

Record of Decision
Former Paint Storage Area Site,
Paint Shop Building 35
Joint Base Pearl Harbor-Hickam
Naval Facilities Engineering Command
Hawaii Compound, Oahu, Hawaii

PHNC National Priorities List Site

September 2013

Department of the Navy
Naval Facilities Engineering Command, Hawaii
JBPHH HI 96860-3139



Contract Number: N62742-09-D-1940 CTO HC06

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Record of Decision

Former Paint Storage Area Site, Paint Shop Building 35

**Joint Base Pearl Harbor-Hickam
Naval Facilities Engineering Command
Hawaii Compound, Oahu, Hawaii**

Pearl Harbor Naval Complex NPL

September 2013

Prepared for:



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Joint Base Pearl Harbor-Hickam, HI 96860-3139**

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Contract Number: N62742-09-D-1940, CTO HC06

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ACRONYMS AND ABBREVIATIONS

ACRONYMS/ ABBREVIATIONS	DEFINITION/MEANING
bgs	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COPC	Contaminant of potential concern
CSM	Conceptual Site Model
DOH	Department of Health, State of Hawaii
DoN	Department of the Navy, United States
EAL	Environmental Action Levels
EPA	Environmental Protection Agency, United States
EPC	Exposure point concentration
FOD	Frequency of detection
GSA	Geographic Study Area
HHRA	Human Health Risk Assessment
JBPHH	Joint Base Pearl Harbor-Hickam
MDL	Method detection limit
mg/kg	Milligrams per kilogram
mg/kg-day	Milligrams per kilogram per day
NAVFAC	Naval Facilities Engineering Command
NPL	National Priorities List
Ogden	Ogden Environmental and Energy Services Company
PAL	Project action limit
PCBs	Polychlorinated biphenyls
PHNC	Pearl Harbor Naval Complex
PWC	Public Works Center
RAB	Restoration Advisory Board
RBSL	Risk-based Screening Level
RCRA	Resource Conservation and Recovery Act
RFI	Resource Conservation and Recovery Act Facility Investigation
RI	Remedial Investigation
ROD	Record of Decision
RSL	Regional Screening Level
UCL	Upper confidence limit
VOCs	Volatile organic compounds

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1. DECLARATION

1.1 Site Name and Location

This Record of Decision (ROD) has been prepared by the U.S. Navy for the former paint storage area of Paint Shop Building 35, herein referred to as the "Site," located in the former Public Works Center (PWC) Main Complex Geographic Study Area (GSA) at Joint Base Pearl Harbor-Hickam (JBPHH) on the island of Oahu, Hawaii. The Site is located within the Pearl Harbor Naval Complex (PHNC), which was designated as a National Priority List (NPL) site on 14 October 1992 under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The PHNC has been assigned the Comprehensive Environmental Response, Compensation, and Liability Information System identification number of HI4170090076.

The PWC GSA is located 1 mile east of the Pearl Harbor Makalapa Gate, on the southern coast of Oahu, and is adjacent to the Navy Exchange and Commissary Complex on Johnson Circle. The Site is situated in the northwest-central portion of the former PWC GSA adjacent to Marshall Road (Figure 1) and within the Naval Facilities Engineering Command (NAVFAC) Hawaii Compound of JBPHH.

1.2 Statement of Basis and Purpose

The ROD presents a no action decision for the Site. The final decision was chosen in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. The no action decision for the Site is based on the recommendations of the Remedial Investigation (RI) (Department of the Navy [DoN] 2011).

Information supporting the decisions leading to the finding of no action is contained in the Administrative Record file for the Site. This ROD documents for the Administrative Record this no action decision by the Navy and the United States Environmental Protection Agency (EPA), along with concurrence from the State of Hawaii Department of Health (DOH). Information not specifically summarized in this ROD or its references but contained in the Administrative Record file has been considered and is relevant to the selection of the remedy.

The Navy is the lead agency for the Site; the EPA and DOH are support agencies. The Federal Facilities Agreement for the PHNC documents how the Navy intends to meet and implement CERCLA in partnership with the EPA and DOH (EPA Region 9, State of Hawaii, and DoN 1994). This ROD documents the final response action selected for the Navy's Building 35 site and does not include or affect any other sites.

1.3 Assessment of Site

The assessment of the Site showed that concentrations of contaminants of potential concern (COPCs), resulting from historical paint-related activities at the Site, do not pose a risk to human health or the environment (DoN 2011). The lower of the EPA residential Soil Regional Screening Level (RSL), EPA industrial RSL (EPA 2011), and DOH Tier 1 Environmental Action Levels (EAL) (DOH 2008) were established as site specific project action limits (PALs) for the RI. However, if the established 95th percentile of regional

background levels for metals (DoN 2006) was higher than the lowest of the screening values, the background level was established as the PAL. Concentrations of COPCs were screened against the PALs to assess the nature and extent of contamination at the Site.

A Preliminary Human Health Risk Assessment (HHRA), or Tier 1 risk assessment, was included in the RI and indicates that CERCLA hazardous substances at the Site do not pose a threat to public health, welfare, or the environment in an unrestricted land use scenario. The Navy has determined that no action is necessary to protect human health, welfare, or the environment. The Preliminary HHRA is described in greater detail in Section 2.7.2.

1.4 Statutory Determinations

The selected remedy is protective of human health and the environment, is cost-effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. The calculated 95 percent upper confidence (UCL) limit of the mean polychlorinated biphenyl (PCB) concentrations, as determined in the Human Health Risk Assessment (HHRA) (Section 2.7.2), demonstrates compliance with applicable or relevant and appropriate Federal requirements and numerical standards under the Toxic Substances Control Act.

Under CERCLA, no action is warranted for a site where release conditions do not pose a current or potential threat to human health or the environment. Accordingly, the Navy and EPA, with the concurrence of the DOH, have determined that no action is warranted for the Site under CERCLA because the findings of the RI show that contamination at the Site does not pose a current or potential unacceptable threat to human health or the environment (DoN 2011). Therefore the Site meets the criteria for unrestricted land use, and future five year reviews or regular site inspections are not required. This decision is based on the fact that the reasonable maximum exposure levels of COPCs in soils at the Site are below background or established risk-based screening levels (RBSLs) for the Site. The selected remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. However, treatment is not necessary to protect human health or the environment under the current and future land use scenarios (commercial/industrial), and is not a cost effective remedial alternative for the Site.

1.5 Data Certification Checklist

The following information is included in the *Decision Summary* section of this ROD. Additional information can be found in the Administrative Record file for this site.

Table 1. Information and Section Number for ROD Data Certification

Data	ROD Section Number
Finding of No Action	Section 1.4
Contaminants of potential concern and their respective concentrations	Section 2.5.7
Project action limits established for chemicals of concern and the basis for these levels	Section 2.5.7
Current and reasonably anticipated future beneficial uses of land and groundwater	Section 2.6
Risk represented by the contaminants of potential concern	Section 2.7

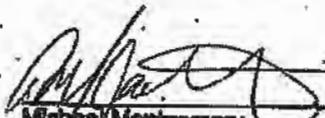
1.6 Authorizing Signatures

The U.S. Navy and EPA Region 9, in coordination with EPA headquarters, and with concurrence from the DOH, have selected no action as the final remedy for the former paint storage area, Paint Shop Building 35 as described in this Record of Decision. This final remedy is protective of human health and the environment.


