Proposed Plan for Site 28 - Todd Shipyards 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 *Installation Restoration (IR)* Site 28 at Alameda Point (former Naval Air Station [NAS] Alameda) in Alameda, California.

This Proposed Plan presents the Navy's preferred remedial (cleanup) alternatives for soil and groundwater contamination at Installation Restoration (IR)* Site 28, known as Todd Shipyards, at Alameda Point. The Navy proposes to clean up contaminated soil and groundwater at Site 28 by:

- Removing the top layer of soil in areas where arsenic, lead, and polynuclear aromatic hydrocarbons (PAH) exceed the levels considered safe for recreational visitors.
- Transporting the excavated soil to an appropriate disposal facility.
- Injecting a compound in groundwater to immobilize copper and prevent its migration into the Oakland Inner Harbor where copper may harm aquatic organisms (which are considered the most sensitive receptors likely to be present near Site 28).
- Prohibiting the extraction and use of groundwater at Site 28 for agricultural and industrial use (this action will prevent human exposure to arsenic-affected groundwater, and thus eliminates the need for active remediation).

— 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 to 8:00 p.m.

- Implementing a groundwater monitoring program after contaminants are immobilized to ensure that cleanup has been completed according to the guidelines that will be established in the Record of Decision (ROD) for Site 28.
- Restricting land use at Site 28 to recreational activities.

This Proposed Plan summarizes the environmental investigations, risk assessments, and remedial alternatives evaluations that were conducted at Site 28 and describes the basis for choosing the preferred alternatives.

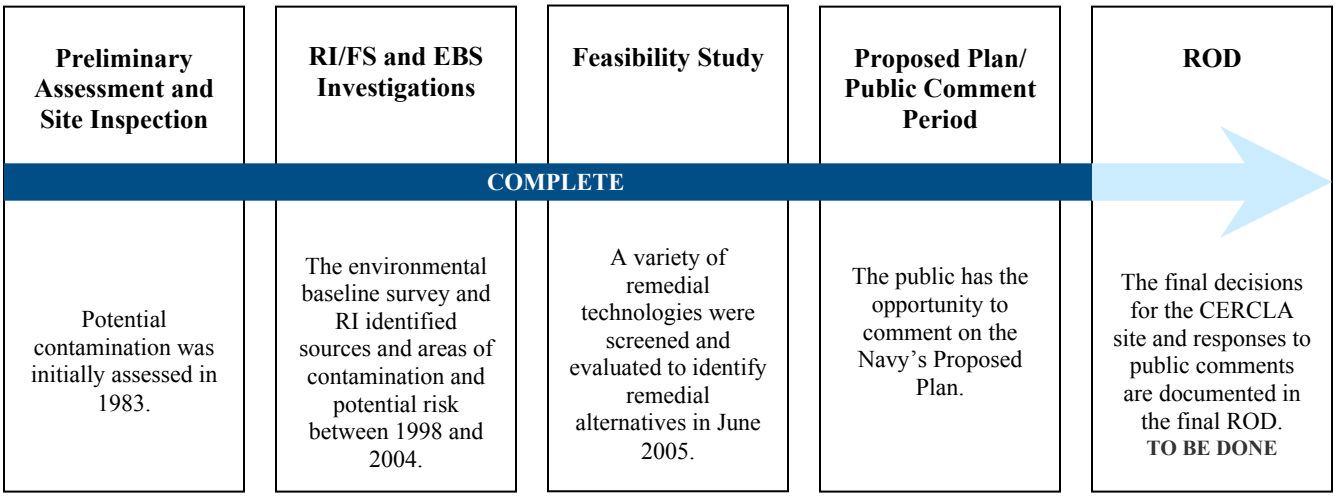
Figure 1. Alameda Point

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

THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT PROCESS

The Navy's comprehensive environmental investigation and cleanup program (**Installation Restoration Program**) identifies, investigates, and remediates chemical contamination that resulted from past activities (see flow chart below). It complies with the Comprehensive Environmental Response, Compensation, and Liability Act (**CERCLA)**, the California Hazardous Substances Account Act, and all other federal and state laws that govern environmental cleanups.

Installation Restoration Program at Site 28



SITE HISTORY

The former NAS Alameda, now known as Alameda Point, ceased operations in 1997. 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). Site 28 is located in the northeastern portion of Alameda Point on the Oakland Inner Harbor (see Figure 2 on page 3) and is approximately 2.9 acres. During the early 1900s, construction of railroad causeways, dikes, and levees contributed to the formation of marshland in the area. Between 1930 and the late 1960s, Site 28 continued to be developed through a series of fill episodes. Site 28 was owned by the Navy from 1936 to 1970. The Todd Shipyards Corporation acquired the property in 1970, but it was transferred back to the Navy in 1995.

Site 28 is unpaved and currently houses a dog park and a parking lot. Past uses included shipbuilding, repair and maintenance of commercial and military marine vessels, and equipment storage and staging. Railroad causeways, railroad tracks, and spurs existed on the site from 1883 to the mid-1960s. Approximately 12,000 square feet of Building 63 was located within the boundary of Site 28. Constructed in 1947 and demolished in 1988, this building most likely was used for storage of materials related to shipbuilding and maintenance.

