francisco, CA 94109	(415) 441-4444	4listens@kron4.com	www.kron.com	Network Television	English	
The Usual Suspects	Barbary Coast Consulting, 660 Market Street, 5th Floor	San Francisco, CA 94104	(415) FOG-0000	Not Available	www.sfusualsuspects.com	Website	English	
India Basin Neighborhood Association (IBNA)	P.O. Box 880953	San Francisco, CA 94188	Not Available	info@indiabasin.org	www.indiabasin.org	Website	English	
City and County of San Francisco	1 Dr. Carlton B. Goodlett Place	San Francisco, CA 94102	(415) 701-2311	Not Available	www.sfgov.org	Website	English	
The World Journal	Not Available	Not Available	Not Available	info@theworldjournal.com	www.TheWorldJournal.com	Website	English/students	
Mission Local	Not Available	Not Available	Not Available	staff@missionlocal.org	http://missionlocal.org/	Internet publication	English and Spanish/Latino	Monthly
Bayview Hunters Point Home Blog	Not Available	Not Available	Not Available	Not Available	http://bvhp.blogspot.com/	Blog	English	
Twitter	Not Available	Not Available	Not Available	Not Available	www.twitter.com	Internet		
Facebook	Not Available	Not Available	Not Available	Not Available	www.facebook.com	Internet		
Text Messages	Not Available	Not Available	Not Available	Not Available	Not Available	Through individual cell phone lists		

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

The table below provides contact information for organizations and venues located in or providing services to the Hunters Point Shipyard community. The Navy contacted these organizations and venues to determine whether they could help support the Navy's community involvement actions. If an "X" is present in the column, the organization responded positively to that action. For example, some organizations indicated the Navy could come to one of their regularly scheduled meetings and provide a brief update or presentation. Other venues are included because they have space to hold a Navy meeting or places where Navy flyers could be posted. Other organizations indicated that the Navy could inform them about the Navy's opportunities for community involvement and the organization would pass the Navy's information along to its members.

Venues and Organizations for Outreach Activities							
	Outreach Action				Venue Details		
Agency or Venue	Navy Attend Organization's Meeting	Use Venue for Navy Public Meeting	Location to Post Flyers	Inform of Upcoming Outreach Events so they can Invite their Members	Venue Capacity for Events	Fees	Miscellaneous Comments
APA Family Support Services 1337 Evans Avenue San Francisco, CA 94124 (415) 824-1128			X	X			
Arc Ecology 1331 Evans Avenue San Francisco, CA 94124 (415) 643-1190 www.arcecology.org			X	X			Contact Saul Bloom for more information on using this venue for public meetings.
Asian Pacific American Community Center 2442 Bayshore Boulevard San Francisco, CA 94134 (415) 587-2689 E-mail: apacc_1999@yahoo.com E-mail: tantammy@live.com	X	X	X	X	~25	Yes (set when reservation is made)	Contact Tammy Tan to make reservation. Refreshments provided.
Bayview/Anna E. Waden Branch Library 5075 3rd Street San Francisco, CA 94124 (415) 355-5757 Web: http://sfpl.org/index.php?pg=0100000401 E-mail: baymgr@sfpl.org		X	X		35	Yes, depending on needs (such as outside normal hours of operation, or rental of audio/visual equipment)	Note: Location currently closed for remodeling. Application for meeting space must be submitted no more than 6 months before the event, and no less than 1 week before the event. The library is scheduled for renovations in April 2011.
Bayview Baptist Church 1509 Oakdale Avenue San Francisco, CA 94124 (415) 822-4844			X	X			Rev. Milton H. Williams
Bayview Hunters Point Beacon Center Burton High School 400 Mansell Street San Francisco, CA 94134 (415) 469-4550 Web: http://www.sfbeacon.org/BeaconCenters/Bayview-HuntersPoint/		X	X	X			

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

Venues and Organizations for Outreach Activities							
	Outreach Action				Venue Details		
Agency or Venue	Navy Attend Organization's Meeting	Use Venue for Navy Public Meeting	Location to Post Flyers	Inform of Upcoming Outreach Events so they can Invite their Members	Venue Capacity for Events	Fees	Miscellaneous Comments
Bayview Hunters Point Community Advocates 1579 Innes Avenue San Francisco, CA 94124 (415) 648-6008	X		X	X			
Bayview Hunters Point Family Resource Center 1325 Evans Avenue San Francisco, CA 94124 (415) 920-2850	X	X	X	X			
Bayview Hunter's Point Foundation for Community Improvement 150 Executive Park Boulevard, Suite 2800 San Francisco, CA 94134 (415) 468-5100	X		X	X			
Bayview Hunters Point Senior Citizens Multipurpose Center 1706 Yosemite Avenue San Francisco, CA 94124 (415) 822-1444 Web: http://www.bhpmss.org/ E-mail: bhpmss1@aol.com	X	X	X	X	75 to 80		Contact Suzie Tyner to make reservations.
Bayview Hunters Point Youth 5015 3rd Street San Francisco, CA 94124 (415) 822-1585	X	X	X	X			
Bayview Opera House/Ruth Williams Memorial Theater 4705 3rd Street San Francisco, CA 94124 (415) 824-0386 Web: http://www.bayviewoperahouse.org/aboutUs/index.shtml E-mail: info.bvoh@bvoh.org		X	X		300-seat theater with a 45-foot indoor stage	Yes	Chairs and tables available; overhead projector, screen and video player available. Full-sized movie screen with digital projector; outdoor stage in an enclosed garden courtyard, and a classroom for smaller meeting groups or breakout sessions.
Bayview Tabernacle Baptist Church 1775 La Salle Avenue San Francisco, CA 94124 (415) 641-5835			X	X			Rev. Joe N. Sandles

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

Venues and Organizations for Outreach Activities							
	Outreach Action				Venue Details		
Agency or Venue	Navy Attend Organization's Meeting	Use Venue for Navy Public Meeting	Location to Post Flyers	Inform of Upcoming Outreach Events so they can Invite their Members	Venue Capacity for Events	Fees	Miscellaneous Comments
Bethel Cathedral Church of God in Christ 1229 Egbert Avenue San Francisco, CA 94124 (415) 822-9936			X	X			Pastor Garlin Bluford
Bret Harte Elementary School 1035 Gilman Avenue San Francisco, CA 94124 (415) 330-1520 Web: http://www.sfbretharte.org/		X	X	X	450	Yes	Call the main office phone line to check availability and to obtain a permit from the school. The fee depends on how many people and the room to be used.
Calvary Hill Community Church 141 Industrial Street San Francisco, CA 94124 (415) 647-5300	X		X	X			Large congregation, will allow the Navy to present. Rev. Joseph Bryant
Carpenters Union Local #22 2085 3rd Street San Francisco, CA 94107 (415) 355-1322 Web: http://www.local22.org				X			
Double Rock Baptist Church 1595 Shafter Avenue San Francisco, CA 94124 (415) 822-4566		X	X	X	150	Yes, $75 for the event	The basement is currently unavailable; however, the sanctuary can be rented if available. At least 1-month notice required when inquiring about specific dates. Rev. Victor L. Medearis
Housing Rights Committee of San Francisco 427 South Van Ness Avenue San Francisco, CA 94103 (415) 703-8634 Web: http://www.hrcsf.org/	X			X			
Hunter's Point Community Youth Park 200 Middle Point Road San Francisco, CA 94124 (415) 285-1415 Web: http://www.dcyf.org/GranteeDetail.aspx?id=918				X			

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

Venues and Organizations for Outreach Activities							
	Outreach Action				Venue Details		
Agency or Venue	Navy Attend Organization's Meeting	Use Venue for Navy Public Meeting	Location to Post Flyers	Inform of Upcoming Outreach Events so they can Invite their Members	Venue Capacity for Events	Fees	Miscellaneous Comments
India Basin Neighborhood Association P.O. Box 880953 San Francisco, CA 94188 (415) 938-6170 Web: http://www.indiabasin.org/ E-mail: info@indiabasin.org	X	X	X	X			
Instituto Familiar de la Raza 2919 Mission Street San Francisco, CA 94110 (415) 229-0500 Web: http://www.ifrsf.org/		X	X	X			Convenient location for the Latino community.
Islais Creek Scale 480 Amador Street San Francisco, CA 94124 (415) 824-0390				X			
Joseph Lee Recreation Center 1395 Mendall Street San Francisco, CA 94124 (415) 822-9040		X	X				
Laborer's Local Union 261 3271 18th Street San Francisco, CA 94110 (415) 826-4550			X	X			Oscar De La Torre, Business Manager Laborer's Union 261 reaches out to the Latino community.
La Raza Community Resource Center 474 Valencia, Suite 100 San Francisco, CA 94103 (415) 863-0764 Web: http://larazacrc.org/ E-mail: info@larazacrc.org		X	X	X			Convenient location for the Latino community.
Milton Meyer Recreation Center 195 Kiska Road San Francisco, CA 94124 (415) 695-5003		X	X				
New Home Baptist Church 1763 Newcomb Avenue San Francisco, CA 94124 (415) 648-9344			X	X			Rev. Kenneth Sampson

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

Venues and Organizations for Outreach Activities							
	Outreach Action				Venue Details		
Agency or Venue	Navy Attend Organization's Meeting	Use Venue for Navy Public Meeting	Location to Post Flyers	Inform of Upcoming Outreach Events so they can Invite their Members	Venue Capacity for Events	Fees	Miscellaneous Comments
Northridge Co-op Homes 1 Ardath Court San Francisco, CA 94124 (415) 647-1124				X			
Olivet Baptist Church 1667 Revere Avenue San Francisco, CA 94124 (415) 822-4049			X	X			Rev. Steve Bailey
Our Lady of Lourdes Catholic Church 1715 Oakdale Avenue San Francisco, CA 94124 (415) 285-3377			X	X			Father Kirk Ullery
Pet Camp Main Campground 525 Phelps Street San Francisco, CA 94124 (415) 282-0700 Web: http://www.petcamp.com/				X			
Portola Family Connections 2565 San Bruno Avenue San Francisco, CA 94134 (415) 715-6746 Web: www.portolafc.org	X	X	X	X			Post one sign in English and one in Chinese on the bulletin board.
Portola Library 380 Bacon Street San Francisco, CA 94134 (415) 355-5660			X				Post one sign in English and one in Chinese on the bulletin board.
Potrero Hill Neighborhood House 953 De Haro Street San Francisco, CA 94107 (415) 826-8025	X		X				
POWER Bayview 4923 3rd Street San Francisco, CA 94124 (415) 671-0911 Web: http://www.peopleorganized.org	X		X	X			

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

Venues and Organizations for Outreach Activities							
	Outreach Action				Venue Details		
Agency or Venue	Navy Attend Organization's Meeting	Use Venue for Navy Public Meeting	Location to Post Flyers	Inform of Upcoming Outreach Events so they can Invite their Members	Venue Capacity for Events	Fees	Miscellaneous Comments
Providence Baptist Church 1601 McKinnon Avenue San Francisco, CA 94124 (415) 641-8719			X	X			Rev. Calvin Jones, Jr.
Rebuilding Together San Francisco Pier 28, The Embarcadero San Francisco, CA 94105 (415) 905-1611 Web: http://www.rebuildingtogethersf.org	X		X				
Ridgeview Terrace Townhouses 140 Cashmere Street San Francisco, CA 94124 (415) 821-7440	X		X	X			
Samoan Community Development Center 2055 Sunnydale Avenue San Francisco, CA 94134-2611 Patsy Tito, (415) 841-1086 Web: http://samoancenter.org/ E-mail: scdc_sf@pacbell.net	X	X	X	X	100+, depending on what room is used	Free	Convenient location for the Samoan Community. The Samoan Community Development Center is located in a school in Visitacion Valley. Contact Patsy Tito to reserve a room.
San Francisco Bayview Rotary Club 3801 Third Street, #1211 San Francisco, CA 94124 Web: http://sfbayview.clubwizard.com/	X	X	X	X			
San Francisco Bicycle Coalition 833 Market Street 10th Floor San Francisco, CA 94103 (415) 431-BIKE Web: http://www.sfbike.org/			X				
San Francisco District Bayview Police Station 201 Williams Street San Francisco, CA 94124 (415) 671-2300 Web: http://sf-police.org/index.aspx?page=798 E-mail: SFPDBayviewStation@sfgov.org	X	X		X	49	Free	The police station currently conducts community meetings on the first Tuesday of the month starting at 6:00 p.m. Convenient location for the Asian community.

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

Venues and Organizations for Outreach Activities							
	Outreach Action				Venue Details		
Agency or Venue	Navy Attend Organization's Meeting	Use Venue for Navy Public Meeting	Location to Post Flyers	Inform of Upcoming Outreach Events so they can Invite their Members	Venue Capacity for Events	Fees	Miscellaneous Comments
San Francisco Housing Development Center/Corporation 4439 Third Street San Francisco, CA 94124 (415) 822-1022 Web: http://www.sfhdc.org	X		X				
San Francisco Human Rights Commission 25 Van Ness Avenue, Room 800 San Francisco, CA 94102-6033 (415) 252-2500, (415) 252-2515 Web: http://www.sf-hrc.org/			X				
Shipyard Trust for the Arts P.O. Box 880083 San Francisco, CA 94199 (415) 822-0922 Web: http://www.shipyardtrust.org/	X			X			
Shoreview Resident Association 35 Lillian Court San Francisco, CA 94124	X			X			
Silver CDS, Community Development Solutions P.O. Box 31925 Oakland, CA 94604 (510) 387-9249 Web: www.silvercds.com				X			
Sojourner Truth Foster Family Service Agency 150 Executive Park Boulevard, Suite 3300 San Francisco, CA 94134 (415) 330-6300				X			
Southeast Community Facility Commission – Alex L. Pitcher, Jr. Conference Room San Francisco City College, Southeast Campus 1800 Oakdale Avenue, Suite B, Room 3 San Francisco, CA 94124 (415) 821-1534, (415) 821-0921 Web: http://www.ccsf.edu/Campuses/Southeast/Main.html Web: http://www.sfgov3.org/index.aspx?page=639	X	X	X		200	Yes (setup, take-down, cleaning fee and fee for monitor [$14/hour] minimum)	Application required in advance of meeting; audio/visual equipment can be rented from its vendor list; payment due via check on day of event.

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

Venues and Organizations for Outreach Activities							
	Outreach Action				Venue Details		
Agency or Venue	Navy Attend Organization's Meeting	Use Venue for Navy Public Meeting	Location to Post Flyers	Inform of Upcoming Outreach Events so they can Invite their Members	Venue Capacity for Events	Fees	Miscellaneous Comments
Southeast Health Center 2401 Keith Street San Francisco, CA 94124 (415) 671-7000	X		X				
Southeast Neighborhood Jobs Initiative Round Table 6620 Third Street San Francisco, CA 94124 (415) 550-4150	X		X				
St. James Baptist Church 1470 Hudson Avenue San Francisco, CA 94124 (415) 648-5995			X	X			Rev. Michael S. Williams
St. Lukes Baptist Church 343 Paul Avenue San Francisco, CA 94124 (415) 467-4303			X	X			Rev. C. Smith
St. Paul of the Shipwreck 1122 Jamestown Avenue San Francisco, CA 94124 (415) 468-3434			X	X			Father James Goode
St. Paul Tabernacle Baptist Church 1789 Oakdale Avenue San Francisco, CA 94124 (415) 642-4965			X	X			Rev. Billy Ware
St. Peters Missionary Baptist Church 1606 Newcomb Avenue San Francisco, CA 94124 (415) 648-4337			X	X			Rev. Joseph P. Alexander
Supersave Market 4517 3rd Street San Francisco, CA 94124 (415) 282-3722			X				Grocery store delivers groceries to seniors and will include a flyer for delivered groceries.
Surfside Liquors 950 Innes Avenue San Francisco, CA 94124 (415) 647-2677			X				Proprietor: Bob

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

Venues and Organizations for Outreach Activities							
	Outreach Action				Venue Details		
Agency or Venue	Navy Attend Organization's Meeting	Use Venue for Navy Public Meeting	Location to Post Flyers	Inform of Upcoming Outreach Events so they can Invite their Members	Venue Capacity for Events	Fees	Miscellaneous Comments
Swords to Plowshares 1060 Howard Street San Francisco, CA 94103 (415) 252-4788 Web: http://swords-to-plowshares.org/				X			
The Point (auditorium on Base) Hunters Point Shipyard, Building 101 San Francisco, CA 94124		X					Navy property; auditorium seating; no equipment; no street lights after dark.
True Hope Church of God in Christ 950 Gilman Avenue San Francisco, CA 94124 (415) 822-5626	X		X	X			Rev. Arelious Walker
United Fathers Coalition 1595 Shafter Avenue San Francisco, CA 94124 (415) 871-6812			X				
Visitacion Chinese Baptist Church 57 Leland Avenue San Francisco, CA 94134 (415) 333-4503			X	X			Rev. Samson Wong
Visitacion Valley Community Beacon 450 Raymond Avenue San Francisco, CA 94134 (415) 452-4907	X	X	X	X			
Visitacion Valley Community Center 50 Raymond Street San Francisco, CA 94134 (415) 467-6400			X				
Visitacion Valley Library 45 Leland Avenue San Francisco, CA 94134 (415) 355-2848			X				Post two signs in English and two signs in Chinese on the bulletin boards.
Visitacion Valley Senior Center 66 Raymond Street San Francisco, CA 94134			X				

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

Venues and Organizations for Outreach Activities							
	Outreach Action				Venue Details		
Agency or Venue	Navy Attend Organization's Meeting	Use Venue for Navy Public Meeting	Location to Post Flyers	Inform of Upcoming Outreach Events so they can Invite their Members	Venue Capacity for Events	Fees	Miscellaneous Comments
Whitney Young Child Development Center 100 Whitney Young Circle San Francisco, CA 94124 (415) 821-7550, (415) 821-0573, (415) 821-1534 Web: http://www.whitneyyoungcdc.org/ E-mail: tmoses@sfwater.org		X	X		450	Free Monday through Friday, 8:00 a.m. to 4:00 p.m. Small fee to use facility after business hours and on weekends.	Call or e-mail Dr. Moses to reserve space as soon as a need is identified. For 2011, reservations begin on December 4, 2010. The space books quickly and is used widely by the community and politicians.
YMCA (Bayview Hunters Point Branch) 1601 Lane Street San Francisco, CA 94124 (415) 822-7728 Web: http://www.ymcasf.org/bayview/ E-mail: ialsalte@ymcasf.org		X	X	X			Contact Gina Fromer (gfromer@ymcasf.org) to reserve meeting space.
Young Community Developers 1715 Yosemite Avenue San Francisco, CA 94124 (415) 822-3491	X		X	X			

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

Community Mailing List

The Hunters Point Shipyard (**HPS**) community mailing list is used to distribute information and updates via e-mail and hardcopies to the HPS community and other interested parties in the City of San Francisco. The e-mail list contains more than 500 members and the hardcopy mailing list has more than 3,000 addresses, including local residents; community organizations; local, state, and federal regulatory agencies; news media; elected officials; business associations; and other interested parties. Individuals on the list will receive fact sheets, meeting notifications, and other important information.

To create and maintain the mailing list, the Department of the Navy adds the following:

- Anyone who makes a telephone or e-mail request for HPS information
- Community Involvement Plan (**CIP**) interviewees
- Meeting attendees
- Local elected officials (updated annually)
- Anyone who asks to be added

The Navy also updates the list with mailing or e-mail returns, as required to update addresses or remove people from the lists. The mailing list will continue to be updated to ensure that the Navy is reaching all interested and concerned parties. If you want to be added to the Navy's e-mail or hardcopy mailing list, please contact Keith Forman at (415) 308-1458, (619) 532-0913, or keith.s.forman@navy.mil.

Key Mailing List Contacts

The key contacts list is a subset of the community mailing list and includes Navy representatives, regulatory agency representatives, elected officials, and other government agencies for the area and state. Those individuals and organizations on the list will receive fact sheets, news releases, meeting notices, and other important information.

Information Repository Locations

The Information Repository contains the Administrative Record index plus site-related documents such as technical reports, sampling data, fact sheets, newsletters, and public meeting transcripts. The Information Repository is available at the following locations:

San Francisco Main Public Library
Science, Technical, and Government Documents Room
100 Larkin Street
San Francisco, CA 94102
(415) 557-4400
http://sfpl.org/index.php?pg=0100000101

Hours:
Mondays: 10:00 a.m. to 6:00 p.m.
Tuesdays, Wednesdays, and Thursdays: 9:00 a.m. to 8:00 p.m.
Fridays: 12:00 p.m. to 6:00 p.m.

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

Saturdays: 10:00 a.m. to 6:00 p.m.
Sundays: 12:00 p.m. to 5:00 p.m.

Bayview/Anna E. Waden Branch Library
5075 Third Street
San Francisco, CA 94124
(415) 355-5757
http://sfpl.org/index.php?pg=0100000401

Hours:
Mondays and Tuesdays: 10:00 a.m. to 6:00 p.m.
Wednesdays: 1:00 p.m. to 8:00 p.m.
Thursdays: 10:00 a.m. to 8:00 p.m.
Fridays: 1:00 p.m. to 6:00 p.m.
Saturdays: 10:00 a.m. to 6:00 p.m.
Sundays: 1:00 p.m. to 5:00 p.m.

* The Bayview/Anna E. Waden Branch Library is scheduled for renovations in April 2011. While the library is closed, the Navy will has relocated the Information Repository to a temporary location at:

Hunters Point Shipyard Site Trailer (Located across the street from the security entrance to the Shipyard)
690 Hudson Avenue
San Francisco, CA 94124

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

The table below provides contact information for local and State of California government officials; however, these entities are not directly involved in the HPS cleanup.

City, County, and State Government Contacts			
Name	**Title or Role**	**Address**	**Phone and E-mail**
City Council Members			
Edwin Lee	City of San Francisco Office of the Mayor	City Hall, Room 200 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102	Phone: (415) 554-6160 E-mail: mayoredwinlee@sfgov.org
Amy Brown	City of San Francisco Office of City Administrator	City Hall, Room 362 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102	Phone: (415) 554-4851 E-mail: city.administrator@sfgov.org
Phil Ting	City of San Francisco Office of the Assessor-Recorder	City Hall, Room 190 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102-4698	Phone: (415) 554-5596 E-mail: assessor@sfgov.org
Jeff Adachi	City of San Francisco Office of the Public Defender	555 Seventh Street San Francisco CA 94103	Phone: (415) 553-1671
David Chiu	City of San Francisco Board of Supervisor President Supervisor, District 3	City Hall, Room 244 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102-4689	Phone: (415) 554-7450 E-mail: David.Chiu@sfgov.org
Jose Cisneros	City of San Francisco Office of the Treasurer and Tax Collector	City Hall, Room 140 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102	Phone: (415) 554-4478 E-mail: treasurer.taxcollector@sfgov.org
Michael Hennessey	City of San Francisco San Francisco's Sheriff's Department	City Hall, Room 456 1 Dr. Carlton Goodlett Place San Francisco, CA 94102	Phone: (415) 554-7225 E-mail: sheriff@sfgov.org
George Gascon	City of San Francisco Office of the District Attorney	Office of the City Attorney City Hall, Room 234 1 Dr. Carlton Goodlett Place San Francisco, CA 94102	Phone: (415) 554-4700 E-mail: cityattorney@sfgov.org

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

City, County, and State Government Contacts			
Name	**Title or Role**	**Address**	**Phone and E-mail**
San Francisco County Board of Supervisors			
Eric Mar	City of San Francisco Supervisor, District 1	City Hall, Room 244 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102	Phone: (415) 554-7410 E-mail: Eric.L.Mar@sfgov.org
Mark Farrell	City of San Francisco Supervisor, District 2	City Hall, Room 244 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102	Phone: (415) 554-7752 E-mail: Mark.Farrell@sfgov.org
Carmen Chu	City of San Francisco Supervisor, District 4	City Hall, Room 244 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102	Phone: (415) 554-7460 E-mail: Carmen.Chu@sfgov.org
Ross Mirkarimi	City of San Francisco Supervisor, District 5	City Hall, Room 244 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102	Phone: (415) 554-7630 E-mail: Ross.Mirkarimi@sfgov.org
Jane Kim	City of San Francisco Supervisor, District 6	City Hall, Room 244 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102	Phone: (415) 554-7970 E-mail: Jane.Kim@sfgov.org
Sean Elsbernd	City of San Francisco Supervisor, District 7	City Hall, Room 244 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102	Phone: (415) 554-6516 E-mail: Sean.Elsbernd@sfgov.org
Scott Wiener	City of San Francisco Supervisor, District 8	City Hall, Room 244 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102	Phone: (415) 554-6968 E-mail: Scott.Wiener@sfgov.org
David Campos	City of San Francisco Supervisor, District 9	City Hall, Room 244 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102	Phone: (415) 554-5144 E-mail: David.Campos@sfgov.org
Malia Cohen	City of San Francisco Supervisor, District 10	City Hall, Room 244 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102	Phone: (415) 554-7670 E-mail: Malia.Cohen@sfgov.org

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

City, County, and State Government Contacts			
Name	**Title or Role**	**Address**	**Phone and E-mail**
John Avalos	City of San Francisco Supervisor, District 11	City Hall, Room 244 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102	Phone: (415) 554-6975 E-mail: John.Avalos@sfgov.org
Other Local Government Agencies			
	City of San Francisco Chamber of Commerce	235 Montgomery Street, 12th Floor San Francisco, CA 94104	Phone: (415) 392-4520
	City of San Francisco Community Development	1 S Van Ness Avenue, #500 San Francisco, CA 94103	Phone: (415) 701-5500
	City of San Francisco Planning Department	1650 Mission Street, Suite 400 San Francisco, CA 94103	Phone: (415) 558-6378
	City of San Francisco Public Health Department	101 Grove Street, Room 100 San Francisco, CA 94102	Phone: (415) 554-2500
	City of San Francisco Recreation and Park Department	501 McLaren Lodge San Francisco, CA 94117	Phone: (415) 831-2782 E-mail: http://sfrecpark.org/ContactUs.aspx
	City of San Francisco Housing Authority	1815 Egbert Avenue San Francisco, CA 94124	Phone: (415) 715-3280 E-mail: feedback@sfha.org
	City of San Francisco Children, Youth and Families Department	1390 Market Street, Suite 900 San Francisco, CA 94102	Phone: (415) 554-8990 E-mail: Public@DCYF.org
	City of)San Francisco Department of the Environment	11 Grove Street San Francisco, CA 94102	Phone: (415) 355-3700 E-mail: environment@sfgov.org
	City of San Francisco Fire Department	Department Headquarters 698 - 2nd Street San Francisco, CA 94107	Phone: (415) 558-3403 E-mail: FireAdministration@sfgov.org
	City of San Francisco Police Department	850 Bryant Street, #525 San Francisco, CA 94103	Phone:(415) 553-1551 E-mail: sfpdcommunityrelations@sfgov.org
	City of San Francisco Bayview Police Station	201 Williams Avenue San Francisco, CA 94124	Phone: (415) 671-2300

Appendix H: News Media, Potential Event Locations, and Other Contacts (continued)

City, County, and State Government Contacts			
Name	**Title or Role**	**Address**	**Phone and E-mail**
	City of San Francisco Public Works	City Hall, Room 348 1 Dr. Carlton B. Goodlett Place San Francisco, CA 94102	Phone: (415) 554-6920 E-mail: dpw@sfdpw.org
	City of San Francisco Public Utilities Commission	1155 Market Street, 11th Floor San Francisco CA, 94103	Phone: (415) 554-3155 E-mail: http://www.sfwater.org
	City of San Francisco Redevelopment Agency	1 S Van Ness Avenue, 5th Floor San Francisco, CA 94103	Phone: (415) 749-2400
California State Senators			
Senator Mark Leno	California State Senate (District 3)	455 Golden Gate Avenue, Suite 14800 San Francisco, CA 94102	Phone: (415) 479-6612 E-mail: senator.leno@senate.ca.gov
Senator Leland Yee	California State Senate (District 8)	455 Golden Gate Avenue, Suite 14200 San Francisco, CA 94102 Phone: (415) 557-7857	Phone: (415) 557-7857 E-mail: senator.yee@senate.ca.gov
California State Assembly Representatives			
Assembly Member Tom Ammiano	California State Assembly (District 13)	455 Golden Gate Avenue, Suite 14300 San Francisco, CA 94102	Phone: (415) 557-3013 E-mail: Assemblymember.Ammiano@assembly.ca.gov
U.S. Senate			
Senator Dianne Feinstein	U.S. Senate	One Post Street, Suite 2450 San Francisco, CA 94104	Phone: (415) 393-0707
Senator Barbara Boxer	U.S. Senate	1700 Montgomery Street, Suite 240 San Francisco, CA 94111	Phone: (415) 403-0100
U.S. House of Representatives			
Congresswoman Nancy Pelosi	U.S. House of Representatives (District 8)	90 7th Street, Suite 2-800 San Francisco, CA 94103	Phone: (415) 556-4862

Appendix I: Acronyms and Abbreviations

AOC	Administrative Order on Consent
ATSDR	Agency for Toxic Substances and Disease Registry
BCT	BRAC Cleanup Team
BRAC	Base Realignment and Closure
BVHP	Bayview Hunters Point
CAC	Citizens Advisory Committee
CDR	Covenant Deferral Request
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIP	Community Involvement Plan
DTSC	California Environmental Protection Agency, Department of Toxic Substances Control
FAQ	Frequently Asked Question
FFA	Federal Facility Agreement
FOSET	Finding of Suitability for Early Transfer
HPS	Hunters Point Shipyard
IBNA	India Basin Neighborhood Association
IR	Installation Restoration
NCP	National Oil and Hazardous Substances Pollution Contingency Plan/National Contingency Plan
NRDL	Naval Radiological Defense Laboratory
NPL	National Priorities List
PAC	Project Area Committee
PAH	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated biphenyl
RAB	Restoration Advisory Board
SFDPH	San Francisco Department of Public Health
SFRA	San Francisco Redevelopment Agency
SVOC	Semi-volatile organic compound
TAG	Technical Assistance Grant
TPH	Total petroleum hydrocarbons

Appendix I: Acronyms and Abbreviations (continued)

U.S. EPA	United States Environmental Protection Agency
USC	U.S. Code
VOC	Volatile Organic Compound
Water Board	San Francisco Bay Regional Water Quality Control Board

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Appendix J: Responses to Comments on the Draft CIP

Comments from:

Jackie Lane, U.S. Environmental Protection Agency (U.S. EPA) Region 9, April 11, 2011

Comment Number	Section/ Page	Comment	Response
1.	**Chapter 4, pg 40-41, Opportunities for Public Involvement at HPS**	The Navy may want to use "Available upon request" for informal review and "Formal Public Comment Needed" for required public comment documents.	The text has been revised to "Available upon request for public review and comment" and "Formal public review and comment required."
2.	**Chapter 4, pg 40-41, Opportunities for Public Involvement at HPS**	Delete reference to draft CIP and final CIP at the beginning of this section. The public will not get an opportunity to review the final CIP again and they have already reviewed the draft final.	The two Community Involvement Plan (CIP) documents have been removed from the table and the schedule for other documents has been updated.
3.	**Chapter 4, pg 40-41, Opportunities for Public Involvement at HPS**	Delete the second "Removal" word in the title "Draft Action Memorandum – Shipshielding Time Critical Removal Action."	The text has been revised as requested.
4.	**Chapter 4, pg 40-41, Opportunities for Public Involvement at HPS**	Delete double entries of the draft and final document titles in the same section under "Removal Action Reports for Parcel E-2."	The table was reviewed; however, no double entries were found. Several draft and final versions of the same document are listed, as is the case throughout this table.
5.	**Chapter 4, pg 40-41, Opportunities for Public Involvement at HPS**	You may want to add a glossary to this section so people will understand what the report means as it concerns the cleanup. For example, what is "Shipshielding?" The average citizen does not know most of the terms used or those expressed in the titles of these documents.	The table has been revised to include footnotes to define terms not commonly used and to refer readers to Appendix G for a glossary of the types of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) documents.
6.	**Chapter 5, pg 51 Cleanup Roles and Responsibilities**	Paragraph 2, sentence 2: spell out CAC and PAC and what these groups do or support. I could not find the contact reference for the groups in Appendix B as reference here.	The acronyms Community Advisory Council (CAC) and Project Area Committee (PAC) are now spelled out and defined in Chapter 5. CAC and PAC are now listed in Appendix B, under Websites for Additional Information. In the table in Appendix B, a description of what these groups do has been added.
7.	**Appendix A**	Page A-1, move paragraph 4 to end of page A-2.	The text has been revised as requested.
8.	**Appendix A**	"Dust Control at the Site" section: add a sentence that says why this action is important in protecting health	A sentence has been added explaining why controlling dust is important for health. Text was also added to explain some of the actions the Navy implements to control dust.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

Amy Brownell, P.E., on behalf of the City and County of San Francisco, and Lennar, April 11, 2011

Comment Number	Section/ Page	Comment	Response
1.	**General**	When discussing the redevelopment, please change the references from City of San Francisco to "the San Francisco Redevelopment Agency" or "the San Francisco Redevelopment Agency or its successor agency".	The text has been modified to "the San Francisco Redevelopment Agency" or SFRA where appropriate.
2.	**Executive Summary, page 2, third paragraph, first sentence**	Please replace with "In addition, the San Francisco Redevelopment Agency, or its successor agency, is responsible for redeveloping HPS."	Redevelopment is not discussed in this section; therefore, the sentence was not replaced. The CIP has been reviewed and revised in all sections where redevelopment is discussed, to clarify that the SFRA is responsible for redeveloping HPS.
3.	**Executive Summary, page 2, fourth paragraph, last sentence:**	Please replace "the City" with "the San Francisco Redevelopment Agency"	The text has been revised as requested.
4.	**Chapter 3: Community Involvement-Actions and Activities, page 16, ninth bullet:**	Please reword first line to state "The Navy will designate a Navy contractor to be the Community Involvement Manager…".	The text has been revised as requested.
5.	**Chapter 3, Theme 1, bullet 7:**	"At meetings, an updated calendar of events and…"	The text has been revised as requested.
6.	**Chapter 3, Community Involvement-Actions and Activities, page 18, Theme 4:**	Please change title reference from "City of San Francisco Redevelopment" to "San Francisco Redevelopment Agency Redevelopment" and please change any references in text to correspond.	The text has been revised as requested.
7.	**Chapter 4, Navy's Cleanup Program, page 23, sixth paragraph:**	Please change references about Parcel A transfer and redevelopment from the City of San Francisco to the San Francisco Redevelopment Agency.	The text has been revised as requested.
8.	**Chapter 4, Navy's Cleanup Program, page 28, Shipyard Map:**	Please change legend for red-dashed line to "Former Parcel A, currently SFRA property"	The map has been revised as requested.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

Amy Brownell, P.E., on behalf of the City and County of San Francisco, and Lennar, April 11, 2011

Comment Number	Section/ Page	Comment	Response
9.	**Chapter 4, Navy's Cleanup Program, page 29, Parcel A table, next steps, 1st sentence:**	Please change to: "The San Francisco Redevelopment Agency is working with developers, selected by the SFRA, to build…"	The text has been revised as requested.
10.	**Chapter 4, Parcel G, Status of Cleanup, second sentence, page 37:**	It currently reads "areas specified areas" – it should be "specified areas".	The text has been revised as requested.
11.	**Chapter 4, Opportunities for Public Involvement at HPS:**	Shouldn't the Parcel B and Parcel G Findings of Suitability for Early Transfer and the FOSTs for other parcels be listed here?	Finding of Suitability to Transfer (FOST) and Finding of Suitability for Early Transfer (FOSET) are transfer documents rather than cleanup documents; therefore, they have not been added to the list.
12.	**Chapter 5: Cleanup Roles and Responsibilities, page 47:**	When referring to the transfer of land, please change all references when referring to transfer from the City of San Francisco to the San Francisco Redevelopment Agency or SFRA.	The text has been revised as requested.
13.	**Chapter 5: Cleanup Roles and Responsibilities, Roles and Responsibilities of the City and County of San Francisco, starts on page 49:**	You need to delete the second and third bullets in the blue box and all paragraphs except the last one which begins: "SFDPH is one…" You need to insert a new heading in front of this City and County of SF heading and titled it "Roles and Responsibilities of the San Francisco Redevelopment Agency or its successors" and then insert the second and third bullets from the blue box (i.e. becomes landowner… and is responsible for redevelopment). You also need to change the first two sentences to "The San Francisco Redevelopment Agency, or its successors, is primary responsible for redeveloping HPS. In 1997, after an extensive multi-year community planning effort, the SFRA adopted the Hunters Point Shipyard Redevelopment Plan." In the third paragraph, please change the references from the City to the SFRA. Delete the third paragraph from this section – it will be retained in CCSF roles – see Comment #13.	The text has been revised as requested. The only exception is that the "or its successors" language was not include in the "Roles and Responsibilities of the San Francisco Redevelopment Agency" heading.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

Amy Brownell, P.E., on behalf of the City and County of San Francisco, and Lennar, April 11, 2011

Comment Number	Section/ Page	Comment	Response
14.	**Chapter 5: Cleanup Roles and Responsibilities, page 50:**	Please consider adding the following "The City has several mechanisms in place that will require anyone who disturbs soil or other ground cover at HPS to comply with requirements in the San Francisco Municipal Codes, specifically Health, Building and Public Works Codes. The City also will regulate the construction of new development through its Subdivision Code, which will require construction of public improvements in conjunction with subdivision of land for private development. The City and the San Francisco Redevelopment Agency have a formal process to confirm that the improvements were constructed as required by the permits. The City also has a process in its Building Code to confirm that structures are constructed to code. Permitted activities involving the disturbance of soil require the permit applicant to go through a special process set out under Article 31 of the Health Code. The Applicant is required to obtain approval of various plans under Article 31 from SFDPH to assure that environmental restrictions and conditions are appropriately taken into account during the permitted activities. Once the Applicant receives approval of the required plans and meets all other permit requirements the Applicant will receive approval for the building, grading or other permit and can begin grading or construction."	The text has been revised as requested.
15.	**Chapter 5: Cleanup Roles and Responsibilities, page 51, last paragraph:**	In last sentence, change "The City" to "The San Francisco Redevelopment Agency".	The text has been revised as requested, using the acronym SFRA throughout the document.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

Amy Brownell, P.E., on behalf of the City and County of San Francisco, and Lennar, April 11, 2011

Comment Number	Section/ Page	Comment	Response
16.	**Appendix A: Health-Related Information, Resources, And Contacts:**	Please include information on the SFDPH's work to assist the Bayview Hunters point neighborhood with health related prevention, treatment and education including reference to the following: Health Programs in Bayview Hunter's Point & Recommendations for Improving the Health of Bayview Hunter's Point Residents Mitchell H. Katz, MD, Director of Health, San Francisco Department of Public Health September 19, 2006 (http://www.sfdph.org/dph/files/reports/StudiesData/BayviewHlthRpt09192006.pdf)	The text has been revised as requested.
17.	**Appendix B: Navy, Federal, State and Local Government Contacts, page B-3:**	Please add the San Francisco Department of Public Health, Hunters Point Shipyard Redevelopment website http://www.sfdph.org/dph/EH/HuntersPoint/ and the Citizens Advisory Committee; http://www.hpscac.com/	The text has been revised as requested.

Comments from:

Michael F. McGowan, Ph.D, Arc Ecology, March 14, 2011

Comment Number	Section/ Page	Comment	Response
1.	**Executive Summary**	The Executive Summary starts right in with acronyms so please make them easier to find than in a distant Appendix. Perhaps right inside the front cover of the report?	Although most technical documents include an acronym list in the front, this document is designed to be more reader-friendly. The acronym list has been kept in the appendices with its own tab because it is easy to flip to in the hard copy and it is linked in the electronic file. Acronyms are defined as they are used, so the reader will not have to refer to the acronym list for the definitions in the Executive Summary.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

Michael F. McGowan, Ph.D, Arc Ecology, March 14, 2011

Comment Number	Section/ Page	Comment	Response
2.	**General**	• This is a Community Involvement Plan, not a how-to on preparing a Community Development Plan. I recommend rearranging the sections so the plan's emphasis is on now and going forward, not so much demonstrating that the voice of the community has been heard in preparing the plan. The users of the plan are primarily going to want to know how to use it, secondarily how it came to be. Specifically: put Section 5.0 Cleanup Roles and Responsibilities right after the Introduction. Then put Section 4 on the cleanup program history and status, followed by Section 3 Community Involvement. After that can be the section documenting how the plan was arrived at and the References section and appendices. This arrangement is more logical because it introduces the plan and its purposes, it describes the process and regulatory responsibilities of the agencies, it describes the existing conditions that require a cleanup and community involvement, and then it presents the plan for give and take between the community and the Navy. Community members who wish to participate can then do so and can read the next section about how the plan was produced, if they want to, and can use the resources presented in the appendices. A statement about how thoroughly the community was involved in the preparation of the CIP is important to include, but it should not be the main focus of the CIP. • The Executive Summary and Introduction should be edited to have a consistent arrangement of topics with the new arrangement of sections.	The table of contents and outline for this document were developed in coordination with the U.S. Environmental Protection Agency (U.S. EPA) and are based on existing CIP examples provided by U.S. EPA. To avoid confusing the public by moving significant text in the final round, this request was not incorporated.
3.	**Pie Charts**	Quantitative information should be displayed in bar charts or other ways but not pie charts in the view of experts on presenting data. Please use graphics other than pie charts wherever possible.	Most qualitative information has been revised to be presented in bar charts.
4.	**General**	Why does translating into Chinese equal translating into Cantonese and not Mandarin? Please provide a little explanation for this.	Based on information provided by the Chinese-American community, Cantonese is the primary Chinese dialect spoken in San Francisco. The Navy may provide other translations in the future if a specific need is identified.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

Michael F. McGowan, Ph.D, Arc Ecology, March 14, 2011

Comment Number	Section/ Page	Comment	Response
5.	**Chapter 4 page 40**	Two "time" per year should be "times" per year.	The text has been revised as requested.
6.	**Chapter 5 page 49**	Change "DTSC that is" to "DTSC is".	The text has been revised as requested.
7.	**Chapter 5 page 49**	Change "The City and County of San Francisco are" to "The city of San Francisco is"	The text has been alternately revised to address City and County of San Francisco comments on the CIP.
8.	**Chapter 5 pages 49 and 50**	Rearrange the paragraphs at the bottom of page 49 and the top of page 50 so they are in the logical order: 1. SFDPH is one… 2. Once a parcel meets… 3. The city of San Francisco… 4. According to the SFRA website (also change the W to w in "website")	The text has been revised to address City and County of San Francisco comments on the CIP.
9.	**Appendix A page A-1**	Change "See the following table…" and label the three separate kinds of content as Table A-1, Table A-2, and Table A-3. Change the one table to three with individual titles.	The table has not been revised into three tables. It is relatively short, and to break it up would mean one table would have only one row.
10.	**Appendix A page A-1**	Change "if air quality is recorded at above approved" to "if dust is detected above approved" or some other factually and grammatically correct statement.	The text has been revised as requested.
11.	**Appendix A page A-3**	Explain here or previously why Cantonese translations and not Mandarin or other Chinese dialects. What is the basis for providing Spanish and Cantonese? Will the Navy provide other translations if requested?	See response to comment number 4.
12.	**Appendix A page A-4**	Under Broader Health Concern for Bay Area Air Quality Management District insert, "Outdoor Air Quality". The mandate of BAAQMD is outdoor air.	The text has been revised as requested.
13.	**Appendix A page A-4**	In the box for Federal Agencies Details include the 2008(?) review by ATSDR of the asbestos monitoring at the shipyard and Parcel A. There was a report, a workshop at the CAC, and a variety of correspondence.	The text has been revised as requested.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

Michael F. McGowan, Ph.D, Arc Ecology, March 14, 2011

Comment Number	Section/ Page	Comment	Response
14.	**Appendix A, pages A-4 and A-5**	Federal and local agencies are included, but what about state agencies?	In general, the local agencies will provide more specific information than the state agencies. However, the document has been revised to include the California Department of Public Health, with a link to their San Francisco-specific programs.
15.	**Appendix B, page B-2**	Change the street address of Arc Ecology to 1331 Evans Avenue. ZIP code remains 94124	The text has been revised as requested.
16.	**Appendix B, page B-2**	The email address for James Haas is not clear. Is there an underline between his first and last names, or?	An underscore is present between his first and last names. The text was revised to include a bolded underscore in his email address for clarity.
17.	**Appendix B, page B-3**	The website for U.S. EPA is formatted differently from all the rest	The text has been revised to include a hyperlink, which also formats the website consistently.
18.	**Appendix C, page C-14**	In the Use Radio box the entry should be edited to show that the University of California radio station is kalx, not Calx, Stanford's radio station is kzsu, and I don't think Lawrence Livermore Lab has a broadcast radio station. Please correct this information.	The text has been revised as requested, with radio station call letters capitalized.
19.	**Appendix C, page C-15**	Do Navy rules prohibit food or beverages or just paying to have them at the meeting? Please clarify.	The text has been revised to clarify the prohibition on using taxpayer funds to provide food and beverages during meetings.
20.	**Appendix C, page C-15**	Please change the spelling "faire" to "fair" throughout the document.	The text has been revised as requested.
21.	**Appendix D, page D-2**	Please change the format of the data in the table to 1 decimal place for all entries to facilitate comparisons.	The text has been revised as requested.
22.	**Appendix D, page D-3, D-4, and D-6**	One decimal place in all data, please.	The text has been revised as requested.
23.	**Appendix E, page E-1**	Data "were", not "was".	The text was revised as appropriate.
24.	**Appendix E, page E-8**	The 3-D bars do not help view the data and obscure the numbers above the bars. Please use 2-D bars for clarity.	Graph 6 has been revised as requested.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

Michael F. McGowan, Ph.D, Arc Ecology, March 14, 2011

Comment Number	Section/ Page	Comment	Response
25.	**Appendix H, page H-3**	Please include information for Arc Ecology in this table. Contact Saul Bloom about Arc's ability to host a meeting and other entries in the table.	The text has been revised as requested.
26.	**Appendix H, pages H-3**	Clarify "Attend Its Meeting" in column heading. Does this mean "Navy willing to Attend Organization's Meeting"?	The text has been revised as requested.

Comments from:

Marlene Tran, spokesperson for Visitacion Valley Asian Alliance, during HPS Community Meeting, March 23, 2011

Comment Number	Section/ Page	Comment	Response
1.	**Proposed Outreach: Dedicated Call-in line**	For those who speak Cantonese, Spanish, or other languages, please have a dedicated phone number someone can call, get cleanup updates in their language and leave a message. This option is especially important for those people who lack internet access.	A dedicated call-in line has been added to the list of planned activities.
2.	**Pie Charts**	In the Draft CIP, the legends on the pie charts are too small. Please enlarge them so they can be read more easily.	The charts have been modified as requested.
3.	**Proposed Outreach: Translated materials**	Make sure there is transparency in the Navy's program by sending translated information to the ethnic media.	The CIP includes sending translated materials to ethnic media. Chapter 3 was revised to include radio show presentations and call-in shows and other information that will be provided to the media in other languages.
4.	**Section 5.0 Cleanup Roles and Responsibilities**	The community needs clearer definitions of the roles of each party (Navy, regulatory agencies, city, Redevelopment agency). It's very unclear who is involved in the cleanup and what their role is.	Please refer to Chapter 5 of the CIP, which has been updated to clarify the roles of all the responsible parties.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

Jaron Browne, community member, during HPS Community Meeting, March 23, 2011

Comment Number	Section/ Page	Comment	Response
1.	**Proposed Outreach:** **Two-way communication**	The Navy should have an elected body that provides input & two-way communication. All the CIP activities are one-way communication. RAB was a body that was recorded & could make recommendations, that is missing from the plan for new activities. The fundamental concern that POWER has with the CIP is that all of the action and activities are geared toward one-way communication from the Navy to community. The CIP lacks formal mechanisms for the community opinions and concerns to be recorded. The CIP absolutely must include a democratically elected community body that can vote and make formal decisions. Even if this body does not have power over the Navy's decisions – it would make a record of the community's democratic decision.	The need for a Restoration Advisory Board (RAB) or another such elected body will be reevaluated at least every 2 years. The current plan includes activities for two-way communication, such as: • Community meetings with question and answer (Q&A) and break-out sessions • Radio call-in shows • Bus tours • Dedicated call-in line • Presentations at established group meetings • Use of a Community Involvement Manager In addition, community opinions and concerns are recorded by: • Writing community comments at meetings and reading them aloud to the group • Providing meeting summaries on the website • Saving radio shows as podcasts • Issuing formal responses to comments on documents

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

Mishwa Lee, community member, during HPS Community Meeting, March 23, 2011

Comment Number	Section/ Page	Comment	Response
1.	**Proposed Outreach:** **Meeting with local groups/organizations**	Instead of community coming to you, go to them. Meet with their church groups, etc. Find out what they know already, and then give them more information.	The CIP includes plans for meeting with several community groups during the group's regular meetings (see Chapter 3). In addition, see the updated list of recent outreach activities in Appendix F.
2.	**Dissolution of the RAB**	Does the Navy have the legal right to dissolve the RAB Board? Why is the Navy trying to appear to involve the community, when the Navy didn't abide by the community input?	Yes, the Navy has the legal right to dissolve the RAB. Please see Chapter 1 and Appendix E for more explanation on that process. The Navy strictly followed standing requirements in the *Restoration Advisory Board Rule Handbook*. Just because the Navy does not fully incorporate community input that does not mean the requirement for community acceptance is being ignored. Please see Chapter 1 and Appendix E.

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
1.	**Generalized Theme**	a) The dissolution of the RAB is driving the update of the CIP. b) There is an underlying unstated but nevertheless clear theme that the Navy is disinclined to undertake a new Restoration Advisory Board (RAB) process; c) The CIP is an attempt to reorganize public participation in the cleanup process to accommodate its disinclination to undertake a new RAB	a) The CIP was last updated in 2004; therefore, it was due for an update regardless of the dissolution of the RAB. It is accurate to state a new plan for the community involvement program was required; therefore, the CIP was updated. b) Based on feedback received in the 73 interviews, a RAB was not identified as the type of outreach that meets the needs of the community. The RAB was no longer serving its purpose, as detailed in Appendix E. This CIP outlines new and different activities designed to better reach the greater community and meet the needs identified in the CIP interviews. c) The CIP is designed to create an involvement program that uses more diverse involvement activities, per the needs of the community identified during the community interviews.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
2.	**Generalized Theme**	By seeking to avoid creating another RAB the Navy has made decisions that could negatively impact meaningful public participation in the Navy Hunters Point Shipyard remedial program. 1. The CIP has redefined community involvement as information, outreach, and education; 2. The CIP fails to grasp important community involvement issues. Substituting outreach and education for engagement is the wrong strategy; 3. The CIP has deemphasized dialogue and the creation of a process for developing an ongoing informed community analysis of the process of cleanup.	The CIP uses information gathered from the Hunters Point Shipyard (HPS) community to design a program that, in addition to meeting regulatory requirements for public involvement, meets the needs of the various sectors of the community through varied means of communication. 1. Community involvement has not been redefined as only information, outreach, and education. Throughout the CIP, the desire to engage and involve the community in the cleanup process is described. 2. For the community to provide input on the proposed cleanup actions during the formal public comment periods, it is necessary to provide opportunities to solicit input and to educate the HPS community. Activities in the CIP are designed to engage the HPS community in the cleanup process in ways community members have expressed are most suitable. 3. The Navy has increased the variety of activities in the CIP allowing for dialogue/two-way communication, including: • participating in multi-lingual radio call-in shows • holding community meetings that include formal question and answer sessions in addition to smaller break-out sessions where community members can talk one on one with the Navy and regulatory agencies' representatives • scheduling bus tours • giving presentations at established group meetings • using a local Community Involvement Manager • maintaining a multi-lingual hotline where people can leave messages and have the call returned.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
3.	**Generalized Theme**	The text of the CIP demonstrates an ongoing resistance to seat this program in the context of its regulatory requirements and guidance directions. 1. In a number of the comments to follow we will raise ongoing concern with regard to the clear avoidance by the authors of the CIP to acknowledge or quote from regulatory requirement and guidance directions governing public participation; 2. Furthermore the CIP has failed to list or otherwise acknowledge several guidances, orders, and an expression of community preference that would replace the general sense of the Navy's conferring of opportunity with meeting legal requirements.	1. The CIP has been modified to clearly identify the community involvement activities and opportunities for public comment that are specifically required per the National Contingency Plan (NCP). The CIP is intended to provide opportunities for public involvement above and beyond the required activities conducted at the project-level as part of the CERCLA process. 2. Appendix G provides a list of the guidance documents pertaining to community involvement. An excerpt from the NCP explaining the regulatory requirements for community participation has been added to Appendix G.
4.	**Chapter 1**	The first paragraph of Chapter 1 makes it appear as though the Navy and U.S. EPA were acknowledging conceptual rights and therefore conferring an opportunity to the public to participate. Public engagement is a regulatory responsibility not a conferred opportunity. The CIP should acknowledge the Navy's regulatory requirement to seek public engagement up front in the introduction.	The introductory paragraph is a positive statement describing the right of the community to be involved and the value of involvement. In addition, this is standard language found in other U.S. EPA-led Community Involvement documents, such as the Iron King Mine CIP. It has now been noted in Chapter 1 that there are regulatory requirements for public participation. In addition, an excerpt from the NCP explaining the regulatory requirements for community participation has been added to Appendix G.
5.	**Chapter 1**	Chapter 1 reference to Appendix G Regulations and Guidance appears as six words in its final paragraph which presents a guide to the entire document. The contents of Appendix G are mentioned without listing its letter designation or explaining the importance to understanding how public participation is governed. Appendix G is located in a part of the document members of the public might not read if its importance is not underscored in the introduction.	The final paragraph of Chapter 1 has been expanded to include a more detailed description of all appendices, including Appendix G. In addition, an excerpt from the NCP explaining the regulatory requirements for community participation has been added to Appendix G.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
6.	**Chapter 1**	Given that the focus of the CIP is public participation, it would be appropriate for some of the space in Chapter 1 to be devoted to a discussion of the regulatory requirements and departmental guidances for public participation.	See response to comment 3. The last paragraph of Chapter 1 has been updated to include a more thorough description of what is included in each appendix, including Appendix G. In addition, an excerpt from the NCP explaining the regulatory requirements for community participation has been added to Appendix G.
7.	**Chapter 2**	Chapter 2 "Community Interviews and Feedback" provides useful information and is well organized however: a) the resistance to specifying regulatory and guidance requirements within the text of the CIP analysis calls into question whether the information being fed back within the CIP was subjected to an institutional bias; b) the failure to provide a statistical analysis of interviewee feedback on each of the survey questions reinforces the concern about institutional bias when reviewing the summary of respondent themes; c) the underlying resistance to creating another RAB further undermines confidence in the interpretation of respondent data.	a) The purpose of Chapter 2 is to summarize the community interview purpose, process, and feedback. In addition, an excerpt from the NCP explaining the regulatory requirements for community participation has been added to Appendix G. b) Interviews were planned and conducted using the U.S. EPA's *Superfund Community Involvement Handbook* as guidance, referenced in Chapter 6. Interviews were not conducted with the intent of producing a statistical survey evaluation. Questions were open-ended and interviews were conversational to promote open communication, resulting in qualitative responses. A strictly statistical analysis of the feedback is not possible. Responses were quantified where possible, and themes in the feedback were identified after all of the responses were gathered. c) Please see response to comment number 1.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
8.	**Chapter 2**	The CIP fails to acknowledge the National Contingency Plan and the invocation of its Community Acceptance Criteria. The Navy summarizes its understanding of the cleanup objectives of the community in paragraph 5 of Page 7 in Chapter 2 as follows: *"The community wants the cleanup to be completed in a way that protects the current community and all future users and neighbors of HPS. The Navy and regulators share this goal with the community and are committed to involving the community in the cleanup process."* While we appreciate this expression of the Navy's understanding, the community adopted a clear Community Acceptance Criteria for cleanup with the passage of Proposition P in 2000. Proposition P sought to establish the National Contingency Plan's (NCP) 9th Criterion on Community Acceptance. The NCP establishes nine criterions for a cleanup program. 87% of the electorate in San Francisco and 93% in the greater Bayview Hunters Point community voted for this criterion. While the 9th criterion is modifying and not mandatory, the criterion has nevertheless been established and the Navy must acknowledge its existence. There is no exemption within the NCP enabling an agency to simply ignore an NCP criterion or the existing establishment of a Community Acceptance criterion. This comment is related to the concern expressed in Comment III. The Navy should make specific reference to Proposition P here.	The NCP requirements have been added to Appendix G. The ninth NCP criterion is community acceptance of a specific remedy during the Proposed Plan. Chapter 2 of the CIP states a general understanding that all community members want a cleanup that protects the current community and future users of the site, regardless of providing specific comments on a remedy. Proposition P is better categorized as a recommendation on what level voters want HPS cleaned to. The Navy's cleanup is directly tied to the San Francisco Redevelopment Agency's redevelopment plan. The cleanup recommendation in Proposition P does not match the SFRA redevelopment plan. Though the Navy does not always follow all recommendations from the community that does not mean the requirement for community acceptance is being ignored. The Navy will continue to adhere to the NCP requirements to solicit public comment on each proposed plan for HPS.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
9.	**Chapter 2**	The Navy's resistance to the establishment of a new RAB has implications for the response reported in the portion of the respondent theme table presented on Page 12 as Public Meetings: Pro "*Many people are informed at once."* & Cons…. *"Many members of the community feel intimidated at a large, centralized meeting. It was stated that it is difficult to have individual questions addressed; there is no single venue where everyone in the community feels comfortable."* Under existing regulation and guidance RABs and or other committees and meetings are one of many methods to be used when reaching out to a community. The above argument was incorporated into the Navy letters and memos discussing its rationale for disbanding the RAB and its appearance here seems to reinforce the impression that the Navy continues to be unwilling to consider creating a new RAB. The bias in this response is further emphasized by the fact that these conclusions are not fully representative of the range of results available through a meeting oriented process and specifically a RAB. The fact that such processes and bodies can result in the development of a group of community representatives conversant in the issues associated with the Shipyard's cleanup and capable of providing the Navy with useful guidance based upon knowledge and experience is completely ignored.	The column header for the last column of the table has been adjusted to read "Pros and Cons Noted by Interviewees." The pros and cons listed for each of the nine historical outreach methods were identified by the community during the interviews, not by the Navy. The Navy does not feel the response is biased. The Navy letters and memoranda included in Appendix E were written prior to and separately from this draft CIP. The Navy does not feel it was biased. The Navy is required to reevaluate the need for a RAB every 2 years, and will continue to do so.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
10.	**Chapter 2, page 11**	The table on Page 11 presents themes raised and by how many interviewees however there are problems with the presentation. a. It does not correspond to the questions asked in the survey which leads to questions with regard to how the responses were interpreted and presented by the Navy; b. The lack of correspondence of the findings presented in the Table to the actual questions presented in the survey creates questions about how the survey data is being interpreted; c. For example there was no question on the Navy's survey form regarding whether an interviewee had an opinion on the status of the RAB, nevertheless the table on Page 11 indicates that less than 5 individuals raised the lack of a RAB as a concern. Table gives the appearance that the RAB issue was surveyed. The problem the table creates is that we can't tell whether the size of the response is a function of a lack of interest or lack of a question in the survey; It would have been more useful for the Navy to have been presented with a matrix providing a summary and numerical scoring of the community responses to the specific survey questions. This way it would have been easier to know how many respondents felt a particular way about the issue raised and there would be less question about the potential for Navy bias in interpreting the data.	As noted in the response to comment number 7, the interview format included many open ended questions. Responses in the table on page 11 were in response to the open-ended question: *Do you have any interests or concerns regarding the base and the cleanup program? If yes, what are they?* This question offered the interviewees an opportunity to raise any concern or interest they have, not to review a list that the Navy would have had to develop. The introductory sentence to the table on page 11 has been revised to read: *Interviewees were asked an open-ended question about whether they have concerns or interests related to the base and the cleanup program, and what all of their concerns and interests might be.* After feedback was received, it was reviewed for themes developed after feedback was received.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
11.	**Chapter 3 Community Involvement Actions and Activities**	Chapter 3 Community Involvement Actions and Activities is the portion of the CIP wherein the Navy changes the emphasis of past CIPs from public participation and engagement to information, outreach and education. While we have no objection to the activities discussed, it is the overall effect that we are concerned about. It is our view that the proposed plan substitutes superficial involvement to the type of detailed engagement consistent with CIPs including RAB and other committees wherein the focus is developing a group of advisors capable of contextualizing their reviews based on prior experience and providing the Navy with informed opinions with regard to the management of the IR program.	Engage is a synonym for involve. The activities outlined in the draft CIP are designed to get information to the broader community and involve them in the cleanup. Feedback received during interviews is that many people are lacking basic information about the cleanup. The Navy seeks to inform and educate the community about the cleanup in order to involve and engage the community in discussions about cleanup decisions during formal public comments periods as well as during informal community involvement activities. No single activity fits the needs of all HPS community members. The plan has included activities for those who want minor updates all the way to those who wish to read and comment on technical documents and contact the Navy or regulatory agencies directly. In the past, the reach of the RAB was relatively narrow, and it was the primary means of involvement. By relying heavily on the RAB as the primary means of involvement, the Navy was unable to engage members of the community who were unable to attend regular meetings, or who had a negative experience at the RAB and were unwilling to attend another meeting. The new plan offers numerous and diverse ways of involving the public, including the use of radio and newspapers as well as other media. Holding regular meetings continues to be an activity in the CIP.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
12.	**Chapter 3 Opening Statement**	The reference to Fort Ord and McClellan Air Force Base emphasizes that the overriding theme of the new CIP is life without a RAB. Both Fort Ord and McClellan Air Force Base had RABs that were shuttered after the local Base commander determined that the committees were no longer meeting their objectives. Both Fort Ord and McClellan's RAB dissolutions were subject to extended litigation. In the case of Fort Ord, the litigation there led directly to the promulgation of the RAB rule of 2007. In the case of McClellan Air Force base the concerns that drove the disagreement – that the site was more radiologically contaminated than the Air Force was willing to admit – was later verified by subsequent remedial research. In both instances the RABs became fractious however records show that the dysfunctionality of both RABs were as much the responsibility of the local base and environmental commands and regulators as they were RAB members. Many members of the respective communities were unhappy with the disbanding of the RABs and the replacement CIPs. As such reference herein is discomforting. Community engagement at both sites has been dramatically curtailed and the benefit to the ongoing cleanup is debatable. Iron Mountain on the other hand is a private site on the NPL in Arizona. There is no military involvement. Nor are there any BRAC conditions on the Site. The analogy to the Hunters Point Shipyard therefore may be more tenuous than not and more likely close to a brownfield. As to public participation specifically, there is a community coalition playing a prominent role in providing feedback to the U.S. EPA, this model is not likely to be applicable to the greater Bayview Community owing to the wide diversity of opinion here.	The CIPs for Fort Ord and McClellan Air Force Base were reviewed as resources because they are both sites in California that are on the National Priorities List, and because these sites do not have a RAB. It is noted that the Navy's plan in this CIP is not a copy of any other outreach program, but was designed to meet the needs of the HPS community. The Iron King Mine CIP was provided by U.S. EPA as an example of a CIP with a format that is user-friendly and a model for other plans. There was no intention to draw a parallel between the cleanup programs at Iron King Mine and HPS. The text in the second sentence has been modified to remove any implication that the Iron King Mine site is in California.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
13.	**Chapter 3**	Theme Two – Hold Regularly Scheduled Meetings. We question whether having the bi-monthly meetings without a commitment to the close coordination involved in a RAB or RAB like entity will result in a different outcome than was the case with the previous RAB. It seems more likely that without addressing the causes of the dysfunctionality experienced with the prior RAB the Navy process will be unsuccessful. We also wonder whether bi-monthly meetings are insufficient to keep up with the schedule presented in the CIP.	Although the CIP identifies bi-monthly meetings, the Navy is currently holding monthly or even twice monthly meetings to reach different segments of the community. The CIP has been revised to acknowledge that the Navy may hold meetings more frequently when appropriate. Various meeting formats are being used to foster more participation and engagement, including sending agendas ahead of time, having small break-out sessions for people to speak directly with the Navy and regulatory agencies, and holding meetings in various locations and on different days and times.
14.	**Chapter 4**	Chapter 4, The Navy's Cleanup Program at the Hunters Point Shipyard provides a useful and excellent summary of the Shipyard program, however: it is not relevant within the context of a description of a community involvement plan. The material presented in Chapter 4 should have been placed in an Appendix, and the space devoted to a greater explanation of the regulatory requirements of the Navy CIP.	The CIP was prepared using guidance from U.S. EPA's Superfund Community Involvement Handbook, and with collaboration from U.S. EPA. Based on feedback gathered in the interviews, the community requested more general information about the Navy's cleanup program. Placing the site cleanup summary in the main text of the CIP provides the reader with the context for the community involvement activities described in the CIP. Additional feedback gathered in the interviews indicated a need for more information about the roles and responsibilities of the regulatory agencies, along with the Navy and other entities involved in the cleanup. Information to address this concern has also been included in the main text of the document, in Chapter 5.
15.	**Chapter 4**	Ordinarily we would be very appreciative of such a well thought out and clear summary of the Navy's cleanup activities. We were particularly pleased to see the schedule of documents, however this is not a document focused on the cleanup itself but rather how the Navy will engage the public in cleanup decision making.	The CIP was prepared using guidance from U.S. EPA's Superfund Community Involvement Handbook and with collaboration from U.S. EPA. It is a standard format for a CIP to present an overview of the installation and information about the status of the cleanup. Chapter 4 may educate readers who are not inclined to read more technical documents, and it also provides context for the types of cleanup projects about which they may review and submit comments.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
16.	**Chapter 4, Page 23**	The historical presentation presented on Page 23 is also interesting although highly abbreviated and of questionable utility. It would have been more useful, if the Navy was of a mind to present a relevant history, it could have provided an overview of the evolution of public participation in cleanup decision making and the crafting of the Navy CIP process. These points would include a review of the public participation components of regulations including NEPA, the NCP, 1986 SARA, as well as a summary of the key point from the Federal Facilities Environmental Dialogue Committee report, a review of the Clinton/ Perry Executive Order on RABs and the Clinton Executive Order on Environmental Justice, the Bush Administration RAB rule and other related issues.	The CIP is not intended to be a primer about regulations and guidance pertaining to public involvement. This document is specific to HPS, and as such provides basic information about the shipyard, including a general timeline. Please see the response to comment number 3.
17.	**Chapter 4**	As indicated above, we appreciate the presentation of the document schedule, however the table includes references to informal and formal comment periods without defining the difference between the two. This distinction is of the utmost importance and represents a significant failing in the goal of the CIP to inform the public. *The formal comment periods associated with the Proposed Plans are the only time during the CERCLA review process when the Administrative Record is open to public comment because an action is being contemplated. As such not providing a description of the difference and its import anywhere in this document represents a significant omission.*	An introduction has been added to the table to explain the difference between the informal and formal comment periods. In addition, Appendix G has been revised to highlight in red the opportunities for required public comment on page G3 and G4 and in the CERCLA graphic on page G-5. Please note that one distinction between the NCP requirements and the Department of Defense (DoD) Installation Restoration program is that the DoD provides significant additional opportunities for formal comment, which are added to the administrative record.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
18.	**Chapter 5**	Chapter 5 Cleanup Roles and Responsibilities/ Responsibilities of the City and County of San Francisco fails to cite existing critical agreements between the City and the Navy; The City's capacity to accept Navy property for transfer is conditioned upon the meeting of the criteria agreed upon within the Conveyance Agreement of 2004. A clear City role in this process is determining whether Conveyance Agreement criteria have been met. This agreement is not cited. Proposition P is City policy and cited within the Conveyance Agreement, yet it is also not cited in the CIP. It is also the 9th criteria for cleanup established by the citizens of San Francisco in accordance with the National Contingency Plan which governs the Shipyard cleanup. While the 9th criterion of the NCP is a modifying criterion the Navy nevertheless must address conformance with Prop P when finalizing a cleanup plan.	The nine evaluation criteria listed in the NCP, 40 Code of Federal Regulations (CFR) 300.430(e)(9)(iii) are used to evaluate cleanup alternatives for a given site or project. Community acceptance is the ninth criterion and is gauged based on community comments provided on the Proposed Plan document. The Navy is required to provide the Proposed Plan and a minimum 30-day public comment period and address public comments in the Record of Decision. The Navy will continue to meet these requirements. The text in Chapter 5 has been modified to cite the 2004 conveyance agreement between the Navy and SFRA. The Navy will meet those conveyance agreements. However, Proposition P is not the guiding authority for the Navy's cleanup. Proposition P is a recommendation to the Navy to clean up to certain standards, but is not enforceable policy. In 2011, the SFRA issued new redevelopment plan. This document helps guides the Navy on the cleanup levels based on future reuse.
19.	**Appendix C**	This Appendix is somewhat confusing. On Page C2 the graphic pie chart caption states that the Navy team conducted 73 interviews and that these many of those interviewed had multiple affiliations which is why the list beginning on Page C3 had 151 affiliations listed. It is unclear however whether individuals with multiple affiliations are representative of the views of each of the organizations they belong to. As such the value of presenting the list is unclear. Is the list intended to show organizational interest or the potential for information resonance in the community? The use of the list is therefore troubling because the CIP does nothing to document either interest or resonance. This being the case it raises we believe a justifiable concern that the list merely serves to inflate the reach of the survey.	Individuals self-identified the organizations they belong to and were asked if the document could note that they were interviewed as a member of that organization before the organization's name was included in the document. Interviewees were not asked to state that they represent the views and opinions of any group in any formal manner. In addition, responses are kept separate from interviewees' names. The goal was to talk with a wide variety of individuals who have varied experiences, interests, and needs. The listing of organizations is an indication of the wide variety of people interviewed.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
20.	**Appendix C**	If affiliation was a driver in the selection of individuals surveyed we are curious about the selection of entities interviewed. Of the 151 affiliations listed, perhaps as many as 58% would appear to be organizationally disinterested in the details or issues associated with the Shipyard's cleanup. With no disrespect intended the interest of The National Rifle Association, the Good Samaritan Family Resource Center, and Friends of McClaren Park in the subject is unclear as is the interest of 84 other organizations of the 151 entities listed. Of the remaining 42% of organizations and entities it seems likely that no more than perhaps half have had any experience with the HPS cleanup. Including duplicated affiliations by different names (Arc Ecology and Community Window for example), 26% or just 40 entities might possess more than a cursory opinion about the cleanup sufficient to provide an informed view of the engagement process. While we recognize that such external views are very useful, we frankly question the balance because of its potential for view shopping. In the past, instances of view shopping lead the Navy to the mistaken notion that residents of Bayview Hunters Point would accept the lowest standard of cleanup if it would hasten the creation of jobs. This view was shown to be in error when 93% of the voting residents of the district voted for Proposition P.	As noted above, people self –identified the groups they belong to. Often, individuals were asked for an interview because of one or two of their affiliations, and then during the interview they identified additional affiliations they wished to have included on the list. The purpose of interviews was not just to talk to people who have already had experience with the HPS cleanup, but also to reach local community members and groups who may want information and were underserved in the past. The list of potential interviewees was reviewed by the regulatory agencies. According to the U.S. EPA Superfund Community Involvement Handbook, listed as a reference in Chapter 6, most CIPs rely on 15 to 25 interviews. The 2004 HPS CIP included 40 interviews, and this CIP includes 73 interviews. The interviews for this document represent a diverse sampling and an enormous effort. The Navy believes it far exceeded previous efforts on this base and other bases in which to form a richer more complete picture of the HPS community.
21.	**Appendix D**	Appendix D reinforces the concerns expressed in VII by clearly demonstrating why Bayview Hunters Point is an environmental justice community but never referring to it as such, 1. Neither the phrase nor reference to the Executive Order on Environmental Justice appears in the text of the CIP; 2. The failure to include reference to EJ guidances calls into question whether the Navy intends to incorporate this concern into its deliberations over cleanup and public participation.	A description of environmental justice (EJ) has been added to the introduction.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
22.	**Appendix E**	This Appendix recounts the reasons why the RAB was discontinued. While it was the opinion of the author of this memo that the RAB Guidance gave the Navy sufficient authority to dissolve the HPS RAB, it was nevertheless difficult to observe so little self examination on the part of the Navy for its role in creating the situation.	The Navy is focused on the current cleanup and creating an inclusive ongoing community involvement program moving forward. The Navy continues to believe the arguments for dissolving the RAB are appropriately captured in the letter of December 23, 2011, in Appendix E.
23.	**Appendix E**	The issues of employment, mistrust, insulting and raucous behavior, and the inability of contractors and Navy personnel to complete entire presentations have been part and parcel of the culture of this body since it was created. Misbehavior was endemic to this RAB from the very beginning and frequently encouraged by Navy personnel and contractors. If the minutes of the HPS RAB beginning in 1994 were scrutinized against the criteria utilized for its dissolution in 2009, the RAB would have been disestablished in 1995. In truth, the RAB has only had brief periods of geniality breaking up its overall fractious history.	The Navy seeks to have a community involvement program moving forward that allows for the two-way exchange of information in a manner that is safe, welcoming, and inclusive of the diverse HPS community. The Navy disagrees that misbehavior at RAB meetings was ever encouraged by Navy personnel or contractors. The Navy also believes that the level of discord and ineffectiveness of the RAB did vary from year to year; however, what is important is that the end-state of the RAB in the 2008/2009 time period was, despite Navy efforts, an ineffective community involvement vehicle.
24.	**Appendix E**	The reason for this situation was insufficient up front training of RAB members starting in 1994. It was unrealistic on the part of the Navy to presume that individuals residing in a community with long term socio economic, environmental and equality disadvantages to immediately give over their trust to an entity whose actions in 1974 helped drive the community into poverty.	The Navy disagrees with the assumptions listed in this comment regarding reasons that the RAB was ineffective. The Navy has never stated that a goal of the RAB is for community members to “give over their trust” to the Navy.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
25.	**Appendix E**	Another contributing factor was that the Navy failed to take advantage of City-based efforts to assist the RAB's management. In 1995, the Hunters Point Shipyard Citizens Advisory Committee created its Environment and Reuse Subcommittee to address matters the Navy considered outside of the scope of the HPS RAB. These issues include questions regarding cleanup employment and contracting and non CERCLA environmental concerns. The Navy BEC at the time, Michael McClellan, and the Western Division Commander were informed that the Subcommittee was being created to in part take the pressure off the RAB by providing an alternative forum for these views. The Navy was invited to participate. Had the Navy partnered with the Subcommittee as was proposed, the RAB might not have been burdened by these questions over the past sixteen years.	The Navy disagrees with the idea that if it had invested more time in the CAC subcommittee that the RAB would have been more effective.
26.	**Appendix E**	It was also unrealistic for the Navy to assume that a community with long-term socio-economic, environmental and equality disadvantages would not see environmental remedial activity as a source of employment and be frustrated by the Navy's segmentation of its hiring, contracting and remedial activities. However valid the Navy's process from its own point of view, the Navy mission centered viewpoint was as destructive to the goals of that mission as counter insurgency methods were to our national campaigns prior to the Petraeus doctrine of engagement.	The Navy disagrees with the assumption stated in this comment. Page 11 of the CIP indicates that during interviews jobs were identified as a primary concern for the community. The Navy will continue to provide information for obtaining jobs through the City's CityBuild Information Line. A handout has been prepared in multiple languages that describes the use of local vendors in the Navy's cleanup. Additionally, a vendor sign-up sheet is provided at each meeting in English, Chinese, and Spanish for any community member who wants to provide contact information.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
27.	**Appendix E**	By viewing external sources of expertise as competitors or agent provocateurs rather than individuals lending their expertise to help the Navy through its cleanup effort, the Navy failed to build the necessary external technical support mechanism in the RAB that would have brought the non environmental professional members of the Board along when there was agreement on remedial strategies. The use of local academic technical expertise would have over the long term built a strong community/ Navy team working on mutual goals around the remedial program each gaining understanding and concessions from the other.	The Navy disagrees with the assumptions contained within this comment. The Navy has historically reached out to a number of individuals, not only to try to increase RAB membership, but also to provide more opportunities for involvement.
28.	**Appendix E**	The lack of internal introspective analysis regarding the Navy's role in the failure of the RAB significantly undermines the credibility of the analysis presented in Appendix E.	The Navy disagrees with this statement. The Navy believes reasons articulated in the letter dated December 23, 2009, accurately reflect the Navy's decision to dissolve the RAB. No further "internal introspective analysis" would have added value to this document.
29.	**Appendix G**	Appendix G should have been Chapter 1 or 2 of the CIP.	The format for this CIP is not uncommon and was developed in cooperation with U.S. EPA. Chapter 1 provides a reader-friendly introduction to the document, and Chapter 2 delves into the feedback received during interviews, which is the cornerstone for the plan outlined in Chapter 3. Regulations can be confusing and the information can be overwhelming to the non-technical reader. General information has been provided, with references for those who wish to review the detailed guidance. See response to comment number 3.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
30.	**Appendix G, Page G1**	The statement appearing in the second paragraph of Appendix G: "Federal and state environmental statutes and amendments require community involvement for hazardous waste sites… " should have been the first paragraph of a chapter devoted to explaining these requirements. Such a chapter should appear as either the 1st or 2nd chapter of the CIP to provide the reader with a context for the requirements and expectations of Congress and successive federal and state administrations for the conduct of public engagement activities.	Please see response to comment number 29.
31.	**Appendix G**	The first paragraph of Appendix G should have been the second paragraph of the chapter described above in VII.1 *"The Department of the Navy's Installation Restoration Program is conducted in accordance with federal and state requirements, and its purpose is twofold---(1) to identify, investigate, and clean up or control the releases of hazardous substances and (2) to reduce the risk to human health and the environment. The Navy is the lead federal agency for the Installation Restoration Program at Hunters Point Shipyard (HPS). The figure on Page G---2 presents the major phases of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process.* " Appendix G, Page G1 To this the Navy should add: CERCLA includes guidance with regard to the provision of public involvement activities found in 42 USC, Section 9601 and following; The Navy could then present a summary of the relevant CERCLA and SARA provisions or cite that the relevant sections of those laws are presented in a new Appendix G.	The format for this CIP is not uncommon and was developed in cooperation with U.S. EPA. A thorough explanation of regulations is provided in Appendix G, and an additional chapter specific to regulations is not deemed necessary for this document.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
32.	**Appendix G**	Although the CIP provides Appendix G which contains a good overview of the regulations governing public participation, this section is not cited elsewhere in the document and the relevant sections of the regs are not quoted. The Navy goes into significant detail about matters regarding the cleanup that are not specific to the issue of public participation (these issues such as those presented in Chapter 4) however it fails to provide equal description to matters of specific relevance to the CIP and public participation such as providing the public participation requirements in each regulation, guidance and other directives in whole or summarized anywhere in the document;	A more thorough description of Appendix G has been added to Chapter 1. Please see response to comment number 3.
33.	**Appendix G**	This comment corresponds with and expands upon Comment [32]. The Navy has couched the CIP in such a ways as to de-emphasize its regulatory requirement to conduct a community involvement process. This clear trend within the document is worrisome.	The Navy disagrees that the CIP in any way deemphasizes regulatory requirements to conduct community involvement. In fact, the Navy is proposing a program that far exceeds any minimum requirements for community involvement.
34.	**General observation/ recommendation**	While there are genuinely many useful concepts in the CIP, the document is undermined by its unstated but obvious antipathy to the full acknowledgement of the requirements of regulation and guidance. The document would be far richer, more informative, and useful if the rules and guidances were fully presented and discussed.	Please see response to comment number 16.
35.	**General observation/ recommendation**	The Navy should acknowledge its own role in the dysfunctionality of the RAB. We refer the Navy to the comments provided on Appendix E [above].	The Navy disagrees with the accuracy and relevance of this comment. Furthermore, the CIP is not meant to focus on the past but to provide a path forward for the future.

