Former NAS Alameda Operable Unit 1 IR Sites 6, 7, 8, and 16

BRAC PMO

Alameda Point, California

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ALAMEDA POINT
SSIC NO. 5090.3

U.S. NAVY ANNOUNCES PROPOSED PLAN

The U.S. Navy encourages the public to comment on its proposed plan for cleanup of Installation Restoration (IR) Sites 6, 7, 8, and 16 in Operable Unit 1 (OU-1) at Alameda Point, the former Naval Air Station (NAS) Alameda, in Alameda, California. The Navy is making this request in cooperation with the U.S. Environmental Protection Agency, Region 9 (EPA); the California Department of Toxic Substances Control (DTSC); and the San Francisco Bay Regional Water Quality Control Board (Water Board).

This proposed plan presents the Navy's preferred remedial (or cleanup) alternatives for soil and groundwater at OU-1 Sites 6, 7, 8, and 16 at Alameda Point. This proposed plan includes specific remedial alternatives for soil at Sites 6, 7, 8, and 16 and for groundwater at Sites 6 and 16. No action is proposed for groundwater at Sites 7 and 8. The Navy proposes to remediate soil and groundwater at the sites by performing the actions listed below.

- **Remove soil** from areas within Sites 6, 7, 8, and 16 to reduce concentrations of metals, volatile organic compounds* (VOC), semivolatile organic compounds (SVOC), pesticides, or polychlorinated biphenyls (PCB) in soil to levels that protect human health and the environment.
- **Transport excavated soil** off site to an appropriate disposal facility.
- **Inject a compound into groundwater at Sites 6 and 16 to degrade VOCs in groundwater**, thus reducing concentrations of VOCs to levels that protect human health and the environment.
- **Implement a monitoring program** to show that remediation of groundwater has met the objectives in this proposed plan.
- **Restrict residential land use at Sites 6 and 16** and require Navy and regulatory agency approval prior to new building construction until remedial action objectives (RAO) have been met.

This proposed plan summarizes the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process and site background and provides an overview of the remedial investigation (RI) and feasibility study (FS) for Sites 6, 7, 8, and 16. Site-specific RI and FS summary sections for each site are presented after the RI and FS overview.

— NOTICE —

Public Comment Period

April 27 to May 26, 2006

Public Meeting

May 16, 2006

Alameda Point Main Office Building
950 West Mall Square, Room 201

6:30 to 8:00 p.m.

*A glossary of terms and definitions is provided on page 19.

THE CERCLA PROCESS

Since the mid-1980s, numerous investigations have been conducted at Alameda Point as part of the Navy's IR Program, which is a comprehensive environmental investigation and cleanup program that complies with CERCLA and the Resource Conservation and Recovery Act (RCRA). The Navy is issuing this proposed plan as part of its public participation responsibilities under Section 117(a) of CERCLA and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan. The flow chart below (right) shows how this proposed plan for Sites 6, 7, 8, and 16 fits into the CERCLA process.

The next stage of the CERCLA process is the Record of Decision (ROD). The ROD will present the selected remedial alternatives for each OU-1 site, and will also specify remediation goals and outline performance standards which the selected remedy must meet. In addition, the ROD will outline requirements for post-remediation sampling to verify that remediation goals have been met.

In June 2004, the Navy requested DTSC to defer corrective actions on RCRA solid waste management units (SWMU) to CERCLA response actions and to defer corrective actions on petroleum related SWMUs to the Total Petroleum Hydrocarbons (TPH) Program currently under the oversight of the Water Board.

SITE BACKGROUND

Alameda Point is located on the western tip of Alameda Island, which is on the eastern side of San Francisco Bay (see Figure 1). Sites 6, 7, 8, and 16 are located in the central portion of Alameda Point (see Figure 2). As a management tool, sites with similar characteristics were grouped into OUs. Sites 6, 7, 8, and 16 were designated as OU-1 sites because they are relatively small and have low levels of contamination related to historical use of the sites. Groundwater beneath the central portion of Alameda Point, including Sites 6, 7, 8, and 16, is not currently being used as a source of drinking, irrigation, or industrial supply water. However, groundwater below Site 16 is considered a potential drinking water source to the public.

Figure 1. Vicinity Map

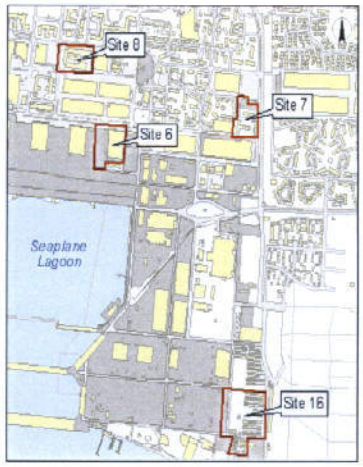
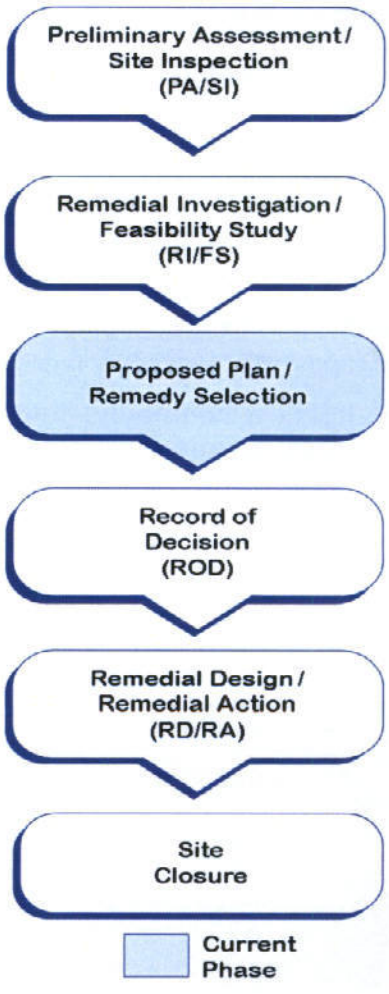


Figure 2: Site Location Map



CERCLA Process

OVERVIEW OF THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY FOR SITES 6, 7, 8, AND 16

The RI and FS reports are the culmination of numerous environmental investigations that the Navy has conducted at Sites 6, 7, 8, and 16 since 1988. In addition, a removal action performed in 1997 at Site 16 was successful in removing PCBs and lead in soil to below residential-based action levels. The Final RI Report was issued on November 18, 2004. Based on the results of the RI, the Navy conducted an FS to refine the risk management issues for each site, and to develop and evaluate potential remedial alternatives from which to select the most appropriate alternative for each site. The Draft Final FS Report was submitted on June 15, 2005, and accepted as final by the EPA. This proposed plan is based on the Final RI and FS Reports. The following text provides an overview of the RI and FS reports.

Remedial Investigation Report

The RI report documented the results of previous environmental investigations, identified the nature and extent of contamination, and assessed risks to human health and the environment at each site. The approach to the human health and ecological risk assessments is summarized below.

A baseline human health risk assessment (BHHRA) was conducted to assess risk to potential human receptors. "Risk" is defined as the likelihood or probability that a hazardous chemical, when released to the environment, will cause adverse effects on exposed humans.

The BHHRA evaluated risk from background or naturally occurring metals and chemicals related to site activities, including polynuclear aromatic hydrocarbons (PAH). The Navy considered the different ways that humans might be exposed to potential chemicals at Sites 6, 7, 8, and 16, including the possible chemical concentrations that could be encountered and the potential frequencies and durations of exposures.

The reuse of Sites 6 and 16 is expected to be commercial/industrial, and the reuse of Sites 7 and 8 is expected to be residential. Potential exposure scenarios were evaluated at each site to support possible future land uses and decision-making. At Sites 6, 8, and 16, four exposure scenarios were evaluated: recreational, residential, commercial/industrial, and construction worker. At Site 7, only three exposure scenarios were evaluated: residential, commercial/industrial, and construction worker. The residential scenario is considered the most conservative.