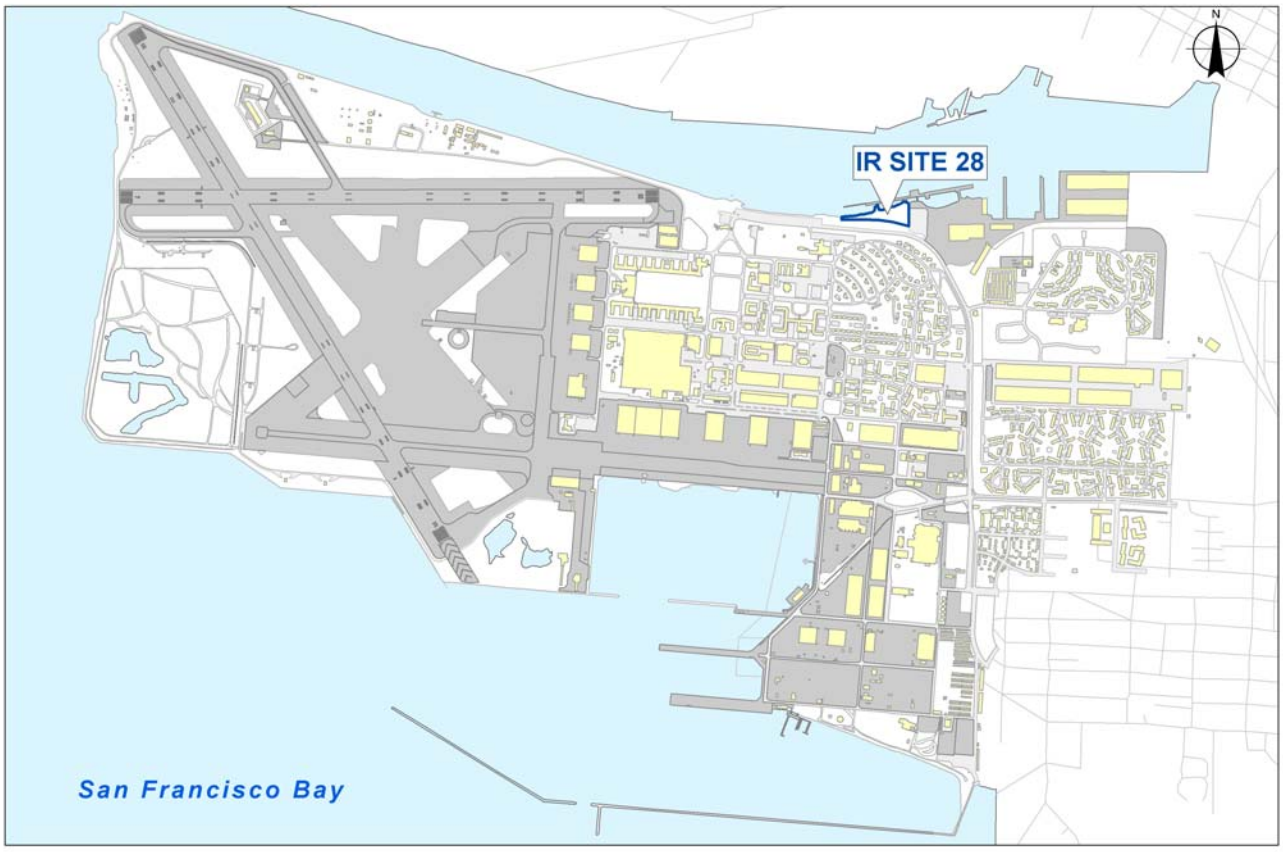


Figure 2. Site 28

REMEDIAL INVESTIGATION SUMMARY

Numerous investigations have been conducted at Site 28. In 1998 and 1999, elevated concentrations of PAHs, pesticides, polychlorinated biphenyls (PCB), organotin compounds, and metals were detected in soil and elevated metal concentrations were detected in groundwater at Site 28. Further investigation was recommended through a remedial investigation (RI) to determine the nature and extent of soil and groundwater contamination at Site 28.

In 2002, a field investigation was conducted as part of the Site 28 RI to further characterize soil and groundwater contamination. The RI also evaluated human health and ecological risk. The RI report was finalized in 2004.

The RI identified two areas of concern: the shoreline area and the inland area. The shoreline area is a strip of land that lies within approximately 100 feet of the shoreline of Oakland Inner Harbor (see Figure 3 on page 4). Soil in this area is contaminated with PAHs, pesticides, arsenic and lead to a depth of 8 feet below ground surface (bgs), and groundwater is impacted with copper. In the inland area, the soil is impacted with PAHs, arsenic, and iron to a depth of 8 feet bgs, and groundwater is impacted with arsenic.

Potential sources of the contamination in both areas include historical shipyard activities such as welding, paint stripping, marine paint application, equipment storage, weed suppression, and pest control. In addition, activities associated with the former railroad tracks, the railroad fire of 1902, and historical dredging and filling operations are considered to be potential sources of contamination at Site 28.

