



Final

**Record of Decision
Site 26**

**Alameda Point
Alameda, California**

August 23, 2006

Prepared for:

**Base Realignment and Closure
Program Management Office West
San Diego, California**

Prepared under:

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ACRONYMS AND ABBREVIATIONS

µg/L	Microgram per liter
§	Section
AOC	Area of concern
ARAR	Applicable or relevant and appropriate requirement
AST	Aboveground storage tank
BCT	BRAC Cleanup Team
Bechtel	Bechtel Environmental Incorporated
bgs	Below ground surface
BRAC	Base Realignment and Closure
BSU	Bay Sediment Unit
CAA	Corrective action area
Cal.	California
Cal/EPA	California Environmental Protection Agency
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulation</i>
ch.	Chapter
Civ.	Civil
COC	Chemical of concern
COPC	Chemical of potential concern
DCA	Dichloroethane
DCE	Dichloroethene
DTSC	Department of Toxic Substances Control
div.	Division
EBS	Environmental baseline survey
EPA	U.S. Environmental Protection Agency
ERA	Ecological risk assessment
EPC	Exposure point concentration
ERM-West	Environmental Resources Management-West, Inc.
et seq.	And the following one or ones
FFA	Federal Facility Agreement
FS	Feasibility study
FWBZ	First water-bearing zone
GAP	Generator accumulation point

ACRONYMS AND ABBREVIATIONS (Continued)

HEAST	Health Effects Assessment Summary Tables
HHRA	Human health risk assessment
HI	Hazard index
HRC	Hydrogen Release Compound [®]
IAS	Initial assessment study
IC	Institutional control
IR	Installation Restoration
IRIS	Integrated Risk Information System
ISB	<i>In-situ</i> bioremediation
ISCO	<i>In-situ</i> chemical oxidation
IT	International Technology Corporation
IWTP	Industrial wastewater treatment plant
LIFO	Lease in Furtherance of Conveyance
MCL	Maximum contaminant level
mg/L	Milligram per liter
MNA	Monitored natural attenuation
MOA	Memorandum of agreement
NACIP	Navy Assessment and Control of Installation Pollutant
NAS	Naval Air Station
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEESA	Naval Energy and Environmental Support Activity
NFA	No further action
NPL	National Priority List
OEHHA	Office of Environmental Health Hazard Assessment
ORC	Oxygen Release Compound [®]
OU	Operable unit
OWS	Oil-water separator
pCi/g	Picocurie per gram
PAH	Polynuclear aromatic hydrocarbons
PRC	Preliminary remediation criteria
PRG	Preliminary remediation goal
Ra-226	Radium-226
RAB	Restoration Advisory Board
RAO	Remedial action objective

ACRONYMS AND ABBREVIATIONS (Continued)

RCRA	Resource Conservation and Recovery Act
Reg.	Regulation
Res.	Resolution
RFA	RCRA facility assessment
RFI	RCRA facility investigation
RI	Remedial investigation
ROD	Record of decision
SARA	Superfund Amendments and Reauthorization Act
SVOC	Semivolatile organic compound
SWBZ	Second water-bearing zone
SWMU	Solid waste management units
SWRCB	State Water Resources Control Board
TCE	Trichloroethene
TCRA	Time-critical removal action
TDS	Total dissolved solid
Tetra Tech	Tetra Tech EM Inc.
tit.	Title
TPH	Total petroleum hydrocarbons
UCL	Upper confidence limit
USC	<i>United States Code</i>
VOC	Volatile organic compound
WD	Washdown area
Water Board	San Francisco Bay Regional Water Quality Control Board
ZVI	Zero-valent iron

DECLARATION

SITE NAME AND LOCATION

This decision document addresses the former Western Hangar Zone (Installation Restoration Site 26) at the former Naval Air Station, now referred to as Alameda Point, in Alameda, California. The U.S. Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation, and Liability Act Information System identification (ID) number is CA2170023236.

STATEMENT OF BASIS AND PURPOSE

This record of decision (ROD) presents the selected remedy, no action for soil and remedial action for groundwater (Remedial Alternative 6), for the former Western Hangar Zone (Site 26) in Alameda, California.

This document was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by Superfund Amendments and Reauthorization Act of 1986 (Title 42 *United States Code Section* 9601, et seq.), and to the extent practicable the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (Title 40 *Code of Federal Regulations* Part 300).

This decision is based on information contained in the administrative record file (a site-specific administrative record index is included as Attachment A), as well as on extensive field investigations, laboratory analyses, interpretation of the data, evaluation of current and future conditions, and thorough assessment of the potential human health and ecological risks. Based on these findings, further action is required at this site.

The U.S. Department of the Navy (Navy), the California Environmental Protection Agency's (Cal/EPA) Department of Toxic Substances Control (DTSC) and San Francisco Bay Regional Water Quality Control Board (Water Board), and the EPA concur on the selected remedy for this site. Agreement letters from the EPA, DTSC, and the Water Board are included as Attachment B.