Appendix J: Responses to Comments on the Draft CIP (continued)

Comments from:

India Basin Neighborhood Association, Technical Assistant Grant Technical Advisor, May 8, 2011

Comment Number	Section/ Page	Comment	Response
36.	**General observation/ recommendation**	The Navy should reconsider creating a new RAB. RABs can play important and useful roles if utilized well and organized appropriately. Particular care must be given to balancing community representation with technical expertise from non military academic and environmental sources because doing so will ultimately serve to educate the full membership of the Board and help it make better recommendations in a more professional collegial environment.	Navy acknowledges that RABs on most Base Realignment and Closure (BRAC) bases do play important and useful roles. However the circumstances described in this comment capture an ideal situation that did not exist at HPS. Although a RAB or other advisory board is not currently part of the planned community involvement activities, as noted in Appendix E, the need for a RAB will be assessed at least every 2 years, as required.

Appendix J: Responses to Comments on the Draft CIP (continued)

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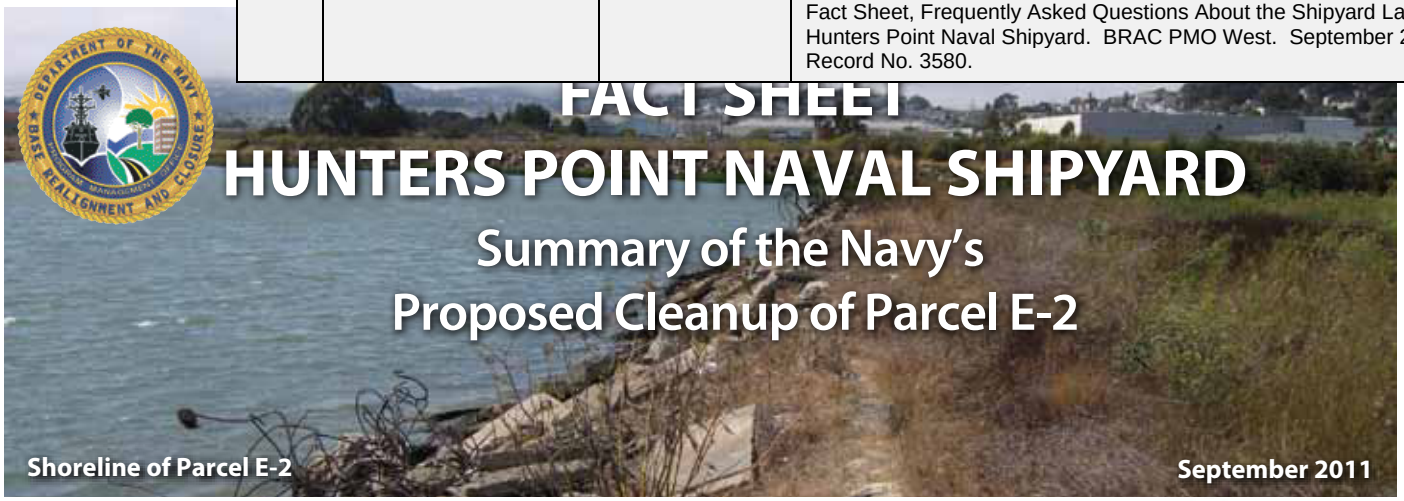
60	Two associated fact sheets	Section 2.10	Fact Sheet, Summary of the Navy's Proposed Cleanup of Parcel E-2, Hunters Point Naval Shipyard. BRAC PMO West. September 2011. Record No. 3580. Fact Sheet, Frequently Asked Questions About the Shipyard Landfill, Hunters Point Naval Shipyard. BRAC PMO West. September 2011. Record No. 3580.



FACT SHEET
HUNTERS POINT NAVAL SHIPYARD
Summary of the Navy's Proposed Cleanup of Parcel E-2

Shoreline of Parcel E-2

September 2011

This fact sheet provides a summary of the Proposed Plan (included in this mailing) for Parcel E-2 on the Hunters Point Naval Shipyard. In addition, the Proposed Plan and other Parcel E-2 information can be viewed on the BRAC PMO website at: ***www.bracpmo.navy.mil.*** *The Navy is requesting public comment on the Proposed Plan in writing before October 24th, 2011 – or in person at a 6:00pm public meeting on September 20, 2011 in the Alex L. Pitcher, Jr. Conference Room at the Southeast Community Facility Commission, located at 1800 Oakdale Avenue in San Francisco.*

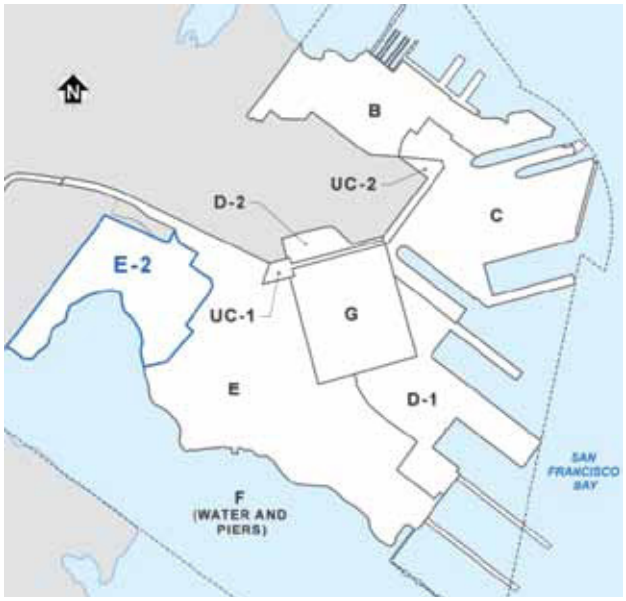


Figure 1 - Location of Parcel E-2

A Brief History of Hunters Point Naval Shipyard

Hunters Point Naval Shipyard (the Shipyard) is located in the southeastern portion of the City of San Francisco and is adjacent to San Francisco Bay (Figure 1). The Shipyard is now closed, but formerly had many uses, including a commercial dry dock from 1869 until it was purchased by the United States Navy (Navy) in 1939. From 1945 until 1974, the Shipyard was used for shipbuilding, repair, and maintenance. The Shipyard was also the site of the Naval Radiological Defense Laboratory, which operated from 1948 through 1969. The Shipyard was closed in 1974 and remained vacant until 1976, when Triple A Machine Shop, Inc. leased the property until 1986. Several buildings have been leased by artists and others between 1986 and the present. Since 1991, the Navy has conducted hundreds of studies, excavations and groundwater treatment actions in an effort to clean up the Shipyard. This fact sheet focuses on the proposed cleanup of a part of the Shipyard called Parcel E-2.

History of Parcel E-2

Parcel E-2 is a 48-acre area located in the southwestern portion of the Shipyard. It is part of an area that was created by filling in the edge of San Francisco Bay with soil, crushed bedrock, dredged sediments and debris. Parcel E-2 also includes a 22-acre landfill where the Navy disposed of construction debris, municipal-type trash, and industrial waste from the mid-1950s until the 1960s. After the landfill closed in the early 1970s, the Navy covered it with 2 to 5 feet of soil. In 2000, the Navy constructed a multi-layer cap across 14 acres affected by a fire. This multi-layer cap remains in place today. The Navy has previously conducted cleanup actions to address known areas of contamination on Parcel E-2, including extracting contaminated groundwater, removing landfill gas, and excavating contaminated soil. These previous actions are all consistent and build upon the Navy's proposal for a permanent remedy at Parcel E-2.

Site Risks

The landfill does NOT currently pose a risk to the Bayview/Hunters Point community because direct exposure to contaminants in the landfill is controlled by the successful completion of the previous Navy actions. The Navy's Proposed Remedy expands on these actions and creates a permanent remedy that will be protective of human health and the environment in the long term. The Navy's proposal allows the property to be developed by the City of San Francisco as open space/parklands.

Parcel E-2 Proposed Cleanup Actions

The Proposed Plan for Parcel E-2 outlines several cleanup alternatives and recommends the following actions to address contaminated soil, sediment, landfill gas, groundwater, and soil which may have low levels of radioactive elements that remain on Parcel E-2. The Navy has carefully studied Parcel E-2 and believes that the following is the best way to protect public health and the environment:

Soil

- Excavate contaminated soil from several areas and dispose of it off site at an approved landfill.
- Install a protective cap and soil cover over all of Parcel E-2 (in addition to the 14 acres already capped) to prevent exposure to the public and minimize rainwater from coming into contact with remaining onsite contamination (Figure 2).
- Build a protective shoreline barrier of large boulders to prevent shoreline erosion along the edge of the Landfill (Figure 2).
- Create new wetlands along parts of the shoreline to restore the environment in the "panhandle" area (Figure 2).
- Conduct a radiation scan of the entire surface of Parcel E-2, remove shallow soil contaminated with radiation, if found, and dispose of it off site at an approved landfill.
- Investigate and clean storm drain lines with any residual low levels of radiation found in them.

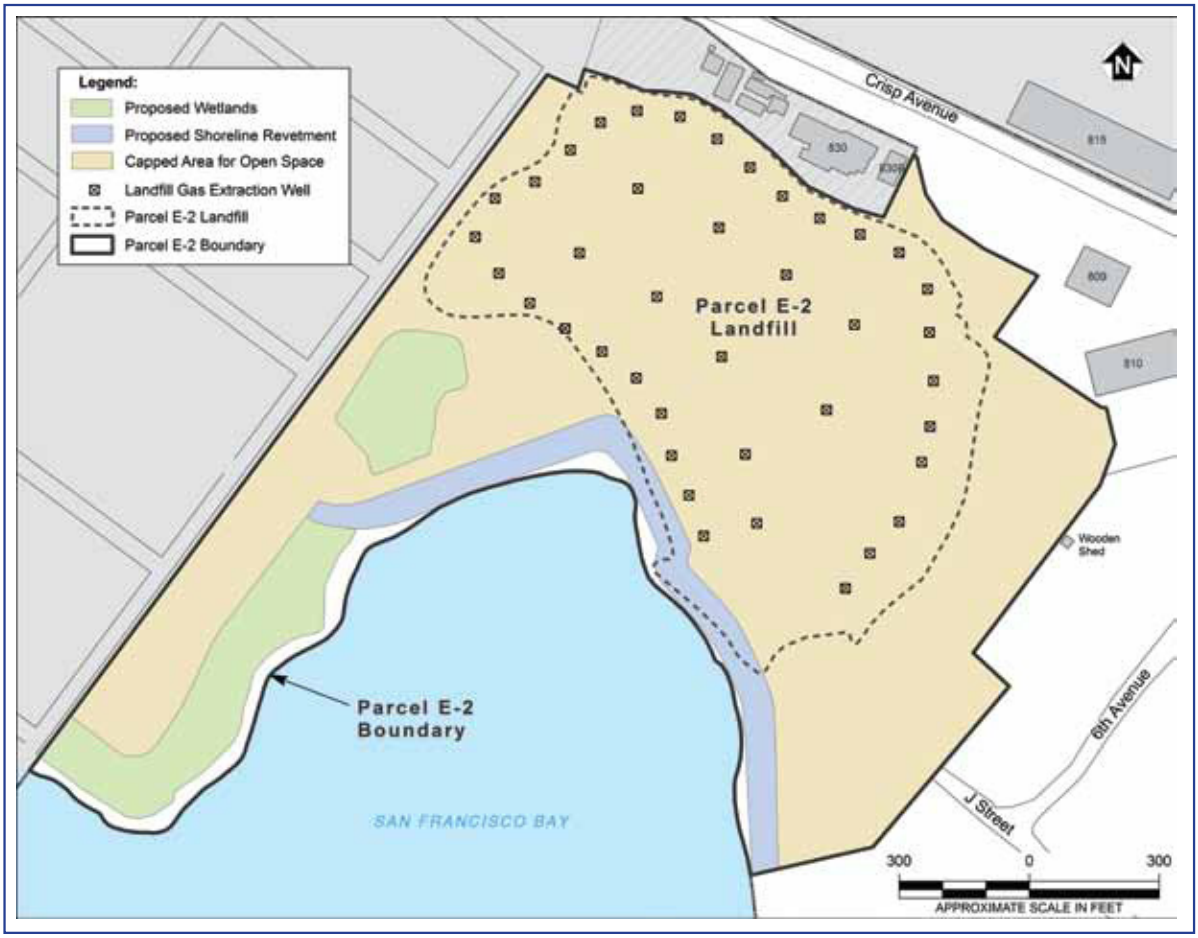


Figure 2 - Parcel E-2 Proposed Cover Plan

Parcel E-2 Proposed Cleanup Actions *(continued)*

Groundwater

- Install below-ground barriers to control groundwater from entering San Francisco Bay.
- Monitor groundwater underneath Parcel E-2 and continue verifying that contaminated groundwater is NOT impacting the San Francisco Bay.

Landfill Gas

- Install wells and equipment to remove, treat, and contain landfill gas and prevent it from moving beyond the boundary of Parcel E-2 (Figure 2).
- Monitor the landfill gas to verify that it is being managed effectively on the property.

Maintaining Parcel E-2 after these cleanup actions

After conducting the actions described above, regular inspections and maintenance of the soil cap, below-ground barriers, well and landfill gas equipment, shoreline revetment, and restored wetlands will be conducted to ensure they are functioning as intended. Use of the land will be limited to open space/parkland, and future digging through the cap will be restricted to ensure the contamination is contained, stays in place, and that the public and the environment are protected.

Estimated Cost

The estimated cost of the proposed actions for soil, sediment, groundwater, landfill gas, and "rad"-impacted soil is approximately $87 million.

The Proposed Remedy discussed above will protect human health and the environment by removing contaminants near the surface and shoreline and installing a cap that will prevent exposure to any remaining waste. The Bay will be protected by keeping contaminants from seeping or moving out of the landfill. When the Navy actually designs these parts of the remedy, the design will take into account future sea level rise, extreme weather conditions and future earthquakes.

Public Comment Period

The Proposed Plan for Parcel E-2 was released to the public in September 2011. You are invited to comment on the preferred remedy for Parcel E-2 at a public meeting on September 20, 2011 at the Southeast Community Facility Commission Building in the Alex L. Pitcher, Jr. Room located at 1800 Oakdale Avenue in San Francisco. Comments from the community will also be accepted in writing from September 7 through October 24, 2011.

The Navy considers all comments before making a final remedy selection. The selected remedy must then be approved by federal and state regulatory agencies. The Navy's selected remedy will then be described in a document called a Record of Decision. This will include a summary of all comments received and the Navy's response to each comment, including how the comment may have influenced aspects of the final remedy selected.

For more information, please contact:

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OR

Matt Robinson
Community Involvement Manager
Telephone: (415) 295-4645
Information Line: (415) 295-4742
E-mail: Info@sfhpns.com

Where do I get more information about the Parcel E-2 cleanup at Hunters Point Naval Shipyard?

Navy documents and reference materials about Hunters Point Naval Shipyard are available to the public at the City of San Francisco Main Library and the Hunters Point Naval Shipyard Site Trailer. The downtown San Francisco library contains a nearly complete record of all documents related to the investigation and cleanup actions under way at Hunters Point Naval Shipyard. Information is also available on the Navy's Hunters Point Naval Shipyard website: **www.bracpmo.navy.mil.**

Click 'Prior BRAC' at bottom of page, and then select 'Former NSY Hunters Point' from the 'Prior BRAC Installations', then scroll down and select 'View/Hide all Documents', then select 'Parcel E-2 Landfill' from the menu.

Information is also available at:

City of San Francisco Main Library
Government Information Center, 5th Floor
100 Larkin Street
San Francisco, CA 94102
(415) 557-4500

Hours of Operation:
Monday: 10:00 a.m. to 6:00 p.m.
Tuesday through Thursday: 9:00 a.m. to 8:00 p.m.
Friday: 12:00 p.m. to 6:00 p.m.
Saturday: 10:00 a.m. to 6:00 p.m.
Sunday: 12:00 p.m. to 5:00 p.m.

Hunters Point Naval Shipyard Site Trailer
(Adjacent to the security entrance to the Shipyard.)
690 Hudson Avenue
San Francisco, CA 94102

Hours of Operation:
Monday - Friday: 8:00 a.m. to 5:00 p.m.

The complete Administrative Record for Hunters Point Naval Shipyard is maintained at the Naval Facilities Engineering Command (NAVFAC) offices in San Diego, California.

Because of the volume of documents required for the Administrative Record, all documents may not be in the local Information Repository. However, a copy of the complete Administrative Record index and documents are available for public review at the Information Repository located at the San Francisco Main Public Library.

Copies of documents located at the Administrative Record are available for review by appointment only by contacting:

Diane Silva
Code EVR-FISC Bldg. 1, 3rd Floor
NAVFAC Southwest
Phone: (619) 532-3676
Fax: (619) 532-3546
diane.silva@navy.mil

Administrative hours are 8:00 a.m. to 5:00 p.m. Monday through Friday. Documents may not be removed from the facility; however, they may be photocopied.

HUNTERS POINT NAVAL SHIPYARD

Frequently Asked Questions About the Shipyard Landfill

September 2011

The community has many questions about the landfill at Parcel E-2 at Hunters Point Naval Shipyard. Below is a list of frequently asked questions, and answers to those questions based on what the Navy has learned from numerous investigations and cleanups conducted over the years.

What do we know about what's in the landfill?

The Navy has thoroughly studied the landfill, including reviewing historical records and collecting hundreds of samples. The Navy has done a large number of investigations at the site, including digging test pits, drilling boreholes to take samples from below the ground, using radiation detectors over the entire surface and sampling the water from under the landfill. Based on this work, the Navy knows that municipal trash, construction debris, soil, and shipyard industrial waste were buried in the landfill.

The Navy took over 300 samples of soil within the landfill (from soil borings, excavation holes where PCB removal was being conducted, groundwater monitoring wells, and test pits). The results of these samples show low levels of contamination, with lead, PCBs and chemicals related to asphalt, being the most common.

Most of the samples show levels of contamination within EPA's acceptable risk range. The worst areas were in the PCB Hotspot Area, which the Navy is currently excavating (Figure 1).

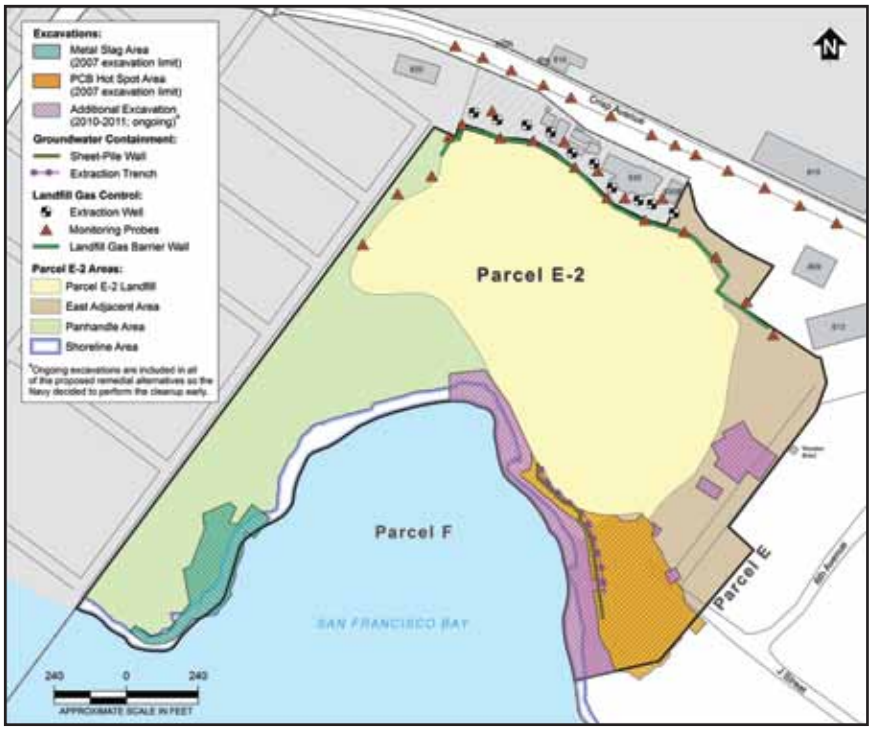

Figure 1 – Parcel E-2 Cleanup Areas

Who is making decisions about the landfill?

The Navy doesn't make cleanup decisions alone. The landfill project at Hunters Point Naval Shipyard involves the Navy, the U.S. EPA, California EPA (also called the Department of Toxic Substances Control), the San Francisco Regional Water Quality Control Board, and other regulatory agencies. In the Proposed Plan, the Navy is announcing what it believes is the best way forward for the landfill. However, the Navy must work with the environmental regulators and the City of San Francisco every step of the way. The cleanup process only moves forward once the Navy and the regulators are in agreement.

Further, the voice of the community plays a significant role. Telling the Navy and regulators your views and opinions can help shape the final decision. The Navy wants to hear from you!

Is there radioactive waste in the landfill?

The Navy has found glow-in-the-dark dials and markers during several excavations. These devices were painted with radium, which is a radioactive material that is no longer used. The Navy has excavated the two areas most likely to have such devices, though there may be more scattered throughout the landfill. The radiation levels are low in these devices and do not pose any risk if they remain underground.

From the late 1940s through the late 1960s, the Navy conducted experiments on the health effects of radiation on animals, and some of those animals may have been buried in the landfill. However, any animals buried in the landfill were not radioactive since the radiation levels they were exposed to were low (similar to those of an x-ray). Any animals that were radioactively contaminated were disposed of at licensed off-site disposal facilities or drummed and disposed of at sea.

Sandblast waste from cleaning ships used during weapons testing in the South Pacific may also have been disposed of at the landfill. However, historic records suggest that waste with the highest levels of radioactivity was controlled and not disposed of at the landfill.

What about toxic chemicals?

The results of the sampling described on Page 1 show that while there are industrial wastes in the landfill, the amounts and concentrations are not that high, except for a few specific hotspots. The Navy has sampled over 200 groundwater locations and did not find any plumes of chemicals in the groundwater. In addition, the soil borings and test pits found mostly wood, glass, cement, metal and paper. The most highly contaminated areas were the Metal Slag area and the PCB Hotspot. The Navy found over 100 buried metal drums filled with oil and tarry waste in the PCB Hotspot Area. The Navy excavated both areas and removed the drums. The Navy is currently extending the excavations in the PCB Hotspot to remove more contamination, including lead contaminated soil in an area where batteries were disposed (see photo to the right).

Excavation of soil with lead contamination

What Navy cleanup actions have been completed at the landfill and in Parcel E-2 to date?

- Installed a sheet pile wall and groundwater extraction system in the southeast portion of Parcel E-2 in 1998 to keep PCBs from moving towards the Bay. The system operated until 2005 when the Navy excavated and removed the source of contamination.
- Installed a multi-layer cap over 14.5 acres of the landfill in 2000.
- Installed a landfill gas control and extraction system in 2002.
- Removed debris from the shoreline in 2003, including 81 tons of metal sent to a recycler, 52 dump trucks of non-metal debris, 344 tires and 10 cubic yards of material containing asbestos.

Old cables excavated from PCB Hot Spot shoreline area

Debris excavated from PCB Hot Spot

- Excavated 8,200 cubic yards (600 dump trucks) of soil, metal slag and debris from the Metal Slag area on the Panhandle in 2005-2006. The Navy found 32 radiological devices (glow-in-the-dark dials or markers) in this waste.
- Excavated 44,500 cubic yards (3,100 dump trucks) of soil and sediment containing PCBs, along with 110 buried drums, from the PCB Hotspot Area in 2005-2007.
- Currently excavating another 40,000 cubic yards (about 2,500 dump trucks) of soil from the PCB Hotspot and East Adjacent Area, where the Navy is removing soil with lead contamination from an area where batteries were disposed.

What about gases from the landfill?

The primary gases from landfills, including the one at Hunters Point, are methane and carbon dioxide that come from rotting material. Neither of these is toxic, though methane must be controlled because it is flammable. In addition, there are small amounts of other gases, called non-methane organic compounds. The Navy installed a cap over the landfill in 2000 to trap the gases, which are then captured for monthly testing. The gases are sent through a carbon filter that removes the non-methane organic compounds before venting them to the atmosphere. Navy tests have shown the gases do not pose a risk to the community.

What about dust and risk?

During soil moving, there is a risk of releasing dust that has chemicals and asbestos in it. The Navy follows an approved dust control plan that prevents public exposure to dust during earth-moving activities. Measures include containing soil to prevent contaminated dust from getting into the air. All trucks carrying soil on or off the Shipyard must have covers and truck wheels are washed or brushed off before leaving the Shipyard. The Navy continuously waters down any areas where soil is being moved to keep dust down. In addition, the Navy monitors the air around all of its active cleanup areas. Test results to date show no risk to the community or the workers. Results from dust monitoring can be found on the Navy's website: **www.bracpmo.navy.mil.**

What about earthquakes and liquefaction?

The Navy has done geotechnical testing of the landfill area and found a low likelihood for major soil movement, called liquefaction. Liquefaction and earthquake related effects are well understood in California. CERCLA, the "Superfund" law regulating cleanup at the Shipyard, requires an evaluation of nine criteria, including short and long-term protectiveness for any remedy proposed. Any remedy will be designed to be protective during and after an earthquake. If a landfill cap and revetment wall are chosen as the remedy, they will be designed and constructed with this in mind.

Can contaminants move into the Bay?

The Navy has completed a large amount of sampling in the Bay and did find PCBs at low levels in sediment near the landfill and the mouth of Yosemite Slough. The sources are private companies near Yosemite Slough and the PCB Hotspot along the shoreline of the landfill. The Navy is removing the PCB Hotspot and evaluating methods to dredge or clean contaminated sediments near Yosemite Slough and the landfill. The Navy has thoroughly sampled groundwater flowing underneath the landfill and has not found any groundwater plumes with contamination migrating towards the Bay.

What if there is a rise in sea level?

All Navy remedies at Hunters Point, including those proposed for the landfill, are designed to withstand potential sea level rise. Any capping remedy will have revetments and elevations that will account for significant sea level rise.

Will the landfill be safe for reuse?

The proposed remedy at the landfill includes an engineered cap, soil cover, and rock revetment along the shoreline. This proposed remedy is summarized in the Navy's Proposed Plan (included in this mailer) and will break the pathway to any contamination left beneath the ground. This action will protect humans and the environment for future reuse of the landfill site. The current projected reuse of the landfill and immediately surrounding area is open space, including a park and Bay Trail.

Where can I get more information about the landfill and Parcel E-2 cleanup at Hunters Point Naval Shipyard?

Information is available on the Navy's Hunters Point Naval Shipyard website: **www.bracpmo.navy.mil.**

Click 'Prior BRAC' at bottom of page, and then select 'Former NSY Hunters Point' from the 'Prior BRAC Installations', then scroll down and select 'View/Hide all Documents', then select 'Parcel E-2 Landfill' from the menu.

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You can also contact:

Keith Forman

Navy Base Realignment and Closure Environmental Coordinator
1455 Frazee Road, Suite 900, San Diego, CA 92108-4310
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Community Involvement Manager
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Information Line: (415) 295-4742
E-mail: Info@sfhpns.com

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NAVY'S PROPOSED PLAN FOR PARCEL E-2
HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA

REPORTER'S TRANSCRIPT OF PUBLIC MEETING

SEPTEMBER 20, 2011

City College of San Francisco
Southeast Campus
Alex Pitcher, Jr., Community Room
1800 Oakdale Avenue
San Francisco, California

Reported by Christine M. Niccoli, RPR, C.S.R. No. 4569

NICCOLI REPORTING
619 Pilgrim Drive
Foster City, CA 94404-1707
(650) 573-9339

P A R T I C I P A N T S

FACILITATOR:

MATT ROBINSON - United States Navy

U.S. NAVY PRESENTERS:

KEITH FORMAN - BRAC Environmental Coordinator

MELANIE KITO - Lead Project Manager

LARA URIZAR - Project Manager

---oOo---

REGULATORS & U.S. NAVY

AMY D. BROWNELL - San Francisco Department of Public Health

JOHN CHESNUTT - Environmental Protection Agency (EPA)

CRAIG COOPER - U.S. EPA

THOR KASLOTSKY - San Francisco Redevelopment Agency

JACQUELINE ANN LANE - U.S. EPA

GRACE MA - U.S. EPA

RYAN MIYA - California Department of Toxic Substances Control (DTSC)

ALEC NAUGLE - California Regional Water Quality

JIM SMITH - Bay Area Air Quality Management District

ROSS STEENSON - California Regional Water Quality

DEB THEROUX - United States Navy

AUDIENCE

TERRY ANDERS - Anders and Anders Foundation

JEFF AUSTIN - Geosyntec

DOUG BIELSKIS - Engineering/Remediation Resources Group

SAUL BLOOM - Arc Ecology

LANCE BURTON - Planet Fillmore

JEFFREY BUTRON - Costanoan Rumsen Ohlone

RONALD CAMESE - R. C. Camese Transportation

LINDSEY DILLON - U.C. Berkeley

GREG DOXEY - Osiris Coalition

MICHAEL ESH - Department of Defense (DoD) police

LARRY FRIAS - Waste Solutions Group, Bayview-Hunters Point (BVHP) resident

KAREN GAINES - Waste Solutions Group

PASTOR GAVIN

LEE GRAY - Lee G & Co. Inc

SUSAN GREEN - India Basin Neighborhood Association

ESPANOLA JACKSON - Muwekma Ohlone, BVHP resident

OSCAR JAMES - BVHP resident

JAMIE

ELL JENNISON

MINDY KENER - Anders and Anders Foundation

KEVIN LAWSON - Innovative Technical Solutions, Inc.

LESLIE LUNDGREN - CH2M HILL

AUDIENCE [Cont.]:

MACIU LYONS - SF SECDC

LAVONNE MOORE - DBEL Trucking Co./Enterprise

JOHN V. McCARTHY - United States Army Reserve (retired)

JEROME McGADNEY - City Build

LAWRENCE McGUIRE - Circlepoint

NEIL MacLEAN - Ohlone Profiles

MEI LEI

HANK NEWTON - Corporate Media Systems, Inc.

WILLIAM NICHOLSON - DoD police

SUDEEP MOTUPALLI RAO - Beautiful Communities

JOILEEN RICHARDS - Black Coalition on Aids

MARY JEAN ROBERTSON - Ohlone Profiles Project

RACHEL RUSSELL - Neighborhood Parks Council

ROYAL SCELLT - Royal Paint

JOHN SCOTT - Resident

CHERYL SMITH - Lennar

JOHN SOURIAL - Engineering/Remediation Resources Group

REX TABORA - Consultant

KEITH TISDELL - BVHP resident

REV. ARNOLD TOWNSEND - Without Walls Church, San Francisco Neighbors Association

SHAMANN WALTON - Young Community Developers

GWENDOLYN WESTBROOK - The United Council of Human Services

---oOo---

I N D E X

COMMENTS

---oOo---

SAN FRANCISCO, CALIFORNIA, TUESDAY, SEPTEMBER 20, 2011

6:32 P.M.

---oOo---

MR. ROBINSON: All right. Well, thank you very much, ladies and gentlemen. Thank you for coming tonight. I'm Matt Robinson. I'm the community involvement manager for the Hunters Point Naval Shipyard.

We're here tonight to have a meeting on the Proposed Plan for the Parcel E-2 section at the naval shipyard.

Here tonight to speak to you about the project is Keith Forman, the Navy's environmental coordinator; Melanie Kito, the Navy's lead project manager; Laura Urizar, another Navy project manager. Also here with us tonight are regulators who oversee what the Navy is doing at the shipyard.

I'm going to ask them all to stand up and wave, the people who are talking tonight as well. From the EPA, U.S. EPA, John Chesnutt, Craig Cooper and Jackie Lane; from California EPA, Ryan Miya; from the Water Board, Alec Naugle and Ross Steenson.

Now, for tonight the purpose of tonight's meeting, we're here to provide overview of the Proposed Plan for Parcel E-2 at the shipyard. We're also

accepting public comment tonight on the Proposed Plan, but you'll also have more time to put in written comments on the plan after this meeting.

Tonight we will also be, as I've said, presenting the Proposed Plan on Parcel E-2. Now, in the back, if you signed in, you can also get a copy of the Proposed Plan to read at your leisure after the meeting.

We'll also be giving you a chance after the presentation to ask clarifying questions on what you've seen and heard from the folks up here about the Parcel E-2 plan. You'll get a chance to ask them for clarifying questions. And then afterwards we'll have you come up. There will be a microphone up here for you to give comments about the Proposed Plan as well.

Now, tonight we want to make sure that everybody has a chance to speak if you would like to speak. And to make sure that everyone is heard, we also have some ground rules that we'd all like you to adhere to tonight.

First of all, we'd like to have you respect other people here participating in the event so not only they can hear what's going on and get a chance to talk with the folks up here about the E-2 parcel and their questions about it. We'd also like you to hold your

questions and comments until after the presentation is done and you've heard from the folks up here about what's going on at Parcel E-2.

We ask that when we have public comment and on clarifying questions that we speak one at a time. We'll have a microphone set up here for you to come up, give us your name, and spell it for the court reporter and be able to talk to the folks up here and do it one at a time.

And there will also be time for everybody to make comment. We want to hear from everyone here tonight who came out to talk about what's going on. We want to give you the opportunity to have some comments to speak to the Navy about the E -- Parcel E-2.

We're going to give three minutes per speaker. And after three minutes, we'd like you to move aside and let someone else have a chance to speak.

But we also want to hear from you if your comments are longer than three minutes. You can wait -- Please wait until the last person is done, and then come back up to continue your comments for another three minutes.

We also want to make sure that everyone is heard. When you come up for your three minutes, please don't give your three minutes to somebody else. If you

have a comment, please make it. Otherwise, let others have a chance to speak.

Also, we also have handouts in the back. If you -- As you sign in, we have a comment card. We have a Fact Sheet as well as Frequently Asked Questions sheet about the parcel that you can also take home and review it.

So now we will turn this over to Keith Forman about Parcel E-2.

MR. FORMAN: Okay. We good to go? All right.

All right. Thank you, everybody, for coming tonight. This is an important meeting for us and for you as we reach a point in the shipyard where we talk about Parcel E-2, which is known to many as the parcel on the shipyard where the base landfill is located. We're going to talk a little bit about the cleanup process.

Just so you know where this meeting tonight fits in, we're going to document the Proposed Plan handout that you have, where that fits into the process. We're going to talk about what we know about Parcel E-2 and why the Navy's in a position to make a recommendation now, a proposal to you and to regulators about what to do with Parcel E-2.

We're also going to talk a little bit about

site risks and how they factored into the decision-making process. And we are going to let you know what data the Navy has and what the Navy's done as far as early cleanup actions, many of which have already been done and some of which are ongoing.

And then we're going to look at the different choices for cleanup. They are called remedial alternatives. We are going to look at those choices and then -- and then tell you what we think the best choice is. We call that a preferred alternative. We're going to do that tonight, and we're going to tell you what the next step of the process is during -- of our presentation.

Then after that there's going to be two sections, one to clarify what we have said. You'll have an opportunity to question us. And then we'll take a break.

And then there will be comments for the record. Those of you who have been at these formal meetings before know that's your opportunity to comment for the record and become part of the process, and that's one of the reasons we have Christine here to record everything tonight.

Okay. Parcel E-2, if you see the map -- do we need to turn down the lights at all, or can everyone

see? Turn out some of the lights?

Thank you. Thank you.

Pardon?

Yeah. Can you see?

Okay. Is that a little better? Okay. I just want to make sure you can see, and I understand it's not the largest screen in the world, but I'm hoping that you can see this. Let us know if there's a problem with that, or you can move up closer here.

Okay. So we're talking about Parcel E-2. Parcel E-2 is located on the southwest part of Hunters Point. Many of you know where it is. If you're standing on the parcel, you'll look across that bay into Candlestick Park. And Candlestick Park, which is located over here [indicating]. This is Parcel E-2. It's about 48 acres; and out of the 48 acres, about 22 of those acres comprise the base landfill.

Okay. Little bit of history of this parcel. Parcel E-2 shares a lot in common with the other parcels that you might know about on the shipyard.

When the Navy first purchased the property in 1939, it was a rocky peninsula. There wasn't much to it. And over the course of the decades of 1940s, '50s and '60s, the Navy filled in the bay. It was a process that occurred year after year as the Navy built out the

parcels to form the base as we now know it.

And when the Navy was filling in this portion of the base, we have -- we have a lot of evidence to suggest what created this new land that jutted out into the bay; and it's soil, crushed bedrock, dredged sediments. Dredged sediments means things that came from the bay already. Construction debris, trash, and some industrial waste also fill out the volume of this portion of the base. We'll talk a little bit more about that and go over that for -- particularly for the base landfill.

So I want to show you some of the photographic record we have; and if you want to study this more intently, we have poster boards, poster boards over here that show you really sort of a chronological record of how Parcel E-2 was built.

So let's start with 1946. The 1935 shoreline -- I hope you can all see this in blue. Some of you -- some of you who are -- actually know about this is that's a natural shoreline.

Now, Parcel E-2 [indicating], the outline of Parcel E-2 is here. This is all bay [indicating]. This is a portion of the bay. It hasn't been filled in much. You can see, though, this east adjacent area is already built out.

So let's go to 1955. You can see there that there's been a lot of work to create new land. The east adjacent area again; but still this large section, it's water. But this panhandle area has been built out a little bit. You can see there's actual solid land here. This is not on the Navy base, but this part of the Navy base has been built out and so is this. And you can see that there's -- from the photograph there's been activity here too.

Let's go a few more years, 1965. You can see a big difference now. The Navy's been building out this parcel. The panhandle area has been completed. This area looks all filled in. Here is the bay out here. This area -- this area had to do with the radiological research program, and the Navy's going to do a separate investigation on that. This is in Parcel E-2. You can see how this has been built out, and this area as well has been all nicely filled in. But this area still remains water.

Okay. So 1969, four years later, you can see the Navy was busy filling in in this four-year period, and we are down to a drainage channel here. Everything else pretty much seems to be filled in.

And then finally, 1974. Unfortunately for many -- we talked a lot about this in the past -- 1974

is the year that the Navy officially closed the shipyard. Many of the shipyard operations went away in 1974. But this is what it looked like at the time. Parcels have been filled in, and the landfill is green here. This is the 22 acres that comprise the landfill -- the base landfill.

Okay. Now, a little bit about the process of where this meeting tonight and the document in your hand, the Proposed Plan, where that fits in.

The Navy's done a bunch of investigations. They have fancy names through the years: site inspections, assessments, remedial investigation, and the document where we looked at all the different options, and so we put them on the table. That's called a Feasibility Study.

But the important thing to really remember is the Navy's been at this for many years taking samples from the site, looking at the site, using instruments to monitor the site to learn more and more about the site; and that's because the regulatory agencies -- there's a number of them -- actually demand that we know more about the parcel.

So that's led us up to this moment. We're now in a position where we have enough -- enough data, enough information, enough history where the Navy can

look at all of the options of what to do and then pick one as a recommendation.

So we're here tonight to tell you what our recommendation is and give you an opportunity tonight and throughout the comment period here to give us input and the regulatory agencies input on what you think we ought to do. You also have an opportunity tonight to ask us questions about the presentation to learn more.

Now, after that we'll have -- after that the next step in the process will be the Record of Decision. That's the next document. That's basically where we go from a proposal to a draft document that suggests this is what we think we want to do; this is how we want to move forward. That's going to be incorporated, your comments.

So if you speak here tonight, Christine again will take that -- your comments down on the record that will become a permanent part of the record, a permanent part of the process.

The Navy's required to respond to each and every one of the comments, and you will get to see that in writing and become a permanent part of this Record of Decision. We anticipate this coming out in early 2012, and you'll get to see your comment and make or submit one later and see our response again.

After that in the process, when you have a final decision here, then you have to do a design. The design is for the actual details of how you're going to build the remedy and what it's going to be composed of, all the nitty-gritty details of what it really needs to do -- what we decide to do on the landfill.

And then the remedial action is when we go out and actually build a remedy for a period of years, and this is all to seek in the future site closure.

Okay. So what we know about Parcel E-2. That's just another picture of one of our workers out on the site on a field work project that's actually ongoing now, and that's one of the hot-spot areas where we have been digging up contamination, in this case, the contamination called PCBs. We're going to learn a little bit about what the Navy knows.

Okay. But first, this is -- these are the different areas that we refer to. When you read your handouts, your Proposed Plan -- if you don't feel like doing that and you just want to read the Fact Sheet that summarizes the Proposed Plan, feel free to do that. You should receive a copy of that. It's a summary of what the 28-page Proposed Plan says.

And it divides the parcels in different areas. This was for ease of investigation, also just to make it

easier to talk about the parcel, about the 48 acres.

So we've got the panhandle area I talked about. We have a specific recommendation we're going to make about that.

You have the landfill proper, I call it, because all of this is really landfill. But the actual base dump or base landfill is in this area [indicating].

And then you have the east adjacent area I talked about. There's contamination there the Navy knows a lot about that's taking some actions on that is separate from this landfill.

And then we have the shoreline area. We have worked some -- diligently on some projects for the shoreline area in order to remove contamination to be protective in this case of San Francisco Bay.

Okay. So previous investigations at this parcel. Now, it was considered when we make this presentation, how detailed do I really want to get? How much do I want to throw out document names? And I don't think that that's really so important as giving you a decent take-away that represents how much effort the Navy's put in and what the results have been.

We have been investigating this parcel for 20 years. 1980 to 2008 we've gathered a lot of data.

And when the Navy gathers data, we go out and check the soil not only on the surface, but at depth, by digging borings into it and taking samples and sending them off to a lab and then sharing that data in public documents that you can read. You can go to the San Francisco Main Library or -- and the regulators always check out. And we have been doing this for a long time.

We've also done trenches. Some of those trenches are in the landfill itself, and some of them are just outside the perimeter of the boundary of the landfill.

We have also done a lot of groundwater monitoring. And if you talk to folks who are in this environmental cleanup business or environmental investigation business, one thing that stands out to me is this is a 48-acre section of the base we're talking about. And look at what we've got here. Over this time period, we have put in 103 groundwater monitoring wells. That's an awful lot for 48 acres.

Now, the comeback to that if the Navy were to complain about this -- we are not -- is: This part of the base, this Parcel E-2, deserved that amount of attention. And it's been given over the years.

We also have 32 soil gas monitoring probes. That's fancy -- That's a fancy name for a place to

monitor the landfill gas that's generated by the landfill. Landfills generate landfill gases. It's one of the facts in the business that we deal with. And we have 32 monitoring probes currently, and you'll get -- when we get to our recommendations, we're going to put in even more.

Now, the subtotal of this is pretty important. And I don't want to bore you with too many numbers because most people don't really want to get into that too much. You can get further detail if you wish by reading the Proposed Plan.

But the take-away here is we have many, many soil samples, many groundwater samples, many radiological soil groundwater samples that the Navy has taken over the years in an attempt to be able to show the public and show the regulatory agencies that scrutinize this how much, if any, radioisotopes still exist in the soil of the groundwater out there. And we have taken a lot of outdoor air samples and landfill gas samples over the years.

So my take-away of this to you is the Navy has done a lot of investigation. We have a ton of data to support what's going on out there, and we think that makes us very confident tonight in telling you what our recommendation for moving forward is.

Okay. I want to show you this because it sort of graphically demonstrates some things about Parcel E-2. These are some of the data points that we posted just outside the parcel in the case of landfill gas probes in the compound near the landfill and then on the parcel itself.

Now, the density of the data points varies depending upon whether an area that has similar fill material and similar stuff that you've logged, results, versus an investigation where digging is occurring and then the sampling points are much closer together because when the Navy goes out and does some of these cleanup actions, we dig and sample and dig and sample and dig, sample. That's the way we do it.

But I wanted to show you that this 48 acres has been very thoroughly characterized. We have a lot of data to support putting together the picture, pieces of the puzzle, to tell us what goes on with this parcel and this landfill.

So some of the things we know about the landfill is what went into it. Well, we know that a lot of construction debris went into it: wood, steel, concrete, and soil.

And I actually was fortunate enough to be on the team and on the base at the time when we put in a

landfill gas barrier system. When we did that, we dug deep trenches for many feet along the western and northern boundary of the landfill, and it's a little bit like peeling it back and looking at the different layers of a sandwich. We were able to see what was in the landfill on the northern and western edges of it.

And that's not all you need to know and it's not the complete picture, but it gives you a pretty darned good idea, looking and peering in there, of what it looks like.

And what we found there is huge concrete slats that take up a lot of volume, a lot of metal ropes and a lot of -- a lot of metal rebar that's used in construction to reinforce concrete, a lot of things like that. In addition to that, a lot of wood, wood being decomposed and wouldn't even -- most of the time it's going to create landfill gas, and a lot of soil as well, not necessarily clean soil, but a lot of soil to fill in the gaps.

And again, this was part of the Navy filling in the volume part of the parcel, not just -- not just taking its trash out of the landfill. This site really is a mixture of that.

We also had a lot of municipal-type trash. You're familiar with that. It's the kind of trash that

any base would generate. They have housing areas on the base during -- during the heyday of the shipyard, and they also had a lot of offices there and a lot of industrial activity.

Now, the offices, as you -- as you know, know anyone in your family or friends who's been in the Navy, the Navy runs on a lot of paper. There's a lot of admin. There's a lot of that kind of stuff that's generated on the base. And this is one of the waste streams that went into the landfill.

We also have industrial waste, and this is important not to overlook. The Navy's not minimizing this at all. In fact, much of the sampling we had to do over the years is because there's this other category of waste coming off of the industrial activities on the base. And some of it, not all of it, but some of it ended up in this landfill.

That includes sandblast grit, sandblast waste from the ships that were pulled into the dry docks, and then paint was sandblasted off them while they were undergoing repairs and maintenance. Much of that ended up in the landfill.

Also some low-level radioactive material. We're pretty familiar with this because we have a huge radiological investigation program on the base.

And those of you who have followed this some years know the Navy has this very extensive and very thorough program that we executed since 2004 where we're going after any residual low-level radioisotopes, like radium, that could be left -- could have left -- been left on the base. And we know there is some of that there. That's not uncommon for a military landfill.

Much of it consists of dials and radioluminescent devices. Radioluminescent device is a fancy name for a glow-in-the-dark deck marker or a glow-in-the-dark dashboard dial where radium paint was used back in the day so that it glowed in the dark and would let the submarine sailor or a surface -- a ship sailor know what was going on in the night.

And to this day, Navy ships, they don't use radium paint for these devices anymore, but they have a lot of night -- night lights, a lot of glow-in-the-dark markers. We just simply don't use radium paint anymore to do that.

But that's -- that will be found in the waste stream of the landfill, also a lot of paint sludge because paint is involved. Paint and things like red lead and primers were used a lot on shipyards. Cleaning solvents, a lot of chlorinated compounds, a lot of things that were used to pickle metal and to degrease

things were also found on the base as well as waste soils and a family of chemicals called PCBs. Might have heard that.

PCBs were used in a lot of electrical equipment, like transformers, and basically they are coolants. They're just a liquid that was used in machinery to transfer heat from one location to another to cool it.

Do we use PCBs anymore? No. The EPA has determined that it's -- and a lot of these facts, the fact that it's a carcinogen, it's no longer used in our modern industry. But back in the day, 1940s and '50s and '60s, it was used, and there is PCB contamination in this part of the base.

Before I leave this too, I want to say that this photo -- I don't know how -- if you can see the details very much. But again, this is from one of the trenches, and it shows you a lot about metal rebar hanging out, a lot of paper and ash and par -- on parts of wood, things like that. That's very typical of what we have seen when we've gone into the landfill area.

Okay. For the next section, talk about site risk, I'll turn it over to Melanie Kito. She's the lead -- engineer lead project manager for the base.

MS. KITO: Good evening. My name is Melanie

Kito. I'm a lead engineer or project manager for Hunters Point Shipyard. I'm in charge of all the technical projects here. It's nice to see everyone here.

My slide here is "What are the site risks?" And I think this is an important slide, just to kind of take my time on a little bit. I think it's one reason why a lot of people are here is the Navy might say -- willing to say after the selected remedy is chosen.

So No. 1 is risk. What is risk? Now, remember, in life, everyone's always going to be at risk. It doesn't matter what it is. There's always going to be some type of risk.

I'm going to use the example of a Clorox bleach bottle, okay. Everyone knows what Clorox -- Clorox bleach is because we normally do laundry. Well, guess what, is also risk with it. If you inhale it, it's going to be -- it's going to be harm to you. If you put it on your hands, it's going to be harmful. If you drink it, it's going to be harmful.

Well, does that mean that you can't have it in your household? Absolutely not. Most people here actually own Clorox bleach. But everyone knows that it can be dangerous. Why? Be a little bottle. The bottle actually says: Don't inhale; don't drink this; don't

put this on your hands. And with that, it's okay. It's in a nice sealed sturdy bottle with a -- with a cap on it, and that's your remedy.

Your remedy is going to keep you safe. Can you still use it? Yes. Is there a risk? Yes. But it's still okay. So I'm going to kind of use analogies as I talk about risk a little bit.

Now, the figure that you see here is not considered our land. It's a typical landfill that we're looking at. And what the Navy does is very similar to a Clorox bleach, which is can people -- you know, is this safe for people?

Well, first of all, you have to look at your risk and then see what you're exposed to. So the risk with Clorox, if you're exposed to it, there's a risk if you inhale it. But let's look and stop the inhalation problem.

So we look at -- at a landfill; can people actually breathe in the vapors? If you have a landfill, ask what is in there. And as Keith Forman mentioned, we did a lot of sampling, since 1988 did a lot of sampling.

Well, this material will actually leach out or actua- -- dissolve into the groundwater and then eventually go into the well or the bay. Will it --?

Can it actually harm critters in the bay? We looked at that too. When you look at actually rains, will it go into the landfill, get contaminants into the bay or the wetlands, again, causing harm to the wildlife. We look at that. Can people drink the water?

So we look at all these things.

Now, the main thing we looked at when we choose a remedy is, number one, we want everyone to be safe, humans and the wildlife.

So enable to do that, you have to cut off the exposure. You have to make sure people -- take that Clorox bleach: Make sure you can't inhale, drink, put the Clorox on your hands. You have to cut off the exposure somehow. That's going to be your bottle. Institution controls basically is the -- is going to be the warning label on that bottle. Tells people what you can and cannot do.

Next, please.

All right. So on E-2 we have been doing studies since 1988; and with that when we actually sample something, you can see the density. I don't think you can remember how Keith had it. But the density of samples was in these areas [indicating].

The reason why there are more samples out in the areas is because you can see that there was a higher

risk. We actually found contaminants that were a higher risk, either PCBs or maybe it was a radiological concern, whatever it was. So what we did is we just removed them.

