



Proposed Plan for Site 14 Former Fire Fighter Training Area Former NAS Alameda

BRAC
PMO WEST

Alameda Point, California

March 2006

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) Site 14 at Alameda Point, the former Naval Air Station (NAS) Alameda in Alameda, California.

This proposed plan presents the Navy's preferred remedial (cleanup) alternatives for soil and groundwater at IR Site 14, known as the Former Fire Fighter Training Area. The proposed plan includes a specific remedial alternative for groundwater and no further action for soil. The Navy proposes to remediate volatile organic compounds (VOC)* in groundwater at Site 14 by:

- ▶ **Treating groundwater using in-situ chemical oxidation (ISCO)** in order to reduce the concentration of vinyl chloride. This remedial alternative will also reduce the concentration of 1,2-dichloroethene (1,2-DCE) and 1,1-dichloroethane (1,1-DCA) in groundwater and VOCs in the saturated zone of soil.
- ▶ **Implementing a groundwater monitoring program** to demonstrate that the remediation has met the objectives proposed in this plan.

— Notice — Public Comment Period

March 20, 2006 to
April 19, 2006

Public Meeting April 12, 2006

Alameda Point
Main Office Building
950 West Mall Square,
Room 201
6:30 p.m. to 8 p.m.

- ▶ **Temporarily restricting the land use** at Site 14 by restricting residential land use until remedial objectives have been met.

This proposed plan presents the preferred alternative for Site 14, and summarizes the results of the environmental investigations, risk assessments, and remedial alternative evaluations that were considered during the selection of the preferred alternatives.

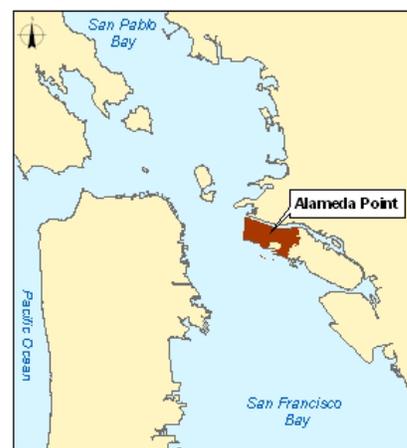


Figure 1. Vicinity Map

*A glossary of terms and definitions is provided on page 15.

THE CERCLA PROCESS

Numerous investigations have been underway at Alameda Point since the mid-1980s under the Navy's IR Program, a comprehensive environmental investigation and cleanup program that complies with the Comprehensive Environmental Response, Compensation, and Liability Act (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 (NCP). The flowchart to the right illustrates the current status of Site 14 in the CERCLA process.

This proposed plan summarizes information detailed in the remedial investigation (RI) and feasibility study (FS) reports and other documents contained in the administrative record file for this site. The Navy encourages the public to review these documents to gain an understanding of the environmental investigations, risk assessments, and remedial alternative evaluations that have been conducted at Site 14. The documents are available for public review at the locations listed on page 11. The Navy will consider the public comments on this proposed plan during the preparation of a record of decision (ROD) document.

CERCLA PROCESS



SITE HISTORY

Alameda Point is located on the western tip of Alameda Island, which is on the eastern side of San Francisco Bay (see Figure 1 on page 1). This proposed plan pertains specifically to Site 14, which is located in the northwestern portion of Alameda Point near the Oakland Inner Harbor (Figure 2). Site 14 is approximately 14.4 acres in size and was historically used for waste and equipment storage and fire fighter training. The site is partially paved with a generally flat topography. Site 14 was designated as part of Operable Unit (OU)-1, since it is relatively small with relatively low levels of contamination related to historical use.