ASSESSMENT OF THE SITE

The Navy has concluded that remedial action is required for groundwater and no action is required for soil to protect public health or the environment on the basis of the following:

- Site histories
- Field investigations

- Laboratory analytical results
- Evaluation of potential ecological and human health risks
- Current and reasonably anticipated future land use

Results of investigations at the former Western Hangar Zone (Site 26) have verified that the site poses a potential risk to human health from volatile organic compounds (VOC) in groundwater through inhalation of vapors in indoor air and no unacceptable risk to human health or the environment from soil based on current and reasonably anticipated future land uses. The ecological risk assessment concluded that there are no unacceptable ecological risks associated with soil and groundwater at the site. Similarly, the ecological risk assessment concluded that Site 26 supports only limited habitat, the presence of terrestrial receptors is limited, and future land uses would not create additional ecological habitat.

The RCRA evaluation process was completed for a total of 14 SWMUs at Site 26. No further corrective action is required for aboveground storage tanks (AST) 024A, 024B, 024C, 024D, and 024E; NAS GAPS 19, 20, 21, and 22; and washdown area (WD) 023. The selected CERCLA remedy will address releases of hazardous substances from oil-water separator (OWS) 020 and WD 020 on the groundwater; no corrective action is needed for soil. Corrective action and closure of ASTs 021B and 540 will be deferred to the Alameda Point Total Petroleum Hydrocarbons program under Water Board oversight.

DESCRIPTION OF THE SELECTED REMEDY: NO ACTION FOR SOIL AND ACTIVE REMEDIATION FOR GROUNDWATER

This ROD recommends no action for soil at Site 26. Levels of contamination are low and do not pose an unacceptable risk for current or proposed future site uses.

Nine remedial alternatives were developed and analyzed to address a potential risk to human health from VOCs in groundwater at Site 26. Alternative 6 was selected as the preferred remedy for groundwater, and it includes the following components:

- *In-situ* chemical oxidation to quickly breakdown source contaminants
- In situ bioremediation to accelerate the natural microbiological process of residual contaminant degradation
- Short-term institutional controls (IC) to implement land use and access restrictions to limit the exposure of future landowner(s) and/or user(s) of the property to hazardous substances and to maintain the integrity of the remedial action until remediation is complete and remediation goals have been achieved
- Sampling of groundwater to confirm the achievement of remediation goals for cis-1,2-dichloroethene of 6 micrograms per liter ($\mu\text{g/L}$), trichloroethene of 5 $\mu\text{g/L}$, and vinyl chloride of 0.5 $\mu\text{g/L}$, which are protective of potential residents and occupational workers

Environmental restrictions in the form of ICs will be implemented, monitored, and reported on by the Navy and enforced by the Navy and DTSC and will remain in place until the remedial action objectives and remediation goals set forth in this ROD have been successfully attained.

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. The remedy uses permanent solutions and alternative treatment or resource recovery technologies to the maximum extent practicable and satisfies the statutory preference for remedies employing treatment that reduces toxicity, mobility or volume of hazardous substances, pollutants or contaminants as a principal element. A 5-year review pursuant to CERCLA Section 121 and the NCP will be conducted, if the remedial action objective and remediation goals are not met before. This selected remedy will not result in contaminants remaining on-site above levels that allow for unrestricted use and is expected to be completed within 3 years. Because the remedial action is expected to reduce all potential risks to acceptable levels in less than 5 years, a 5-year review is not expected to be required. ICs will be implemented at Site 26 until remediation goals are met.

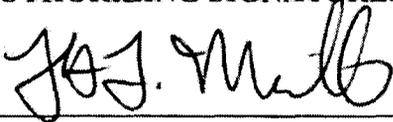
Data Certification Checklist

Checklist Item	Description
Chemicals of potential concern and their respective concentrations.	Chemicals of potential concern are characterized throughout Site 26 based on data from several investigations. A description of these activities is provided in Section 2.0 of the ROD. A description of the nature and extent of contamination at Site 26 is presented in Section 5.3 of the ROD.
Risk assessments are representative of the chemicals of potential concern.	A baseline human health risk assessment and screening-level ecological risk assessment were conducted as part of the remedial investigation using data representative of current conditions at Site 26. The results of these risk assessments are presented in Section 7.0 of this ROD.
Remedial levels established for chemicals of concern and the basis for these levels.	The response action for groundwater selected in this ROD is necessary to protect the public health or the welfare or the environment from actual or threatened releases of hazardous substances into the environment. No action for soil is necessary to protect the public health or the welfare or the environment. The risk assessments are presented in Section 7.0 of this ROD, and the remedial levels are presented in Section 8.0.
How source materials constituting principal threats are addressed.	Former buildings and surrounding areas, along with storm sewers and fuel lines, were investigated and evaluated as potential sources. Results of environmental investigations have not identified any significant soil contamination or suggest the presence of a continuing source. Potential volatilization of contaminants in groundwater to air presents a potential risk to human health. Section 5.3 of the ROD describes the nature and extent of remaining contamination, and principal threat waste is presented in Section 11.0.
Current and reasonably anticipated future land use assumptions and current and potential beneficial uses of groundwater used in the baseline risk assessment and ROD.	Site 26 is currently used for industrial purposes. According to the Alameda Point General Plan Amendment, the long-term reuse of Site 26 is also anticipated to be commercial/industrial. As part of the HHRA, the risks were evaluated under three different scenarios: residential, occupational (which includes light industrial), and construction workers. Although the residential exposure pathways, ingestion of homegrown produce and domestic use of groundwater, were initially evaluated in the HHRA presented in the RI report, these pathways were later considered incomplete after further evaluations concluded that they do not represent a significant potential for human exposure. Future land use and beneficial uses of groundwater are discussed in Section 6.0 of this ROD.
Potential land and groundwater use that will be available at the site as a result of the selected remedy.	According to the Alameda Point General Plan Amendment, the long-term reuse of Site 26 is anticipated to be commercial/industrial. Groundwater is not currently used for drinking water, irrigation, or industrial supply. Potential land and groundwater uses at Site 26 are discussed in Section 6.0 of the ROD. After remediation goals are met, the selected remedy will allow for unrestricted site use.
Estimated capital, annual operation and maintenance, and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected.	This ROD recommends no action for soil and remedial action for groundwater at the site. Section 12.0 of this ROD describes the selected groundwater remedy. Estimated capital and operation and maintenance costs are presented in Table 12-1.
Key factors that led to selecting the remedy.	Based on the low levels of incremental contamination remaining at the site in soil, no action is necessary at Site 26 to protect human health or the environment. The risk assessment conclusions indicated that the risk posed by exposure to soil at the site consistent with Alameda Point background concentrations. Groundwater at the site poses a potential risk to human health; therefore, active treatment using a proven technology is the selected remedy. Section 12.0 of this ROD describes the selected remedy, and Section 13.0 describes the statutory determinations that were made regarding the selected remedy. Section 4.0 documents that the Navy has reviewed all written and oral comments submitted during the public comment period and has determined that no significant changes to the selected groundwater remedial action and no action for soil are necessary or appropriate.