Risk calculations were based on conservative assumptions to protect human health. "Conservative" means the assumption will tend to overestimate risk. The use of conservative assumptions results in remediation goals that are more protective of human health. Human health risk is classified as cancer (from exposure to carcinogens) or noncancer (from exposure to noncarcinogens). A hazard index (HI) of 1 or less is considered protective of noncancer health hazards.

Cancer risk is generally expressed as a probability. For example, a cancer risk probability of 5 in 100,000 (5×10^{-5}) indicates that out of 100,000 people, 5 cancer cases may occur as a result of exposure to contaminants. The Navy used the federally established risk management range of 10^{-4} to 10^{-6} to evaluate site cancer risks. When risk is above this range ($>10^{-4}$), action is generally warranted, and when risk is within this range, site-specific factors are considered to determine whether action is required.

A modified screening-level ecological risk assessment (SLERA) was conducted to evaluate the risk to small mammals and birds from exposure to soil at Sites 6, 7, 8, and 16; and the risk to aquatic life from exposure to groundwater through discharge to the San Francisco Bay (including the Oakland Inner Harbor and the Seaplane Lagoon) from Sites 6 and 16. Results of the SLERA indicated little to no significant risk is posed to small mammals, birds, or aquatic life. As a result, no action is necessary to address ecological risks at Sites 6, 7, 8, and 16. Significant factors for the no-further-action decision are; (1) the sites contain limited habitat to support small mammals or birds, and (2) additional habitat is unlikely to be present at the sites under the planned reuse. Ecological risk is not discussed further in this proposed plan.

The Final RI Report summarizes additional data gaps which were identified by the Navy and the regulatory agencies. These data gaps will be addressed in the remedial design.

Feasibility Study Report

The FS evaluated potential remedial alternatives to identify the most appropriate remedies for Sites 6, 7, 8, and 16. The FS report identified RAOs and remedial alternatives for Sites 6, 7, 8, and 16. RAOs provide the foundation upon which remedial alternatives are developed. An RAO is a statement that contains an objective for the protection of one or more specific receptors from exposure to one or more specific chemicals in a specific medium (soil, groundwater, or air) at a site. Reasonably anticipated future use of the site is an important consideration in determining the RAOs and thus the remedy selected for the site.

A remediation goal is a chemical concentration that provides a quantitative means of identifying areas for potential remedial action, screening the types of appropriate technologies, and assessing the potential of each remedial alternative to achieve the RAO.

CERCLA requires that remedial actions meet federal or state environmental standards, requirements, criteria, or limitations that are determined to be applicable or relevant and appropriate requirements (ARAR). See Table 16 (page 17) for a list of the significant ARARs that apply to remediation of soil at Sites 6, 7, 8, and 16 and groundwater at Sites 6 and 16. The FS provides a complete list of ARARs.

Technologies and associated process options were screened and assembled into the site-specific remedial alternatives. Many of the remedial alternatives include institutional controls (IC), (which are described in a box on the next page). Each remedial alternative was evaluated against seven of the nine criteria that are part of the statutory requirements of CERCLA (Table 1 below describes the nine criteria). The final criteria, State Acceptance and Community Acceptance, will be evaluated after the public comment period and addressed in the record of decision (ROD). The Final FS Report provides a detailed description of the technology screening process, the alternatives, and comparison of the alternatives. The Alameda Point Base Realignment and Closure (BRAC) Cleanup Team (BCT) has concurred with the preferred remedial alternatives presented in this proposed plan. The BCT comprises representatives from the Navy, EPA Region 9, DTSC, and the Water Board.

Table 1: Evaluation Criteria

The Navy uses the nine criteria* identified in the CERCLA process to evaluate alternatives for cleaning up a hazardous waste site. The nine criteria are as follows:

1. **Overall Protection of Human Health and the Environment** evaluates if a remedy provides adequate protection and if risks posed through each pathway are eliminated, reduced, or controlled.
2. **Compliance with Applicable or Relevant and Appropriate Requirements** evaluates if a remedy will meet all federal and state environmental laws or provide grounds for a waiver.
3. **Long-Term Effectiveness and Permanence** evaluates if a remedy will reliably protect human health and the environment over time.
4. **Reduction of Toxicity, Mobility, or Volume through Treatment** evaluates if a remedy reduces health hazards, the movement of contaminants, or the quantity of contaminants at the site through treatment.
5. **Short-Term Effectiveness** evaluates the period of time needed to complete a remedial alternative and any effects the remedial alternative may have on workers, the community, and the environment.
6. **Implementability** evaluates the technical and administrative feasibility of the remedy, including availability of materials and services needed to carry out the remedy and coordination of federal, state, and local governments to work together to clean up the site.
7. **Cost** evaluates estimated capital and operation and maintenance costs over the lifecycle of each alternative in comparison with other equally protective measures.
8. **State Acceptance** evaluates if the state agrees with the preferred alternative.
9. **Community Acceptance** evaluates if the local community agrees with, has reservations about, or opposes the preferred alternative (this criterion is evaluated after receiving public comments on this proposed plan).

* **Threshold.** These criteria (1 and 2) must be satisfied for an alternative to be eligible.

Primary Balancing. These criteria (3, 4, 5, 6, and 7) are used to evaluate the differences among alternatives.

Modifying. After all federal, state, and public comments are reviewed, modifications to the preferred remedy based on state and community acceptance (8 and 9).

INSTITUTIONAL CONTROLS

Institutional controls described in this Proposed Plan include land use restrictions, which would be established to limit human exposure to contaminated shallow groundwater until the risk-based remediation goals in the ROD and ARARs have been reached.

Institutional controls are applicable to all alternatives evaluated for groundwater (except Alternative 1, No Action) and will be implemented as soon as feasible.

If the property within OU-1 is transferred to a non-federal entity, the land use restrictions will be incorporated into and implemented through two separate legal instruments:

1. Restrictive covenants included in a "Covenant to Restrict Use of Property" entered into by the Navy and DTSC as provided in tit. 22 Cal. Code Regs. Section 67391.1 and consistent with the Navy/DTSC 2000 Memorandum of Agreement.
2. A Quitclaim Deed from the Navy to the property recipient.

Proposed Land Use Restrictions:

- *Prohibit* alteration, disturbance, or removal of Navy extraction, injection, and monitoring wells and associated piping and equipment, any component of a response or cleanup action, or associated utilities without the prior review and written approval of the Navy.
- *Prohibit* extraction of groundwater and installation of new groundwater wells by a non-federal entity until the risk-based remediation goals in the ROD have been reached, unless written approval is obtained from the regulatory agencies and the Navy.
- *Require* the future landowner to gain written approval from the regulatory agencies and the Navy for construction of new buildings until the risk-based remediation goals in the ROD have been reached.

Access provisions are required to ensure the Navy and regulatory agencies have access to remedial equipment and other remedy components for the purpose of implementing the remedial action, performing maintenance activities, and conducting monitoring.

SITE 6 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY SUMMARY

Site 6, also known as Building 41 (Aircraft Intermediate Maintenance Facility), is about 5.6 acres in size (see Figure 3 on page 6). Site 6 is relatively flat and is covered by Buildings 41, 273, and 501, asphalt, concrete, roads, and parking lots. Site 6 contains the following SWMUs: two washdown areas (WD-40 and WD-41A), three oil-water separators (OWS) (40A, 40B, and 41) and NAS Generator Accumulation Point (GAP) 25. Also present at Site 6 are former fuel line Corrective Action Area (CAA) B, RCRA Unit Tiered Permit Facility TP-01, a concrete cleaning vat, several sewer lines, and a former portable avionics laboratory. The buildings at Site 6 are currently unoccupied. Based on the Alameda Point reuse amendment, the expected future use of Site 6 is commercial/industrial.

Elevated concentrations of PAHs were detected in soil at Site 6. The main source of PAHs was from dredged materials from the San Francisco Bay that were used to construct Alameda Point, and are not associated with Navy activities. PAHs are not COCs at Site 6 and are below the site average threshold level of 0.62 mg/kg benzo(a)pyrene-equivalent [B(a)P-eq] concentration.