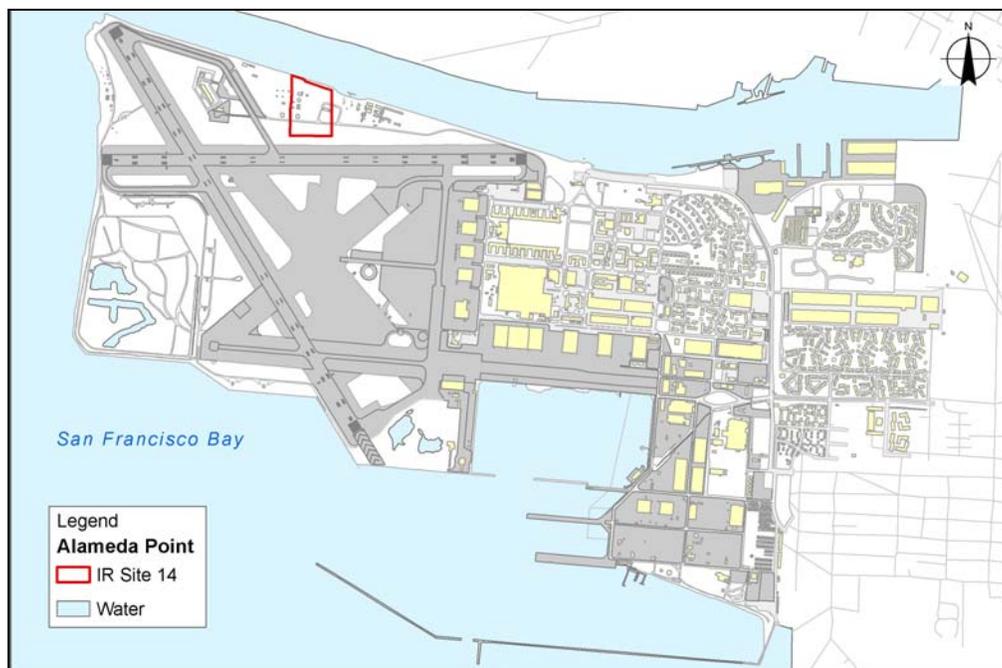


Figure 2. Site Location Map

The site includes five buildings, two closed aboveground storage tanks (ASTs 96A and 96B) that stored non-potable water, one former petroleum remedial action area (Corrective Action Area [CAA] 2), and several storm and sanitary sewer lines (Figure 3). In addition, Site 14 contains multiple solid waste management units (SWMUs), which include former generator accumulation points (GAPs) 9 and 11, washdown area (WD) 528, and the following petroleum-related SWMUs: area of concern (AOC) 357, AST 179, and AST 528. The Navy and the California Department of Toxic Substances Control (DTSC) agree that GAP 11 and WD 528 do not require further evaluation under RCRA. The Navy has recommended no further action for GAP 9. The Navy investigated and remediated CAA-2 under the basewide total petroleum hydrocarbon program. CAA-2 and five of the six petroleum SWMUs have a no further action closure pending before the San Francisco Bay Regional Water Quality Control Board (Water Board or the RWQCB). The Navy is working with the Water Board to secure closure on all of the petroleum sites at Site 14.

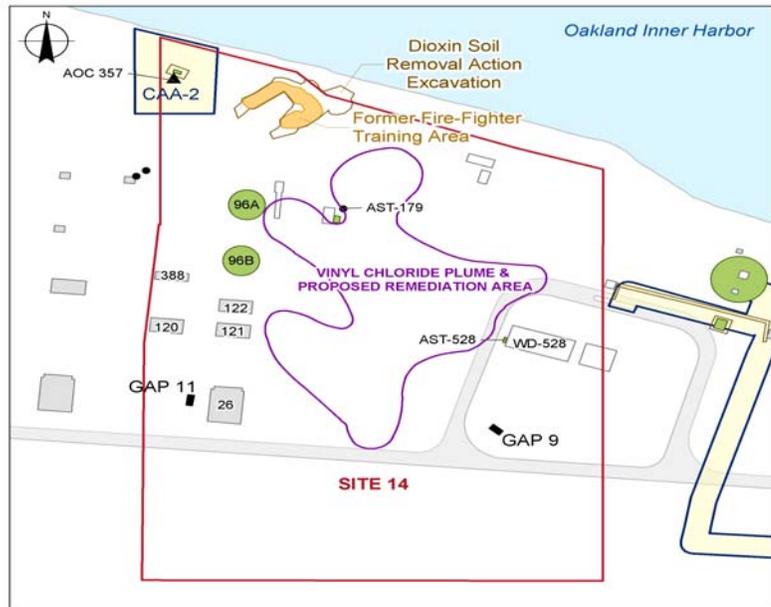


Figure 3. Site Detail.