AUG 7 2006

This signature sheet documents the Navy's and the EPA's co-selection of the remedial actions in this ROD for Site 26 at Alameda Point of no action for soil and remedial action for groundwater, and the State of California, by the DTSC's and the Water Board's concurrence with this ROD. The respective parties may sign this sheet in counterparts.

AUTHORIZING SIGNATURES



Signature

Mr. Thomas Macchiarella
Base Realignment and Closure Environmental Coordinator
Base Realignment and Closure Program Office West
Department of the Navy

7/31/2006

Date



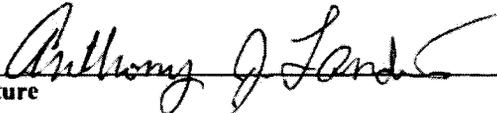
Signature

Ms. Kathleen Johnson
Chief, Superfund Federal Facilities and Site Cleanup Branch
United States Environmental Protection Agency

8/2/06

Date

The State of California, Department of Toxic Substances Control had an opportunity to review and comment on the Record of Decision and our concerns were addressed.

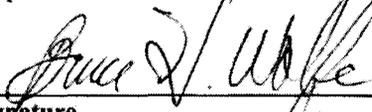


Signature

Mr. Anthony Landis, P.E.
Chief, Northern California Operations,
Office of Military Facilities
California Environmental Protection Agency
Department of Toxic Substances Control

8-3-06

Date



Signature

Bruce H. Wolfe
Executive Officer
San Francisco Bay Regional Water Quality Control Board

8/7/06

Date

1.0 SITE NAME, LOCATION, AND DESCRIPTION

This record of decision (ROD) presents the selected remedy for Installation Restoration (IR) Site 26. Site 26 is part of Operable Unit (OU) 6 at the former Naval Air Station (NAS) Alameda now referred to as Alameda Point in Alameda, California. The document was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 (Title 42 *United States Code* [USC] Section [§] 9601 et seq. [and the following one or ones]) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (Title 40 *Code of Federal Regulations* [CFR] § 300 et seq.). The decision for this site is based on the information contained in the administrative record. The administrative record index for this site is found in Attachment A.

1.1 SITE NAME

This ROD addresses IR Site 26, Western Hangar Zone at Alameda Point (hereinafter referred to as Site 26).

1.2 SITE LOCATION

Site 26 is part of Alameda Point, which is adjacent to the City of Oakland (see Figure 1-1). Alameda Point is roughly rectangular, about 2 miles long (east to west) and 1 mile wide (north to south), and occupies 1,734 acres of onshore land. Site 26 is located in the central portion of Alameda Point and is immediately east of a partially paved runway area and west of Site 5, a CERCLA site in OU-2C used as an aircraft rework facility (see Figure 1-2).

1.3 SITE DESCRIPTION

Site 26 is rectangular in shape and comprises approximately 32 acres. It is covered by concrete and asphalt pavement, four former aircraft hangars (Buildings 20 through 23), a building that formerly housed paint and finishing operations (Building 24), and several ancillary buildings (see Figure 1-3). The unpaved areas account for less than 1 acre of the site and are generally landscaped strips along the east side of buildings. The four former aircraft hangars are included in the Alameda Point Historic District and are occupied by businesses that are tenants of the Alameda Reuse and Redevelopment Agency. No naturally occurring surface streams or ponds are located on the site.