 J.W. James
 Captain, U.S. Navy
 Commander
 Joint Base Pearl Harbor-Hickam

7/12/13

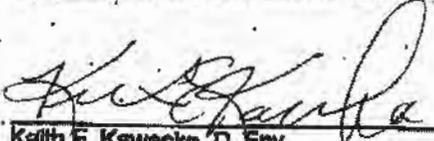
Date


 Michael Montgomery
 Assistant Director, Federal Facilities and Site Cleanup Branch
 Superfund Division
 U.S. Environmental Protection Agency, Region 9

9/23/13

Date

The State of Hawaii DOH concurs with the selected remedy as documented in this ROD.


 Keith E. Kawasaka, D. Env.
 Program Manager
 Hazard Evaluation and Emergency Response Office
 State of Hawaii, Department of Health

10-7-13

Date

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2. DECISION SUMMARY

This section summarizes the Site location, description, history, and environmental investigations conducted at the Site.

2.1 Site Name, Description, and Location

The Site consists of the former paint storage area, an 8,000 square-foot area northeast of Building 35 at the NAVFAC Hawaii Compound of JBPHH. The Site included a 900 square-foot paint storage area that was formerly located approximately 35 feet northeast of Building 35 along an unpaved embankment. The Site is located within the former PWC Main Complex GSA at JBPHH on the island of Oahu, Hawaii. The former PWC Main Complex GSA is approximately 1 mile east of the Pearl Harbor Makalapa Gate, and is adjacent to the Navy Exchange and Commissary complex on Johnson Circle. It is bounded by the Bougainville Industrial Park on the north, Salt Lake Boulevard on the east, Moanalua Terrace Naval Housing on the south, and Radford Drive on the west. The Site is situated in the northwest-central portion of the former PWC GSA adjacent to Marshall Road (Figure 1). The Site is surrounded by NAVFAC Hawaii industrial and professional facilities and is not accessible to the public. The layout of the Site is shown on Figure 2. As described in Section 1.1, PHNC is identified on the NPL as EPA Comprehensive Environmental Response, Compensation, and Liability Information System No. HI4170090076.

2.2 Site History

Built in 1951, Building 35 was formerly used for painting and related activities, including exterior storage and paint-related activities. The former paint storage area was used for storage of paint, paint supplies, paint-waste containers, and related hazardous materials, including paint thinner. Paint-related activities and paint storage have occurred at the Site since 1943.

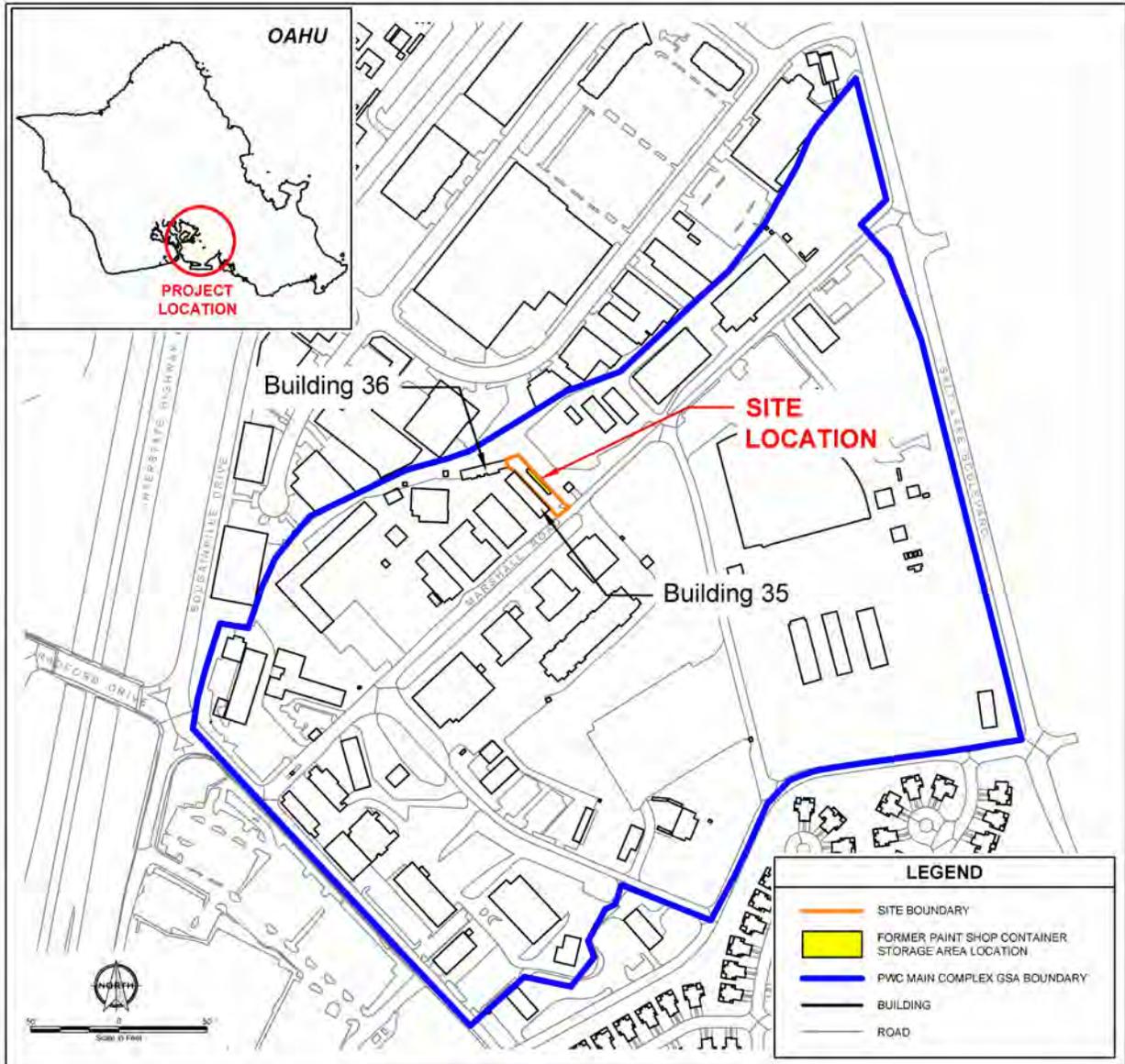
Paint supplies were stored at the Site in two locking metal cabinets, while paint wastes were stored in 55-gallon capacity containers and some smaller containers on pallets. Paint waste containers were stored on wooden pallets in direct contact with surface soils. Paint wastes were generated from paint shops in Buildings 20 and 35, and various other former PWC shops. Paint brushes were reportedly cleaned at the Site in the asphalt parking lot between Building 35 and the former paint storage area. The exterior of the former paint storage area structure and Site area were formerly used for mixing and application of paint, and for storage of paint-related hazardous materials. The paint supplies and paint waste of the former paint storage area have been removed from the Site.

During site reconnaissance conducted for the 1992 Ogden Environmental and Energy Services Company (Ogden) investigation, paint stains were visible along the dirt embankment within the Site (DoN 2011). Exterior storage and paint mixing operations have since ceased.