The Navy investigated and remediated CAA-2 under the basewide total petroleum hydrocarbon program. CAA-2 and five of the six petroleum SWMUs have a no further action closure pending before the San Francisco Bay Regional Water Quality Control Board (Water Board or the RWQCB). The Navy is working with the Water Board to secure closure on all of the petroleum sites at Site 14.

REMEDIAL INVESTIGATION AND SOIL REMOVAL ACTION SUMMARY

Numerous investigations of soil and groundwater and an interim cleanup action have been conducted at Site 14 from 1991 to 2004. Because elevated concentrations of dioxins (reported as 2,3,7,8-tetrachlorodibenzo-p-dioxin [TCDD] equivalents) were identified in soil at the fire fighter training area, a removal action was conducted between December 2001 and March 2002.

In addition to dioxins, polynuclear aromatic hydrocarbons (PAHs) were identified in soil. PAH concentrations in soil, expressed as benzo(a)pyrene (BaP) equivalents, range from non-detect (below 0.011 milligrams per kilogram [mg/kg]) to 1.193 mg/kg, with an average concentration below 0.62 mg/kg. PAHs are associated with the dredged materials from the San Francisco Bay used to construct the northern part of Alameda Island prior to its occupancy by the Navy.

Several VOCs were detected in a shallow unconfined groundwater plume beneath Site 14. The presence of VOCs in groundwater was not linked to any specific activity at Site 14; although, contamination may be related to a historical spill. Information collected during the RI and the basewide groundwater monitoring program indicates that the concentrations of VOCs in groundwater are decreasing due to natural processes at Site 14.

REMOVAL ACTION

Approximately 1,400 cubic yards of soil were excavated from six areas and disposed of off-site, which included an earthen berm and underlying soil to a depth of 2 to 4 feet (see Figure 3). Confirmation samples collected after the excavation of soil showed that remaining concentrations of dioxins in the soil are less than the ecologically based screening level of 0.0135 micrograms per kilogram ($\mu\text{g}/\text{kg}$) for TCDD equivalents. Thus, the clean-up objectives agreed to by the Base Realignment and Closure (BRAC) Cleanup Team (BCT) were met. This ecological cleanup level is much lower than a human health based remedial goal; therefore, it is considerably more protective of human health.

RISK SUMMARY

“Risk” is the likelihood or probability that a hazardous chemical, when released to the environment, will cause adverse effects on exposed humans or other biological receptors. As part of the RI, a human health risk assessment and an ecological risk assessment were conducted to assess risk.

HUMAN HEALTH RISK ASSESSMENT

The Navy considered the different ways that humans might be exposed to the chemicals, the possible concentrations of chemicals that potentially could be encountered in those exposures, and potential frequency and duration of exposure. The expected long-term use of Site 14 is recreational. To support possible future land uses, four exposure scenarios were evaluated: recreational, residential, occupational, 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 over estimate risk, which means that the remedial goals will be more protective. Human health risk is classified as cancer (from exposure to carcinogens) or non-cancer (from exposure to non-carcinogens). A hazard index (HI) of 1 or less is set as protective of non-cancer health hazards.

Cancer risk is generally expressed as a probability. For example, a cancer risk probability of five in 100,000 (5×10^{-5}) indicates that out of 100,000 people, five cancer cases may occur as a result of exposure. To assist with the characterization of cancer risks, the federally established risk management range (10^{-4} to 10^{-6}) was used by risk managers to determine whether site risks are significant enough to warrant further cleanup. According to the U.S. Environmental Protection Agency (EPA), for sites where the cumulative site risk for future and current land use is less than 10^{-4} , action generally is not warranted; however, action may be warranted if a chemical-specific standard that defines acceptable risk is violated or if there are non-cancer effects or adverse environmental impacts that warrant action. When risk is within the risk management range, between 10^{-4} and 10^{-6} , site-specific factors are considered when making decisions about whether action is required.