In addition, Site 26 contains multiple inactive solid waste management units (SWMU), fuel lines, and storm sewer lines. The SWMUs include seven aboveground storage tanks (or AST), one oil-water separator (or OWS), two washdown areas (or WD), and four generator accumulation points (or GAP). The area southeast of Building 20 was historically used for aircraft washdown (WD 020) and included an associated OWS (020), and the area north of Building 23 was also used as WD 023 (see Figure 1-3). Groundwater southeast of Building 20, near the former WD, is contaminated with volatile organic compounds (VOC), which may have been released to

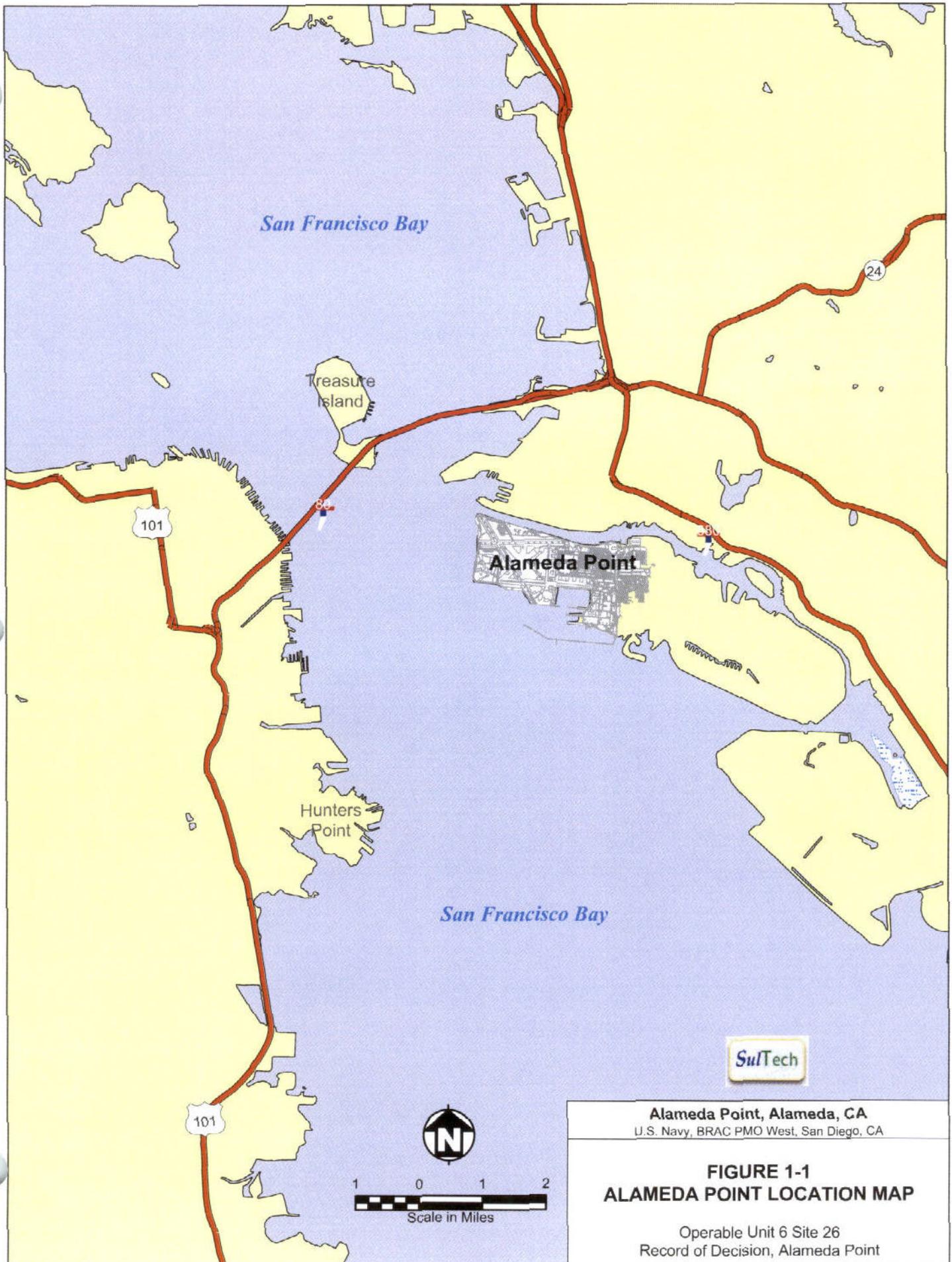
groundwater from former aircraft washdown activities. The VOCs in groundwater include cis-1,2-dichloroethene (DCE), trichloroethene (TCE), and vinyl chloride.

Historically, underground fuel lines connected each of the four hangars to the fueling manifold system, which was connected to the fuel-loading station located immediately north of Site 26 and Building 20. Fuel lines were either cleaned and left in place or removed. The fueling manifold system, located west of Buildings 20 through 23, was closed in place. Areas of fuel-related hydrocarbon contamination were identified and designated as Corrective Action Areas (CAA)-6 and Fuel Line C and are currently being investigated and remediated under the U.S. Department of the Navy's (Navy) Alameda Point total petroleum hydrocarbons (TPH) program.