Elevated concentrations of VOCs were detected in groundwater, with the highest concentrations present in the western portion of the site. The presence of VOCs is likely related to solvent use in the washdown areas. The VOCs 1,2-dichloroethene (DCE), tetrachloroethene (PCE), trichloroethene (TCE), and vinyl chloride (VC) appear to be confined to the first water-bearing zone, with no apparent continuing source. Based on the results of the RI, further evaluation in an FS was recommended to delineate the chemicals that were detected in groundwater.

Results of the BHHRA, summarized in Table 2 (page 6), indicated that total noncancer HIs were below 1 for the recreational, commercial/industrial, and construction worker scenarios and above 1 for the residential scenario. Total cancer risks from soil and groundwater were (1) within or equal to the

lower end of the risk management range for the commercial/industrial and recreational scenarios, (2) below the risk management range for the construction worker scenario, and (3) above the risk management range for the residential scenario.

Figure 3. Site 6 Detail

Table 2:
Site 6 Cancer and Noncancer Risks

Use	Media	Cancer Risk[1]	Non-Cancer HI[1]
Commercial/ Industrial	Soil	2×10^{-6}	0.009
	Groundwater	6×10^{-5}	0.05
Construction	Soil	2×10^{-7}	0.03
Recreational	Soil	1×10^{-6}	0.02
Residential	Soil	1×10^{-5}	0.2
	Groundwater	5×10^{-4}	9

[1] Based on EPA-derived toxicity values

Potential cancer risks to a resident and commercial/industrial worker from soil alone were within the risk management range, and the noncancer HIs were below 1. Potential risks at Site 6 are from arsenic and PAHs in soil and VOCs in groundwater. Arsenic concentrations in soil at Site 6 are at naturally occurring background levels and are not related to activities conducted at the site. Based on the low levels of incremental (or site activity-related) contamination in soil, no remedial action for soil is necessary at Site 6 to protect human health, except for additional investigation of potential contamination at the OWSs. Risk from groundwater at Site 6 was attributed to the elevated concentrations of DCE, PCE, TCE, and VC. These VOCs were identified as COCs at Site 6 and were recommended for further evaluation in the FS. RAOs and remedial alternatives for soil and groundwater at Site 6 are presented separately below.

Site 6 Soil

The RAO for soil surrounding the OWSs at Site 6 is to minimize the potential risk of exposure (through ingestion or dermal contact) of a commercial worker to COCs in the soil. Remediation goals for the COCs identified during the sampling at the OWSs will be based on EPA's residential preliminary remediation goals (PRG).

The remedial alternatives developed for Site 6 are presented below. Table 3 (page 7) presents a comparative analysis of each remedial alternative against the evaluation criteria required by CERCLA.

Remedial Alternative 1: No Action – Alternative 1 does not involve actions or costs; however, it is required by CERCLA as a baseline for comparison with the other alternatives.

Remedial Alternative 2: Sampling and ICs – Alternative 2 would involve collection and analysis of soil and groundwater samples to evaluate the nature and extent of potential contamination beneath and adjacent to OWS-040A and OWS-040B. If chemicals are present in soil at concentrations exceeding their remediation goals, ICs would be applied to prohibit excavation of soil without prior regulatory approval; such prohibition would prevent any significant inhalation or ingestion of or dermal contact with contaminated soil. The ICs would remain in place until the RAO is achieved. This alternative is estimated to cost $250,000.

Remedial Alternative 3: Sampling and Excavation with Off-Site Disposal of Soil – Alternative 3 would involve collection and analysis of soil and groundwater samples to evaluate the nature and extent of contamination adjacent to OWS-040A and OWS-040B. If chemicals are present in soil at concentrations potentially exceeding their remediation goals, the contaminated soil would be excavated and disposed of off site. This alternative is estimated to cost $240,000. ***This is the Navy's preferred alternative.***

Based on the comparative analysis, the Navy prefers Alternative 3. Key points that support the Navy's preference for Alternative 3 are listed below.

- Protects human health and the environment and fully complies with ARARs.
- Provides excellent long-term protection by significantly removing COCs and their associated risk at a cost that is comparable to Alternative 2, which is estimated to take much longer.
- Prevents further migration of chemicals.

Table 3: Comparative Analysis of Soil Alternatives at Site 6

Alternatives	Protective Overall?	Compliance with ARARs?	Long-Term Effectiveness/ Permanence	Reduction of Toxicity, Mobility, or Volume through Treatment	Short-Term Effectiveness	Implementability	Timeframe (yrs.)	Cost ($M)
1. No Action	No	None	None	None	None	None	100	0
2. Sampling and ICs	Yes	Yes	◖	None	●	●	100	0.25
3. Excavation with Off-Site Disposal	Yes	Yes	●	None	●	●	1	0.24

Notes: ○ = Low, ◖ = Moderate; ● = High. Text in purple indicates preferred alternative.

The remediation goals for residential reuse are more stringent than those for commercial reuse; however, the cost to remediate to residential reuse is comparable with the cost to remediate to other reuses when long-term ICs are considered.

Site 6 Groundwater

The anticipated future use of Site 6 is commercial/industrial. The RAOs for groundwater underlying Site 6 are (1) to protect the beneficial use of the aquifer and (2) to minimize the potential risk of exposure through inhalation by a commercial worker to COCs in groundwater. Groundwater beneath Site 6 is unlikely to be a potential source of drinking water as explained in the RI and FS; however, this aquifer is currently designated in the Water Board's Basin Plan as suitable for drinking water supply. Based on this designation, the preliminary remediation goals for Site 6 groundwater will be the maximum contaminant levels (MCL) (see Table 4) until the Navy obtains concurrence that this portion of the aquifer is exempt from the drinking water designation. The preliminary remediation goals in Table 4 will also minimize the potential risk to a commercial worker posed by breathing vapors in indoor air that may migrate from groundwater contaminated with COCs. Remediation goals will be finalized in the ROD.

The remedial alternatives developed for groundwater at Site 6 are presented below. The planned groundwater remedial action is also intended to close the RCRA SWMUs at Site 6. Table 5 (see page 8) presents a comparative analysis of each remedial alternative against the evaluation criteria required by CERCLA.

Table 4: Groundwater Remediation Goals for Site 6

Chemical of Concern	Remediation Goal (µg/L)[1]
1,2-DCE	6
PCE	5
TCE	5
VC	0.5

Notes:

µg/L Micrograms per liter

[1] Current maximum concentrations for 1,2-DCE, PCE, TCE, and VC are 110, 95, 150, and 72 µg/L, respectively.

Remedial Alternative 1: No Action – Alternative 1 does not involve actions or costs; however, it is required by CERCLA as a baseline for comparison with the other alternatives.

Remedial Alternative 2: Monitored Natural Attenuation (MNA) and ICs – Alternative 2 would implement additional plume delineation and an estimated 30 years of MNA for groundwater. Additionally, Alternative 2 would require ICs restricting residential property use until concentrations are within the risk management range for residential use. Alternative 2 is estimated to cost $1.1 million.

Remedial Alternative 3: Active Treatment to Reduce Risk to Commercial/Industrial Workers with *In-Situ* Chemical Oxidation (ISCO) and Accelerated Bioremediation, MNA, and ICs – This alternative combines Alternatives 3A and 3B that were described in the FS report. Additional plume delineation would be performed in the remedial design. ISCO would be used to reduce high concentrations of COCs, followed by accelerated bioremediation of the groundwater contamination plume to the point that groundwater concentration levels are protective for commercial/industrial property reuse. MNA would then be implemented until the remediation goals are achieved. The remedial design will define the actual performance goals for ISCO, accelerated bioremediation, and MNA.

This alternative includes ICs restricting residential property until concentrations are within the risk management range for residential use. Alternative 3 is estimated to cost $1.6 million.

Remedial Alternative 4: Treatment to Remediation Goals with ISCO and Accelerated Bioremediation, MNA, and ICs – This alternative combines Alternatives 4A and 4B that were described in the FS report. Additional plume delineation would be performed in the remedial design. ISCO would be used to reduce high concentrations of COCs, followed by accelerated bioremediation of the groundwater contamination plume until the remediation goals are achieved. MNA may also be employed on the fringes of the plume where groundwater concentrations are approaching the remediation goals. The remedial design will define the actual performance goals for ISCO, accelerated bioremediation, and MNA. This alternative includes ICs restricting residential property until concentrations are within the risk management range for residential use. Alternative 4 is estimated to cost $3.6 million. ***Alternative 4 is the Navy's preferred alternative***.