So -- and then this area -- it's green -- is called the metal slag area. This is an area that's full of metal, metal debris. It was a risk to the bay and actually has some radiological concerns there too. So we removed it.

Same thing with the PCB hot spot here, very high in PCB. It was too high to leave it there. It was too much of a risk. We removed that.

And then this area here in purple, a little purple here or there too, same thing: high contamination. And whenever I say this, as far as the Navy is, we're in collaboration with the regulators here, and together we decided it's too high of a risk not remove it, so we removed that as well.

And up here we have the landfill gas probes to make sure that methane isn't migrating in that area.

Now, one thing that's not on here but was on the figure that Keith had shown is all throughout here we've done radiological groundwater sampling too. So the one reason why we didn't do sam- -- do any type of a little work there is because it was very, very low.

There's no need to. Again, low risk, if none at all.

Next, please.

All right. These are just some pictures here, and this is what the PCB hot spot looked like at first. You can see there's a lot of junk here, junk. We didn't sample there. It was just too high. You can see how close it is to the bay here.

Next, please.

Afterwards we removed it, removed all of the contamination, which again lowers the risk; and that's what it looks like now. So it looks very good.

Next, please.

All right. So after doing all the sampling and you get your data, then you calculate it; then you have a whole team of engineers, scientists, risk assessors with the EPA Water Board, we actually determine that there should be five alternatives.

Now, five alternatives, you have to pick one. You see which ones -- let's see, is this one going to be better than the other? And you have to think of it as -- well, for us we picked five.

And you can see for No. 1, it's no action. Well, that's not one that we're going to pick. But you have to have a baseline that you go somewhere because you have to have your worst-case scenario. If you know

that there's a risk there and you do nothing, then what's going to be the baseline numbers to calculate from? That's why we always have that.

So the ones that we look at are going to be 2, 3, and 4.

Number 2 is going to be remove and dispose of everything in that landfill. Number 3 is to contain the landfill and also the areas -- remove some of the -- what, some hot spots, that need to remove the highest contaminated areas there, to remove high contaminated -- contamination around that area. And then 4 and 5 we're actually removing more contamination than you do in 3, and you also have some landfill -- I mean some wetland design as well.

Next, please.

All right. This is a comparison criteria. I'm not going to go too much into detail. It's a little boring. If you guys are really interested, you can look on page 15 of the Proposed Plan for detail.

But the main thing is -- I want you guys to know is that there's nine criteria here that we must actually go through. Now, all the alternatives, you see 1 and 2 here? Number 1 is probably the most important. Are we safe to humans and are we safe to wildlife? If the answer is no, it's out the door. So no action, we

do nothing, it's out the door. It's not even protective of humans and the environment.

Number 2 is another one. These are called the threshold criteria from the EPA, the EPA criteria that we use. And what that one just means is, are we actually going into all the rules and regulations? And again, that is no; it's out the door.

So 3, 4, 5, 6, 7 -- and 7 is a -- called short-term implementability. Those type of things are balancing criteria. So once we actually get some very good alternatives and now that balance, okay, which one is the right one we choose?

So then we have state acceptance. And then No. 9, which is community acceptance, why we're here today, we want to actually tell you all the things that we've done, all the calculations that we've done. We're going to actually tell you what we think is the best remedy, and then we want your input.

Next, please.

Okay. This is a comparison of alternatives, kind of like a consumer report. You guys have -- ever seen CONSUMER REPORT magazines? They have these pie charts here and, you know, on the pie charts the bubbles that are full, and there's bubbles that are empty here.

And it's a little deceiving here. You guys may

look at this and go, Wow, this remedy is really good and there's two really full. Well, you have to remember, though, this is going to be no action here.

So the short-term effectiveness is really good because you're not going to cause any harm to any construction worker because there is no construction work. You're not doing it.

Same thing with implementability. It's easy 'cause you're not doing it. So that's why it's full. And here it's nothing here because it's -- there's no long-term effect if you're not doing it.

So after getting all of those alternatives that I talked about, 2, 3, 4, and 5, the very bottom one, which is blue, is in the opinion of the Navy and all of our professionals and also the regulatory agencies here is the best one that should be chosen only because it protects human health and wildlife and lowers the risk significantly.

And you can see that the pie chart here, these are three quarters; this was half. And Lara will talk more about this in future slides.

Next, please.

Okay. So I'm going to hand off the microphone to Lara, who's a project manager for this project, and she's going to tell you about our preferred remedy.

MS. URIZAR: Okay. So as Melanie mentioned, Alternative 5, or Option 5, this is the option that we're looking at for cleaning up Parcel E-2, right? Five different ways we could do it, and this is the one that's the best way for cleaning up Parcel E-2, the Navy landfill.

Okay. And so this included containing the landfill, excavating and disposing of hot spots, so dispose -- excavating those areas and digging up the most contaminated areas surrounding the landfill, excavating and disposing of radioactive material that's near the surface, installing protective liner and soil cover over the remaining contamination, and then installing something called slurry walls to -- below-ground barriers, and this is to limit the groundwater flow.

And I'm just going to skim over this pretty quickly and show you some pictures and then to explain some of the components of this option so that you can better see what these mean.

Okay. Alternative 5, or Option 5. Option 5 also includes additional actions to protect humans and wildlife. That's -- So that's really why we're doing all this, because we want to be protective. Whatever we do, in the end when we're done, we need to make sure

we've been protective of humans and wildlife.

Okay. So we're going to remove and treat landfill gas. That's the methane gas that builds up from, like, the decomposing wood that might be in the landfill.

We're going to build a shoreline revetment. That's just a fancy word for a rock wall. So we'll plan on building a rock wall on the shoreline.

Build new wetlands, tidal and freshwater. I'll show you a picture of that in a minute.

And then we'll monitor and maintain the different parts of these preferred alternatives. So we're not going to just walk away. When the Navy's done, we will monitor this and make sure that it's still protective of humans and the wildlife basically as long as we need to.

And then we're going to use institutional controls, which basically just restricts specific land uses. So while it's likely good for a park, you're not going to be able to dig a well and have water, take a shower in it, and you won't be able to build a house there. But that's basically what -- institutional controls.

All right. So this is -- okay, they are showing some of the components, and it's a little washed

out, but here you have the tidal wetlands. We're going to build wetlands. We have freshwater wetlands, kind of in an inland area; the shoreline revetment, or the rock wall, along here [indicating].

And here's our landfill. So you'll see all these little squares. These are landfill gas extraction wells. So we're going to have many wells in place to extract any methane or other landfill gases to prevent those from migrating off the site and from going off the site. And we're also going to have what's called slurry walls. There's going to be one here and one here.

Oh, wait. Actually, go back one.

One of the thing that isn't on this is a hot-spot removal. And so if you look at these poster boards we have over here -- and you can't really see them right now, but after the meeting -- you can see where all the hot spots are going to be where we're excavating. And some of them Keith and Melanie mentioned they are going to take early action and take some of those more contaminated areas out, and those are areas that are surrounding the areas outside of the landfill.

Okay. So "Preferred Alternative" still. Okay. This is a picture actually of our current landfill cap. And the reason why I'm showing you that

is because it's basically going to look like this when we're done.

Here you have some fancy names, "Schematic of Future Landfill Cap." It's basically you imagine like a layer cake with the bottom layer being the landfill waste, which is, you know, mostly trash and debris, which is about, you know, up to 25 feet thick.

On top of that in 1974 when the Navy ceased operations at the landfill, they placed at least 2 feet and up to 5 feet of soil on top of that three.

And then on top of that, you have 2 more feet of soil -- it was placed in 2000 -- and a liner. And actually, I brought you a sample you can come and look at when the meeting is over at what the liner looks like. It's basically like a plastic liner, and then on top of it it's a drainage so that water comes down through that top layer of soil and hits that and it can drain off the landfill rather than going into it. So that's the liner material.

And then on top of that the Navy will bring in 2 feet, minimum 2 feet, of clean soil off the base that's been tested and it's clean, certified clean, to be put on top of that liner, and then the final ground surface, which you see there, and it will look pretty much like that.

Next.

All right. So here's the slurry wall. This is a picture of a slurry wall being constructed not on Hunters Point, but this is what it will look like. You have an excavator, and it's digging a trench along the line, and inside that trench is what's called soil-bentonite mixture, and that's just a fancy word for like a clay material mixed with sand; and that material is so thick that it helps prevent groundwater, which is the water that's underneath the ground, from flowing through it.

And here we have a typical cross section with the landfill, and you can see all the debris and the trash; and right here this dash line is where the groundwater is, right? So that's groundwater underneath the ground. And all of this debris is in groundwater.

And then here is soil-bentonite slurry wall, which is being built in this picture, and it goes down to the bottom of the base. And so this groundwater that's sitting here in waste has a harder time reaching the bay.

Okay. So these are some pictures. This is a picture of the tidal wetlands that's actually in the East Bay. But if you'll remember, we're going to be building also shoreline wetlands along the panhandle

area. So they'll -- they may look something like this.

And then here is the picture of the shoreline revetment. It's just a rock wall. And this is actually a picture of another site on the base that we just finished this year.

Next.

Okay. So why is this the preferred alternative? Well, it protects people and wildlife from being exposed to contamination that may cause unacceptable risk. It would remove and dispose of the hot-spot areas. So those more contaminated areas that were surrounding landfill will be excavated, dug up, hauled away, and taken off the base. And in fact, we've already done that.

We would remove and dispose of radioactive material near the ground surface, install soil cover, and this is actually a picture of a typical soil cover being installed.

We have landfill gas and groundwater controls -- those are the facts posed that I had showed you in the previous picture -- and the groundwater controls for the slurry wall. That would help prevent contact with remaining contamination.

And then we have long-term monitoring and maintenance. Once again, don't forget, the Navy's not

going to walk away. We are going to maintain this, keep it safe as long as it needs to be kept in place.

All right. So the landfill on the Navy base can be safely maintained because all of our investigations, all those samples that Keith showed you and talked about in numerous trenches, you know exactly what -- you know what the waste looks like, the soil samples that were collected, the groundwater samples. All of those show us that we know pretty well what's in the landfill.

We got construction debris, trash, industrial waste, and they're all very similar to landfills -- other landfills around the bay that have also been closed in place. So this isn't a new thing. We didn't invent the wheel here.

We have low-level radioactive waste that consists mostly of glow-in-the-dark dials that could be safely and easily managed in place. If you'll remember, those are just the painted dials to keep the sailors from tripping over their toes. So it's -- this is not high-level radioactive waste we are talking about.

And then we know that groundwater does not pose a major risk to humans and wildlife. We did a groundwater study in 2008 where we looked at radioactive chemicals, and we found no levels that impact people and

wildlife, and we did numerous investigations and would have seen it. We did not see high-level radioactive levels.

Okay. So the preferred alternative will protect people and wildlife. It's consistent with EPA national policy for keeping large landfills in place. It's similar to other landfill closures around the bay.

So the other thing I have to point out with regards to the second one especially is that we didn't do this in a vacuum. All these investigations over all these years, every step of the way we've worked and coordinated with the agencies, with the Water Board, with the Cal EPA and U.S. EPA. And they wanted more samples; we took more samples. We didn't move to that next step in the process until everybody on the team was okay with where we are.

So you still might be wondering, Why are we still digging it up? Alternative 2 was the dig the whole landfill up. Why are we choosing Alternative 5? Well, because Alternative 5 presents fewer short-term risks.

It -- If you think about it, you have to dig up all -- use Alternative 2, and you're digging up the landfill. That's over a million cubic yards. That's, I think, over 60,000 trucks would have to be driven

through the neighborhood for a minimum of four years. That would be smelly. It would potentially cause more risk to the community because you're digging up all the material.

So in the short term, it's much safer to contain the material in place.

All right. So what happens if Alternative 5 is selected? Well, the Navy will design and build a final remedy to control potential liquefaction after an earthquake. So if there's a big earthquake, all the components of the remedy, the rock wall, the soil cover, all these will be designed to be very robust and stand up to earthquakes.

We'll treat landfill gas.

Maybe you're worried about potential sea-level rise. We'll protect against that. And all that is designed to accommodate potential sea-level rise.

And then, again, we'll provide pedestrian access. So this area will be a park that can be used.

Okay.

MR. FORMAN: Okay. Thank you.

Okay. So what are some of the next steps in the process? Tonight we're going to hear clarifying questions, which are questions that are related to the presentation that you want to get a better idea about,

an opportunity to do that, as Matt Robinson indicated.

Also, we're going to have a part of the meeting where we take official comments where you -- they are not necessarily questions. You can take comment -- We will take comments down. Christine may ask you to spell your name and to speak a little slower.

But we want to get it down on the record, each of your comments, because, as I indicated earlier, they will become part of the process and part of the permanent record so that when we go to the next step, which is the Record of Decision, your comments will be there and our responses will be there, the Navy's responses, that is.

Public comments are due on this Proposed Plan for Parcel E-2 -- they are due October 24th; and then the Navy will start writing a Record of Decision and will release this document in early 2012, February-March time frame.

And the difference between Proposed Plan and the Record of Decision is, what we have recommended here tonight in the next document will actually say: Well, we feel this is the final choice. This should be final choice. And that comes out again in the Record of Decision document.

Then where many of the nitty-gritty details are

ironed out about what exactly -- what exactly the program is going to be like will be formed in the design, the remedial design, for the -- this parcel. And then and only then after that's been finalized and approved by the regulatory agencies will we then go out and construct what is chosen as the final remedy for this parcel.

So those are the future steps in the process.

MR. ROBINSON: Okay. Thank you, Keith.

So how can you provide a comment tonight? We got a couple of ways. One, you can submit questions in writing. We have provided comment cards out there for you if you want to submit your writing -- comments in writing, or you can speak to this group of folks up here, being able to ask them your questions yourself if you'd like to do that as well.

Also, after tonight what you can do is send comments in mail, E-mail, fax to Keith Forman. Also, we'd like to have these comments no later than October 24th.

Also, some of the other contacts available, which is on page 20 of the Proposed Plan, of course, is Keith, Craig, Ryan, and Ross, some of the people who were working on this project for a long time and can help you with any questions you might have.

Any additional information, if you want to look at the Proposed Plan but don't have a copy, you may have lost a copy, you can get other copies and read them at the San Francisco Main Library on Larkin or also go to the Hunters Point Naval Shipyard trailer office. The trailer office is right before the security gate, and you can go in there and look at the Proposed Plan if you'd like.

You can also find the Proposed Plan at the Navy's Web site. The Web site is up here as well. It's also in the Proposed Plan if you have a printed copy.

So now we will take a break and let all of you take a chance to digest what you've just heard. We'll come back with our clarifying questions, comments, if you'd like to ask for clarifying questions about what you've just heard. Please come back at 7:30. Okay. Thank you very much.

Also, while you are walking around if you'd like to talk to . . . One more thing, folks. During the break, go ahead and look at all of the posters up here, also have a chance to talk to the Navy or any of the regulators walking around.

(Whereupon, a recess is taken from 7:22 p.m. to 7:33 p.m.)

MR. ROBINSON: Ladies and gentlemen, let's get

started with the second portion of tonight's meeting. Take your seat. Thank you very much.

So now we are getting started on Part Two of tonight's meeting, which is the chance for you to ask clarifying questions for the presentation you just heard a few moments ago. Here's a chance for you to ask the folks up here what they may have meant by certain information.

Also, if you'd like, you could also pose your question to one of the folks, Melanie, Keith, or Laura -- Lara, to ask them what they meant by something they said earlier.

This is not a chance for you to make a comment about the E-2. We just want to help you clarify any questions you had about what you have just seen.

Now, we ask that if you have any comment -- clarifying questions, please step up to the mike, and please again go single file in line, and then go ahead and please ask your question.

Please state your name.

MS. JACKSON: Good evening. Thank you for coming. My name is Espanola Jackson, and I live here in the area.

One of the questions I did ask Matt but I will ask you the same question is why the police are here.

This is the first time that I came to a meeting and several police is out there; they say they came to contain Espanola, which is me. Okay?

Now, the question that I would like because it wasn't there, there was no talk of lead or asbestos in any of the talks that was made. You talked about the cleaning of the ship, the paint, this, that, and the other. Now, we all know from last time there was plenty of lead in all of the paint so -- that's in the ground. And I would just like to know why that was left out, paint and asbestos.

Thank you.

MR. ROBINSON: Thank you, Miss Jackson.

MR. FORMAN: Is this on?

MR. NEWTON: Yes.

MR. FORMAN: Okay. Espanola, thank you for coming and thank you for that question.

We didn't go through the long list of chemicals that are there. But you're absolutely right. Lead is there. There's an area, as -- As you stated, the shipyard used lead-based paint. They used lots of primers that were high in lead at the time, and that is waste that is included, really, within the whole paint waste streams in the landfill.

As far as asbestos, asbestos used to be used in

many ship activities on many ships and so on and so forth. And I'm sure there is asbestos in the land -- it is in the landfill, and it's another one of those industrial waste streams that is there.

There's also some specific areas outside of the landfill that have lead. We didn't go into the details of one of the areas, but let's see here, if I can go back. Okay. Well, this isn't working.

Pardon?

SPEAKER: (Brief statement off mike.)

MR. FORMAN: Well, no. I want to -- I just want to show a map so that I can show her a little bit of the detail of what we've done.

When it comes to elevated levels of lead, we have --

Well, further . . . No. Keep on going. Good. Right there. Okay.

Sorry about that.

Okay. So this area -- I believe is this area of elevated lead?

MS. URIZAR: Yes.

MR. FORMAN: Okay. There was, I believe, a battery disposal area there. That is one of the hot spots. We didn't -- You're ri- -- absolutely right; we didn't go into the details of what drove that hot spot,

what drove us to dig there.

We had elevated levels of lead, a lot of -- some other things too, that we dug out. And on a recent bus tour, we took folks to that area, to the pit that we dug there. This area has been dug up and hauled off. It had elevated levels of lead that we found, and that was one of the hot spots we've already removed.

Okay?

MR. ROBINSON: Any other questions, please step up to the mike.

MR. JENNISON: My name is Ell Jennison.

I heard the one la- -- Lara say that the remedy to extract everything would be -- would take four years to remove all the landfill, and you also said that it would also take 60,000 trucks to go through the neighborhood?

MS. URIZAR: Yes.

MR. JENNISON: Is that correct?

MS. URIZAR: Yes, a minimum of four years, yeah.

MR. JENNISON: Has it ever been proposed to take it out on barges out of the neighborhood and go ahead and extract? 'cause it seems to me that when you start extracting these hot spots and then you leave -- you have to put a barrier, that's necessary to put a

barrier before you can put the final landfill to have a park or whatever on top of it. Why hasn't that been analyzed just to go ahead and remove all this stuff and then be done with it?

MS. URIZAR: You know, I don't think we did barging. Did we?

MS. JACKSON: What are you saying? I can't hear you.

MR. FORMAN: Yeah, put it on.

MR. BIELSKIS: So as part of our evaluation, we looked at several different options for waste. Actually, one of them by rail. That was another way to, you know, minimize truck traffic.

But, you know, the analogy that Lara used in the presentation of 60,000 truckloads was just to give people a visual representation of what the option we looked at. Barging in this particular area, you know, is not -- you can't do it at the shoreline 'cause of the -- there's not deep enough water to bring a boat in.

So you have to truck it from one spot to a different location on the base, and it's more cost effective to simply look at something else, for example, extending existing rails where they're already relatively close to the -- to the parcel.

MR. FORMAN: So there's -- I mean, just to summarize here, there's a -- That is a good question. There's different ways you can do it.

The main point, though, in that alternative is that there's going to be exposure -- there's going to be exposure as you open up the landfill, and there's going to exposure during transportation phase of carting that waste from Point A to Point B. Even if you were to come in, that base is far too shallow to have barge operations.

But let's say that you did some trucking to some other point on the base that's deep enough. You barge it in across the bay. A truck is going to have to pick it up on the other end there. They are going to have to do something to still transport it to the legal authorized place for it to be deposited on another part of the planet.

In doing all of that, the take-away point is that there's a lot of opportunities for exposure to stuff that has been buried for a long period of time; and it's going to be many, many truckloads over an extended period of time.

So over that period of time, the community under that alternative would be exposed to things that they have never been exposed to before by the very

nature of having to dig things up, drag them out into piles, separate them, and eventually put them on something, whether it's a railroad truck or a barge temporarily or/and onto another truck to eventually get it to a land-based landfill some other place on the planet where it would then have to be put back into another landfill.

And now again, the whole take-away there is, you would have newly created exposure pathways over an extended period of time to cart the waste from Point A to Point B, and that was the Navy's thinking of why that's a disadvantage to that alternative.

MR. JENNISON: But hasn't the community been exposed when you've been trucking the stuff into the other hot spots through the community already?

MR. FORMAN: Well, what we do is we take -- we take a lot of time and -- to put together a plan to put the contaminated soil into a sealed bin, sealed truck, right, before it leaves the base.

That -- Now, what I'm talking about for exposure is not just the truck portion. The fact that if you had thousands and thousands of trucks and you apply statistics to that, there probably would be accidents that happen or other things that would happen if you're talking about 60,000 trunks.

But I'm talking really about the exposure that would occur when you dug up this incredible, you know, landfill, right, you would have to put out the waste on pads for an extended period of time. Much of the waste is below the groundwater level that you saw. So you'd have wet trash that would somehow have to be dried out and then would have to be handled and separated over an extended period of time.

The way we look at it is: This type of landfill doesn't lend itself to that type of operation. And the Navy's feeling is that we don't want to incur that additional risk or the potential for a lot of additional risk over that extended period of time.

You don't have that when you're digging in hot spots in relatively localized areas and then putting it into sealed trucks. You don't have quite the same exposure level.

You always have some risk attendant to any alternative. But in the Navy's view, the short-term risk and the additional exposure over time for the whole operation is a disadvantage to that alternative.

MR. JENNISON: Just one more question.

MR. FORMAN: Sure.

MR. JENNISON: Since it was a shipyard for gigantic ships and aircraft carriers --

MR. FORMAN: Sure.

MR. JENNISON: -- there has to be accessibility to the water for, you know, when you say it's low --

MS. JACKSON: I don't hear what he's saying.

MR. JENNISON: Where you say it's low -- low water for it to be -- it's not accessible for barges --

MR. FORMAN: In that --

MR. JENNISON: -- it seems like -- it seems like in that E-2 -- that F -- in the F -- F parcel --

MR. FORMAN: Yes, sir.

MR. PONTON: -- that area is probably contaminated too. So it won't hurt to go ahead and dredge that up and get rid of that material too, and then --

MR. FORMAN: That is --

MR. JENNISON: Then you would have accessibility to --

MR. FORMAN: It's a great point. That's another parcel; but you're right, there is contamination in the bay in that area that the Navy will have to take some action on in the future. We're not as far along in the process for that.

And as far as the barge operations, the potential barge operations you're talking about, I was pointing out that there's another part of the base

obviously where the deep ships came in where you could use barges conceivably, that's true.

But to get it from Point A to Point B on base, it would be a rather large trucking operation in itself. Even though it would be short hauls, you'd have to find a way to do that. And again, that's, again, another facet that we think is a disadvantage for this alternative. Okay.

MR. JENNISON: Just one more question. Just one more question I want to --

MR. FORMAN: Yes, sir.

MR. JENNISON: Just the fact is, would it be hard to seal off the whole --

MS. JACKSON: Could I ask, talk in the mike.

MR. JENNISON: -- to keep -- to keep the whole Navy yard sealed off until everything is completely cleaned up. Instead of trying to do it in piecemeals and have development here and there, why not just go ahead and have the whole thing sealed off until it is -- everything is clean, you know, and it has a -- and the Navy's been cleared and say they can move on instead of doing these developments, trying to get developments in and this fast track instead of having it completed -- the cleanup complete?

MR. FORMAN: That's a great question. Some --

some folks do believe that the proper approach to a base is to do the entire cleanup for every portion, every parcel, before you begin any kind of conveyance of the property.

MS. JACKSON: That's right.

MR. FORMAN: And I understand that, and I respect that viewpoint.

But currently the way the Navy's operating and not just on Hunters Point but on virtually every base that I'm familiar with is that when we finish the cleanup on other -- on a piece of land and we deem that that piece of land is ready, we then have to do a finding of suitability to transfer to see if it's safe to transfer.

If we get regulatory approval to do that and if we can demonstrate that it's safe to convey it, the Navy's position is that anything that's safe to convey will convey as soon as it is safe to do that.

The other approach would be for the base to sit there until the entire cleanup is done, which would be many, many years.

What Congress has told the Base Realignment and Closure Commission is: When possible and when done safely, we want parts of bases to be reintegrated into the community sooner rather than later, even if it's

portions of bases. So that's why the Base Realignment and Closure Commission across the country really operates the way we do.

But I do understand and respect that there are those who do not share that viewpoint and don't want anything done until the entire cleanup is complete everywhere. I understand that.

MR. JENNISON: Thank you.

MR. ROBINSON: Go ahead.

MR. TISDELL: Hi. My name is Keith Tisdell, d-e-l-l, and I'm a resident.

Keith, along the back wall where those air monitors -- the methane gas monitors was placed along the U.C. -- the back of U.C.S.F. and --

MR. FORMAN: Right. And, Keith, just -- excuse me. We'll just point this out so everyone can participate in this. You're talking about the gas probes here [indicating]?

MR. TISDELL: Yes, yes. Okay. Now, the Navy wasn't afraid to dig there and find out what was going on there.

MR. FORMAN: Right.

MR. TISDELL: Why should the Navy be scared to take out E-2? because you know -- you already know what's down there. It wasn't a risk factor to the

community when you was taking -- you know, building a trench and a slurry wall. But why would it be such of a big hassle to do E-2? That's just a question.

MR. FORMAN: Okay. Great question.

I think I probably need -- I probably should set the record straight and say the Navy isn't scared to do that.

But, Keith, one of the things that experience across the nation has told us is that landfills of this type, of this size, and of these contents can be professionally managed in place, in other words, contained in place, and that the pros outweigh the cons in doing that; that when it comes to the long term, that the best way is to professionally manage waste in place and to be responsible for where it was put.

Now, you always have to have a lot of data to support the fact that that's the right choice to make, and I think we do have the data to support that, both the groundwater and the soil.

So when you're talking about digging up the entire landfill, the question that I would have for you is, knowing everything up to this point that we know, what would be the driving reason to handle this landfill differently than many other landfills that fit this same profile across the country?

MR. TISDELL: One quick question.

MR. FORMAN: Sure.

MR. TISDELL: How many other landfills --?

MR. FORMAN: Keith, I'm sorry; but if you're going to ask a question, you have to go up to the microphone. I'm sorry.

MR. TISDELL: Say it different, how many other landfills are in, say, a sector like this in a black community? Is that a --?

MR. FORMAN: Well, okay. We're talking about a landfill -- let me -- if I could fill in some of the blanks. You let me know if I do a good job at this point.

It is a landfill that's perched on the bay like other landfills of San Francisco Bay and other bays. It's on a military base in a closed urban area. There's -- there's actually quite a few locations that fit that profile.

Now, the thing that we were looking for and that we have been doing investigation on since 1988 is, Do we know enough about this landfill? Do we have enough data to know that this landfill is the kind of landfill that could be professionally managed in place?

And I'm very confident in saying from the groundwater in the sense of work we've done around the

perimeter of the landfill from the 25 investigative trenches that we dug into the landfill, when you look at the different pieces of the puzzle that were provided to us over the years, we know enough to say that this landfill does not present the kinds of risks that can't be -- that cannot be designed for to be protective for the long term. And that won't be a proper way to address the situation.

MR. ROBINSON: Folks, we are -- want to make sure that you have any questions clarifying the presentation, so try to keep it to the presentation at this moment.

MR. FORMAN: All right. And I'm sorry, I'll try to make my answers more directed towards the presentation. Okay?

MR. McCARTHY: Yes. Given the graphics that we're seeing related to the different categories of remediation in this E-2 parcel site -- and I was active with the RAB before. My name is John McCarthy. I'm from the East Bay.

Anyway, there are two categories that I wanted to question. One is starting with the NRDL activity site in the panhandle area.

MR. FORMAN: Yes.

MR. McCARTHY: What information has been given

about monitoring what happens with that, with that area that the -- someone is responsible for concerning the NRDL activity in the panhandle? That's the first question regarding my first category.

The other question is that my understanding for over 15 years that there was a large drum area full of -- drums -- maybe 55-gallon drums --

MR. FORMAN: Yes.

MR. McCARTHY: -- that were full of contaminated material --

MR. FORMAN: Yes.

MR. McCARTHY: -- in the area that shows as the gas well monitoring area. I think that's where it was.

MR. FORMAN: Okay.

MR. McCARTHY: So what information has been provided relating to that drum storage area? So those are probably both questions related to the NRDL activities.

MR. FORMAN: Well, okay. Quite a few questions there, John. Let me -- let me go over a few things here.

This is the ship shielding area. You see this very interesting shape? That's the ship shielding area that you're referring to, which is the Navy Radiological Defense Laboratory site. That's going be to subject

to -- and -- its own investigation and removal action.

MR. McCARTHY: From who? From --

MR. FORMAN: From the Navy.

MR. McCARTHY: Okay.

MR. FORMAN: Yes. We're going to do that in the not-too-distant future. We've already laid the groundwork to be able to do that. Melanie has already laid the groundwork to be able to include that in the future budget. Well, we're going to actually go out there and do some significant studies.

Now, again, that's a specific part of the base.

MR. McCARTHY: Right.

MR. FORMAN: And we have a very, very good idea what's there. We have done significant removals in this area [indicating] --

MR. McCARTHY: Right.

MR. FORMAN: -- for the metal slag area --

MR. McCARTHY: Yeah.

MR. FORMAN: -- which had -- which had some elevated readings from some devices that were imbedded in molten metal.

MR. McCARTHY: Right.

MR. FORMAN: And so -- and there was also a lot of trash on the shoreline that we cleaned up, oh, quite a few years ago now.

MR. McCARTHY: Right.

MR. FORMAN: So, now, when you're talking about the nest of drums, 55-gallon drums, we found -- in our first large removal action for the PCBs along the shoreline here --

MR. McCARTHY: Right.

MR. FORMAN: -- we found a nest of 9 -- I believe it was 95 drums, 55-gallon drums, in about 2005, 2006 that we removed.

MR. McCARTHY: I think this was a larger accumulation of drums that -- than --

MR. FORMAN: Well, okay. If you can show me something that indicates that, because we were able to get our arms around that and actually remove every one of the drums in that area.

MR. McCARTHY: I've been looking for that documentation --

MR. FORMAN: Okay.

MR. McCARTHY: -- at the city library since they moved.

MR. FORMAN: Yes, sir. I can help you with that. That's -- It's a -- It's called a completion report. It's the completion report for the PCB hot-spot area in 2005, 2006.

MR. McCARTHY: And the other thing was related

to the graphics --

MR. FORMAN: Sure.

MR. McCARTHY: -- the nearshore -- there's a hot-spot nearshore area --

MR. FORMAN: Right in there.

MR. McCARTHY: -- and a hot-spot upland area.

And I'm wondering -- since I didn't see anything specific to the future monitoring for those two areas, I'm wondering what that is.

MR. FORMAN: Well, we have removed a lot off of that shoreline area: PCBs, gas and oil spills, elevated levels of lead, elevated levels of copper that we found. But that's also a continuing ongoing project.

What -- The largest field work project we had this year, in fact, is still ongoing. Lara's in charge of it. I think she's between 60 and 70 percent done with it where we are removing an additional 40,000 cubic yards to remove the contaminants from that area. So that's all going to be taken care of, you know, within the next six months.

And this again is the follow-on to what we started in 2005, 2006 where we removed 44,000 cubic yards of PCB contaminants, lead, copper, oil, and gas contamination that was in that shoreline area.

So we're -- the answer -- the short answer is:

We are removing all that before we put the rock wall in.

MR. McCARTHY: And then -- and then the upland area, the upland hot-spot area, which is adja- -- I think it's part of the east side --

MR. FORMAN: Yes.

MR. McCARTHY: -- adjacent area which is also a location of hot spot.

MR. FORMAN: We're right in there -- Right, and we've removed -- we have one of those areas that I showed you has PCBs that we removed, and another one is battery -- we think the battery disposal area where we found parts of batteries and elevated levels of lead in soil that we have removed very recently.

MR. McCARTHY: Okay. Thanks a lot.

MR. FORMAN: Thank you.

Okay. And again, Matt, I don't want to rush things here; but when it comes to questions, I think we need to somewhat keep to a three-minute rule on this so that we can get really the comments section where people can make official comments for the record.

MS. JACKSON: Well, don't you talk so long.

MR. FORMAN: Yes, ma'am. I'll take that advice.

MR. JAMES: Good evening, Keith.

MR. FORMAN: Good evening, Oscar. Good to see

you.

COMMENT

BY OSCAR JAMES:

My name is Oscar James. I'm a native of Bayview-Hunters Point. I was born on Navy Road.

MR. FORMAN: Yes, sir.

MR. JAMES: I seen all them Parcel E, E-2. I seen it fill. My father helped fill a lot of that. I had a uncle who drove the dump trucks down there who put a lot of those chemicals and those toxins there.

My father was one of the ones that put a lot of those barrels that were put in Parcel E-2, and they also put those same barrels out at the Farallon Islands where they -- the Navy did and then would perform experiments that were done in the old experimental lab in Hunters Point Shipyard where they had those dogs, and they would test them, put them in those barrels, and they would dump --

MR. ROBINSON: Sir, sir --

MR. JAMES: What I'm saying, I wasn't here -- I wasn't here for the presentation. I was at another meeting. I came here.

But I'm talking -- what I want to do, I want to make sure you do 100 percent clean, take out all those materials of Parcel E-2, make sure the community

truckers are allowed to do some of that work. I wish everyone is meeting from the community, from the city, write to you guys, stating that they want 100 percent clean and no cap at Hunters Point Shipyard.

When I was a little bitty boy, we used to look down, and that was a beach front before they started filling in. They used to have shrimps, trails, horses, and what have you like that --

MR. ROBINSON: I'm sorry.

MR. JAMES: -- down --

MR. ROBINSON: This is the question portion.

MR. JAMES: This is the question portion.

MR. ROBINSON: Did you have a question? Please ask your question.

MR. JAMES: My question is, All of the toxins have been down there, and you guys don't know what's been down there. I -- What my father told me and what my wife's uncle told me what was down there, Jack Jones, who was one of the truckers who did that, they took the materials out of 11 hospital [sic] into the shipyard that was toxic.

We had crab, shrimps, and oysters out there. And when they start dumping in the '40s, in the '50s, there were no more crabs out there. We want to see our crabs and our shrimps come back.

This was an industrial area where we selling shrimps. That's why they had the -- The Chinese had the shrimp farms out here, and they were getting shrimps out there. Soon as they start dumping, all of that left.

We want our community 100 percent clean. I'll be not here another 20, 30 years from now, but my grandkids is going to be here. I want to make sure they have the same opportunity, the same thing I seen when I was a little bitty boy.

Thank you very much.

MR. FORMAN: All right. Thank you, Mr. James.

Matt, I guess that really is more of a official --

MR. ROBINSON: Yeah, it's official question [sic].

MR. FORMAN: I just want to make sure.

So, Mr. James, that will be part of the official record.

MR. JAMES: Yes, sir.

MR. FORMAN: It won't -- Thank you very much.

MR. ROBINSON: We are in the question portion of the proposal that you heard. Please keep it to the questions for now. After we have the last question, then we'll move on to being able to give comments.

Thank you.

DR. RAO: Hello. My name is Sudeep Motupalli Rao. I'm a resident, and I reside right here in Bayview Hunters Point. I've served on the RAB before it was dissolved. I have four quick questions.

MR. FORMAN: Okay.

DR. RAO: There are two slides I'd like to refer to. One is the slide which has the meatball chart, I guess you call it.

MR. FORMAN: Hold on. We'll see how fast I am. I guess I'm not as fast as some folks. Okay.

DR. RAO: So I'm wondering, so there's a short-term implementability and short-term effectiveness and others.

MR. FORMAN: Yes.

DR. RAO: I'm wondering -- I know you addressed -- there was a question earlier a gentleman asked about instead of trucking the 60,000 that Lara mentioned truckloads of waste -- I mean, basically it wasn't a request. The community was saying we don't want to have something, you know, in the community which is a landfill.

So in terms of implementability as far as barging the waste out, does it change -- if we consider barging, does it change the chart significantly, or does

it change there at all? That's one question I have.

MR. FORMAN: Okay.

DR. RAO: Should I --?

MR. FORMAN: First question -- No. First question I would say is, it wouldn't change it at all because the short-term effectiveness would still be zero in -- in -- because you'd be still exposing. The key here is not the method of transporting from Point A to Point B or what most likely will be in the case of a barge or railway from Point A to Point B to Point C to Point D because you ultimately have to put this stuff somewhere.

DR. RAO: Yeah.

MR. FORMAN: So the idea is in the short term, you're not -- you're not being effective at all in decreasing risk. You are in fact increasing risk by the very nature of creating whole new exposure pathways by digging this stuff up.

And one of the Navy's contentions is, using the data, working with the regulators, is -- what we found is, the data strongly supports that the risk that we're finding, right, does not warrant a removal of -- of the waste, and that in fact getting to the point of getting the waste exposed and creating exposure creates a greater risk than professionally managing and containing

the landfill in place. That -- that is the Navy's position.

DR. RAO: Thank you.

And there's another slide. I think it's --

MR. FORMAN: Sure.

DR. RAO: -- Slide 33.

MR. FORMAN: Sure.

DR. RAO: This looks like this is what is going to be in place, construction debris, trash; and there's also going to be some low-level radioactive waste, maybe some dials there, that were not found through our sampling.

MS. URIZAR: Right. This is --

MR. FORMAN: Right.

MS. URIZAR: -- material that would be left in places in the landfill.

DR. RAO: So -- But the question I have is, Can you call this a closure of the landfill? I mean, this is maybe semantic, but --

MR. FORMAN: Sure.

DR. RAO: -- but I'm just wondering, can we actually call this a closure of the landfill? because we're still having this in place. Or can we call it sealing of the landfill? because we're not technically closing the landfill. That is just a question that I

have. I mean --

MR. FORMAN: No, great question. Okay. Yeah, it might be similar semantics. I think you've hit on a good point here.

It would be professionally managing the waste in place. That will go on -- Unless there's something dramatic as landfills age through the centuries, that would go on for as far as I can see. We would have to professionally manage it and have controls in place, and then we would have to provide data to indicate that it's operating properly and successfully; and we would have to continue to do that with regulatory agencies.

DR. RAO: That leads my -- The next point is if you have --

MR. FORMAN: Sure.

DR. RAO: -- we leave the landfill in place after cleaning it up as much as we can --

MR. FORMAN: Yeah.

DR. RAO: -- if we leave it in place it will be good for the community. I'm just wondering if it's possible to have some kind of a real-time monitoring so when you're going back, well, let's say walking that, Oscar James hit on a point very well. He served on the RAB with me. He said when he was a kid he'd travel.

I have a dream that we can have our children or

our grandchildren be able to swim around and walk around, eventually to figure out ways in which we can clean up whatever parcels left and other things, go in the bay so -- and had a desire to jump into the water, I know the risks involved.

So if there's a way, is there a way to have real-time monitoring where people, as they're walking by, they can say, oh, that alarm's not going off or that dial is green or --?

I'm just thinking, you know, thinking outside the box a little bit rather than wait for the samples to go out, et cetera, some way in which we can leave behind a monitoring active laboratory, small dials or some ways in which we can reassure in real time that, hey, things are in place and that we can walk by the beach; we can walk by that walk, things like that? I'm just wondering -- you don't have to answer it right now, but just real-time monitoring would be a --

MR. FORMAN: It's a good question. We have -- kind of have real-time monitoring.

MS. URIZAR: Well, and that's something that we can actually look at during the next step of the process, which is the design process, 'cause that seems like a really probably easy thing to look at, yeah.

DR. RAO: Dago Mary's where we had the meetings

was proposed at that time that it would be good to have -- use the Naval Shipyard as sort of a model museum of restoration, showing that, hey, we used best practices so that -- that means you have to use best practices.

And so the last and final point, somewhat technical, but if we are sort of using these dry -- wet slurry walls, I think it was -- wet or dry?

MS. URIZAR: They don't dry, particularly, yeah.

DR. RAO: Oh.

MS. URIZAR: They say --

DR. RAO: So --

MS. URIZAR: -- they're viscous.

DR. RAO: So if we use these walls, it's a desire to prevent any kind of transport between the landfill and the --

MS. URIZAR: Slow down, limit, not completely prevent, but to slow it down, yeah.

DR. RAO: Okay. So the question that I have is, Does it still allow to filter the toxic materials but not with water? But -- and you've answered the question that it does.

MS. URIZAR: Yes. Well, and we also have a revetment which also includes a very fine filter which

also keeps the contaminants that are attached to the soil and the sediment from flowing out into the bay. So, you know, there's -- there's two parts to the -- to the remedy.

DR. RAO: Thank you.

MR. ROBINSON: Any other questions?

MR. MacLEAN: Thanks for your presentation. My name is Neil MacLean. I've been a resident at Hunters Point. I'm currently from Mission and lifetime in San Francisco.

Despite that I -- in the presentation especially I was -- what I missed was an understanding of several things. One is sort of what is the -- what is the problems? Why -- It was almost like why is this designated a Superfund site? It was almost like it was a cleaned-over presentation in a sense. I didn't get what is the real risk that's ongoing.

And so one of the questions that I would come to is, like, what happened in 2000 when clearly it got out of control?

And following on that question, and why didn't we hear anything about that?

And why -- how do we know that it won't go out of control again? is sort of implicit in that.

And then following that also is that one of the

response to that, of course, was the citywide proposition around it, and the question I have there is, How do you feel your recommendation responds to that, as clearly people expressed at that time?

MR. ROBINSON: Do you want to answer those questions one at a time, Keith?

MR. MacLEAN: Okay.

MR. FORMAN: Well, sure.

Okay. When it -- when it comes to greater detail of the risk numbers, if you go to the handout in of the Proposed Plan itself --

Doug, you may have a copy that you can -- if the gentleman doesn't have it.

And you can go into great detail for the numbers. If you want to see the actual numbers of the risk as they can calculate it, yeah, many of them are in the Proposed Plan. Other than that, if you want any greater level of detail, you have to dig into other documents which you may or may not want to do.

But when you calculate risks, you use assumptions on what the risk would be if humans and wildlife are actually exposed. So when you calculate risk in risk as- -- and assess the risk in a risk assessment, which we did, you are looking for risk in worst-case scenarios that involve complete exposure

pathways.

When the Hunters Point Shipyard was put on the National Priorities List, which is referred to -- the nickname that is the Superfund, it was a compilation of the number of sites on the shipyard, I believe. It's a -- it's a function of addition. There are, I believe, 78 installation restoration sites on the base. And when it made the National Priorities List, it had fewer than that at the time because it qualified for it at the time.

But to be -- in this case for the shipyard to have been on the National Priorities List, it was a function of the number of sites, not any one site that was particularly toxic, which is another way to get on the National Priorities List.

I'm -- Let me see. Did I --?

MR. MacLEAN: Thanks for that answer.

MR. FORMAN: Sure.

MR. MacLEAN: Another part of that --

MR. FORMAN: Oh, Proposition P?

MR. MacLEAN: Sorry.

MR. FORMAN: Did you want me to respond to Proposition P --

MR. MacLEAN: Yes.

MR. FORMAN: -- question? That's a good

question. Mr. Bloom always brings this up, Proposition P, and others do too.

My answer to that is, the Navy's program is -- is very much targeted to working with the City and County of San Francisco. The City San -- and County of San Francisco set part of the agenda because what Congress has told -- in this case, the Navy, whatever branch for a particular base -- what Congress has told us to do is to work hand in hand with the local reuse authority, in this case the City and County of San Francisco.

When they put out a redevelopment plan or a reuse plan for the base, one of the things -- the target that we have to meet is our cleanup options are what we look at, and ultimately the cleanup decisions we make must be compatible with the reuse and redevelopment as proposed by the City and County of San Francisco. So the Navy has to meet that standard.

This additional standard that you're talking about, Proposition P, which I believe was a recommendation for the Navy to follow an even higher standard, is not something that we're required to meet. It was -- it was a recommendation.

And we understand that there's strong sentiment, particularly the way Proposition P was worded

or interpreted anyway, to clean up to an even higher level is one interpretation of it than is called for by the redevelopment or reuse plan. But we understand that. However, we are tied to and our cleanup program is very much tied to making sure that we meet the goals of the redevelopment and reuse plan.

So I guess in summary I can say it's sort of two ships passing in the night in terms of what a local vote would be and what the -- really the rules of the Navy follows, that Congress tells us to follow, to clean up a base and then transfer it to the City and County of San Francisco.

MR. ROBINSON: Okay.

MR. MacLEAN: Thanks. So that's clear, if I can summarize, it's that --

MR. FORMAN: Sure.

MR. MacLEAN: -- you're not responding to the proposition. You're saying that's --

MR. FORMAN: Right. The Navy -- the Navy in no way directly correspond -- directly tunes its program, I guess is one way of looking at it, with regard to that. We need official document in a community for reuse or the redevelopment plan, and then we work with the regulatory agencies and in this case the City and County of San Francisco to make sure that we meet the standards

of reuse and redevelopment. That's really our -- one of our missions.

Does that make sense?

MR. MacLEAN: Yes.

MR. FORMAN: And that may -- I understand fully that may not be a satisfactory response, but really that's one of the guidelines from Congress that the Navy has, the base realignment program.

MR. MacLEAN: There was a question in there too of what went wrong in 2000 that the fire started and all of that, that that -- it got so out of control? And so -- and how can we know that that -- and -- and how -- how has that been taken care of? I guess is the question.

And I -- if I could just also sort of tune that a little bit to say that one of my concerns -- I think other people's -- is the bay itself at this point. How do we know that similar things are not occurring in terms of leaks into the water, and what is the long-term monitoring that you're proposing to do? How will we actually know? He just said he'd like to swim there, and we would like to be -- I mean, it's clearly a potentially wonderful place.

MS. KITO: I'll try to make this as short as I can with the first, first of all, in 2000.

Landfills in general, one thing you have to -- every landfill is going to have to be monitored for methane. Methane's a gas that's produced once materials start decomposing. Normally it's going to be a wood or a paper material, and there are a lot of constructive wood, also paper from administrative things.

When it gets wet, groundwater goes up and down because of fluctuations of rainy season; that when it gets wet, that's what creates methane.

Now, in 2000 -- the landfill's closed in '76. A lot of time since '76 and 2000 had occurred; we had a lot of methane build up. If anyone has a compost, a compost can get really hot. That's what happens. It caught on fire.

What we did to remedy that is we put a cap on that. As with any fire, a fire cannot happen if it doesn't have oxygen. So you put a cap on top of it, a 2- -- in our case, it was a 2-foot cap; and we put a plastic liner on it. You cut the exposure; you cut your oxygen; there goes your fire.

So we will -- we have never had any flare-ups at all and we won't because, again, a fire can't happen with -- without an oxygen source. So -- so that's that one.

I think you had one small --

MR. MacLEAN: Well, it was about the water, and it's really the monitoring of the water that's going to be ongoing and it's about its safety and it's about the use of the shoreline; and --

MS. KITO: Yeah, and we have a long --

MR. MacLEAN: -- and considering the history of sort of at least that major error --

MR. FORMAN: Sure.

MR. MacLEAN: -- how do we -- how do we know?

MS. KITO: Sure. We have a monitoring system that -- it's called long-term monitoring. And we have to make sure that -- you're absolutely correct -- that we know for a fact that no contaminants will be actually migrating from the contaminated area into the bay, and that will be going on -- ongoing to the person who wants -- like Sudeep said, I want to go out there and eventually, you know, dive in the water; it may be contaminated.

Eventually we are going to be cleaning up the bay too and Parcel F. That's what we call Parcel F and actually say that that's going to be clean eventually as well. But we just haven't gotten to that point yet.

MR. FORMAN: Okay.

MR. ROBINSON: Okay. Before we go to our next question, let's take a ten-minute break to allow our

court reporter a chance to rest her hands, and then we will -- we will just take a quick ten-minute break.

(Whereupon, a recess is taken from 8:17 p.m. to 8:26 p.m.)

MR. ROBINSON: Ladies and gentlemen, we could get started again for folks to ask questions of the Navy. Please take your seats. All right.

MS. MOORE: Good evening. My name is Lavonne Moore.

MR. ROBINSON: Hold on. I'm sorry.

Let's get started for questions to be heard.

MS. MOORE: My name is Lavonne Moore, and I'm a citizen, a resident of the community, and self-employed here.

Prior to going into construction trucking, for 20 years I was a paralegal downtown. And cases that we handled were from the shipyard. We had 50,000 plaintiffs, most of which died.

But the ones that had the highest exposure levels to everything that's out there, "D" and "E" specifically, it was unreal. They lived a total of maybe two months.

I want to know, what have you done now to make "E" safer to go in as opposed to what was going on out there in '86, '87, '88, '89? I lost three uncles out

there to the exposure, and they were in "D" and "E."

Now, at the same time, there was, like, man, at least 150 law firms involved with these cases, but we were defendants, so they were suing us, so we had to pay plaintiffs.

It was determined in 1989 that Parcel D and E should never be touched, based on the IMEs that the plaintiffs were coming back with, the levels of asbes- -- I suppose asbestosis but from the asbestos, the mesothelioma, the upper respiratory problems. It was awful. I never seen anything like it in my life.

So now you're saying "D" and "E," we can actually approach those two areas? I mean, if we did investigation and stuff, 'cause we were the defendants, so we were trying to save money. So the first thing we needed to do is get investigators out there to really see what was going on.

We had plaintiffs from Mare Island and Oakland Army Base as well; but the Hunters Point Shipyard, Parcel E and D, and laid them out.

So I need to know what have you done that's going to make "E," I mean, accessible where people that have already died from this stuff? You're going to send truckers in there to move all the yards. Once you start digging and moving stuff, it's airborne. So what -- I

mean, how is this going to be handled?

We got this [indicating] Thursday at City Hall where a superior court judge has already ruled that the Hunters Point Shipyard parcels, until they are federally mandated, the remediation process has to be complete. He ruled that the City of San Francisco's redevelopment plan for the former Hunters Point Naval Shipyard, they failed to properly evaluate the environmental and health risk from allowing the Navy to transfer ownership of a contaminated Superfund site before the cleanup of the area is complete.

So we're talking vital now. We're talking serious at the areas. This other stuff I heard, truckers, is lightweight. I have truckers that have had heart attacks out there. They are bleeding from orifices. Now, we're talking about going into an area which they're not suited up either.

So whoever is responsible for that, Navy, EPA, my men need masks; they need respirators. They don't wear suits. All this stuff is being dredged up. It's airborne. So now we getting ready to go into "E" and then probably "D" next?

I know somebody -- The truckers are not responsible for our deal. I know that for a fact. So somebody in this room with a name badge on needs to take

a look at this, because I have a few truckers here I think you already know. They have been out there trucking.

But we had three guys that had a heart attack. One of them died. And then we have had another guy, he has constant nose bleeds. And they have gotten sick a couple days out there, and they have had to shut that job down.

Now, I don't know exactly where they are, but what I do know is they are in an area that would be a little more subtle than "E," and I guess after "E" you going to do "D."

So what I would request and I'd like to see is somebody directly from the Navy and someone from the EPA work closely with the community, because we do have truckers here that are certified for HAZMAT. They have got their credentials, everything through the EPA, Washington D.C. But it needs to be monitored a little better as far as what they are being exposed to --

MR. FORMAN: Yes, ma'am.

MS. MOORE: -- 'cause this one time Mr. Blankenship, he has a nose bleed every day.

So, I mean, you know, it really makes you wonder.

MR. FORMAN: Well --

MS. MOORE: So I'm hoping someone will take responsibility for that.

MR. FORMAN: Yes, ma'am. Okay. Here -- Thank you.

MR. ROBINSON: Your question for the Navy is . . . ?

MS. MOORE: Yeah. What you going to do? I mean, you're going into "E."

MR. FORMAN: Yes, ma'am. I think I got it.

MS. MOORE: Thank you.

MR. FORMAN: Thank you.

MS. MOORE: You going to answer?

MR. FORMAN: Yes, ma'am.

MS. MOORE: Okay.

MR. FORMAN: I think there's a lot here that you may not be aware of that we can make folks better aware of if they have an interest level that you've indicated.

And it's this: We very closely characterize a site before we go in and do any digging and hauling. We're required to do that. So we don't dig and haul in any areas where we don't already know the contaminants, the contaminant levels, and the areas of those contaminants that are going to be found.

When we do that, we have a dust -- a basewide

dust control plan which has to gain the approval of all the regulators, and that includes not only the U.S. EPA, the state EPA, California EPA, but also the Bay Area Air Quality Management District.

In addition to getting that plan, that dust-control plan, approved -- very stringent plan, I might add -- we have a representative from the area called Air -- from the Air Quality Management District in the Bay Area that is overlooking the operation. She's -- often spends all of her day on the base looking at operations in that area. So wherever we're digging, we do have oversight for that.

We're also required within the air-monitoring plans to present data, and we do so. If you go to our Web site, the Web site that's listed in the Proposed Plan, you can actually see the data that is posted on the Web site, the air quality data.

MS. URIZAR: So, Keith, I just want to . . .

We do test for asbestos, and I've had one really large construction excavation project on Parcel E-2, and we have not had a single exceedance of anything we tested for, and that includes not only asbestos, but rad and other chemicals that we're digging up there.

MR. FORMAN: Yeah.

So I think the good news is -- and I hope this is a satisfying enough answer for now. The good news is we have many plans in place, many controls in place; and whenever we do something like dig and haul, there's a lot of controls and a lot of supervision and scrutiny that the Navy gets not after the operation but actually while it's occurring, and that's the good news.

The other things you cited now of which I understand the heartbreak there; I understand the tragedy of having folks that have contacted these diseases, many of which are based on industrial activity and exposure. Much of which you were talking about, the methos- --

I can't said that word. Thank you.

-- and other diseases that are related to asbestos exposure did in fact occur and are connected to industrial activities during the shipyard operations.

That was when the operations for shipping and some repair were in full swing, which occurred from about 1939, 1940, up till 1974.

Those operations are long past since the shipyard's been closed. So we don't face that set of risks anymore.

What you were, I believe, referring to was the cap bins that were left in the soil and the

groundwater.

And again, just in summary, there's everything from dust-control plans, air -- air monitoring that's done along with very strict work plans that have to be approved by the regulators before the Navy can go out and address those problems. To date, it's usually been with -- with digging them up and removing them from the base.

So I am very confident that we do that very well and very successfully and that we are closely scrutinized every day that we're out there doing field work.

MR. ROBINSON: All right. Next question, please.

MS. ROBERTSON: Thank you for taking the time to answer our questions and our concerns. My name is Mary Jean Robertson, and I'm a resident of the city council.

And my question has to do with how you're doing this piecemeal, you know, like he was saying, doing Parcel E-2 and then ultimately going to do "F."

When, for example, the City decides that they are going to put in sewers and, you know, or electrical work or phone company, there are times when it feels like the street is torn up three times when it could

likely have been done all at the same time.

So when you do things piecemeal, like you were saying that you were going to do "F" after E-2, what happens when you're doing some dredging and found some difficulties and you're going to be dredging out the -- behind the -- under the water and then you're going to go right through E-2 with some more of that contaminated stuff after you've already cleared E-2? Do you see what I'm saying, you know? What's the planning on the process?

The second question that I have -- and you did mention something about how you were trying to work through this. But we are in one of the most seismically active areas. And not that many bases, although who knows, Washington, D.C., just -- the monument just cracked. So who knows?

But we are in very seismically active -- What -- what reassurances do we have that the capping is going to last longer than, say, ten years if we have a large major earthquake?

MR. FORMAN: Well, first of all, when it comes to seismic activity, the Navy will assure and the regulators will demand it that we do the proper studies and have enough information so that we know when it comes to the design phase how to design a remedy that is

going to be protective in this area. That's really a bottom-line requirement for it.

Now, today we have done something called -- there's a phenomenon called liquefaction that you might be familiar with. We have done a liquefaction study, actually, that was completed a number of years ago that looked specifically at the landfill in Parcel E-2.

In addition to that, Lara Urizar is doing geotechnical studies that involve soil borings and using sophisticated equipment in order to better refine these conditions there and then to use professionals in this field in order to determine what the risks are and then use further professionals when we construct -- design and construct a remedy to make sure that it is fit to a couple of different things, the seismic activities that you -- the maximum probable seismic activity you would encounter and also sea levelwise and also weather conditions.

So all that has to be taken into account in order to get a design approved by the regulatory agencies.

MS. URIZAR: We should also mention that once the remedy is in place and once the cap is in place, we have operation and maintenance ongoing. So people will go out and after a certain earthquake, 6.0 or whatever,

that will go out and inspect the ground and then look if there's a crack in the cover or if, you know, looks like it needs maintenance; and then we will do that and we'll fix it.

So that's been going forward through time to make sure that we are protective.

MS. ROBERTSON: What about the -- what about --?

MR. FORMAN: Madam, if you could go to the microphone.

MS. ROBERTSON: I'm sorry.

What about the -- doing Parcel F after E-2? Or, you know, what -- how did you plan how to do which parcel when? How -- and how is that affecting recontaminating the ones that are cleared?

MR. FORMAN: Okay. Well, certainly, it is never in anybody's interest, you know, not the community's, not the Navy's, not the regulators, to ever recontaminate an area.

And I can tell you I'm responsible for a lot of what goes on in the program; and if I recontaminate an area, I'd have some -- some definite questions to answer. So it's in everybody's best interest not to do that.

When you talk about doing the base "piecemeal,"

that's interesting. In a sense, we do that; but every month the Navy and regulators get together in an official meeting, and we look at the project as a whole. If you were to look at the base and we would talk about every parcel on the base today, you'd see that there's a lot of activities on many of the parcels that are going concurrently.

So we really don't piecemeal it in the sense that just one area is looked at at a time. But there is a limited amount you can do for a lot of good reasons at any one time. One of them's budget. You know, we have a very substantial budget -- cleanup budget on Hunters Point, but you don't have enough budget to do cleanup in one year or two years.

And the other thing is, you run out of area to do cleanup in. When you do cleanup, you have to have routes planned; you to have ways for trucks to get in and out; you have to have lay-down areas to screen soil, and then you have to have areas to store the clean soil because every time the Navy digs a big hole, it's required to fill that hole with clean fill.

So all of these things are real-estate demands. And if we were to show you a map that has all the screening yards, the lay-down areas, the places where the contractors have to work and put trucks and

the digging areas and the safety associated with that, we are doing so much on the base right now, we couldn't do any more projects right now if we wanted to because we've just run out of land in which to do it safely. We have to do it safely.

So we're doing a lot of things concurrently on different parcels, and we have been doing a lot of work over the last few years on "B" and "G" concurrently and on "D"; and the large project is the largest project this year, and it's -- it might be on E-2, but we also had a huge project removing major piers in Parcel F this year. So we did a lot in different places.

But we do get together with the regulators on a monthly basis, and we go over the program comprehensively just to make sure that we're doing it in the right order and doing as much as we can do and the right way to do it concurrently.

MS. ROBERTSON: Thank you.

MR. FORMAN: But I can assure you, a component of that is the regulators and the Navy looking always to make sure that we don't recontaminate an area. That within and of itself would be a serious mistake and cost a lot of extra funds in the outreach to go back and clean something up again.

MR. ROBINSON: Okay. Great. Thank you, Keith.

Let's go to our next question. Public comment or question?

MR. FORMAN: Right.

MR. ROBINSON: Have we any other questions about the proposal?

MR. FORMAN: Questions or comments. Yeah, again, I --

REV. TOWNSEND: I just have a quick question. I'll wait for the comments for comment --

MR. FORMAN: Okay.

REV. TOWNSEND: -- comment period for my comments.

But just real quickly, you mentioned --

MR. FORMAN: Sir, if you can state your name.

REV. TOWNSEND: Oh. Reverend Arnold Townsend.

MR. FORMAN: Thank you, sir.

REV. TOWNSEND: You mentioned earlier -- someone did -- about using liners, and I would like to know if that -- those -- if that technology has been used anywhere else in the Bay Area.

Hold on. And -- 'cause I'm going to let you answer both, and I'm going to sit down.

And then can you give me an idea of the shelf life of those liners?

Thanks.

MS. URIZAR: Right. So this [indicating] is an example that I showed you what the liners looked like, and it's called high-density polyethylene, HDPE. And then on top we have the dredge layer. And this is a very common material. It's used in every landfill anywhere after landfill is covered.

And I think that during our evaluation of how long this would last, it's hundreds of years. And the operation and maintenance period that comes after, we look at that, and so we'll see if it's starting to break down or there's settling. So, you know, if it needs to be repaired going forward, you would -- we would take care of that.

REV. TOWNSEND: Thank you.

MS. URIZAR: You're welcome.

MR. FORMAN: Thank you.

MR. ROBINSON: Thank you.

Any other questions about the Proposed Plan?

Okay. Then let's of move on to the next phase, which is our comment period. Here is your opportunity to give comment on the E-2 project.

Some basic rules again. For the comment period, we want to hold your comments to three minutes. We have a timer up here, and I will also be letting you know just as backup that we have two minutes, one

minute, 30 seconds as well.

So please will -- go ahead and line up if you'd like to start giving comment. And if you could, once again, please state your name and then go ahead with your comment.

If -- One more thing. If you have -- your comment goes further than three minutes, we'll have to stop you at three minutes and ask you to go to essentially back and let others speak. And then once everyone else is completed, you can resume your comments. Thank you.

COMMENT

BY SAUL BLOOM:

Okay. Good evening, folks. My name is Saul Bloom. I'm with Arc Ecology. Nice to see you all again. Thank you for having the hearing.

And I just want to say to begin with that Arc Ecology is formally requesting extension of public comment period.

THE COURT REPORTER: I'm sorry. Can you --

MR. BLOOM: I'm sorry.

THE COURT REPORTER: -- slow down so I can understand what you're saying, please?

MR. BLOOM: Arc Ecology is formally requesting an extension for public comment period.

20:45:53 I'm going to be fairly easy on my comments tonight because we're going to give extensive commentary in writing.

20:45:59 As you know, the best way to comment on Proposed Plan is to actually comment on the Feasibility Study. So we're going to be going back through the Feasibility Study. We're bringing our consultants in, and we are going to have a very, very thorough look at that.

20:46:13 But I want to point to the landfill cap construction 2000, 2001 because there's some historical inaccuracies in the statement. The statement says, "a protective liner and soil cover were installed over part of the landfill, about 14.5 --" [background noise]

20:46:39 THE COURT REPORTER: I'm not hearing you. I'm hearing other things going on. Covering part of the landfill what?

20:46:39 MR. BLOOM: Can I get my time back?

20:46:39 THE NAVY: Yes.

20:46:39 MR. BLOOM: Thank you. I'll just jump ahead.

20:46:41 (Reading:) The fire started on August 16th, 2000, and was extinguished at the surface within six hours, but small areas continued to smolder below ground for approximately one month. Because the

protective liner and soil cover limits the air from entering into the landfill, the effect was a smothering of any smoldering . . . below the ground.

20:47:03 The problem is -- is that the timing is not exactly correct. I have here the E-mail correspondence for Chein Kao from the Department of Toxic Substances Control. In that period of time, as you know, Chein Kao worked for Arc Ecology.

20:47:19 It shows that on -- as of September 11th, almost a month later, the Navy was first introducing the landfill expert to the public at this point. I know this isn't your problem because you weren't here at the time, so no reflection on you, but that just simply did not occur at that time.

20:47:39 If you jump ahead to September 12th, you have a letter from Dan Meer from the U.S. EPA, Mr. Chetnut's -- Chesnutt's predecessor; and he is talking about three weeks problem getting the Navy to respond to the landfill fire.

20:48:03 If you jump ahead to the 15th, you find the letter that the Navy is preparing an emergency removal action plan for the proposed cap at the time.

20:48:14 And so the timing simply doesn't work. You need to get that right.

And we all know that ATSDR began a program on -- in November that was finalized in December. And at that point, the land -- the air documentation came, and the Navy proposed in February that stopped sampling there; and in March it was announced. So thank you. That it was closed.

So I think the record needs to be adjusted to reflect that time line. It's easy to have it.

And the problem that I have with seeing an error like that is that it worries me about the rest of the analysis because it's a very, very simple thing to check.

I will come back at the end of public comment to make my second point. I should mention, Mr. Forman, I do like to speak about Prop P, and I will address that at that point.

Thank you.

COMMENT

BY REVEREND ARNOLD TOWNSEND:

Thank you. My name is a Reverend Townsend. I'm associate pastor at Without Walls Church, which happens to be located at 860 Innes Street, which is right down the block from the shipyards. So quite naturally, we have concerns, had concerns before we moved there. The concerns have only been -- have only

increased since moving.

I support the project, support the concept of the project, certainly. But I think it's simple to say that no one in their right mind, I hope, wants a project that is not clean and absolutely cleaned; and it is absolutely essential that you do it for the people of Hunters Point who have suffered and who have sat here all these years with the site that's basically not safe right now, a site that's basically not really clean right now. And folks are not quite sure how bad it is.

So we certainly need something to be done. The reality is we would just like to see it done right and want to make sure that there's some confidence given to the people that it is being done right.