2.2.1 Previous Investigations

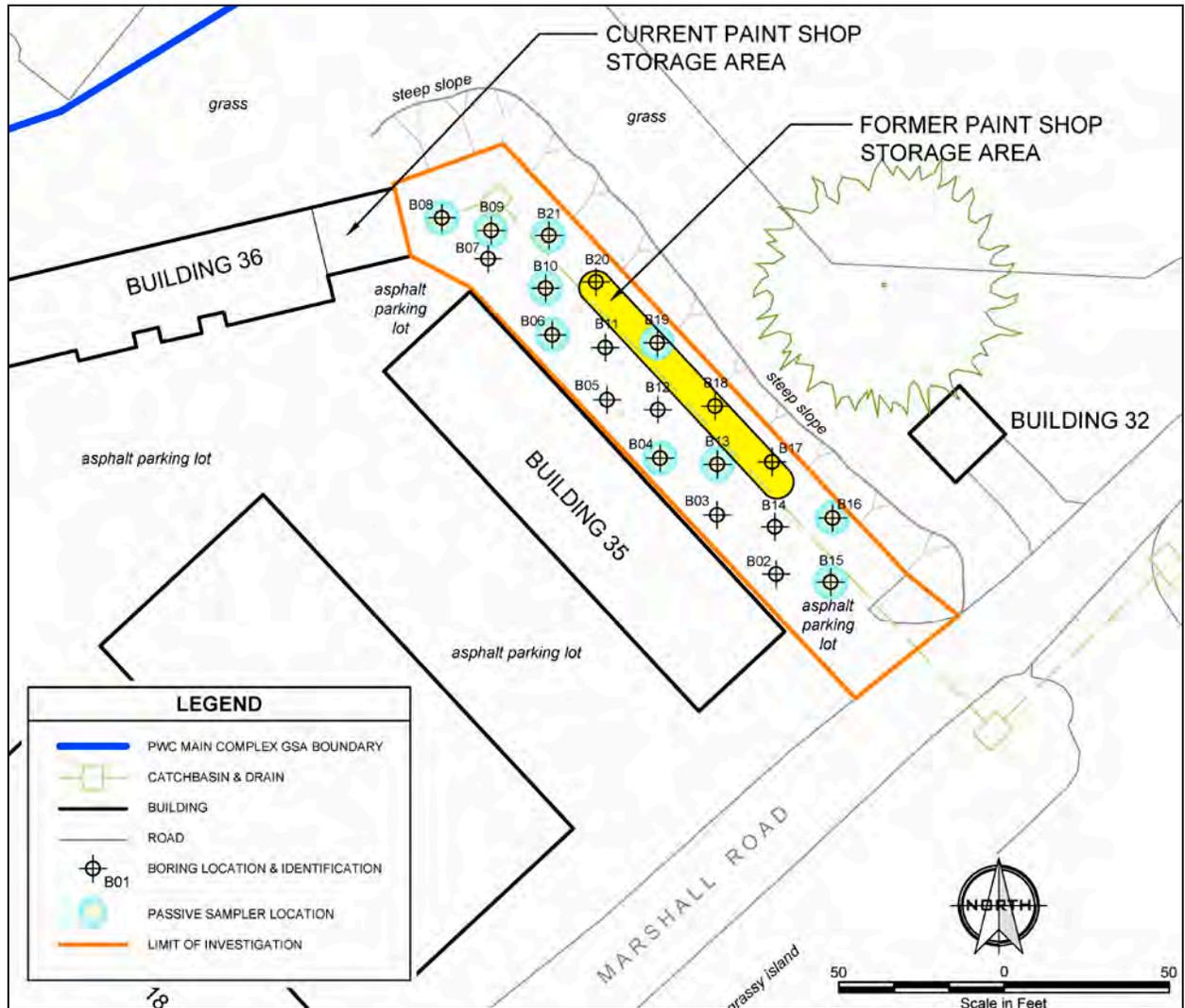
The following documents listed are available in the Administrative Record and provide detailed information used to support the finding of NO ACTION at the Site. These previous investigations show evidence of releases of hazardous substances at the Site.

Figure 1. Site Location



Source: DoN 2011

Figure 2. Site Layout



Source: DoN 2011

2.2.1.1 Technical Evaluation of Solid Waste Management Units (Kennedy, Jenks, and Chilton 1989)

Findings of a 1989 Technical Evaluation of Solid Waste Management Units were incorporated into the 1992 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI). Based on historical use of the Site for paint-related activities, the COPCs were volatile organic compounds (VOCs), chlorinated VOCs, and metals. One sediment sample of the storm drain catch basin and two composite surface soil samples were collected from near the former paint storage area. Concentrations of lead, chromium, and toluene were detected above the former RCRA *Subpart S* action levels for soils (Title 40 Code of Federal Regulations Part 264 *Proposed Rule*, Subpart S [EPA 1990]).

The RFI concluded that releases to the soil at the Site had occurred and recommended collection of additional soil samples and storm drain sediment to delineate COPCs in soils and storm drain sediments.

2.2.1.2 RCRA Facility Investigation (Ogden 1992)

An RFI was conducted in 1992 to identify potential sites at PHNC that may require further investigation. The Site was investigated under the RFI based on the recommendations of the 1989 Technical Evaluation of Solid Waste Management Units. Four borings were drilled to a depth of 15 feet along the storm drain pipeline which runs alongside the former paint storage area at the Site. Soil samples were collected at depths of 1.5, 5, 10 and 15 feet below ground surface (bgs), and sediment from the northwestern storm basin was collected. Samples were analyzed for 17 metals, because metals are found in paint pigments, and for VOCs, because solvents are used to clean painting equipment and include paint thinners. The PALs for the RFI were based on proposed RCRA Subpart S action levels for soils.

No VOCs were present at the Site at concentrations above the analytical laboratory method detection limits (MDLs) in soil or sediment. Beryllium was detected at concentrations above the RFI PAL in every soil sample collected, concentrations of arsenic exceeded the PAL in one soil sample, and MDLs were greater than the RFI PAL in all samples. However, concentrations of arsenic and beryllium were not significantly higher than background concentrations. Arsenic and beryllium concentrations in soil were determined not to be related to paint related activities or releases. Chromium, mercury, and lead were detected in sediment at concentrations exceeding the RFI PAL at the Site. The RFI indicated that the impacted sediment identified in the storm drain catch basin of the Site was removed in July 1991. In addition, the current paint storage area at Building 36 replaced the former paint storage area; therefore, no additional impact to the soils of the Site is assumed after mid-1991.

A comparison of RFI results against the 2011 RI PALs indicated that only barium and mercury were detected at concentrations that exceeded the current, respective PAL. Barium concentrations exceeded the PAL in three soil samples collected at 1.5, 5, and 15 feet bgs. Mercury was detected in one sediment sample above the PAL at the Site. Nickel concentrations exceeded the PAL in one sample at 1.5 feet bgs; however, the concentration was within the range of regional background concentrations.

The RFI recommended additional sampling of sediment at the Site to determine whether sediments containing COPCs are still present, and concluded that COPCs present in soil were consistent with background levels and no further soil sampling was recommended.

2.2.1.3 Site Summary Report (DoN 2002)

In December 2002, a Site Summary Report was prepared for the former PWC GSA. Based on the results of the RFI, no further soil sampling was recommended at the Site; however, the storm drains were recommended for further investigation. The Site was identified in the Site Summary Report as a potential significant hazardous substance release site where contaminant concentrations exceed applicable or relevant and appropriate requirements or to-be-considered criteria.