Based on the comparative analysis, the Navy prefers Alternative 4, which includes active treatment using ISCO and accelerated bioremediation, monitoring, and implementation of ICs that would limit direct and indirect exposures to groundwater. Key points that support the Navy's preference for Alternative 4 are listed below.

- Protects human health and the environment and fully complies with ARARs.
- Provides excellent long-term protection by significantly reducing concentrations of COCs and their associated risk in a shorter timeframe than Alternatives 2 or 3.
- Permanently removes and prevents further migration of chemicals.

Table 5: Comparative Analysis of Groundwater Alternatives at Site 6

Alternatives	Protective Overall?	Compliance with ARARs?	Long-Term Effectiveness/ Permanence	Reduction of Toxicity, Mobility, or Volume through Treatment	Short-Term Effectiveness	Implementability	Timeframe (yrs.)	Cost ($M)
1. No Action	No	None	None	None	None	None	37	0
2. MNA/IC s	Yes	Yes	◖	○	●	●	37	1.1
3. Active Treatment to Commercial / Industrial Concentrations, MNA, and ICs	Yes	Yes	◖	●	◖	●	11	1.6
4. Active Treatment to Residential Concentrations, Monitoring and ICs	Yes	Yes	●	●	◖	●	6	3.6

Notes: ○ = Low, ◖ = Moderate; ● = High. Text in purple indicates preferred alternative.

SITE 7 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY SUMMARY

Site 7, known as the Navy Exchange Service Station, occupies about 5.6 acres (see Figure 4). Site 7 consists of buildings and structures that cover about 30 percent of the site, while the remainder of the site is open space covered with asphalt, concrete, and some bare ground. Site 7 is the location of the following SWMUs: NAS GAP 30, underground storage tank (UST) (R)-16, UST(R)-15/NAS-GAP-16, and OWS-459.

Site 7 was used most recently as an automotive repair and servicing facility; before that, it was the site of an incinerator (former Building 68-3), which was surrounded by grassy open space.

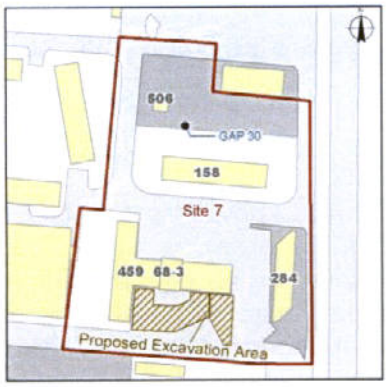


Figure 4. Site 7 Detail

Petroleum contamination in soil and groundwater from automotive-related activities and former USTs at Site 7 is currently being remediated as CAA 7 as part of the Navy's TPH program, with oversight from the Water Board.

During the investigations of Site 7, a blue, crystalline metal debris layer was identified in shallow soils in the parking area near the footprint of the former incinerator. Elevated concentrations of arsenic, cadmium, and lead were observed within the debris area. Cadmium and lead concentrations may be associated with activities around the incinerator. Arsenic, cadmium, and lead in the debris layer were identified as COCs for further evaluation in an FS.

Elevated concentrations of PAHs also were detected in soil at Site 7. PAHs are not COCs at Site 7 and are below the site average threshold level of 0.62 mg/kg B(a)P-eq concentration. The main source of PAHs outside the debris area was from a subsurface soil layer known as the "Marsh Crust," and from dredged materials from San Francisco Bay that were used to construct Alameda Point. Because these PAHs posed low incremental risk, the RI recommended no further action for PAHs. The RI report recommended further evaluation of soil in the debris layer and near OWS-459.

Groundwater at Site 7 contains elevated concentrations of arsenic and PAHs that were likely mobilized from fill material by the presence of petroleum-related products, which have altered the subsurface chemical conditions at the site. It is anticipated that remediation activities being conducted under the Navy's TPH program will reduce arsenic and PAH concentrations in groundwater at Site 7. As a result, the RI report recommended no further action for groundwater under CERCLA.

Table 6 summarizes the total potential cancer and noncancer risks at Site 7. The BHHRA indicated total noncancer HIs were below 1 for a commercial/industrial scenario and above 1 for construction worker and residential scenarios. Total cancer risks are within the risk management range for the commercial/industrial and construction worker scenarios and above the risk management range for the residential scenario. The expected long-term use of Site 7 is residential.

Most of the risks under the residential use scenario at Site 7 come from background metals, PAHs, debris area soil, and groundwater. Based on the incremental risk to debris area soils, further action is recommended. Risks from groundwater are being addressed under the Navy's TPH program. Additional sampling is necessary at OWS-459, to determine the extent of potential contamination present.

Table 6:
Site 7 Cancer and Noncancer Risks

Use	Media	Cancer Risk[1]	Noncancer HI[1]
Commercial/ Industrial	Soil	2×10^{-5}	0.4
	Groundwater	2×10^{-11}	< 1
Construction	Soil	4×10^{-6}	2
Residential	Soil	3×10^{-4}	10
	Groundwater	2×10^{-3}	21

[1] Based on EPA-derived toxicity values

The RAO for the debris area at Site 7 is to minimize exposure of residents (from ingestion and dermal contact) to soil with elevated concentrations of arsenic, cadmium, and lead. Table 7 presents the remediation goals for soil at Site 7. The remediation goals for arsenic and cadmium are based on background concentrations, and the remediation goal for lead is based on residential PRGs. An additional RAO for Site 7 is to minimize the potential risk of exposure (through ingestion or dermal contact) to COCs in the soil surrounding OWS-459. RAOs for the COCs identified during sampling will be based on residential PRGs from EPA.

Table 7: Site 7 Soil Remediation Goals

Chemical of Concern	Remediation Goals (mg/kg)
Arsenic	9.1
Cadmium	1.7
Lead	230

The remedial alternatives for soil at Site 7 are presented below. Table 8 (see page 11) presents the comparative analysis of each alternative against the evaluation criteria required by CERCLA.

Remedial Alternative 1: No Action – Alternative 1 does not involve actions or costs; however, it is required by CERCLA as a baseline for comparison with the other alternatives.

Remedial Alternative 2: Sampling and Excavation with Off-Site Disposal of Soil – This alternative involves collection and analysis of soil and groundwater samples to evaluate the extent of potential soil contamination, followed by excavation and off-site disposal of contaminated soil. This alternative would effectively reduce potential site risks to human health that may result from soil exposures under unrestricted land use. Additional actions necessary to close the RCRA SWMUs will be identified and addressed in the remedial design. This alternative is estimated to cost $1.4 million. ***This is the Navy's preferred alternative.***

Based on the comparative analysis, the Navy prefers Alternative 2. Key points that support the Navy's preference for Alternative 2 are listed below.

- Protects human health and the environment and fully complies with ARARs.
- Provides excellent long-term protection by significantly removing COCs and their associated risk at a reasonable cost within a reasonable time frame.
- Prevents further migration of chemicals.

SITE 8 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY SUMMARY

Site 8, known as Building 114 (the pesticide storage area), is about 4.3 acres. Site 8 is located in the central portion of Alameda Point (see Figure 5) and is covered (80 percent) by asphalt, concrete, buildings, roads, and parking lots. Site 8 is the location of the following SWMUs: NAS GAP 03, OWS-114, and WD-114. Site 8 also contains Building 191, Building 391, storm sewer lines, open space, and subsurface sewage pumping station 10. Building 191 was used as a storage building for the Public Works Department, and Building 391 was used to store paints, degreasers, petroleum products, and hazardous waste. Site 8 is also identified as CAA-8 because of petroleum contamination and its close proximity to a fuel line located outside the boundary of the site.