A human health risk assessment for Site 14 was conducted as part of the RI. This risk assessment indicated that the noncancer HIs are below 1 for all scenarios, and cancer risk from soil and groundwater is within or below the risk management range for the occupational, construction worker, and recreational scenarios. However, the cancer risk from exposure to groundwater for the residential scenario is greater than the risk management range because of the assumption that future residents would be exposed to contaminants through domestic use of groundwater, which includes using groundwater as a source of drinking water. Risk to a resident from soil alone is within the risk management range and is from arsenic and PAHs. Arsenic concentrations in soil at Site 14 are similar to background concentrations, and thus are not related to activities conducted at Site 14. PAHs are associated with the dredged materials from the San Francisco Bay used to construct the northern part of Alameda Island, and the average site concentration of PAHs is below 0.62 mg/kg. Based on the low levels of incremental (site activity related) contamination in soil, no remedial action for soil is necessary at Site 14 to protect human health.

The Navy re-evaluated the potential for human exposures through domestic use of groundwater and concluded that there is an incomplete pathway for such exposures because groundwater in the first water-bearing zone (FWBZ) is unlikely to be used as a domestic source. This conclusion was based on the following: 1) the East Bay Municipal Utility District indicated that the FWBZ would not be used for drinking water; 2) the Water Board provided the Navy with a letter exempting the shallow groundwater aquifer at Site 14 from the beneficial use of drinking water, 3) although the FWBZ qualifies as a Class II aquifer under federal guidelines, the BRAC Cleanup Team (BCT) determined that groundwater at the site is unlikely to be used as a source of drinking water, and 4) Alameda County well construction standards require that all wells be sealed and screened below the first confining layer in a shallow aquifer system.

Based on the conclusion that the domestic use of groundwater represents an incomplete pathway, the Navy prepared a supplemental FS report for Site 14, which included a revised risk assessment for groundwater under the residential scenario. The results of the revised risk assessment indicated a potential risk to a hypothetical resident posed by breathing vapors in indoor air that may migrate from the presence of vinyl chloride in groundwater. Table 1 summarizes the final cancer and non-cancer risks at Site 14.

Table 1: Cancer and Non-Cancer Risks		
Use	Cancer Risk	Non-Cancer Hazard Index
Recreational	5×10^{-6}	0.07
Construction	6×10^{-7}	0.2
Occupational	6×10^{-6}	0.1
Residential	1×10^{-4}	0.7

ECOLOGICAL RISKS

An ecological risk assessment considers risks to ecological receptors, such as small mammals, birds, and marine life. The ecological risk assessment at Site 14 evaluated the risk to terrestrial receptors (small mammals and birds) from exposure to soil and the risk to marine life from exposure to groundwater through discharge to the Oakland Inner Harbor. The results of the ecological risk assessment indicated that there is little to no significant risk to ecological receptors, and that no further action is necessary to address ecological risks at Site 14. A significant factor was that Site 14 contains limited habitat to support receptors and that ecological receptors are unlikely to use the site in a significant way under the planned reuse.

FEASIBILITY STUDY

The supplemental FS report was finalized in August 2005. Data from the supplemental FS were used to develop a remedial action objective (RAO), screen potential remedial technologies, and select and evaluate three remedial alternatives for groundwater contamination at Site 14. The remedial alternatives were then evaluated using the nine criteria identified by the CERCLA process and as specified in the NCP. This information is provided in the supplemental FS report and a summary of the evaluation of the remedial alternatives is provided below in the remedial alternatives section.

RAOs provide the foundation upon which remediation alternatives are developed. An RAO is a statement that contains a remediation goal 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.

Based on the low levels of incremental contamination in soil, no remedial action for soil is necessary at Site 14 to protect human health or ecological receptors. Therefore, this proposed plan does not provide RAOs or remediation alternatives for soil.

Site 14 lies within the boundary of public trust land at Alameda Point, which may not be used for general purpose industrial, retail, commercial, office, or housing. In addition, the City of Alameda reuse plans designate the expected long-term use of Site 14 as a golf course. Under this planned recreational use, the human health risk assessment determined that risks are within the risk management range for current and reasonably anticipated scenarios. Although the public trust applies to this land, the Navy recognizes that institutional controls ([ICs] see Table 2 on page 6) may be required to ensure that the property is restricted from residential use until the potential risk to residential receptors has been addressed. The Navy also recognizes there is a long term cost in maintaining these institutional controls; therefore, the supplemental FS evaluated a remediation alternative that removes the restrictions for the unlikely residential scenario.