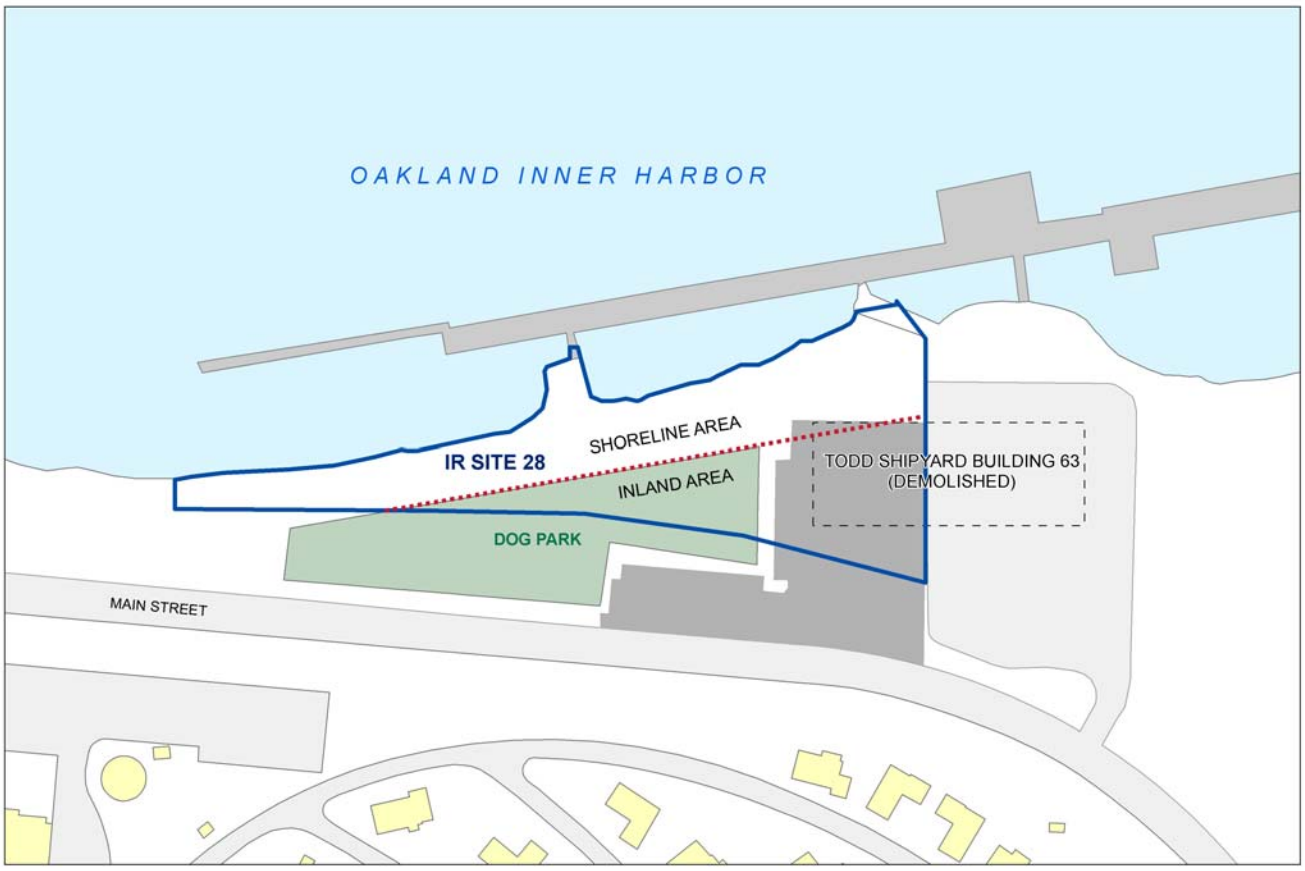


Figure 3. Site Detail

SITE-SPECIFIC RISK SUMMARY

"Risk" is the likelihood or probability that a hazardous chemical, when released to the environment, will have adverse effects on exposed humans and other biological receptors. As part of the RI, a site-specific Human Health Risk Assessment (HHRA) and an Ecological Risk Assessment (ERA) were conducted to assess risk to human and ecological receptors at Site 28. Results of the risk assessments concluded that areas within Site 28 may pose a risk to human and ecological receptors.

Human Health Risk Assessment

In its human health risk evaluation, the Navy considered the different ways that people might be exposed to chemicals, the possible concentrations of chemicals that potentially could be encountered from those exposures, and the potential frequency and duration of exposure. In addition, the Navy evaluated the following four exposure scenarios: recreational, occupational, construction workers, and residential (Table 1 on page 5 presents the potential exposure pathways for each scenario). Of these four scenarios, the residential scenario is the most conservative. The current and expected long-term use of Site 28 is recreational.

Risk calculations were based on conservative assumptions that are protective of human health. "Conservative" means the assumptions will tend to overestimate risk, which means that the remediation goals will be more protective. Human health risk is classified as cancer risk (from exposure to carcinogens) or noncancer risk (from exposure to noncarcinogens). Site specific factors are considered when making decisions about whether action is required.