Figure 5 – Site 8 Detail

Table 8: Comparative Analysis of Soil Alternatives at Site 7								
Alternatives	Protective Overall?	Compliance with ARARs?	Long-Term Effectiveness/ Permanence	Reduction of Toxicity, Mobility, or Volume through Treatment	Short-Term Effectiveness	Implementability	Timeframe (yrs.)	Cost ($M)
1. No Action	No	None	None	None	None	None	100	0
2. Excavation with Off-Site Disposal	Yes	Yes	●	None	○	●	1	1.4

Notes: ○ = Low, ◖ = Moderate; ● = High. Text in purple indicates preferred alternative.

During investigations at Site 8, elevated concentrations of lead, PAHs, dieldrin, and PCBs (Aroclor-1254 and Aroclor-1260) were detected in soil. The most likely sources of lead are from paint or spent oil used for weed control. The highest concentrations of lead were observed in the northeast corner of the site.

PAHs are not COCs at Site 8 and are below the site average threshold level of 0.62 mg/kg B(a)P-eq concentration. PAHs are associated with dredged materials that were used to construct Alameda Point and because they posed low incremental risk, the RI recommended no further action. Dieldrin was detected in only one surface soil sample collected in the northeast portion of Site 8. The highest lead and PCB concentrations were observed in the northeastern corner of Site 8, and the most likely source of PCBs is from the use of oil containing PCBs to control weeds and dust. Arsenic concentrations at Site 8 are background or naturally occurring in soil and are not related to activities conducted at the site. Lead, Aroclor-1254, Aroclor-1260, total PCBs, and dieldrin in soil were identified as COCs for further evaluation in an FS.

Elevated concentrations of benzene and TCE were detected in groundwater at Site 8. The highest concentration of benzene was detected in 1995, in a sample from a monitoring well adjacent to OWS-114. Analytical results for samples collected in 2002 and 2003 from this monitoring well indicated that the benzene concentrations have decreased significantly. In 1995, TCE was detected in samples from monitoring wells adjacent to OWS-114 and WD-114 and a portion of sanitary sewer line connected to Building 114. However, TCE has not been detected in groundwater since 1995.

Petroleum-related products were detected in soil and groundwater at various locations of Site 8, and the fuel line located outside the boundary of Site 8 is the likely source of these products. Petroleum contamination is being addressed as part of the TPH Program, with oversight from the Water Board.

Table 9 summarizes the total potential cancer and noncancer HIs at Site 8. Total noncancer HIs were below 1 for commercial/industrial, construction, and recreational uses and above 1 for residential use. The total cancer risk for recreational visitors, commercial/industrial workers, and construction workers are either within the risk management range or below it. Total cancer risk for residential use is above the risk management range, which is the expected long-term use of Site 8.

Concentrations of benzene and TCE in groundwater were related to historical data and have decreased since 1995, reducing the incremental cancer risk from exposures below the risk management range and the noncancer HI below 1. At this time the Navy believes no remedial action is necessary for groundwater at Site 8 to protect human health; however, the Navy will conduct further sampling to confirm this. The RI recommended further evaluation in an FS for soil near OWS-114.

Table 9: Site 8 Cancer and Noncancer Risks			
Use	Media	Cancer Risk[1]	Noncancer HI[1]
Commercial/ Industrial	Soil and Groundwater	7×10^{-6}	0.04
Construction	Soil	7×10^{-7}	0.1
Recreational	Soil	7×10^{-6}	0.1
Residential	Soil	6×10^{-5}	0.6
	Groundwater	2×10^{-4}	3

[1] Based on EPA-derived toxicity values

The RAO for soil at Site 8 is to minimize exposure of residents (from ingestion and dermal contact) to soil with elevated concentrations of lead, dieldrin, and PCBs. Table 10 presents the remediation goals for soil at Site 8. An additional RAO for Site 8 is to minimize the potential risk of exposure (through ingestion or dermal contact) to COCs in the soil surrounding OWS-114. Remediation goals for the COCs identified during sampling will be based on residential PRGs from EPA. Furthermore, the sampling effort and any subsequent remediation activities, at OWS-114 are expected to result in the closure of SWMUs OWS-114 and WD-114.

Table 10: Site 8 Soil Remediation Goals

Chemical of Concern	Remediation Goals (mg/kg)
Lead	230
Dieldrin	0.03
Aroclor-1254	0.22
Aroclor-1260	0.22
Total PCBs	1.0

The remedial alternatives for soil at Site 8 are presented below. Table 11 presents the comparative analysis of each alternative against the evaluation criteria required by CERCLA.

Remedial Alternative 1: No Action – Alternative 1 does not involve actions or costs; however, it is required by CERCLA as a baseline for comparison with the other alternatives.

Remedial Alternative 2: Soil Sampling and ICs – This alternative would involve collection and analysis of soil and groundwater samples to evaluate the nature and extent of potential contamination beneath and adjacent to OWS-114. If chemicals are present in soil at concentrations exceeding their remediation goals, ICs would be applied to prevent contact through inhalation and ingestion of contaminated soil. These ICs would prohibit excavation without regulatory approval and require installation of vapor barrier and removal systems in buildings. The ICs would be in place until concentrations are within the risk management range for residential use. This alternative is estimated to cost $240,000.

Remedial Alternative 3: Soil Sampling and Excavation with Off-Site Disposal of Soil – This alternative would involve collection and analysis of soil and groundwater samples to evaluate the extent of potential contamination beneath and adjacent to OWS-114 and an area near the northwest corner of the site. After sampling is performed, contaminated soil would be excavated and disposed of off site. This alternative would effectively reduce potential risks to human health from soil exposures under unrestricted land use, and result in the closure of two RCRA SWMUs (OWS-114 and WD-114). This alternative is estimated to cost $160,000. ***This is the Navy's preferred alternative.***

Based on the comparative analysis, the Navy prefers Alternative 3. Key points that support the Navy's preference for Alternative 3 are listed below.

- Protects human health and the environment and fully complies with ARARs.
- Provides the best long-term protection by removing COCs and their associated risk, with a cost comparable to Alternative 2.
- Prevents migration of chemicals.

Table 11: Comparative Analysis of Soil Alternatives at Site 8

Alternatives	Protective Overall?	Compliance with ARARs?	Long-Term Effectiveness/ Permanence	Reduction of Toxicity, Mobility, or Volume through Treatment	Short-Term Effectiveness	Implementability	Timeframe (yrs.)	Cost ($M)
1. No Action	No	None	None	None	None	None	100	0
2. Sampling and ICs	Yes	Yes	◖	None	●	●	100	0.24
3. Excavation with Off-Site Disposal	Yes	Yes	●	None	○	●	1	0.16

Notes: ○ = Low, ◖ = Moderate; ● = High. Text in purple indicates preferred alternative.

SITE 16 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY SUMMARY

Site 16, known as the shipping storage container area, is about 11.1 acres and is located 390 feet east of San Francisco Bay (see Figure 6). Site 16 is mostly covered by asphalt, concrete roads, parking lots, buildings, and some unpaved open areas. Site 16 is the location of the following SWMUs: aboveground storage tank (AST)-338-A1, AST 338-D4, AST 608, UST(R)-18/NAS GAP 17, UST 608-1/GAP-17, OWS 608(A), OWS 608(B), and WD-608. Before 1948, Site 16 was used for aircraft parking and chemical storage. In 1948, eight large shipping containers were placed in the eastern portion of the site and used to store avionic parts and test equipment, chemicals, and aircraft fabrication equipment. In 1980, an auto-repair facility (Building 608) was constructed in the southern portion of the site. The northwestern portion of the site was used as a scrap yard. Site 16 also includes storage sheds, former and present ASTs, and associated fuel lines. Due to possible petroleum contamination, Site 16 is also designated as CAA-9B.

Analytical results of previous investigations at Site 16 indicated that elevated concentrations of metals and PCBs were present in soil. In 1997, the Navy performed a removal action to excavate and dispose of contaminated soil.