2.2.1.4 Remedial Investigation (DoN 2011)

In October 2011, an RI was performed to evaluate if impacts to site soils have resulted from releases of hazardous substances related to historical activities at the Site. Concentrations of COPCs in surface soil and subsurface soil samples were compared to the current PALs

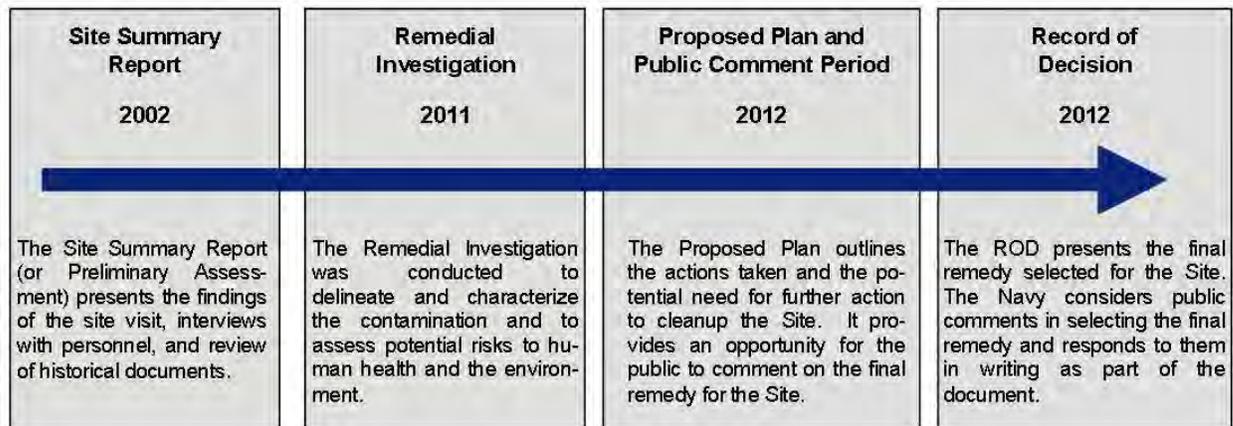
to assess the potential risk to human health and the environment at the Site. Soil gas samplers were placed in ten borings to qualitatively screen for VOCs at the Site. The results of the RI are discussed in Section 2.5.7 and Section 2.7.

2.3 Community Participation

The Navy has encouraged public participation in the decision process for environmental response actions at the Site throughout the environmental restoration and site closeout processes. A Restoration Advisory Board (RAB) composed of the DOH, EPA, Navy, and community representatives was established to ensure public involvement in the decision-making process. The Navy has issued fact sheets that summarize the site investigations. The RAB team has provided review and comment leading to the selection of the final remedy memorialized in this ROD. The Navy has also established a point-of-contact for the public.

The RI was made available to the public in October 2011. A notice of availability of the RI and Proposed Plan was published in the *Honolulu Star-Advertiser* on 15 July 2012. A Public meeting was held on 24 July 2012 at the Aiea Public Library, during which the findings and conclusions of the RI and Proposed Plan were made available to the community. Fact Sheets and presentation notes summarizing the previous investigation results, findings, and conclusions were distributed. Representatives from the Navy solicited questions from the public about the Site at the public meeting. The meeting was also used to solicit a wide cross-section of community input on the reasonably anticipated future land use and potentially beneficial groundwater uses at the Site. A comment period was extended for 30 days from the public meeting (from 24 July 2012 to 22 August 2012). Figure 3 represents the timeline of the CERCLA process.

Figure 3. CERCLA Process



No comments were received from the community on the previous investigation information or the July 2012 Proposed Plan.

Project documents, including the Work Plan/Sampling and Analysis Plan, RI, Fact Sheet, Proposed Plan, and other materials relating to the Site have been archived in the information repositories at the following locations:

Pearl City Public Library
1138 Waimano Home Road
Pearl City, Hawaii 96782
Telephone: (808) 453-6566

University of Hawaii-Manoa
Hamilton Library – Hawaiian and Pacific Collection
2550 McCarthy Mall
Honolulu, Hawaii 96822
Telephone: (800) 956-8264

Additional project information about the Site is located in the Administrative Record File at NAVFAC Pacific. The address for the Administrative Record File is as follows:

Naval Facilities Engineering Command, Pacific
258 Makalapa Drive, Suite 100
JBPHH HI 96860-3134

2.4 Scope and Role

The Navy and EPA, with concurrence from the HDOH, have established a Federal Facilities Agreement for the PHNC (EPA, State of Hawaii, and DoN 1994) to ensure that environmental impacts associated with past and present activities at PHNC are thoroughly investigated, remedial actions are taken and appropriate to protect human health and the environment, and a procedural framework, schedule, and exchange of information are established among the stakeholders. This ROD documents the final response action selected for the Navy's Building 35 site and does not include or affect any other sites at the PHNC. Based on the results of the HHRA in the RI (DoN 2011), the Navy, EPA Region 9, and the HDOH concluded that no action is required at the Site.

2.5 Summary of Site Characteristics

The Site is surrounded by NAVFAC Hawaii industrial and professional facilities and is not accessible to the public. The Site consists of an approximately 8,000 square-foot area northeast of Building 35, as illustrated on Figure 2.

2.5.1 Climate

The Pearl Harbor area experiences northeast trade winds that blow approximately nine months of the year. During the balance of the year, south to southeast winds and mild offshore breezes prevail. Winds up to 40 miles per hour occasionally occur from the north or northwest. The median rainfall for the region is between 20 and 30 inches (DLNR 1986), depending on the incidence of the occasional heavy rains. These heavy rains occur principally from November to April. Temperatures typically range from 72 to 89 degrees Fahrenheit during the summer and 60 to 78 degrees Fahrenheit during the winter season.

2.5.2 Topography and Elevation

The Site is approximately 40 feet above mean sea level and lies on Moanalua Ridge just southeast of Makalapa Crater, about 3,800 feet east of the Southeast Loch at PHNC. The Site is almost entirely paved with asphalt, and slopes gently toward the northwest. The Site

is mostly flat; however, it lies at the base of a steep slope to the north and northwest. Runoff from the Site flows into a catch basin at the northwest end of the paved area (Figure 2). The general area of the former PWC GSA that includes the Site slopes to the west and southwest. During periods of heavy rainfall, surface runoff from the street and the asphalt-paved parking areas of the Site will generally trend toward the catch basin connected to a storm drain in the northwest corner of the Site. From the area west of Buildings 35 and 36, surface runoff is estimated to flow to the west, away from the Site.

2.5.3 Geology

The former PWC GSA is underlain by deposits of gray to brown bedded tuff, fragments of basalt, palagonite, volcanic glass formed by volcanic explosions, and coralline limestone formed in a shallow marine setting (Ogden 1992). The Site stratigraphy included well and poorly graded sands occurring with clay or silt, well graded gravel with silt and clay, clayey sand, silt, and clay. Soil at the Site is classified as *fill land, mixed* (United States Department of Agriculture 2011).