Given the expected long-term use of Site 14, the primary RAO for Site 14 is to protect future recreational receptors. However, in order to analyze an alternative that would allow unrestricted site use, and therefore remove the need for long term ICs, the Navy also evaluated treating vinyl chloride concentrations to a range protective of hypothetical residential receptors. Because groundwater at Site 14 is unlikely to be used as a source of drinking water, potential risk to a hypothetical resident is only posed by breathing vapors in indoor air that may migrate from groundwater contaminated with vinyl chloride. The following remedial goal was proposed in the supplemental FS:

- Vinyl chloride: 15 µg/L

This proposed remedial goal corresponds to a potential cancer risk of 10^{-6} for the indoor air pathway for a hypothetical resident, which is at the conservative end of the risk management range of 10^{-4} to 10^{-6} . In developing alternatives that target this proposed remedial goal, an alternative can be selected that is anticipated to achieve the primary RAO. Remedial goals are finalized in the ROD. Figure 3 (page 3) shows the extent of the groundwater plume which exceeds the remedial goal and is targeted for remediation.

TABLE 2. 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 remedial goals in the ROD and applicable or relevant and appropriate requirements (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 Site 14 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 remedial 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 remedial 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.

SUMMARY OF REMEDIATION ALTERNATIVES

Technologies and associated process options for groundwater that were retained after screening within the supplemental FS were assembled into three separate remedial alternatives, for further evaluation. These remediation alternatives are described below:

Remedial Alternative 1 – No Action.

Remedial Alternative 1 does not involve any actions or costs; it is required by CERCLA as a baseline for comparison to the other alternatives.

Remedial Alternative 2 – Monitoring and ICs.

Remedial Alternative 2 includes the continued monitoring of vinyl chloride-impacted groundwater and the establishment of ICs. Table 2 (page 6) provides a description of the types of ICs that would be used. During the remedial design phase, additional monitoring wells would be installed in order to further delineate the extent of groundwater contamination. ICs would be established to restrict residential land use until concentrations are within the risk management range for residential use and to protect the groundwater monitoring system. This alternative is estimated to cost \$1.6 million.

Remedial Alternative 3 – ISCO, Monitoring, and ICs.

Remedial Alternative 3 includes ISCO, groundwater monitoring and ICs. During the remedial design phase, additional monitoring wells would be installed in order to further define the extent of groundwater contamination. ISCO would be used to remediate the groundwater until the RAO is achieved. Performance monitoring would evaluate the progress of ISCO and could include analysis of ISCO-specific parameters and collection of samples from injection wells. Post-remediation monitoring would be performed at existing and new monitoring wells to determine the long-term performance of the remedial effort. ICs would be used to protect the groundwater monitoring system and to restrict residential land use until concentrations are within the risk management range for residential use. This alternative is estimated to cost \$2.2 million.

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 alternative for cleanup of groundwater are provided in Table 3 (see page 8).

Table 3. 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 alternative for groundwater are listed below. See the RI and FS reports for more specific information on potential ARARs.

Potential Federal ARARs

Substantive requirements of Section 141.61(a) of 40 Code of Federal Regulations (CFR) pertaining to maximum contaminant levels (MCLs) have been determined not to be federal chemical-specific ARARs for groundwater. The Navy does not consider the MCLs to be relevant and appropriate because the groundwater is unlikely to be used as a drinking water supply based on guidance provided by the EPA on how to determine whether an aquifer should be considered a potential drinking water source for the purpose of making CERCLA decisions (U.S. EPA 1999).

The EPA further clarified that the groundwater underlying the central region of Alameda Point is unlikely to be a drinking water source in a letter dated 3 Jan 2000 (U.S. EPA 2000). Additionally, the Navy's groundwater beneficial use determination report dated July 2000 states, "For the purpose of CERCLA clean up decisions, groundwater in the western and central regions (including Site 28) of Alameda Point is unlikely to be used as a potential drinking water source."

Substantive provisions of the following state regulations that are a component of a federally authorized or delegated state program are considered federal ARARs.

- Relevant and appropriate requirements of California Code of Regulations (CCR) Title 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.
- Corrective action monitoring (Sections 66264.100[d] and [g][1])

Potential State of California ARARs

Substantive provisions of the following requirements have been determined to be applicable state chemical- or action-specific ARARs:

- 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 Sections 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

In July 2003, the RWQCB issued a letter that states the groundwater in the first and second water bearing zones west of Saratoga Street at Alameda Point meet the exemption criteria in SWRCB Resolution No. 88-63 and RWQCB Resolution No. 89-39 and are not potential sources of drinking water.