Table1: Exposure Pathways

Recreational, occupational, construction worker, and residential users may be exposed to chemicals through:

- Incidental ingestion and touching of soil,
- Breathing in soil dust, and
- Breathing in the vapors from chemicals in soil and groundwater.

Residents may also be exposed through:

- Ingestion of homegrown produce and groundwater, and
- Direct contact with groundwater extracted from beneath Site 28 and used for domestic purposes such as showering.

The federally established risk management range was used to determine whether site risks are significant enough to warrant further cleanup. Cancer risk (i.e., the likelihood of any kind of cancer resulting from exposure to chemicals) is generally expressed as a probability. For example, a cancer risk probability of 5 in 100,000 ($5x10^{-5}$) indicates that, out of 100,000 people, five cancer cases may occur as a result of exposure. For non-cancer health effects, the U.S. Environmental Protection Agency (EPA) calculates a Hazard Index (HI). If the HI is less than or equal to 1, the non-cancer hazard is considered allowable. If the HI is greater than 1, the non-cancer hazard is considered unacceptable.

Table 2: Cancer and Non Cancer Risks

Use	Cancer Risk	Hazard Index (HI)
Recreational *(current and planned use)*	2×10^{-5} 3×10^{-5}*	1
Occupational	2×10^{-5}	0.6
Construction	5×10^{-5}	2
Residential	1×10^{-2}	305

* Based on toxicity values provided by the California Department of Toxic Substances Control. Other risks are based on U.S. EPA toxicity values.

Table 2 presents the Site 28 HHRA results. The current and planned future use for Site 28 is recreational. The recreational scenario falls within the acceptable CERCLA cancer risk management range (10^{-4} to 10^{-6}) and the HI is equal to 1. The construction scenario cancer risk is within the acceptable risk management range; however, the HI is equal to 2. Therefore, institutional controls (ICs) would be would be required to ensure that future digging activities are conducted in a manner that would be protective of construction workers. The HHRA results for residential use for Site 28 fall above the cancer risk management range and far exceed an HI of 1. Restrictions on residential use also would be included in the ICs.

In Addition, Table 2 presents the total cumulative risk assessment results for soil and groundwater at Site 28. Total cumulative risk is calculated by adding the potential risks posed by all chemicals and all potential exposure pathways present at the site, including risks posed by background metals and PAHs from fill events. Background metals are defined as metals that occur naturally at the site. The risks presented in Table 2 are from PAHs, arsenic, and lead in the soil; and arsenic in the groundwater. These chemicals were identified as chemicals of concern (COC) at Site 28. Based on the HHRA, PCBs and pesticides do not pose a risk to recreational visitors. Recreational use is the current and planned future use of Site 28. Risk levels for residential use are more protective than the other scenarios uses because it is assumed that people in the residential scenario will be exposed to the chemicals for longer time periods. Also, it is assumed that they could potentially ingest arsenic from groundwater and homegrown produce.

Ecological Risk Assessment

The ERA evaluated the potential risk to ecological receptors from exposure to chemicals in both soil and surface water. The ERA indicated a potential risk to terrestrial ecological receptors from exposure to pesticides, PCBs, and metals. Risk to these receptors may be overestimated because the current uses of the area include a parking lot, open space, and a dog park. Furthermore, future land use plans are not likely to create suitable habitat for ecological receptors.

Because groundwater in the shoreline area is tidally influenced, elevated concentrations of copper in groundwater may migrate to the sediment in the Oakland Inner Harbor. The ERA results indicated that such migration is a potential risk to benthic (sediment-dwelling) aquatic life and salt water aquatic life.

FEASIBILITY STUDY

The Feasibility Study (FS) report for Site 28 was finalized in June 2005. The FS report developed and evaluated remedial action objectives (RAOs); eight remedial alternatives for soil contamination, including two sub-alternatives; and four remedial alternatives for groundwater contamination. Remedial alternatives were evaluated using the nine criteria identified by the CERCLA process and specified in the National Contingency Plan (NCP).

REMEDIAL ACTION OBJECTIVES

Site-specific RAOs were identified to help develop and evaluate the remedial alternatives for soil and groundwater at Site 28. An RAO is a statement that contains a remediation goal for the protection of one or more specific receptors from one or more specific chemicals in a specific medium (e.g., soil, groundwater, or air). The remediation goals are usually chemical concentration limits that provide a quantitative means of: 1) identifying areas for potential remedial action, 2) screening the appropriate types of technologies, and 3) assessing a remedial action's potential to achieve the RAO. Ultimately, the success of a remedial response is measured by the response's ability to meet the respective RAOs. The groundwater at Site 28 is unlikely to be a drinking water source. As a result, the Base Realignment and Closure (BRAC) Cleanup Team (BCT) concurs that the remediation goals for Site 28 groundwater can be less strict than maximum contaminant levels (MCL), because there are no inhalation risks present at the site from vapors in soil or groundwater. Additionally, the remediation goals for the shoreline area groundwater are based on reducing the potential risk to offshore receptors from exposures to elevated copper concentrations in the groundwater that discharges to the Oakland Inner Harbor.