Volcanic tuff is exposed in the slope adjacent to the Site. During direct-push drilling at the Site, a layer of hard tuff or refusal of the drilling equipment was typically encountered at a depth between 5 and 7 feet, and occasionally at 1 foot bgs. Based on the geophysical survey, however, welded tuff was observed at 2.5 to 3 feet bgs within the boundary of the Site. Direct-push drilling conducted at the Site as part of the RI was not intended to penetrate bedrock as in previous investigations. Geotechnical analysis of samples of tuff at the former rinsate pit revealed low hydraulic conductivity in the area (DoN 2008), which suggests that the potential for downward vertical flow of water into groundwater is low.

2.5.4 Groundwater Hydrogeology

Information on groundwater beneath the Site comes from surrounding areas and indicates that the Site overlies a complex series of strata making up overlying confining caprock and the Pearl Harbor basal aquifer (DoN 2002). Historical well drilling in the area indicates that regional basal groundwater is contained within basalt. Based on the historical record, the basal groundwater may be confined to considerable depth and the depth to the basal aquifer groundwater in the vicinity of the Site may be in excess of several hundred feet bgs (MacDonald et al. 1983).

Groundwater was not encountered in previous investigations or the RI. The deepest boring at the Site to date was 15 feet bgs, and based on available information for the Site vicinity, the deepest boring was to 32 feet bgs (DoN 2008). However, based on regional studies in the area, smaller pockets of higher-level groundwater perched above lenses of clay or other low permeability strata may be encountered above both caprock water and the basal aquifer. These occurrences of perched groundwater tend to be limited and do not represent potential drinking water sources.

The DOH has adopted the regional groundwater classification system of Mink and Lau to determine the permissible uses for groundwater in different areas of Oahu (Mink and Lau 1990). Mink and Lau identify a shallow, caprock groundwater system overlying a separate deep basal aquifer in the area of the Site. The uppermost groundwater is characterized as an unconfined, caprock aquifer contained in sediments. This caprock groundwater is given a Status Code of 12211 that indicates the groundwater is brackish (i.e., with a chloride content of 1,000 to 5,000 milligrams per liter). Therefore, the caprock groundwater is not

suitable for drinking water, is not ecologically significant, is vulnerable to contamination but is a replaceable resource.

Under the Mink and Lau system, the groundwater contained in the deep aquifer is given a Status Code of 11113 that indicates the groundwater is considered fresh water and represents a currently used, irreplaceable source of drinking-quality water and has low susceptibility to contamination because of confinement and the overlying caprock.

EPA's *Guidelines for Ground-Water Classification* (EPA 1988) and site-specific factors have been used to classify JBPHH groundwater. The Site is located inland of the DOH Underground Injection Control line. Therefore, it is considered a potential drinking water source (DoH 1992). Under the EPA's Groundwater Protection Strategy caprock groundwater beneath the former PWC GSA can best be categorized as Federal Groundwater Classification Class II (a current or potential source of drinking water); however, the site-specific hydrologic and hydrogeological conditions, along with pertinent federal, state, and local regulations and guidance, indicate that shallow groundwater directly beneath the Site does not represent a potential drinking water source.

2.5.5 Surface Water

No long-term surface water exists onsite or in the general vicinity of the Site. The closest permanent surface water body to the Site is the Southeast Loch of Pearl Harbor located approximately 0.75 miles from the Site.

2.5.6 Sensitive Populations and Habitats

The 1992 RFI indicated that no endangered species or sensitive environments have been identified within or in the vicinity of the Site. The Site and the surrounding area are highly developed and therefore do not host sensitive habitats. Additionally, the Site area is relatively small, covering a total approximate area of less than 0.20 acres, is mostly covered with asphaltic concrete paving and adjacent to a sparsely vegetated rocky outcrop of the adjacent, steep slope.

There are no National Wetland Inventory wetlands, wildlife sanctuaries, reserves, or State or Federal parks within a 0.5 mile radius (DoN 2011). The Site lacks significant ecological receptors and exhibits conditions that are generally unfavorable as ecological habitat.

2.5.7 Summary of Current Nature and Extent of Contamination

The following is a summary of the current nature and extent of contamination at the Site based on the 2011 RI report. Additional information is contained in the RI. The COPCs were chosen based on the historical evidence of paint-related activities at the Site, and include contaminants found in paint and paint-related compounds, including metals, polychlorinated biphenyls (PCBs), and VOCs (Table 2). Table 2 lists the Site COPCs, as well as their respective PAL and the specific criterion that the PALs are based on.

Known releases of COPCs from paint-related activities have occurred at the Site (see Sections 2.2 Site History and 2.3 Previous Investigations for evidence of historical releases). As part of the RI, the Site was investigated to the lateral extent of the defined site boundaries. Discrete surface and subsurface soil samples were collected at the following intervals:

- Surface Interval (0.5 to 1.5 feet bgs)
- Subsurface Interval A (1.5 to 5 feet bgs)
- Subsurface Interval B (5 to 9 feet bgs)

Concentrations of site-specific COPCs were detected throughout the Site. Concentrations of COPCs exceeding the PALs are discussed below.

Metals – Concentrations of nickel, vanadium, and barium exceeded their respective PAL at the Site. Concentrations of nickel and vanadium did not exceed the upper limit for the range of regional background concentrations; however, five barium exceedances were greater than the upper limit for the regional background concentrations.

Concentrations of barium exceeding the PAL were detected fairly widespread in Surface Interval samples, but only locally (boring B17) in Interval A and B. Three of these are located in the northwest of the Site and are co-located with toluene in the same boring. Two concentrations of barium exceeding the upper limit for the range of regional background concentrations in Surface Interval samples (borings B12 and B13) are not co-located with other COPCs and are only slightly greater than the upper limit for the range of regional background concentrations, and therefore do not appear associated with releases of paint or paint-related wastes.

Three vanadium exceedances in shallow soil are co-located with concentrations of petroleum hydrocarbons in soil gas samples at the Site, indicating the origin of the vanadium may be from a petroleum source and not paint-related.

VOCs – No concentrations of volatile organic compounds in soil samples exceeded PALs. Detections of VOCs at the Site are limited to toluene, with the exception of boring B17, where acetone was detected in Interval A. Toluene concentrations cluster in the northwest area of the Site around borings B19, B10, B11, B07 and B06, but occur in soil of different depths. The toluene detections are an indicator of a paint-related release, but detected concentrations of toluene were very low (four orders of magnitude below the PAL). The highest concentration of toluene was detected in boring B11 near the former paint storage area.

Soil gas samples collected from ten borings across the Site indicated low concentrations of VOCs. The results were close to or below contaminant detection levels (or laboratory MDLs).

PCBs – A single concentration of Aroclor 1260 exceeded the PAL and the Toxic Substances Control Act High Occupancy cleanup level in a sample collected at one foot bgs at boring B19, along the embankment and northeast boundary of the Site. Boring B19 is the only location where Aroclor 1260 was also detected in Interval B and where toluene was detected at all three depth intervals. Lower Aroclor 1260 concentrations were detected in the Surface Interval of the neighboring borings B18 and B11, in or near the former paint storage area of the Site. Aroclor 1260 is co-located with COPCs related to paint-related activities such as VOCs, and in one instance cobalt, indicating an association with paint-related releases. Boring B16 is a second area where Aroclor 1260 was detected in the Surface Interval, and is co-located with an exceedance of lead from the previous investigation. Toluene was detected in the area around boring B19 and B11, indicating that Aroclor 1260 may be related to historical painting activities at the Site.