Storm sewer lines at Site 26 were either cleaned and left in place or removed. A small portion of a storm sewer line extends from Site 5 into Site 26, between Buildings 23 and 24. This storm sewer line segment received waste from operations at Site 5 that may have included radium-containing paints. The Navy will address impacts to this storm sewer segment as part of Site 5 CERCLA activities.

Table 1-1 provides a detailed description of Site 26.

FIGURES

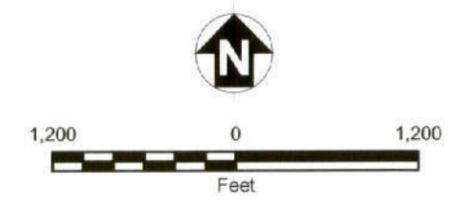




- SITE & DESCRIPTION**
- 1 1943-1956 DISPOSAL AREA
 - 2 WEST BEACH LANDFILL AND ASSOCIATED WETLANDS
 - 3 ABANDONED FUEL STORAGE AREA
 - 4 BUILDING 360 (AIRCRAFT ENGINE FACILITY)
 - 5 BUILDING 5 (AIRCRAFT REWORK FACILITY)
 - 6 BUILDING 41 (AIRCRAFT INTERMEDIATE MAINTENANCE FACILITY)
 - 7 BUILDING 459 (NAVY EXCHANGE SERVICE STATION)
 - 8 BUILDING 114 (PESTICIDE STORAGE AREA)
 - 9 BUILDING 410 (PAINT STRIPPING FACILITY)
 - 10 BUILDING 400 (MISSILE REWORK OPERATIONS)
 - 11 BUILDING 14 (ENGINE TEST CELL)
 - 12 BUILDING 10 (POWER PLANT)
 - 13 FORMER OIL REFINERY
 - 14 FORMER FIRE TRAINING AREA
 - 15 BUILDINGS 301 AND 389 (FORMER TRANSFORMER STORAGE AREA)
 - 16 C-2 CANS AREA (SHIPPING CONTAINER STORAGE)
 - 17 SEAPLANE LAGOON
 - 19 YARD D-13 (HAZARDOUS WASTE STORAGE)
 - 20 OAKLAND INNER HARBOR
 - 21 BUILDING 162 (SHIP FITTING AND ENGINE REPAIR)
 - 22 BUILDING 647 (FORMER SERVICE STATION)
 - 23 BUILDING 530 (MISSILE REWORK OPERATIONS)
 - 24 PIER 1 AND 2 SEDIMENTS
 - 25 ESTUARY PARK AND THE COAST GUARD HOUSING AREA
 - 26 WESTERN HANGAR ZONE
 - 27 DOCK ZONE
 - 28 TODD SHIPYARD
 - 29 SKEET RANGE
 - 30 MILLER SCHOOL
 - 31 MARINA VILLAGE
 - 32 NORTHWESTERN ORDNANCE STORAGE AREA
 - 33 SOUTH TARMAC AND RUNWAY WETLANDS
 - 34 FORMER NORTHWEST SHOP AREA
 - 35 WEST HOUSING AREA

- CERCLA Site Boundary
- Operable Unit 1
- Operable Unit 2A
- Operable Unit 2B
- Operable Unit 2C
- Operable Unit 3
- Operable Unit 4A
- Operable Unit 4B
- Operable Unit 4C
- Operable Unit 5
- Operable Unit 6
- Building
- Land Cover