So reality, once again, is that you need to make sure you go out of your way to assuage the fears and concerns of the people in the community and -- because the things that may seem clean to -- may seem clear to those of you who work in the process are not always as clear to lay people. So you need to take the time to work and spend the money to make sure that all the questions are answered and answered publicly.

Thank you so much.

MR. FORMAN: Thank you, sir.

COMMENT

20:51:08 BY ESPANOLA JACKSON:

Espanola Jackson again.

20:51:12 I would just like to say that I been to so many of these. In fact, I was at the beginning of getting the Navy to come and -- when I learned that this was a Superfund site here in Hunters Point. I been living here since 1943, all right?

20:51:37 What I've seen going on over and over again is that the little millions of dollars that Congress gives that clean the shipyard has been nothing.

20:51:52 2001 -- and I've talked to the city officials -- I even told you, sweetheart -- that the Navy should get together with our Congress persons because I felt when those planes hit in New York and Congress decided that they will spend $10 billion a month to fight a war over in the other countries, I'm going to say it again, I feel that you, Navy, along with the City, along with EPA and everybody else, should send to our representatives, which is Dianne Feinstein, Pelosi, and Boxer -- I called those names before -- that $10 billion one time be set aside to clean up that Superfund site because there's no way that -- there is no way them few little million dollars just goes straight to the surface.

20:53:23 I'm not going to fault you, baby, 'cause you

weren't here. I'm not going to fault anyone. But the thing of it is, it seems as though we cannot get together to said this is what the Navy need and how it is to be done. Maybe won't take $10 billion to clean the shipyard. Maybe it just takes 6 billion. But let's do something instead of just coming back, because you been here too long.

20:53:53 You know, when I went and found out that there was a need for a -- what was the name of that committee? When I went to the Navy, the Navy said that they had them in Southern California but that was done in Northern California. What's the name of that board?

20:54:09 MR. FORMAN: Restoration Advisory Board?

20:54:11 MS. JACKSON: Yeah, the RAB board.

20:54:12 MR. FORMAN: Right.

20:54:12 MS. JACKSON: I'm the one that requested and let them know to send a RAB board not only to Hunters Point, but at the day that I was speaking, the Presidio was in the process of closing.

20:54:24 Now, the honest side, if you -- the Navy started the same time. Honey, for the Presidio, what they had to do has been done. They got everything. Why don't we just come together here at Bayview-Hunters Point and do the same thing? That's all I'm asking.

20:54:43 And when you and my --

20:54:47 1 THE NAVY: Miss --
20:54:47 2 MS. JACKSON: Excuse me, baby. You just --
3 Hold it, honey, because, you see, I'm 78 years old. I
4 been living too long. And when I come here to speak,
5 I'm speaking for the rest of the people in my community
6 because you don't have that many people here from the
7 community, and you need to hear what I'm saying. And
8 I'm not arguing. I just want to make sure you all
9 understand what we are talking about.
20:55:09 10 I want to -- My husband was in the Navy. He
11 go back. And I was out there at the shipyard, and
12 everybody know that.
20:55:16 13 But I just want to thank you all for coming,
14 and please take under consideration what I'm saying
15 tonight about how we get it done of cleaning up that
16 shipyard.
20:55:29 17 Thank you very much.
20:55:30 18 MR. FORMAN: Thank you very much, Miss Jackson.
20:55:33 19 COMMENT
20:55:33 20 BY JEFFREY BUTRON:
20:55:33 21 My name is Jeff Butron. I spell my last name
22 B-u-t-r-o-n. I'm a Costanoan Rumsen Ohlone. I come to
23 represent my people today.
20:55:43 24 You know what? It's only apparent a lot of
25 people are really concerned about this cleanup here.

And it's kind of like cleaning the house. You know, when you clean the house and you sweep all the dirt underneath the rug, guess what: The house is still dirty.

20:55:56 And you know what? I think that we should take into consideration all the concerns that were said here today. But also, what my tribe is requesting, we're not taking -- asking for consideration. We're requesting. Since this was once occupied by our ancestors and, of course, there's a lot of shell still out there and there's probably some villages and there's also a lot of digging that's being dug up. What we're requesting is -- we're not asking for land, but we are asking for an easement.

20:56:26 An easement is basically to where our tribe and other Ohlone tribes and other California tribes and even other cultures of the other ethnic cultures can come and utilize this area --

20:56:38 I see your two minutes.

20:56:40 -- come utilize this area and so that they could actually have a ceremony and some kind of spiritual, you know, gathering together.

20:56:48 And like I said once before, we're not asking to take into consideration. We're asking for -- We're asking the question. Thank you.

20:56:57 1 MR. FORMAN: Thank you very much.

20:57:11 2 COMMENT

20:57:11 3 BY SAUL BLOOM:

20:57:11 4 Saul Bloom again for the record, Arc Ecology.

5 I just wanted to touch again on the Proposition P for a

6 second.

20:57:21 7 The reason why I spent some time talking about

8 the fire was because it was the Seminole event. It was

9 the event that made this community concerned about this

10 landfill more than any other event and scarred this

11 community and continues to scar this community today.

12 And Proposition P was now of that fire then.

20:57:41 13 Now, in Proposition P -- and I know because I

14 wrote it -- was focused on the community acceptance

15 criteria of the National Contingency Plan. There's no

16 opt-out in the -- in the NCP with regard to agreeing or

17 not agreeing. The Navy's required to look at this

18 modifying criteria. It may not necessarily abide by it,

19 but it is required to look at it and consider it duly.

20:58:09 20 But it's also based on BRAC policy, required to

21 look at reuse authority. The reuse authority is a --

22 powered by the Board of Supervisors of San Francisco.

23 And in August 2001, the Board of Supervisors adopted the

24 Proposition P as city policy. Proposition P was also

25 incorporated in 2004 as a conveyance agreement that the

Navy signed with the City of San Francisco.

20:58:34 And I should also mention that the 1992 Federal Facilities Compliance Act also followed the BRAC legislation, and so that further informed BRAC legislation, which again requires the Navy to follow all federal regulations.

20:58:52 Reuse plan for the shipyard is silent on the matter of whether or not the use has any effect on Proposition P, in fact. One could go ahead and remediate that site fully to Proposition P levels, and there's nothing to say that that will not be fully compliant with the use.

20:59:10 And there are long-term interests that people have within that site. In fact, the failure to provide Prop P guidance does in fact dictate what the City's options are with regard to future uses of that site. We can't do certain little things, wetlands and other activities on that site. They are required for excavation because it would violate the institutional controls and land-use controls and instruments the Navy plans to have in place at that site.

20:59:38 So Proposition P is an important thing for the Navy to take into consideration and to give its due weight too.

20:59:44 So again, thank you for your time, comments on

Proposition P.

MR. FORMAN: Thank you very much.

MR. JENNISON: Could I just make one --

THE NAVY: Yes.

MR. JENNISON: -- one quick comment?

COMMENT

BY ELL JENNISON:

And I -- and I kind of -- Ell Jennison.

I kind of brought it up in my question, but I think that there should be a total cleanup before the land is turned over to the City for redevelopment.

And I think that it is very important that these -- the high standards. And you are our Navy. You know, it's not like the Navy Navy.

And I -- and I think that we should realize that we're all in this together as far as not just the community but the whole nation. This is part of -- This -- this and the -- and the toxicity that was generated there in Hunters Point was to protect this country.

And so then I think it's important to realize that you are our Navy and that I think that you should stipulate to our city government that this is completely cleaned up before it is -- any type of development is allowed in that area.

21:00:54 Thank you.

21:00:55 MR. FORMAN: Thank you very much, sir.

21:00:57 MS. JACKSON: Very good, babe.

21:00:59 MR. ROBINSON: Any other --? Anyone want to make a comment on Parcel E-2? The mike is open.

21:01:15 Okay. Well, thank you very much, folks. Remember, the comment portion isn't over yet. You have until October 24th to make comments. The Navy will take the comments in the course and put them into the Record of Decision.

21:01:30 Any -- any words, Keith?

21:01:37 MR. FORMAN: Did someone ask for an extension?

21:01:41 AUDIENCE MEMBERS: Yes.

21:01:42 MR. FORMAN: Mr. -- Thank you. Did you quantify that extension?

21:01:48 MR. BLOOM: No. No, no. One of the concerns that we have, to answer your question, is that we know we have a mayor's race, and everybody's --

21:01:57 THE COURT REPORTER: I'm not hearing you.

21:01:57 MR. ROBINSON: Could you come up to the microphone and get it on the record?

21:02:01 MR. BLOOM: Yes, yes, yes. Sorry, sorry, sorry.

21:02:01 MR. FORMAN: Again, I'm sorry. Maybe I shouldn't have opened up --

21:02:03 MR. BLOOM: You know what, I just want to --
21:02:03 MR. FORMAN: -- open this one up because my sense of it is you did want some more immediate answer than you suggest.
21:02:09 MR. BLOOM: No, no. I mean, I'm perfectly happy to hear back from you about when you think -- you ask the question about why. One of the reasons why is, of course, we do the analysis where it's going to take us a little bit of time.
21:02:20 But the other part of the thing is -- is that we are in the middle of a mayor's race, and people are extremely focused on that race. And I had several meetings today where I talked to people about the fact that this is going on now. And they were, like, Oh, my God, it's the mayor's race. What am I supposed to do about it? So -- and that was at least three members of the Board of Supervisors.
21:02:40 So I think that these are things that we need to take into account. We have had many a time to look at, and that's all.
21:02:50 I understand that we need to be -- I -- you know, I wouldn't ask you to go up to the Thanksgiving holiday, of course. I don't think that's necessary. But I think sometime after the holiday would be appropriate so folks can then take a look finally and

say, okay, here's what, you know, we talked about. You have some time to respond then, and I think that would be very helpful.

21:03:13 Thank you so much.

21:03:14 MR. FORMAN: Thank you again.

21:03:17 MR. ROBINSON: Any concluding comments tonight?

21:03:18 MR. FORMAN: No. I think that --

21:03:18 I want to thank everybody for coming. I -- We realize this is on your time, and we really appreciate not only your interest; you listen to the presentation, but then offering questions and comments. We really appreciate that.

21:03:32 And I look forward to this being a continuing process. This isn't the last time you'll have a chance to interact with us.

21:03:41 And take -- please take the handouts with you, and you can reach me by cell phone, or you can reach me by E-mail. And please continue to interact with me, give me your input and hold my feet to the fire to get answers to your questions because I think that's one of our obligations here that we take very seriously.

21:04:00 And I want to thank you, once again, everybody, for coming tonight. I appreciate it.

(Off record at 9:04 p.m., 9/20/11.)

CERTIFICATE OF REPORTER

I, CHRISTINE M. NICCOLI, Certified Shorthand Reporter of the State of California, do hereby certify that this 112-page transcript of the foregoing meeting was reported by me stenographically to the best of my ability at the time and place aforementioned.

IN WITNESS WHEREOF, I have hereunto set my hand this _____ day of _____, _____.

_____
CHRISTINE M. NICCOLI, C.S.R. NO. 4569

Attachment 3. Responsiveness Summary

INTRODUCTION

The responsiveness summary provides the views of the public and regulatory agencies as expressed during the public comment period on the Proposed Plan, and documents how public comments were integrated into the decision-making process. Because of the large number of comments received on the Proposed Plan, this introduction summarizes the most commonly expressed views and the Navy's associated responses. This introduction is intended to facilitate a better understanding of how public comments were integrated into the decision-making process, but is not intended to replace the complete responses to each comment received on the Proposed Plan. The complete responsiveness summary immediately follows this introduction.

Issue 1 – Does the Navy know enough about the Parcel E-2 Landfill to select a remedy?

Yes. The Navy has worked closely with the EPA[1], DTSC, Water Board, CCSF DPH, and other project stakeholders for more than 20 years to obtain and evaluate data from the Parcel E-2 Landfill. Section 3 of the RI/FS Report (ERRG and Shaw, 2011) details the previous environmental investigations performed in and around the Parcel E-2 Landfill. During these investigations, the Navy installed 28 soil borings and 18 monitoring wells and excavated 25 test pits within the Parcel E-2 Landfill to evaluate the nature and extent of contamination. As demonstrated by the approval of the Final RI/FS by the EPA, DTSC, Water Board, and CCSF DPH, the investigations at Parcel E-2 have satisfied the regulatory stakeholders and have provided adequate data to support an informed risk management decision.

When the Navy began preparing the RI/FS Report in 2004, the first step involved evaluating existing site data and reviewing pertinent EPA guidance to develop a preliminary list of remedial alternatives for Parcel E-2. Based on the review, the Navy determined that (1) conditions at the Parcel E-2 Landfill support use of the presumptive containment remedy, and (2) conditions at the Panhandle Area, East Adjacent Area, and Shoreline Area do not support use of the presumptive containment remedy but, consistent with the streamlined approach outlined in the NCP preamble (55 Federal Register 8704-8705, March 8, 1990) and in EPA RI/FS guidance (EPA, 1988), support evaluation of remedial alternatives focused on containment and excavation. The Navy consulted with the EPA, DTSC, Water Board, and CCSF DPH during this initial stage and, based on their input and input from the community, determined that complete removal of the Parcel E-2 Landfill should also be evaluated as one of the remedial alternatives. This approach is consistent with EPA's directive regarding presumptive remedies (EPA, 1993b), which states that "*there may be unusual circumstances (such as, complex contaminant mixtures, soil conditions, or extraordinary State and community concerns) that may require the site manager to look beyond the presumptive remedies for additional (perhaps more innovative) technologies or remedial approaches.*" The information contained in the RI/FS Report demonstrates that Parcel E-2 is characterized adequately to support an evaluation of the focused set of remedial alternatives developed in consultation with the EPA, DTSC, Water Board, and CCSF DPH. In addition, the information contained

[1] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

in the RI/FS Report supports the use of the presumptive containment remedy for the Parcel E-2 Landfill and explains the relative risks of that option compared to complete excavation.

Issue 2 – Why was Alternative 5 selected instead of Alternative 2?

The Navy acknowledges the input from many community members expressing their support for Alternative 2 instead of Alternative 5. The Navy is obligated to consider the community's input regarding the cleanup decision for Parcel E-2 because community acceptance is one of nine CERCLA remedy selection criteria identified in the federal regulation called the NCP. As described on page 15 of the Proposed Plan, Criteria 1 and 2 (protection of human health and the environment and compliance with ARARs) are threshold criteria that each alternative must meet to be eligible for selection. Criteria 3, 4, 5, 6, and 7 are balancing criteria used to weigh major tradeoffs in the benefits and limitations among alternatives. Criteria 8 and 9 (state acceptance and community acceptance) are modifying criteria considered in the ROD.

The Navy's evaluation of the remedial alternatives is summarized on pages 15, 16, and 17 of the Proposed Plan. Additional information is included in Sections 2.8 and 2.9 of this ROD. In summary, the preferred alternative published in the Proposed Plan (Alternative 5) complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria. The Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The State of California, through DTSC and the Water Board, and segments of the community, represented by the SFRA and Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have concurred with the preferred alternative published in the Proposed Plan. In addition, the preferred alternative is generally consistent with Proposition P as explained on the following pages (under Issue 4). The information presented by members of the community that disagree with the preferred alternative does not justify modification of the preferred alternative based upon the "community acceptance" criteria of the NCP. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife.

Issue 3 – How are Environmental Justice principles considered in the remedy selection process?

The Navy and EPA are firmly committed to achieving the goals identified in the Executive Order on Environmental Justice (E.O. 12898) at HPNS. Both agencies are dedicated to consistent, fair treatment and meaningful participation in environmental decision-making for minority, low-income, and indigenous populations that are disproportionately impacted by pollution. The Navy and EPA, in performing environmental cleanup work at HPNS with support from DTSC and the Water Board, have worked together to achieve the environmental justice goals of fully protective cleanup actions, fair and equal treatment, and meaningful involvement for all people in the Bayview-Hunters Point community. Our efforts to satisfy these goals include:

- Substantial regulatory review and oversight of all Navy cleanup activities. The EPA, DTSC, Water Board, CCSF, California Department of Public Health, Bay Area Air Quality Management District, and San Francisco Bay Conservation and Development Commission all have dedicated significant additional staff to HPNS to ensure that the Navy's cleanup work is performed in a way that is protective of the Bayview-Hunters Point community and complies with federal and state laws and regulations.
- Substantial financial commitment from the Navy to HPNS cleanup. The Navy has spent approximately $716M over the past 20 years on the HPNS cleanup program, and these expenditures have made HPNS one of the nation's largest BRAC cleanup programs. The Navy's cleanup efforts to date have successfully removed, treated, or contained a significant volume of contamination that would otherwise pose an unacceptable risk to site workers and future occupants.
- EPA's Technical Assistance Grants to the Community.
  - Technical Assistance Grants (TAG). Since 1993, EPA has consistently provided various community groups with grant money to hire an independent technical advisor to review and provide independent input on the Navy's plans and reports, and to help further explain the Navy's cleanup work to interested community members.
  - Technical Assistance Services for Communities (TASC). EPA used its TASC contract program to provide the community with an independent asbestos technical expert to review the "Draft 2010 U.S. EPA's Review of Dust/Asbestos Control Measures and Air Monitoring at Hunters Point Shipyard Parcel A Report" and other supporting documentation. A community meeting was held where the independent technical advisor presented his findings. In addition, TASC services were used by the community to review the San Francisco Redevelopment Agency's Environmental Impact Report (EIR) for HPNS related to land use and site cleanup. The technical advisor presented formal comments to the CCSF and held a meeting to present independent findings to the broader community.
  - Region 9 Environmental Justice Grant for HPNS. Prior to the national program, the Region 9 EPA Superfund Program developed and awarded a "one-time" HPNS Environmental Justice Small Grant to encourage new activity or improve the quality of existing activities related to environmental justice and cleanup of the HPNS.
- Meaningful Community Engagement under the Navy's Updated Community Involvement Plan (CIP). The Navy updated their CIP in 2011 to present the communication and community involvement program activities that were designed to meet the specific needs and desires of the HPNS community (Navy, 2011a). The Navy conducts the following specific community outreach efforts in accordance with the CIP: (1) publishing an annual calendar of outreach events; (2) dedicating a Navy team member to serve as Community Involvement Manager; (3) publishing fact sheets on important technical topics; (4) holding regularly scheduled community meetings; (5) publishing an annual overview of the HPNS cleanup program; (6) regularly updating a hardcopy mail and e-mail distribution list to maximize communication; (7) holding periodic bus tours of HPNS to describe the cleanup program; (8) participating in local radio programs to answer questions from the local community; (9) presenting technical information to a variety of existing community groups; (10) making translation services available to interested community members; and (11) publishing notices in local newspapers to announce public meetings associated with important document reviews.

- Employment. The Navy works closely with their existing contractors to emphasize the importance of hiring community members to assist in the cleanup program, and works with interested stakeholders (such as the CCSF) to promote job training programs. These efforts have proven successful based on recent estimates—from 2009 to 2011 over 1,000 community members have been employed under Navy contracts (on either full-time, part-time, or temporary basis) to assist in the cleanup program. In addition, the Navy and their contractors have identified a large network of local businesses to assist in the cleanup program, such as those providing document production services, supplying building materials and consumables (drinking water and ice), renting heavy equipment, and transporting soil and rock. These efforts have proven successful based on recent estimates of over $11 million worth of goods and services from local businesses.
- Commitment to Protective Cleanup Actions. Most importantly, the Navy, EPA, and the State of California regulatory agencies are committed to fully protective cleanup actions at Parcel E-2 and throughout HPNS. As described in previous responses, the selected remedy for Parcel E-2 will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife. Since 2005, the Navy has undertaken a great deal of early action to remove contaminated soil at Parcel E-2, involving the excavation and off-site disposal of over 90,000 cubic yards (over 6,400 truckloads). For the Parcel E-2 landfill itself, the Navy, EPA, and State of California jointly believe that safely isolating and capping the Parcel E-2 Landfill (as specified in Alternative 5) presents less overall risk to the adjacent community when compared with the risks of other cleanup alternatives evaluated, including complete removal of the Parcel E-2 Landfill (in Alternative 2). The combination of removal and containment proposed under Alternative 5 reduces risk sooner, is easier to implement, and is much more cost-effective as compared with Alternative 2. In addition, Alternative 5 provides additional risk reduction as compared with Alternatives 3 and 4.

Issue 4 – How is Alternative 5 consistent with City and County of San Francisco Proposition P?

Proposition P was adopted by the CCSF Board of Supervisors in Resolution 634-01 in August of 2001. Although Proposition P does express a recommendation from the Hunters Point Bayview community for cleanup to a level allowing unrestricted use of the property, Proposition P also urges the Navy to clean up the shipyard in a manner that does not rely on future owners to maintain barriers to protect the public from exposure unless other remedies are technically infeasible. The Navy, in its RI/FS Report that was concurred upon by the other Federal Facility Agreement signatories, has determined that Alternative 2 (which involves excavation and off-site disposal of the entire Parcel E-2 Landfill) poses many complex engineering challenges and borders on being technically infeasible. In addition, Alternative 2 is not cost-effective pursuant to the CERCLA and NCP remedy selection criteria addressed in the Proposed Plan and ROD. The cover component of the containment remedy selected in the ROD is a barrier that will protect the public from exposure consistent with Proposition P.

Proposition P was later addressed in the "*Conveyance Agreement Between the United States of America Acting by and Through the Secretary of the Navy United States Department of the Navy and the San Francisco Redevelopment Agency for the Conveyance of Hunters Point Naval Shipyard*" executed on

March 31, 2004. Recital paragraphs 10 and 11 of the Conveyance Agreement referenced Proposition P and reiterated community support for cleanup to the highest level practical. Furthermore, Article 1(q)(iv) of the Conveyance Agreement specifically addresses Parcel E (which at the time of execution also included Parcel E-2) and states in relevant part: "*In any event, the remedies selected for Parcels E and F shall meet applicable Federal and State regulatory requirements, including the nine criteria set forth in 40 CFR 300.430(e)(9)(iii), one of which is community acceptance.*" Recital 10 also acknowledges that the Navy is required under CERCLA to take community acceptance into account in its cleanup decision. The Navy has done so in this ROD and responsiveness summary in accordance with CERCLA and the NCP and has also addressed technical feasibility and cost effectiveness in the ROD in a manner that is consistent with CERCLA, the NCP, Proposition P, the Conveyance Agreement, and the Hunters Point Shipyard Redevelopment Plan.

The Navy's environmental cleanup program at HPNS addresses the planned reuse outlined in the SFRA's amended Hunters Point Shipyard Redevelopment Plan (SFRA, 2010), which was approved 9 years after the adoption of Proposition P and 6 years after execution of the Conveyance Agreement. The Redevelopment Plan was initially approved in 1997 and adopted as the official Redevelopment Plan for HPNS by the CCSF Board of Supervisors (Ordinance 285-97 pursuant to Chapter 4.5 of California Community Redevelopment Law, California Health and Safety Code § 33492). The Redevelopment Plan was subsequently amended in 2010, and the selected remedy would accommodate the future reuses identified in the amended plan.

The Navy also notes that Proposition P is a local governmental resolution and is not a federal or state statute or promulgated regulation. Therefore, Proposition P is not a CERCLA federal or state ARAR for purposes of CERCLA remedy selection in Parcel E-2.

Issue 5 – How will the Navy involve the community during the design of the selected remedy?

Once the ROD for Parcel E-2 is finalized, the Navy will work closely with federal and state regulatory agencies, representatives from the CCSF, and members of the local community to develop a remedial design document. This document will identify the actions necessary to (1) properly implement the selected remedy for Parcel E-2, and (2) perform maintenance and monitoring of the remedy as long as necessary to protect people and wildlife and comply with the pertinent federal and state requirements (as identified in Attachment 4 of this ROD). The remedial design document will also include a detailed analysis of several important elements of the selected remedy that are of interest to the community, including:

- Shoreline Protection,
- Landfill Gas Treatment, and
- Liquefaction Potential.

The remedial design document will be submitted for review and approval by EPA, DTSC, and the Water Board. The Navy will also solicit comments from representatives from the CCSF and members of the local community.

Issue 6 – How will the Navy ensure that the selected remedy will protect people and wildlife in the long-term?

The selected remedy includes the following monitoring and maintenance activities that would be performed as long as necessary to protect human health and the environment and to comply with pertinent federal and state requirements (as identified in Attachment 4 of this ROD):

- Groundwater monitoring will be performed, consistent with the pertinent federal and state requirements, to verify that chemical concentrations in groundwater do not exceed concentrations designated by the RAOs at the compliance boundary.
- Landfill gas monitoring will be performed to demonstrate compliance with the pertinent state requirements.
- Stormwater and erosion controls will be installed and maintained, and stormwater discharges will be monitored as required under the pertinent federal and state requirements.
- The cover will be inspected and maintained to ensure its integrity as required under the pertinent state requirements.

The long-term monitoring and maintenance program will be detailed in the post-closure operation and maintenance plan for Parcel E-2, and submitted for review and approval by EPA, DTSC and the Water Board in conjunction with the remedial design. Regulatory oversight will continue during long-term operation and maintenance of the selected remedy. In addition, the selected remedy will be subject to statutory reviews every 5 years (pursuant to CERCLA) to ensure that it remains protective of human health and the environment.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Spoken Comments by Arc Ecology (Saul Bloom) at the public meeting held on September 20, 2011

Comment No.	Comment	Response
1.	(Reading from page 7 of Proposed Plan): "The fire started on August 16th, 2000, and was extinguished at the surface within six hours, but small areas continued to smolder below ground for approximately one month. Because the protective liner and soil cover limits the air from entering into the landfill, the effect was a smothering of any smoldering . . . below the ground." The problem is -- is that the timing is not exactly correct. I have here the E-mail correspondence for Chein Kao from the Department of Toxic Substances Control. In that period of time, as you know, Chein Kao worked for Arc Ecology. It shows that on -- as of September 11th, almost a month later, the Navy was first introducing the landfill expert to the public at this point. I know this isn't your problem because you weren't here at the time, so no reflection on you, but that just simply did not occur at that time. If you jump ahead to September 12th, you have a letter from Dan Meer from the U.S. EPA, Mr. Chestnut's -- Chesnut's predecessor; and he is talking about three weeks problem getting the Navy to respond to the landfill fire. If you jump ahead to the 15th, you find the letter that the Navy is preparing an emergency removal action plan for the proposed cap at the time. And so the timing simply doesn't work. You need to get that right. And we all know that ATSDR began a program on -- in November that was finalized in December. And at that point, the land -- the air documentation came, and the Navy proposed in February that stopped sampling there; and in March it was announced. So thank you. That it was closed. So I think the record needs to be adjusted to reflect that time line. It's easy to have it. And the problem that I have with seeing an error like that is that it worries me about the rest of the analysis because it's a very, very simple thing to check. [Refer to the transcript of the public meeting on pages 97 through 100 for the complete comment.]	The subject statement in the Proposed Plan correctly states that the surface fire was extinguished in 6 hours, but subsurface smoldering continued for approximately 1 month. This information was published previously in fact sheets prepared by the Navy (Navy, 2000a, 2000b, and 2000c) and a health consultation performed by the ATSDR[2] (2001). Information relating to the fire and associated response actions is provided in the document titled "Removal Action Landfill Cap Closeout Report." This document, which was finalized in February 2005 after review and comment by the EPA, DTSC, and Water Board, was provided as Appendix E to the RI/FS Report for Parcel E-2 (ERRG and Shaw, 2011). Based on this information, the Navy believes that the administrative record accurately reflects the timeline of activities regarding the landfill fire and associated response actions, and that no correction is required.

[2] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Spoken Comments by Arc Ecology (Saul Bloom) at the public meeting held on September 20, 2011 *(continued)*

Comment No.	Comment	Response
2.	Now, in Proposition P -- and I know because I wrote it -- was focused on the community acceptance criteria of the National Contingency Plan. There's no opt-out in the -- in the NCP with regard to agreeing or not agreeing. The Navy's required to look at this modifying criteria. It may not necessarily abide by it, but it is required to look at it and consider it duly. But it's also based on BRAC policy, required to look at reuse authority. The reuse authority is a -- powered by the Board of Supervisors of San Francisco. And in August 2001, the Board of Supervisors adopted the Proposition P as city policy. Proposition P was also incorporated in 2004 as a conveyance agreement that the Navy signed with the City of San Francisco. And I should also mention that the 1992 Federal Facilities Compliance Act also followed the BRAC legislation, and so that further informed BRAC legislation, which again requires the Navy to follow all federal regulations. Reuse plan for the shipyard is silent on the matter of whether or not the use has any effect on Proposition P, in fact. One could go ahead and remediate that site fully to Proposition P levels, and there's nothing to say that that will not be fully compliant with the use. And there are long-term interests that people have within that site. In fact, the failure to provide Prop P guidance does in fact dictate what the City's options are with regard to future uses of that site. We can't do certain little things, wetlands and other activities on that site. They are required for excavation because it would violate the institutional controls and land-use controls and instruments the Navy plans to have in place at that site. So Proposition P is an important thing for the Navy to take into consideration and to give its due weight too. [Refer to the transcript of the public meeting on pages 106 through 108 for the complete comment.]	As described on page 16 of the Proposed Plan, the community acceptance criterion is one of two modifying criteria and has been evaluated based on comments provided in the course of the CERCLA remedy selection process, including those received on the Proposed Plan, and other community input, including Proposition P. Consistent with the NCP [40 CFR § 300.430(e) and (f)], the Navy's evaluation of the community acceptance criterion is documented in this ROD, which includes the subject responsiveness summary. The Navy notes that the SFRA and the Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have concurred with the preferred alternative published in the Proposed Plan and their concurrence documents community acceptance. Proposition P was adopted by the CCSF Board of Supervisors in Resolution 634-01 in August of 2001. Although Proposition P does express a recommendation from the Hunters Point Bayview community for cleanup to a level allowing unrestricted use of the property, Proposition P also urges the Navy to clean up the shipyard in a manner that does not rely on future owners to maintain barriers to protect the public from exposure unless other remedies are technically infeasible. The Navy, in its RI/FS Report that was concurred upon by the other Federal Facility Agreement signatories, has determined that Alternative 2 (which involves excavation and off-site disposal of the entire Parcel E-2 Landfill) poses many complex engineering challenges and borders on being technically infeasible. In addition, Alternative 2 is not cost-effective pursuant to the CERCLA and NCP remedy selection criteria addressed in the Proposed Plan and ROD. The cover component of the containment remedy selected in the ROD is a barrier that will protect the public from exposure consistent with Proposition P.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Spoken Comments by Arc Ecology (Saul Bloom) at the public meeting held on September 20, 2011 *(continued)*

Comment No.	Comment	Response
2. *(cont.)*	*(see above)*	Proposition P was later addressed in the "*Conveyance Agreement Between the United States of America Acting by and Through the Secretary of the Navy United States Department of the Navy and the San Francisco Redevelopment Agency for the Conveyance of Hunters Point Naval Shipyard*" executed on March 31, 2004. Recital paragraphs 10 and 11 of the Conveyance Agreement referenced Proposition P and reiterated community support for cleanup to the highest level practical. Furthermore, Article 1(q)(iv) of the Conveyance Agreement specifically addresses Parcel E (which at the time of execution also included Parcel E-2) and states in relevant part: "*In any event, the remedies selected for Parcels E and F shall meet applicable Federal and State regulatory requirements, including the nine criteria set forth in 40 CFR 300.430(e)(9)(iii), one of which is community acceptance.*" Recital 10 also acknowledges that the Navy is required under CERCLA to take community acceptance into account in its cleanup decision. The Navy has done so in this ROD and responsiveness summary in accordance with CERCLA and the NCP and has also addressed technical feasibility and cost-effectiveness in the ROD in a manner that is consistent with CERCLA, the NCP, Proposition P, the Conveyance Agreement, and the Hunters Point Shipyard Redevelopment Plan. The Navy's environmental cleanup program at HPNS addresses the planned reuse outlined in the SFRA's amended Hunters Point Shipyard Redevelopment Plan (SFRA, 2010), which was approved 9 years after the adoption of Proposition P and 6 years after execution of the Conveyance Agreement. The Redevelopment Plan was initially approved in 1997 and adopted as the official Redevelopment Plan for HPNS by the CCSF Board of Supervisors (Ordinance 285-97 pursuant to Chapter 4.5 of California Community Redevelopment Law, California Health and Safety Code § 33492). The Redevelopment Plan was subsequently amended in 2010, and the selected remedy would accommodate the future reuses identified in the amended plan. The Navy also notes that Proposition P is a local governmental resolution and is not a federal or state statute or promulgated regulation. Therefore, Proposition P is not a CERCLA federal or state ARAR for purposes of CERCLA remedy selection in Parcel E-2.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Spoken Comments by Reverend Arnold Townsend at the public meeting held on September 20, 2011

Comment No.	Comment	Response
1.	I'm associate pastor at Without Walls Church, which happens to be located at 860 Innes Street, which is right down the block from the shipyards. So quite naturally, we have concerns, had concerns before we moved there. The concerns have only been -- have only increased since moving. I support the project, support the concept of the project, certainly. But I think it's simple to say that no one in their right mind, I hope, wants a project that is not clean and absolutely cleaned; and it is absolutely essential that you do it for the people of Hunters Point who have suffered and who have sat here all these years with the site that's basically not safe right now, a site that's basically not really clean right now. And folks are not quite sure how bad it is. So we certainly need something to be done. The reality is we would just like to see it done right and want to make sure that there's some confidence given to the people that it is being done right. So reality, once again, is that you need to make sure you go out of your way to assuage the fears and concerns of the people in the community and -- because the things that may seem clean to -- may seem clear to those of you who work in the process are not always as clear to lay people. So you need to take the time to work and spend the money to make sure that all the questions are answered and answered publicly. [Refer to the transcript of the public meeting on pages 100 and 101 for the complete comment.]	The Navy understands the desire of community members to have HPNS[3] cleaned up to the highest standards. The Navy also recognizes its responsibility to properly communicate the potential risks at Parcel E-2 to community members, and to answer all questions posed regarding the Navy's preferred alternative published in the Proposed Plan. This responsiveness summary is an important tool that the Navy uses to meet these obligations. The Navy understands the challenges of reaching out to the community and directly answering their questions; we continue to work on improving our CIP to help more people understand recommended cleanup actions at HPNS. The following paragraphs provide the Navy's responses to questions about the potential risks at and the degree of cleanup for Parcel E-2. The potential risks at Parcel E-2 are summarized in pages 9 and 10 of the Navy's Proposed Plan. Additional information is included in Section 2.5 of this ROD. In summary, the Navy estimated potential risk from exposure to contamination (based on current conditions if no action was taken) and determined that there were unacceptable risks that required remedial (cleanup) action. The Navy determined that Remedial Alternatives 2 through 5, once properly implemented, would each protect humans and wildlife from these potential risks. The EPA, DTSC, Water Board, and CCSF DPH have reviewed and have concurred with the Navy's findings. The Navy will continue to make its staff available to participate in various community outreach activities, and will answer questions regarding the cleanup process at HPNS (including Parcel E-2). The next community meeting is scheduled for April 2012, at which the draft ROD for Parcel E-2 will be discussed. Navy staff will be available at this meeting to answer questions about the proposed cleanup activities at Parcel E-2.

[3] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Spoken Comments by Reverend Arnold Townsend at the public meeting held on September 20, 2011 *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	*(see above)*	The Navy is obligated to consider the community's input regarding the cleanup decision for Parcel E-2 because community acceptance is one of nine CERCLA remedy selection criteria identified in the federal regulation called the NCP. As described on page 15 of the Proposed Plan, Criteria 1 and 2 (protection of human health and the environment, and compliance with ARARs) are threshold criteria that each alternative must meet to be eligible for selection. Criteria 3, 4, 5, 6, and 7 are balancing criteria used to weigh major tradeoffs in the benefits and limitations among alternatives. Criteria 8 and 9 (state acceptance and community acceptance) are modifying criteria considered in the ROD. The Navy's evaluation of the remedial alternatives is summarized on pages 15, 16, and 17 of the Proposed Plan. Additional information is included in Sections 2.8 and 2.9 of this ROD. In summary, the preferred alternative published in the Proposed Plan (Alternative 5) complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria. The Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The State of California, through DTSC and the Water Board, and segments of the community, represented by the SFRA and Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have concurred with the preferred alternative published in the Proposed Plan. In addition, the preferred alternative is generally consistent with Proposition P, as explained in the responses to comments from Arc Ecology (see pages 8 and 9 of this responsiveness summary). The information presented by members of the community that disagree with the preferred alternative does not justify modification of the preferred alternative based upon the "community acceptance" criteria of the NCP. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Spoken Comments by Espanola Jackson at the public meeting held on September 20, 2011

Comment No.	Comment	Response
1.	What I've seen going on over and over again is that the little millions of dollars that Congress gives that clean the shipyard has been nothing. …I feel that you, Navy, along with the City, along with the EPA and everybody else, should send to our representatives, which is Dianne Feinstein, Pelosi, and Boxer -- I called those names before -- that $10 billion one time be set aside to clean up that Superfund site because there's no way that -- there is no way them few little million dollars just goes straight to the surface. Maybe won't take $10 billion to clean the shipyard. Maybe it just takes 6 billion. But let's do something instead of just coming back, because you been here too long. [Refer to the transcript of the public meeting on pages 102 through 104 for the complete comment.]	The Navy has spent approximately $716M over the past 20 years on the HPNS[4] cleanup program, and these expenditures have made HPNS one of the nation's largest BRAC cleanup programs. The Navy's cleanup efforts to date have successfully removed, treated, or contained a significant volume of contamination that would otherwise pose an unacceptable risk to site workers and future occupants. The cleanups are consistent with the SFRA's Redevelopment Plan (SFRA, 2010). In addition, the Navy has worked closely with the EPA, DTSC, Water Board, and CCSF to investigate and study all of the contaminated sites at HPNS and make sure that these efforts are performed and documented to comply with federal and state regulations. The Navy will continue to work with the EPA, DTSC, Water Board, and CCSF, the community, and the congressional representatives from San Francisco to move forward with the cleanup program as quickly and efficiently as possible.

[4] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Spoken Comments by Jeffrey Butron at the public meeting held on September 20, 2011

Comment No.	Comment	Response
1.	I'm a Costanoan Rumsen Ohlone. I come to represent my people today. But also, what my tribe is requesting, we're not taking -- asking for consideration. We're requesting. Since this was once occupied by our ancestors and, of course, there's a lot of shell still out there and there's probably some villages and there's also a lot of digging that's being dug up. What we're requesting is -- we're not asking for land, but we are asking for an easement. An easement is basically to where our tribe and other Ohlone tribes and other California tribes and even other cultures of the other ethnic cultures can come and utilize this area -- and so that they could actually have a ceremony and some kind of spiritual, you know, gathering together. [Refer to the transcript of the public meeting on pages 104 through 106 for the complete comment.]	The Navy understands its obligation, as required by the National Historic Preservation Act, to consider and properly address potential impacts upon cultural resources at HPNS[5], including shellmounds from native people who used the land prior to the Navy's occupancy. To meet this obligation, the Navy, in consultation with the Advisory Council on Historic Preservation and State Historic Preservation Office, identified potential archaeological resources at HPNS and established a process by which all proposed underground construction must be reviewed to make sure that potential archaeological resources are not adversely affected. The Navy identified a potential buried shellmound in the northwest portion of Parcel E-2, but determined that the proposed remedial alternatives would not adversely affect this potential resource because the underground construction is limited to excavation of artificial fill and solid waste placed by the Navy and placement of clean imported soil. Further information is included in Appendix N (Section N3.4.1) of the RI/FS Report (ERRG and Shaw, 2011). Regarding the request for an easement, the Navy wishes to clarify that SFRA has identified the planned redevelopment and future use of HPNS in coordination with the Navy's cleanup program. As discussed in the Proposed Plan, Parcel E-2 is planned for open space use. The SFRA's Redevelopment Plan for HPNS states that the planned open space in Parcel E-2 may include recreational areas and plazas that will be open to the public (SFRA, 2010).

[5] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Spoken Comments by Ell Jennison at the public meeting held on September 20, 2011

Comment No.	Comment	Response
1.	I kind of brought it up in my question, but I think that there should be a total cleanup before the land is turned over to the City for redevelopment. And I -- and I think that we should realize that we're all in this together as far as not just the community but the whole nation. This is part of -- This -- this and the -- and the toxicity that was generated there in Hunters Point was to protect this country. And so then I think it's important to realize that you are our Navy and that I think that you should stipulate to our city government that this is completely cleaned up before it is -- any type of development is allowed in that area. [Refer to the transcript of the public meeting on pages 108 and 109 for the complete comment.]	The Navy understands the desire of community members to have HPNS[6] cleaned up to the highest standards. The Navy is obligated to consider the community's input regarding the cleanup decision for Parcel E-2 because community acceptance is one of nine CERCLA remedy selection criteria identified in the federal regulation called the NCP. As described on page 15 of the Proposed Plan, Criteria 1 and 2 (protection of human health and the environment, and compliance with ARARs) are threshold criteria that each alternative must meet to be eligible for selection. Criteria 3, 4, 5, 6, and 7 are balancing criteria used to weigh major tradeoffs in the benefits and limitations among alternatives. Criteria 8 and 9 (state acceptance and community acceptance) are modifying criteria considered in the ROD. The Navy's evaluation of the remedial alternatives is summarized on pages 15, 16, and 17 of the Proposed Plan. Additional information is included in Sections 2.8 and 2.9 of this ROD. In summary, the preferred alternative published in the Proposed Plan (Alternative 5) complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria. The Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The State of California, through DTSC and the Water Board, and segments of the community, represented by the SFRA and Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have concurred with the preferred alternative published in the Proposed Plan. In addition, the preferred alternative is generally consistent with Proposition P as explained in the responses to comments from Arc Ecology (see pages 8 and 9 of this responsiveness summary). The information presented by members of the community that disagree with the preferred alternative does not justify modification of the preferred alternative based upon the "community acceptance" criteria of the NCP. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife.

[6] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard		
Written Comments by Sudeep Rao received at the public meeting held on September 20, 2011		
Comment No.	**Comment**	**Response**
1.	We need to assess the feasibility and risk including short-term implementability of using barges to transport the wastes from Parcel E-2.	The Navy's RI/FS[7] Report considered a range of options to transport wastes from Parcel E-2, but the analysis focused mostly on a combination of truck and rail transport (ERRG and Shaw, 2011). Transport by barge was not evaluated in detail because of several factors, most notably: • Suitable dock facilities are not available near Parcel E-2, and the lack of nearby dock facilities would require picking up and moving the waste multiple times before loading onto a barge. This handling process would be significantly less efficient and more expensive as compared to truck and rail transport. • Relatively few licensed disposal facilities located in the western U.S. accept the range of wastes types that would be generated during cleanup at HPNS. None of these facilities are located close to waterways that allow for barge transport. As a result, the material to be transported by barge would also need to be picked up and transported significant distances by either truck or rail. This handling process would be significantly less efficient and more expensive as compared to truck and rail transport.
2.	I don't see how this is a plan for closure of a landfill when it is just a sequestered landfill. Radium dials, etc. are left behind.	"Closure" is broad term used in federal and state regulations regarding actions performed at inactive landfill sites to prevent exposure to buried solid waste. The most common closure action for large landfills (like that at Parcel E-2) is to contain and manage the waste in place, although complete removal is performed sometimes for small landfills. Based on the evaluation presented in the RI/FS Report and summarized in the Proposed Plan, the selected remedy for Parcel E-2 involves containment and professional management (including ongoing monitoring and maintenance in accordance with federal and state ARARs) of the Parcel E-2 Landfill.

[7] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Sudeep Rao received at the public meeting held on September 20, 2011 *(continued)*

Comment No.	Comment	Response
3.	Landfill cannot be hermitically sealed. So why not use permeable barriers that filter toxic materials but not water?	The Navy evaluated the potential contaminant migration pathways from the landfill waste to surrounding groundwater and San Francisco Bay. The site data indicate that the primary area of potential concern is along the Parcel E-2 shoreline, at the PCB Hot Spot Area and the adjoining portions of the Parcel E-2 Landfill located close to San Francisco Bay. The Navy evaluated the potential use of permeable reactive barriers to treat groundwater near the Parcel E-2 shoreline and determined that it was not a viable technology because of issues with its effectiveness, implementability, and cost in addressing the site-specific conditions at Parcel E-2. Additional information is provided in Section 11.5.5.5 of the RI/FS Report (ERRG and Shaw, 2011).
4.	If we leave a landfill in place, we need real-time monitoring. Can this be made a reality?	Certain types of contaminants (for example, methane in landfill gas) can be monitored in real-time using field instruments. However, other chemicals in landfill gas and groundwater require collection and analysis of samples at a licensed laboratory to obtain data that meets federal and state requirements for quality and accuracy. Accordingly, with the exception of some landfill gas monitoring, real-time monitoring is not currently a viable option for long-term monitoring at Parcel E-2. The Navy will evaluate the best available technologies when developing the long-term monitoring plan for Parcel E-2 (after the ROD is finalized and in conjunction with the remedial design). In addition, the Navy will reevaluate the monitoring program on a regular basis to ensure that activities are being performed as efficiently as possible. As previously discussed, professional management, including ongoing monitoring and maintenance in accordance with federal and state ARARs, is an essential component of the selected remedy for Parcel E-2.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard		
Written Comments by San Francisco Department of Public Health (Amy Brownell) received on October 5, 2011 via e-mail		
Comment No.	**Comment**	**Response**
Introduction	**Proposed Plan for Parcel E-2, Hunters Point Shipyard, dated September 2011** The San Francisco Redevelopment Agency through the San Francisco Department of Public Health and its consultants, Treadwell and Rollo, have closely monitored the Regulatory Agencies' oversight and the Navy's investigation and cleanup of the Hunters Point Shipyard including Parcel E-2 for the past 18 years. We have reviewed many technical documents written about Parcel E-2 (Attachment A). Based on our review and involvement in this process, it is our opinion that the Navy has adequately studied and understands the nature and extent of the contamination on Parcel E-2 and that the remedial alternatives listed in the Parcel E-2 Proposed Plan are, in our technical judgment, feasible and follow accepted scientific understanding and industry standards for the range of possible remedies for dealing with the contamination at Parcel E-2. We support the process being implemented by the Navy and the Regulatory Agencies to select a preferred alternative that best meets all CERCLA criteria. We strongly encourage that substantial consideration and weight are given in this process to input from the public and all stakeholders. **We have a few technical comments on some elements of the Alternatives as follows:**	The Navy understands its obligation to consider the community's input regarding the cleanup of Parcel E-2. The Navy's evaluation of the community acceptance criterion is documented in this ROD[8], which includes the subject responsiveness summary.
1.	Where feasible and practical, we support the removal of contaminants to off-site disposal facilities to facilitate the intended reuse of the property as set forth in the Hunters Point Shipyard Redevelopment Plan, amended August 3, 2010.	The Navy's selected remedy incorporates excavation and off-site disposal in areas that pose substantial risk to humans and wildlife, with remaining contamination being safely contained to facilitate future use of Parcel E-2 in accordance with the Hunters Point Shipyard Redevelopment Plan (SFRA, 2010).

[8] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by San Francisco Department of Public Health (Amy Brownell) received on October 5, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
2.	We support the use of land use and activity restrictions, as needed, in order to protect the remedies and public health and the environment. We look forward to working with the Navy to design land use and activity restrictions that will allow for full use of the property for the intended use without an undo burden on the local government or other future property owners.	The Navy will work closely with stakeholders from the CCSF to develop a LUC RD for Parcel E-2. The LUC RD will build upon similar documents developed for other HPNS parcels and will identify the actions (including inspections, enforcement, and reporting) necessary to properly implement land use and activity restrictions at Parcel E-2. The LUC RD will also identify the roles and responsibilities of federal, state, and local government in implementing the land use and activity restrictions at Parcel E-2.
3.	For the wetlands design, as long as the sediment contamination issues have been adequately addressed by other elements of the remedy, we encourage the selection of an alternative that allows for construction of unlined wetlands because it will allow for better freshwater interaction with groundwater which might make the wetlands more sustainable in the long run. We look forward to the Navy's further analysis of the design of the wetlands in the Remedial Design process.	The Navy's selected remedy includes restoration of tidal and freshwater wetlands without a liner (to promote a more natural hydrologic function within the wetlands and underlying groundwater). As noted in Section 14.1 of the RI/FS Report (ERRG and Shaw, 2011), additional analysis would be performed during the remedial design to verify that the net inflow of potentially contaminated groundwater into the proposed freshwater wetlands would be negligible.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Francisco DaCosta received on October 24, 2011 via internet blog posting (*http://www.franciscodacosta.com/articles/bayview168.html*)

Comment No.	Comment	Response
1.	The United States Navy has harmed millions of people all over the world. In recent times using missiles and other dangerous bombs sometimes with justification at other times without. It is no exception at Hunters Point Naval Shipyard - in San Francisco at Bayview Hunters Point. The U.S. Navy took a large area of land over 800 acres by eminent domain as part of its World War II operations and contaminated pristine land. It filled the pristine wetlands and destroyed two hills containing serpentine rock, crushed the rock containing and released Asbestos structures and spread the contaminated material all over Hunters Point Naval Shipyard - as part of the fill in operations and created of the piers and naval operations. The United States Navy known well for its "jettison orders" from around 1850 to late 1970s continued to contaminate the entire Hunters Point Naval Shipyard. When the U.S. Navy shut down its operations in 1974 - it leased the Shipyard to entities like AAA Shipyard Repairs who further contaminated the Hunters Point Naval Shipyard - dumping contaminated wastes of the worst order. Most egregious behavior of the U.S. Navy was the desecration of the Hunters Point Naval Shipyard by spreading the remains of the Ohlone the First People of San Francisco and the immediate area. The U.S. Navy well knows that it cannot run away from its obligation to first apologize and then offer restitution. The U.S. Navy has shunned addressing the archeological survey mandated by Federal Regulation and linked to the First People in this case the Ohlone. Thus as the Spokesperson on all matters linked to Base Closures, Infrastructure and related issues representing the Muwekma Ohlone, the First People of the San Francisco area and having Patrimonial Jurisdiction over Hunters Point Naval Shipyard - I said; and stand by my statement: "No good will ever come at Hunters Point Naval Shipyard." Aho.	The Navy has spent approximately $716M over the past 20 years on the HPNS[9] cleanup program, and these expenditures have made HPNS one of the nation's largest BRAC cleanup programs. The Navy's cleanup efforts to date have successfully removed, treated, or contained a significant volume of contamination that would otherwise pose an unacceptable risk to site workers and future occupants. The cleanups are consistent with the SFRA's Redevelopment Plan (SFRA, 2010). In addition, the Navy has worked closely with the EPA, DTSC, Water Board, and CCSF to investigate and study all of the contaminated sites at HPNS and make sure that these efforts are performed and documented in a way that meets federal and state regulations. The Navy understands its obligation, as required by the National Historic Preservation Act, to consider and properly address potential impacts upon cultural resources at HPNS, including shellmounds from native people who used the land prior to the Navy's occupancy. To meet this obligation, the Navy, in consultation with the Advisory Council on Historic Preservation and State Historic Preservation Office, identified potential archaeological resources at HPNS, and established a process by which all proposed underground construction must be reviewed to make sure that potential archaeological resources are not adversely affected. The Navy identified a potential buried shellmound in the northwest portion of Parcel E-2, but determined that the proposed remedial alternatives would not adversely affect this potential resource because the underground construction is limited to excavation of artificial fill and solid waste placed by the Navy and placement of clean imported soil. Further information is included in Appendix N (Section N3.4.1) of the RI/FS Report (ERRG and Shaw, 2011).

[9] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Francisco DaCosta received on October 24, 2011 via internet blog posting *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	The United States must apologize and do it soon - if it does not - Mother Earth will teach the corrupt a lesson and it does not matter what remediation, abatement; the unjust have in mind and what Environmental Impact Report or California Environmental Quality Act or other act is evoked and followed.	
	The presentation offered by some Navy personnel at the Land Use meeting at City Hall on October 24, 2011 in Room 263 was to say the least drab, more shallow, and a very pathetic representation of the ability of the United States Navy to tell the truth and facilitate an open dialog with the constituents of the Bayview Hunters Point and neighboring areas. More San Francisco and San Franciscans; our politicians have told their souls and Big Developers want to take pride building 10,500 homes on very contaminated land. Go Figure!	The Navy recognizes its responsibility to properly communicate with community members regarding the proposed cleanup at Parcel E-2 and has attended the following community meetings to discuss the cleanup program at Parcel E-2: • On August 24, 2011, Navy staff presented to the Mayor's Hunters Point Shipyard Citizens Advisory Committee. At this meeting, Navy staff summarized the cleanup activities at Parcel E-2 and answered questions about the cleanup process at Parcel E-2. • On September 20, 2011, the Navy held a public meeting to present its preferred alternative for Parcel E-2. At the public meeting, the Navy gave presentations on the conditions at Parcel E-2, and the representatives from the Navy, EPA, DTSC, Water Board, and CCSF DPH were available to answer questions. • On October 24, 2011, the Navy, EPA, DTSC, Water Board, and CCSF DPH presented to the CCSF Board of Supervisors regarding the preferred alternative for Parcel E-2. • On February 22, 2012, the Navy held a community meeting to summarize recent cleanup activities at Parcel E-2 and answer questions about the cleanup process at Parcel E-2. The Navy will continue to make its staff available to participate in various community outreach activities, and will answer questions regarding the cleanup process at HPNS (including Parcel E-2). The next community meeting is scheduled for April 2012, at which the draft ROD for Parcel E-2 will be discussed. Navy staff will be available at this meeting to answer questions about the proposed cleanup activities at Parcel E-2.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Francisco DaCosta received on October 24, 2011 via internet blog posting *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	In the year 2000 the voting constituents in San Francisco by an overwhelming majority of eighty seven percent voted for Proposition P - and mandated that the entire Hunters Point Naval Shipyard be cleaned to the highest standards. Local politicians; led by Diane Feinstein, Nancy Pelosi, Willie L. Brown Jr., Sophie Maxwell, Gavin Newsom pressured the U.S. Navy to hand over Parcel A against the wished of the people. Today Parcel A is contaminated and daily reports some of us receive - show elevated Asbestos Structures on Parcel A. However, the wind carries these dangerous particles all over the Shipyard and beyond. Some of us in the know including myself because of my position working at the Presidio of San Francisco for Sixth U.S. Army and Presidio of San Francisco having had access to manifests and other sensitive documents and know a lot about the landfill material and its containment at Parcel E and more at the much seriously contaminated, Parcel E-2.	The Navy understands the desire of community members to have HPNS cleaned up to the highest standards. The Navy is obligated to consider the community's input regarding the cleanup decision for Parcel E-2 because community acceptance is one of nine CERCLA remedy selection criteria identified in the federal regulation called the NCP. As described on page 15 of the Proposed Plan, Criteria 1 and 2 (protection of human health and the environment, and compliance with ARARs) are threshold criteria that each alternative must meet to be eligible for selection. Criteria 3, 4, 5, 6, and 7 are balancing criteria used to weigh major tradeoffs in the benefits and limitations among alternatives. Criteria 8 and 9 (state acceptance and community acceptance) are modifying criteria considered in the ROD. The preferred alternative published in the Proposed Plan (Alternative 5) complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria. The Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The State of California, through DTSC and the Water Board, and segments of the community, represented by the SFRA and Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have concurred with the preferred alternative published in the Proposed Plan. In addition, the preferred alternative is generally consistent with Proposition P, as explained in the following paragraph. The information presented by members of the community that disagree with the preferred alternative does not justify modification of the preferred alternative based upon the "community acceptance" criteria of the NCP. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife. Proposition P was adopted by the CCSF Board of Supervisors in Resolution 634-01 in August of 2001. Although Proposition P does express a recommendation from the Hunters Point Bayview community for cleanup to a level allowing unrestricted use of the property, Proposition P also urges the Navy to clean up the shipyard in a manner that does not rely on future owners to maintain barriers to protect the public from exposure unless other remedies are technically infeasible.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Francisco DaCosta received on October 24, 2011 via internet blog posting *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	The U.S. Navy's own document the Final Historical Radiological Assessment Report and the following amendments all of which I have copies and are available at the San Francisco, Main Library at 11 Grove Street - reveal in detail the contents of this very polluted area. Elements; more radiological in nature with very, very high and dangerous levels of toxic elements, methane gas, and of course radiological in nature because of the atomic bomb experiments, depleted uranium, and other tests all sensitive and part of the World War II operations. One Atomic Bomb left Hunters Point to be dropped on Japan during World War Two. The U.S. Navy has an obligation whatever the amount to clean up the entire Hunters Point Naval Shipyard. Now. The Naval Radiological Defense Laboratory was located just outside Parcel E-2. You do not have to be a Rocket Scientist to know why and this close proximity to Parcel E-2; - contains so much of Radiological Waste that the United States Navy lies about any opportunity it gets.	The Navy, in its RI/FS Report that was concurred upon by the other Federal Facility Agreement signatories, has determined that Alternative 2 (which involves excavation and off-site disposal of the entire Parcel E-2 Landfill) poses many complex engineering challenges and borders on being technically infeasible. In addition, Alternative 2 is not cost-effective pursuant to the CERCLA and NCP remedy selection criteria addressed in the Proposed Plan and ROD. The cover component of the containment remedy selected in the ROD is a barrier that will protect the public from exposure consistent with Proposition P. Regarding the potential presence of radioactive waste at Parcel E-2, Section 8.2.3.1 of the RI/FS Report (ERRG and Shaw, 2011) states that, based on the findings of the HRA (NAVSEA, 2004), low-level radioactive wastes may be present at Parcel E-2. These wastes consist primarily of buried radioluminescent devices (typically covered with paint containing radium-226), but may also include sandblast waste used to decontaminate ships used during atomic testing. Section 4.2 of the Radiological Addendum to the RI/FS Report (ERRG and RSRS, 2011) provides detailed information on the potential sources of radioactive contamination at Parcel E-2. Based on information from removal actions at Parcel E-2, low-level radioactive wastes at Parcel E-2 are found in low proportion relative to other waste types. EPA's presumptive remedy guidance for military landfills specifically identifies "*low-level radioactive waste*" among the "*low-hazard military-specific waste*" that "*generally are no more hazardous than some wastes found in municipal landfills*" (EPA, 1996; page 3). Consistent with the analysis presented in Section 8.2.3.4 of the RI/FS Report (ERRG and Shaw, 2011), the presence of low-level radioactive waste does not preclude the Navy from selecting a remedy that contains waste in place at Parcel E-2. The Navy worked collaboratively with the EPA, DTSC, Water Board, CCSF DPH, and other project stakeholders to solicit input on the RI/FS Report and associated radiological addendum. As a result of this effort, the Navy's conclusions in the RI/FS Report and associated radiological addendum have been reviewed and approved by the EPA, DTSC, Water Board, and CCSF DPH.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Francisco DaCosta received on October 24, 2011 via internet blog posting *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	The U.S Navy wants to cap the area using some plastic material which in the Bay Area on many sites has failed. At Midway Village; off Geneva Avenue in Daly City and by the Cow Palace - Pacific Gas and Electric; experimented on this so called plastic cap and it has failed miserably. What are more hundreds of people have died from Cancer in this area and more will die slowly in the future. The United States Navy knows about this area; is devoid of understanding, less compassion, and is on a deliberate course to challenge the community and for this very reason will fall on its knees and face; and regret for not listening to the community and those that have spoken and told the TRUTH. None of the models for abatement and mitigation have been vetted by the community. The U.S. Navy failed; because may be for the first time in the history of the United States Navy and its link with the history and formation of all the Restoration Advisory Boards (RABs) the U.S. Navy chose and went against the wishes of the people to dismantle the only body that could give a qualified opinion and represent the community at large at Hunters Point Naval Shipyard. By dismantling the Restoration Advisory Board (RAB) the U.S. Navy clearly demonstrated that it does not want to shoulder its responsibilities, has something to hide, and is a despicable, coward. More a disgrace to this Nation and I served well as the last Congressional Liaison of Sixth U.S. Army and Presidio of San Francisco and won two Commander Awards. I also participate in Desert Shield and Storm and was awarded for my participation at the highest level. The United States Navy should feel ashamed of itself for the cover up, dishonest behavior, unbecoming on any so called professional organization. President George Washington would feel ashamed of such behavior and so would a President such as President Jimmy Carter.	High-density plastic liners (which will be used at the Parcel E-2 Landfill) are a common and proven way to reduce water infiltration at inactive landfills and be protective of future site users. Additional information is provided in Section 11.5.1.2 of the RI/FS Report (ERRG and Shaw, 2011). Based on a review of publicly available information at the California DTSC website[10], the cleanup efforts at the Midway Village site did not use plastic liners but rather consisted of removing contaminated soil near the ground surface, and then covering the surface with either soil, concrete, or asphalt to prevent residents from being exposed to contamination in subsurface soil (DTSC, 2003). Further, the cover at the Midway Village site is regularly inspected and maintained, and has been shown to remain protective of human health (DTSC, 2011). From 1994 through 2009, the primary means of community involvement was the Navy's RAB. Although the RAB was dissolved in December 2009 because it was no longer fulfilling its purpose, the Navy continues to involve the community in the details of the environmental cleanup program for HPNS in a manner that fully complies with and exceeds the requirements of CERCLA and the NCP. The Navy updated their CIP in 2011 to present the communication and community involvement program activities that were designed to meet the specific needs and desires of the HPNS community (Navy, 2011a). Some of the specific community outreach efforts that the Navy conducts in accordance with the CIP include (1) preparation of topic-specific fact sheets; (2) use of a calendar of outreach events; (3) holding regularly scheduled community meetings; and (4) conducting bus tours. The Navy will regularly reevaluate the community involvement program, and determine if additional outreach efforts will help better inform the public of the HPNS cleanup program.