RAOs were based on risk calculations presented in the human health and ecological risk assessments and on water quality standards. The RAOs for Site 28 are to (1) reduce concentrations of PAHs, arsenic, and lead in soil to levels that are protective of recreational visitors and occupational workers based on the current and future uses of the site as a dog park, parking lot, and open space; (2) to reduce exposure to arsenic in groundwater in the inland area to levels that are protective of the agricultural water supply; and (3) prevent potential exposure of aquatic offshore receptors (In the Oakland Inner Harbor) to copper in surface water adjacent to the sediments along the shoreline area. The remediation goal for PAHs in soil is based on the EPA Region 9 industrial preliminary remediation goal (PRG), which was adjusted for total risk. The remediation goal for arsenic was based on background concentrations at Alameda Point, and the remediation goal for lead was based on the recreational child exposure scenario. The PRGs presented here are those used in the feasibility study. The site specific risked based remediation goals will be determined in the ROD. The PRGs for soil are as follows:

- PAHs: 2.1 milligrams per kilogram (mg/kg)
- Arsenic: 9.1 mg/kg
- Lead: 800 mg/kg

The remedial goal for arsenic in the inland area groundwater is based on the agricultural water supply objective from the San Francisco Bay Regional Water Quality Control Board (RWQCB or the Water Board). The remediation goal for copper was derived from the California Toxic Rule and values from the Water Board. The remediation goals are as follows:

- Arsenic: 2,000 micrograms per liter ([µg/L] inland area of groundwater)
- Copper: 3.1 µg/L

Site 28 RAOs will be achieved through remediation of soil and groundwater in the shoreline and inland areas.

SUMMARY OF SOIL REMEDIAL ALTERNATIVES

Various technologies and associated process options were screened based on their effectiveness, implementability, cost, compliance with EPA guidance and the NCP, and ability to meet Site 28 RAOs for soil. Those technologies and associated process options retained after screening were assembled into eight remedial alternatives for soil. These alternatives are summarized in Table 3. See Table 4 on page 8 for explanation of Institutional Controls (IC).

Table 3: Summary of Remedial Alternatives for Soil at Site 28

Remedial Alternatives	Description
Alternative 1	No Action. No costs are associated with this alternative.
Alternative 2	Implement institutional controls (IC) to limit land use to recreational activities. The ICs would be in place until the Navy and the regulatory agencies concur that unacceptable risk is no longer posed to human health and the environment. This alternative is estimated to cost $405,000.
Alternative 3	Cap impacted soil with a soil or synthetic membrane, and implement ICs to restrict activities that may damage the cap and limit land use to recreational activities. The ICs would be in place indefinitely and this alternative is estimated to cost $1,094,000.
Alternative 4A	Remove impacted soil to a depth of 6 feet and transport soil off site for disposal. The estimated cost of this alternative is $4,832,000.
Alternative 4B *(Navy's preferred alternative)*	Remove impacted soil to a depth of 2 feet, transport soil off site for disposal, and implement ICs to prevent possible exposure to the contaminated deeper soils by restricting excavation and limiting land use to recreational activities. Risk-based remedial goals for recreational use will be determined in the ROD. The ICs would be in place until remedial goals are achieved. This alternative is estimated to cost $1,768,000.
Alternative 5	Use plants to absorb contaminants from soil; the plants would be harvested and transported off site for disposal. Implement ICs to prevent exposure to contaminated soil and disturbance of the plants and limit land use for recreational activities. The ICs would be in place until remedial goals are achieved. This alternative is estimated to cost $1,587,000.
Alternative 6A	Remove impacted soil to a depth of 6 feet, treat excavated soil through bioremediation and stabilization, and transport treated material off site for disposal. This alternative is estimated to cost $4,370,000.
Alternative 6B	Remove impacted soil to a depth of 2 feet, treat excavated soil through bioremediation and stabilization, transport treated material off site for disposal, and implement ICs to prevent possible exposure to contaminated deeper soils and limit land use to recreational activities. The ICs would be in place until remedial goals are achieved. This alternative is estimated to cost $1,753,000.

Table 4: Institutional Controls

ICs described in this Proposed Plan include deed restrictions, which would be established to limit human exposure to contaminated soil and shallow groundwater. ICs are applicable to Soil Remedial Alternatives 2, 3, 4, 5, and 6 and Groundwater Remedial Alternatives 2, 3, and 4, and would be implemented through deed restrictions at the time of property transfer.

The Navy plans to use ICs to:

- Prevent exposure to contaminated soil and groundwater,
- Allow the Navy and Navy subcontractor access to monitoring wells and other remedial action components,
- Protect wells installed as part of the remedy and other equipment installed at Site 28, and
- Restrict extraction of groundwater for agricultural and industrial use until remedial goals are met,
- Restrict excavation at the property until remedial goals are met.