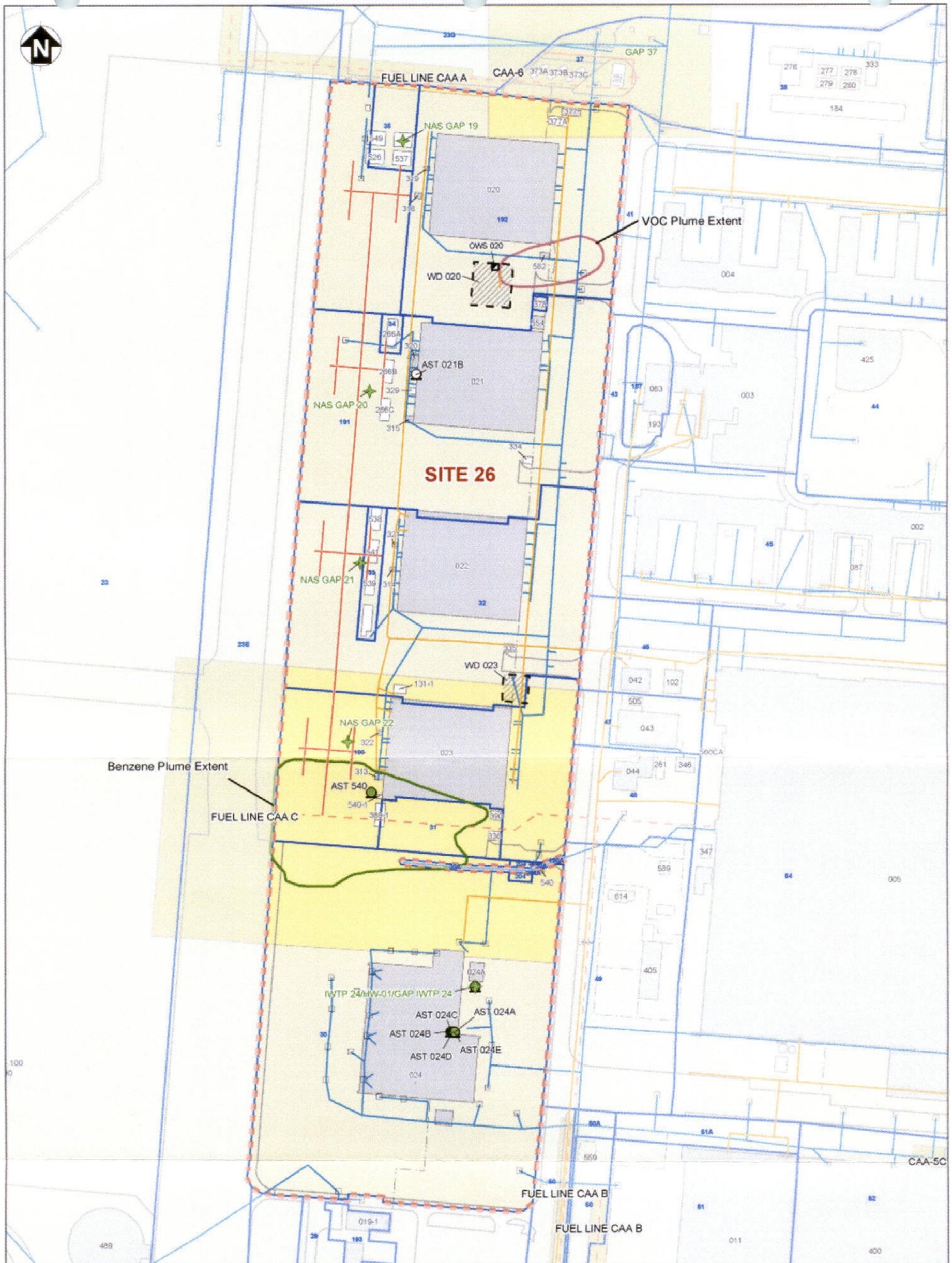
Note:
 CERCLA Comprehensive Environment Response,
 Compensation, and Liability Act



Alameda Point, Alameda, CA
 U.S Navy, BRAC PMO West, San Diego, CA

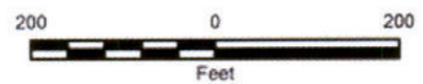
**FIGURE 1-2
 SITE LOCATION MAP**

Operable Unit 6 Site 26
 Record of Decision, Alameda Point



- Generator Accumulation Point
- Oil Water Separator
- Catch Basin
- Aboveground Storage Tanks**
- PRESENT
- REMOVED
- Fence Line
- Fuel Lines**
- Present
- Abandoned-in-place in 2001/2002
- Removed in 1998
- Sanitary Sewer Line
- Storm Sewer Line
- CERCLA Site Boundary
- Environmental Baseline Survey Parcel
- Buildings**
- Present
- Removed
- Benzene Plume Extent
- VOC Plume Extent
- Corrective Action Area
- Approximate Location of Former Aircraft Washdown Area

Note:
 AST Aboveground Storage Tank
 CAA Corrective Action Area
 CERCLA Comprehensive Environment Response, Compensation, and Liability Act
 GAP Generator Accumulation Point
 IWTP Industrial Wastewater Treatment Plant
 VOC Volatile Organic Compound



Alameda Point, Alameda, CA
 U.S. Navy, BRAC PMO West, San Diego, CA

**FIGURE 1-3
 SITE FEATURES MAP**

Operable Unit 6 Site 26
 Record of Decision, Alameda Point

TABLES

TABLE 1-1: SITE 26 DESCRIPTION

Record of Decision, Site 26, Alameda Point, Alameda, California

OU Number	Site Name	Approximate Area (acres)	Approximate Depth to Groundwater (feet bgs)	Site Description
OU-6	26	32	2 to 6	Site 26 is located in the central portion of Alameda Point and was primarily used for aircraft parking, maneuvering, washdown, fueling, and maintenance, as well as support activities including paint and primer spraying, mixing, storage and use of solvents, adhesives, detergents, alcohol, and sealers. Site 26 includes four aircraft hangars (Buildings 20 through 23), a painting and finishing building (Building 24), several ancillary buildings, SWMUs, fuel lines, and storm sewer lines. SWMUs include seven ASTs, four GAPs, two washdown areas, and one oil-water separator. The areas southeast of Building 20 and north of Building 23 were historically used for aircraft washdown and an oil-water separator was associated with the washdown area near Building 20. Historically, underground fuel lines connected each of the four hangars to the fueling manifold system, which was connected to the fuel-loading station located immediately north of Site 26. Groundwater southeast of Building 20 is impacted with VOCs (cis-1,2-dichloroethene, trichloroethene, and vinyl chloride), which may have been released to groundwater from former aircraft washdown activities. Groundwater is also contaminated with fuel-related hydrocarbons that is currently being investigated and remediated under the Alameda Point TPH program.

Notes:

AST	Aboveground storage tank
bgs	Below ground surface
GAP	Generator accumulation point
OU	Operable Unit
SWMU	Solid waste management unit
TPH	Total petroleum hydrocarbons
VOC	Volatile organic compound

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

This section summarizes the site history and investigation activities conducted at Site 26.