[10] http://www.dtsc.ca.gov/SiteCleanup/index.cfm

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Francisco DaCosta received on October 24, 2011 via internet blog posting *(continued)*

Comment #	Comment	Response
1. (*cont.*)	My work as the Congressional Liaison gives me a unique purview of the U.S. Navy and its shallow and unprofessional manner of operating - the word "jettison" is well known to the United States Navy and that "word" and many operations linked to that word - were common at the Hunters Point Naval Shipyard - more during World War Two and the many sordid experiments much before the Environmental Protection Agency came to be an off shoot of the National Radiological Defense Laboratory established first at Hunters Point now carried on at Lawrence Livermore Laboratory and other sites. All the experiments conducted at "Bikini Islands" the exposure of the many ships in close proximity to the experimental Atomic Bombs. The large animals that were exposed on purpose and radiated to be tested latter, the many other experiments that one can review today - through the Freedom of Information Act and written in many books - are clear about the experiments and the adverse impacts to the Polynesian People the people that were adversely impacted on Bikini Islands and the neighboring islands and the Pacific Ocean. The ships that participated in these experiments were towed to Hunters Point Naval Shipyard and sand blasted as part of the cleanup operations. The particles collected landed mostly on Parcel E and Parcel E-2 for burial - but knowing the nonchalant, hazarded behavior of the United States Navy - they buried and dumped all over the place. In keeping with its mentality - "jettison". Large animals that were radiated were buried on Parcel E and Parcel E-2. We have witnesses who are alive and live in the community who can testify to this. These witnesses will not talk to the U.S. Navy - they are afraid that they will be killed.	Section 4.2 of the Radiological Addendum to the RI/FS Report (ERRG and RSRS, 2011) provides detailed information on the potential sources of radioactive contamination at Parcel E-2. Also, in conjunction with the Proposed Plan, the Navy distributed a fact sheet titled "Frequently Asked Questions About the Shipyard Landfill" (Navy, 2011b). As described on page 2 of the fact sheet, "*From the late 1940s through the late 1960s, the Navy conducted experiments on the health effects of radiation on animals, and some of those animals may have been buried in the landfill. However, any animals buried in the landfill were not radioactive since the radiation levels they were exposed to were low (similar to those of an x-ray). Any animals that were radioactively contaminated were disposed of at licensed on-site disposal facilities or drummed and disposed of at sea. Sandblast waste from cleaning ships used during weapons testing in the South Pacific may also have been disposed of at the landfill. However, historic records suggest that waste with the highest levels of radioactivity was controlled and not disposed of at the landfill.*" Because of the potential for sandblast waste to contain radioactive contamination, the Navy samples and analyzes any sandblast waste encountered during excavation activities at HPNS. This procedure was followed during previous removal actions at Parcels E and E-2 and the sandblast waste was found to not be radioactively contaminated. This finding is consistent with the history of the shipyard in that, throughout shipyard operations (early 1940s through the early 1970s), abrasive sandblast material was commonly used to clean ships not associated with radiological operations.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Francisco DaCosta received on October 24, 2011 via internet blog posting *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	This all happening in the year 2011. These men earned more for doing the burying and tell us that these animals were cut open and tested by University of California San Francisco. They gave us details; how the animals were transported, where they were transported to, at what time of the night these burials were performed, and how much money they were paid. Of course the U.S. Navy with all its investigative operations, highly trained operatives; pretend they are NOT aware of such nefarious and shameful operations. "Nothing good will happen at Hunters Point Naval Shipyard". I said this before and I say it again. The UCSF still has a laboratory on the edge of the U.S. Navy Shipyard at Hunters Point by the Palou Gate - now mostly conducting experiments on rats and other such animals like monkeys. Such devious experiments by the UCSF; but UCSF often times likes to boast about the Bio-Medical operations at Mission Bay. But, rarely mentions its devious and sly operations at Hunters Point Naval Shipyard adversely impacting our community. So, much for our politicians that I have mentioned, the sell outs that are many and of Lennar the Rogue Developer and its minions who want to build 10,500 homes at Hunters Point and adjoining Candlestick Point. In the year 2000 there was a raging fire that went on for over two months. The U.S. Navy was fined a measly; $250 but the people living by Mariner's Village, Kiska Road, beyond - suffered from the many ailments - severe headaches, burning of the eyes and throats, vomiting and so on. We discussed this issue of the raging fire in the year 2000 at the Restoration Advisory Board and were told lies and the matter was delayed. Years later a model from the East Coast was brought to the West Coast that is San Francisco to explain the fire. When we asked in what direction was the wind blowing; the culprits fully understood their model would not work. The wind caused most of the trouble and we knew in what direction the wind was blowing, causing untold misery to the community.	Information relating to the fire and associated response actions is provided in the document titled "Removal Action Landfill Cap Closeout Report." This document, which was finalized in February 2005 after review and comment by the EPA, DTSC, and Water Board, was provided as Appendix E to the RI/FS Report for Parcel E-2 (ERRG and Shaw, 2011). Based on this information, the Navy believes that the administrative record accurately reflects the timeline of activities regarding the landfill fire and associated response actions, and that no correction is required beyond that provided by the soil cover and liner component of the selected remedy for Parcel E-2.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Francisco DaCosta received on October 24, 2011 via internet blog posting *(continued)*

Comment No.	Comment	Response
1. (*cont.*)	It is the same with the Asbestos Dust and other toxic dust some from the operations of the U.S. Navy and others from the Rogue Developer - Lennar - even today nothing much has changed. The community daily in adversely impacted by clandestine operations going on at Hunters Point Naval Shipyard conducted by the United States Navy and Tetra Tech the Prime Contractors whose term will soon - expire. The United States Navy must be ashamed of itself. It should adhere to Proposition P passed in the years 2000 and many proposals vetted at the Restoration Advisory Board and bring back the Restoration Advisory Board. Failure to do that the people will STOP the operations. The U.S. Navy and the failed politicians, the sell outs, the many Poverty Pimp Pastors, cannot fool all the people all the time. Aho. The Muwekma Ohlone demand the entire Hunters Point Naval Shipyard restores the once pristine wetlands. Clean the watershed and remove all the contaminants. Conduct an Archeological Survey and initiated the process of Restitution. In the year 1991 the Muwekma Ohlone Tribe exercised its Rights of First Refusal. All Bases Closed under BRAC and declared Excess Property must first contact the Native American Tribes closely associated with the deactivated base and having jurisdiction - in this case Patrimonial Jurisdiction. The United States Navy deadline for this proposal and its abatement and mitigation of Parcel E-2 was October 24, 2011 - this was extended to November 21, 2011. Written comments can be sent to: Mr. Keith Forman BRAC Environmental Coordinator BRAC Program Management Office West 1455 Frazee Road, Suite 900 San Diego, California 92108-4310 Telephone: (619) 532-0913 Cell Phone: (415) 308-1458 Fax: (619) 532-0995E-mail: keith.s.forman@navy.mil	*[Please refer to the response on pages 21 and 22 regarding the degree of cleanup proposed for Parcel E-2 and the Navy's consideration of Proposition P during its evaluation of the community acceptance criterion.]* Although the RAB was dissolved in December 2009 because it was no longer fulfilling its purpose, the Navy continues to involve the community in the details of the environmental cleanup program for HPNS. The Navy updated their CIP in 2011 to present the communication and community involvement program activities that were designed to meet the specific needs and desires of the HPNS community (Navy, 2011a). *[Please refer to the response on page 19 regarding the Navy's activities to properly address archaeological resources at HPNS.]*

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard		
Written Comments by Subra Company (Wilma Subra on behalf of POWER and SLAM) received on November 12, 2011 via e-mail		
Comment No.	**Comment**	**Response**
Introduction	The following comments on the Proposed Plan for Parcel E-2 of the Hunters Point Naval Shipyard are submitted on behalf of People Organized to Win Empowerment Rights (POWER) and Stop Lennar Action Movement (SLAM).	See below for the Navy's response to the subject comments.
1.	**Proposition P** According to Proposition P, adopted by the voters of San Francisco in 2000, and the legally binding Conveyance Agreement implementing the covenant agreement executed in 2004, regarding the cleanup and the transfer of the Shipyard between the Navy and the City, the Navy, EPA and Cal EPA should pursue the highest practicable level of cleanup for Parcel E-2 of Hunters Point Naval Shipyard.	Proposition P was adopted by the CCSF[11] Board of Supervisors in Resolution 634-01 in August of 2001. Although Proposition P does express a recommendation from the Hunters Point Bayview community for cleanup to a level allowing unrestricted use of the property, Proposition P also urges the Navy to clean up the shipyard in a manner that does not rely on future owners to maintain barriers to protect the public from exposure unless other remedies are technically infeasible. The Navy, in its RI/FS Report that was concurred with by the other Federal Facility Agreement signatories, has determined that Alternative 2 (which involves excavation and off-site disposal of the entire Parcel E-2 Landfill) poses many complex engineering challenges and borders on being technically infeasible. In addition, Alternative 2 is not cost-effective pursuant to the CERCLA and NCP remedy selection criteria addressed in the Proposed Plan and ROD. The cover component of the containment remedy selected in the ROD is a barrier that will protect the public from exposure consistent with Proposition P. Proposition P was later addressed in the "*Conveyance Agreement Between the United States of America Acting by and Through the Secretary of the Navy United States Department of the Navy and the San Francisco Redevelopment Agency for the Conveyance of Hunters Point Naval Shipyard*" executed on March 31, 2004. Recital paragraphs 10 and 11 of the Conveyance Agreement referenced Proposition P and reiterated community support for cleanup to the highest level practical. Furthermore, Article 1(q)(iv) of the Conveyance Agreement specifically addresses Parcel E (which at the time of execution also included Parcel E-2) and states in relevant part: "*In any event, the remedies selected for Parcels E and F shall meet applicable Federal and State regulatory requirements, including the nine criteria set forth in 40 CFR 300.430(e)(9)(iii), one of which is community acceptance.*"

[11] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Subra Company (Wilma Subra on behalf of POWER and SLAM) received on November 12, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	*(see above)*	Recital 10 also acknowledges that the Navy is required under CERCLA to take community acceptance into account in its cleanup decision. The Navy has done so in this ROD and responsiveness summary in accordance with CERCLA and the NCP and has also addressed technical feasibility and cost effectiveness in the ROD in a manner that is consistent with CERCLA, the NCP, Proposition P, the Conveyance Agreement, and the Hunters Point Shipyard Redevelopment Plan. The Navy's environmental cleanup program at HPNS addresses the planned reuse outlined in the SFRA's amended Hunters Point Shipyard Redevelopment Plan (SFRA, 2010), which was approved 9 years after the adoption of Proposition P and 6 years after execution of the Conveyance Agreement. The Redevelopment Plan was initially approved in 1997 and adopted as the official Redevelopment Plan for HPNS by the CCSF Board of Supervisors (Ordinance 285-97 pursuant to Chapter 4.5 of California Community Redevelopment Law, California Health and Safety Code § 33492). The Redevelopment Plan was subsequently amended in 2010, and the selected remedy would accommodate the future reuses identified in the amended plan. The Navy also notes that Proposition P is a local governmental resolution and is not a federal or state statute or promulgated regulation. Therefore, Proposition P is not a CERCLA federal or state ARAR for purposes of CERCLA remedy selection in Parcel E-2.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Subra Company (Wilma Subra on behalf of POWER and SLAM) received on November 12, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
2.	**Remedial Alternative 2** The remedial alternative developed in the Parcel E-2 Remedial Investigation/Feasibility Study, March 5, 2011, which most closely complies with Proposition P and implementing Conveyance Agreement for the pursuit of the highest practical level of cleanup for Parcel E-2 is presented as Remedial Alternative 2. Remedial Alternative 2 consist of excavation of all waste and contaminated soil in the landfill area and under the waste in the landfill of Parcel E-2. The alternative also requires the excavation of all shallow waste, soil and sediment in the Panhandle Area, East Adjacent Area and Shoreline Area. The alternative requires the off site disposal of all excavated waste and contaminated soil and sediment. Remedial Alternative 2 also includes Wetland Restoration in the Panhandle Area and Shoreline Area, Groundwater Monitoring, Institutional Controls, and additional radiological actions. The Institutional Controls are required to protect people from being exposed to the remaining contaminants (after remedial activities) in deep soil in the Panhandle Area, East Adjacent Area and Shoreline Area. An evaluation of the Remedial Alternative indicates that Remedial Alternative 2, even with the need for Institutional Controls to control human exposure to remaining contamination, comes the closest to the "highest practical level of cleanup for Parcel E-2" identified in Proposition P and the Conveyance Agreement regarding the cleanup. Remedial Alternative 2 is estimated to cost $351.5 million and will require four years to excavate the contaminated material on Parcel E-2, dispose of the excavated contaminated material off site and fill the excavation with clean soil. The Remedial Alternative 2 would be protective of human health and the environment, comply with applicable or relevant and appropriate requirements (ARARs) and reduce toxicity, mobility and volume of contaminants. Remedial Alternative 2 was the only Remedial Alternative that would fully insure long-term effectiveness and permanence of the remedy. This remedy would be the most effective in the long-term due to the excavation and off site disposal of waste posing unacceptable risks. However, Remedial Alternative 2 was identified as presenting many short-term risks, difficulties in implementation and very expensive by the Navy.	The Navy understands the desire of community members to have HPNS cleaned up to the highest standards, and is obligated to consider the community's input regarding the cleanup decision for Parcel E-2 because community acceptance is one of nine CERCLA remedy selection criteria identified in the federal regulation called the NCP. As described on page 15 of the Proposed Plan, Criteria 1 and 2 (protection of human health and the environment, and compliance with ARARs) are threshold criteria that each alternative must meet to be eligible for selection. Criteria 3, 4, 5, 6, and 7 are balancing criteria used to weigh major tradeoffs in the benefits and limitations among alternatives. Criteria 8 and 9 (state acceptance and community acceptance) are modifying criteria considered in the ROD. The Navy's evaluation of the remedial alternatives is summarized on pages 15, 16, and 17 of the Proposed Plan. Additional information is included in Sections 2.8 and 2.9 of this ROD. In summary, the preferred alternative published in the Proposed Plan complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria. The Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The State of California, through DTSC and the Water Board, and segments of the community, represented by the SFRA and Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have concurred with the preferred alternative published in the Proposed Plan. In addition, the preferred alternative is generally consistent with Proposition P, as explained previously in the response to comment 1. The information presented by members of the community that disagree with the preferred alternative does not justify modification of the preferred alternative based upon the "community acceptance" criteria of the NCP. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Subra Company (Wilma Subra on behalf of POWER and SLAM) received on November 12, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
2. *(cont.)*	Thus, as a result of the Navy's evaluation of Remedial Alternative 2, as being protective of human health and the environment, reduce toxicity, mobility and volume of contamination and fully insure long term effectiveness, the Navy focused on the many short-term risks, difficulty in carrying out the remedy and being very expensive, as the reasons to dismiss Remedial Alternative 2. Thus, in combination with the large volume of waste and soil to be excavated and removed, the Navy removed Remedial Alternative 2 from consideration. The removal from consideration of Remedial Alternative 2, by the Navy, is contrary to the conditions contained in Proposition P and the Conveyance Agreement and is thus unacceptable. Remedial Alternative 2 must continue to be considered as a viable option for the remedial activities to be performed at Parcel E-2.	*(see responses on pages 27, 28, and 29)*
3.	**Cap as Remedy for Parcel E-2** In July 2010, the Board of Supervisors of the City and County of San Francisco adopted Resolution No. 347-10 (File No. 100572). The Resolution stated in part on page 5, that "the Board of Supervisors hereby (i) declares the adoption of these findings shall not in any way imply support for a cap for Parcel E-2." With the Navy's dismissal of consideration of Remedial Alternative 2, the Navy has focused the Remedial Activity on excavation and off site disposal of radioactive contamination and capping the remaining waste on Parcel E-2 with a soil cover over all of Parcel E-2. As stated in the July 2010 Board of Supervisor resolution, the findings (in the resolution) shall not in any way imply support for a cap for Parcel E-2. Thus the Navy has forced the Board of Supervisors to only have a Remedial Alternative that requires the waste, other than radioactive contamination, to remain on site and be capped with a soil cover. This approach is unacceptable. Remedial Alternative 2 must continue to be considered by the Navy as a viable remedial alternative.	The subject resolution by the CCSF Board of Supervisors does not preclude the Navy from selecting a remedial alternative for Parcel E-2, pursuant to the CERCLA and NCP remedy selection criteria addressed in the Proposed Plan and ROD, that includes a cap. The subject resolution also urges the Navy, EPA, and the State of California to participate in a hearing before the CCSF Board of Supervisors prior to selecting a remedy for Parcel E-2. In accordance with this request, the Navy, EPA, DTSC, Water Board, and CCSF DPH participated in a hearing before the CCSF Board of Supervisors on October 24, 2011. The Navy's environmental cleanup program at HPNS addresses the planned reuse outlined in the SFRA's Hunters Point Shipyard Redevelopment Plan (SFRA, 2010). The Navy's selected remedy will allow for future use of Parcel E-2 in accordance with the Hunters Point Shipyard Redevelopment Plan. The Navy has followed the process established in the NCP (40 CFR § 300.430) to evaluate potential remedial alternatives in the RI/FS Report (ERRG and Shaw, 2011) and identify a preferred alternative in the Proposed Plan, and now is in the process of selecting a remedial action in the ROD.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard		
Written Comments by Subra Company (Wilma Subra on behalf of POWER and SLAM) received on November 12, 2011 via e-mail *(continued)*		
Comment No.	**Comment**	**Response**
3. *(cont.)*	***(see above***	The preferred alternative published in the Proposed Plan (Alternative 5) complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria identified in the NCP. The Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The State of California, through DTSC and the Water Board, and segments of the community, represented by the SFRA and Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have concurred with the preferred alternative published in the Proposed Plan. In addition, the preferred alternative is generally consistent with Proposition P, as explained previously in the response to comment 1. The information presented by members of the community that disagree with the preferred alternative does not justify modification of the preferred alternative based upon the "community acceptance" criteria of the NCP. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Subra Company (Wilma Subra on behalf of POWER and SLAM) received on November 12, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
4.	**Remedial Alternatives 3, 4 and 5- Soil Cap** Remedial Alternatives 3, 4 and 5 approach the Parcel E-2 waste containment through the use of a soil cap. As detailed in the previous section of these comments, the approval of using a soil cap to contain the waste on site, does not meet the requirements of Proposition P and the associated Conveyance Agreement for "highest practical level of cleanup for Parcel E-2" and goes against the Board of Supervisors lack of support for a cap remedy. However, with that stated, the following comments are provided to clarify the more acceptable of Remedial Alternatives 3, 4 and 5.	As previously discussed, the environmental cleanup program at HPNS addresses the planned reuse outlined in the SFRA's amended Hunters Point Shipyard Redevelopment Plan (SFRA, 2010). The Navy's selected remedy will allow for future use of Parcel E-2 in accordance with the Hunters Point Shipyard Redevelopment Plan. Also, as previously discussed, Proposition P is a local governmental resolution and is not a federal or state statute or promulgated regulation. Therefore, Proposition P is not a CERCLA federal or state ARAR for purposes of CERCLA remedy selection in Parcel E-2. However, Proposition P provides pertinent input regarding the cleanup program at HPNS. This input is considered in the Navy's evaluation of the community acceptance criterion, as provided in this ROD. Consistent with the NCP [40 CFR § 300.430(e) and (f)], the community acceptance criterion is one of two modifying criteria and has been evaluated based on comments provided in the course of the CERCLA remedy selection process, including those received on the Proposed Plan, and other community input, including Proposition P.
	Remedial Alternatives 3, 4 and 5 propose a soil cap over Parcel E-2. Remedial Alternatives 4 and 5 also require additional excavation and off site disposal of contaminated soil and waste from the Panhandle Area, East Adjacent Area and Shoreline Area. Remedial Alternatives 4 and 5 require a below ground barrier along the shoreline to limit the flow of contaminated groundwater to San Francisco Bay. This barrier is very important due to the fact that the landfill was not lined and the groundwater exist in contact with the waste disposed of in the landfill. The contaminated groundwater in contact with the waste in the landfill will continue to negatively impact the quality of the groundwater. The additional excavation and groundwater controls contained in Remedial Alternatives 4 and 5 are a much needed approach if a soil cap is selected as the remedy.	
	Remedial Alternatives 4 and 5 have a greater long-term effectiveness and performance when compared to Remedial Alternative 3. Thus Remedial Alternative 3 is unacceptable when considering Remedial Alternatives 3, 4 and 5.	The Navy acknowledges that Alternatives 4 and 5 offer improved long-term effectiveness relative to Alternative 3, and the Navy's considered this information in identifying Alternative 5 as the preferred alternative in the Proposed Plan.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Subra Company (Wilma Subra on behalf of POWER and SLAM) received on November 12, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
5.	**Institutional Controls** Remedial Alternative 2 through 5 all require Institutional Controls to limit the use of the land and restrict activities on Parcel E-2. The Institutional Controls are necessary because the contaminants remaining on site threaten to contaminate human health and the environment if the remedy fails. After remediation, Parcel E-2, will be subject to restricted use in order to restrict exposure. The contamination remaining on site will continue to impact the ground water and air quality. The proposed Institutional Controls are lacking in timely monitoring of restrictions. The superfund program requires reviews of the effectiveness of the remedy every five years. In the case of Remedial Alternatives 3, 4 and 5, which utilize a soil cap to isolate the waste, the five year review process is not adequate. Parcel E-2 must be evaluated on a yearly basis for effectiveness of the remedy and on a quarterly basis for impacts to the soil cover/cap. If the soil cover/cap is breached, the groundwater and air quality will be degraded by the waste remaining on the site.	The Navy will work closely with stakeholders from the CCSF to develop a remedial design document that, consistent with similar documents developed for other HPNS parcels, will identify the actions (including inspections, enforcement, and reporting) necessary to properly implement the institutional controls at Parcel E-2. The remedial design document will also identify the roles and responsibilities of federal, state, and local government in implementing the institutional controls at Parcel E-2. In addition, the selected remedy includes the following monitoring and maintenance activities that would be performed on a regular schedule and for as long as necessary to protect human health and the environment, and to comply with pertinent state and federal ARARs: • Groundwater monitoring will be performed, consistent with the requirements of Title 22 CCR § 66264.100(d) and § 66264.310(b)(3), to verify that chemical concentrations in groundwater do not exceed concentrations designated by the RAOs at the compliance boundary. • Landfill gas monitoring will be performed to demonstrate compliance with Title 27 CCR § 20917 through § 20934. • Stormwater and erosion controls will be installed and maintained as required under Title 27 CCR § 20365(c) and (d), and stormwater discharges will be monitored as required under Title 22 CCR § 66264.97(c)(1) and (c)(2)(B). • The cover will be inspected and maintained to ensure its integrity as required under Title 27 CCR § 21180(a). The long-term monitoring and maintenance program will be detailed in the post-closure operation and maintenance plan for Parcel E-2, consistent with content requirements as provided in Title 27 CCR § 21800(c), and submitted for review and approval by EPA, DTSC and the Water Board in conjunction with the remedial design. Regulatory oversight will continue during long-term operation and maintenance of the selected remedy.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by California Department of Fish and Game (Charlie Huang, Ph.D., Staff Toxicologist) received on November 18, 2011 via e-mail

Comment No.	Comment	Response
Introduction	**Comments on Proposed Plan (PP) for Parcel E-2, Hunters Point Shipyard (HPS), San Francisco, California** The California Department of Fish and Game, Office of Spill Prevention and Response (DFG-OSPR) has completed its review of the subject document, received on September 7, 2011. The comments that follow are provided as part of our role as a natural resource Trustee for the State of California's fish and wildlife, and their habitats. DFG-OSPR's review focused on the ecological risk assessment and biological resource related sections of the document. The DFG is the State's Trustee for fish and wildlife resources pursuant to Fish and Game Code Section 711.7. The DFG is also designated as a Trustee for natural resources pursuant to Comprehensive Environmental Response, Compensation, and Liability Act Section 107 (1)(2)(B). **Background** HPS, located in southeast San Francisco on a peninsula that extends east into San Francisco Bay, was identified for closure during the Base Realignment and Closure process of 1991. The shipyard is approximately 936 acres in size, 443 acres of which are on land with the remaining acreage under water (Tetra Tech, 2000). HPS is bounded on the north and east by San Francisco Bay and on the south and west by the Hunters Point district of San Francisco, which consists of public and private housing and commercial & industrial buildings. The north and east shores of HPS are developed for ship repair with dry docks and berths; there are no shipping facilities on the southwest shore. HPS was operated as a commercial dry dock facility from 1869 until 1939. In 1940, the Navy obtained ownership of the shipyard for ship building, repair, and maintenance activities. Activities shifted from ship repair to submarine servicing and testing after World War II. HPS was deactivated in 1974 and remained relatively unused until 1976. Between 1976 and 1986, the Navy leased most of the property to a privately-owned ship repair firm. In 1986, the Navy again occupied the shipyard and began a program to investigate and clean up contamination resulting from past activities (Engineering/Remediation Resources, 2009).	Comment acknowledged. The following pages provide responses to the general and specific comments from the CDFG[12].

[12] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by California Department of Fish and Game (Charlie Huang, Ph.D., Staff Toxicologist) received on November 18, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
Introduction *(cont.)*	HPS is divided into six parcels (A through F). Parcel E-2 is about 48 acres in size and is located in the southwestern part of HPS, adjacent to San Francisco Bay. It includes former portions of Parcel E, including Installation Restoration (IR)-01/21, the Panhandle Area, a small area of IR-02 Northwest, and the area east of IR-01/21 that does not have an IR site designation. Habitats in Parcel E-2 include ruderal, non-native annual grassland, intertidal and saline emergent wetlands, and a seasonal freshwater wetland. Base habitats that include upland, tidal wetlands, and offshore habitats are used by many wildlife species representing different trophic levels. The planned reuse for Parcel E-2 is open space, except for a small area in the East Adjacent Area, which is designated as part of the Shipyard South Multi-Use District. In a memorandum dated July 26, 1999, DFG-OSPR provided comments on the Draft Validation Study Report, Parcel E, HPS, San Francisco, California (Chernoff, 1999). DFG-OSPR commented on the Draft Wetlands Mitigation and Monitoring Plan, Metal Debris Reef and Metal Slag Areas Parcels E and E-2, HPS (Gray, 2007a). DFG-OSPR commented on the Parcel E-2 Remedial Investigation/Feasibility Study, HPS (Gray and Huang, 2007). DFG-OSPR provided Applicable or Relevant and Appropriate Requirements (ARARs) for the Parcel E-2 Feasibility Study in a memorandum dated September 7, 2007 (Gray, 2007b). DFG-OSPR commented on the Draft Final Wetlands Mitigation and Monitoring Plan, Metal Debris Reef and Metal Slag Areas Parcels B, E and E-2, HPS (Huang and Nakahara, 2009). DFG-OSPR commented on the Draft Final Remedial Investigation/Feasibility Study for Parcel E-2, HPS (Nakahara et al, 2009). DFG-OSPR commented on the Final Wetlands Mitigation and Monitoring Plan, Metal Debris Reef and Metal Slag Areas Parcels B, E and E-2, HPS (Nakahara, 2010). DFG-OSPR provided Applicable or Relevant and Appropriate Requirements (ARARs) for the Time-Critical Removal Action at the Experimental Ship Shielding Range, Parcel E-2, Hunters Point Naval Shipyard in a memorandum dated July 27, 2011 (Nakahara, 2011).	The following pages provide responses to the general and specific comments from CDFG.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by California Department of Fish and Game (Charlie Huang, Ph.D., Staff Toxicologist) received on November 18, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 1	DFG-OSPR was not provided the opportunity to review the PP during the regulatory agency review period. DFG-OSPR received a copy of the PP during the public comment period. Please include DFG-OSPR on the regulatory agency document distribution list, for all future document reviews at Hunters Point Shipyard for parcels with natural resource concerns, including Preliminary Assessments, Site Inspections, Remedial Investigations, Feasibility Studies, Proposed Plans, Records of Decision (ROD), Remedial Designs, Work Plans, Restoration Plans, Operations and Maintenance Plans, and Action Completion Reports. This memorandum will serve to inform the Navy of our continuing interest in coordinating any natural resource issues, as one of the designated State natural resource Trustees.	The Navy has revised the distribution list to ensure that CDFG personnel are provided copies of future documents for HPNS parcels with natural resource concerns.
General Comment 2	DFG-OSPR is in general concurrence with the remedial alternative 4 or 5 (excavation and off-site disposal, groundwater containment, and natural clay liner for freshwater wetlands [Alternative 4], or no clay liner for freshwater wetlands [Alternative 5]), with inclusion of at least one the following recommendations: incorporation of an adequate biotic barrier under the soil cover over all of Parcel E-2 except the wetlands, incorporation of a soil cover of at least four feet in depth over all of Parcel E-2, or the addition of other methods of post-closure monitoring, such as soil and surface water monitoring for contaminants.	The Navy will perform post-closure inspections, maintenance, and monitoring necessary to comply with pertinent federal and state requirements, as identified in Attachment 4 of this ROD. The planned activities are briefly described in Section 2.9.1 of this ROD and will be detailed in the post-closure operation and maintenance plan. The post-closure operation and maintenance plan will satisfy the content requirements provided in Title 27 CCR § 21800(c), and will be submitted for review and approval by EPA, DTSC and the Water Board in conjunction with the remedial design. Regulatory oversight will continue during long-term operation and maintenance of the selected remedy. The planned activities, which include surface water monitoring, will be adequate to ensure the protection of human health and the environment. Please refer to the response to specific comment 2 regarding the Navy's position on CDFG's request for an additional biotic barrier and thicker soil cover.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by California Department of Fish and Game (Charlie Huang, Ph.D., Staff Toxicologist) received on November 18, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
Specific Comment 1	Page 11, Table 4. Based on soil Remedial Action Objectives in Appendix L (Engineering/Remediation Resources Group, 2009), DFG-OSPR agrees with the preliminary remediation goals (PRGs) for wildlife on the land and on the shoreline at Parcel E-2 for copper and lead, but not for total Polychlorinated biphenyls (PCBs) (37 mg/kg). However, based on the ecological receptors and habitat present at Parcel E-2, DFG-OSPR may accept total PCB concentrations in soils within the range of 0.74 mg/kg (e.g., based on a human-use recreational exposure scenario). These site-specific PRGs are developed only for Parcel E-2 and should not be extended to other parcels. No further response is required from the Navy for this comment.	Comment acknowledged.
Specific Comment 2	Page 17, Section "Summary of the Preferred Alternative". The PP states, "*The liner will minimize water seeping into the contaminated material, control animals from burrowing under the cover, and serve as a visual marker for the bottom of the cover.*" a. Geomembrane liners are designed to reduce stormwater infiltration into the contaminated material. Geomembranes are not designed to function as biotic barriers to prevent burrowing animals and plant roots from infiltrating the landfill cap and exposing contaminants. On June 7, 2011, DFG-OSPR contacted the manufacturer of the geomembrane samples the Navy provided for Parcel E-2 (GSE Lining Technology, Inc.), and inquired if any studies had been conducted to document the geomembrane was an effective biotic barrier against burrowing animals. The manufacturer has not responded to date. Therefore, unless the Navy can provide specific documentation that substantiates their claim that the geomembrane liner will "*control animals from burrowing under the cover*", they should not make that claim and remove that statement from the text. b. DFG-OSPR commented on the Draft Final Remedial Investigation/ Feasibility Study Report for Parcel E-2 and asked the Navy to explain why a biotic barrier was not incorporated into the design of the landfill cover since gophers can dig up to six feet deep, which exceeds the depth of the proposed 2-foot soil cover (Nakahara et al., 2009).	a. The language in the Proposed Plan was, in this particular instance, simplified relative to the more detailed information presented in the RI/FS Report (ERRG and Shaw, 2011). Specifically, the term "liner" was used in the Proposed Plan to focus on that material's primary function to limit surface water infiltration. Section 11.5.1.2 of the RI/FS Report describes the complete range of functions of a geosynthetic cap, which include the geocomposite drainage layer that is placed on top of the geomembrane. This layer would provide a drainage path for water infiltrating through the vegetative layer and, consistent with its use at other landfill sites, would also deter burrowing animals. The Navy believes that the information in the RI/FS Report adequately demonstrates that the proposed cover, which will be regularly inspected and maintained (with animal control measures implemented as necessary), will be protective of human health and the environment. b. *(see the response on the following page)*

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by California Department of Fish and Game (Charlie Huang, Ph.D., Staff Toxicologist) received on November 18, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
Specific Comment 2 *(cont.)*	1) The Navy responded DFG-OSPR's comment, in the Final Remedial Investigation/Feasibility Study Report for Parcel E-2 (Engineering/Remediation Resources Group, Inc., 2011), by providing an example of another former Naval base (Moffett Field Site 1) that has had a similar multilayer landfill cap in place since 1998, with maintenance of the cap and monitoring of landfill gas and groundwater since 1999. According to the Navy, two Five-Year Reviews were completed in 2002 and 2007 and the remedy continues to be protective of human health and the environment. Twelve years of maintenance and monitoring is a relatively short period in the life of a landfill that is supposed to function and be maintained in perpetuity. Even the half-life of the geomembrane is only predicted to be 100 years at an average temperature of 25°C (Koerner et al., 2011). If conditions change (i.e., temperature increases, damage to the geomembrane), the length of the half-life decreases. The bottom line is that the geomembrane will naturally degrade over time and will eventually need to be replaced. Damage from burrowing animals will just speed up this process. Therefore, due to the relatively short existence of the Moffett Field Site 1 landfill cap, this example is not adequate to support the Navy's claim that "*placement of a high-density plastic liner under at least 2 feet of clean soil will prevent exposure to remaining contamination*" (page 17 of Parcel E-2 PP).	1) The Navy believes that the demonstrated performance of the cover at Site 1 at the former NAS Moffett Field is useful in evaluating the efficacy of the proposed cover at Parcel E-2. Further, the reviewer's statement that "*the half-life of the geomembrane is only predicted to be 100 years at an average temperature of 25°C*" is not accurate. The document cited in the subject comments is the same one that was referenced in Section 11.5.1.2 of the RI/FS Report (ERRG and Shaw, 2011); however, the reviewer appears to have cited data collected for exposed geomembrane whereas, as clearly stated in Section 4 of the referenced document, covered geomembranes are used in all landfill liner and cover applications. Table 2 in the referenced document indicates that the estimated lifetime of a covered geomembrane at a temperature of 25°C is nearly 270 years. As described in Section 12.2.3.6 of the RI/FS Report, the geomembrane will be covered by a geocomposite drainage layer and 2 feet of soil, which exceeds the requirements for erosion-resistant layers at Title 27 CCR § 21090(a)(3). The complete discussion from Section 4 of the referenced document is included below. *"This White Paper is bifurcated into two very different parts; covered (or buried) lifetime prediction of HDPE geomembranes and exposed (to the atmosphere) lifetime prediction of a number of geomembrane types. In the covered geomembrane study we chose the geomembrane type which has had the majority of usage, that being HDPE as typically used in waste containment applications. Invariably whether used in landfill liner or cover applications the geomembrane is covered. After ten-years of research Table 2 (repeated here) was developed which is the conclusion of the covered geomembrane research program. Here it is seen that HDPE decreases its predicted lifetime (as measured by its half-life) from 446-years at 20°C, to 69-years at 40°C."* The Navy believes that the information in the RI/FS Report adequately demonstrates that the proposed cover, which will be regularly inspected and maintained (with animal control measures implemented as necessary), will be protective of human health and the environment.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by California Department of Fish and Game (Charlie Huang, Ph.D., Staff Toxicologist) received on November 18, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
Specific Comment 2 *(cont.)*	2) The Navy responded DFG-OSPR's comment DFG-OSPR's comment by providing information from a 1999 study by the Air Force Center for Engineering and the Environment on "Landfill Covers for Use at Air Force Installations" that stated, "*Although animals cannot generally penetrate a flexible membrane cover (FMC), they can widen an existing hole or tear through wrinkled material (Karr at al., 1992). Gee and Ward (1997) reported that animal burrows did not significantly affect percolation of water into landfill covers at Hanford, Washington. A biointrusion layer is not included as a component in most landfill covers."* According to the Installation Quality Assurance Manual for Geomembrane Products (GSE Lining Technology, Inc. , 2011), there are numerous ways a geomembrane can be damaged during installation and the manual provides installation guidelines to minimize damage, such as: • Unroll geomembrane using methods that will not damage geomembrane and will protect underlying surface from damage. • Place temporarily ballast, such as sandbags, on geomembrane that will not damage the geomembrane • Personnel walking on geomembrane shall not engage in activities or wear shoes that could damage it. • Do not allow heavy vehicular traffic directly on geomembrane. • Prior to driving on geomembrane layer, please check for sharp edges, embedded rocks, or other foreign objects that may protrude in the tires and tracks. • Path driven on geomembrane shall be as straight as possible with no sharp turns, sudden stops or quick starts.	*(see the response on the following page)*

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Written Comments by California Department of Fish and Game (Charlie Huang, Ph.D., Staff Toxicologist) received on November 18, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
Specific Comment 2 *(cont.)*	Based on this information, it is possible to damage the geomembrane during installation. Therefore, it is also possible for burrowing animals to breach the geomembrane through holes or wrinkles created during installation. Furthermore, according to the installation guidelines, the seams of the geomembrane should be sealed by welding them together. If the seams are not properly sealed, this would provide openings for burrowing animals and stormwater to infiltrate the contaminated material. DFG-OSPR is also concerned that over time, the cumulative damage from burrowing animals may significantly affect infiltration of water into the landfill cover. Although biotic barriers may not have been included in most landfill covers back in 1999, based on the potential for burrowing animals to cause significant damage to the landfill cover over time, it would be prudent to be proactive in installing biotic barriers during the landfill cover construction to prevent damage to the cover rather than trying to repair the damage in perpetuity. 3) The Navy also responded to DFG-OSPR's comment by providing information from a 1992 study on "Waste Containment Systems, Waste Stabilization, and Landfills, which stated, "*Damage to geomembranes by burrowing animals such as mice and other rodents has often been discussed, but there seems to be little to no evidence of this occurring in field installations. The only potential food sources for these animals provided by geomembranes are plasticizers and some additives.*" First, has there been any actual scientific research done on long-term damage to geomembranes by burrowing animals in field installations or is the above statement based on anecdotal evidence? Second, rodents would not necessarily be chewing on geomembranes as potential food source. A rodent's incisors continuously grow throughout its life so it must gnaw on objects to keep its incisors worn down. As a result, rodents have been known to gnaw on a variety of objects from wood to plastic sprinkler pipes to electrical wiring (Salmon and Gorenzel, 2011; Salmon and Baldwin, 2011; Timm et al., 2011). Therefore, it would not be unlikely for a rodent to gnaw on a geomembrane.	2) The manufacturer's installation guidance, as cited by the reviewer, would be incorporated into the remedial action work plan that would detail specific installation procedures, supplemented by rigorous quality control testing and inspections, to ensure that the liner is not damaged during installation and that individual liner panels are properly sealed. These specific installation procedures and rigorous quality control practices are industry standards that have been implemented successfully at numerous landfill sites throughout the United States. The Navy believes that the information in the RI/FS Report (ERRG and Shaw, 2011) adequately demonstrates that the proposed cover, which will be regularly inspected and maintained (with animal control measures implemented as necessary), will be protective of human health and the environment. Further, the Navy does not believe that CDFG has presented sufficient technical information to support its assertion that burrowing animals would cause significant damage to the landfill cover over time. 3) The Navy is not aware of any scientific research being done to evaluate the long-term damage to geomembranes by burrowing animals. However, as previously stated, the Navy does not believe that CDFG has presented sufficient technical information to support its assertion that burrowing animals would cause significant damage to the landfill cover over time. As described in Section 11.5.1.2 of the RI/FS Report (ERRG and Shaw, 2011), the geomembrane and associated soil cover and drainage geocomposite "*is proven and reliable in the climatic conditions present at Parcel E-2. Proper design and maintenance would minimize erosion, liquefaction, and slope stability concerns. The cap is durable and could handle foot traffic. In addition, this cap would resist damage from burrowing animals, deep-rooted plants, and desiccation cracking more effectively than a low permeability soil cap.*" The Navy believes that the information in the RI/FS Report adequately demonstrates that the proposed cover, which will be regularly inspected and maintained (with animal control measures implemented as necessary), will be protective of human health and the environment. The post-closure operation and maintenance plan will identify the inspection and maintenance actions, and will be submitted for review and approval by EPA, DTSC and the Water Board in conjunction with the remedial design.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by California Department of Fish and Game (Charlie Huang, Ph.D., Staff Toxicologist) received on November 18, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
Specific Comment 2 *(cont.)*	4) If the Navy is convinced that the geomembrane, along with regular inspections and maintenance, such as installing raptor perches for controlling burrowing animals, is adequate to prevent burrowing animals from breaching the landfill cap at Parcel E-2, then please explain why the Navy at Moffett Field Site 22 believed it was necessary to install a biotic barrier consisting of cobblestone with cement slurry to prevent burrowing animals from breaching their landfill cap? Please also explain why the Navy at Port Hueneme Site 14 believes it is necessary, as part of their long-term landfill maintenance, to poison gophers with Fumitoxin on a weekly basis? DFG-OSPR does not support the use of pesticides such as Fumitoxin for landfill maintenance because of their ability to kill non-target species. 5) The Navy proposes the future reuse of Parcel E-2 as open space and the panhandle area for new, created tidal and freshwater wetlands. Although, the Navy may not currently have problems with burrowing animals on their existing Parcel E-2 landfill cap, once the remediation is completed and the habitat restored, additional wildlife may be attracted to the new habitat, including burrowing animals. If the number of burrowing animals increase at Parcel E-2 in the future, how will the Navy adequately prevent these animals from damaging the landfill cap?	4) The Navy considers existing site conditions when developing and evaluating remedial alternatives, and different site conditions often warrant selection of different response actions. For example, the conditions at Site 22 at the former NAS Moffett Field did not warrant installation of a geosynthetic cap to prevent infiltration but required a biotic barrier to prevent exposure to solid waste that was buried between 0.5 and 2.0 feet below the ground surface. In contrast, the existing conditions at the Parcel E-2 Landfill require a geosynthetic cap to prevent infiltration and the waste is currently buried at least 2.5 below the ground surface and, in most areas, is buried greater than 5 feet or more below the ground surface (see cross sections in Section 2 of the RI/FS Report) (ERRG and Shaw, 2011). The difference in existing site conditions between the Parcel E-2 Landfill and NAS Moffett Field Site 22 warrant selection of different response actions. Therefore, the direct comparison of the preferred alternative for Parcel E-2 with the selected response action for NAS Moffett Field Site 22 is inappropriate. Regarding the potential use of pesticides to control burrowing animals, the Navy has previously responded to CDFG concerns on this matter by stating that low-impact control measures (such as raptor perches) would be preferred over higher impact measures (such as poisons) (see Sections 12.2.3.6 and 12.2.3.10 and Appendix S of the RI/FS Report). 5) To clarify, the SFRA is the entity responsible for determining the future reuse of Parcel E-2. Further, the Navy's wetlands restoration activities are proposed in the Panhandle Area and are not planned for the Parcel E-2 Landfill. Therefore, the Navy does not believe that it is accurate to assert that increased biological activity within the restored wetlands will result in an increase in burrowing animal activity on the Parcel E-2 Landfill cover. The Navy believes that the information in the RI/FS Report (ERRG and Shaw, 2011) adequately demonstrates that the proposed cover, which will be regularly inspected and maintained (with animal control measures implemented as necessary), will be protective of human health and the environment.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by California Department of Fish and Game (Charlie Huang, Ph.D., Staff Toxicologist) received on November 18, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
Specific Comment 2 *(cont.)*	6) DFG-OSPR disagrees that the geomembrane liner will adequately function as a biotic barrier. The Navy has not provided sufficient evidence to support their claim that the liner is an effective biobarrier. Therefore, DFG-OSPR requests the Navy include in the ROD for Parcel E-2, that the proposed landfill cover will include a biotic barrier that has been documented to be effective against damage from burrowing animals and plant roots, not merely that the cover will include a geomembrane and two feet of soil cover. Another option would be to install at least four feet of clean soil on top of the geomembrane to deter burrowing animals from reaching the geomembrane. The Navy could also include in the ROD that they will conduct additional monitoring such as soil and surface water monitoring for contaminants to ensure that the membrane maintains its integrity. Please provide more information in the ROD regarding how the Navy will adequately maintain, and detect and repair damage to the geomembrane in perpetuity. The general information provided in the PP is not sufficient to determine if the proposed remedial alternative will be adequate to protect ecological receptors. Please also explain how the Navy will deal with the geomembrane once it is damaged (by burrowing animals) or degrades to the point where it no longer functions properly. As stated before, DFG-OSPR does not support the use of pesticides for burrowing animal control. In addition, we question whether it is wise to install raptor perches, and attract predators to an area that is being restored to provide future habitat for State and Federal special status species. The increase in raptors may increase the amount of predation on special status bird and mammals species at HPS.	6) As previously stated in the response to part (a) of this comment, the language in the Proposed Plan was not intended to assert that the geomembrane would serve as a biotic barrier. The Navy's plan to address burrowing animals at Parcel E-2 is discussed in Sections 12.2.3.6 and 12.2.3.10 of the RI/FS Report (ERRG and Shaw, 2011). The Navy believes that the information in the RI/FS Report adequately demonstrates that the proposed cover, which will be regularly inspected and maintained (with animal control measures implemented as necessary), will be protective of human health and the environment. The Navy does not believe that CDFG has presented a sufficient technical basis to support their requests for a thicker soil cover or a biointrusion barrier, or their assertions that burrowing animals will damage the geomembrane or the geomembrane will require replacement because of degradation. In preparing the remedial design, the Navy will work with the EPA, DTSC, and Water Board to develop an adaptable set of control measures that satisfies the pertinent postclosure requirements and maintains an appropriate degree of protection for wildlife in restored wetlands.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by California Department of Fish and Game (Charlie Huang, Ph.D., Staff Toxicologist) received on November 18, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
Specific Comment 3	Page 17, Section "Summary of the Preferred Alternative". The PP states, The groundwater would be pumped and treated if necessary to keep contaminants from flowing into San Francisco Bay." Please explain what criteria the Navy will use to determine if groundwater needs to be pumped and treated. Where would the groundwater be pumped to and how would it be treated?	Section 12.2.3.8 of the RI/FS Report (ERRG and Shaw, 2011) describes the planned approach for addressing groundwater flow from the Parcel E-2 Landfill. Pumping may be required to prevent buildup of hydraulic head along the southern perimeter of the cover system and to comply with the leachate control requirements. The remedial design will include specific criteria to determine what conditions will require pumping. Based on the operational data from the previous groundwater extraction system at Parcel E-2, groundwater that may need to be pumped from the area will likely be suitable for discharge to a publicly owned treatment works; however, the remedial design will include a contingency action for on-site treatment prior to discharge to a publicly owned treatment works.
Specific Comment 4	Attachment 1, Key Applicable or Relevant and Appropriate Requirements. The PP states a complete list of potential ARARs identified for the Preferred Alternative is provided in Appendix N of the Parcel E-2 RI/FS Report. Under Appendix N, several potential biological resource ARARs were not included as ARARs, such as the Federal Endangered Species Act, California Fish and Game Code (F&GC) Sections 1908, 4700, and 5050. DFG-OSPR requests these ARARs be added to the list of ARARs for the remedial activities at Parcel E-2. a. The Federal Endangered Species Act is relevant and appropriate because a nesting pair of California Clapper Rails and their two chicks, which are Federally endangered species, were confirmed to be present in San Francisco's Heron's Head Park, near Hunters Point during the summer of 2011 (Fimme, 2011). Therefore, this species also has the potential to be present in the salt marsh at Hunters Point. Please note, this species is also State-listed as endangered and is a State fully protected species, so it is also covered by F&GC Sections 2080 and 3511. In addition, the salt marsh harvest mouse (SMHM), a Federally endangered species, has the potential to be present in the salt marsh at Hunters Point The SMHM is also State-listed as endangered and is a State fully protected species, so it is also covered by F&GC Sections 2080 and 4700.	The Navy has previously responded to CDFG comments regarding the various requirements identified by CDFG as potential ARARs and has provided adequate information to support the determinations of which requirements may qualify as ARARs for the potential response actions at Parcel E-2. Brief responses to the CDFG's current comment are provided below. Please refer to Appendix S of the Final RI/FS Report (ERRG and Shaw, 2011) for further information. a. The Navy does not agree that past observations at Heron's Head Park are relevant to Parcel E-2 because the Navy has performed site-specific studies, as detailed in the RI/FS Report (see Section 2.4) (ERRG and Shaw, 2011), to demonstrate that neither the California Clapper Rail nor the salt marsh harvest mouse is present at Parcel E-2. The Navy's findings are confirmed by information provided in the SFRA's recent EIR (SFRA, 2009). California F&GC § 2080 was previously identified as a potential ARAR because the American peregrine falcon is present on site and is listed as a state endangered species (as of 2008). However, in November 2009, the American peregrine falcon was delisted as an endangered species by the State of California (list published in January 2011). As a result, California F&GC § 2080 is not an ARAR for the selected remedy at Parcel E-2. The Navy recognizes that the American peregrine falcon remains a fully protected species; therefore, California F&GC § 3511 is an ARAR for the selected remedy at Parcel E-2.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by California Department of Fish and Game (Charlie Huang, Ph.D., Staff Toxicologist) received on November 18, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
Specific Comment 4 *(cont.)*	b. F&GC Section 1908 (native plant protection) is relevant and appropriate because there is potential habitat for rare or endangered plants, such as bristly sedge (*Carex comosa*), Diablo helianthella (Helianthelfa castanea), seaside tarplant (*Hemizonia congesta* ssp. congesta), rose leptosiphon (Leptosiphon *rosaceus*), and California seablite (*Suaeda califomica*) on or near Parcel E-2. The Navy states, "*Cal. Fish and Game Code § 1908 is not an ARAR because none of the pertinent rare and endangered plant species are present at the site*." If the Navy has not conducted a rare plant survey according to DFG rare plant survey protocols (DFG, 2009) within the past two years, they will have to conduct another rare plant protocol survey during the appropriate time of year when the species are evident and identifiable, before remedial activities begin, in order to determine if rare plant species are present at Parcel E-2. c. F&GC Section 4700 (fully-protected mammals) is relevant and appropriate because potential habitat for the salt marsh harvest mouse is located on or near Parcel E-2. d. F&GC Section 5050 (fully-protected reptiles and amphibians) is relevant and appropriate because Parcel E-2 is within the known range of the San Francisco garter snake and habitat for this species may be present on or near Parcel E-2.	California F&GC § 4700 was not previously identified by CDFG as a potential ARAR for Parcel E-2; this requirement is not an ARAR for the selected remedy at Parcel E-2 because none of the fully protected mammals (including the salt marsh harvest mouse) are present at the site. b. As previously cited in responses to CDFG comments on the RI/FS Report (see Appendix S of the RI/FS Report) (ERRG and Shaw, 2011), the Navy does not agree with CDFG's assertion that rare or endangered plants are present at Parcel E-2 or elsewhere at HPNS. The Navy concluded in Section 2.4 of the RI/FS Report that, based on past biological surveys performed by the Navy, no rare or endangered plants are present at HPNS. This finding is confirmed by information provided in the SFRA's recent EIR. Specifically, Appendix N1 of the SFRA EIR summarizes past plant surveys as follows (SFRA, 2009): *"Jones & Stokes conducted botanical habitat assessments of the Candlestick Point and HPS on October 29, 2004; March 1, 2006; October 6, 2006; and May 17, 2007. PBS&J botanists conducted rare plant surveys for the Candlestick Point area in May 2008. The general absence of suitable habitat over a majority of the Study Area in conjunction with the absence of observed special-status plants, either as observed during focused surveys or cited in CNDDB species accounts, supports the conclusion that no sensitive plant species occur within the Study Area."* Further, no promulgated requirement exists to support the CDFG's request that a rare plant survey is to be performed within the last 2 years. Therefore, California F&GC § 1908 is not an ARAR. c. California F&GC § 4700 is not an ARAR for the selected remedy at Parcel E-2 because none of the fully protected mammals (including the salt marsh harvest mouse) are present at the site. d. As previously cited in responses to CDFG comments on the RI/FS Report (see Appendix S of the RI/FS Report) (ERRG and Shaw, 2011), the Navy does not agree with CDFG's assertion that fully protected reptiles and amphibians are present at Parcel E-2 or elsewhere at HPNS.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail

Comment No.	Comment	Response
Introduction	Arc Ecology would like to thank the Navy for the opportunity to comment on the Hunters Point Shipyard Proposed Plan for Parcel E2. Futhermore, we would like to express our appreciation to the Navy for the extension of the public comment provided in response to our request to enable these comments to be developed. These comments have been consolidated and are being submitted by Arc Ecology's Executive Director Saul Bloom. These comments are a compilation of research and extensive reviews conducted by Arc Ecology's Environmental Scientist Mike McGowan and environmental consultant Martha Walters. Arc Ecology recognizes and would like to acknowledge the significant concerns of this site to the US Navy, the environmental regulatory community and to the Bayview Hunters Point community. The response to pollution in the United States has been an iterative process and the military's environmental remediation program presents unique challenges. Arc Ecology recognizes also that Navy departmental priorities, concerns, and policies also factor into recommendations made in this document. Finally, we would like to express our sincere appreciation for the current Navy and environmental regulatory team (including the City of San Francisco), who in our opinion, have been one of the most constructive environmental teams we have worked with in our 27 years of engagement with this site. While acknowledging the participants in this process, we have reviewed the Proposed Plan for E2 and submit the following comments:	The following pages provide responses to the general and specific comments provided in writing by Arc Ecology. The Navy previously responded to spoken comments by Arc Ecology at the public meeting on September 20, 2011 (see pages 8 and 9 of this responsiveness summary). Acronyms and abbreviations used in these responses are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 1	**While Arc Ecology recognizes that current preferred alternative for the Parcel E2 Landfill conforms to both DoD and EPA policy in terms of adequacy of characterization and response, we disagree that the landfill has been adequately characterized.** ARC believes that the historic predisposition toward capping this site has prejudiced the characterization to suit that alternative. This historic predisposition toward the resolution of this remedial response has left us questioning: • estimates of quantities for removal in Alternative 2, • the seemingly oppositional arguments that on the one hand, the site is simply a municipal landfill, and yet on the other hand, it is too dangerous to conduct additional sampling within its confines; and • that the response to any contamination found in subsequent sampling would lead to capping anyway, so why bother with further characterization when there is no sunset on CERCLA 120(h) and DoD is bound to return should new uncharacterized contamination be found, and found to be a problem.	As the reviewer acknowledges, the Navy's preferred alternative (which is now identified as the selected remedy) conforms to federal policy and guidance regarding the adequacy of characterization and types of response actions requiring consideration. However, the Navy does not agree with the reviewer's assertion that "*the historic predisposition toward capping this site has prejudiced the characterization to suit that alternative*." Section 3 of the RI/FS Report (ERRG and Shaw, 2011) details the previous environmental investigations performed in and around the Parcel E-2 Landfill including (1) preliminary assessment and investigation in 1984 and 1987, respectively; (2) two separate phases of an RI from 1988 to 1996; and (3) three supplemental data gaps investigations in 2002. During these investigations, the Navy installed 28 soil borings and 18 monitoring wells and excavated 25 test pits within the Parcel E-2 Landfill to evaluate the nature and extent of contamination. The previous environmental investigations were developed in consultation with the EPA, DTSC, Water Board, and CCSF DPH. As demonstrated by the approval of the Final RI/FS by the EPA, DTSC, Water Board, and CCSF DPH, the investigations at Parcel E-2 have satisfied the regulatory stakeholders and have provided adequate data to support an informed risk management decision. When the Navy began preparing the RI/FS Report in 2004, the first step involved evaluating existing site data and reviewing pertinent EPA guidance to develop a preliminary list of remedial alternatives for Parcel E-2. Based on the review, the Navy determined that (1) conditions at the Parcel E-2 Landfill support use of the presumptive containment remedy, and (2) conditions at the Panhandle Area, East Adjacent Area, and Shoreline Area do not support use of the presumptive containment remedy but, consistent with the streamlined approach outlined in the NCP preamble (55 Federal Register 8704-8705, March 8, 1990) and in EPA RI/FS guidance (EPA, 1988), support evaluation of remedial alternatives focused on containment and excavation. The Navy consulted with the EPA, DTSC, Water Board, and CCSF DPH during this initial stage and, based on their input and input from the community, determined that complete removal of the Parcel E-2 Landfill should also be evaluated as one of the remedial alternatives (in addition to one or more containment alternatives).