Provisions are needed to ensure that the Navy and the regulatory agencies have access to the site for the purpose of implementing the remedial action, performing maintenance activities, and conducting groundwater monitoring. The ICs will be incorporated and implemented through the following two separate legal instruments:

1. Restrictive covenants included in one or more "Covenant to Restrict Use of Property" entered into by the Navy and the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) as provided in the Navy/DTSC MOA and consistent with the substantive provisions of title 22 Cal. Code Regs. Section 67391.1.
2. A Quitclaim Deed from the Navy to the property recipient.

SUMMARY OF GROUNDWATER REMEDIAL ALTERNATIVES

Technologies and associated process options for groundwater that were retained after screening were assembled into four alternatives. These groundwater remedial alternatives are summarized in Table 5.

Table 5: Summary of Remedial Alternatives for Groundwater at Site 28

Remedial Alternatives	Description
Alternative 1	No Action. No cost is associated with this alternative.
Alternative 2	Install additional monitoring wells to further delineate groundwater contamination; continue groundwater monitoring at the site; and implement ICs to prohibit extraction and use of groundwater for agricultural and industrial use. The ICs will remain in place until remedial goals are achieved. This alternative is estimated to cost $789,000.
Alternative 3 *(Navy's preferred alternative)*	Inject a metals reducing compound into groundwater in the shoreline area to reduce copper concentrations in groundwater; continue groundwater monitoring at the site until remedial goals are achieved; and implement ICs to prohibit extraction and use of groundwater for agricultural and industrial use. The ICs will remain in place until remedial goals are achieved. This alternative is estimated to cost $1,436,000.
Alternative 4	Excavate soil in the shoreline area and mix it with a metals reducing compound, use the mixture as backfill to reduce copper concentrations in groundwater; continue groundwater monitoring at the site; and implement ICs to prohibit extraction and use of groundwater for agricultural and industrial use. The ICs will remain in place until remedial goals are achieved. This alternative is estimated to cost $1,789,000.

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 applicable or relevant and

appropriate requirements (ARAR). CERCLA, the NCP, EPA policy, and Navy policy require that potential ARARs be identified in proposed plans so that the public can participate in selecting cleanup levels for CERCLA remedial actions. The most significant ARARs that are key factors in establishing cleanup levels and remedy selection must be clearly identified (including legal citations) so that an interested member of the public can comment on the Navy's proposed decision to identify them as ARARs.

Significant potential ARARs that will be met by the preferred remedy for cleanup of soil and groundwater at Site 28 are located in Attachment 1 following the glossary. For more specific information concerning potential ARARs, the FS report for Site 28 is available to the public as part of the administrative record (see page 12). The final determination of project ARARs will be made in the ROD as part of the response action selection process, and will be subject to the public review of this process.

COMPARISON OF REMEDIAL ALTERNATIVES

In selecting the preferred remedial alternative, the Navy evaluated each of the proposed alternatives separately against the nine NCP criteria that are described in Table 6, compared the evaluation results across all proposed alternatives for each NCP criterion, and evaluated all of the proposed alternatives to determine which alternative is best suited for implementation at the site.

Table 6: Evaluation Criteria

The Navy uses the nine NCP criteria[1] 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 or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled.
2. **Compliance with ARARs** addresses whether or not a remedy will meet applicable or relevant and appropriate federal and state environmental laws and regulations 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 the ability of a remedy to reduce 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 the remedy and any adverse effects to human health and the environment that may be caused during construction and implementation of the remedy.
6. **Implementability** refers to 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 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 tradeoffs 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.

Table 7: Comparative Analysis of Soil and Groundwater Alternatives

Alternatives	Protective Overall?	Compliant with ARARs?	Long-Term Effectiveness/ Permanence	Reduction of Toxicity, Mobility, or Volume via Treatment	Short-Term Effectiveness	Implement-ability	Cost ($M)
Soil							
1. No Action	No	None	None	None	None	None	0
2. ICs	Yes	No	●	None	●	●	0.41
3. Soil/Synthetic Cover and ICs	Yes	Yes	●	○	◖	◖	1.0
4A. Removal and disposal of soil	Yes	Yes	●	●	○	○	4.8
4B. Removal and disposal of soil (upper 2 feet) and ICs	Yes	Yes	◖	◖	◖	◖	1.7
5. Phytoremediation and ICs	Yes	Yes	◖	●	◖	○	1.5
6A. Removal, on-site treatment, and disposal of soil	Yes	Yes	●	●	○	○	4.3
6B. Removal and disposal of soil (upper 2 feet), on-site treatment, and ICs	Yes	Yes	◖	◖	◖	○	1.7
Groundwater							
1. No Action	No	None	None	None	None	None	0
2. Monitoring and ICs	Yes	Yes	◖	○	●	●	.7
3. Monitoring, ICs, and injection of a metals reducing compound	Yes	Yes	◖	◖	◖	◖	1.4
4. Monitoring, ICs, application of a metals reducing compound, and Soil Removal	Yes	Yes	◖	○	○	○	1.7

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

Based on the comparative analysis (see Table 7), the Navy prefers soil alternative 4B, which will remove impacted soil to a depth of 2 feet (See Figure 4), transport soil off site for disposal, and implement ICs to prevent possible exposure to the contaminated deeper soils by restricting excavation and limiting land use to recreational activities. If excavation is necessary health and safety precautions will be required during excavation. The ICs are expected to be in place until remedial goals are achieved. The cost associated with Soil Alternative 4B is slightly higher than Soil Alterative 6B, however, this alternative is more difficult to implement due to the setup of on-site treatment of contaminated soil.