2.1 SITE HISTORY

Alameda Point is located on the western tip of Alameda Island, which is on the eastern side of San Francisco Bay. Most of the northern portions of Alameda Island were covered by the waters and tidal lands of San Francisco Bay. To create Alameda Point, fill material was dredged from San Francisco Bay. The U.S. Army acquired Alameda Point from the City of Alameda in 1930. The Navy later acquired the land from the U.S. Army in 1936, and built the former NAS Alameda to support the Navy's operations in Europe before World War II. The base was operated as an active naval facility from 1940 to 1997. During the history of NAS Alameda, it housed approximately 60 military tenant commands for a combined military/civilian work force of over 18,000 personnel.

Historical use of Site 26 included aircraft parking, maneuvering, washdown (southeast of Building 20 and north of Building 23), fueling, and maintenance, as well as support activities including paint and primer spraying, mixing, storage and use of solvents, adhesives, detergents, alcohol, and sealers (International Technology Corporation [IT] 2001). Historically, underground fuel lines connected each of the four hangars to the fuel distribution network at Site 26.

The Navy began investigations of contaminated sites in 1982 under the auspices of the Navy Assessment and Control of Installation Pollutants (NACIP) program. The Navy's procedures and priorities for conducting environmental investigations and cleanups have evolved, partly in response to events such as the closure of NAS Alameda in April 1997, under the Base Closure and Realignment Act, and the designation of Alameda Point as a National Priority List (NPL) site in July 1999 (U.S. Environmental Protection Agency [EPA] 1999b). When NAS Alameda was listed for closure, responsibility for the environmental cleanup program at Alameda Point passed to the Base Realignment and Closure (BRAC) Cleanup Team (BCT). At Alameda Point, the BCT comprises representatives from Navy, EPA, and the California Environmental Protection Agency's Department of Toxic Substances Control Board (DTSC) and San Francisco Bay Regional Water Quality Control Board (Water Board). The listing of Alameda Point on the NPL invokes the applicable requirements of the NCP and requires EPA concurrence prior to the final classification of any property as uncontaminated. The Navy and EPA negotiated and signed a Federal Facility Agreement in 2001, and DTSC and Water Board signed the agreement in 2005.

The BCT developed a comprehensive strategy to accelerate site investigation, cleanup, and reuse of the CERCLA sites at Alameda Point, and part of that strategy involved grouping the sites into OUs. Site 26 is part of OU-6 and is designated as a mixed use OU because potential reuse will include commercial, light industrial, recreational, and medium-density residential uses. Previously, the basewide storm sewer system was designated Site 18. Storm sewers are currently being addressed within their respective CERCLA site; therefore, the storm sewers located within the boundary of Site 26 are being addressed by this decision document, except for a small

portion of a storm sewer line that extends from Site 5 into Site 26 between Buildings 23 and 24. This storm sewer line received waste from operations at Site 5 that may have included radium-containing paints. The Navy will address these waste materials as part of Site 5 CERCLA activities.

Historically, underground fuel lines connected each of the four hangars to the fuel distribution network at Site 26. Cleaned lines running north-south along the western portion of the site were abandoned in place. A length of fuel line running east-west between Buildings 23 and 24 has been removed. During this removal, a break in the line was discovered southwest of Building 23. A 1941 fuel-line release was reported in the same area.

In addition, a fuel-loading station was historically located immediately north of Site 26 and Building 20; associated fuel-related hydrocarbon contamination (CAA-6) is currently being investigated and remediated under the Navy's Alameda Point TPH program.

2.2 INVESTIGATION ACTIVITIES

No enforcement activities are related to Site 26 or any of the other sites that are included in OU-6. Environmental investigation and remedial activities associated with OU-6 are implemented under the installation-wide environmental program called the IR program. The purpose of this program is to identify, investigate, assess, characterize, and cost-effectively clean up or control releases of hazardous substances to reduce the risk to human health and the environment. The program is administered in accordance with the following environmental laws:

- CERCLA, as amended by SARA
- Resource Conservation and Recovery Act (RCRA)

CERCLA applies to sites where a hazardous substance is known or suspected to have been released to the environment. RCRA generally applies to active solid and hazardous waste management facilities. RCRA also may apply to past SWMUs and/or areas of concern (AOC) that are located on past hazardous waste management facilities. CERCLA and RCRA address the investigation and cleanup of contaminated property through slightly different, but functionally equivalent processes; therefore, regulatory authorities normally require the application of only one of the processes, when both of CERCLA and RCRA apply to a single site. In these instances, brief explanations are prepared to indicate the fulfillment of the requirements for the process that was not used.

In addition to investigations under CERCLA, Alameda Point and Site 26 also underwent environmental baseline survey (EBS) and TPH investigations. The following sections summarize the CERCLA, RCRA, TPH, and EBS activities conducted at Site 26.