Substantive provisions of the following requirements of the California Civil Code (CCC) and the Health and Safety Code (HSC) have been determined to be state action-specific ARARs for implementation of ICs for property that will be transferred to a nonfederal entity:

- CCC § 1471, Transfer of Obligations
- CCR title 22, § 67391.1, Land Use Covenants
- HSC §§ 25202.5, 25222.1, 25355.5(a)(1)(C), 25232(b)(1)(A)-(E), 25233(c), and 25234.

The RWQCB 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 14 groundwater remedial action. The SWRCB interprets Resolution 68-16 as prohibiting further migration of the VOC contaminant plume at Site 14; however, the U.S. EPA and the Navy do not agree that SWRCB Resolution 68-16 applies to further migration. Further, the Navy's position is 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 Title 22 CCR Section 66424.94, determined to be ARARs for Site 14 groundwater remedial action. The RWQCB and DTSC do not agree with Navy's determination that SWRCB Resolutions 68-16 and 92-49 are not ARARs for Site 14 remedial action; however, the RWQCB and DTSC agree that the proposed remedial action would comply with SWRCB Resolutions 68-16 and 92-49.

REFERENCES

U.S. Environmental Protection Agency. 1998. Letter from Tom Huetteman to Henry Gee (Navy) which clarified considerations for an aquifer to be a potential source of drinking water.
U.S. Environmental Protection Agency. 2000. Revised Draft Determination of the Beneficial Uses of Groundwater at Alameda Point, Alameda.

COMPARISON OF ALTERNATIVES

Selection of the preferred alternative is based on an evaluation of the remedial alternatives using nine criteria identified by the CERCLA process and as specified in the NCP. General descriptions of the nine criteria are presented in Table 4. Table 5 (see page 10) provides a summary of the evaluation of the remedial alternatives for Site 14 using each of the nine NCP criteria.

Table 4: Evaluation Criteria

The Navy uses the nine criteria¹ 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** addresses whether a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled.
 2. **Compliance with Applicable or Relevant and Appropriate Requirement (ARARs)** addresses whether a remedy will meet all federal and state environmental laws or provide grounds for a waiver.
 3. **Long-term effectiveness and permanence** refers to the ability of a remedy to provide reliable protection of human health and the environment over time.
 4. **Reduction of toxicity, mobility, or volume through treatment** refers to preference for a remedy that reduces health hazards, the movement of contaminants, or the quantity of contaminants at the site through treatment.
 5. **Short-term effectiveness** addresses the period of time needed to complete a remedial alternative and any impacts the implementation of the remedial alternative may have on remediation workers, the community, and the environment.
 6. **Implementability** refers to the technical and administrative feasibility of the remedy, including the availability of materials and services needed to carry out the remedy and the 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 life cycle of each alternative in comparison to other, equally protective measures.
 8. **State acceptance** indicates whether the state agrees with, opposes, or has no comment on the alternative.
 9. **Community acceptance** includes determining which components of the alternatives interested persons in the community support, have reservations about, or oppose (not complete until public comments on proposed plan are received).
- 1 **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 weigh major trade-offs among alternatives. **Modifying.** Once all comments are evaluated, state and community acceptance (8 and 9) may prompt modifications to the preferred remedy and are thus designated modifying criteria.

1. Overall Protection of Human Health and the Environment.

Alternative 1 provides no protection for human health until the contaminant has naturally degraded, which could take several decades. Alternatives 2 and 3 would meet the threshold criteria of overall protection to human health and the environment.

2. Compliance with ARARs.

ARARs are not applicable to Alternative 1. Alternatives 2 and 3 meet the threshold criteria of compliance with ARARs.

3. Long-Term Effectiveness and Permanence.

As the No Action Alternative, Alternative 1 offers neither treatment nor ICs, and thus it serves as the basis for comparison of the other two alternatives. Long-term effectiveness of Alternative 2

depends on adherence to ICs that restrict land use until the contamination has naturally degraded to the RAO. The long-term effectiveness and permanence of Alternative 3 would depend on the effectiveness of the remedial technology to reduce vinyl chloride concentrations in groundwater and the adherence to the ICs. Alternative 3 is considered most favorable for providing long-term-effectiveness and permanence.