Soil Alternative 4B is fully protective of human health and the environment and complies with

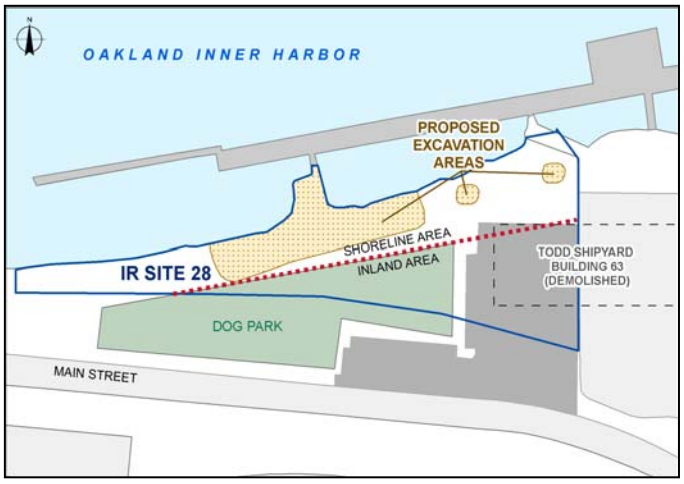


Figure 4. Proposed Excavation Areas

environmental regulations and laws. This alternative reduces the mobility, toxicity, and volume of PAHs and metals in soil by implementing an expedient and aggressive treatment strategy. The Navy prefers Soil Alternative 4B for the following reasons:

- Provides long-term protection by significantly reducing concentrations of PAHs and metals and their associated risk.
- Permanently removes a portion of contaminant mass and prevents further migration.
- Protects human health and the environment by implementing ICs that prevent exposure to contaminated soil.
- Places clean fill over remaining contaminated soil.
- Falls into the medium-cost group of options and is considered to be the most cost-effective at achieving RAOs.

Based on the comparative analysis the Navy prefers Groundwater Alternative 3, which includes the injection of a metals reducing compound to reduce copper concentrations in groundwater in the shoreline area that is discharged into the Oakland Inner Harbor. Under this alternative, contaminated groundwater in the inland area would be linked to ICs prohibiting the extraction and use of groundwater for agricultural or industrial use. ICs also would be established for the shoreline area prohibiting the extraction and use of groundwater for agricultural or industrial use. The ICs would be in place until the remedial goals are achieved. This alternative also includes a groundwater monitoring program, which will be in place until RAOs have been achieved. Groundwater Alternative 3 is fully protective of human health and the environment and complies with environmental regulations and laws. This alternative would reduce the mobility, toxicity, and volume of copper in groundwater by implementing an expedient treatment strategy. The Navy prefers Groundwater Alternative 3 for the following reasons:

- Protects human health and the environment by implementing ICs that prevent exposure to contaminated groundwater.
- Provides long-term protection by significantly reducing concentrations of copper and its associated risk.
- Protects offshore receptors by immobilizing copper in groundwater and preventing its migration into the Oakland Inner Harbor.
- Falls into the medium-cost group of options and is considered to be the most cost-effective at achieving RAOs.

MULTI-AGENCY ENVIRONMENTAL TEAM CONCURS WITH PREFERRED REMEDY

The preferred remedy has been approved by the Alameda Point Base Realignment and Closure (BRAC) Cleanup Team (which is made up of representatives from:

- **The Navy,**
- **EPA Region 9,**
- **Cal-EPA DTSC, and**
- **California RWQCB**

OPPORTUNITIES FOR PUBLIC INVOLVEMENT

The Navy provides information on the cleanup of Site 28 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 28 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 28. Administrative record files are located at the following address:

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

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 28 and a complete index of all Navy Alameda Point documents at the following information repositories located in Alameda:

- 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.

For your convenience a comment form is provided in this section. 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 28. 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

INTERNET CONNECTION

For more information on the closure of Alameda Point, the IR Program, and Site 28, checkout the website at:

http://www.navybracpmo.org

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 California Center Drive
Sacramento, CA 95826
(916) 255-6449

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

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

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

Applicable or Relevant and Appropriate Requirement (ARAR): The federal and state environmental standards, requirements, criteria, or limitations that have been determined to be the minimum level of remedial action on a CERCLA site.

BCT: BRAC Cleanup Team

bgs: Below ground surface

BRAC: Base Realignment and Closure

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 that evaluate damages to natural resources.

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

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

EPA: U.S. Environmental Protection Agency

ERA: Ecological Risk Assessment

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

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

Hazard Index (HI): A calculated value used to represent a potential non-cancer health risk. An HI value of less than 1 is considered an acceptable risk to human health.