Analytical results also indicated metals, pesticides, and VOCs are present in Site 16 groundwater at elevated concentrations. Lead and pesticides (alpha-chlordane and heptachlor epoxide) were detected in groundwater near former UST-608-1. However, pesticides were detected intermittently at Site 16; therefore, the Navy believes no continuing source of pesticides is present at Site 16. VOCs were likely released in two separate locations; however, the plumes of contaminants in groundwater extend across much of Site 16. Petroleum-related products were detected in soil and groundwater and are being remediated as part of the Navy's TPH Program, with oversight from the Water Board. Based on the results of the RI, further evaluation in an FS was recommended for soil near OWS-608A and OWS-608B.

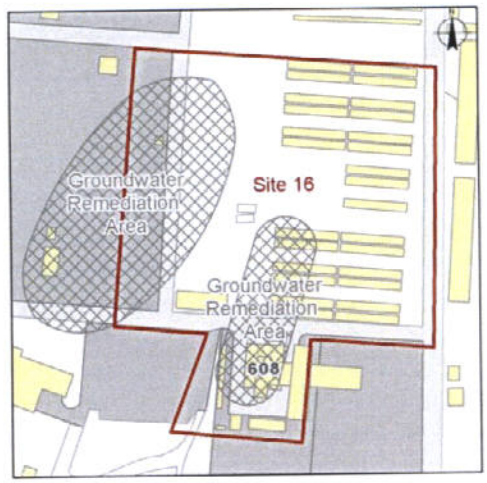


Figure 6. Site 16 Detail

Soil Removal Action	Groundwater Removal Action
In 1997, a removal action was performed to excavate and dispose of soil contaminated with lead and PCBs from Site 16. A total of 3,000 cubic yards of soil was removed from three separate areas. Confirmation samples indicated that the concentrations in the remaining soil were below the residential-based action levels of 1 mg/kg for PCBs and 300 mg/kg for lead, and that the removal action was successful in meeting its objectives.	In 2004, a full-scale removal action consisting of ISCO injections was performed at two locations on Site 16. Results of these limited actions indicated that contamination could be reduced to concentrations at or below the residential-based MCLs. Additional investigations to further delineate the plume and potential sources were recommended.

Table 12 summarizes the total potential cancer and noncancer risks at Site 16. The total cancer risks for soil and groundwater are either within or below the risk management range for the commercial/industrial, construction worker, and recreational scenarios and above the risk management range for the residential scenario. The noncancer HIs are below 1 for the commercial/industrial, construction worker, and recreational scenarios and above 1 for the residential scenario. The expected long-term use of Site 16 is commercial/industrial.

Table 12:
Site 16 Cancer and Noncancer Risks

Use	Media	Cancer Risk[1]	Noncancer HI[1]
Commercial/ Industrial	Soil	8×10^{-6}	0.1
	Groundwater	1×10^{-5}	0.04
Construction	Soil	9×10^{-7}	0.2
Recreational	Soil	7×10^{-6}	0.1
Residential	Soil	7×10^{-5}	1
	Groundwater	7×10^{-4}	14

[1] Based on EPA-derived toxicity values

The potential cancer risks to a resident or commercial/industrial worker from soil are within the risk management range and the noncancer HIs are 1 or below. Based on the low levels of incremental contamination in soil, no remedial action for soil is necessary at Site 16 to protect human health; however, additional information is required at the locations of the OWSs. Additional sampling and possible remediation will be performed at the OWSs. The agencies have requested additional sampling to further characterize PCBs in soil. Risk from the pesticides in groundwater was evaluated using historical data; however, pesticides were not detected in more recent samples. The VOCs dichlorobenzene, PCE, TCE, and vinyl chloride were identified as COCs in groundwater. These VOCs were identified as COCs at Site 16 and were recommended for further evaluation in the FS. RAOs and remedial alternatives for soil and groundwater at Site 16 are presented separately below.

Site 16 Soil

The RAO for soil surrounding the OWSs at Site 16 is to minimize the potential risk of exposure (through ingestion or dermal contact) of a commercial worker to COCs in the soil. Remediation goals for the COCs identified during sampling at the OWSs will be based on residential PRGs from EPA.

The remedial alternatives developed for soil at Site 16 are presented below. Table 13 (see page 15) presents the comparative analysis of each alternative against the evaluation criteria required by CERCLA.

Remedial Alternative 1: No Action – Alternative 1 does not involve any actions or costs; however, it is required by CERCLA as a baseline for comparison with the other alternatives.

Remedial Alternative 2: Soil Sampling and ICs – This alternative involves collection and analysis of soil and groundwater samples to evaluate the nature and extent of potential contamination adjacent to OWS-608A and OWS-608B and if PCB contamination is still present at the former soil excavation area. If chemicals are present in soil at concentrations exceeding their remediation goals, ICs would be applied to prevent contact through inhalation and ingestion of contaminated soil. These ICs would prohibit excavation without regulatory approval. The ICs would be in place until the RAO is achieved. Alternative 2 is estimated to cost $270,000.

Remedial Alternative 3: Soil Sampling and Excavation with Off-Site Disposal of Soil – This alternative would involve collection and analysis of soil and groundwater samples to evaluate the nature and extent of potential contamination adjacent to the OWSs and PCB excavation area, followed by excavation and off-site disposal of contaminated soil. Additional actions necessary to close the RCRA SWMUs would be identified and addressed in the remedial design. Alternative 3 is estimated to cost $1.3 million. ***This is the Navy's preferred alternative.***

Based on the comparative analysis, the Navy prefers Alternative 3. Key points that support the Navy's preference for Alternative 3 are listed below.

- Protects human health and the environment and fully complies with ARARs.
- Provides excellent long-term protection by significantly removing COCs and their associated risk at a cost comparable to Alternative 2, which is estimated to take much longer.
- Prevents further migration of chemicals.

Table 13: Comparative Analysis of Soil Alternatives at Site 16

Alternatives	Protective Overall?	Compliance with ARARs?	Long-Term Effectiveness/ Permanence	Reduction of Toxicity, Mobility, or Volume through Treatment	Short-Term Effectiveness	Implementability	Timeframe (yrs.)	Cost ($M)
1. No Action	No	None	None	None	None	None	100	0
2. Sampling and ICs	Yes	Yes	◖	None	●	●	100	0.27
3. Excavation with Off-Site Disposal	Yes	Yes	●	None	○	●	1	1.3

Notes: ○ = Low, ◖ = Moderate; ● = High. Text in purple indicates preferred alternative.

Site 16 Groundwater

The anticipated future use of Site 16 is commercial/industrial. The RAOs for groundwater underlying Site 16 are (1) to protect the beneficial use of the aquifer and (2) to minimize the potential risk of exposure through inhalation by a commercial worker to COCs in the groundwater. The preliminary remediation goals for Site 16 groundwater will be the MCLs (see Table 14 on page 16). The remediation goals in Table 14 will also minimize the potential risk to a commercial worker posed by breathing vapors in indoor air that may migrate from groundwater contaminated with COCs. Remediation goals will be finalized in the ROD.

The remedial alternatives developed for groundwater at Site 16 are presented below. Table 15 (see page 16) presents the comparative analysis of each alternative against the evaluation criteria required by CERCLA.

Remedial Alternative 1: No Action –Alternative 1 does not involve actions or costs; however, it is required by CERCLA as a baseline for comparison to the other alternatives.

Remedial Alternative 2: MNA and ICs – Alternative 2 would implement additional plume delineation and an estimated 64 years of MNA for groundwater. Additionally, Alternative 2 would require ICs restricting residential property use until concentrations are within the risk management range for residential use. This alternative is estimated to cost about $1.8 million.

Remedial Alternative 3: Active Treatment to Reduce Risk to Commercial/Industrial Workers with ISCO and Accelerated Bioremediation, MNA, and ICs – This alternative combines Alternatives 3A and 3B that were described in the FS report. Additional plume delineation would be performed in the remedial design. ISCO would be used to reduce high concentrations of COCs, followed by accelerated bioremediation of the groundwater contamination plume to the point that groundwater concentrations are protective for commercial/industrial property reuse. MNA would then be implemented until the remediation goals are achieved. The remedial design will define the actual performance goals for ISCO, accelerated bioremediation, and MNA.

This alternative includes ICs restricting land use until concentrations are within the risk management range for residential use. Alternative 3 is estimated to cost $2.5 million.