Aroclor 1254 was detected in one soil sample from boring B14 at a concentration approximately one order of magnitude below the PAL in Interval A. Based on the proximity of the sample with the Aroclor 1254 to samples with detected concentrations of petroleum hydrocarbons in soil gas and a sample with vanadium exceeding the PAL in a neighboring boring, it is possible that the Aroclor 1254 is related to an isolated release of waste solvent or oil at the Site.

Elevated contaminant detection limits (or laboratory MDLs) for Aroclor 1254 occurred for samples collected from the northeast border of the Site next to the steep slope. Interferences from non-target compounds during laboratory analysis caused the MDL to significantly exceed the PAL in two samples (collected at borings B18 and B20). However, these results do not significantly impact the decision for the Site for the following reasons:

- For the elevated MDL of Aroclor 1254 at boring B20, there is no pattern of co-location with other COPCs related to historical paint shop activities,
- Close analysis of the analytical data (i.e., gas chromatography) for boring B20 shows peaks on the chromatogram that are not consistent with the presence of Aroclor 1254,
- Based on the frequency of detection and the magnitude of impacts from PCBs as Aroclors 1260 and 1254 at the Site, it is unlikely that a significant release or source of PCBs exists at the Site.
- The two highest MDLs did not exceed the TSCA low occupancy upper regulatory threshold of 10 milligrams per kilogram (mg/kg) (i.e., non-detect results of <8.2 mg/kg and <3.8 mg/kg in borings B18 and B20, respectively).

There is evidence of paint-related COPCs at boring B18 based on a cobalt exceedance. However, based on the isolated detection of Aroclor 1254, it appears that Aroclor 1254 at the Site is more likely related to isolated or *de minimis* releases of oil or other wastes than paint or paint-related wastes. Therefore, it is unlikely that a release of PCB-containing paint or paint-related wastes occurred at the Site.

The elevated MDLs represent a data gap due to matrix interferences. However, the data gap is small and is not considered to have significant impact on the project conclusions and recommendations. The data gap was considered for the human health risk assessment described in Section 2.7.

Table 2. Summary of Screening Criteria

Analyte	Project Action Level (mg/kg)	Residential Soil RSLs (EPA 2011)	Industrial Soil RSLs (EPA 2011)	Tier I EAL ¹ (DOH 2008)	Background Concentration (DoN 2006)
		(mg/kg)			
Metals					
Antimony	7.3**	31	4.10E+02	6.3	7.3
Barium	752**	1.50E+04	1.90E+05	750	752
Beryllium	4	1.60E+02	2.00E+03	4	2.5
Cadmium	12	70	8.0E+02	12	2.3
Chromium*	500	1.20E+05	1.50E+06	500	250
Cobalt	72**	23	300	40	72
Copper	230	3.10E+03	4.10E+04	230	110
Lead ²	200	4.00E+02	800	200	96
Mercury	4.7	10	43	4.7	0.29
Molybdenum	40	3.90E+02	5.10E+03	40	-
Nickel ³	205**	1.50E+03	2.00E+04	150	205
Selenium	10	3.90E+02	5.10E+03	10	9
Silver	20	3.90E+02	5.10E+03	20	0.86
Thallium	2.7**	-	-	1	2.7
Vanadium	206**	3.90E+02	5.20E+03	110	206
Zinc	600	2.30E+04	3.10E+05	600	166
Volatile Organic Compounds (VOCs)					
Acetone	0.86	6.10E+04	6.3E+05	0.86	-
Ethylbenzene	1.6	5.4	27	1.6	-
Toluene	34	5.00E+03	4.60E+04	34	-
Polychlorinated Biphenyls (PCBs)					
Aroclor 1016	3.9	3.9	21	1.1	-
Aroclor 1221	0.14	0.14	0.54	1.1	-
Aroclor 1232	0.14	0.14	0.54	1.1	-
Aroclor 1242	0.22	0.22	0.74	1.1	-
Aroclor 1248	0.22	0.22	0.74	1.1	-
Aroclor 1254	0.22	0.22	0.74	1.1	-
Aroclor 1260	0.22	0.22	0.74	1.1	-

Notes: (-) indicates no value available. mg/kg - milligrams per kilogram

*EPA RSL for chromium (III) insoluble salts

**Background concentration (DoN 2006) used as PAL.

¹Tier I EALs provided are for areas above non-drinking water aquifer, greater than 150 meters (m) from surface waters, unless otherwise noted. PCB EAL is applied for individual Aroclors or total PCBs.

²Background lead concentration includes combined anthropogenic and natural background

³The RSL values for nickel apply to soluble salts.

2.6 Current and Potential Future Land and Groundwater Use

The Site is no longer actively used as a paint storage area. The Site is currently used for storage of equipment and vehicle parking. The Site is surrounded by NAVFAC Hawaii industrial and professional facilities and is not accessible to the public. The land use in the area is commercial. The anticipated future use of the Site is similar to the current use. Based on available information, perched shallow groundwater directly beneath the Site is not currently used, nor would future development as a drinking water source be likely. The entire former PWC GSA is located over the Honolulu-Pearl Harbor basal groundwater aquifer. The groundwater from the deeper underlying aquifer is a current or potential source of drinking water (DoH 1992). Migration of COPCs to the basal aquifer is unlikely to occur due to the great depth to the underlying aquifer and the presence of impermeable, welded tuff below the Site. Shallow groundwater directly beneath the Site is not currently used. There are no indications that shallow groundwater will be developed in the future for drinking water to meet the needs of a family or a public water system. No long-term surface water exists onsite or in the general vicinity of the Site.

2.7 Summary of Site Risk

The risk assessment estimates what risks the Site poses if no action is taken. It provides the basis for taking action, if necessary, and identifies the contaminants and exposure pathways, if any, that need to be addressed by a remedial action. This section of the ROD summarizes the results of the risk assessment conducted for the Site.

2.7.1 Conceptual Site Model

The conceptual site model (CSM) is a dynamic model that is used to include or exclude sources of COPCs, receptors, or exposure pathways, based on site history and current information. The human health CSM identifies the exposure pathways that are potentially complete, insignificant, or incomplete for selected current and future receptors (Figure 4).

The Site is currently paved and used as a parking lot and for access to Buildings 35 and 36. The Site includes a narrow, unpaved area along the northeastern boundary at the base of the steep slope. The grass cover of this area is thin and does not eliminate current exposure to surface soils, and potentially impacted bare soil is present at the base of the steep slope. This narrow, unpaved area has the potential to generate fugitive dust.

The potential contaminated media are surface and subsurface soil and bedrock. Groundwater of the former PWC GSA is not likely to be impacted from releases at the Site; results for VOCs indicate a lack of significant presence and none of the VOC concentrations exceeded the respective PAL. Metals and PCBs are relatively non-mobile and non-leachable under standard pH conditions in the subsurface. There is no surface water at the Site. The average rainfall is low with 20 to 30 inches annually. There is a low potential for contact of impacted storm water runoff from Site surfaces, through the catch basin inlet, or with the waters of Pearl Harbor.