HHRA: Human Health Risk Assessment

Institutional Controls (IC): 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

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

MCL: maximum contaminant level

Metals Reducing Compound: A chemical compound used to immobilize metals in groundwater.

mg/kg: milligram per kilogram

µg/L: microgram per liter

NAS: Naval Air Station

NCP: National Oil and Hazardous Substances Pollution Contingency Plan

PRG: preliminary remediation goal

Remedial Investigation (RI): 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 assess the nature and extent of contamination and to estimate the risks presented by contamination at a site.

PAH: Polynuclear Aromatic Hydrocarbon

PCB: Polychlorinated Biphenyl

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

Proposed Plan: A document that reviews the cleanup alternatives presented in the FS report, summarizes the recommended cleanup actions, explains the reasons for recommending them, and solicits comments from the community.

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

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

Record of Decision (ROD): 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.

Remediation Goals: Usually 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 for achievement of the RAO.

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

ATTACHMENT 1

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 applicable or relevant and appropriate requirements (ARAR). Significant potential ARARs that apply to the remediation of PAHs and metals in soil and arsenic and copper in groundwater are presented. See the Remedial Investigation/Feasibility Study (FS) report for Site 28 for more specific information on potential ARARS.

Potential Federal ARARs

- Substantive requirements of Code of Federal Regulations (CFR) Title 40, §§ 131.36(b) and 131.38. Water quality standards apply to discharges that are made to the Oakland Inner Harbor, which is connected to San Francisco Bay.
- Substantive requirements of Section 141.61(a) of 40 CFR pertaining to maximum contaminant levels (MCL) for arsenic and copper 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. In June 1999, the RWQCB issued a letter that states the shallow groundwater at Alameda Point meets the exemption criteria in the State Water Resources Control Board (SWRCB) Resolution No. 88-63 and RWQCB Resolution No. 89-39, so it is unlikely that the shallow groundwater would be used as a source of drinking water. The U.S. Environmental Protection Agency (EPA), in a letter from Tom Huetteman (U.S. EPA 1998), clarified considerations that would be taken into account regarding if a water aquifer was a potential source for drinking water. The EPA included the following considerations:

- Thickness of the aquifer,
- Actual groundwater yield,
- Proximity to salt water and the potential for saltwater intrusion,
- Quality of underlying water-bearing units and whether these units are current or potential drinking water sources,
- Existence of institutional controls on well construction or aquifer use,
- Information on current or historical use of the aquifer, and
- Cost of cleanup to MCLs.

The EPA further clarified that the groundwater underlying the central region of Alameda Point should not be considered 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.
  - Determination of RCRA characteristic hazardous waste [Sections 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100(a)(1)]
  - On-site waste generation [§§ 66262.10(a), 66262.11, and 66264.13(a) and (b)]
  - Hazardous waste accumulation [§ 66262.34]
    - Hazardous waste pre-transport requirements [Sections 66262.30-66262.31, and 66262.32]
    - Hazardous waste disposal restrictions [Sections 66268.1 and 66268.7]

- Relevant and appropriate requirements of CCR Title 22, §§ 66264.94, except 66264.94(a)(2) and 66264.94(b). [groundwater protection standards for owners and operators of Resource Conservation and Recovery Act treatment, storage, and disposal facilities] have been determined to be potential ARARs.
- Hazardous waste container storage regulations [§§ 66264.171, 66264.172, 66264.173, 66264.174, 66264.175(a) and (b), and 66264.178]
- Corrective action monitoring (Sections 66264.100[d] and [g][1])

State of California Potential ARARs:

- Substantive provisions of the following requirements have been determined to be applicable state chemical- or action-specific ARARs:
  - Non-RCRA hazardous waste determinations [title 22 Cal. Code Regs. Sections 66261.22(a)(3) and (4), 66261.24(a)(2) to (a)(8), 66261.101(a)(1) and (a)(2) and 66261.3(a)(2)(C) or 66261.3(a)(2)(F)]
  - The San Francisco Bay Basin Water Quality Control Plan, for beneficial use, promulgated pursuant to the Porter-Cologne Water Quality Control Act (California Water Code Sections 13240, 13241, 13242, 13243, 13360, and 13263(a), Chapter 2:
    - Water quality objective for arsenic is 2,000 micrograms per liter, excluding livestock watering.
  - Implementation Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, SWRCB 2000, §§ 1.3 and 1.4
  - SWRCB Resolution No. 88-63, established criteria to identify potential drinking water sources
  - Bay Area Air Quality Management District Regulation 6, §§ 6-301, 302, and 305
  - Substantive requirements 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
    - Cal. Code Regs. 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 28 groundwater remedial action. The SWRCB interprets Resolution 68-16 as prohibiting further migration of the VOC contaminant plume at Site 28; 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 Resolution 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 28 groundwater remedial action. The RWQCB and DTSC do not agree with Navy's determination that SWRCB Resolution 92-49 and 68-16 are not ARARs for Site 28 remedial action; however, the RWQCB and DTSC agree that the proposed remedial action would comply with SWRCB Resolution 92-49 and 68-16.

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. January 00.

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Proposed Plan for
Site 28 - Todd Shipyards
Former NAS Alameda