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 1 *(cont.)*	*(see above)*	This approach is consistent with EPA's directive regarding presumptive remedies (EPA, 1993b) which states that "*there may be unusual circumstances (such as, complex contaminant mixtures, soil conditions, or extraordinary State and community concerns) that may require the site manager to look beyond the presumptive remedies for additional (perhaps more innovative) technologies or remedial approaches.*" The information contained in the RI/FS Report demonstrates that Parcel E-2 is characterized adequately to support an evaluation of the focused set of remedial alternatives developed in consultation with the EPA, DTSC, Water Board, and CCSF DPH. In addition, the information contained in the RI/FS Report supports the use of the presumptive containment remedy for the Parcel E-2 Landfill and explains the relative risks of that option compared to complete excavation. The Navy considered and addressed concerns raised about the remedial alternatives in the draft and draft final versions of the RI/FS Report, public review and comment upon those reports, and Navy responses to those comments. For example, the Navy solicited input from community groups, including Arc Ecology, throughout its preparation of the RI/FS Report. In comments submitted on the draft and draft final versions of the RI/FS Report, Arc Ecology did not express concerns with the adequacy of the Navy's characterization efforts at Parcel E-2. To the contrary, Arc Ecology's first comment on the draft RI/FS Report stated that the "*study is well organized with copious information provided in the tables, figures, appendices, and list of references that thoroughly document the results so far of the remedial investigation.*" Appendix S of the RI/FS Report provides all comments received and the Navy's associated responses.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 1 *(cont.)*	*(see above)*	In response to the specific concerns raised in this comment, the Navy offers the following information: • The estimated quantities for solid waste, soil, and sediment to be excavated under Alternative 2 are detailed in Appendix R of the RI/FS Report (Table R-6) and are based on detailed geologic cross sections (Figures 2-3 through 2-8) for the Parcel E-2 Landfill and surrounding area. • Section 8.2.1 of the RI/FS Report describes the type and volume of waste identified at the Parcel E-2 Landfill, including municipal-type waste, construction debris, and industrial wastes. The Navy has not asserted that additional sampling within the Parcel E-2 Landfill is "too dangerous" but, as provided in Section 8.2.3.1 of the RI/FS Report, has demonstrated that the landfill has been characterized adequately to support an evaluation of the focused set of remedial alternatives. Using criteria specified in EPA guidance, the Navy evaluated several potential hot spots within the Parcel E-2 Landfill to determine if further characterization was warranted. As documented in Section 8.2.3.2 of the RI/FS Report, further characterization of the potential hot spots is not warranted because the contaminants do not pose a principal threat to human health or the environment and can be reliably contained.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 2	**II. Proposed Plan does not conform to BRAC policy** The summary generally applied to BRAC policy toward cleanup is that "reuse drives cleanup." If this is indeed the DoD's approach to cleanup, it has not been applied for this site. *The Navy's historic approach to this site has in fact driven the proposed reuse for this site.* A. **The proposed capping of Parcel E2 has been the presumptive remedy for the property since 1989 and the sites inclusion on the NPL.** As a consequence the Navy's presumptive remedy has driven reuse planning instead of allowing the reuse planning to flow from a community dialogue over other proposed uses. The evidence for this perspective is that there have been a number of alternative use studies of the site, most focusing on some form of wetland. For example, • In 2001, CALFED funded a study of the possible use of the Parcel E landfill site as the location for a storm water treatment wetlands. • In 2003, the California State Coastal Conservancy funded a park useage study for the Shipyard's southern shoreline and waterfront. In that study the area of the Parcel E2 landfill was also identified as a wetlands site. The same landscape architectural firm that designed Crissy Field in the Presidio including its wetlands, Hargreaves Associates, were commissioned to develop the study. The study was conducted under a cooperative agreement with the San Francisco Redevelopment Agency and Commission. The resulting report earned the American Society of Landscape Architects National Award for Research and Planning in 2007. • In 2009, San Francisco International Airport contracted for a study of a wetlands design for a 20 acre portion of the Shipyard's southern shoreline. The original selected site was Parcel E2 based on the prior studies outlined above. HOWEVER: during the negotiations over the SFO contract, both the Mayors Office of Economic and Workforce Development and the San Francisco Regional Water Quality District requested the site be moved from Parcel E2 to elsewhere on Parcel E because of the belief that the Navy was committed to capping the E2 landfill and would not consider any alternative to that view.	The reviewer's assertion that "*proposed capping of Parcel E2 has been the presumptive remedy for the property since 1989*" is inaccurate and unsubstantiated. As described in the response to general comment 1, the Navy's environmental investigation activities at Parcel E-2 were initiated in 1984, were developed in consultation with the EPA, DTSC, Water Board, and CCSF DPH, and included two separate phases of an RI from 1988 to 1996 and three supplemental data gaps investigations in 2002. The Navy's environmental cleanup program at HPNS addresses the planned reuse outlined in the SFRA's amended Hunters Point Shipyard Redevelopment Plan (SFRA, 2010). The Redevelopment Plan was initially approved in 1997 and adopted as the official Redevelopment Plan for HPNS by the CCSF Board of Supervisors (Ordinance 285-97 pursuant to Chapter 4.5 of California Community Redevelopment Law, California Health and Safety Code § 33492). The Redevelopment Plan was subsequently amended in 2010, and the selected remedy would accommodate the future reuses identified in the amended plan. The selected remedy includes restored wetlands in the Panhandle Area that is consistent with the concepts presented in the Redevelopment Plan. Specifically, Map 1 of the original 1997 Redevelopment Plan identifies a combination of open space reuses in the area encompassing Parcel E-2, including passive and active recreation at the Parcel E-2 Landfill and East Adjacent Area, and restored wetlands in the Panhandle Area. In addition, the Navy's selected remedy for Parcel E-2 complies with pertinent BRAC law and policy (DoD, 2006) because it is consistent with the reasonably anticipated future land use, as identified by the local redevelopment authority (in this case, the SFRA) in their approved redevelopment plan.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 2 *(cont.)*	More than $1 million in state funds have been expended on Parcel E2 landfill and related Yosemite Slough and Park planning. Arc Ecology and various members of our staff and teams have discussed these plans with the Navy and regulators over the past decade. A briefing and tour was conducted by the Navy in 2006 during which Mr. Arthur Feinstein of the Sierra Club outlined the concept of a wetlands located in the current place of the Parcel E2 landfill. It is therefore our opinion that the reuse of E2 as open space is based solely on the assumption that capping the site is all the Navy has been willing to do.	*(see response on pages 46 through 49)*
	B. The Proposed Plan does not appear to conform to the December 1997 DoD Base Reuse Implementation Manual. The Manual identifies the following items as principles for guiding the cleanup of a closing military base: • ***CONSIDER COMMUNITY NEEDS.*** *Think about how decisions will affect the ability of communities to redevelop the base.* • ***COMPROMISE.*** *Reaching agreements early in the process will save time and money later.* • ***BE FLEXIBLE.*** *Do not be wedded to a particular approach to a problem. Creativity, within the applicable laws and regulations, is essential to successful base closure and reuse.* • ***BE INNOVATIVE.*** *Do not be hamstrung by past practices. This is a new process, and decisions should be new and different.* • ***EXERCISE COMMON SENSE.*** *Solutions should be site-specific. There will rarely be cookie-cutter solutions that apply to all cases. [and:]* • *Refocus current environmental cleanup, compliance, and natural and cultural resources strategies and schedules in light of the LRA's land-use plan and redevelopment priorities.*	As previously described, the Navy's selected remedy for Parcel E-2 complies with the most current BRAC policy document, the 2006 "Base Redevelopment and Realignment Manual", DoD 4165.66-M. This 2006 manual canceled the 1997 Base Reuse Implementation Manual (see "Base Redevelopment and Realignment Manual" Forward dated March 1, 2006), and reflects the most current statutes and regulations.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 2 *(cont.)*	**DoD Base Reuse Implementation Manual December 1997** i. **Consider Community Needs**: Bayview Hunters Point is the City's most polluted of San Francisco's neighborhoods. Leaving a 22 acre parcel not adequately uncharacterized but known to be contaminated landfill in place, even capped with institutional and structural controls is nevertheless in our view contrary to this community's need for a healthy and safe environment. The Navy's reliance of CERCLA 120(h) as a guarantor of future remedial response should controls fail is not reliable because, as the Navy has frequently stated, the Anti-Deficeincy Act prevents the Department from binding Congress to future actions and expenditures. Congress could vote to deny funding for a future response, as it nearly did this year for disaster relief – another traditional guarantee of the federal government – and it could vote to abolish 120(h) entirely. ***Therefore the remedy that best considers community needs is one that is not dependent upon the future good will of Secretaries of the Navy or Congress.*** ii. **Compromise:** The preferred remedy is the same remedy expected for this site for some 20 years, which includes shoreline rip rap and revetments that the community has expressed consistent opposition to, and is hardly a demonstration of compromise. iii. **Flexibility**: "Do not be wedded to a particular approach to a problem." **Innovation**: "Do not be hamstrung by past practices." **Common Sense**: "There will rarely be cookie-cutter solutions that apply to all cases." The preferred alternative is nothing if it is not all of these. It relies on standard practice implemented Department wide with regard to landfills and shoreline armoring and it is rooted in past practice while ignoring the the substantive benefits of living shorelines and other strategies that could be implemented for the entire E2 Parcel. It appears that the proposed alternative ***is*** a cookie cutter approach to a problem that should have a more considered response.	The Navy understands the desire of community members to have HPNS cleaned up to the highest standards. The Navy is obligated to consider the community's input regarding the cleanup decision for Parcel E-2 because community acceptance is one of nine CERCLA remedy selection criteria identified in the federal regulation called the NCP. As described on page 15 of the Proposed Plan, Criteria 1 and 2 (protection of human health and the environment, and compliance with ARARs) are threshold criteria that each alternative must meet to be eligible for selection. Criteria 3, 4, 5, 6, and 7 are balancing criteria used to weigh major tradeoffs in the benefits and limitations among alternatives. Criteria 8 and 9 (state acceptance and community acceptance) are modifying criteria considered in the ROD. The preferred alternative published in the Proposed Plan (Alternative 5) complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria. The Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The State of California, through DTSC and the Water Board, and segments of the community, represented by the SFRA and Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have concurred with the preferred alternative published in the Proposed Plan. In addition, the preferred alternative is generally consistent with Proposition P, as explained in the responses to spoken comments from Arc Ecology (see pages 8 and 9 of this responsiveness summary). The information presented by members of the community that disagree with the preferred alternative does not justify modification of the preferred alternative based upon the "community acceptance" criteria of the NCP. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 2 *(cont.)*	*(see above)*	The selected remedy includes the following monitoring and maintenance activities that would be performed as long as necessary to protect human health and the environment and to comply with pertinent state and federal ARARs: • Groundwater monitoring will be performed, consistent with the requirements of Title 22 CCR § 66264.100(d) and § 66264.310(b)(3), to verify that chemical concentrations in groundwater do not exceed concentrations designated by the RAOs at the compliance boundary. • Landfill gas monitoring will be performed to demonstrate compliance with Title 27 CCR § 20917 through § 20934. • Stormwater and erosion controls will be installed and maintained as required under Title 27 CCR § 20365(c) and (d), and stormwater discharges will be monitored as required under Title 22 CCR § 66264.97(c)(1) and (c)(2)(B). • The cover will be inspected and maintained to ensure its integrity as required under Title 27 CCR § 21180(a). The long-term monitoring and maintenance program will be detailed in the post-closure operation and maintenance plan for Parcel E-2, consistent with content requirements as provided in Title 27 CCR § 21800(c), and submitted for review and approval by EPA, DTSC and the Water Board in conjunction with the remedial design. Regulatory oversight will continue during long-term operation and maintenance of the selected remedy. In addition, the selected remedy will be subject to statutory reviews every 5 years (pursuant to CERCLA) to ensure that it remains protective of human health and the environment.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 3	**III. The Proposed Plan does not conform to US EPA Environmental Justice policy.** The Proposed Plan is not in our view in conformance with US EPA EJ policy. The Proposed Plan clearly does not consider Environmental Justice as a criteria for decision-making with regard to Parcel E2. It is difficult to see how EPA Region 9 can, as it has stated publicly, support the Alternative proposed in the Navy's Proposed Plan given its failure to comply with the interim guidance on Environmental Justice published by the Agency in July 2010. In fact none of the discussion presented in the Proposed Plan refers to environmental justice, the responsibilities to comply with EJ guidelines, or the fact that the Shipyard is located in an EJ community. **A. Both the DoN and EPA are bound by E.O. 12898 - *59 FR 7629 Feb. 16, 1994*** ***Title 3 - The President*** *"By the authority invested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:"* ***Section 1-1. Implementation.*** ***1-101**. Agency Responsibilities. To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands.* ***1-102**. Creation of an Interagency Working Group on Environmental Justice. (a) Within 3 months of the date of this order, the Administrator of the Environmental Protection Agency ("Administrator") or the Administrator's designee shall convene an interagency Federal Working Group on Environmental Justice ("Working Group"). The Working Group shall comprise the heads of the following executive agencies and offices, or their designees: (a) Department of Defense; (b) Department of Health and Human Services;*	The Navy and EPA are firmly committed to achieving the goals identified in the Executive Order on Environmental Justice (E.O. 12898) at HPNS. Both agencies are dedicated to consistent, fair treatment and meaningful participation in environmental decision-making for minority, low-income, and indigenous populations that are disproportionately impacted by pollution. The Navy and EPA, in performing environmental cleanup work at HPNS with support from DTSC and the Water Board, have worked together to achieve the environmental justice goals of fully protective cleanup actions, fair and equal treatment, and meaningful involvement for all people in the Bayview-Hunters Point community. Our efforts to satisfy these goals include: • Substantial regulatory review and oversight of all Navy cleanup activities. The EPA, DTSC, Water Board, CCSF, California Department of Public Health, Bay Area Air Quality Management District, and San Francisco Bay Conservation and Development Commission all have dedicated significant additional staff to HPNS to ensure that the Navy's cleanup work is performed in a way that is protective of the Bayview-Hunters Point community and complies with federal and state laws and regulations. • Substantial financial commitment from the Navy to HPNS cleanup. The Navy has spent approximately $716M over the past 20 years on the HPNS cleanup program, and these expenditures have made HPNS one of the nation's largest BRAC cleanup programs. The Navy's cleanup efforts to date have successfully removed, treated, or contained a significant volume of contamination that would otherwise pose an unacceptable risk to site workers and future occupants. • EPA's Technical Assistance Grants to the Community: - Technical Assistance Grants (TAG). Since 1993, EPA has consistently provided various community groups with grant money to hire an independent technical advisor to review and provide independent input on the Navy's plans and reports, and to help further explain the Navy's cleanup work to interested community members.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 3 *(cont.*	*(c) Department of Housing and Urban Development; (d) Department of Labor; (e) Department of Agriculture; (f) Department of Transportation; (g) Department of Justice; (h) Department of the Interior; (i) Department of Commerce; (j) Department of Energy; (k) Environmental Protection Agency; 59 FR 7629, Feb. 16, 1994.* **B. The Proposed Plan does not appear to be consistent with the goals and objectives outline in the July of 2010 *Interim Guidance on Considering Environmental Justice During the Development of an Action* developed by the US EPA.** The guidance, excerpted below, shows that Environmental Justice considerations must be a part of any remedy decision involving EPA. Furthermore it directs EPA staff to the maximum extent feasible to incorporate environmental justice concerns: *E.O. 12898 applies to agency "programs, policies, and activities" and in general calls on each federal agency to make achieving EJ part of its mission (see Appendix A for full text of E.O. 12898). It directs agencies such as EPA, "[t]o the greatest extent practicable and permitted by law," to "identify[…] and address[…], as appropriate, disproportionately high and adverse human health or environmental effects" of agency programs, policies, and actions on minority populations and low-income populations."* *Consistent with the emphasis in the Presidential Memorandum accompanying E.O. 12898, regarding the use of existing environmental laws to help achieve the goal of EJ, EPA uses existing environmental statutes and regulations to consider and address EJ concerns. These authorities encompass the breadth of the Agency's activities, including setting standards. Some authorities direct the Agency to consider specific affected populations when setting standards, whereas others provide discretionary opportunities to incorporate EJ concerns into the action.* **i. The *Interim Guidance* establishes some criteria to guide EPA staff:** *Your action may involve an EJ concern if it could: Present opportunities to address existing disproportionate impacts on minority, low-income, or indigenous populations that are addressable through the action under development. You are encouraged to consider how your action may impact these populations, and this list is intended to aid in those considerations.*	- Technical Assistance Services for Communities (TASC). EPA used its TASC contract program to provide the community with an independent asbestos technical expert to review the "Draft 2010 U.S. EPA's Review of Dust/Asbestos Control Measures and Air Monitoring at Hunters Point Shipyard Parcel A Report" and other supporting documentation. A community meeting was held where the independent technical advisor presented his findings. In addition, TASC services were used by the community to review the San Francisco Redevelopment Agency's EIR for HPNS related to land use and site cleanup. The technical advisor presented formal comments to the CCSF and held a meeting to present independent findings to the broader community. - Region 9 Environmental Justice Grant for HPNS. Prior to the national program, the Region 9 EPA Superfund Program developed and awarded a "one-time" HPNS Environmental Justice Small Grant to encourage new activity or improve the quality of existing activities related to environmental justice and cleanup of the HPNS. • Meaningful Community Engagement under the Navy's Updated Community Involvement Plan (CIP). The Navy updated their CIP in 2011 to present the communication and community involvement program activities that were designed to meet the specific needs and desires of the HPNS community (Navy, 2011a). The Navy conducts the following specific community outreach efforts in accordance with the CIP: (1) publishing an annual calendar of outreach events; (2) dedicating a Navy team member to serve as Community Involvement Manager; (3) publishing fact sheets on important technical topics; (4) holding regularly scheduled community meetings; (5) publishing an annual overview of the HPNS cleanup program; (6) regularly updating a hardcopy mail and e-mail distribution list to maximize communication; (7) holding periodic bus tours of HPNS to describe the cleanup program; (8) participating in local radio programs to answer questions from the local community; (9) presenting technical information to a variety of existing community groups; (10) making translation services available to interested community members; and (11) publishing notices in local newspapers to announce public meetings associated with important document reviews.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 3 *(cont.*	• ***Proximity and Exposure to Environmental Hazards.*** *Disproportionate public health and environmental effects can be related to a community's or population's differential proximity and exposure to environmental hazards. There are many prominent examples, empirical and anecdotal, of communities affected by their proximity to environmental hazards.* • ***Susceptible Populations.*** *Susceptible populations are groups that are at a high risk of suffering the adverse effects of environmental hazards. Certain factors may render different groups less able to resist or tolerate an environmental stressor. These susceptibility factors may be intrinsic in nature, based on age, sex, genetics, race, or ethnicity. In addition, some susceptibility factors may be acquired (such as chronic medical conditions, lack of health care access, poor nutrition, or fitness) or be related to other pollutant exposures. Minority, low-income, and indigenous children are at greater risk because factors such as poverty, poor nutrition, pre-existing health conditions, lack of access to health care, lack of information, lack of exercise, psychosocial stress, and lack of social capital contribute to greater susceptibility to environmental hazards.* • ***Unique Exposure Pathways****. An exposure pathway is the route a substance takes from its source to its endpoint. Some populations sustain unique environmental exposures because of practices linked to their cultural background or socioeconomic status. For example, as a cultural practice, some indigenous populations rely on a diet that may include subsistence fishing and/or farming. Subsistence diets may expose these populations to toxic chemicals, such as mercury from a fish diet or other chemicals from a diet high in contaminated vegetation. There are also nondietary exposure pathways that may be unique to some indigenous populations. For example, in populations that practice basket weaving, exposure to toxic chemicals may occur when contaminated materials are placed in the mouth during the weaving process.*	• Employment. The Navy works closely with their existing contractors to emphasize the importance of hiring community members to assist in the cleanup program, and works with interested stakeholders (such as the CCSF) to promote job training programs. These efforts have proven successful based on recent estimates—from 2009 to 2011 over 1,000 community members have been employed under Navy contracts (on either full-time, part-time, or temporary basis) to assist in the cleanup program. In addition, the Navy and their contractors have identified a large network of local businesses to assist in the cleanup program, such as those providing document production services, supplying building materials and consumables (drinking water and ice), renting heavy equipment, and transporting soil and rock. These efforts have proven successful based on recent estimates of over $11 million worth of goods and services from local businesses. • Commitment to Protective Cleanup Actions. Most importantly, the Navy, EPA, and the State of California regulatory agencies are committed to fully protective cleanup actions at Parcel E-2 and throughout HPNS. As described in previous responses, the selected remedy for Parcel E-2 will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife. Since 2005, the Navy has undertaken a great deal of early action to remove contaminated soil at Parcel E-2, involving the excavation and off-site disposal of over 90,000 cubic yards (over 6,400 truckloads). For the Parcel E-2 landfill itself, the Navy, EPA, and State of California jointly believe that safely isolating and capping the Parcel E-2 Landfill (as specified in Alternative 5) presents less overall risk to the adjacent community when compared with the risks of other cleanup alternatives evaluated, including complete removal of the Parcel E-2 Landfill (in Alternative 2). The combination of removal and containment proposed under Alternative 5 reduces risk sooner, is easier to implement, and is much more cost-effective as compared with Alternative 2. In addition, Alternative 5 provides additional risk reduction as compared with Alternatives 3 and 4.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 3 *(cont.*	• ***Multiple and Cumulative Effects.*** *Minority, low-income, and indigenous populations are likely to suffer a wide range of environmental hazards, ranging from poor air quality to poor housing. Numerous empirical studies and anecdotal accounts describe minority, low-income, and indigenous communities that are impacted by multiple environmental hazards, such as industrial facilities, landfills, transportation-related air pollution, poor housing, leaking underground tanks, pesticides, and incompatible land uses. Analyzing cumulative effects from multiple stressors allows a more realistic evaluation of a population's risk to pollutants. The chemical-specific focus to assessing environmental risk fails to account for the fact that these populations may be exposed to several different pollutants. EPA's Framework for Cumulative Risk Assessment can enhance an evaluation of the various aspects of cumulative risk experienced by these populations.* • ***Ability to Participate in the Decision-Making Process.*** *The ability, or inability, to participate in the environmental decision-making process may contribute to disproportionate impacts. Factors that contribute to the inability of a community to participate fully in the decision-making process include:* ✓ *Lack of trust* ✓ *Availability or lack of information* ✓ *Language barriers* ✓ *Socio-cultural issues* ✓ *Inability to access traditional communication channels* ✓ *Limited capacity to access technical and legal resources* ***Physical Infrastructure.*** *Physical infrastructure, such as poor housing, poorly maintained public buildings (e.g., schools), or proximity to transportation hubs, contributes to making certain populations more vulnerable to environmental hazards.*	The reviewer's expectation that the Proposed Plan address environmental justice as a specific criterion is not consistent with the NCP (which identifies nine specific criteria, including community acceptance). This responsiveness summary provides the Navy's and EPA's responses to community comments on the Proposed Plan, and Section 2.8.2 of this ROD documents the Navy's evaluation of the community acceptance criterion.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard		
Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*		
Comment No.	**Comment**	**Response**
General Comment 3 *(cont.)*	**ii. The above criteria clearly speaks to Bayview Hunters Point** ✓ **Proximity and Exposure to Environmental Hazards.** *Disproportionate public health and environmental effects*. Bayview Hunters Point and the Potrero neighborhood of Dog Patch are San Francisco's last two remaining industrial neighborhoods. It is well documented that residents of Bayview Hunters Point face a greater number of environmental health threats than any other community in San Francisco. These studies include the 1991 study by the San Francisco Department of Health reporting an elevated level of respiratory ailment and specifically asthma within the population of Bayview Hunters Point over the rest of the City. ✓ **Susceptible populations** *are groups that are at a high risk of suffering the adverse effects of environmental hazards.* Here again, Bayview Hunters Point has already documented elevated levels of respiratory ailments and other diseases over the general population of San Francisco. Given the disproportionate impact of industry on the neighborhood Bayview is a quintessential **example of pollution** *driving* health. ✓ **Unique Exposure Pathways.** *This is of particular concern with regard to subsistence fishing that goes on* in South Basin the body of water adjacent to E2 and whose sediments compose a portion of Parcel F. Asian, Hispanic and African American fisherpersons regularly frequent the southern shoreline of South Basin at Candlestick Point State Recreational Area. Arc Ecology has photographs of Asians crabbing around the inlet of Yosemite Slough. These areas in which people fish in, have documentation, which indicates that there are elevated levels of hazardous substances.	The Navy and EPA are firmly committed to achieving the goals identified in the Executive Order on Environmental Justice (E.O. 12898) at HPNS. Both agencies are dedicated to consistent, fair treatment and meaningful participation in environmental decision-making for minority, low-income, and indigenous populations that are disproportionately impacted by pollution. The Navy and EPA, in performing environmental cleanup work at HPNS with support from DTSC and the Water Board, have worked together to achieve the environmental justice goals of fully protective cleanup actions, fair and equal treatment, and meaningful involvement for all people in the Bayview-Hunters Point community. Our efforts to satisfy these goals are detailed previously in this response. Contamination in offshore Parcel F is being addressed by the Navy as part of a separate CERCLA action. The Navy is working to finalize the RI/FS process for Parcel F, at which point it will identify a preferred alternative for Parcel F in a Proposed Plan. Further, the Navy is working with various stakeholders to integrate the cleanup program for Parcel F with the adjoining portions of Parcel E-2 and the neighboring Yosemite Slough. The Navy will select a final remedy for Parcel F that is protective of human health and the environment.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 3 *(cont.)*	✓ **Multiple and Cumulative Effects.** As mentioned earlier in the Proximity and Exposure section, the BVHP community is exposed to numerous sources of environmental pollution. We question the efficacy of capping and containing a source of potential contamination within a community already awash in numerous other sources. **iii. The Proposed Plan demonstrates that the concept of Environmental Justice is clearly not well understood. The EPA's Guidance defines environmental justice as:** *"the **fair treatment** and **meaningful involvement** of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."* ***Fair Treatment** means that no group of people should bear a disproportionate burden of environmental harms and risks, including those resulting from the negative environmental consequences of industrial, governmental, and commercial operations or programs and policies.* ***Meaningful Involvement** means that: 1) potentially affected community members have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health; 2) the public's contribution can influence the regulatory agency's decision; 3) the concerns of all participants involved will be considered in the decision-making process; and 4) the decision-makers seek out and facilitate the involvement of those potentially affected.*	As described in the response to general comment 2, the Navy's analysis of potential remedial alternatives for Parcel E-2 has shown that the preferred alternative published in the Proposed Plan (Alternative 5) complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria. The Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife. *(see the response on the following page)*

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 3 *(cont.)*	a. **Fair Treatment**: **All landfills are not equal**. Perhaps the best example of the failure of the proposed plan to treat BVHP fairly is the use of the equivalence argument regarding landfill capping in other locations. At public hearings, the City and Navy have compared the Parcel E2 landfill to other large capped landfills in the Bay Area; and that this strategy is sanctioned by EPA's own large landfill closure guidance. The examples are Caesar Chavez Park in Berkeley, Shoreline Amphitheater in Santa Clara, and Alameda Point. However these landfills are significantly different from Parcel E2 in that they are all at least half a mile from residences. Parcel E2 is in close proximity to housing, specifically the low-income "Oakdale" public housing development, and the low-income affordable development of Mariners Village. According to one mapping program, Parcel E2 is located within 900' of Mariners Village. After the October 24, 2011 briefing and public hearing on the Parcel E2 Proposed Plan before the San Francisco Board of Supervisors Land Use Committee where Arc Ecology had raised this point, the EPA's current Project Manager for the Shipyard countered that we had failed to bring up that at the Presidio a capped landfill was even closer to a residential site. While this is in-fact correct, the problem with using the Presidio as an analogy is of course that: The Presidio is not a comparable comparison. *The Presidio is not an environmental justice community*. o Historically, the Presidio was an administrative military base, whereas the Shipyard was an industrial manufacturing military base. o The Presidio landfill is smaller and not thought to contain radiological contamination or pose a potentially equivalent threat to the Parcel E2 landfill. o Unlike the Bayview, the Presidio is not surrounded and does not surround a heavily concentrated industrial area with ongoing sources of unregulated pollution.	The reviewer's comments incorrectly suggest that the remedy selection process for Parcel E-2 has focused on the comparison of the Parcel E-2 Landfill with other large landfills in the Bay Area. The Navy's analysis of remedial alternatives for Parcel E-2, which serves as the foundation for the remedy selection process, has followed the NCP and other pertinent regulatory guidance (EPA, 1988, 1991, 1993a, 1993b, 1994, and 1996). Alternative 2 includes removal of the Parcel E-2 Landfill and was compared with three other alternatives involving hot spot removal and containment. The preferred alternative published in the Proposed Plan (Alternative 5) complies with the two threshold NCP criteria, and provides the best balance of tradeoffs with respect to the five balancing NCP criteria. The Navy's evaluation of the two modifying NCP criteria did not warrant changes to the preferred alternative. The State of California, through DTSC and the Water Board, and segments of the community, represented by the SFRA and Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have concurred with the preferred alternative published in the Proposed Plan. In addition, the preferred alternative is generally consistent with Proposition P, as explained in the responses to spoken comments from Arc Ecology (see pages 8 and 9 of this responsiveness summary). The information presented by members of the community that disagree with the preferred alternative does not justify modification of the preferred alternative based upon the "community acceptance" criteria of the NCP. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife. The Navy has engaged the local community in an effort to communicate the findings of the RI/FS Report and to solicit their input. The Navy's descriptions have emphasized the process by which they have fully evaluated excavation of the Parcel E-2 Landfill, and compared it to other remedial alternatives involving hotspot removal and containment. The Navy's descriptions of other landfill sites in comparison with the Parcel E-2 Landfill were provided for illustrative purposes to explain that large landfills, regardless of their specific location, are commonly managed in place. Ample evidence exists to support this conclusion and is the primary reason that EPA developed the containment presumption for large landfills planned for closure under CERCLA.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 3 *(cont.)*		As previously stated, the selected remedy will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife.
	o The Presidio is not located in nor is it populated by a majority minority and poor community ▪ Rents and leases for the Presidio are well above what is affordable to most BVHP residents in close proximity to the Shipyard. Some residents of the adjacent San Francisco neighborhoods of Richmond, Sea Gate, Pacific Heights, and the Marina, have annual incomes that exceed the entire resident population of public housing developments adjacent to the Shipyard like Alice Griffiths, Oakdale, Kiska, and West Point. The confusion regarding the applicability of the Presidio to Hunters Point speaks to why EJ concerns are absent from the Proposed Plan for E2.	*(please see the response on page 59)*
	Several Bayview Hunters Point residents spoke to similar concerns at the October 2011 Board of Supervisors Land Use Committee Meeting including: o Long-time community leader Espanola Jackson spoke directly regarding her opposition to the preferred alternative in the proposed plan requesting instead that the Landfill be removed to address the hazard it posed to the community as well as long-term cumulative impacts of pollution on this environmental justice community. Ms. Jackson expressed a general community sentiment that odor, delay of property transfer and transportation considerations were of less concern to the majority of Bayview Hunters Point residents than was the possibility that E2 would remain intact albeit capped under the Preferred Alternative.	The CCSF Board of Supervisors informed the Navy that the purpose of the October 2011 meeting was for members of the public to provide comments to the Board of Supervisors for their consideration in formulating CCSF's comments on the proposed plan. Although a Navy representative attended this meeting to describe the preferred alternative identified in the Proposed Plan and answer questions from the Board of Supervisors, the public comments provided to the Board of Supervisors at this meeting were not directed to the Navy for consideration or response. However, many of the same community members who attended the October 2011 Board of Supervisors meeting also provided comments directly to the Navy on the Proposed Plan. Please refer to the responses to comments provided by other community members (including Ms. Jackson, Ms. Harrison, and members of POWER), as provided in this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 3 *(cont.)*	o Green Action's Bayview Hunters Point Organizer and community resident Marie Harrison raised similar issues and spoke in opposition to the Proposed Plan. o Other community residents associated with POWER echoed these similar concerns. o These comments and others from the community would have been vetted in the months leading up to the publication of the Proposed Plan had the HPS RAB been revamped instead of disbanded. b. **Meaningful Public Involvement: All methods of community engagement are not equal.** The Navy's failure to replace the RAB for Hunters Point Shipyard is a clear example of BVHPs limitation in participating in the decision making process surrounding E2. This omission of the RAB at the Shipyard, severely limits any formal and meaningful public participation or community involvement, especially for Parcel E2.'s Proposed Plan. Arc Ecology voiced this same concern with regard to the Navy's Community Involvement Plan and we have seen this problem in action at the meetings associated with the Proposed Plan. While we agree with the Navy that the prior RAB needed revamping, we vehemently disagree with its determination to use other methods to engage the public now. Part of the purpose of a RAB is to create a committee of well-informed community advisors able to participate in a meaningful dialogue with regard to the concepts eventually presented in action documents like the Proposed Plan for E2. The lack of a RAB fundamentally undermined our confidence that this Plan was appropriately vetted in the community. **iv. Although the Proposed Plan is not in conformance with the USEPA EJ Guidance, it is important to note that DoN has for nearly twenty years not been in conformance with E.O. 12898 - *59 FR 7629, Feb. 16, 1994.*** Thus it is not entirely the responsibility of the Shipyard's project team for having left environmental justice concerns out of the formulation of their Proposed Plan for E2.	As previously discussed, input from the local community was considered by the Navy under the community acceptance criterion. As specified in the NCP [40 CFR § 300.430(e)(9)(iii)(I)], the community acceptance criterion cannot be evaluated "*until comments on the proposed plan are received.*" The Navy's evaluation of the community acceptance criterion is documented in this ROD, which includes the subject responsiveness summary. From 1994 through 2009, the primary means of community involvement was the Navy's RAB. Although the RAB was dissolved in December 2009 because it was no longer fulfilling its purpose, the Navy continues to involve the community in the details of the environmental cleanup program for HPNS. The Navy updated their CIP in 2011 to present the communication and community involvement program activities that were designed to meet the specific needs and desires of the HPNS community (Navy, 2011a). Some of the specific community outreach efforts that the Navy conducts in accordance with the CIP include (1) preparation of topic-specific fact sheets; (2) use of a calendar of outreach events; (3) holding regularly scheduled community meetings; and (4) conducting bus tours. Section 2.10 of this ROD identifies the Navy's efforts to involve the local community in the cleanup program at HPNS, including soliciting input on the proposed cleanup for Parcel E-2. Additional efforts by the Navy and EPA to achieve the environmental justice goals of fully protective cleanup actions, fair and equal treatment, and meaningful involvement for all people in the Bayview-Hunters Point community are detailed previously in this response.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 4	**IV. The Proposed Plan fails to address the National Contingency Plan community acceptance criteria adopted by the City of San Francisco's electorate, Proposition P, in November 2000 and implemented by the Board of Supervisors by unanimous vote in July 2001.** A. **The Navy *refuses* to recognize Proposition P**, San Francisco's November 2000 plebiscite which called on the Navy to clean the Shipyard to highest attainable level. i. Prop P was a direct response to the Parcel E2 landfill fire & the Navy's probable capping solution. ii. Prop P was passed by 87% of San Francisco voters City-wide, 93% of Bayview Hunters Point voters, and adopted as official City policy by a unanimous vote of the Board of Supervisors. B. **The NCP does not provide the Navy with a "Get out of Conformance Free Card."** While community acceptance is a modifying criteria, **the Navy is nevertheless bound by that plebiscite to explain why it is selecting a preferred alternative that does not conform to the Community's Acceptance Criteria.** C. **The Community Acceptance Criteria is also important from an EJ perspective** because by ignoring it the Navy is further demonstrating its failure to conform to the criteria of Meaningful Involvement identified in President Clinton's Executive Order on Environmental Justice.	The reviewer's expectation that the Proposed Plan address the community acceptance criterion is not consistent with the NCP [40 CFR § 300.430(e)(9)(iii)(I)], which specifies that the community acceptance criterion cannot be evaluated "*until comments on the proposed plan are received.*" As described on page 16 of the Proposed Plan, the community acceptance criterion is one of two modifying criteria and has been evaluated based on comments provided in the course of the CERCLA remedy selection process, including those received on the Proposed Plan, and other community input, including Proposition P. Consistent with the NCP [40 CFR § 300.430(e) and (f)], the Navy's evaluation of the community acceptance criterion is documented in this ROD, which includes the subject responsiveness summary. The Navy does not agree with the reviewer's assertion that it refuses to recognize Proposition P. As described above, Proposition P was considered, along with other community input provided in the course of the CERCLA remedy selection process, in the Navy's evaluation of the community acceptance criterion. Although Proposition P does express a recommendation from the Hunters Point Bayview community for cleanup to a level allowing unrestricted use of the property, Proposition P also urges the Navy to clean up the shipyard in a manner that does not rely on future owners to maintain barriers to protect the public from exposure unless other remedies are technically infeasible. The Navy, in its RI/FS Report that was concurred with by the other Federal Facility Agreement signatories, has determined that Alternative 2 (which involves excavation and off-site disposal of the entire Parcel E-2 Landfill) poses many complex engineering challenges and borders on being technically infeasible. In addition, Alternative 2 is not cost-effective pursuant to the CERCLA and NCP remedy selection criteria addressed in the Proposed Plan and ROD. The cover component of the containment remedy selected in the ROD is a barrier that will protect the public from exposure consistent with Proposition P.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 4 *(cont.)*	*(see above)*	However, as previously discussed, the preferred alternative published in the Proposed Plan (Alternative 5) complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria. The Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The State of California, through DTSC and the Water Board, and segments of the community, represented by the SFRA and Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have concurred with the preferred alternative published in the Proposed Plan. In addition, the preferred alternative is generally consistent with Proposition P, as explained above. The information presented by members of the community that disagree with the preferred alternative does not justify modification of the preferred alternative based upon the "community acceptance" criteria of the NCP. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife. In addition, the Navy's environmental cleanup program at HPNS addresses the planned reuse outlined in the SFRA's Hunters Point Shipyard Redevelopment Plan (SFRA, 2010), which was approved 9 years after the adoption of Proposition P. The Redevelopment Plan was initially approved in 1997 and adopted as the official Redevelopment Plan for HPNS by the CCSF Board of Supervisors (Ordinance 285-97 pursuant to Chapter 4.5 of California Community Redevelopment Law, California Health and Safety Code § 33492). The Redevelopment Plan was subsequently amended in 2010, and the selected CERCLA remedy would accommodate the future reuses identified in the amended plan. The Navy also notes that Proposition P is a local governmental resolution and is not a federal or state statute or promulgated regulation. Therefore, Proposition P is not a CERCLA federal or state ARAR for purposes of CERCLA remedy selection in Parcel E-2.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
General Comment 5	**V. The Grid Sample Survey Model presented in Appendix E of the Parcel E Feasibility Study and applied to Parcel E2 as a rationale for not doing such as survey is fundamentally flawed.** A. **A variety of assumptions and confidence levels and sizes of hot spots were considered and presented in figures and tables.** There were some differences with the different input values but the following example sums up the resulting impracticality of implementing grid-based sampling. To detect a 25' diameter hot spot with reasonable confidence would require 54 samples within each 150' x 150' square of the parcel (approximately 1/2 acre). A 20-acre parcel such as the E-2 landfill would require approximately 2000 samples at each of two depths to detect a 25' diameter spherical hot spot. i. **The problem with this analysis is the size of the hot spots considered was too small.** A 25' diameter hot spot is approximately the size of the average backyard in San Francisco. While such a hot spot could be problematic, in the context of the Parcel E2 Landfill the concern is not that something that small would be missed but that something relatively large has been missed. Multi-acre plumbs slightly smaller that the "Dog and Bird" spills on Parcel C could be entirely missed by the current state of sampling of the site. A much larger courser grid survey of the kind Arc Ecology has been proposing would be sufficient to find such a multi-acre plumb or a field of PCB laden transformers strewn over several acres. If something were to be identified in this courser survey, then a finer grained grid would be appropriate. However if nothing were found than the fear of missing a large would be allayed.	The reviewer is incorrect in his assertion that the grid sample survey model was applied to the Parcel E-2 Landfill. The subject appendix was published in the Revised RI Report for Parcel E and provides information that was requested by the EPA, DTSC, and Water Board during development of the standard data gaps investigation at Parcel E (which at the time included the area now referred to as Parcel E-2). As described in Section 3 of the RI/FS Report for Parcel E-2 (ERRG and Shaw, 2011), the standard data gaps investigation was performed in 2002 to further define the nature and extent of chemicals in soil within areas outside of the Parcel E-2 Landfill, and was performed concurrent with several other data gaps investigations focused on the Parcel E-2 Landfill. These landfill-specific investigations, which are referred to as nonstandard data gaps investigations, were developed in consultation with the EPA, DTSC, Water Board, and CCSF DPH and implemented in a manner that provided adequate information to support the RI/FS Report for Parcel E-2. During development of the data gaps investigations for Parcels E and E-2, the Navy, EPA, DTSC, Water Board, and CCSF DPH reviewed existing data collected between 1987 and 1996 and determined that the data gaps at the Parcel E-2 Landfill consisted of (1) defining the nature and extent of landfill gas, (2) refining the lateral extent of solid waste, (3) evaluating liquefaction potential of the landfill, and (4) delineating wetlands areas adjacent to the landfill. These nonstandard data gaps were addressed during investigations performed from October 2001 to September 2002, and the information was evaluated in a series of reports that were appended to the RI/FS Report.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*

Comment No.		Comment	Response
General Comment 5 *(cont.)*	ii.	**The argument that if there was some form of chemical contamination or plumb on** site the contaminants would be found in the ground water samples is also speculative. Slow moving contaminants like PCBs might not be identified but could still pose a long-term hazard.	Section 4 of the RI/FS Report provides a detailed evaluation of all available data for Parcel E-2 (Sections 4.2 through 4.4), identifies potential hot spots (Section 4.5.3.1), and documents the adequacy of existing data to evaluate a focused set of remedial alternatives for Parcel E-2 (Section 4.5.4). Please refer to the response to Arc Ecology general comment 1 for more information on the Navy's efforts, beginning in 2004, to develop the RI/FS Report in consultation with the EPA, DTSC, Water Board, and CCSF DPH. The draft and draft final versions of the RI/FS Report were reviewed by the EPA, DTSC, Water Board, CCSF DPH, and other project stakeholders, including Arc Ecology. The Navy responded to all comments received on the draft and draft final versions of the RI/FS Report and incorporated input from various reviewers, as appropriate, into the final version of the RI/FS Report that was published in May 2011. The Final RI/FS Report documents that the Parcel E-2 Landfill has been adequately characterized to support a focused set of remedial alternatives developed in consultation with the EPA, DTSC, Water Board, and CCSF DPH. The information contained in the administrative record, which includes pertinent regulatory guidance (EPA, 1993a, 1993b, 1994, and 1996) and site-specific input from various stakeholders, adequately supports this determination.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard		
Written Comments by Arc Ecology (Saul Bloom) received on November 21, 2011 via e-mail *(continued)*		
Comment No.	**Comment**	**Response**
SPECIFIC COMMENTS – Prepared by Dr. McGowan		
Specific Comment 1	**p. 3.** What happened to the drainage channel shown in 1969 photo? Have the remedial actions taken into account the natural drainage patterns in this watershed?	The drainage channel shown in the 1969 photograph was a manmade feature created during the filling of Parcel E-2. Section 1.7.2 of the RI/FS Report summarizes the filling activities at Parcel E-2 and indicates that the drainage channel was filled in by 1975, at which time the Parcel E-2 Landfill was closed and covered with soil (ERRG and Shaw, 2011). The Navy collected soil, sediment, and groundwater samples near the intersection of the former drainage channel and San Francisco Bay to evaluate the nature and extent of contamination in this area. Elevated concentrations of certain chemicals were identified in this area, but these concentrations were not as high or as laterally extensive as the elevated concentrations found in the PCB Hot Spot Area located immediately to the southeast. The PCB Hot Spot Area is included as a hot spot to be excavated as part of the selected remedy. The Navy is taking early action by excavating this area because it was included as a part of Alternatives 2, 3, 4, and 5 (and was therefore assured of being part of the selected remedy).
Specific Comment 2	**p. 4**. Volume estimates seem calculated to intimidate. As I recall, the waste may be 25' deep at the deepest but very thin around the edges so the average depth may be only 12-15'. This alone cuts the volume estimate in half.	The estimated quantities of solid waste, soil, and sediment to be excavated under Alternative 2 are detailed in Appendix R of the RI/FS Report (Table R-6) and are based on detailed geologic cross sections (Figures 2-3 through 2-8) for the Parcel E-2 Landfill and surrounding area (ERRG and Shaw, 2011). Using this information, the Navy determined that the waste extends over 22 acres and ranges from 10 to 25 feet thick, with an average thickness of 13 feet. The estimated volume of landfill waste is 473,000 cubic yards. This information was also used to estimate the volume of existing soil over the landfill (393,500 cubic yards). Most of this soil was placed during two separate actions in 1974 and 2000. In 1974, after landfill operations ended, the Navy placed between 2 and 5 feet of soil over the entire 22-acre landfill. In 2000, in response to the landfill fire, the Navy placed another 1.5 to 3.5 feet of soil over the 14.5-acre part of the landfill surface that had burned. In addition, the volume estimates include an average of 4 feet of soil under the 22-acre landfill (141,750 cubic yards) that is likely contaminated and would need to be removed under Alternative 2.

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Specific Comment 3	**p. 4.** Volume estimates: what does it mean, "likely contaminated" soil under the landfill waste? What is the basis for this statement and how much of the 1,000,000 cubic yards estimate was unspecified soil underneath the landfill waste?	The phrase "likely contaminated" relates to the Navy's conceptual model for the Parcel E-2 Landfill, which assumes that soil underneath the landfill waste has been contaminated. In developing Alternative 2, the Navy applied this conceptual model and assumed that soil below the landfill waste would need to be removed to support complete removal of the Parcel E-2 Landfill. Section 12.2.2.4 of the RI/FS Report describes the assumptions made in estimating the excavation volumes for Alternative 2 (ERRG and Shaw, 2011).
Specific Comment 4	**p. 4.** Shoreline. Above mean sea level in E-2 but below mean sea level in F. This means that both are in the intertidal zone and have bay water sloshing over them twice a day. How will these be remediated separately?	Remediation along the Parcel E-2 shoreline, as well as offshore Parcel F, will require various controls to prevent discharge of contaminants to San Francisco Bay and ensure proper implementation of the selected remedy. The implementation procedures for the selected remedy will be specified in the remedial design (and the associated remedial action work plan).
Specific Comment 5	**p. 5.** Adequacy of sampling seems presented deceptively. For example, 2000 soil samples since the landfill was covered (1974 photo on p. 3) is 54 samples per year but consider that E-2 is 47.4 acres (p. 2) so the average sampling for chemicals and radioactivity was 1.1 sample per acre per year. Some areas were undoubtedly sampled more frequently than this but that means that some were sampled less, perhaps much less. Please come up with a better measure of sampling adequacy than simple number that doesn't seem so impressive by year and acreage.	The Navy identified the number of environmental samples collected at Parcel E-2 for informational purposes in the Proposed Plan. Consistent with the NCP and EPA guidance, the RI/FS Report provides a detailed evaluation of all available data for Parcel E-2 (Sections 4.2 through 4.4) and documents the adequacy of existing data to evaluate a focused set of remedial alternatives for Parcel E-2 (Section 4.5.4) (ERRG and Shaw, 2011). Please refer to the responses to Arc Ecology general comments 1 and 5 for more information on the Navy's efforts to characterize Parcel E-2 in consultation with the EPA, DTSC, Water Board, and CCSF DPH. Further, the Navy wishes to clarify that there is no technical basis for determining the adequacy of soil characterization relative to the temporal sampling frequency.
Specific Comment 6	**p. 5.** Conclusion that knowledge is adequate to support Navy's preferred alternative is true only if not all benefits of excavation are considered. For example, see next comment.	As discussed in the responses to Arc Ecology general comments 1 and 5, the RI/FS Report documents the adequacy of existing data to evaluate a focused set of remedial alternatives for Parcel E-2, including Alternative 2 that evaluates complete removal of the Parcel E-2 Landfill (ERRG and Shaw, 2011).

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Specific Comment 7	**p. 6.** Groundwater extraction system, sheet pile wall, and monitoring and O&M in perpetuity would not be needed if the landfill were removed.	The RI/FS Report evaluates the various remedial alternatives, and the results of this evaluation are summarized on pages 12 through 16 of the Proposed Plan. The RI/FS Report evaluates the benefits of Alternative 2 relative to the criteria specified in the NCP (ERRG and Shaw, 2011). For example, the improved long-term effectiveness and decreased monitoring and maintenance costs are reflected in the Navy's evaluation of Alternative 2.
Specific Comment 8	**p. 6.** Landfill cap to prevent oxygen reaching smoldering or potential incendiary items would not be needed if the contents of the landfill were removed. No debris = no fire potential.	Please refer to the response to specific comment 7 above.
Specific Comment 9	**p. 6.** Landfill gas removal system and monitoring and potential explosive methane hazard would all be removed along with the contents of the landfill. If there is no buried organic matter, then there is no anaerobic production of methane and carbon dioxide (CO2), and no need to be concerned about O&M and monitoring and land use restrictions/institutional controls for this area. Methane and CO2 are greenhouse gases (GHG) that contribute to global warming and sea level rise. Capping the landfill means that these gases will be emitted from Parcel E-2 for decades or more.	Please refer to the response to specific comment 7 above. In addition, the Navy performed a preliminary analysis of the greenhouse gas emissions associated with implementing Alternatives 2 and 5, accounting for both the remedial action construction and long-term monitoring activities. The Navy determined that a significantly greater volume of greenhouse gases would be emitted under Alternative 2 as compared with Alternative 5. This difference is attributed to the emissions from excavating, transporting, and disposing of the estimated 1,166,000 cubic yards of soil, sediment, and solid waste.
Specific Comment 10	**p. 6.** PCB hot spot removals have already removed over 100,000 cubic yards of material. This is 10% of the estimated 1 million cubic yards that were estimated for the removal alternative. Even if the estimate is accurate, it doesn't seem that the Navy has trouble moving and removing dirt when it wants to.	The Navy wishes to clarify that the previous removal actions differ substantially from Alternative 2 because: 1. The estimated excavation volume of over 1 million cubic yards (for Alternative 2) is not comparable with the volume of material removed under previous removal actions at Parcel E-2 (less than 100,000 cubic yards). 2. The previous removal actions dealt with soil containing isolated debris, whereas Alternative 2 would deal with debris and with lesser quantities of soil. The excavation, screening, and segregation processes are much more labor-intensive when dealing with large volumes of debris.

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Specific Comment 10 *(cont.)*	*(see above)*	3. The previous removal actions dealt with relatively shallow soil that could be removed using conventional excavation techniques and without extensive shoring or dewatering efforts. As described in Section 12.2.2 of the RI/FS Report (ERRG and Shaw, 2011), implementation of Alternative 2 would require extensive shoring and dewatering efforts. 4. The previous removal actions addressed soil with very high concentrations of PCBs along the shoreline that posed a risk to aquatic wildlife in the Bay. Although similarly high concentrations of PCBs have been reported within the Parcel E-2 Landfill, they are located deep below the ground surface, are located much farther from the shoreline, and are not impacting groundwater. Therefore, the Navy's ability to implement the previous removal action does not change the Navy's evaluation of the significant implementation challenges posed by Alternative 2 (as described in Section 13.2.6 of the RI/FS Report [ERRG and Shaw, 2011]).
Specific Comment 11	**p. 12.** The Navy estimates that it would take 4 years to excavate the landfill and replace it with clean fill. Why not excavate it and not fill it with clean fill or anything else? Restore it to the natural wetlands and waters of the United States that it was before it was filled? This would also eliminate the need for agencies and property owners to be concerned about institutional controls and deed restrictions.	As detailed in a response to Arc Ecology's comments on the Draft RI/FS Report (see response to general comment 9, Appendix S in the Final RI/FS Report) (ERRG and Shaw, 2011), Alternative 2 was not modified to evaluate wetlands restoration throughout the entire Parcel E-2 Landfill because (1) although the estimated backfilling costs would be substantially reduced, such changes would not significantly affect the overall cost of Alternative 2 beyond the required accuracy required by EPA RI/FS guidance (+50/-30 percent) (EPA, 1988); and (2) such a large-scale expansion of the planned wetlands restoration is not required by the RAOs, ARARs, or planned reuse, which play an important role in the remedy evaluation process under CERCLA.

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Specific Comment 12	**p. 15.** The Navy admits that excavation and removal would be the most effective long-term solution. I prefer this.	The improved long-term effectiveness of Alternative 2 does not offset its disadvantages relative to other criteria specified in the NCP. The preferred alternative published in the Proposed Plan (Alternative 5) complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria specified in the NCP. As explained previously, the Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife.
Specific Comment 13	**p. 16.** The Table 8 is a biased and unscientific figure prejudicial to the Navy's preferred alternative. For example, Alternative 2 is clearly implementable. Dig it up and remove it. What's difficult about this? It should have a dark, completely filled circle, making it the highest ranking alternative. The short-term effectiveness circle should also have more, if not all, quarters filled in because there is plenty of time to remove the contents of the landfill before it is scheduled to be transferred to the SF Redevelopment Agency. In the present state it is not a risk to human health or the environment so short-term effectiveness is not as critical or important as long-term effectiveness of the remedy and should not have equal weight.	The Navy does not agree with the reviewer's assertion that its evaluation of the remedial alternatives is biased and unscientific. Section 13.2.6 of the RI/FS Report (ERRG and Shaw, 2011) summarized the technical factors that are unique to the Parcel E-2 Landfill and adequately support the implementability rating for Alternative 2 relative to this criterion. Primary among these factors is the extremely large excavation volume for Alternative 2, which is not comparable with the volume of material removed under previous removal actions at Parcel E-2, nor is it comparable with the volume of material that would be removed as part of Alternatives 3, 4, or 5. As described on page 15 of the Proposed Plan, short-term effectiveness pertains to the ability to protect humans and wildlife during implementation of the remedy, and does not relate to its current condition as suggested by the reviewer. Section 13.2.5 of the RI/FS Report (ERRG and Shaw, 2011) summarized the technical factors that are unique to the Parcel E-2 Landfill and adequately support the short-term effectiveness rating for Alternative 2 relative to this criterion. Primary among these factors is the slope failure hazard associated with deep excavation into saturated waste. The Navy believes that this information is adequate to support the ratings detailed in Sections 13 and 14 of the Final RI/FS Report (and summarized in the Proposed Plan). The Navy does not believe that any changes to these ratings are warranted.

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Specific Comment 14	**p. 17.** Calling the Navy's preferred alternative the "presumptive remedy" is not accurate because the landfill contains more than municipal waste, it is unlined, it is adjacent to San Francisco Bay, and presumptive remedies do not undergo the careful consideration of alternatives that has taken place in the RI/FS. Use of the term "presumptive remedy" is prejudicial to an objective, impartial, and scientific comparison of alternatives**.**	In accordance with EPA's presumptive remedy guidance for military landfills (EPA, 1996), the Navy prepared and included a detailed analysis of the Parcel E-2 Landfill in Section 8.2.3 of the RI/FS Report (ERRG and Shaw, 2011). The Navy considered each of the factors include in the EPA guidance, which included the presence of military-specific wastes and the close proximity of Parcel E-2 to San Francisco Bay, and concluded that the Parcel E-2 Landfill met the requirements for a presumptive remedy set forth in that guidance. However, as described in the response to general comment 1, the Navy consulted with the EPA, DTSC, Water Board, and CCSF DPH and, based on their input, determined that the remedial alternatives should also include complete removal of the Parcel E-2 Landfill (Alternative 2) in addition to one or more containment alternatives (Alternative 3, 4, and 5). This approach is consistent with EPA's directive regarding presumptive remedies (EPA, 1993b) which states that "*there may be unusual circumstances (such as, complex contaminant mixtures, soil conditions, or extraordinary State and community concerns) that may require the site manager to look beyond the presumptive remedies for additional (perhaps more innovative) technologies or remedial approaches.*" The information contained in the RI/FS Report supports the use of the presumptive containment remedy for the Parcel E-2 Landfill and explains the relative risks of that option compared to complete excavation. The Navy wishes to clarify that the term "presumptive remedy" on page 17 of the Proposed Plan was not used to describe the Navy's preferred alternative. Rather, the statement indicates that EPA's presumptive remedy guidance, which was developed based on a nationwide analysis of numerous other large landfills, supports the Navy's analysis of potential remedial alternatives for Parcel E-2. Specifically, the poor performance of Alternative 2 relative to Alternatives 3, 4, and 5 is consistent with EPA's findings from similar studies of other large landfills similar to the Parcel E-2 Landfill.

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Specific Comment 15	**p. 17.** Based on experience in other landfills around San Francisco Bay the proposed liner will not effectively protect from burrowing animals such as the California ground squirrel. Rodent control will likely be a much more expensive and contentious issue at E-2 than has been presented in the RI/FS or this Proposed Plan.	The language in the Proposed Plan was simplified relative to the more detailed information presented in the RI/FS Report. Specifically, the term "liner" was used in the Proposed Plan to focus on that material's primary function to limit surface water infiltration. Section 11.5.1.2 of the RI/FS Report fully describes the functions of a geosynthetic cap, which include the geocomposite drainage layer that is placed on top of the geomembrane. This layer would drain water infiltrating through the vegetative layer and, consistent with its use at other landfill sites, would also deter burrowing animals (ERRG and Shaw, 2011). The Navy believes that the information in the RI/FS Report is adequate to demonstrate that the proposed cover, which will be regularly inspected and maintained (with animal control measures implemented as necessary), will be protective of human health and the environment. Please refer to the response to specific comment 2 from the CDFG for more detailed information regarding this topic.
Specific Comment 16	**p. 19.** Rock revetment is ideal habitat for ground squirrels and rats and not a natural bay shoreline. The former Berkeley city landfill at the edge of the bay is a good nearby example.	The Navy has identified rock revetment as the most viable option for armoring parts of the Parcel E-2 shoreline; however, the Navy will further evaluate this option during the remedial design. The evaluation will consider ways to enhance the recreational uses and aesthetics of the shoreline while maintaining a similar level of long-term effectiveness, implementability, and cost compared to rock revetment. The Navy does not believe that the potential presence of ground squirrels is a sufficient technical reason for selecting an alternative shoreline protection approach. Sections 12.2.3.6 and 12.2.3.10 of the RI/FS Report describe the means by which burrowing animals, such as ground squirrels, will be effectively managed to ensure that the cover system remains protective of human health and the environment (ERRG and Shaw, 2011).

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Specific Comment 17	**p. 24.** The criterion for cancer risk of 1 in 1 million only applies to contaminants in soil, not to groundwater or radiation risk. Radiation additional risk of cancer may be as high as 1 in 10 thousand. The blanket statement about 1 in 1 million is inaccurate and misleading.	The reviewer's statement is not correct. As summarized in Table 2 of the Proposed Plan (and detailed in the RI/FS Report and radiological addendum), the Navy estimated chemical and radiological cancer risks from exposure to soil. As summarized in Table 3 of the Proposed Plan, the Navy also estimated chemical cancer risks from exposure to groundwater (radioactive chemicals were not found in groundwater at concentrations requiring a risk assessment). The subject statement on page 24 of the Proposed Plan describes the threshold cancer risk level (1 in 1 million).
RECOMMENDATIONS – Prepared by Saul Bloom		
Specific Comment 18	**Alternative 1: Remove the E2 Landfill in its entirety.** The Preferred Alternative in the Proposed Plan continues to subject Bayview Hunters Point to disproportionate levels of contamination within the confines of the community. Arc Ecology recognizes that the Navy and regulatory community believes the protection afforded by a cap is sufficient to protect the public's safety. This solution however does not meet current Environmental Justice standards as discussed previously in this comment. Arc Ecology rejects the argument of the CERCLA 120(h) covenant as a viable guarantor of the integrity of the Preferred Alternative. The Anti-Deficiency Act itself raises question with regard to the viability of this covenant. Government programs and promises wink out of existence with alarming regularity. Members of Congress are currently discussing the elimination of both the EPA and the centuries old Department of Education. Congress is free within its wisdom to amend or eliminate all but constitutionally guaranteed protections, and even some of the most sacred of our constitutional protections such as the First Amendment are not well guarded. As such the only meaningful remedy that will ensure the hazard posed by the Parcel E2 landfill is eliminated is removal.	The preferred alternative published in the Proposed Plan (Alternative 5) complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria specified in the NCP. As explained previously, the Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife. As discussed in the response to Arc Ecology general comment 3, the Navy has worked with EPA toward achieving environmental justice goals (that is, the fair treatment and meaningful involvement of all people) in developing the cleanup program for HPNS in accordance with CERCLA, the NCP, and DoD policy (DoD, 1995). This responsiveness summary provides the Navy's and EPA's responses to community comments on the Proposed Plan, and Section 2.8.2 of this ROD documents the Navy's evaluation of the community acceptance criterion. In addition, Section 2.10 of this ROD identifies the Navy's and EPA's efforts to involve the local community in the cleanup program at HPNS, including soliciting input on the proposed cleanup for Parcel E-2.

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Specific Comment 18 *(cont.)*	Removal will have numerous and substantial benefits to the environment, public health and environmental justice. Removal of the landfill will have benefits to the health and well being of the San Francisco Bay. The portion of San Francisco Bay filled to create Parcel E2 was at one time an extremely productive fishery and coastal wetlands. It could be again. Savings could be derived through simply removing and not replacing the landfill, allowing San Francisco Bay to reclaim what was once a part of it. Removing the landfill would benefit water quality in Yosemite Slough by improving water circulation. It would have economic benefits to local fisheries as well as to the planned development of the Shipyard and surrounding neighborhood because it will void the negative impact on property valuation imposed by being adjacent to a closed toxic landfill. As mentioned above, removal of the E2 Landfill will end the threat to public health posed by the containment of the pollution therein, the need for ongoing institutional and mechanical controls, and the ongoing maintenance required to insure the ongoing viability of those controls. It is the simplest and most effective way of protecting the health of Bayview Hunters Point from the all too frequent failures of humanity. If the Navy will not remove the E2 landfill it should in its place provide San Francisco with a bond valued at twice the cost estimate of replacing the cap and the other stabilization infrastructure so as to protect the City of San Francisco from the possibility of Congress eliminating or amending the CERCLA 120 (h) covenant. Furthermore guarantees must be provided that the impacts of an earthquake or other natural disaster will not be considered "force majeure" within future transfer documents.	As discussed in the response to Arc Ecology general comment 2, the selected remedy includes the numerous monitoring and maintenance activities that would be performed as long as necessary to protect human health and the environment and to comply with pertinent state and federal ARARs. Regulatory oversight will continue during long-term operation and maintenance of the selected remedy. In addition, the selected remedy will be subject to statutory reviews every 5 years (pursuant to CERCLA) to ensure that it remains protective of human health and the environment. The Navy believes that Alternative 2 was evaluated properly in the RI/FS Report, and that its potential advantages and disadvantages were adequately considered. As detailed in a response to Arc Ecology's comments on the Draft RI/FS Report (see response to general comment 9, Appendix S in the Final RI/FS Report) (ERRG and Shaw, 2011), Alternative 2 was not modified to evaluate wetlands restoration throughout the entire Parcel E-2 Landfill because (1) although the estimated backfilling costs would be substantially reduced, such changes would not significantly affect the overall cost of Alternative 2 beyond the required accuracy required by EPA RI/FS guidance (+50/-30 percent) (EPA, 1988); and (2) such a large-scale expansion of the planned wetlands restoration is not required by the RAOs, ARARs, or planned reuse, which play an important role in the remedy evaluation process under CERCLA. The Navy believes that this information is adequate to address the reviewer's concerns and support the ratings detailed in Sections 13 and 14 of the Final RI/FS Report (and summarized in the Proposed Plan). The Navy does not believe that any changes to these ratings are warranted.

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Specific Comment 19	**Alternative 2: Withdraw the Proposed Plan.** If the Navy will not remove the E2 landfill, it should withdraw the Proposed Plan for having inadequately characterized the landfill and nonconformance with E.O. 12898 - *59 FR 7629, Feb. 16, 1994* and existing Environmental Justice Guidance's and BRAC policies. Arc Ecology's recommendation would be for the Navy to initially develop a course gridded survey of the Parcel E2 landfill with grid segments no larger than quarter to half acres in size with further refinements developed should findings warrant. Efforts should be made to assess the true quantity and strata of fill material to provide better estimates for the various alternative responses evaluated in a revised Proposed Plan. The prejudice with which the Navy pursued a single strategy for response to the E2 Landfill has been discussed above. It's impacts on the clarity of the data acquired, property reuse, public confidence in the selection of the Preferred Alternative, and Arc Ecology's own confidence in this choice can only be repaired if the Navy returns to the drawing board and develops a sampling regime that will allow for greater confidence in the neutral characterization of the contents of the landfill.	As discussed in the responses to Arc Ecology general comments 1 and 5, the Navy has worked closely with the EPA, DTSC, Water Board, CCSF DPH, and other project stakeholders for more than 20 years to obtain data from the Parcel E-2 Landfill. The Navy does not believe that a grid-based sampling approach is necessary or appropriate to characterize the Parcel E-2 Landfill because, as described in the response to Arc Ecology general comment 5, the Final RI/FS Report documents that the Parcel E-2 Landfill has been adequately characterized to support a focused set of remedial alternatives developed in consultation with the EPA, DTSC, Water Board, and CCSF DPH. The information contained in the administrative record, which includes pertinent regulatory guidance (EPA, 1993a, 1993b, 1994, and 1996) and site-specific input from various stakeholders, adequately supports this determination. As discussed in the response to Arc Ecology general comment 2, the Navy's selected remedy for Parcel E-2 complies with the most current BRAC policy document, the 2006 Base Redevelopment and Realignment Manual. As discussed in the response to Arc Ecology general comment 3, the Navy and EPA, in performing environmental cleanup work at HPNS with support from DTSC and the Water Board, have worked together to achieve the environmental justice goals of fully protective cleanup actions, fair and equal treatment, and meaningful involvement for all people in the Bayview-Hunters Point community.
Specific Comment 20	**OTHER RECOMMENDATIONS** **1. Replace Proposed Rip Rap and Revetments with a living shoreline** The community has continually expressed its desire to see a more ecological, environmentally sustainable and visually pleasant alternative to the Rip Rap and Revetments. Such strategies are cost effective and Arc Ecology would be pleased to assist the Navy with design.	The Navy understands the community's desires for restoration of natural shoreline and has incorporated such approaches into the selected remedy where they can be implemented cost effectively. Specifically, the proposed tidal wetlands will result in approximately one-third of the Parcel E-2 shoreline being restored at gradual slopes with natural soil and vegetation. However, the construction of tidal and freshwater wetlands will require excavation of existing material and consolidation on other parts of Parcel E-2. The surface topography following on-site consolidation will result in steeper slopes along the remaining portions of the Parcel E-2 shoreline, including adjacent to the Parcel E-2 Landfill, that require more robust protection (that is, the armoring identified in the selected remedy).

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Specific Comment 21	**2. Improve meaningful public participation from the BVHP community by installing a new RAB.** There is no substitute for a RAB. Restoration Advisory Boards, though occasionally trying, represent the best way to communicate with the public about a restoration plan. The benefits of a RAB were outlined above. It is our view that the Navy's community meetings, though quieter, are less informative for both the community as well as the Navy and regulatory community. RABs need not be as problematic as the former HPS committee. As outlined in our comments on the CIP, there are numerous strategies the Navy could use to improve the dialogue and its partnership with the BVHP community.	Although the RAB was dissolved in December 2009 because it was no longer fulfilling its purpose, the Navy continues to involve the community in the details of the environmental cleanup program for HPNS. The Navy updated their CIP in 2011 to present the communication and community involvement program activities that were designed to meet the specific needs and desires of the HPNS community (Navy, 2011a). Some of the specific community outreach efforts that the Navy conducts in accordance with the CIP include (1) preparation of topic-specific fact sheets; (2) use of a calendar of outreach events; (3) holding regularly scheduled community meetings; and (4) conducting bus tours. The Navy will regularly reevaluate the community involvement program, and determine if additional outreach efforts will help better inform the public of the HPNS cleanup program.
Specific Comment 22	**3. Recognize Proposition P** The Navy's orientation toward Proposition P is untenable in a democracy. We may not like or have voted for the candidates our fellow citizens choose to elect, but we are not given the option of ignoring them. We may not like what an elective body like Congress does but we are bound to the laws this nation's legislature creates. Proposition P was approved as the Community Acceptance Criteria under the NCP. The Navy and regulators must acknowledge Proposition P and begin addressing its objectives within its decisions. Arc Ecology recognizes that Proposition P does not bind DoN to a course of action. It's existence as a plebiscite and City Policy however does bind DoN to address Prop P in its discussions relative to the merits of decisions like the Parcel E2 Proposed Plan.	As discussed in the response to Arc Ecology general comment 4, the Navy has considered Proposition P in its evaluation of the community acceptance criterion. However, as previously discussed, the preferred alternative published in the Proposed Plan (Alternative 5) complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria. The Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The State of California, through DTSC and the Water Board, and segments of the community, represented by the SFRA and Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have concurred with the preferred alternative published in the Proposed Plan. In addition, the preferred alternative is generally consistent with Proposition P, as explained in the responses to general comment 4. The information presented by members of the community that disagree with the preferred alternative does not justify modification of the preferred alternative based upon the "community acceptance" criteria of the NCP. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife.

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Comment No.	**Comment**	**Response**
RECOMMENDATIONS – Prepared by Saul Bloom		
Specific Comment 23	**4. Evaluate other methods of transporting excavated materials to avoid shipment through BVHP neighborhoods** The BVHP Community has consistently requested that the Navy explore other means of transporting excavated materials than by truck. DoN cannot on the one hand bind the community to the use of trucks for the transportation of this material; while at the same time threaten the community that a particular cleanup decision will result in dramatic increases of its preferred mode for conveying this material. From an environmental justice perspective, this situation is particularly problematic as it dramatically increases the disproportionate impacts felt by these communities. Doing so continually pits one aspect of the community's interest against the other, clean air and clean streets versus the cleanup of a large contaminated landfill that will remain in the neighborhood in perpetuity. Alternative means such as barging of waste from the Shipyard to Pier 98 remain viable means of preventing such transportation through the neighborhood. This would provide the DoN with the option of either transporting materials to licensed landfills for disposal via train, truck or barge. Barging can accommodate larger loads potentially reducing the time it would take for any of the alternatives considered to be implemented. If DoN cannot do without trucks, Arc Ecology proposes that it consider a southerly route through the Bayview industrial flats across Ingalls to the Hunters Point Expressway, Harney Way to 101 South. This would dramatically limit the amount of material being transported through San Francisco on the approach to Highway 101 or 280 along Potrero Hill and downtown and over the Bay Bridge through the densest portions of the East Bay's communities. Instead trucks utilizing a southerly route would avoid densely populated areas in favor of 101 South to the San Mateo Bridge and I 680 through largely suburban and low- density rural areas.	In preparing the RI/FS Report (ERRG and Shaw, 2011), the Navy considered a range of options to transport wastes from Parcel E-2, but the analysis focused on a combination of truck and rail transport. Transport by barge was not evaluated in detail because of several factors, most notably: • No suitable dock facilities are close to Parcel E-2, and the lack of nearby dock facilities would require picking up and moving the waste multiple times before loading onto a barge. This handling process would be significantly less efficient and more expensive as compared to truck and rail transport. • Relatively few licensed disposal facilities located in the western U.S. accept the range of wastes types that would be generated during cleanup at HPNS. None of these facilities are located close to waterways that allow for barge transport. As a result, the material to be transported by barge would also need to be picked up and transported significant distances by either truck or rail. This handling process would be significantly less efficient and more expensive as compared to truck and rail transport. The Navy will continue to work with Arc Ecology and other stakeholders on determining the most appropriate methods for off-site disposal of excavated waste from HPNS. The specific transport methods for the selected remedy at Parcel E-2 will be developed in the remedial action work plan, which will be submitted to the EPA, DTSC, CDFG, CDPH, Water Board, CCSF DPH, and other interested stakeholders (including Arc Ecology) for review.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Costanoan Rumsen Carmel Tribe (Tony Cerda) received on November 21, 2011 via e-mail

Comment No.	Comment	Response
1.	Please consider these comments on the Navy's proposed cleanup of Parcel E-2, in the Hunter's Point Shipyard. Parcel E-2 has been separated out from the rest of the shipyard because its history includes pollution from use as a landfill over several decades when there was little oversight and less forethought about dumping contaminants including heavy metals, radioactive waste, and pcbs. I am not qualified to say whether the Navy's clean up plan successfully protects the public or fulfills its responsibility to avoid harm in the future. About the cleanup, I am concerned that there are too many unknowns. About how the area will be used, which includes trails and a shoreline park, I see that it acknowledges the extreme natural beauty of E-2, where the bay, the mud flat, and the fresh water outflows combine to make a unique and potentially wonderful restoration possible. The Navy may understand that salt marshes and mud flats are one of the most life generating types of nature. Many scientists believe that life itself emerged from such salt marsh areas. The Ohlone certainly feel this way. When we lived there we prayed there every day. What we want in the future is to pray again in a wetland like what we had before. I see no evidence that the Navy considered that if E-2 could be healed, it could contribute more to the health of the bay than any other region in San Francisco. Nor do I see evidence that the Navy considered the chance to give the Ohlone a heal to heal by returning this mud flat to as natural a state as possible and allowing us to practice our culture there. It seems to me that your cleanup plan does not take this chance to restore health and reverse destruction seriously enough. The proposal for a rock barrier is unnatural, short term thinking that losses the potential for giving life that salt marshes hold. The proposal for a cement cap is likewise a short term solution, a convenient solution, that seems not to have much else to say for itself.	The Navy has worked closely with the EPA[13], DTSC, Water Board, and CCSF DPH to investigate potential contamination at Parcel E-2 in accordance with federal and state regulations. The Navy has also developed cleanup alternatives in consultation with the EPA, DTSC, Water Board, and CCSF DPH to support the planned reuse outlined in the SFRA's Hunters Point Shipyard Redevelopment Plan (SFRA, 2010). The development and evaluation of cleanup alternatives was guided by the Hunters Point Shipyard Redevelopment Plan and pertinent federal and state regulations. Using these guidelines, the Navy determined that there was no technical or regulatory basis for restoring all of Parcel E-2 as coastal wetlands. The Navy's selected remedy will allow for future use of Parcel E-2 in accordance with the Hunters Point Shipyard Redevelopment Plan and will comply with the federal and state regulations identified as ARARs (see Attachment 4 of this ROD). The Navy understands the community's desires for restoration of natural shoreline and has incorporated such approaches into the selected remedy where they can be implemented cost effectively. Specifically, the proposed tidal wetlands will result in approximately one-third of the Parcel E-2 shoreline being restored at gradual slopes with natural soil and vegetation. However, construction of the tidal and freshwater wetlands will require excavation of existing material and consolidation on other parts of Parcel E-2. The surface topography following the on-site consolidation will result in steeper slopes along the remaining portions of the Parcel E-2 shoreline, including the area adjacent to the Parcel E-2 Landfill, that require more robust protection (that is, the armoring identified in the selected remedy). The Navy believes that Alternative 2, which considered complete removal of the Parcel E-2 Landfill, was evaluated properly in the RI/FS Report, and that its potential advantages and disadvantages were adequately considered. The Navy's evaluation of the remedial alternatives, which were developed in consultation with EPA, DTSC, Water Board, and CCSF DPH, is detailed in Sections 13 and 14 of the Final RI/FS Report (ERRG and Shaw, 2011) and is summarized in the Proposed Plan. The Navy does

[13] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Costanoan Rumsen Carmel Tribe (Tony Cerda) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	I don't think the Navy has considered what this area means to San Francisco's Native Americans. I know that it has not consulted us, and that the city Planning Department, in its EIR explicitly avoided contacting us. I can't say that the Navy actively excluded us because I don't have those documents. But I can say there has been no effort to include us. I think you know that there are sixteen ancient sites within the Shoreline Development area or within 1/4 mile of it. This marks the shoreline as the most heavily used area of San Francisco by native people. E-2 and its surroundings include enough sites that it would be possible to understand more about the Ohlone from studying this place than anywhere else that remains in San Francisco, and possibly anywhere in the Bay Area. When Scotts Valley near Santa Cruz was excavated documented human history was pushed back from 3,000 to 13,000 years. When the BART and Yerba Buena Center were built Ohlone presence in San Francisco was no longer characterized as fleeting and baron, but rather seen as complex and exciting. I do not say this in order to ask you to study our graves. I say it because you still seem to treat us as if we never had any merit and in any case, are dead. What's true is that E-2 and its surroundings could be a source of pride for us, and in turn, for you. This could be a place where Ohlone culture was welcomed, fostered, and celebrated. You have the chance to restore the land and sea in a way that shows you are taking responsibility for what you have done. I'm humbled to say that it seems to have fallen on my shoulders to remind you of this. Our tribe wants to participate in the cleanup, to encourage and contribute to taking it as far back to a healthy place as it is possible to do by restoring a salt marsh. It would be an honor to participate in that way. I want to partner with you to do that. So I am asking you to invite our participation and consultation in restoring this place to a higher standard then you are proposing.	not believe that any changes to these ratings are warranted. Further, the reviewer's suggestion to restore all of Parcel E-2 as coastal wetlands is not required by the RAOs, ARARs, or planned reuse, which play an important role in the CERCLA remedy evaluation process. The Navy understands its obligation, as required by the National Historic Preservation Act, to consider and properly address potential impacts upon cultural resources at HPNS, including shellmounds from native people who used the land prior to the Navy's occupancy. To meet this obligation, the Navy, in consultation with the Advisory Council on Historic Preservation and State Historic Preservation Office, identified potential archaeological resources at HPNS and established a process by which all proposed underground construction must be reviewed to make sure that potential archaeological resources are not adversely affected. The Navy identified a potential buried shellmound in the northwest portion of Parcel E-2, but determined that the proposed remedial alternatives would not adversely affect this potential resource because the underground construction is limited to excavation of artificial fill and solid waste placed by the Navy and placement of clean imported soil. Further information is included in Appendix N (Section N3.4.1) of the RI/FS Report. The Navy will continue to work with community members and other stakeholders on maintaining adequate public participation regarding the cleanup for Parcel E-2.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard		
Written Comments by Greenaction for Health and Environmental Justice (Marie Harrison) received on November 21, 2011 via e-mail		
Comment No.	**Comment**	**Response**
1.	In response to the Navy's Preferred Alternative (Alternative 5) as stated in the Proposed Plan for Parcel E-2 of the Hunters Point Naval Shipyard, Greenaction for Health and Environmental Justice submits the following comments. We submit these comments on behalf of our low-income and people of color constituents who reside near the Shipyard, and out of concern for future residents who may be living on top of or next to contamination at the Shipyard if it is not cleaned properly and thoroughly.	See below for the Navy's response to the subject comments.
2.	Greenaction opposes Alternative 5, the Navy's Preferred Alternative, as it is not protective of public health or the environment. We also cannot support the other proposed Alternative Remedial Actions with the sole exception of Alternative 2. We support and urge adoption or Alternative 2 as it is the only Alternative that involves a full cleanup of contamination as part of the remediation process. Alternative 5 only removes 'hotspots' of contaminated soil and would 'cap' areas with a plastic liner and soil overlay. These methods are insufficient to ensure the protection of human health to the highest degree for the immediate community of Bayview Hunters Point's current and future residents. Capping may be cheaper in the short run, but will be expensive due to the lack of full cleanup and the threat to public health and the environment that will be allowed to remain.	As stated on page 15 of the Proposed Plan, the Navy determined that Alternatives 2, 3, 4, and 5 each provide adequate protection of human health and the environment. Section 13 of the RI/FS[14] Report details the basis of the Navy's determination (ERRG and Shaw, 2011). The draft and draft final versions of the RI/FS Report were reviewed by the EPA, DTSC, Water Board, CCSF DPH, and other project stakeholders. The Navy responded to comments regarding its evaluation of the remedial alternatives, as documented in Appendix S of the Final RI/FS Report. The Navy believes that this information is adequate to address the reviewer's concerns and support the ratings detailed in Sections 13 and 14 of the Final RI/FS Report (and summarized in the Proposed Plan). The Navy does not believe that any changes to these ratings are warranted. The Navy understands the desire of community members to have Parcel E-2 cleaned up to the highest standards and has considered this input in its evaluation of the community acceptance criterion. However, the Navy is also required to consider eight other criteria that are specified in the NCP. As described on page 15 of the Proposed Plan, Criteria 1 and 2 (protection of human health and the environment, and compliance with ARARs) are threshold criteria that each alternative must meet to be eligible for selection. Criteria 3, 4, 5, 6, and 7 are balancing criteria used to weigh major tradeoffs in the benefits and limitations among alternatives. Criteria 8 and 9 (state acceptance and community acceptance) are modifying criteria considered in the ROD.