Remedial Alternative 4: Treatment to Remediation Goals with ISCO and Accelerated Bioremediation, MNA, and ICs – This alternative combines Alternatives 4A and 4B that were described in the FS report. Additional plume delineation would be performed in the remedial design. ISCO would be used to reduce high concentrations of COCs, followed by accelerated bioremediation of the groundwater contamination plume until the remediation goals are achieved. MNA may also be employed on the fringes of the plume where the groundwater concentrations are approaching the remediation goals. The remedial design will define the actual performance goals for ISCO, accelerated bioremediation, and MNA. This alternative includes ICs restricting residential property use until concentrations are within the risk management range for residential use. Alternative 4 is estimated to cost $12.6 million. ***Alternative 4 is the Navy's preferred alternative.***

Table 14: Site 16 Groundwater Remediation Goals	
Chemical of Concern	**Remediation Goal (µg/L)**
1,3-Dichlorobenzene	**5.5**
1,4-Dichlorobenzene	**5**
1,2-DCE	**6**
PCE	**5**
TCE	**5**
VC	**0.5**

Notes: Current maximum concentrations in µg/L for 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1, 2-DEC, PCE, TCE, and vinyl chloride are 1,000; 3,100; 191; 59; 34; and 21, respectively.

Table 15: Comparative Analysis of Groundwater Alternatives at Site 16

Alternatives	Protective Overall?	Compliance with ARARs?	Long-Term Effectiveness/ Permanence	Reduction of Toxicity, Mobility, or Volume through Treatment	Short-Term Effectiveness	Implementability	Timeframe (yrs.)	Cost ($M)
1. No Action	No	None	None	None	None	None	64	0
2. MNAs/ICs	Yes	Yes	◖	○	●	●	64	1.8
3. Active Treatment to Protect Commercial/Industrial Workers with ISCO and Accelerated Bioremediation, with Monitoring and ICs	Yes	Yes	◖	●	◖	●	14	2.5
4. Active Treatment to reach MCLs with ISCO and accelerated bioremediation, with monitoring and ICs	Yes	Yes	●	●	◖	●	7	12.6

Notes: ○ = Low, ◖ = Moderate; ● = High. Text in purple indicates preferred alternative.

Based on the comparative analysis, the Navy prefers Alternative 4 to address groundwater at Site 16. Key points that support the Navy's preference for Alternative 4 are listed below.

- Protects human health and the environment and fully complies with ARARs.
- Provides excellent long-term protection by significantly reducing concentrations of COCs, and their associated risk in a shorter timeframe than Alternatives 2 or 3.
- Permanently removes and prevents further migration of chemicals.

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

CERCLA requires that remedial actions meet federal or state (if more stringent) environmental standards, requirements, criteria, or limitations that are determined to be ARARs. Significant potential ARARs that will be met by the preferred alternatives for cleanup of soil and groundwater are provided in Table 16. Please see the RI and FS reports for more specific information on potential ARARs.

Table 16. Applicable or Relevant and Appropriate Requirements

Potential Federal ARARs

Substantive requirements of the following provisions of *California Code of Regulations* (Cal. Code Regs.), Title (tit.) 22, were determined to be federal action- or chemical-specific ARARs:

- Determination of RCRA characteristic hazardous waste [Sections (§§) 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100]
- On-site waste generation [§§ 66262.11 and 66264.13(a), (b)]
- Hazardous waste accumulation [§66262.34]
- Hazardous waste pre-transport requirements [§§ 66262.30-66262.31, and 66262.32]
- Hazardous waste disposal restrictions [§§ 66268.1 and 66268.7]
- Relevant and appropriate requirements of Cal. Code Regs. tit. 22, § 66264.94, except 66264.94(a)(2) and 66264.94(b). (Groundwater protection standards for owners and operators of RCRA treatment, storage, and disposal facilities have been determined to be potential ARARs.)
- Groundwater monitoring (§ 66264.93)

Substantive requirements of the following federal regulations:

- Federal MCLs, National Primary Drinking Water Standards [40 *Code of Federal Regulations* (CFR) §§ 141.11-141.13, excluding §§ 141.11(d)(3), 141.15, 141.16, 141.61(a) and (c), and 141.62(b)] (Site 16 only)
- Federal regulations relating to the storage and disposal of PCB remediation waste [40 CFR § 761.61(a)(4)(i)(A) and (B) and (c)(2)]

Potential State of California ARARS

The substantive requirements of the following were determined to be state action- or chemical-specific ARARs:

- Definitions of designated waste, nonhazardous waste, and inert waste [Cal. Code. Regs., tit. 22 §§ 20210 and 20220]
- State MCLs (§ 64444; Sites 6 and 16)
- The San Francisco Bay Basin Water Quality Control Plan, for groundwater beneficial use, promulgated pursuant to the Porter-Cologne Water Quality Control Act (*California Water Code* §§ 13240, 13241, 13242, 13243, 13360, and 13263(a)), Chapters 2.
- State Water Resources Control Board (SWRCB) Resolution No. 88-63, established criteria to identify potential drinking water sources

Substantive requirements of the following provisions of the *California Civil Code* (CCC) and the *Health and Safety Code* (HSC) for implementation of institutional controls for property that will be transferred to a nonfederal entity:

- CCC § 1471
- CCR §§ 22 and 67391.1(e)2
- HSC §§ 25202.5; 25222.1; 25233(c), and 25234

The Water Board identified the substantive provisions of the "Statement of Policy with Respect to Maintaining High Quality of Waters in California" (SWRCB Resolution 68-16) and "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under California Water Code Section 13304" (SWRCB Resolution 92-49) as State ARARs for Site 6 and 16 groundwater remedial action. The SWRCB interprets Resolution 68-16 as prohibiting further migration of the VOC contaminant plume at Site 6 and 16; however, the EPA and the Navy do not agree that SWRCB Resolution 68-16 applies to further migration. Further, it is the Navy's position that the SWRCB Resolutions 68-16 and 92-49 do not constitute chemical-specific ARARs (numerical values or methodologies that result in the establishment of a cleanup level at the site) since they are state requirements and are not more stringent than federal provisions of Cal. Code Regs. tit. 22 § 66424.94, determined to be ARARs for Sites 6 and 16 groundwater remedial action. The Water Board and DTSC do not agree with Navy's determination that SWRCB Resolutions 68-16 and 92-49 are not ARARs for remedial action at Sites 6 and 16; however, the Water Board and DTSC agree that the proposed remedial action would comply with SWRCB Resolutions 68-16 and 92-49.

PUBLIC COMMENT PROCESS FOR THIS PROPOSED PLAN

The Navy provides information on the cleanup of OU-1 to the public through public meetings, the administrative record file for the site, and media announcements published in the local newspapers.

The Navy, EPA, DTSC, and the Water Board encourage the public to gain a more thorough understanding of OU-1 and CERCLA activities conducted at Alameda Point by visiting the information repository, reviewing the administrative record file, and attending public meetings. Restoration Advisory Board meetings are held every month and are open to the public.

The collection of reports and historical documents used by the BCT in the selection of cleanup or remedial alternatives is the Administrative Record. The Administrative Record includes such documents as the Final RI and Final FS Reports, as well as other supporting documents and data for OU-1. Administrative Record files are located at the following address.

Administrative Record File

Contact: Ms. Diane Silva
Administrative Records Coordinator
Naval Facilities Engineering Command, Southwest
937 N. Harbor Drive, Building 1, 3rd Floor
San Diego, California 92132-5190
Telephone: (619) 532-3676

Community members interested in the full technical details beyond the scope of this proposed plan can also find key supporting documents that pertain to OU-1 and a complete index of all Navy Alameda Point documents at the following information repositories located in Alameda:

Information Repository Locations

Alameda Point Information Repository
950 West Mall Square
Building 1
Rooms 240 and 241
Alameda CA, 94501
(510) 749-5800

Alameda Public Library
Information Repository
2200A Central Avenue
Alameda, CA 94501
(510) 747-7777

There are two ways to provide comments during the public comment period (April 27, 2006 to May 26, 2006):

- Offer oral comments during the public meeting
- Provide written comments by mail, fax, or e-mail no later than May 26, 2006

The public meeting will be held on May 16, 2006, at Building 1, Room 201, at Alameda Point from 6:30 pm to 8:00 pm. Navy representatives will provide visual displays and information on the environmental investigations and the remedial alternatives for OU-1. The Navy also will give a presentation on the proposed plan. You will have an opportunity to ask questions and formally comment on the remedial alternatives summarized in this proposed plan.