Exposure pathways for surface soil are currently potentially complete only for industrial workers, and include inhalation, ingestion, and dermal contact. Current access to the Site is restricted, so exposure to current and future trespassers is considered an incomplete pathway. Potentially complete surface soil exposure pathways include inhalation, ingestion, and dermal contact for future industrial workers, construction workers, and future onsite

residents. There are no currently potentially complete exposure pathways for subsurface soil. However, if construction were to occur at the Site in the future, and if land use were to change to include residential use, potentially complete exposure pathways to subsurface soil could exist. Potentially complete subsurface soil exposure pathways include inhalation, ingestion, and dermal contact for future construction workers, industrial workers, or onsite residents if excavated soil is used for surface completion. A summary of the exposure pathways and a rationale for the assessment is included in Figure 4.

2.7.2 Human Health Risk Assessment

A Preliminary HHRA was conducted for COPCs in soil at the Site as part of the RI (DoN 2011). The results indicated that no site chemicals are present at levels that present potentially unacceptable risk to human health and the environment. Therefore, a response action is not necessary to protect human health or welfare or the environment from actual or threatened releases of pollutants or contaminants at the Site.

Based on the available historical information, site details, and current and anticipated future site uses, the exposure routes for which pathways are potentially complete include inhalation, incidental ingestion and dermal contact with site soils. These exposure pathways apply to current and future site industrial workers, construction workers (if construction activities are undertaken at the Site), and hypothetical future residents. Both surface soil data and complete sample data set scenarios were calculated for the Preliminary HHRA.

Tier 1A of the Preliminary HHRA included a screening-level comparison of COCP concentrations detected in soil against the PALs to assess the nature and extent of contamination at the Site. The results of the screening indicated that eight COPCs exceeded the PALs, and therefore required further evaluation in the risk assessment process. The COPCs carried forward included: barium, nickel, cobalt, vanadium, lead, zinc, mercury, and PCBs as Aroclor 1260. A complete description of the Tier 1A Preliminary HHRA can be found in Appendix A.

Tier 1B of the Preliminary HHRA was a site-specific assessment that evaluated COPCs in soil that failed to exit the Preliminary HHRA process, based on the Tier 1A screening. For the Tier 1B, a comparison is made of the 95 percent upper confidence limit (UCL) of the mean chemical concentrations at the Site to the respective, site-specific RBSL. The 95 percent UCL is a conservative estimate of the true mean chemical concentration, and is significantly larger than the mean of the sample concentrations, resulting in a conservative estimate of the site-wide exposure concentration used in the risk assessment process. The RBSLs are concentrations of constituents in soil that are considered protective of human health under a specific exposure scenario. For each exposure scenario, the 95 percent UCL values were used to represent the highest exposure that can reasonably be expected at the Site based on current and potential future land use. Calculations of the 95 percent UCL are included in Appendix A.

The site-specific RBSLs for individual COPCs were based on USEPA Guidance, Oak Ridge National Laboratory spreadsheets (Oak Ridge National Laboratory 2008), and EPA residential RSLs for soil.

The only COPC to exceed its site-specific RBSL was cobalt. However, the 95 percent UCL values (44.82 mg/kg for surface soil data and 44.89 mg/kg for complete soil data) were below the regional background concentration for cobalt (72 mg/kg). A summary of the

results of the site-specific screening for residents, industrial workers, and construction workers can be found in Tables 3, 4, 5 and 6, respectively.

Table 3. Tier 1B Noncancer and Cancer Toxicity Factors

Contaminant of Potential Concern	Noncancer Toxicity Values			Cancer Toxicity Values		
	Oral Reference Dose (mg/kg-day)	Dermal Reference Dose (mg/kg-day)	Inhalation Reference Dose (mg/kg-day)	Oral Reference Dose (mg/kg-day)	Dermal Reference Dose (mg/kg-day)	Inhalation Reference Dose (mg/kg-day)
Barium	2.00E-01	1.40E-02	5.00E-04	-	-	-
Cobalt	3.00E-04	3.00E-04	6.00E-06	-	-	9.00E-03
Lead	-	-	-	-	-	-
Mercury	3.00E-04	2.10E-05	-	-	-	-
Nickel	2.00E-02	8.00E-04	9.00E-05	-	-	2.60E-04
Vanadium	5.00E-03	5.00E-03	-	-	-	-
Zinc	3.00E-01	3.00E-01	-	-	-	-
Aroclor 1260	-	-	-	2.00E+00	2.00E+00	5.70E-04

Notes: (-) indicates no toxicity factor available mg/kg-day – milligrams per kilogram per day

Exposure Pathway			Human Receptors					Rationale	
			Current Land Use*		Future Land Use				
Contributing Source	Transport Mechanism	Exposure Route	Industrial Worker	Offsite Resident/Trespassers	Construction Worker	Industrial Worker	Offsite Resident/Trespassers	Onsite Resident	
Surface Soil	Direct Contact	Incidental Ingestion	Potentially Complete	Incomplete	Potentially Complete	Potentially Complete	Incomplete	Potentially Complete	Potentially Complete for all receptors except Current Residents (as the Site is uninhabited) and offsite Residents and Trespassers under Current and Future Land Use. The Site is too far from residences, and is paved so as not to reasonably pose a hazard, trespassing is unlikely, because the Site is part of the secured PHNC. The Site is covered by either an asphalt parking lot or thin grass, but the grass swath along the northern and eastern edge is thin and does not provide a barrier to contact with the surface soil. Future Land Use of the Site is anticipated to remain commercial/industrial. However, to provide conservative estimates, exposure to surface soil under Future Land Use is considered Potentially Complete for Construction Workers, Industrial Workers, and Residents if the Site undergoes development that involves removal of the asphalt or landscaping resulting in exposed soil.
		Dermal Contact	Potentially Complete	Incomplete	Potentially Complete	Potentially Complete	Incomplete	Potentially Complete	Same as above.
	Air Transport	Inhalation of Particulates	Potentially Complete	Incomplete	Potentially Complete	Potentially Complete	Incomplete	Potentially Complete	Same as above.
Subsurface Soil	Direct Contact	Incidental Ingestion	Incomplete	Incomplete	Potentially Complete	Potentially Complete	Incomplete	Potentially Complete	Incomplete for all receptors under Current Land Use because the Site is covered by either an asphalt parking lot or thin grass. There is no exposure to subsurface soil under current conditions. Future Land Use of the Site is anticipated to remain commercial/industrial. However, to provide conservative estimates, exposure to subsurface soil under Future Land Use is considered Potentially Complete for Construction Worker if the Site undergoes development that involves excavation of subsurface soil. Although development is unlikely to occur in the proximity of Industrial Workers or Onsite Residents, exposure to subsurface soil under Future Land Use is also considered Potentially Complete for Industrial Workers and Onsite Residents if the Site undergoes development that involves excavation of subsurface soil, and is left without suitable surface completion materials, eg., paving, concrete slab, or top-soil and grass. Exposure pathways to Offsite Residents/Trespassers are Incomplete because the Site is far from residences and trespassing is unlikely because the Site is part of the secured PHNC.
		Dermal Contact	Incomplete	Incomplete	Potentially Complete	Potentially Complete	Incomplete	Potentially Complete	Same as above.
	Air Transport	Inhalation of Particulates	Incomplete	Incomplete	Potentially Complete	Potentially Complete	Incomplete	Potentially Complete	Incomplete for all receptors under Current Land Use because the Site is covered by either an asphalt parking lot or thin grass. There is no exposure to subsurface soil under current conditions. Future Land Use of the Site is anticipated to remain commercial/industrial. However, to provide conservative estimates, exposure to subsurface soil under Future Land Use is considered Potentially Complete for Construction and Industrial Workers and onsite Residents if the Site undergoes development that involves excavation of subsurface soil.
	Leaching to Groundwater	Dermal Contact with Groundwater	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete	Incomplete for all receptors under Current Land Use. Incomplete for all receptors under Future Land Use. Groundwater is anticipated at such a depth that it would not be encountered during excavations or construction activities.