[14] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Greenaction for Health and Environmental Justice (Marie Harrison) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
2. *(cont.)*	*(see above)*	The Navy's evaluation of the remedial alternatives is summarized on pages 15, 16, and 17 of the Proposed Plan. Additional information is included in Sections 2.8 and 2.9 of this ROD. In summary, the preferred alternative published in the Proposed Plan (Alternative 5) complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria. The Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The State of California, through DTSC and the Water Board, and segments of the community, represented by the SFRA and Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have concurred with the preferred alternative published in the Proposed Plan. In addition, the preferred alternative is generally consistent with Proposition P, as explained in the responses to comments from Arc Ecology (see pages 8 and 9 of this responsiveness summary). The information presented by members of the community that disagree with the preferred alternative does not justify modification of the preferred alternative based upon the "community acceptance" criteria of the NCP. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife.
	The landfill in E-2 contained hazardous and radioactive materials, yet has not been fully characterized; soil bores and samples have not been systematically taken for the entire area, and therefore it is not acceptable to cap the landfill without even knowing what is buried inside of it. Not only is the landfill not fully characterized, but it is in very close proximity to the community, compared to other areas where capping was used as a method of containment. The landfill is across the street from where people live, with the only separation being a wire fence.	Regarding the assertion of inadequate characterization, the Navy has worked closely with the EPA, DTSC, Water Board, CCSF DPH, and other project stakeholders for more than 20 years to obtain and evaluate data from the Parcel E-2 Landfill. The Navy's collaborative effort with the EPA, DTSC, Water Board, and CCSF DPH resulted in the identification of a focused set of remedial alternatives that included complete removal of the Parcel E-2 Landfill (in addition to one or more containment alternatives). The available data are adequate to support an evaluation of the focused set of remedial alternatives, and the Navy does not believe that further characterization is necessary or appropriate to select a remedy for Parcel E-2. The information contained in the administrative record, which includes pertinent regulatory guidance (EPA, 1993a, 1993b, 1994, and 1996) and site-specific input from various stakeholders, adequately supports this position.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Greenaction for Health and Environmental Justice (Marie Harrison) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
2. *(cont.)*	Capping and lining are not permanent solutions. After the fire of 2000, the Navy has had to recap portions of the landfill in E-2 because the gases had migrated off-site to UCSF in 2002. In 2003, the Navy had to work the extraction pumps again to remove the gases migrating beneath the capped portions. With capping proposed as a permanent solution, current gas-control measures would be expanded to take care of the entire landfill on the large-scale. Combustible methane would still be building up below the cap and need to be extracted in the future to maintain the 5% combustion cut-off rate recommended to prevent the gas from combusting. Proposed methods also include flare burning of methane and filters to remove organic compounds. Without knowing what is in the landfill, filters and the flare method for burning methane may not be the best course of action. Likewise, gas monitoring of the landfill is stated as an ongoing part of the clean up plan, but without any protocol for evacuation or notification of the community in the event of an emergency. The Navy has already failed to notify the community in a timely manner when the fire broke out in the landfill in 2000. In light of the fact that degradation of the landfill contents will take place over hundreds of years and produce many unknown flammable and toxic and combustible gases, and the fact that there already was a fire within the landfill, we feel this represents a lack of foresight that can impact the community in the future. Furthermore, below-ground barriers near the San Francisco Bay are not sufficient to prevent leachate from contaminating San Francisco Bay; the landfill is situated right over the water table that feeds into the Bay. Even though the Navy proclaims that their barrier will prevent leachate in the event of an earthquake, there has been no independent testing to confirm this. Despite the planned monitoring and maintenance, nowhere in the plan is a contingency plan mentioned should monitoring levels for water, air, or soil pollution be exceeded. Without any oversight, monitoring efforts are not useful in protecting the nearby community, nor people who use the area in the future.	Regarding the concerns over the long-term effectiveness of the preferred alternative, the Navy believes that the information in the RI/FS Report is adequate to demonstrate that the proposed cover and other containment systems, which will be inspected regularly and maintained in accordance with the ARARs identified in Attachment 4 of this ROD, will be protective of human health and the environment. Sections 11.5 and 12.2.3 of the RI/FS Report (ERRG and Shaw, 2011) provide detailed information on the elements of the containment systems proposed under the preferred alternative. The Navy believes that this information is adequate to address the reviewer's concerns. In addition, the Navy wishes to clarify several points raised by the reviewer: • No effort was made to "recap" the Parcel E-2 Landfill in 2002. The landfill gas control system installed from 2002 to 2003 was a separate action from the interim cover that was placed from 2000 to 2001. These two actions are briefly described on page 7 of the Proposed Plan. Detailed information on both actions is presented in the RI/FS Report (Sections 3.8.4 and 3.8.5, and Appendices E and F). • The Navy has identified two potential options to treat landfill gas but, as stated on page 19 of the Proposed Plan, will further evaluate the treatment options during the remedial design and will consult with the EPA, DTSC, Water Board, CCSF DPH, and other project stakeholders to determine which treatment option will be used. • The Navy will inspect, maintain, and monitor the cover and containment systems to comply with pertinent federal and state requirements, as identified in Attachment 4 of this ROD. The planned activities will include emergency response procedures necessary to comply with the pertinent state requirement (Title 27 CCR § 21130). The planned activities are briefly described in Section 2.9.1 of this ROD and will be detailed in the post-closure operation and maintenance plan. • The planned activities will include groundwater and surface water monitoring that will be adequate to ensure the protection of human health and the environment. The EPA, DTSC, and Water Board will continue to oversee the Navy's long-term management of Parcel E-2 to ensure that it complies with pertinent federal and state requirements.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Greenaction for Health and Environmental Justice (Marie Harrison) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
2. *(cont.)*	Greenaction supports the implementation of a full cleanup of contaminants as described in Alternative 2, with proper monitoring of contamination and cleanup activities as well as enforcing laws related to air, land, and water. Greenaction has never supported capping as an effective or permanent solution to the problem of toxic contamination at Hunters Point Naval Shipyard or anywhere else. The community of Bayview Hunters Point deserves the best clean up possible, regardless of the fiscal impacts to those responsible, because health should be considered before wealth. As a low-income community of color that has already been negatively impacted by the Shipyard's contamination in the past and also is impacted by multiple contamination and pollution sources, cumulative effects must be taken into consideration when choosing a plan that effects the long-term health of Bayview Hunters Point residents. Greenaction for Health and Environmental Justice, Bayview Hunters Point community members, and the majority of city residents, want a full cleanup of the pollution in Parcel E-2. Greenaction also demands that toxic waste not be transferred to other impacted communities, shifting the burden to another community with cumulative health problems and pollution sources. As a federal agency, the US Navy is subject to the Executive Order on Environmental Justice, Executive Order 12898. This Executive Order requires the Navy to comply with environmental justice, and environmental justice mandates will be violated if the Navy merely requires capping of a massive toxic mess instead of a safe, thorough and comprehensive site remediation so that the health of future and current residents are fully protected. The Navy also failed to provide meaningful opportunities for public involvement in this decision-making process, especially in light of the disbanding of the Restoration Advisory Board. Public involvement in decisions that affect the well-being of a community is a right of all citizens. We therefore request that the Navy adopt and implement Alternative 2, the most health protective and just solution to the contamination at the Hunters Point Shipyard.	The Navy and EPA are firmly committed to achieving the goals identified in the Executive Order on Environmental Justice (E.O. 12898) at HPNS. Both agencies are dedicated to consistent, fair treatment and meaningful participation in environmental decision-making for minority, low-income, and indigenous populations that are disproportionately impacted by pollution. The Navy and EPA, in performing environmental cleanup work at HPNS with support from DTSC and the Water Board, have worked together to achieve the environmental justice goals of fully protective cleanup actions, fair and equal treatment, and meaningful involvement for all people in the Bayview-Hunters Point community. Our efforts to satisfy these goals include: • Substantial regulatory review and oversight of all Navy cleanup activities. The EPA, DTSC, Water Board, CCSF, California Department of Public Health, Bay Area Air Quality Management District, and San Francisco Bay Conservation and Development Commission all have dedicated significant additional staff to HPNS to ensure that the Navy's cleanup work is performed in a way that is protective of the Bayview-Hunters Point community and complies with federal and state laws and regulations. • Substantial financial commitment from the Navy to HPNS cleanup. The Navy has spent approximately $716M over the past 20 years on the HPNS cleanup program, and these expenditures have made HPNS one of the nation's largest BRAC cleanup programs. The Navy's cleanup efforts to date have successfully removed, treated, or contained a significant volume of contamination that would otherwise pose an unacceptable risk to site workers and future occupants. • EPA's Technical Assistance Grants to the Community: - Technical Assistance Grants (TAG). Since 1993, EPA has consistently provided various community groups with grant money to hire an independent technical advisor to review and provide independent input on the Navy's plans and reports, and to help further explain the Navy's cleanup work to interested community members.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Greenaction for Health and Environmental Justice (Marie Harrison) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
2. *(cont.)*	*(see above)*	- Technical Assistance Services for Communities (TASC). EPA used its TASC contract program to provide the community with an independent asbestos technical expert to review the "Draft 2010 U.S. EPA's Review of Dust/Asbestos Control Measures and Air Monitoring at Hunters Point Shipyard Parcel A Report" and other supporting documentation. A community meeting was held where the independent technical advisor presented his findings. In addition, TASC services were used by the community to review the San Francisco Redevelopment Agency's EIR for HPNS related to land use and site cleanup. The technical advisor presented formal comments to the CCSF and held a meeting to present independent findings to the broader community. - Region 9 Environmental Justice Grant for HPNS. Prior to the national program, the Region 9 EPA Superfund Program developed and awarded a "one-time" HPNS Environmental Justice Small Grant to encourage new activity or improve the quality of existing activities related to environmental justice and cleanup of the HPNS. • Meaningful Community Engagement under the Navy's Updated Community Involvement Plan (CIP). The Navy updated their CIP in 2011 to present the communication and community involvement program activities that were designed to meet the specific needs and desires of the HPNS community (Navy, 2011a). The Navy conducts the following specific community outreach efforts in accordance with the CIP: (1) publishing an annual calendar of outreach events; (2) dedicating a Navy team member to serve as Community Involvement Manager; (3) publishing fact sheets on important technical topics; (4) holding regularly scheduled community meetings; (5) publishing an annual overview of the HPNS cleanup program; (6) regularly updating a hardcopy mail and e-mail distribution list to maximize communication; (7) holding periodic bus tours of HPNS to describe the cleanup program; (8) participating in local radio programs to answer questions from the local community; (9) presenting technical information to a variety of existing community groups; (10) making translation services available to interested community members; and (11) publishing notices in local newspapers to announce public meetings associated with important document reviews.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Greenaction for Health and Environmental Justice (Marie Harrison) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
2. *(cont.)*	*(see above)*	• Employment. The Navy works closely with their existing contractors to emphasize the importance of hiring community members to assist in the cleanup program, and works with interested stakeholders (such as the CCSF) to promote job training programs. These efforts have proven successful based on recent estimates—from 2009 to 2011 over 1,000 community members have been employed under Navy contracts (on either full-time, part-time, or temporary basis) to assist in the cleanup program. In addition, the Navy and their contractors have identified a large network of local businesses to assist in the cleanup program, such as those providing document production services, supplying building materials and consumables (drinking water and ice), renting heavy equipment, and transporting soil and rock. These efforts have proven successful based on recent estimates of over $11 million worth of goods and services from local businesses. • Commitment to Protective Cleanup Actions. Most importantly, the Navy, EPA, and the State of California regulatory agencies are committed to fully protective cleanup actions at Parcel E-2 and throughout HPNS. As described in previous responses, the selected remedy for Parcel E-2 will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife. Since 2005, the Navy has undertaken a great deal of early action to remove contaminated soil at Parcel E-2, involving the excavation and off-site disposal of over 90,000 cubic yards (over 6,400 truckloads). For the Parcel E-2 landfill itself, the Navy, EPA, and State of California jointly believe that safely isolating and capping the Parcel E-2 Landfill (as specified in Alternative 5) presents less overall risk to the adjacent community when compared with the risks of other cleanup alternatives evaluated, including complete removal of the Parcel E-2 Landfill (in Alternative 2). The combination of removal and containment proposed under Alternative 5 reduces risk sooner, is easier to implement, and is much more cost-effective as compared with Alternative 2. In addition, Alternative 5 provides additional risk reduction as compared with Alternatives 3 and 4.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard		
Written Comments by Greenaction for Health and Environmental Justice (Marie Harrison) received on November 21, 2011 via e-mail *(continued)*		
Comment No.	**Comment**	**Response**
2. *(cont.)*	*(see above)*	The Navy agrees that contamination should not be transferred to other communities and that is one of the reasons for selecting a safe, protective containment remedy for Parcel E-2.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard		
Written Comments by Hunters Point Shipyard Citizen's Advisory Committee (Veronica Hunnicutt) received on November 21, 2011 via e-mail		
Comment No.	**Comment**	**Response**
Introduction	We are the members of Citizen's Advisory Committee for the San Francisco Hunters Point Shipyard Redevelopment Project (HPCAC), and we are writing to comment on the US Navy's proposed remedial alternatives for Parcel E-2. For the past 18 years, the HPCAC has worked toward the revitalization of the southeast sector of the City in concert with many stakeholders, including current residents of the project area, the master developer and the San Francisco Redevelopment Agency. The Parcel E-2 remediation is a major milestone in the progress of the overall project. Our end goal is a redeveloped area that is economically, socially, and environmentally successful and sustainable. We review all actions within the total redevelopment project with that perspective. In our review of the proposed Parcel E-2 remediation, we are looking for solutions that provide: 1. Healthy and safe environment for future residents, employees, and visitors; 2. Flexible land uses that maintain maximum ability to adjust as City land needs change; 3. Maximum ability to be completed in a reasonable timeframe so as not to delay the buildout of the Shipyard. After reviewing the proposed remedial alternatives, we generally agree with the Navy's recommended alternative (Alternative #4). We agree that it best meets the federal requirements within the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) as well as the particular goals of the HPCAC listed above. However, there are certain issues that we would wish for the Navy to address in the final design of the remedial action. These are the following:	The following pages provide responses to the specific comments from the Mayor's Hunters Point Shipyard Citizens Advisory Committee.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard		
Written Comments by Hunters Point Shipyard Citizens Advisory Committee (Veronica Hunnicutt) received on November 21, 2011 via e-mail *(continued)*		
Comment No.	**Comment**	**Response**
1.	Evaluation of the rock revetment. As part of the environmental remediation, we understand the purpose of the upland's rock revetment, but considered in light of our goal to maintain flexible land uses, we are concerned that the rock revetment limits potential recreational uses of the Parcel E-2. While we would never support a recreational use that would inflict long-term environmental damage on the new wetland area, we feel it is in the community's interest to maintain land use flexibility. To that end, we would ask that alternatives to the rock revetment be considered.	The Navy has determined that armoring will be required along steeply sloped portions of the Parcel E-2 shoreline, including the area adjacent to the Parcel E-2 Landfill. The Navy has identified rock revetment as the most viable option for armoring these parts of the Parcel E-2 shoreline; however, the Navy will further evaluate potential refinement to this option during the remedial design. The evaluation will consider ways to enhance the recreational uses and aesthetics of the shoreline while maintaining a similar level of long-term effectiveness, implementability, and cost compared to rock revetment.
2.	Landfill gas treatment. We understand that the Navy plans to review methods of treating extracted landfill gas. We would ask that the Navy disclose the potential risks of enclosed flare in an urban environment should that continue to be a potential method of remediation.	The Navy will further evaluate the option to treat landfill gas during the remedial design and will consult with the EPA[15], DTSC, Water Board, CCSF DPH, and other project stakeholders to determine which treatment option will be used. The Navy will describe the potential hazards associated with the landfill gas treatment options when the specific design has been chosen after extensive discussion with the EPA, DTSC, Water Board, CCSF DPH, and other project stakeholders.
3.	Liquefaction. While the Navy has addressed this topic previously, we would ask that potential risks of liquefaction present in the recommended alternative be laid out in the remedial action design documents.	The Navy will describe the potential risks associated with liquefaction in the remedial design and will further evaluate this very important part of the design, including consulting with other technical experts, to make sure that the final cover is built to withstand the appropriate design earthquake and comply with numerous other regulatory requirements for landfill covers.

[15] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Hunters Point Shipyard Citizens Advisory Committee (Veronica Hunnicutt) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
4.	We feel it is important to address why we are not endorsing Alternative #2, characterized by complete removal of all waste and contaminated soils in the Parcel E-2 landfill and additional identified radiological wastes. This is a remedial action that a contingent of the community has long advocated for. Although we agree with the end goals of maximum long-term environmental safety for the community, we don't feel that Alternative #2 best meets those goals. From our understanding there is a great amount of exposure risk associated with complete removal – this understanding is supported by recommendations from the Environmental Protection Agency. These exposure risks are elevated and would continue for the entire timeframe of the remediation action, which could be years. In addition, there is no guarantee that the remediated land parcel would allow for a greater flexibility in land uses. For these reasons, we cannot support Alternative #2.	Thank you for your comment.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard		
Written Comments by John McCarthy received on November 21, 2011 via e-mail		
Comment No.	**Comment**	**Response**
1.	While this message is certainly 'down to the wire', it seems that there is still time to express my continuing concern about the relatively wide dispersion of monitoring wells for "Parcel E-2" at HPS. With that kind of dispersion and not very specific information about the overall depth of measure, it would seem that there is much room for critical threshhold chemistry to be missed (rad count ?). It would seem appropriate that SF takes all of the the proposed restrictions ("Institutional Controls"), as a non negotiable prerequisite, enforced and enforceable by both state and federal authorities. [The Navy's "Overview of Proposed Institutional Controls," as published in the Proposed Plan, was attached for reference purposes.]	The Navy has worked closely with the EPA[16], DTSC, Water Board, CCSF DPH, and other project stakeholders for more than 20 years to obtain and evaluate data from Parcel E-2 and has determined that the available data are adequate to support an evaluation of the focused set of remedial alternatives. In addition to the specified institutional controls, the selected remedy includes the numerous monitoring and maintenance activities that would be performed as long as necessary to protect human health and the environment and to comply with pertinent state and federal ARARs. Regulatory oversight will continue during long-term operation and maintenance of the selected remedy. In addition, the selected remedy will be subject to statutory reviews every 5 years (pursuant to CERCLA) to ensure that it remains protective of human health and the environment.

[16] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Lynne Brown and Michael E. Boyd received on November 21, 2011 via e-mail

Comment No.	Comment	Response
1.	**Re: Comments and 60-days notice of Citizens Suit following approval of the plan** Dear US Navy, We wish to object to and protest to the U.S. Department of the Navy, in coordination with state and federal environmental regulatory agencies, *Proposed Plan for cleanup of Parcel E-2* at the former Naval Shipyard at Hunters Point San Francisco, California. This letter also constitutes a 60-days notice of intent to bring a Citizens suit against you pursuant to Administrative Procedures Act (APA) Chapter 5; Clean Air Act (CAA) 42 USC § 7604 Citizen suits; Clean Water Act (Federal Water Pollution Control Act (FWPCA)) 33 USC § 1365 Citizen suits; and, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 42 USC § 9659 (a) Citizen suits The Navy's proposed cleanup plan regarding uncharacterized contaminants is to provide only for "Containment: Install soil cover over all of Parcel E-2 and place a protective liner under the soil cover in all areas except the new tidal wetlands in the Panhandle Area. Build shoreline revetment at the edge of the soil cover. Perform active landfill gas extraction and treatment. Install below ground barrier and drain at western boundary to divert groundwater flow into the landfill. Inspect and maintain soil cover, protective liner, groundwater barrier/drain, and gas control system". The proposed plan if implemented would be in direct violation of the voter approved San Francisco Proposition P in 2000 its Board of Supervisors Implementation Resolution 06304-1 [Exhibit A], and Bay View Hunters Points' residence, and out civil rights under color of law [federal and state]. "WHEREAS, The Hunters Point Bayview community wishes the Hunters Point Shipyard to be cleaned to a level which would enable the unrestricted use of the property – the highest standard for cleanup established by the United States Environmental Protection Agency; and	Proposition P was adopted by the CCSF[17] Board of Supervisors in Resolution 634-01 in August of 2001. Although Proposition P does express a recommendation from the Hunters Point Bayview community for cleanup to a level allowing unrestricted use of the property, Proposition P also urges the Navy to clean up the shipyard in a manner that does not rely on future owners to maintain barriers to protect the public from exposure unless other remedies are technically infeasible. The Navy, in its RI/FS Report that was concurred upon by the other Federal Facility Agreement signatories, has determined that Alternative 2 (which involves excavation and off-site disposal of the entire Parcel E-2 Landfill) poses many complex engineering challenges and borders on being technically infeasible. In addition, Alternative 2 is not cost-effective pursuant to the CERCLA and NCP remedy selection criteria addressed in the Proposed Plan and ROD. The cover component of the containment remedy selected in the ROD is a barrier that will protect the public from exposure consistent with Proposition P. Proposition P was later addressed in the "*Conveyance Agreement Between the United States of America Acting by and Through the Secretary of the Navy United States Department of the Navy and the San Francisco Redevelopment Agency for the Conveyance of Hunters Point Naval Shipyard*" executed on March 31, 2004. Recital paragraphs 10 and 11 of the Conveyance Agreement referenced Proposition P and reiterated community support for cleanup to the highest level practical. Furthermore, Article 1(q)(iv) of the Conveyance Agreement specifically addresses Parcel E (which at the time of execution also included Parcel E-2) and states in relevant part: "*In any event, the remedies selected for Parcels E and F shall meet applicable Federal and State regulatory requirements, including the nine criteria set forth in 40 CFR 300.430(e)(9)(iii), one of which is community acceptance.*"

[17] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Lynne Brown and Michael E. Boyd received on November 21, 2011 via e-mail

Comment No.	Comment	Response
1.	WHEREAS, The 87% of voters in the City and County of San Francisco in November 2000, who opposed increasing the risk for cancer as a result of using lower standards for cleanup, supported the Hunters Point Bayview community's request that the federal government - through its Department of the Navy - allocate funds sufficient to clean the Shipyard to a level that will enable unrestricted use and approved Proposition P urging that the initiative be adopted as City policy; and WHEREAS, A cleanup to unrestricted levels under Proposition P would (1) protect the community and future residents of the Shipyard from past pollution,.." [Exhibit A page 7] The US Navy has authority to act in behalf of the affected Bay View Hunters Point community under Federal laws to insure compliance with all federal environmental, restoration, civil rights and base reuse laws (i.e., Laws Ordinance Regulations and Standards), but has failed to do so; including, but not limited to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601 et seq.; 40 CFR Parts 300–311, the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901 et seq.; 40 CFR Parts 240–281, the Clean Water Act (CWA), 33 U.S.C. §§ 1251–1387; 33 CFR Parts 320–330, 335–338; 40 CFR Parts 104–140, 230–233, 401–471; Executive Order 11990 (Protection of Wetlands), the Clean Air Act (CAA), 42 U.S.C. § 7401 et seq.; 40 CFR Parts 50, 60, 61, and 80, the Safe Drinking Water Act (SDWA), 42 U.S.C. §§ 300f–300j- 26; 40 CFR Parts 141–149, the Base Closure Community Redevelopment and Homeless Assistance Act of 1994 (Redevelopment Act), Pub. L. 103-421; 32 CFR Part 176, the National Environmental Policy Act (NEPA) 42 U.S.C. § 4321 et seq.; and the Civil Rights Act of 1964, 28 U.S.C. § 1447, 42 U.S.C. §§1971, 1975a–1975d, 2000a– 2000h-6, by the CCSF, the SFRA, and US Navy, and other federal (US EPA), state (DTSC), and local agencies of the government, in all its programs, plans, and actions. And the US Navy has a specific duty under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601 et seq., and its implementing regulations, 40 CFR Parts 300–311, which requires the federal government to take community acceptance into account in all its cleanup decisions	Recital 10 also acknowledges that the Navy is required under CERCLA to take community acceptance into account in its cleanup decision. The Navy has done so in this ROD and responsiveness summary in accordance with CERCLA and the NCP and has also addressed technical feasibility and cost effectiveness in the ROD in a manner that is consistent with CERCLA, the NCP, Proposition P, the Conveyance Agreement, and the Hunters Point Shipyard Redevelopment Plan. The Navy's environmental cleanup program at HPNS addresses the planned reuse outlined in the SFRA's amended Hunters Point Shipyard Redevelopment Plan (SFRA, 2010). The Redevelopment Plan was initially approved in 1997 and adopted as the official Redevelopment Plan for HPNS by the CCSF Board of Supervisors (Ordinance 285-97 pursuant to Chapter 4.5 of California Community Redevelopment Law, California Health and Safety Code § 33492). The Redevelopment Plan was subsequently amended in 2010, 9 years after Proposition P was approved and 6 years after execution of the Conveyance Agreement. The CERCLA remedial action selected in this ROD is consistent with and will accommodate the future reuses identified in the amended Redevelopment Plan. The Navy also notes that Proposition P is a local governmental resolution and is not a federal or state statute or promulgated regulation. Therefore, Proposition P is not a CERCLA federal or state ARAR for purposes of CERCLA remedy selection in Parcel E-2. The Navy has, in consultation with the EPA, DTSC, Water Board, CCSF DPH, and other project stakeholders, complied with the requirements of CERCLA 42 U.S.C. § 9601, et seq., the NCP (40 CFR Part 300) and pertinent EPA guidance to (1) obtain and evaluate data regarding potential contamination at Parcel E-2; (2) develop and evaluate an appropriate range of remedial alternatives in the RI/FS Report addressing CERCLA and NCP requirements, including federal and State ARARs (ERRG and Shaw, 2011); (3) identify a preferred alternative in the Proposed Plan and solicit public comments, and (4) select a CERCLA remedial action in this ROD as documented and supported in the CERCLA administrative record for Parcel E-2 (see administrative index in Attachment 4).

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Lynne Brown and Michael E. Boyd received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	But the US Navy and US EPA has failed to comply with civil rights requirements to "take community acceptance into account in all its cleanup decisions" despite our repeated complaints to that effect starting with our October 20, 2004 Title VI civil rights complaint [Exhibit B] to the US EPA, US Navy, and US DOJ which the United States government has swept under the rug and has failed to address over seven years later. "The SFRA took discretionary action on December 2, 2003, by approving the DDA for the development of the Hunters Point Shipyard[1]. The minutes of the December 20, 2003 meeting of the RAB reflects they unanimously adopted my motion before the RAB.[2] Mr. Brown reintroduced a document that concerned a civil rights violation by the Redevelopment Agency related to the Disposition Development Agreement (DDA). He made a motion to accept the document…. and Ms. Pendergrass called the question and the RAB supported Mr. Brown's motion. Additionally, by and through Mayor Gavin Newsom, CCSF took what is clearly discretionary action by approving (*i.e.*, entering into) the CA with the U.S. Navy. The CA sets a specific timetable for giving CCSF a portion of the Hunters Point Shipyard for residential development (herein referred to as Parcel A), as well as giving commercial development rights to Lennar/BVHP, a private, non-governmental organization. To my knowledge (and please advise me immediately if and how I am wrong), neither of the discretionary actions involving the CA and DDA previously described has been subjected to public review or comment, nor have these actions been subjected to environmental review as required by CEQA for such projects. [1] See attached Exhibit B http://mecresources.com/RABonViolations1.htm motion unanimously adopted by the RAB at its December 20, 2004 meeting. [2] See http://www.efdsw.navfac.navy.mil/environmental/pdf/hpmin012204.pdf at page 2 paragraph 2.	As described on page 16 of the Proposed Plan, the community acceptance criterion is one of two modifying criteria and has been evaluated based on comments provided in the course of the CERCLA remedy selection process, including those received on the Proposed Plan, and other community input, including Proposition P. Consistent with the NCP [40 CFR § 300.430(e) and (f)], the Navy's evaluation of the community acceptance criterion is documented in this ROD, which includes the subject responsiveness summary. The reviewer's allegations concerning the SFRA and the Disposition Development Agreement are directed to local governmental decisions relating to local California Environmental Quality Act compliance and do not relate to CERCLA remedy selection by the Navy and EPA.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Lynne Brown and Michael E. Boyd received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	On November 7, 2000, CCSF voters passed, with 87% approval, Proposition P calling upon the US Navy to remediate the Hunters Point Naval Shipyard to the highest levels practical to assure the flexible reuse of the property. The Navy is required under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601 *et seq.*, and its implementing regulations, 40 CFR Parts 300–311, to take community acceptance into account in its cleanup decisions. On July 30, 2001, CCSF's Board of Supervisors (the Board) passed unanimously a resolution implementing the will of the voters as expressed by Proposition P. The Board's vote confirmed as the policy of CCSF that the Navy should clean the Hunters Point Naval Shipyard of toxic and hazardous pollution to the highest practical level. Since the voters empowered the Board to enforce Proposition P, and the Board then proceeded to do so, the Board clearly has a duty to also vote on the CA. Both the CA and the DDA must be subjected to all applicable government approvals including all required environmental reviews under both CEQA and its federal counterpart, the National Environmental Policy Act (NEPA). There are a number of additional governmental approvals that must be obtained prior to the development allowed by the CA and DDA, including General Plan amendment(s) and redevelopment area mergers. There are also legal mandates for a subsequent or supplemental environmental analysis to augment the study done in 1999, which provides no complete or adequate environmental analysis of the impacts associated with the development envisioned and allowed by the CA and DDA. The impacts that are being ignored pose imminent threats of grave if not fatal harm to human life and safety, as well as the environment. The impacts and their potentially grave harm must be analyzed by considering the pertinent documentation from the Navy and the Hunters Point and San Francisco Fire Departments, particularly in regard to the residential	As previously stated, although Proposition P does express a recommendation from the Hunters Point Bayview community for cleanup to a level allowing unrestricted use of the property, Proposition P also urges the Navy to clean up the shipyard in a manner that does not rely on future owners to maintain barriers to protect the public from exposure unless other remedies are technically infeasible. The Navy, in its RI/FS Report that was concurred upon by the other Federal Facility Agreement signatories, has determined that Alternative 2 (which involves excavation and off-site disposal of the entire Parcel E-2 Landfill) poses many complex engineering challenges and borders on being technically infeasible. In addition, Alternative 2 is not cost-effective pursuant to the CERCLA and NCP remedy selection criteria addressed in the Proposed Plan and ROD. The cover component of the containment remedy selected in the ROD is a barrier that will protect the public from exposure consistent with Proposition P.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Lynne Brown and Michael E. Boyd received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	development being planned for Parcel A under the CA and DDA. It is common knowledge that this area has been the site of a series of fires during the summer months of the years 2003, 2002, 2001 and 2000. The ignition of these fires was fueled by flammable, explosive chemicals whose presence is documented in the Parcel A Record of Decision and include petroleum products, pesticides, volatile organic compounds in the air and soil, and gaseous emissions from the partially capped industrial landfill on Parcel E, which is immediately adjacent to Parcel A.[3] " [Exhibit B page 3 to 5] Subsequent actions by the US Navy, including but not limited to the December 23, 2009 [Exhibit C] Memo from BRAC Program Management Office West Recommendation to Dissolve the Hunters Point Restoration Advisory Board demonstrates conclusively a failure by the US Navy [in concert with US EPA] to comply with their specific duty under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601 et seq., and its implementing regulations, 40 CFR Parts 300–311, to take community acceptance into account in all its cleanup decisions. We allege that the US Navy, US EPA, and other federal officials; in their official capacities, are participating in an unlawful "civil conspiracy" with City and County of San Francisco, the San Francisco Redevelopment Agency, and Lennar/BVHP, a private, non-governmental organization to violate our federal civil rights under color of law; both state and federal. [3] Information on these vital subjects is readily available, and we respectfully request that to the extent it hasn't been done yet, a full investigation be conducted prior to an further discretionary action involving the CA and DDA. If such an investigation has been done or commenced, please consider this our request for an opportunity to inspect all writings in your possession concerning such an investigation.	As previously stated, the reviewer's allegations concerning the SFRA and the Disposition Development Agreement are directed to local governmental decisions relating to local California Environmental Quality Act compliance and do not relate to CERCLA remedy selection by the Navy and EPA. In addition, conditions at the former Parcel A, which was transferred to the CCSF in 2004, have no bearing on Parcel E-2. Although the RAB was dissolved in December 2009 because it was no longer fulfilling its purpose, the Navy continues to involve the community in the details of the environmental cleanup program at HPNS. The Navy updated their CIP in 2011 to present the communication and community involvement program activities that were designed to meet the specific needs and desires of the HPNS community (Navy, 2011a). Some of the specific community outreach efforts that the Navy conducts in accordance with the CIP include (1) preparation of topic-specific fact sheets; (2) use of a calendar of outreach events; (3) holding regularly scheduled community meetings; and (4) conducting bus tours. Section 2.10 of this ROD identifies the Navy's efforts to involve the local community in the cleanup program at HPNS, including soliciting input on the proposed cleanup for Parcel E-2. The Navy does not agree with the reviewer's assertion of a "civil conspiracy" or any violations of the civil rights of members of the local community. As previously stated, the Navy has, in consultation with the EPA, DTSC, Water Board, CCSF DPH, and other project stakeholders, followed the process established in the NCP (40 CFR § 300.430) and pertinent federal guidance to (1) obtain and evaluate data regarding potential contamination at Parcel E-2; (2) develop and evaluate an appropriate range of remedial alternatives in the RI/FS Report (ERRG and Shaw, 2011); and (3) identify a preferred alternative in the Proposed Plan and solicit public comments. The information contained in the administrative record, which includes pertinent regulatory guidance (EPA, 1993a, 1993b, 1994, and 1996) and site-specific input from various stakeholders, is consistent with and supports the selection of the remedial action for Parcel E-2 by the Navy and EPA pursuant to CERCLA and the NCP.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Lynne Brown and Michael E. Boyd received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	We are in the belief and understanding that a civil conspiracy is defined as an agreement between two or more people to participate in an unlawful act or a lawful act in an unlawful manner. See *Halberstam v. Welch*, 705 F.2d 472, *Hampton v. Hanrahan*, 600 F.2d 600, 620-21 (7th Cir.1979), modified on other grounds, 446 U.S. 754, 100 S.Ct. 1987, 64 L.Ed.2d 670 (1980). An express agreement among all conspirators is not necessary. "A plaintiff ... need not prove that each participant in a conspiracy knew the `exact limits of the illegal plan or the identity of all participants therein.'" Hampton, 600 F.2d at 621 (quoting *Hoffman-LaRoche, Inc. v. Greenberg*, 447 F.2d 872, 875 (7th Cir.1971)). The conspirators "must share the general conspiratorial objective, but they need not know all the details of the plan ... or possess the same motives." *Id.* Thus, to "demonstrate the existence of a conspiratorial agreement, it simply must be shown that there was a single plan, the essential nature and general scope of which [were] known to each person who is to be held responsible for its consequences." Id. (quoting *Hoffman-LaRoche, Inc. v. Greenberg*, 447 F.2d 872, 875 (7th Cir.1971)). To make the conspiracy actionable, there must also be an overt act in furtherance of the object of the conspiracy that injures plaintiff in his person or property or, in a section 1985(3) action, which deprives him of having or exercising any right or privilege of a citizen of the United States. We are alleging, that individual decision makers, by knowingly specifically authorizing the exposure of surrounding Bay View Hunters Point residents to harmful environmental hazards and failing to provide for remedial measures, that this deprives us and these residents of having or exercising any right or privilege under the Constitution.	*(see above)*

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Lynne Brown and Michael E. Boyd received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
2.	**Conclusion** The relief requested is for the US Navy to adopt a modified Alternative 2 "Excavation and Off-Site Disposal: Excavate all waste and contaminated soil in the Parcel E-2 Landfill and all shallow waste, soil, and sediment in the Panhandle Area, East Adjacent Area, and Shoreline Area. Dispose of excavated waste and contaminated soil and sediment at an off-site landfill. Wetlands Restoration in Panhandle Area and Shoreline Area: Build new tidal and freshwater wetlands with appropriate soil and vegetation. Maintain and monitor wetlands. Groundwater Monitoring: Implement long-term monitoring of groundwater to assess whether chemicals are migrating and to monitor changes in ambient conditions. ICs: Impose ICs to limit the use of land or restrict activities that take place within an area. The ICs for Parcel E-2 are listed on page 21. Additional Radiological Actions: Excavate potential radioactive contamination from (1) drain lines that extend into the East Adjacent Area but are located outside of the boundary of IR Site 01/21, and (2) ship-shielding berm in Panhandle Area. Dispose of excavated waste and soil at an off-site landfill. Perform final radiological surveys at all excavated areas prior to backfilling with clean, imported soil." The modifications must also implement SF BOS Resolution 06304-1 [Exhibit A at page 9] requiring "the Navy to more fully characterize the nature and extent of contaminants in the landfill on Parcel E, off-shore sediments in Parcel F, *soils below ten feet and contaminated ground water plumes*, so that remedies can be selected and implemented that are fully protective of persons residing in close proximity to the landfill and the Bay shoreline and that fully protect future occupants and residents from any unacceptable exposures posed by soil and ground water on other portions of the Shipyard; and, be it FURTHER RESOLVED, That the Board hereby urges City departments and the Agency *to establish community-based monitoring programs to ensure that the adjacent community is protected and that the remediation process for the respective Parcels are accomplished in a manner that is fully protective of human health and the environment"*.	The Navy understands the desire of community members to have Parcel E-2 cleaned up to the highest standards and has considered this input in its evaluation of the community acceptance criterion, which is one of nine criteria identified in the federal regulation called the NCP. However, the Navy is also required to consider the other eight criteria that are specified in the NCP. As described on page 15 of the Proposed Plan, Criteria 1 and 2 (protection of human health and the environment, and compliance with ARARs) are threshold criteria that each alternative must meet to be eligible for selection. Criteria 3, 4, 5, 6, and 7 are balancing criteria used to weigh major tradeoffs in the benefits and limitations among alternatives. Criteria 8 and 9 (state acceptance and community acceptance) are modifying criteria considered in the ROD. The Navy's evaluation of the remedial alternatives is summarized on pages 15, 16, and 17 of the Proposed Plan. Additional information is included in Sections 2.8 and 2.9 of this ROD. In summary, the preferred alternative published in the Proposed Plan (Alternative 5) complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria. The Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The State of California, through DTSC and the Water Board, and segments of the community, represented by the SFRA and Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have concurred with the preferred alternative published in the Proposed Plan. In addition, the preferred alternative is generally consistent with Proposition P, as explained previously in the response to comment 1. The information presented by members of the community that disagree with the preferred alternative does not justify modification of the preferred alternative based upon the "community acceptance" criteria of the NCP. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by Lynne Brown and Michael E. Boyd received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
2. *(cont.)*	Therefore in the absence of providing the requested relief either of us, and any Bay View Hunters Point resident adversely affected, may assert in the federal court that they are the victim of a civil conspiracy[4] by any so named respondent to violate those civil rights, all actionable under 42 U.S.C. § 1985(3) (Supp. V 1981) and 42 U.S.C. §1983, to redress violations of federal violations of federal laws committed by the same, i.e. to inter alia compel the enforcement of federal laws, for the affected residents' and the public's interests, and to secure remedial relief for damages caused by those violations, including but not limited to from the Decision Makers themselves. [4] We also define a civil conspiracy or collusion as an agreement between two or more parties to deprive a third party of legal rights or deceive a third party to obtain an illegal objective.	The Navy has worked closely with the EPA, DTSC, Water Board, CCSF DPH, and other project stakeholders for more than 20 years to obtain and evaluate data from the Parcel E-2 Landfill. The Navy's collaborative effort with the EPA, DTSC, Water Board, and CCSF DPH resulted in the identification of a focused set of remedial alternatives that included complete removal of the Parcel E-2 Landfill (in addition to one or more containment alternatives). The available data are adequate to support an evaluation of the focused set of remedial alternatives, and the Navy does not believe that further characterization is necessary or appropriate to select a remedy for Parcel E-2. The information contained in the administrative record, which includes pertinent regulatory guidance (EPA, 1993a, 1993b, 1994, and 1996) and site-specific input from various stakeholders, adequately supports this position. The Navy will inspect, maintain, and monitor the cover and containment systems to comply with CERCLA and the NCP and federal and state ARARs, as identified in Attachment 4 of this ROD, and to ensure the protection of human health and the environment. The EPA, DTSC, and Water Board will continue to oversee the Navy's long-term management of Parcel E-2 to ensure that it complies with these federal and state requirements.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by San Francisco Green Party (Eric Brooks) received on November 21, 2011 via e-mail

Comment No.	Comment	Response
Introduction	I am submitting these comments to point out, and insist upon correction of, serious inadequacies, in your department's selection of Preferred Alternative 5 for the Proposed Plan for cleanup of Parcel E-2, which includes a landfill along the shoreline at Hunters Point Naval Shipyard in San Francisco, California I will focus my comments in two categories - 1) SERIOUS INADEQUACIES IN ADDRESSING, AND FAILURES TO ACCOUNT FOR, PROJECTED SEA LEVEL RISE 2) FAILURE TO ACCOUNT FOR AND AVOID HEALTH AND ENVIRONMENTAL HAZARDS OF TOXIC MATERIALS, INCLUDING BUT NOT LIMITED TO CHRYSOTILE ASBESTOS AND IONIZING RADIATION; AND, FAILURE TO MEET THE LEGAL PRECAUTIONARY PRINCIPLE ESTABLISHED BY ORDINANCE IN THE SAN FRANCISCO, CALIFORNIA, ENVIRONMENT CODE CHAPTER 1: - PRECAUTIONARY PRINCIPLE POLICY STATEMENT - SECTIONS 100-104 Comments:	Please see below for the response to specific comments from the San Francisco Green Party.
1	SERIOUS INADEQUACIES IN ADDRESSING, AND FAILURES TO ACCOUNT FOR, PROJECTED SEA LEVEL RISE As is now commonly understood and established by widespread and overwhelming scientific consensus, the Earth's oceans and the San Francisco Bay are now undergoing sea level rise due to planetary climate warming. Until very recently, science policy groups, including and especially the Intergovernmental Panel on Climate Change (IPCC) had been projecting that the worst case scenario for global sea level rise would be no higher than 1.5 meters by the year 2100.	The selected remedy provides an adequate level of shoreline protection which, based on the most recent estimates from the IPCC[18], can reasonably accommodate rising sea levels over the next 100 years. Figures 12-1 and 12-2 in the Final RI/FS Report, which present a preliminary design for the selected remedy, show that the top of the revetment structure is anticipated to be approximately 14 to 15 feet above mean sea level, or about 11 to 12 feet above the mean high tide level (ERRG and Shaw, 2011). The revetment structure will be further evaluated in the remedial design relative to several factors, including but not limited to potential rise in sea level. In addition, the selected remedy will be subject to statutory reviews every 5 years (pursuant to CERCLA) to ensure that it remains protective of human health and the environment. The five-year reviews will consider multiple technical factors, including but not limited to potential rise in sea level.

[18] Acronyms and abbreviations are summarized at the end of this responsiveness summary.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by San Francisco Green Party (Eric Brooks) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	However new data and reports released in November 2009 now indicate that the worst case scenario for global sea level rise is now projected to be at least 2 meters by the year 2100. More importantly, NASA's James Hansen, widely recognized as the preeminent climate change expert on Earth, argued credibly as early as 2007 that worst case scenario sea level rise will instead be 5 meters by the year 2100. In light of the fact that the IPCC's predictions of sea level rise from just two years ago have been found to be inadequate by an entire one half meter, and that James Hansen had previously argued in 2007 that the IPCC's projections were indeed inadequate, Hansen's projection of a worst case scenario of 5 meters sea level rise by the year 2100, must now be assumed as the guide for the Proposed Plan for cleanup of Parcel E-2. The following data and reports prove this case: - On Nov 22, 2009 NASA released new satellite gravimetric data from a 7 year study of Antarctica showing that the massive East Antarctic Ice Sheet, which scientists previously thought was gaining in volume, is suddenly (as of 2006) undergoing rapid and widespread melting. See http://www.guardian.co.uk/environment/2009/nov/22/east-antarctic-ice-sheet-nasa The NASA study report itself can be ordered from Nature Geoscience at http://www.nature.com/ngeo/journal/v2/n12/full/ngeo694.html This research also shows massive new and more rapid melting in West Antarctica and Greenland. - As of November 24, 2009, in a report entitled 'The Copenhagen Diagnosis', even historically overly equivocal IPCC scientists revised their sea level rise projections to a possible 2 meters (6.5 feet) by the year 2100. See the Reuters news release on the report at http://www.reuters.com/article/idUSTRE5AN4L620091124 and the actual report itself at http://www.copenhagendiagnosis.org/download/default.html	The Navy does not agree with the reviewer's assertion that the selected remedy must account for a worst-case scenario of a 5 meter rise in sea level. The revetment structure will be further evaluated in the remedial design relative to the most current IPCC estimates for a rise in sea level. In addition, the selected remedy will be subject to statutory reviews every 5 years (pursuant to CERCLA) to ensure that it remains protective of human health and the environment. The five-year reviews will consider multiple technical factors, including but not limited to potential rise in sea level.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by San Francisco Green Party (Eric Brooks) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	The portion of this report which describes new sea level rise projections begins on page 37 of the report. - In a March 2007 report, NASA's James Hansen, who first alerted the general public and policy makers to the global climate crisis, discusses the probability of a 5 meter (16.25 feet) sea level rise. See Hansen's report at: http://www.iop.org/EJ/article/1748-9326/2/2/024002/erl7_2_024002.html Note that Hansen's report is speculative by nature, simply because ice sheet melting and other data will not exist to prove the case that he argues, until that level of melting is already happening. However, given that the NASA gravimetric data noted above shows that Antarctic and Greenland ice sheets are currently undergoing rapidly accelerating melting at previously unforeseen rates (and at rates which continue to accelerate even further) there is absolutely no reason whatsoever to doubt Hansen's predictions; especially in light of the fact that Hansen's past predictions have consistently proved to be correct. CONCLUSIONS - SEA RISE: Hence, since James Hansen's prediction of a worst case 5 meter sea level rise by the year 2100 is highly credible, it is, at the very least, that standard of a predicted 5 meter rise which must be used as the guideline for the Proposed Plan for cleanup of Parcel E-2. More importantly, good engineering practice (especially when dealing with a factor with such high unpredictability and potentially severe and costly outcomes as climate induced sea level rise) would call for at least an additional 100% margin of safety over worst case projections to be adopted for the Proposed Plan for cleanup of Parcel E-2. This means that the standard for assumed sea level rise in the project should be at least 10 meters (32.5 feet) of sea level rise by the year 2100. Even if planners were to use the likely far too equivocal 2 meter worst case sea rise projection in The Copenhagen Diagnosis, an additional 100% margin of safety would still demand a minimum 4 meter rise assumption.	The Navy does not agree with the reviewer's assertion that the selected remedy must account for a worst-case scenario of a 5 meter (or greater) rise in sea level. The revetment structure will be further evaluated in the remedial design relative to the most current IPCC estimates for a rise in sea level. In addition, the selected remedy will be subject to statutory reviews every 5 years (pursuant to CERCLA) to ensure that it remains protective of human health and the environment. The five-year reviews will consider multiple technical factors, including but not limited to potential rise in sea level.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by San Francisco Green Party (Eric Brooks) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	To get a sense of the profound potential sea rise impacts on Parcel E-2, see the following online interactive sea level rise projection maps: The Project Area At 2 Meters Sea Level Rise: http://flood.firetree.net/?ll=37.7293,-122.3995&z=3&m=2 The Project Area At 5 Meters Sea Level Rise: http://flood.firetree.net/?ll=37.7293,-122.3995&z=3&m=5 Even at the minimum 2 meter rise worst case assumption, the sea inundations into the project area clearly and profoundly impact that entire area in fundamental ways that are not adequately addressed by the selection of Alternative 5 for the Proposed Plan for cleanup of Parcel E-2. And the 5 meter projection map is undeniably astounding in its implications. Sea Level Rise Interactions With Liquefaction & Hazardous Materials The most important inadequacies of the selection of Alternative 5 for the Proposed Plan for cleanup of Parcel E-2 lie in their failure to account adequately for the potential of sea level rise to severely exacerbate both liquefaction and the leaching and harmful interactions of hazardous materials in the project area. Liquefaction In the report entitled 'Vulnerability assessment to liquefaction hazard induced by rising sea-levels due to global warming' (see http://www.thefreelibrary.com/_/print/PrintArticle.aspx?id=155784183 - or purchase the full article with graphics at http://eproceedings.worldscinet.com/9789812701602/preserved-docs/9789812701602_0069.pdf) the report authors establish clearly that liquefaction dangers increase as sea levels rise, and increase rapidly after sea level rise exceeds 1 meter.	As described on pages 18 and 19 of the Proposed Plan, the preferred alternative includes a preliminary plan, developed with input from various technical experts, that would control soil movement during the maximum probable earthquake. The Navy studied soil in and around the Parcel E-2 Landfill and found that most soil would not liquefy even during the maximum probable earthquake, and the soil layers that might liquefy would be controlled through proper design and construction of the final cover using methods that are well established for sites in the San Francisco Bay area. The Navy will further evaluate this very important part of the remedial design, including collecting additional geotechnical data and consulting with other technical experts, to make sure that the final cover is built to withstand the appropriate design earthquake and comply with numerous other regulatory requirements for landfill covers. In addition, the Navy's previous study revealed that the potentially liquefiable soil layers in and around the Parcel E-2 Landfill are located 10 feet or deeper below the ground surface, meaning that these soil layers are already saturated with groundwater and the degree of saturation would not be significantly affected by rising water levels. Appendix C in the RI/FS Report details the findings of the Navy's previous study of liquefaction potential at the Parcel E-2 Landfill (ERRG and Shaw, 2011).

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by San Francisco Green Party (Eric Brooks) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	This likely increased liquefaction danger clearly exacerbates potential hazardous materials releases from the site and therefore all hazardous materials must be completely removed from Parcel E-2 before any development occurs in the project area. Hazardous Materials By far the most troubling aspect of the selection of Alternative 5 for the Proposed Plan for cleanup of Parcel E-2 is in the failure to sufficiently address potential sea level rise interaction with hazardous materials in and on the site. In 'Implications of Sea Level Rise for Hazardous Waste Sites in Coastal Floodplains' (see http://www.epa.gov/climatechange/effects/downloads/Challenge_chapter9.pdf) the authors establish clearly the extensive dangerous interactions that can occur as sea level rise exacerbates flooding and triggers other negative impacts in hazardous waste sites, such as those in and around Parcel E-2. The dramatic sea level rise scenarios projected above could so overwhelm the project area that unforeseen and unavoidable extremely dangerous leaching, flushing, mixing, out-gassing and dispersion of a veritable toxic soup of hazardous materials could take place in the project area. It is therefore imperative that all hazardous materials be completely removed from Parcel E-2 before any development is permitted to proceed. Under a scenario of sea level rise between 2 and 5 meters, no capping or other on-site containment of any hazardous wastes can be adequate to assure the prevention of unacceptably dangerous leaching, flushing, mixing, out-gassing and dispersion of hazardous materials; all which in turn would lead to the inevitable poisoning of the environment, animals, and people, living in, working in, and visiting the area. Therefore all hazardous materials must be completely removed from Parcel E-2 before any development occurs in the project area.	As described on page 17 of the Proposed Plan, the preferred alternative also includes the following elements to control potential leaching of chemicals from the Parcel E-2 Landfill: (1) the protective liner would limit infiltration from the ground surface into the landfill waste; (2) below-ground barriers would control the flow of contaminated groundwater into San Francisco Bay; (3) groundwater along the shoreline would be regularly monitored; and (4) groundwater would be pumped and treated if necessary to keep contaminants from flowing into San Francisco Bay. The Navy does not believe there is a sufficient technical basis to support the reviewer's request. As previously discussed, the selected remedy would (1) provide an adequate level of shoreline protection that can reasonably accommodate rising sea levels over the next 100 years; (2) control soil movement during the appropriate design earthquake; and (3) control potential leaching of chemicals from the Parcel E-2 Landfill. In addition, the Navy wishes to clarify that, from a perspective of environmental sustainability, the implementation of Alternative 5 would have a smaller impact as compared to Alternative 2. The Navy performed a preliminary analysis of the greenhouse gas emissions associated with implementing Alternatives 2 and 5, accounting for both the remedial action construction and long-term monitoring activities. The Navy determined that a significantly greater volume of greenhouse gases would be emitted under Alternative 2 as compared with Alternative 5. This difference is attributed to the emissions from excavating, transporting, and disposing of the estimated 1,166,000 cubic yards of soil, sediment, and solid waste.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by San Francisco Green Party (Eric Brooks) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
1. *(cont.)*	These remarks on sea level rise disrupted hazardous materials now segue well into the second and final category of my comments.	*(please see the response on pages 99 through 103)*
2	FAILURE TO ACCOUNT FOR AND AVOID HEALTH AND ENVIRONMENTAL HAZARDS OF TOXIC MATERIALS, INCLUDING BUT NOT LIMITED TO CHRYSOTILE ASBESTOS AND IONIZING RADIATION; AND, FAILURE TO MEET THE LEGAL PRECAUTIONARY PRINCIPLE ESTABLISHED BY ORDINANCE IN THE SAN FRANCISCO, CALIFORNIA, ENVIRONMENT CODE CHAPTER 1: - PRECAUTIONARY PRINCIPLE POLICY STATEMENT - SECTIONS 100-104 Chrysotile Asbestos Two recent European Union (EU) directives can be viewed at http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=31999L0077&model=guichett and at http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=32003L0018&model=guichett In those directives, the EU establishes that "No threshold level of exposure has yet been identified below which chrysotile asbestos does not pose carcinogenic risks;". In those directives, the EU also bans all applications and uses of chrysotile asbestos as of the year 2005. Chrysotile or 'white' asbestos is the same type existing naturally in serpentine rock at the Candlestick Point-Hunters Point Shipyard Phase II Development Plan Project area and in other development areas in the Bayview Hunters Point. Previous grading and other development activities in those other development areas has resulted in chrysotile dust contamination on the Candlestick Point-Hunters Point Shipyard Phase II Development Plan Project area.	The Navy has, in consultation the EPA, DTSC, Water Board, CCSF DPH, and other project stakeholders, followed the process established in the NCP (40 CFR § 300.430) and pertinent federal guidance to (1) obtain and evaluate data regarding potential contamination at Parcel E-2; (2) develop and evaluate an appropriate range of remedial alternatives in the RI/FS Report (ERRG and Shaw, 2011); and (3) identify a preferred alternative in the Proposed Plan and solicit public comments. The information contained in the administrative record, which includes pertinent regulatory guidance (EPA, 1993a, 1993b, 1994, and 1996) and site-specific input from various stakeholders, is consistent with and supports the selection of the remedial action for Parcel E-2 by the Navy and EPA pursuant to CERCLA and the NCP. The Navy understands that chrysotile asbestos occurs naturally in the serpentinite rock present at HPNS and is considered a background condition under CERCLA rather than a release of hazardous substances potentially requiring a CERCLA response action. Nonetheless, the Navy, in accordance with Title 17 CCR § 93105, implements a rigorous dust control and air monitoring program as part of its cleanup actions at HPNS to control potential exposures to naturally occurring asbestos and other chemicals that may be disturbed during implementation of CERCLA response actions. The same dust control and air monitoring requirements will apply during implementation of the selected remedy at Parcel E-2 because Title 17 CCR § 93105 is an ARAR (see Attachment 4 of this ROD). Although the Navy cannot speak directly to the development process outside of HPNS, we understand that a similar dust control and air monitoring program is in place to comply with Title 17 CCR § 93105. We recommend that the reviewer consult with the Bay Area Air Quality Management District, the regulatory agency that oversees both the Navy and developer's dust control and air monitoring programs.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard

Written Comments by San Francisco Green Party (Eric Brooks) received on November 21, 2011 via e-mail *(continued)*

Comment No.	Comment	Response
2. *(cont.)*	Because it has been established that there is no safe level of exposure to chrysotile asbestos, all asbestos dust which has arisen from other construction sites must be completely removed from Parcel E-2 before any any development can begin in the area. Ionizing Radiation In June 2005 the National Academies of Science reported that there is no safe dose of ionizing radiation (see http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=11340) Therefore no development can be allowed to proceed in and around Parcel E-2 until all radiological waste materials are completely removed from the area. Proceeding with any development while such wastes remain anywhere in Parcel E-2, presents unnecessary and unacceptable risks to human health. The Precautionary Principle And All Hazardous Materials Furthermore, because San Francisco's own legally established Precautionary Principle also requires that no person be unnecessarily exposed to chrysotile asbestos, ionizing radiation, or any other hazardous materials, it is doubly mandated that all radiological and other hazardous materials must be completely removed from Parcel E-2 before any development can proceed in the area.	The Navy believes adequate information is available to demonstrate that chrysotile asbestos occurs naturally in the serpentinite rock present at HPNS and does not constitute a release of hazardous substances potentially requiring a CERCLA response action. Accordingly, the Navy does not believe there is a sufficient technical basis to support the reviewer's request for removal of said "chrysotile dust contamination." Further, the Navy believes that the dust control and air monitoring programs implemented to comply with Title 17 CCR § 93105 are sufficient. The Navy has, in consultation the EPA, DTSC, Water Board, CCSF DPH, and other project stakeholders, followed the process established in the NCP (40 CFR § 300.430) and pertinent federal guidance to (1) obtain and evaluate data regarding potential contamination at Parcel E-2, including from radiological material; (2) develop and evaluate an appropriate range of remedial alternatives in the RI/FS Report (ERRG and Shaw, 2011); and (3) identify a preferred alternative in the Proposed Plan and solicit public comments. Following this process, the Navy has identified Alternative 5 as the preferred alternative for Parcel E-2 because it complies with the two threshold criteria, and provides the best balance of tradeoffs with respect to the five balancing criteria specified in the NCP. The Navy's evaluation of the two modifying criteria did not warrant changes to the preferred alternative. The State of California, through DTSC and the Water Board, and segments of the community, represented by the SFRA and Mayor's Hunters Point Shipyard Citizens Advisory Committee, as well as a number of engaged citizens who live in close proximity to HPNS, have concurred with the preferred alternative published in the Proposed Plan. In addition, the preferred alternative is generally consistent with Proposition P, as explained in the responses to comments from Arc Ecology (see pages 8 and 9 of this responsiveness summary). The information presented by members of the community that disagree with the preferred alternative does not justify modification of the preferred alternative based upon the "community acceptance" criteria of the NCP. The preferred alternative will remove significant amounts of contaminants and safely contain the remaining material, and will prevent unacceptable exposure to humans (both future site users and the surrounding community) and wildlife.

Proposed Plan for Parcel E-2, Hunters Point Naval Shipyard		
Written Comments by San Francisco Green Party (Eric Brooks) received on November 21, 2011 via e-mail *(continued)*		
Comment No.	**Comment**	**Response**
2. *(cont.)*	*(see above)*	The information contained in the administrative record, which includes pertinent regulatory guidance (EPA, 1993a, 1993b, 1994, and 1996) and site-specific input from various stakeholders, is consistent with and supports the selection of the remedial action for Parcel E-2 by the Navy and EPA pursuant to CERCLA and the NCP.
Written Comments by Eric Brooks (San Francisco Green Party) received on November 22, 2011 via e-mail		
1.	In my comments sent to you previously on the Proposed Plan for cleanup of Parcel E-2, which are recopied below, I have discovered that the second link in the section discussing 'The Copenhagen Diagnosis' is incorrect. The correct link is: http://www.copenhagendiagnosis.com/download/default.html	Comment acknowledged; thank you for the correction.