4. Reduction of Toxicity, Mobility, or Volume through Treatment.

Alternatives 1 and 2 rely on natural processes to reduce the concentration of vinyl chloride in groundwater. Only Alternative 3 would reduce the mobility, toxicity, and volume of contamination through treatment.

5. Short-Term Effectiveness.

Alternative 1 would not be effective in the short term, since no actions are taken to restrict exposure or treat the contamination. Alternatives 2 and 3 would be effective in the short term, since ICs take a relatively short amount of time to implement. Alternative 3 has an added advantage in that the concentration of vinyl chloride should be substantially reduced within the first few years following active remediation, with the remaining time period necessary only to satisfactorily demonstrate that the RAO has been achieved. Potential exposures to remediation workers would be managed by following applicable state and federal regulations, and by using appropriate work practices.

6. Implementability.

All of the alternatives are implementable.

7. Cost.

Alternative 1 has no costs. Alternative 2 is estimated to cost \$1.6 million, including capital, monitoring, and periodic costs. Alternative 3 has an estimated cost of \$2.2 million including capital, monitoring, and periodic costs. The costs for Alternatives 2 and 3 are comparable.

8. State Agency Acceptance. The State of California has concurred with the Navy’s proposed remedial alternative (Alternative 3).

9. Community Acceptance. This will be evaluated after the public comment period ends. A responsiveness summary will document responses to public comments in the ROD.

Table 5 provides a comparative analysis of Alternatives 1, 2, and 3 using the nine criteria identified by the CERCLA process and specified in the NCP.

Table 5: Comparative Analysis of Soil and Groundwater Alternatives							
Alternatives	Protective Overall?	Compliant w/ARARs ?	Long-term Effectiveness/ Permanence	Reduction of Toxicity, Mobility, or Volume via Treatment	Short-term Effectiveness	Implementability	Cost (\$M)
1. No Action	No	NA	○	○	○	●	0
2. Monitoring/ICs	Yes	Yes	◐	○	●	●	1.6
3. ISCO, Monitoring, and ICs	Yes	Yes	●	●	●	●	2.2

IC – Institutional Controls
 NA – Not Applicable
 ○low ◐mod ●high

PREFERRED ALTERNATIVE

The Navy prefers Alternative 3, which includes active treatment of contaminated groundwater. In addition, this alternative will reduce the concentrations of 1,2-DCE and 1,1-DCA in groundwater and VOCs within the saturated zone of soil. During the remedial design phase, the groundwater plume will be further delineated. ICs would be established to restrict land use and would remain in place until the concentrations are within the risk management range for residential use, based on performance

standards to be established in the ROD and the Remedial Design. This alternative is protective of human health, including residential use, and the environment, and complies with environmental regulations and laws. This alternative reduces the mobility, toxicity, and volume of vinyl chloride by implementing an expedient and aggressive treatment strategy. Key points that support the Navy's preference for Alternative 3 are listed below:

- ▶ Protective of human health and the environment by implementing short-term ICs that prevent exposure to contaminated groundwater.
- ▶ Provides long-term protection by significantly reducing concentrations of vinyl chloride and its associated risk at a cost slightly higher than Alternative 2, which is estimated to take 10 times longer.
- ▶ Permanently removes a portion of contaminant mass and prevents further migration.

The Alameda Point BCT has concurred with the proposed plan. The BCT is made up of representatives from:

- ▶ Navy
- ▶ EPA
- ▶ DTSC
- ▶ Water Board

OPPORTUNITIES FOR PUBLIC INVOLVEMENT

The Navy provides information on the cleanup of Site 14 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 Site 14 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 environmental alternatives is the administrative record. The administrative record includes such documents as the final RI report and final FS report, as well as other supporting documents and data for Site 14. 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 Harbor Drive, FISC Building 1
San Diego, California 92132-5190
Telephone: (619) 532-3676

INTERNET CONNECTION

For more information on the closure of Alameda Point, the IR Program, and Site 14, checkout the website at:

<http://www.navybracpmo.org>

Community members interested in the full technical details beyond the scope of this proposed plan can also find key supporting documents that pertain to Site 14 and a complete index of all Navy Alameda Point documents at the following information repositories located in Alameda:

Information Repository Locations

- ▶ Alameda Point, 950 West Mall Square, Building 1, Rooms 240 and 241, (510) 749-5800.
- ▶ Alameda Public Library, 2200A Central Avenue, (510) 747-7777.