Please send all written comments to:

Mr. Thomas Macchiarella
BRAC Environmental Coordinator
BRAC Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108
Telephone: (619) 532-0907; Fax: (619) 532-0983

If you have any questions or concerns about environmental activities at Alameda Point, feel free to contact any of the following project representatives:

EPA
Ms. Anna-Marie Cook, Project Manager
U.S. EPA, Region 9
75 Hawthorne Street
San Francisco, CA 94105
(415) 972-3029

WATER BOARD
Ms. Judy Huang, Project Manager
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
(510) 622-2363

DTSC
Ms. Dot Lofstrom, Project Manager
Dept. of Toxic Substances Control
8800 Cal Center Drive
Sacramento, CA 95826
(916) 255-6449

NAVY
Mr. Thomas Macchiarella
BRAC Environmental Coordinator
BRAC Program Mgmt. Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310
(619) 532-0907

INTERNET CONNECTION

For more information on the closure of Alameda Point, the IR Program, and OU-1, check out the website at:

http://www.navybracpmo.org

Glossary of Technical Terms, Abbreviations, & Acronyms Used in This Proposed Plan

µg/L: Microgram per liter

Accelerated Bioremediation: — The use of specialized compounds during treatment to enhance micro-organisms ability to break down chemicals in groundwater.

ARARs: Applicable or Relevant and Appropriate Requirements — Federal, state and local regulations and standards that are considered to be legally applicable or relevant and appropriate to remedial actions at a CERCLA site.

AST: Aboveground storage tank

Background Concentration: A concentration of a chemical that is naturally occurring.

BCT: BRAC Cleanup Team

BHHRA: Baseline human health risk assessment

BRAC: Base Realignment and Closure

CAA: Corrective action area

Cal. Code Regs.: *California Code of Regulations*

CCC: *California Civil Code*

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act — A law that establishes a program to identify hazardous waste sites and procedures for cleaning up sites to protect human health and the environment and evaluate damages to natural resources.

CFR: *Code of Federal Regulations*

COC: Chemical of Concern — A chemical present at a site in soil, sediment, groundwater, or surface water at concentrations that may potentially pose a threat to human health or the environment.

DCE: 1,2-Dichloroethene

DTSC: Department of Toxic Substances Control

EPA: U.S. Environmental Protection Agency

FS: Feasibility Study — A study to identify, screen, compare, and choose remedial alternatives for a site.

GAP: Generator accumulation point

Groundwater: Water in the subsurface that fills pores in soil or openings in rocks.

HI: Hazard Index — A calculated value used to represent a potential noncancer health effect. An HI value of 1 or less is considered protective of human health.

HSC: *Health and Safety Code*

IC: Institutional Controls — Nonengineered mechanisms established to limit human exposure to contaminated waste, soil, or groundwater. These mechanisms may include deed restrictions, covenants, easements, laws, and regulations.

IR Program: Installation Restoration Program— Designated to identify, investigate, assess, characterize, and clean up or control releases of hazardous substances from past Navy activities.

ISCO: *In-Situ* Chemical Oxidation — A treatment that accelerates the breakdown of contaminants by injecting oxidizing chemicals into groundwater.

MCL: Maximum contaminant level

mg/kg: Milligram per kilogram

MNA: Monitored natural attenuation

National Oil and Hazardous Substances Contingency Plan (NCP) — The NCP is the basis for government responses to oil and hazardous substance spills, releases, and sites where these materials have been released.

OU: Operable Unit — A grouping of similar sites or areas that are addressed together in cleanups of large facilities or complex sites under Superfund.

OWS: Oil-water separator

PAH: Polynuclear aromatic hydrocarbon

PCB: Polychlorinated biphenyl

PCE: Tetrachloroethene

Plume: A zone of contaminated groundwater.

Preferred Alternative: The remedial alternative selected by the Navy, in conjunction with the regulatory agencies, that best satisfies the RAO and remediation goal based on the evaluation of alternatives presented in the FS report.

PRG: Preliminary remediation goal

Proposed Plan: A document that summarizes the remedial alternatives presented in the FS report, presents the recommended cleanup action, explains the recommendation, and solicits comments from the community.

RAO: Remedial Action Objective — A set of statements that each contains a remediation goal for the protection of one or more receptors from one or more chemicals in a specific medium (such as soil, groundwater, or air) at a site.

RCRA: Resource Conservation and Recovery Act — A federal law that gave EPA the authority to control hazardous waste from the "cradle-to-grave," including generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA focuses only on active and future facilities and does not address abandoned or historical sites (see CERCLA).

Remedial Action: A general term used to describe technologies or actions implemented to contain, collect, or treat hazardous wastes to protect human health and the environment.

Remediation Goal: Chemical concentration limits that provide a quantitative means of identifying areas for potential remedial action, screening the types of appropriate technologies, and assessing a remedial action's potential to meet the RAO.

RI: Remedial Investigation — One of the two major studies that must be completed before a decision can be made about how to clean up a site (the FS is the second study). The RI is designed to assess the nature and extent of contamination at a site and to estimate the risks presented by the contamination.

ROD: Record of Decision — A decision document that identifies the remedial alternative chosen for implementation at a CERCLA site. The ROD is based on information from the RI and FS, and on public comments and community concerns.

SLERA: Screening-level ecological risk assessment

SVOC: Semivolatile Organic Compound — An organic (carbon-containing) compound that does not readily evaporate at room temperature.

SWMU: Solid waste management unit

SWRCB: State Water Resources Control Board

TCE: Trichloroethene

TPH: Total Petroleum Hydrocarbons — Measure of the total concentrations of petroleum hydrocarbon constituents present in a given amount of media.

UST: Underground storage tank

VC: Vinyl chloride

VOC: Volatile Organic Compound — An organic (carbon-containing) compound that evaporates readily at room temperature. VOCs are found in industrial solvents commonly used in dry cleaning, metal plating, and machinery degreasing operations.

Water Board: San Francisco Bay Regional Water Quality Control Board

Attn: Ms. Tommie Jean Damrel

Community Involvement Coordinator
Tetra Tech EM Inc.
135 Main Street, Suite 1800
San Francisco, CA 94105

BRAC PMO

Proposed Plan for Former NAS Alameda Operable Unit 1 IR Sites 6, 7, 8, and 16

Proposed Plan Comment Form
Operable Unit 1, Sites 6, 7, 8 and 16 Alameda

The public comment period for the Proposed Plan for Operable Unit 1, Sites 6, 7, 8 and 16 at Alameda Point, Alameda, California is from April 27, 2006 to May 26, 2006. A public meeting to present the Proposed Plan will be held at the Alameda Point Main Office Building, 950 West Mall Square, Bldg. 1, Room 201, Alameda, California on May 16, 2006 from 6:30 pm to 8:00 pm. You may provide your comments verbally at the public meeting where your comments will be recorded by a stenographer. Alternatively, you may provide written comments in the space provided below or on your own stationery. After completing your comments and your contact information, please fold and mail this form to the address provided on the reverse. All written comments must be postmarked no later than May 26, 2006. You may also submit this form to a Navy representative at the public meeting. Comments are also being accepted by e-mail; please address e-mail messages to thomas.macchiarella@navy.mil. Comments are also being accepted by fax: (619) 532-0983.

Name: _____

Representing: _____

Phone Number: _____

Address: _____

Comments:

Thomas Macchiarella, BRAC Environmental Coordinator
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108

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Southwest Division
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San Diego, CA 92101-8517

DATE: 04/25/06
CTO: 0098
LOCATION:
Alameda Point, Alameda, California

FROM:

Steven Bradley, Contract Manager

DOCUMENT TITLE AND DATE:

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