ACRONYMS AND ABBREVIATIONS

ARARs	applicable or relevant and appropriate requirement
ATSDR	Agency for Toxic Substances and Disease Registry
BRAC	Base Realignment and Closure
CCR	California Code of Regulations
CCSF	City and County of San Francisco
CDFG	California Department of Fish and Game
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIP	Community Involvement Plan
DoD	Department of Defense
DPH	Department of Public Health
DTSC	Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
ERRG	Engineering/Remediation Resources Group, Inc.
EIR	Environmental Impact Report
F&GC	Fish & Game Code
FS	Feasibility Study
HPNS	Hunters Point Naval Shipyard
HRA	Historical Radiological Assessment
IPCC	Intergovernmental Panel on Climate Change
LUC RD	land use control remedial design
NAS	Naval Air Station
NAVSEA	Naval Sea Systems Command
Navy	Department of the Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Protection Act
OSPR	Office of Spill Prevention and Response
PCB	polychlorinated biphenyl
RAB	Restoration Advisory Board
RAOs	remedial action objectives
RI	Remedial Investigation
ROD	Record of Decision
RSRS	Radiological Survey and Remedial Services, LLC
SFRA	San Francisco Redevelopment Agency
Shaw	Shaw Environmental Inc.
TAG	Technical Assistance Grants
TASC	Technical Assistance Services for Communities
Water Board	San Francisco Bay Regional Water Quality Control Board
§	Section

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Attachment 4. Applicable or Relevant and Appropriate Requirements

Attachment 4. Federal Chemical-Specific[a] Applicable or Relevant and Appropriate Requirements

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Requirement	Prerequisite	Citation [b]	ARAR Determination	Comments
		Groundwater		
U.S. Environmental Protection Agency				
Classifies groundwater based on ecological importance, replaceability, and vulnerability considerations.	Groundwater	EPA Guidelines for Groundwater Classification under the EPA Groundwater Protection Strategy [d]	To Be Considered	The Navy has reviewed the classification criteria for the A-aquifer at HPNS Parcel E-2 and determined that groundwater classifications Class II and III apply to A-aquifer groundwater based on EPA guidelines. However, based on site-specific factors provided by EPA Region 9, A-aquifer groundwater at HPNS Parcel E-2 is not considered a potential domestic use source.
Safe Drinking Water Act (42 USC, ch. 6A, § 300[f] through 300[j]-26)[c]				
National primary drinking water standards are health-based standards for public water systems (MCLs).	Public water system	40 CFR §§ 141.11 [excluding § 141.11(d)(3)], 141.13, 141.15, 141.16, 141.61(a) and (c), and 141.62(b)	Relevant and appropriate	The Navy has identified MCLs as ARARs for containment of in-place waste within the Parcel E-2 Landfill and adjacent areas (Panhandle, East Adjacent, and Shoreline Areas) for which MCLs are federal ARARs for groundwater in portions of the B-aquifer downgradient of the POC.
Resource Conservation and Recovery Act (42 USC, ch. 82, §§ 6901 through 6991[i])[c]				
Groundwater protection standards. Owners and operators of RCRA treatment, storage, or disposal facilities must comply with conditions in these sections that are designed to ensure that hazardous chemicals entering groundwater from a regulated unit do not exceed concentration limits for chemicals of concern set forth under Cal. Code Regs. tit. 22, § 66264.94 in the uppermost aquifer underlying the waste management area of concern at the POC.	A regulated unit that receives or has received hazardous waste before July 26, 1982, or regulated units that ceased receiving hazardous waste prior to July 26, 1982, where chemicals in or derived from waste may pose a threat to human health or the environment.	Cal. Code Regs, tit. 22, § 66264.94 (a)(1), (a)(3), (c), (d), (e)	Relevant and appropriate	The lowest concentration determined to be technologically and economically achievable is an ARAR for the A-aquifer. The lowest concentration limit greater than background that is technologically and economically achievable for the A-aquifer is based on unacceptable risk from the vapor intrusion pathway. These ARARs pertain to the containment of in-place waste within the Parcel E-2 Landfill and adjacent areas (Panhandle, East Adjacent, and Shoreline Areas) for which concentration limits based on unacceptable risk from the vapor intrusion pathway are federal ARARs for groundwater in portions of the A-aquifer downgradient of the POC.

Attachment 4. Federal Chemical-Specific[a] Applicable or Relevant and Appropriate Requirements *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Requirement	Prerequisite	Citation [b]	ARAR Determination	Comments
Surface Water				
Clean Water Act of 1977, as Amended (33 USC, ch. 26, §§ 1313–1314)[c]				
Surface water quality standards	Discharges to waters of the United States	40 CFR § 131.38	Applicable	These standards, known as the CTR, are applicable surface water ARARs. The Navy has identified the CTR as ARARs for HPNS Parcel E-2 because groundwater and surface water bodies discharge to San Francisco Bay. The Navy will meet these ARARs for chemicals that do not have a promulgated standard in Table 3-3 of the Basin Plan at the interface of the A-aquifer and the bay. These ARARs will also be applied to surface water bodies at HPNS Parcel E-2. The Navy has identified MCLs as ARARs for the B-aquifer, which will be protective of the discharge of B-aquifer groundwater to the bay. Therefore, these are not ARARs for the interface of the B-aquifer and the bay.
Solid Waste, Soil, and Sediment				
Resource Conservation and Recovery Act (42 USC, ch. 82, §§ 6901 through 6991[i])[c]				
This requirement defines RCRA hazardous waste. Solid wastes are characterized as toxic based on the TCLP results if the wastes exceed the TCLP maximum concentrations.	Waste	Cal. Code Regs, tit. 22, §§ 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100	Applicable	These regulations are applicable to activities that generate waste. The selected remedy includes excavation and off-site disposal of solid waste, soil, and sediment. The Navy will determine if excavated solid waste, soil, and sediment meet the definition of non-RCRA hazardous waste when it is generated.

Attachment 4. Federal Chemical-Specific[a] Applicable or Relevant and Appropriate Requirements *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Requirement	Prerequisite	Citation [b]	ARAR Determination	Comments
Solid Waste, Soil, and Sediment *(continued)*				
Uranium Mill Tailings Radiation Control Act (42 USC, ch. 88, § 192.02, 192.12(a,b), and 192.42)[c]				
Standards for cleanup of land and buildings contaminated with radium-226, radium-228, and thorium from inactive uranium processing sites. As a result of residual radioactive materials from any designated processing site: (a) The concentration of radium-226 in land averaged over any area of 100 square meters shall not exceed the background level by more than: (1) 5 pCi/g, averaged over the first 15 cm of soil below the surface, and (2) 15 pCi/g, averaged over 15-cm-thick layers of soil more than 15 cm below the surface.	UMTRCA sites	40 C.F.R. §§ 192.12(a) and 192.32(b)(2)	Relevant and appropriate	Not applicable because Parcel E-2 is not an UMTRCA site, but is relevant and appropriate for sites with soil contaminated with radioactive waste. The surface and subsurface concentration of 5 pCi/g is relevant and appropriate only for areas with sanitary sewer, storm drain, or septic sewer lines that do not extend into another radiologically impacted area. These areas, following remediation of ROCs exceeding the proposed RGs, will not require land use restrictions regarding exposure to radioactivity. Not an ARAR for radiologically impacted areas that will be transferred with engineering and institutional controls for radioactive chemicals.
In any occupied or habitable building, the objective of the remedial action shall be, and reasonable effort shall be made to achieve, an annual average (or equivalent) radon decay product concentration (including background) not to exceed 0.02 WL. In any case, the radon decay product concentration (including background) shall not exceed 0.03 WL. Provisions applicable to radon-222 shall also apply to radon-220.	UMTRCA sites	40 C.F.R. §§ 192.12(b)(1) and 192.41(b)	Relevant and appropriate	Not applicable because Parcel E-2 is not an UMTRCA site. Relevant and appropriate because the selected remedy will result in excavation of material with radiological contamination that may produce this level of dose.

Attachment 4. Federal Chemical-Specific[a] Applicable or Relevant and Appropriate Requirements *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Requirement	Prerequisite	Citation [b]	ARAR Determination	Comments
Solid Waste, Soil, and Sediment *(continued)*				
Uranium Mill Tailings Radiation Control Act (42 USC, ch. 88, § 192.02, 192.12(a,b), and 192.42)[c]				
Concentration limits for cleanup of gamma radiation in buildings at inactive uranium processing sites designated for remedial action. In any occupied or habitable building, the level of gamma radiation shall not exceed the background level by more than 20 microroentgens per hour.	UMTRCA sites	40 C.F.R. § 192.12(b)(2)	Relevant and appropriate	Not applicable because Parcel E-2 is not an UMTRCA site. Relevant and appropriate because the selected remedy will result in excavation of material with radiological contamination that may produce this level of dose.
Radiological Criteria for License Termination				
A site will be considered acceptable for unrestricted use if residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 25 mrem/y, including that from groundwater sources of drinking water, and that the residual radioactivity has been reduced to ALARA.	Existing NRC-licensed site	10 C.F.R. § 20.1402	Relevant and appropriate	Not applicable because Parcel E-2 is not an NRC-licensed site. This ARAR is relevant and appropriate only for areas with sanitary sewer, storm drain, or septic sewer lines that do not extend into another radiologically impacted area. These areas, following remediation of ROCs exceeding the proposed RGs, will not require land use restrictions regarding exposure to radioactivity. EPA does not believe this NRC regulation is protective of human health and the environment, and believes the proposed RGs are more protective. Not an ARAR for radiologically impacted areas that will be transferred with engineering and institutional controls for radioactive chemicals.
Requires that the TEDE to individual members of public not exceed 0.1 rem from licensed operation, construction, operation, and decommissioning of commercial reactors and fuel cycle facilities; possession, use, processing, exporting, and certain aspects of transporting nuclear materials and waste; and siting, design, construction, operations, and closure of waste disposal sites.	Existing NRC-licensed site	10 C.F.R. § 20.1301	Relevant and appropriate	Not applicable because Parcel E-2 is not an NRC-licensed site. Relevant and appropriate because the proposed remedial selected remedy will leave potential radiological contamination on site.

Attachment 4. Federal Chemical-Specific[a] Applicable or Relevant and Appropriate Requirements *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Requirement	Prerequisite	Citation [b]	ARAR Determination	Comments
Solid Waste, Soil, and Sediment *(continued)*				
Radiological Criteria for License Termination *(continued)*				
Performance objectives for the land disposal of LLRW. Concentrations of radioactive material that may be released to the general environment must not result in an annual dose exceeding 25 mrem to the body or any organ of a member of the general public.	Existing NRC-licensed LLRW disposal site	10 C.F.R. § 61.41	Relevant and appropriate	Not applicable because Parcel E-2 is not an NRC-licensed site. Relevant and appropriate for all radiologically impacted areas at Parcel E-2, except for sanitary sewer, storm drain, and septic sewer lines that do not extend into another radiologically impacted area, and that will be transferred with engineering and institutional controls for radioactive chemicals.
Air				
NESHAPs under CAA that Apply to Radionuclides				
Emissions of radionuclides to ambient air from DOE facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/y.	Facility owned or operated by the DOE that emits any radionuclide other than radon-222 and radon-220 into the air.	40 C.F.R. pt. 61, subpt. H, § 61.92	Relevant and appropriate	Not applicable because Parcel E-2 is not a DOE site, but is relevant and appropriate if there is the potential for airborne emissions of radionuclides other than radon. Only an ARAR until cleanup action is completed. Not an ARAR for residual contamination after cleanup.
Emissions of radionuclides, including iodine, to ambient air from a facility regulated under this subpart shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/y. Emissions of iodine to ambient air from a facility regulated under this subpart shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 3 mrem/y.	Facilities owned or operated by any federal agency other than the DOE and not licensed by the NRC.	40 C.F.R. pt. 61 subpt. I, § 61.102	Applicable	The requirements are applicable because fugitive dust may be generated during implementation of the remedial action at Parcel E-2. Exposure to the public from remedial action operations at Parcel E-2 is not likely to exceed 10 mrem/y because of the following reasons: (1) the concentrations of any radionuclide in dust are relatively low as previously measured in air samples, and (2) the concentration of any radionuclide in dust will be reduced by use of engineering controls such as wetting of soils.

Attachment 4. Federal Chemical-Specific[a] Applicable or Relevant and Appropriate Requirements *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Notes:

a	Many action-specific ARARs contain chemical-specific limitations and are addressed in the action-specific ARAR tables
b	Only the substantive provisions of the requirements cited in this table are ARARs.
c	Statutes and policies and their citations are provided as headings to identify general categories of ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the Navy accepts the entire statutes or policies as ARARs; specific ARARs are addressed in the table below each general heading; only pertinent substantive requirements of the specific citations are considered ARARs.
d	EPA. 1986. "Guidelines for Groundwater Classification Under the EPA Groundwater Protection Strategy, Final Draft." November.

ALARA	as low as reasonable achievable	NESHAPs	National Emissions Standards for Hazardous Air Pollutants
ARARs	applicable or relevant and appropriate requirements	NRC	U.S. Nuclear Regulatory Commission
CAA	Clean Air Act	pCi/g	picocuries per gram
Cal. Code Regs.	California Code of Regulations	POC	point of compliance
CFR	Code of Federal Regulations	pt.	part
ch.	Chapter	RCRA	Resource Conservation and Recovery Act
cm	centimeter	ROCs	radionuclides of concern
CTR	California Toxics Rule	RGs	remediation goals
DOE	U.S. Department of Energy	subpt.	subpart
EPA	U.S. Environmental Protection Agency	TCLP	toxicity characteristic leaching procedure
HPNS	Hunters Point Naval Shipyard	TEDE	total effective dose equivalent
LLRW	low-level radioactive waste	tit	title
MCLs	maximum contaminant level	UMTRCA	Uranium Mill Tailings Radiation Control Act
mrem	millirem	USC	United States Code
mrem/y	millirems per year	§	Section
Navy	Department of the Navy		

Attachment 4. State Chemical-Specific ARARs [a]

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Requirement	Prerequisite	Citation [b]	ARAR Determination	Comments
Groundwater				
State and Regional Water Quality Control Boards [c]				
Authorizes SWRCB and RWQCB to establish, in water quality control plans, beneficial uses and numerical and narrative standards to protect both surface water and groundwater quality.	Waters of the state	California Water Code, div. 7, §§ 13241, 13243, 13263(a), 13269, and 13360	Applicable	The Navy accepts the substantive provisions of these sections of the California Water Code as enabling legislation, as implemented through the beneficial uses, WQOs, waste discharge requirement, and promulgated policies of the San Francisco Basin Plan as ARARs.
Describes the water basins in the San Francisco Region, establishes beneficial uses of groundwater and surface water, and establishes WQOs, including narrative and numerical standards.	Waters of the state	Comprehensive Water Quality Control Plan for the San Francisco Region (Basin Plan) Chapters 2 and 3 (California Water Code § 13240), except the MUN designation for the A-aquifer	Applicable	The substantive groundwater provisions of Chapters 2 and 3 of the Basin Plan, except the MUN designation, are ARARs. According to the Basin Plan, which incorporates SWRCB Resolution 88-63, A-aquifer groundwater at HPNS Parcel E-2 is not a potential drinking water source. The only beneficial use of A-aquifer groundwater is freshwater replenishment of San Francisco Bay. B-aquifer groundwater has a moderate potential for use as a drinking water source.
Designates all groundwater and surface waters of the state as drinking water, except where total dissolved solids are greater than 3,000 ppm, the well yield is less than 200 gpd from a single well, the water is a geothermal resource or in a water conveyance facility, or the water cannot reasonably be treated for domestic use using either best management practices or best economically achievable treatment practices.	Waters of the state	SWRCB Resolution 88-63	Applicable	The Navy has evaluated the groundwater characteristics in the A-aquifer and B-aquifer at HPNS Parcel E-2 against the criteria listed in SWRCB Resolution 88-63. The Navy has determined that groundwater in the A-aquifer is not a potential source of drinking water and groundwater in the B-aquifer has a moderate potential for use as a drinking water source. RWQCB has concurred with the Navy's determination that groundwater in the A-aquifer is not a potential drinking water source.
Department of Toxic Substances Control [c] / State and Regional Water Quality Control Boards [c]				
State MCL list.	Source of drinking water	Cal. Code Regs. tit. 22, §§ 64431 and 64444	Relevant and appropriate	State MCLs are ARARs for the containment of in-place waste within the Parcel E-2 Landfill and adjacent areas (Panhandle, East Adjacent, and Shoreline Areas) for which MCLs are state ARARs for groundwater in portions of the B-aquifer downgradient of the POC.

Attachment 4. State Chemical-Specific ARARs [a] *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Requirement	Prerequisite	Citation [b]	ARAR Determination	Comments
Groundwater *(continued)*				
Department of Toxic Substances Control [c] / State and Regional Water Quality Control Boards [c]				
State secondary MCL list.	Source of drinking water	Cal. Code Regs. tit. 22, § 64449(a)	Relevant and appropriate	State secondary MCLs are ARARs for the containment of in-place waste within the Parcel E-2 Landfill and adjacent areas (Panhandle, East Adjacent, and Shoreline Areas), for which MCLs are state ARARs for groundwater in portions of the B-aquifer downgradient of the POC.
Establishes the policy that high quality waters of the state "shall be maintained to the maximum extent possible" consistent with the "maximum benefit to the people of the State." It provides that whenever the existing quality of water is better than that required by applicable water quality policies, such existing high quality water will be maintained until it has been demonstrated to the state that any change will be consistent with maximum benefit to the people of the state, will not unreasonably affect present and anticipated beneficial use of such water, and will not result in water quality less than that prescribed in the policies. It also states that any activity that produces or may produce a waste or increased volume or concentration of waste and that discharges or proposes to discharge to existing high-quality waters will be required to meet waste discharge requirements that will result in the best practicable treatment or control of the discharge.	High quality waters of the state	Statement of Policy With Respect to Maintaining High Quality of Waters in California, SWRCB Res. 68-16	Not an ARAR	SWRCB Res. 68-16 is not a chemical-specific ARAR because it is not more stringent than the federal Cal. Code Regs. tit. 22 groundwater protection standard [Cal. Code Regs. tit. 22, § 66264.94(a)(1) and (3),(c), (d), and (e)]. SWRCB Res. 68-16 is also not an action-specific ARAR because the selected remedy does not include discharge of treated groundwater to surface water. The Navy has determined that further migration of contaminants through groundwater is not a discharge governed by the language in Res. 68-16. More specifically, the language of SWRCB Res. 68-16 indicates that it is prospective in intent, applying to new discharges in order to maintain existing high-quality waters. It is not intended to apply to restoration of waters that are already degraded. The state does not agree with the Navy's determination that SWRCB Res. 92-49 and 68-16 are not ARARs for this response action. SWRCB has interpreted the term "discharges" in the *California Water Code* to include the movement of waste from soils to groundwater and from contaminated to uncontaminated water (SWRCB 1994). However, the state agrees that the proposed action would comply with SWRCB Res. 92-49 and 68-16. The state does not intend to dispute the ROD, but reserves its rights if implementation of the provisions at Cal. Code Regs. tit. 22 is not as stringent as state implementation of the provisions at Cal. Code Regs. tit. 23. Because Cal. Code Regs. tit. 22 regulation is part of the state's authorized hazardous waste control program, it is also the state's position that Cal. Code Regs. tit. 22, § 66264.94 is a state ARAR and not a federal ARAR (*United States v. State of Colorado*, 990 F.2d 1565 [1993]).

Attachment 4. State Chemical-Specific ARARs [a] *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Requirement	Prerequisite	Citation [b]	ARAR Determination	Comments
Groundwater *(continued)*				
Department of Toxic Substances Control [c] / State and Regional Water Quality Control Boards [c]				
Describes requirements for RWQCB oversight of investigation and cleanup and abatement activities resulting from discharges of hazardous substances. RWQCB may decide on cleanup and abatement goals and objectives for the protection of water quality and beneficial uses of water within each region. Establishes criteria for "containment zones" where cleanup to established water quality goals is not economically or technically practicable.	Discharge of hazardous substance into waters of the state	Policies and procedures for investigation and cleanup and abatement of discharges under California Water Code § 13304, SWRCB Res. 92-49	Not an ARAR	SWRCB Res. 92-49 is not an ARAR because it is not more stringent than the federal Cal. Code Regs. tit. 22 monitoring requirements [Cal. Code Regs. tit. 22, § 66264.94(a)(1) and (3),(c), (d), and (e)]. The state does not agree with the Navy's determination that SWRCB Res. 92-49 and 68-16 are not ARARs for this response action. SWRCB has interpreted the term "discharges" in the *California Water Code* to include the movement of waste from soils to groundwater and from contaminated to uncontaminated water (SWRCB 1994). However, the state agrees that the proposed action would comply with SWRCB Res. 92-49 and 68-16. The state does not intend to dispute the ROD, but reserves its rights if implementation of the provisions at Cal. Code Regs. tit. 22 is not as stringent as state implementation of the provisions at Cal. Code Regs. tit. 23. Because Cal. Code Regs. tit. 22 regulation is part of the state's authorized hazardous waste control program, it is also the state's position that Cal. Code Regs. tit. 22, § 66264.94 is a state ARAR and not a federal ARAR (*United States v. State of Colorado*, 990 F.2d 1565 [1993].
Surface Water				
State Water Resources Control Board [c]				
Surface water quality standards.	Marine water with salinities equal to or greater than 10 parts per thousand	Basin Plan Table 3-3	Applicable	These standards are applicable to San Francisco Bay. The Navy has identified Table 3-3 as ARARs for HPNS Parcel E-2 because groundwater discharges to the bay. The Navy will meet these ARARs in the Bay, at a point past the interface of the A-aquifer (or surface water bodies) and the bay. The Navy has identified MCLs as ARARs for the B-aquifer, which will be protective of any discharge of B-aquifer groundwater to the permeable zones underlying the bay. Therefore, these are not ARARs for the interface of the B-aquifer and the permeable zones underlying the bay.

Attachment 4. State Chemical-Specific ARARs [a] *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Requirement	Prerequisite	Citation [b]	ARAR Determination	Comments
Solid Waste, Soil, Sediment, and Subsurface Air				
Department of Toxic Substances Control [c] / State Water Resources Control Board [c] / California Integrated Waste Management Board				
Definition of non-RCRA hazardous waste.	Waste	Cal. Code Regs, tit. 22, §§ 66261.22(a)(3) and (a)(4), 66261.24(a)(2)-(a)(8), 66261.101, 66261.3(a)(2)(C) and (a)(2)(F)	Applicable	These regulations are applicable to activities that generate waste. The selected remedy includes excavation and off-site disposal of solid waste, soil, and sediment. The Navy will determine if excavated solid waste, soil, or sediment meets the definition of non-RCRA hazardous waste when it is generated.
Definition of designated waste and nonhazardous waste.	Waste	Cal. Code Regs, tit. 27, §§ 20210 and 20220	Applicable	These regulations are applicable to activities that generate waste. The selected remedy includes excavation and off-site disposal of solid waste, soil, and sediment. The Navy will determine if excavated solid waste, soil, or sediment meets these definitions when it is generated.
This requirement controls release of methane.	Release of methane from landfill	Cal. Code Regs, tit. 27, § 20921(a)	Applicable	Provides that methane must not exceed 1.25 percent by volume in air within on-site structures, and concentrations of methane migrating from the Parcel E-2 Landfill must not exceed 5 percent by volume in air at the property boundary (or an alternative boundary) in accordance with Cal. Code Regs, tit. 27, § 20925.

Notes:

a Many action-specific ARARs contain chemical-specific limitations and are addressed in the action-specific ARAR tables.

b Only the substantive provisions of the requirements cited in this table are ARARs.

c Statutes and policies and their citations are provided as headings to identify general categories of ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the Navy accepts the entire statutes or policies as ARARs; specific ARARs are addressed in the table below each general heading; only pertinent substantive requirements of the specific citations are considered ARARs.

ARAR	Applicable or relevant and appropriate requirement	ppm	parts per million
Cal. Code Regs	California Code of Regulations	RCRA	Resource Conservation and Recovery Act
div.	Division	ROD	record of decision
gpd	gallons per day	RWQCB	Regional Water Quality Control Board
HPNS	Hunters Point Naval Shipyard	SWRCB	State Water Resources Control Board
MCL	Maximum contaminant level	WQOs	water quality objectives
MUN	municipal and domestic supply	§	Section

Attachment 4. Federal Location-Specific ARARs

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Location	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
National Historic Preservation Act of 1966, as Amended (16 USC § 1470-470x-6) [b]					
Historic project owned or controlled by federal agency	Action to preserve historic properties; planning of action to minimize harm to properties listed on or eligible for listing on the National Register of Historic Places	Property included in or eligible for the National Register of Historic Places	16 USC § 470-470x-6 36 CFR Part 800 40 CFR § 6.301(b)	Applicable	The substantive provisions are ARARs for a response action impacting property listed on or eligible for listing on the National Register of Historic Places. A sensitive archaeological area (potential shellmound site) has been identified in the northwest portion of Parcel E-2.
Migratory Bird Treaty Act of 1972 (16 USC §§ 703 through 712) [b]					
Migratory bird area	Protects almost all species of native migratory birds in the United States from unregulated "take," which can include poisoning at hazardous waste sites.	Presence of migratory birds	16 USC § 703	Relevant and appropriate	This section is relevant and appropriate because migratory birds have been observed at Parcel E-2
Coastal Zone Management Act (16 USC §§ 1451 through 1464) [b]					
Within coastal zone	Conduct activities in a manner consistent with approved state management programs to the maximum extent practicable.	Activities affecting the coastal zone, including lands there under and adjacent shore land	16 USC § 1456(c) 15 CFR § 930.30	Relevant and appropriate	The selected remedy will comply with the CZMA and San Francisco Bay Plan to the maximum extent practicable.
Clean Water Act of 1977, as Amended, § 404 (33 USC § 1344) [b]					
Jurisdictional water of the United States	Action to prohibit discharge of dredged or fill material into wetland without permit.	Jurisdictional water as defined by Clean Water Act	33 USC § 1344	Applicable	Substantive provisions (see action-specific ARAR table) are applicable because discharge of dredged or fill material is planned as part of the response action.

Notes:

a Only the substantive provisions of the requirements cited in this table are ARARs.

b Statutes and policies and their citations are provided as headings to identify general categories of ARARs for the convenience of the reader; listing the statues and policies does not indicate that the Navy accepts the entire statute or policy as a ARAR; specific ARARs are addressed in the table below each general heading; only substantive requirements of the specific citations are considered ARARs.

ARAR	applicable or relevant and appropriate requirement	USACE	U.S. Army Corps of Engineers
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	USC	United States Code
CFR	Code of Federal Regulations	§	Section
CZMA	Coastal Zone Management Act		

Attachment 4. State Location-Specific ARARs

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Location	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
McAteer-Petris Act (California Government Code §§ 66600 through 66661) [b]					
Within the San Francisco Bay coastal zone	Reduce fill and disposal of dredged material in San Francisco Bay, maintain marshes and mudflats to the fullest extent possible to conserve wildlife, abate pollution, and protect the beneficial uses of the San Francisco Bay.	Activities affecting the San Francisco Bay and 100 feet landward of the shoreline.	Bay Plan at Cal. Code Regs, tit. 14, §§ 10110 through 11990	Relevant and appropriate	The Bay Plan, developed under the authority of the McAteer-Petris Act, is an approved state coastal zone management program. The selected remedy will affect San Francisco Bay and will occur within 100 feet landward of the shoreline, and therefore will be consistent with the enforceable policies of the Bay Plan to the maximum extent practicable. See action-specific ARARs table for the substantive provisions of the Bay Plan that pertain to the selected remedy.
California Department of Fish and Game (Cal. Fish & Game Code) [b]					
Fully protected birds	Fully protected birds or parts thereof may not be taken or possessed at any time. The following are fully protected birds: American Peregrine Falcon, California Brown Pelican, California Black Rail, California Clapper Rail, California Condor, California Least Tern, Golden Eagle, Greater Sandhill Crane, Light-footed Clapper Rail, Southern Bald Eagle, Trumpeter Swan, White-tailed Kite, and Yuma Clapper Rail.	A fully protected species must be potentially affected.	Cal. Fish & Game Code § 3511	Relevant and appropriate	Cal. Fish & Game Code § 3511 is not applicable because the United States of America has not waived sovereign immunity in the FESA for this State of California requirement. The American peregrine falcon is protected under Cal. Fish & Game Code § 3511. The substantive provisions of Cal. Fish & Game Code § 3511 meet the pertinent NCP criteria under 40 CFR § 300.400(g)(2)(viii) and are "relevant and appropriate" because the American peregrine falcon is present at the site and protection of this vulnerable resource allows it to be "used" in the sense that it continues to provide its unique value to the State of California. The Navy accepts Cal. Fish & Game Code § 3511 as a state ARAR subject to the following conditions. The State of California, through CDFG-OSPR, concurs that this statute addresses prohibited conduct but does not provide for or prescribe affirmative measures to avoid a "taking."

Attachment 4. State Location-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Location	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
California Department of Fish and Game (Cal. Fish & Game Code) [b] *(continued)*					
Fully protected birds *(continued)*	*(see above)*	*(see above)*	*(see above)*	*(see above)*	Notwithstanding the absence of specific affirmative measures in the statute, the Navy will implement reasonable measures to ensure adequate protection of ecological receptors during response action construction following issuance of a CERCLA decision document pursuant to the Navy's obligations under CERCLA to select removal or remedial actions that are protective of human health and the environment (see Section 121[b][1] of CERCLA). The Navy will coordinate with the State, through CDFG-OSPR, prior to implementation of such reasonable measures. The Navy understands that the State of California reserves the right to conduct periodic site visits during removal or remedial activities to confirm implementation of avoidance measures.
Waters of the state	Prohibits the passage of enumerated substances or materials into waters of the state deleterious to fish, plant life, or birds.	Not authorized under Cal. Water Code § 13263 or a waiver issued pursuant to subdivision (a) of § 13269 of the Cal. Water Code.	Cal. Fish & Game Code § 5650(a), (b), and (c)	Relevant and appropriate	Cal. Fish & Game Code § 5650 is not applicable because the United States of America has not waived sovereign immunity for this state of California requirement. While no direct deposition of material is expected to enter into or affect waters of the states, the substantive portions of this standard will be complied with as an ARAR. The selected remedy will be conducted in such a way as to ensure that materials dug up along the shoreline will not be released into the water column.

Attachment 4. State Location-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Notes:

a	Only the substantive provisions of the requirements cited in this table are ARARs.
b	Statutes and policies and their citations are provided as headings to identify general categories of ARARs for the convenience of the reader; listing the statues and policies does not indicate that the Navy accepts the entire statute or policy as a ARAR; specific ARARs follow each general heading; only substantive requirements of the specific citations are considered ARARs.
ARAR	Applicable or relevant and appropriate requirement
Bay Plan	San Francisco Bay Plan
Cal.	California
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CDFG	California Department of Fish and Game
FESA	Federal Endangered Species Act
Navy	Department of the Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
OSPR	Office of Spill Prevention and Response
tit.	Title
§	Section

Attachment 4. Federal Action-Specific ARARs

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Containment					
Resource Conservation and Recovery Act (Title 42 USC, ch. 82, §§ 6901-6991[i]) [b]					
Compaction	If waste is to remain in a unit, the unit shall be compacted before any portion of the final cover is installed.	Landfill closure	Cal. Code Regs. tit. 22, § 66264.228(e)(1)	Relevant and appropriate	Relevant and appropriate.
Post-closure water entry	The final cover will be designed to prevent the downward entry of water into the closed landfill throughout a period of at least 100 years.	Landfill closure	Cal. Code Regs. tit. 22, § 66264.310(a)(1)	Relevant and appropriate	Relevant and appropriate for the containment actions at the Parcel E-2 Landfill. Not an ARAR for containment actions at the Panhandle, East Adjacent, or Shoreline Areas because the type of site regulated by Cal. Code Regs. tit. 22 does not match the site conditions at these Parcel E-2 areas.
Cover seismic requirements	The final cover shall accommodate lateral and vertical shear forces generated by the maximum credible earthquake so that the integrity of the cover is maintained.	Landfill closure	Cal. Code Regs. tit. 22, § 66264.310(a)(5)	Relevant and appropriate	Relevant and appropriate.
Post-closure care	Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events throughout the post-closure period.	Landfill closure	Cal. Code Regs. tit. 22, § 66264.310(b)(1)	Relevant and appropriate	Relevant and appropriate.
Benchmark maintenance	Protect and maintain surveyed benchmarks throughout the post-closure period.	Landfill closure	Cal. Code Regs. tit. 22, § 66264.310(b)(5)	Relevant and appropriate	Relevant and appropriate.

Attachment 4. Federal Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Shoreline Construction					
Clean Water Act, as Amended, § 404 (Title 33 USC § 1344) [b]					
Perform construction in shoreline zone	These sections describe specific restrictions on the discharge of dredged or fill material into waters of the United States, and require that appropriate and practicable steps be taken to minimize adverse impacts.	Waters of the United States	40 CFR §§ 230.10; 230.70 through 230.77	Applicable	Compliance with 40 CFR § 230.10 is evaluated using factual determinations, per 40 CFR § 230.11, for the proposed action. Potential actions to minimize adverse impacts are identified at 40 CFR §§ 230.70 through 230.77. The shoreline construction proposed under the selected remedy will comply with the specified discharge restrictions and will incorporate appropriate steps to minimize adverse impacts to waters of the United States. Appendix O in the RI/FS Report provides an evaluation relative to these requirements.
Perform construction in shoreline zone	These sections identify specific information to be included in factual determinations for proposed actions involving discharge of dredged or fill material into waters of the United States.	Waters of the United States	40 CFR §§ 230.11; 230.20 through 230.25; 230.31; 230.32; 230.41; 230.42; and 230.53	Applicable	Appendix O in the RI/FS Report provides a factual determination for the shoreline construction proposed under the selected remedy.
Perform construction in shoreline zone	This section identifies general requirements for compensatory mitigation to offset losses from unavoidable impacts to waters of the United States.	Waters of the United States	40 CFR § 230.93	Applicable	The selected remedy incudes shoreline construction that would result in the discharge of fill material into a wetland, the loss for which would be mitigated by the Navy in accordance with the substantive provisions of 40 CFR § 230.93. Appendix O in the RI/FS Report identifies a specific mitigation approach that will be developed further in the remedial design.
Perform construction in shoreline zone	This section identifies the required content for mitigation plans.	Waters of the United States	40 CFR § 230.94(c)	To Be Considered	Requirements are procedural and not substantive; however, these requirements will be used as TBCs in developing site-specific mitigation plans for Parcel E-2.

Attachment 4. Federal Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Shoreline Construction *(continued)*					
Clean Water Act, as Amended, § 404 (Title 33 USC § 1344) [b]					
Perform construction in shoreline zone	These sections identify ecological performance standards and monitoring requirements for mitigation projects.	Waters of the United States	40 CFR §§ 230.95 and 230.96	Applicable	Ecological performance standards and monitoring requirements will be incorporated, as appropriate, into site-specific mitigation plans for Parcel E-2.
Perform construction in shoreline zone	This section identifies the long-term management methods for compensatory mitigation projects.	Waters of the United States	40 CFR § 230.97	Applicable	Long-term management methods will be incorporated, as appropriate, into site-specific mitigation plans for Parcel E-2.
Perform construction in shoreline zone	This section identifies general policies for evaluating permit applications for proposed discharge of dredged or fill material into waters of the United States.	Water of the United States	33 CFR § 320.4	Applicable	The proposed shoreline construction is to be performed on-site pursuant to CERCLA and, as such, the Navy is not required to obtain a permit to discharge the fill; however, the Navy will comply with the substantive provisions of general policies for evaluating permit applications. Appendix O in the RI/FS Report provides an evaluation relative to these policies.
Perform construction in shoreline zone	These sections identify terms and conditions for the nationwide permit program, which authorizes discharges having minimal impacts.	Water of the United States	33 CFR §§ 330.1(e)(3)	Applicable	The proposed shoreline construction is to be performed on-site pursuant to CERCLA and, as such, the Navy is not required to obtain a permit to discharge the fill; however, the Navy will comply with the substantive terms and conditions of Nationwide Permit 38 (Cleanup of Hazardous and Toxic Waste).
Resource Conservation and Recovery Act (Title 42 USC, ch. 82, §§ 6901-6991[i]) [b]					
Temporary units	Alternative requirements that are protective of human health or the environment may replace design, operating, or closure standards for temporary tanks and container storage areas.	Temporary units may be used and are not subject to RCRA LDRs	Cal. Code Regs. tit. 22, §§ 66264.553 (b), (d), (e), and (f)	Applicable	The substantive portions are applicable for temporary storage of dredged sediments on site following excavation and prior to off-site disposal.

Attachment 4. Federal Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Landfill Gas Treatment					
Clean Air Act (Title 42 USC § 7401 et seq.) [b]					
Landfill gas emissions	Requires that a person shall not discharge into the atmosphere from any miscellaneous operation an emission containing more than 6.8 kilograms (15 pounds) per day and containing a concentration of more than 300 parts per million of total carbon on a dry basis.	Landfill gas emissions	BAAQMD Regulation 8, Rule 2	Applicable	Applicable for discharges from landfill gas collection and treatment systems.
Stormwater Discharge / Surface Water Monitoring					
Resource Conservation and Recovery Act (Title 42 USC, ch. 82, §§ 6901-6991[i]) [b]					
Surface water monitoring	Owner or operator shall establish a surface water monitoring system for each regulated unit and include a sufficient number of monitoring points installed at appropriate locations and depths to yield samples that provide the best assurance of the earliest possible detection of a release from a regulated unit.	RCRA hazardous waste management unit	Cal. Code Regs. tit. 22, § 66264.97(c)(1) and (c)(2)(B)	Relevant and appropriate	These requirements are applicable to RCRA hazardous waste facilities; however, the Navy has determined that they are relevant and appropriate to the monitoring component of the containment action.
Clean Water Act, as Amended (Title 33 USC, ch. 26, §§ 1251–1387) [b]					
Excavation and grading activities	Construction that disturbs at least 1 acre must use best management practices to control stormwater discharges.	Construction activities at least 1 acre in size.	Clean Water Act § 402 40 CFR § 122.44(k)(2) and (4)	Applicable	The selected remedy will disturb more than 1 acre. The Navy will implement the substantive provisions of state general stormwater discharge permit, Orders 09-09-DWQ and 10-14-DWQ (adopted pursuant to Clean Water Act § 402), to comply with the federal Clean Water Act ARARs and water quality state ARARs for discharge to surface water. The federal and state ARARs require implementing best management practices and meeting the substantive numeric effluent limit and action level requirements. Although procedural requirements do not qualify as CERCLA ARARs, the Navy shall voluntarily prepare a CERCLA storm water plan as a component of CERCLA remedial design in order to address the substantive provisions.

Attachment 4. Federal Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Groundwater Monitoring					
Resource Conservation and Recovery Act (Title 42 USC, ch. 82, §§ 6901-6991[i]) [b]					
Monitor groundwater	After final closure, maintain and monitor the groundwater system and comply with all other applicable requirements of Article 6, Chapter 14.	RCRA hazardous waste management unit.	Cal. Code Regs. tit. 22, § 66264.310(b)(3)	Relevant and appropriate	Relevant and appropriate for groundwater monitoring associated with landfill closure.
Monitor groundwater	Chemicals of concern are the waste constituents, reaction products, and hazardous constituents that are reasonably expected to be in or derived from the waste contained in the regulated unit.	RCRA hazardous waste management unit.	Cal. Code Regs. tit. 22, § 66264.93	Relevant and appropriate	These requirements are applicable to RCRA hazardous waste facilities; however, the Navy has determined that they are relevant and appropriate to the monitoring component of the groundwater response action.
Monitor groundwater	The POC is a vertical surface, located at the hydraulically downgradient limit of the waste management area that extends through the uppermost aquifer underlying the regulated unit.	RCRA hazardous waste management unit.	Cal. Code Regs. tit. 22, § 66264.95	Relevant and appropriate	The Navy believes that contamination upgradient of the POC would be adequately contained by the remedial action to ensure compliance with the RAOs and adequately protect human health and the environment.
Monitor groundwater	Owner or operator of shall establish a groundwater monitoring system for each regulated unit and include a sufficient number of monitoring points installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater passing the POC.	RCRA hazardous waste management unit.	Cal. Code Regs. tit. 22, § 66264.97(b)(1)(A), (b)(1)(D)(1) and (b)(1)(D)(2)	Relevant and appropriate	These requirements are applicable to RCRA hazardous waste facilities; however, the Navy has determined that they are relevant and appropriate to the monitoring component of the groundwater response action.
Monitor groundwater	Requirements for monitoring well construction and sampling intervals.	RCRA hazardous waste management unit.	Cal. Code Regs. tit. 22, § 66264.97(b)(4), (5), (6), and (7)	Relevant and appropriate	These requirements are applicable to RCRA hazardous waste facilities; however, the Navy has determined that they are relevant and appropriate to the monitoring component of the groundwater response action.
Monitor groundwater	Requirements for collecting samples.	RCRA hazardous waste management unit.	Cal. Code Regs. tit. 22, § 66264.97(e)(6), (e)(12)(A), (e)(12)(B), (e)(13), and (e)(15)	Relevant and appropriate	These requirements are applicable to RCRA hazardous waste facilities; however, the Navy has determined that they are relevant and appropriate to the monitoring component of the groundwater response action.

Attachment 4. Federal Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Groundwater Monitoring / Excavation and Off-Site Disposal					
Resource Conservation and Recovery Act (Title 42 USC, ch. 82, §§ 6901-6991[i]) [b]					
On-site generation of waste	Person who generates waste shall determine if the waste is a RCRA hazardous waste.	Generator of waste.	Cal. Code Regs. tit. 22, §§ 66262.10 (a), 66262.11	Applicable	These regulations are applicable to any operation that generates waste. The selected remedy will generate waste to be disposed of off site. The Navy will decide whether the waste is RCRA hazardous waste when it is generated.
On-site generation of waste	Requirements for analyzing waste for determining whether waste is hazardous.	Generator of waste.	Cal. Code Regs. tit. 22, § 66264.13 (a) and (b)	Applicable	These regulations are applicable to any operation that generates waste. The selected remedy will generate waste to be disposed of off site. The Navy will decide whether the waste is RCRA hazardous waste when it is generated.
Excavation and Off-Site Disposal					
Resource Conservation and Recovery Act (Title 42 USC, Chapter 82, §§ 6901-6991[i]) [b]					
Stockpiling soil for off-site disposal	Allows generators to accumulate solid remediation waste in an EPA-designated pile for storage only up to 2 years during remedial operations without triggering LDRs.	RCRA hazardous waste temporarily stored in piles.	40 CFR, § 264.554(a), (d), (g), (h), (i), (j), and (k)	Relevant and appropriate	The Navy will temporarily stockpile soil in staging piles for off-site disposal. The Navy does not anticipate that all soil will be RCRA hazardous waste; however, the Navy has determined that these requirements are relevant and appropriate for all stockpiled soil.
Temporary units	Alternative requirements that are protective of human health or the environment may replace design, operating, or closure standards for temporary tanks and container storage areas.	Temporary units may be used and are not subject to RCRA LDRs.	Cal. Code Regs. tit. 22, §§ 66264.553 (b), (d), (e), and (f)	Applicable	The substantive portions are applicable for treatment of groundwater on site during excavation.

Attachment 4. Federal Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Excavation and Off-Site Disposal *(continued)*					
Clean Water Act (General Pretreatment Regulations) [b]					
Discharge of treated groundwater to publicly owned treatment works	Identifies prohibited discharges, categorical standards, and monitoring requirements.	Pollutants from nondomestic sources that are discharged indirectly into publicly owned treatment works.	40 CFR Part 403	Applicable	If, during implementation of the selected remedy, on-site groundwater extracted or treated is discharged to a publicly owned sanitary sewer system, the substantive provisions of the pretreatment standards are relevant and appropriate federal ARARs.
Clean Air Act (Title 42 USC, § 7401 et seq.) [b]					
Excavation	Sets forth opacity limitations.	Excavation.	BAAQMD Regulation 6, Rule 302	Applicable	Applicable for excavation activities.
Leachate Collection and Control					
Resource Conservation and Recovery Act (Title 42 USC, ch. 82, §§ 6901-6991[i]) [b]					
Leachate control	Continue to operate leachate collection and removal system until leachate is no longer detected (this regulation does not require the installation of a leachate collection system)	RCRA hazardous waste management unit.	Cal. Code Regs. tit. 22, § 66264.310(b)(2)	Relevant and appropriate	Relevant and appropriate for leachate control (if required based on groundwater monitoring results).

Attachment 4. Federal Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Notes:

a Only the substantive provisions of the requirements cited in this table are ARARs.

b Statutes and policies and their citations are provided as headings to identify general categories of ARARs for the convenience of the reader. Listing the statutes and policies does not indicate that the Navy accepts the entire statutes or policies as ARARs; specific ARARs are addressed in the table below each general heading; only substantive requirements of specific citations are considered ARARs.

ARAR	Applicable or relevant and appropriate requirement	POC	point of compliance
BAAQMD	Bay Area Air Quality Management District	RAOs	remedial action objectives
Cal. Code Regs.	California Code of Regulations	RCRA	Resource Conservation and Recovery Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	RI/FS	Remedial Investigation/Feasibility Study
CFR	Code of Federal Regulations	SWRCB	State Water Resources Control Board
ch.	Chapter	TBC	to be considered
EPA	U.S. Environmental Protection Agency	tit.	Title
LDRs	land disposal restrictions	USC	United States Code
Navy	Department of the Navy	§	Section

Attachment 4. State Action-Specific ARARs

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Containment					
State Water Resources Control Board / California Integrated Waste Management Board [b]					
Capping permeability	Hydraulic conductivities will be evaluated primarily through laboratory methods and will be confirmed by appropriate field testing. Earthen materials used in containment structures will consist of a clay mixture and other suitable fine-grained soils that have specific characteristics and that, in combination, can be compacted to attain the required hydraulic conductivity when installed.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 20320 (c) and (d)	Relevant and appropriate	Relevant and appropriate for the containment actions at the Parcel E-2 Landfill. Not an ARAR for containment actions at the Panhandle, East Adjacent, or Shoreline Areas because the type of site regulated by Cal. Code Regs. tit. 27 does not match the site conditions at these Parcel E-2 areas.
Erosion control	Diversion and drainage facilities will be designed, constructed, and maintained to accommodate the anticipated volume of precipitation and peak flows. In addition, erosion and related damage of the final cover due to drainage must be prevented throughout the post-closure maintenance period.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, §§ 20365(c) and (d) and 21090(c)(4)	Relevant and appropriate	Relevant and appropriate; a cover will be designed to prevent erosion, slope failure, washout, and overtopping.
Post-closure care	§ 20950(a): The post-closure maintenance period shall extend as long as the wastes pose a threat to water quality. § 21180(a): The landfill shall be maintained and monitored for a period of not less than 30 years after closure of the entire solid waste landfill.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 20950(a) and § 21180(a)	Relevant and appropriate	Relevant and appropriate.

Attachment 4. State Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Containment *(continued)*					
State Water Resources Control Board / California Integrated Waste Management Board [b]					
Final grading	The final cover of closed landfills will be designed, graded, and maintained to prevent ponding and to prevent site erosion caused by high runoff velocities. Slopes should be at least 3 percent.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 21090(b)(1)	Relevant and appropriate	Relevant and appropriate for the containment actions at the Parcel E-2 Landfill. Not an ARAR for containment actions at the Panhandle, East Adjacent, or Shoreline Areas because the type of site regulated by Cal. Code Regs. tit. 27 does not match the site conditions at these Parcel E-2 areas.
Foundation layer	Closed landfills shall be provided with not less than 2 feet of appropriate materials as a foundation layer for the final cover. These materials may be soil, contaminated soil, incinerator ash, or other waste materials, provided that such materials have appropriate engineering properties to be used for a foundation layer. The foundation layer shall be compacted to the maximum density obtainable at optimum moisture content using methods that are in accordance with accepted civil engineering practice. A lesser thickness may be allowed for units if the differential settlement of waste and ultimate land use will not affect the structural integrity of the final cover.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 21090(a)(1)	Relevant and appropriate	Relevant and appropriate.

Attachment 4. State Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Containment *(continued)*					
State Water Resources Control Board / California Integrated Waste Management Board [b]					
Erosion-resistant layer	The low hydraulic conductivity layer of § 21090(a)(2) shall be directly overlain by an erosion-resistant layer. Closed landfills shall be provided with an uppermost cover layer consisting of either a vegetative layer consisting of not less than 1 foot of soil capable of sustaining native or other suitable plant growth or a mechanically erosion-resistant layer.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 21090(a)(3)	Relevant and appropriate	Relevant and appropriate.
Emergency response	Potential emergency conditions that may exceed the design of the site and could endanger the public health or the environment must be anticipated.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 21130	Relevant and appropriate	The Navy will comply with the substantive portions of this requirement.
Site Security	Requires that all points of access be restricted except at permitted entry points and that the monitoring, control, and recovery systems be protected from unauthorized access	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 21135 (f) and (g)	Relevant and appropriate	The Navy will comply with the substantive portions of this requirement.

Attachment 4. State Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Containment *(continued)*					
State Water Resources Control Board / California Integrated Waste Management Board [b]					
Structure Removal	Requires that the operator dismantle and remove site structures at the time of closure to protect public health and safety in accordance with the closure plan.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 21137	Relevant and appropriate	The Navy will comply with the substantive portions of this requirement.
Final cover	Contains general standards for the design of the final cover.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, §21140(a) and (b)	Relevant and appropriate	The cap will be designed to function with minimal maintenance and control vectors, prevent exposure to landfill contents, and ensure the stability and integrity of the cover.
Final grading	Contains general standards for landfill grading.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 21142(a)	Relevant and appropriate	The cap will be designed to function with minimal maintenance and control vectors, prevent exposure to landfill contents, and ensure the stability and integrity of the cover.
Slope stability	Contains general standards for slope stability.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 21145(a)	Relevant and appropriate	The cap will be designed to function with minimal maintenance and control vectors, prevent exposure to landfill contents, and ensure the stability and integrity of the cover.

Attachment 4. State Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Containment *(continued)*					
State Water Resources Control Board / California Integrated Waste Management Board [b]					
Erosion control	The drainage and erosion control system will be designed and maintained to (1) ensure integrity of post-closure land uses, roads, and structures; (2) prevent public contact with waste and leachate; (3) ensure the integrity of gas monitoring and control systems; (4) prevent safety hazards; and (5) prevent exposure of waste.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 21150(a)	Relevant and appropriate	Relevant and appropriate.
Final closure plan	Sets forth requirements for final closure plan contents.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 21800(c)	To be considered	Requirements are procedural and not substantive; however, these requirements will be used as TBCs in developing the final closure plan.
Final closure plan	Provides the content requirements for post-closure maintenance plans for solid waste disposal sites.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 21830	To be considered	Requirements are procedural and not substantive; however, these requirements will be used as TBCs in developing the postclosure maintenance plan.

Attachment 4. State Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Containment *(continued)*					
State Water Resources Control Board / California Integrated Waste Management Board [b]					
Post-closure land use	Subsection (a) requires proposed post-closure land uses be designed and maintained to protect health and safety; prevent contact with waste, landfill gas, and leachate; and prevent gas explosions. Subsection (b) specifies that the site closure design shall show one or more proposed uses of the closed site or show development that is compatible with open space. Subsection (c) specifies that approval is required if proposed post-closure land uses involve structures within 1,000 feet of the disposal area, structures on top of waste, modification of the low permeability layer, or irrigation over waste. Subsections (d) through (g) set forth conditions for construction of on-site structures.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, §§ 21190(a), (b), (d), (e), (f), and (g)	Relevant and appropriate	The substantive portions of Subsections (a), (b), (d), (e), (f), and (g) are relevant and appropriate. Even though no waste was discharged after July 18, 1997, this section is relevant and appropriate because it is a closure/post-closure requirement in Cal. Code Regs. tit. 27, Division 2, Subchapter 5, Article 2, which applies to "disposal sites that did not complete closure prior to November 18, 1990, in accordance with all applicable requirements" (Cal. Code Regs. tit. 27, § 21100). Subsection (c) specifies nonsubstantive requirements, and is therefore not an ARAR. The substantive provisions of Subsection (g) are relevant and appropriate for future construction within the Parcel E-2 boundary, including the portion of the Parcel E-2 Landfill that extends onto UCSF property, because Parcel E-2 may be affected by subsurface gas emanating from the Parcel E-2 Landfill. However, these provisions are not relevant and appropriate to future off-site construction beyond the Parcel E-2 boundary because these areas are not affected by subsurface gas emanating from the Parcel E-2 Landfill.

Attachment 4. State Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Construction and Grading					
California Air Resources Board [b]					
Construction or grading in soil containing asbestos, serpentine, or ultramafic rock	This regulation sets forth requirements for road construction and maintenance, and for construction and grading operations in soil containing naturally occurring asbestos, serpentine, or ultramafic rock.	Soil containing naturally occurring asbestos, serpentine, or ultramafic rock.	Cal. Code Regs. tit. 17, § 93105	Applicable	This regulation is applicable for construction and grading activities if they will occur in areas containing asbestos, serpentine, or ultramafic rock.
State Water Resources Control Board [b]					
Remediation activities	Actions taken by or at the direction of public agencies to clean up or abate conditions of pollution or nuisance resulting from unintentional or unauthorized releases of waste or pollutants to the environment are exempt from the Cal. Code Regs. tit. 27 requirements identified in Cal. Code Regs. tit 27, div. 2, subdiv. 1, provided that wastes, pollutants, or contaminated materials removed from the immediate place of release shall be discharged according to the SWRCB-promulgated sections of div. 2, subdiv. 1, ch. 3, subch. 2 and further provided that remedial actions intended to contain such wastes at the place of release shall implement applicable SWRCB-promulgated provisions of div. 2 to the extent feasible.	Action taken by or at the direction of a public agency to cleanup release of pollutant.	Cal. Code Regs, tit. 27 § 20090(d)	Relevant and appropriate	The substantive provisions of this regulation are relevant and appropriate.

Attachment 4. State Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Shoreline Construction					
McAteer-Petris Act (California Government Code §§ 66600 through 66661) [b]					
Tidal marshes and tidal flats in the San Francisco Bay coastal zone	Tidal marshes and tidal flats should be conserved to the fullest possible extent. Projects harming tidal marshes and tidal flats should be allowed only for purposes providing substantial public benefits and only if there is no feasible alternative. Restoration projects should include a monitoring program with biological and physical goals and success criteria.	Activities affecting the San Francisco Bay.	Part III of Bay Plan (Findings and Policies Concerning Tidal Marshes and Tidal Flats around the Bay, Policies 1 and 5)	Relevant and appropriate	The selected remedy for Parcel E-2 would destroy on-site tidal marshes, the loss of which would be mitigated by the Navy. Appendix O in the RI/FS Report provides an evaluation relative to these requirements.
Fills in the San Francisco Bay coastal zone	To prevent damage by flooding, shoreline structures should be designed to consider future sea level rise and subsidence for the expected life of the project.	Activities affecting the San Francisco Bay.	Part IV of Bay Plan (Findings and Policies Concerning Safety of Fills in the Bay, Policies 4 and 5)	Relevant and appropriate	Shoreline protection features will be installed to prevent erosion and protect the integrity of the remedial action. Appendix O in the RI/FS Report provides an evaluation relative to these requirements.
Shoreline protection in the San Francisco Bay coastal zone	Riprap revetments should be constructed of properly sized and placed material. Protective projects should be maintained to ensure that the shoreline will be protected from tidal erosion. Protective projects should include nonstructural methods such as marsh vegetation where feasible.	Activities affecting the San Francisco Bay.	Part IV of Bay Plan (Findings and Policies Concerning Shoreline Protection around the Bay, Policies 2, 3, and 4)	Relevant and appropriate	Shoreline protection features will be installed to prevent erosion and protect the integrity of the remedial action. Appendix O in the RI/FS Report provides an evaluation relative to these requirements.

Attachment 4. State Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Shoreline Construction *(continued)*					
McAteer-Petris Act (California Government Code §§ 66600 through 66661) [b]					
Fills in the San Francisco Bay coastal zone	Fills in accord with the Bay Plan should be the minimum necessary to achieve its purpose and meet one of the following criteria outlined in Bay Plan policies: (a) filling supports bay-related purposes (e.g., ports, water-related recreation, etc.); (b) filling is needed for infrastructure for which there is no other alternative (e.g., airports, roads, etc.); or (c) filling is minor and needed to improve shoreline appearance or public access.	Activities affecting the San Francisco Bay.	Part IV of Bay Plan (Findings and Policies Concerning Fills in Accord with the Bay Plan, Policy 1)	Relevant and appropriate	The selected remedy involves varying degrees of excavation of contaminated sediment in order to protect human health and the environment that require minor filling of on-site tidal marshes, the loss of which would be mitigated by the Navy, and the bay. Appendix O in the RI/FS Report provides an evaluation relative to these requirements.
Fills in the San Francisco Bay coastal zone	Minor fill to improve shoreline appearance is permissible if (1) the fill is necessary because the present appearance adversely affects the enjoyment of the bay and its shoreline; (2) it is either physically impractical or economically infeasible to improve the appearance without filling; (3) the amount of filling is the minimum necessary to improve shoreline appearance; (4) the proposed project would improve the shoreline appearance; and (5) the fill would not adversely affect enjoyment of the bay and its shoreline, and the fill will not have any adverse effect on present or future use designated in the Bay Plan.	Activities affecting the San Francisco Bay.	Cal. Code Regs, tit. 14, § 10700	Relevant and appropriate	The selected remedy requires minor filling of on-site tidal marshes, the loss of which would be mitigated by the Navy, and the bay. Appendix O in the RI/FS Report provides an evaluation relative to these requirements.

Attachment 4. State Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Shoreline Construction *(continued)*					
McAteer-Petris Act (California Government Code §§ 66600 through 66661) [b]					
Fills in the San Francisco Bay coastal zone	Measures to compensate for unavoidable adverse impacts to natural resources of the bay should be required. Mitigation projects should be sited as close to the impact site as practicable. The amount and type of mitigation should be based on an analysis of the probability of success of the mitigation project, the expected delay between the impact and the functioning mitigation site, and the type and quality of ecological functions of the mitigation site compared with the impacted site.	Activities affecting the San Francisco Bay.	Part IV of Bay Plan (Findings and Policies Concerning Mitigation, Policies 1, 2, and 4 through 7)	Relevant and appropriate	The selected remedy would result in the discharge of fill material into a wetland, the loss for which would be mitigated by the Navy in accordance with the substantive provisions of Part IV of Bay Plan. Appendix O in the RI/FS Report identifies a specific mitigation approach that will be developed further in the remedial design.
Landfill Gas Monitoring and Control					
State Water Resources Control Board / California Integrated Waste Management Board [b]					
Landfill gas monitoring	Contains general standards for a landfill gas monitoring network.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations).	Cal. Code Regs. tit. 27, § 20923	Relevant and appropriate	Relevant and appropriate to closure of the landfill.
Landfill gas monitoring	Describes the location, spacing, depth, and construction requirements for a perimeter monitoring system.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 20925	Relevant and appropriate	Relevant and appropriate to closure of the landfill.

Attachment 4. State Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Landfill Gas Monitoring and Control *(continued)*					
State Water Resources Control Board / California Integrated Waste Management Board [b]					
Landfill gas monitoring	Provides requirements for monitoring structures.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 20931	Relevant and appropriate	Relevant and appropriate to closure of the landfill.
Landfill gas monitoring	Requires that all monitoring probes and on-site structures be sampled for methane during the monitoring period.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 20932	Relevant and appropriate	Relevant and appropriate to closure of the landfill.
Landfill gas monitoring	Establishes the frequency for landfill gas monitoring.	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 20933	Relevant and appropriate	Relevant and appropriate to closure of the landfill.
Landfill gas monitoring	Describes actions to be taken if the results of landfill gas monitoring indicate that concentrations of methane exceed levels set forth in § 20921(a).	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, § 20937	Relevant and appropriate	Relevant and appropriate to closure of the landfill.

Attachment 4. State Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Groundwater Monitoring / Excavation and Off-Site Disposal					
State Water Resources Control Board [b]					
Generating IDW	Sampling and analysis of discharges shall be used for accurate characterization of wastes.	Waste.	Cal. Code Regs. tit. 27, §20200(c)	Applicable	This regulation is applicable to excavation of soil and generation of IDW. The Navy will characterize soil or any IDW when it is generated.
Off-site disposal of soil and IDW	Requires that designated waste as defined at California Water Code §13173 be discharged to Class I or Class II waste management units.	Discharge of designated waste after July 18, 1997 (nonhazardous waste that could cause degradation of surface or ground waters) to land for treatment, storage, or disposal	Cal. Code Regs. tit. 27, §20210	Applicable	This regulation is applicable to excavation of soil and generation of IDW. The Navy will characterize soil or any IDW when it is generated.
Off-site disposal of soil and IDW	Requires that nonhazardous solid waste as defined at Cal. Code Regs. tit. 27, §20220(a) be discharged to a classified waste management unit.	Discharge of nonhazardous solid waste after July 18, 1997, to land for treatment, storage, or disposal.	Cal. Code Regs. tit. 27, § 20220(b), (c), and (d)	Applicable	This regulation is applicable to excavation of soil and generation of IDW. The Navy will characterize soil or any IDW when it is generated.
Leachate Collection and Control					
State Water Resources Control Board / California Integrated Waste Management Board [b]					
Leachate control	During the post-closure maintenance period, the owner and operator will ensure that leachate collection and control are performed in a manner that prevents public contact and controls vectors, nuisance, and odors. (This section does not require installation of a new leachate collection system.)	Cal. Code Regs. tit. 27, requirements are only applicable for waste discharged after July 18, 1997 (the effective date of the consolidated regulations), unless otherwise noted.	Cal. Code Regs. tit. 27, §§ 21160(a) and (c)	Relevant and appropriate	Relevant and appropriate for leachate control (if required based on monitoring results).

Attachment 4. State Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Institutional Controls					
California Civil Code [b]					
Land use controls	Provides conditions under which land use restrictions will apply to successive owners of land.	Transfer of property from the federal government to a nonfederal agency.	California Civil Code § 1471(a)(3)	Relevant and appropriate	Substantive provisions are the following general narrative standard: "to do or refrain from doing some act on his or her own land . . . where (c) Each such act relates to the use of land and each such act is reasonably necessary to protect present or future human health or safety or the environment as a result of the presence of hazardous materials, as defined in Section 25260 of the California Health and Safety Code." This narrative standard would be implemented through incorporation of restrictive covenants in the deed and Environmental Restriction and Covenant Agreement at the time of transfer.
Land use controls	Allows DTSC to enter into an agreement with the owner of a hazardous waste facility to restrict present and future land uses.	Transfer of property from the federal government to a nonfederal agency.	California Health and Safety Code § 25202.5	Relevant and appropriate	The substantive provisions of Cal. Health & Safety Code § 25202.5 are the general narrative standards to restrict "present and future uses of all or part of the land on which the . . . facility . . . is located . . ."
Land use controls	Prohibits certain uses of land containing hazardous waste without a specific variance.	Hazardous waste property.	Cal. Health & Safety Code § 25232(b)(1)(A)–(E)	Relevant and appropriate	Land use restrictions will be used to prohibit the following activities at Parcel E-2: residential use of the sites, construction of hospitals for humans, schools for persons under 21 years of age, daycare centers for children, or any permanently occupied human habitation on the sites.

Attachment 4. State Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Institutional Controls *(continued)*					
California Health and Safety Code [b]					
Land use controls	Provides processes and criteria for obtaining written variances from a land use restriction and for removal of the land use restrictions.	Transfer of property from the federal government to a nonfederal agency.	California Health & Safety Code §§ 25233(c) and 25234	Relevant and appropriate	Cal. Health & Safety Code § 25233(c) sets forth "relevant and appropriate" substantive criteria for granting variances based upon specified environmental and health criteria." Cal. Health & Safety Code § 25234 sets forth the following "relevant and appropriate" substantive criteria for the removal of a land use restriction on the grounds that "…the waste no longer creates a significant existing or potential hazard to present or future public health or safety."
Land use controls	Provides a streamlined process to be used to enter into an agreement to restrict specific use of property to implement the substantive use restrictions of Cal. Health & Safety Code § 25232(b)(1)(A)-(E).	Transfer of property from federal government to a nonfederal agency.	California Health & Safety Code §§ 25222.1 and 25355.5(a)(1)(C)	Relevant and appropriate	Generally, Cal. Health & Safety Code §§ 25222.1 and 25355.5(a)(1)(C) provide the authority for DTSC to enter into voluntary agreements with land owners to restrict the use of property. The agreements run with the land restricting present and future uses of the land. The substantive requirements of the following Cal. Health & Safety Code § 25222.1 provisions are "relevant and appropriate": (1) the general narrative standard: "restricting specified uses of the property…" and (2) "…the agreement is irrevocable, and shall be recorded by the owner, …as a hazardous waste easement, covenant, restriction or servitude, or any combination thereof, as appropriate, upon the present and future uses of the land."

Attachment 4. State Action-Specific ARARs *(continued)*

Record of Decision for Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California

Action	Requirement	Prerequisite	Citation [a]	ARAR Determination	Comments
Institutional Controls *(continued)*					
California Health and Safety Code [b]					
Land use controls *(continued)*	*(see above)*	*(see above)*	*(see above)*	*(see above)*	The substantive requirements of the following Cal. Health & Safety Code § 25355.5(a)(1)(C) provisions are "relevant and appropriate": "…execution and recording of a written instrument that imposes an easement, covenant, restriction, or servitude, or combination thereof , as appropriate, upon the present and future uses of the land."
Land use covenants	A land use covenant imposing appropriate limitations on land use shall be executed and recorded when facility closure, corrective action, remedial or removal action, or other response actions are undertaken and hazardous materials, hazardous wastes or constituents, or hazardous substances will remain at the property at levels that are not suitable for unrestricted use of the land.	Transfer of property from federal government to a nonfederal agency.	Cal. Code Regs. tit. 22, § 67391.1(a) and (e)(1)	Relevant and appropriate	Cal. Code Regs. tit. 22, § 67391.1 provides for a land use covenant to be executed and recorded when remedial actions are taken and hazardous substances will remain at the property at concentrations that are unsuitable for unrestricted use of the land. The substantive provisions of this regulation have been determined to be relevant and appropriate ARARs by the Navy.

Notes:

a Only the substantive provisions of the requirements cited in this table are ARARs.

b Statutes and policies and their citations are provided as headings to identify general categories of ARARs for the convenience of the reader. Listing the statutes and policies does not indicate that the Navy accepts the entire statutes or policies as ARARs; specific ARARs are addressed in the table below each general heading; only substantive requirements of specific citations are considered ARARs.

Cal. Code Regs.	California Code of Regulations	RCRA	Resource Conservation and Recovery Act
CFR	Code of Federal Regulations	RI/FS	Remedial Investigation/Feasibility Study
div.	Division	subch.	Subchapter
ARAR	Applicable or relevant and appropriate requirement	subdiv.	Subdivision
DTSC	Department of Toxic Substances Control	SWRCB	State Water Resources Control Board
IDW	investigation-derived waste	TBC	to be considered
Navy	Department of the Navy	tit.	Title
RAOs	remedial action objectives	§	Section