There are two ways to provide comments during the public comment period (March 20, 2006 to April 19, 2006):

- ▶ Offer oral comments during the public meeting.
- ▶ Provide written comments by mail, fax, or email no later than April 19, 2006.

The public meeting will be held on April 12, 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 at Site 14. 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
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1455 Frazee Road, Suite 900
San Diego, CA 92108-4310
Telephone: (619) 532-0907
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If you have any questions or concerns about environmental activities at Alameda Point, feel free to contact any of the following project representatives:

U.S. EPA

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

DTSC

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

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

NAVY

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

Proposed Plan Comment Form
Site 14 Former Fire Fighter Training Area
Former NAS Alameda

The public comment period for the Proposed Plan for Installation Restoration Site 14 at Alameda Point, Alameda, California is from March 20, 2006 to April 19, 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 April 12, 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 April 19, 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
BRAC Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310

Glossary of Technical Terms, Abbreviations, and Acronyms Used in this Plan

AOC: area of concern

Aquifer: A particular zone or layer of rock or soil below the earth's surface through which groundwater moves in sufficient quantity to serve as a source of water.

ARARs: Applicable or Relevant and Appropriate Requirements - The federal and state regulations and standards that have been determined to be legally applicable or relevant and appropriate to remedial actions at a CERCLA site.

AST: aboveground storage tank

BaP: benzo(a)pyrene

BCT: BRAC Cleanup Team

BRAC: Base Realignment and Closure

CAA: Corrective Action Area

CCC: California Civil Code

CCR: California Code of Regulations

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 be protective of human health and the environment, and evaluate damages to natural resources.

CFR: Code of Federal Regulations

DTSC: California Environmental Protection Agency, Department of Toxic Substances Control

EPA: U.S. Environmental Protection Agency

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

FWBZ: First Water-Bearing Zone - A distinct underground stratum in which water fills the pores in soil or openings in rocks.

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 non-cancer health risk. An HI value of less than 1 is considered protective of human health.

HSC: Health and Safety Code

ICs: Institutional Controls - Non-engineered mechanisms established to limit human exposure to contaminated waste, soil, or groundwater. These mechanisms may include deed restrictions, covenants, easements, laws, and regulations.

IR: Installation Restoration

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: milligrams per kilogram

NAS: Naval Air Station

Navy: U.S. Navy

NCP: National Contingency Plan - The National Oil and Hazardous Substances Pollution Contingency Plan. 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.

PAH: Polynuclear Aromatic Hydrocarbons - A group of over 100 different chemicals comprising one or more fused carbon rings; they are present in coal and petroleum products, and are formed during burning of organic substances.

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

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

RAO: Remedial Action Objective - A statement that contains a remediation goal 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.

RCRA: Resource Conservation and Recovery Act

Receptors: A living organism (human, animal or plant) that may be exposed to chemicals at a site.

Remedial Goal: Usually chemical concentration limits, which provide a quantitative means of identifying areas for potential remedial action, screening the types of appropriate technologies, and assessing a remedial action's potential for achievement of the RAO.

RI: Remedial Investigation - The first of 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 determine the nature and extent of contamination and to estimate the risks presented by the contamination at a site.

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.

SWMU: solid waste management unit

SWRCB: State Water Resources Control Board

TCDD: tetrachlorodibenzo-p-dioxin

Total Petroleum Hydrocarbons: Measure of the total concentration of petroleum hydrocarbon constituents present in a given amount of soil or water.

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

Water Board (or the RWQCB): San Francisco Bay Regional Water Quality Control Board

WD: washdown area

Attn: Mr. Thomas Macchiarella

Base Realignment and Closure (BRAC) Environmental Coordinator
Navy BRAC Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310



BRAC
PMO WEST

**Proposed Plan for
Site 14 – Former Fire Fighter Training Area
Alameda Point, California**