* The Site consists of an asphalt-paved parking lot with a small, narrow swath of loose, gravelly soil and thin grass, insufficient to cover bare soil, bordering the eastern edge of the Site.

Figure 4.
Summary of Exposure Pathway Scenarios

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For PCBs, an uncertainty existed related to the small portion of the RI analytical data with raised contaminant detection levels (or MDLs) for PCBs in several samples. The MDL results for Aroclor 1254 significantly exceed the PAL in two samples; however, the only detection of Aroclor 1254 at the Site was one order of magnitude below the PAL of 0.22 mg/kg. The non-detect results introduce uncertainty into the HHRA. However, based on the frequency of detection and the magnitude of impacts from PCBs at the Site, it is unlikely that a significant release or source of PCBs exists at the Site.

Table 4. Tier 1B Human Health Risk Assessment Results – Future Residential Scenario

Contaminant of Potential Concern	Media	Tier 1B Site-Specific RBSL (mg/kg)	Surface Soil Data			All Soil Data		
			FOD (%)	Max. Detect (mg/kg)	EPC (mg/kg)	FOD (%)	Max. Detect (mg/kg)	EPC (mg/kg)
Barium	Soil	15,000	100	1046.5 J	637.3	100	1360	587.2
Cobalt	Soil	23	100	66.2	44.82	100	81.3 J	44.89
Lead	Soil	400	100	790	112.1	100	790	45.99
Mercury	Soil	23	81	15	1.82	74	15	0.644
Nickel	Soil	1,500	100	278 J	171	100	345 J	186.9
Vanadium	Soil	390	100	208	152.9	100	209	146.2
Zinc	Soil	23,000	100	750	196	100	750	134.1
Aroclor 1260	Soil	0.22	20	1.100	0.1723	9	1.100	0.0652

Notes: **bold** – exceeds the RBSL
 mg/kg – milligrams per kilogram
 RBSL – Risk Based Screening Level
 EPC – exposure point concentration based on 95 percent UCL concentration
 FOD – frequency of detection
 J – estimated value

Table 5. Tier 1B Human Health Risk Assessment Results – Current and Future Industrial Worker Scenario

Contaminant of Potential Concern	Media	Tier 1B Site-Specific RBSL (mg/kg)	Surface Soil Data			All Soil Data		
			FOD (%)	Max. Detect (mg/kg)	EPC (mg/kg)	FOD (%)	Max. Detect (mg/kg)	EPC (mg/kg)
Barium	Soil	359,000	100	1046.5 J	637.3	100	1360	587.2
Cobalt	Soil	603	100	66.2	44.82	100	81.3 J	44.89
Lead	Soil	800	100	790	112.1	100	790	45.99
Mercury	Soil	613	81	15	1.82	74	15	0.644
Nickel	Soil	38,000	100	278 J	171	100	345 J	186.9
Vanadium	Soil	10,300	100	208	152.9	100	209	146.2
Zinc	Soil	613,000	100	750	196	100	750	134.1
Aroclor 1260	Soil	1.49	20	1.100	0.1723	9	1.100	0.0652

Notes: **bold** – exceeds the RBSL
 mg/kg – milligrams per kilogram
 RBSL – Risk Based Screening Level
 EPC – exposure point concentration based on 95 percent UCL concentration
 FOD – frequency of detection
 J – estimated value

Table 6. Tier 1B Human Health Risk Assessment Results – Future Construction Worker Scenario

Contaminant of Potential Concern	Media	Tier 1B Site-Specific RBSL (mg/kg)	All Soil Data		
			FOD (%)	Max. Detect (mg/kg)	EPC (mg/kg)
Barium	Soil	60,700	100	1360	587.2
Cobalt	Soil	92.7	100	81.3 J	44.89
Lead	Soil	800	100	790	45.99
Mercury	Soil	92.9	74	15	0.644
Nickel	Soil	6,120	100	345 J	186.9
Vanadium	Soil	1,560	100	209	146.2
Zinc	Soil	92,900	100	750	134.1
Aroclor 1260	Soil	7.63	9	1.100	0.0652

Notes: **bold** – exceeds the RBSL
 mg/kg – milligrams per kilogram
 RBSL – Risk Based Screening Level
 EPC – exposure point concentration based on 95 percent UCL concentration
 FOD – frequency of detection
 J – estimated value

2.7.3 Screening Ecological Risk Assessment

A screening ecological risk assessment was not performed for the Site based on the following reasons:

- The general area in and around the Site is part of a completely developed area devoted primarily to industrial activity (Ogden 1992);
- no long-term surface water exists onsite or in adjacent areas;
- no endangered species or sensitive environments were identified at the Site or in the immediate vicinity; and
- there are no suitable marine or terrestrial habitats present at the Site.

The nearest location of a known population of a Federal or State listed species is at the Waiawa Unit of the Pearl Harbor National Wildlife Refuge (24.5 acres), which is more than three miles from the Site, where there are several species of endangered water birds. Additionally, the Site area is relatively small, covering a total approximate area of less than 0.20 acres. The Site is mostly covered with asphaltic concrete paving and adjacent to a rocky outcrop of the adjacent, steep slope. Vegetation is limited to a small area of along the north and east perimeter. The Site is used for industrial purposes including equipment storage and vehicle parking.

Exposure pathways to contaminated subsurface soil for all ecological receptors are either incomplete or insignificant based on current and future land use at the Site. Exposure pathways to contaminated groundwater or sediment are potentially complete for marine ecological receptors if these media are transported to Pearl Harbor via the storm drain system. However, ecological risk posed by the sediments in Pearl Harbor is being evaluated under a Pearl Harbor sediment study, and discharge from the storm drain system

is managed and regulated through National Pollutant Discharge Elimination System permits for the PHNC.

Based on insignificant or incomplete exposure pathways for terrestrial ecological receptors under current and future land use, further evaluation is not warranted.

2.8 Documentation of Significant Changes

There have been no significant changes to the proposed remedy since the publication of the Proposed Plan in July 2012.

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3. RESPONSIVENESS SUMMARY

The 30-day comment period for the Proposed Plan was held from 24 July 2012 through 22 August 2012, as announced in a Notice of Availability that was published in the 15 July 2012 (Sunday) edition of the Honolulu Star Advertiser, the largest daily edition newspaper in the State of Hawaii. The public meeting presented the Proposed Plan was held at the Aiea Public Library on 24 July 2012. The Aiea Public Library is located less than five miles from the Site within the nearby city of Aiea. No comments were received from the community regarding the results of the previous investigations or the Proposed Plan.

3.1 Community Preferences

No community preferences were requested or identified.

3.2 Stakeholders Comments and Responses

Comments received and corresponding comment responses are integrated in the Appendix. Corresponding verbal and written changes to this document incorporate these responses. No changes to the selected decision are indicated in these comments.

3.3 Technical and Legal Issues

No technical or legal issues have been identified.

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