2.2.1 CERCLA Investigation Activities

The Navy initiated environmental investigations at Alameda Point under the NACIP program. Under the NACIP, the Navy performed an initial assessment study (IAS) in 1982 to assess Alameda Point for areas posing a potential threat to human health or the environment due to contamination from past hazardous materials operations (see Table 2-1). The IAS report (Naval Energy and Environmental Support Activity [NEESA] 1983) identified a 1941 fuel line break that likely occurred within Site 26. The location of the break was described as "southwest of hangar 23," and the IAS indicated that the leak required extensive soil excavation and the removal of gasoline by pumping before vapor levels could be brought to a safe level (NEESA 1983). Petroleum contamination, including benzene, remains in groundwater southwest of Building 23 and is currently being investigated and remediated under the Alameda Point TPH program, which is regulated by the Water Board.

After receiving a Remedial Action Order from the California Department of Health Services (now DTSC) in 1988, the Navy converted its NACIP program into the IR program to be more consistent with CERCLA, and investigations were conducted in a phased approach. Activities conducted at Site 26 under CERCLA consisted of storm sewer removal actions, data gaps sampling, a remedial investigation (RI), and basewide groundwater monitoring.

A time-critical removal action (TCRA) storm sewer removal was conducted at Site 26 from July 1996 to March 1997, and a non-TCRA was conducted in 1999. The storm-sewer system at Alameda Point consists of approximately 194,000 linear feet of sewer line with 35 subsystems, all of which discharge to nearby surface water bodies such as the Oakland Inner Harbor or Seaplane Lagoon. At Site 26, storm sewer lines located at and north of Building 23 flow to an outfall in the Oakland Inner Harbor, while storm sewer lines located south of Building 23 flow to an outfall in Seaplane Lagoon. The TCRA was conducted to remove the residual contamination in storm sewer lines and sediments in catch basins from washing into nearby surface water bodies (IT 1997). The non-TCRA involved cleaning or removal of selected storm sewer lines in the vicinity of Site 26; other lines were left in place (Tetra Tech EM Inc. [Tetra Tech] 2002).

Based on a radiation survey conducted in 1996, radiological readings were discovered in manholes and segments of storm sewer lines adjacent to Site 26 (Tetra Tech 1997). A second survey was conducted in 1997 (New World Technology 1998), and storm sewer lines and manholes in the vicinity of Site 26 were found to contain radium-226 (Ra-226) at concentrations up to 36 picocuries per gram (pCi/g). Sediment collected from manholes near Site 26 contained Ra-226 at concentrations ranging from 0.16 to 731.7 pCi/g. An additional sediment sample collected near the storm water outfall in Seaplane Lagoon (immediately downstream of Site 26) contained 0.938 pCi/g of Ra-226. Storm sewer lines that were addressed during the 1999 removal action included a segment that runs east-west between Building 5 and Site 26 and 360 feet of sewer lines extending southward towards Seaplane Lagoon (Tetra Tech 2002). The removal action ceased approximately 360 feet south of Building 5 after the presence of heaving sands and shallow groundwater made the excavation and replacement of the lines in these areas difficult and costly. The Navy plans to address impacts to a storm sewer segment located between Buildings 23 and 24 at Site 26, which may have received waste from operations at Site 5, as part of Site 5 CERCLA activities; therefore, it is not addressed by this ROD.

In 2002, data gap sampling was conducted, which included an investigation of storm sewer bedding material at Site 26 (Tetra Tech 2002). Based on the results of the investigation, it was concluded that neither the storm sewers nor the bedding material were acting as preferential pathways for contaminant migration.

A RI field investigation was conducted from February to December 2002. Investigation activities included collection of soil, soil gas, and groundwater samples to refine the characterization of the contamination at the site and to provide data for risk assessment. The VOCs 1,1-dichloroethane (DCA), 1,2-DCA, cis-1,2-DCE, TCE, vinyl chloride, and benzene were detected in groundwater southeast of Building 20. Fuel hydrocarbons were detected in soil and groundwater southwest of Building 23. The fuel hydrocarbons detected in soil included benzene and ethylbenzene. Fuel hydrocarbons detected in groundwater include benzene, ethylbenzene, toluene, total xylenes, 1,2-dibromoethane, and 1,2-DCA (Bechtel Environmental Incorporated [Bechtel] 2003).

The basewide groundwater monitoring program began in 2002 and is ongoing. It was initiated to (1) monitor the status of contaminant plumes in groundwater, (2) determine the potential for natural degradation, (3) determine the groundwater flow direction and gradient, and (4) identify locations where additional wells are needed and locations where existing wells can be abandoned. Select wells were identified for quarterly or semiannual monitoring.

An RI report for Site 26 was prepared and became final in November 2003 (Bechtel 2003). A feasibility study (FS) report was also prepared and became final in April 2005 (Bechtel 2005).

In October 2005, the Navy distributed a proposed plan for Site 26, which included their recommendation for no action for soil and remediation of groundwater (SulTech 2005a). The proposed plan also summarized the history of the site, including the environmental investigations conducted, and notified the community of the public meeting and public comment period.

Table 2-1 summarizes the CERCLA investigation activities at Site 26.

2.2.2 RCRA Investigation Activities

A RCRA facility assessment (RFA) was conducted at Alameda Point in 1992 (DTSC 1992). Its primary objectives were to identify SWMUs and AOCs and to collect preliminary information on all actual or potential contaminant releases from these SWMUs and AOCs to evaluate the need and scope of a RCRA facility investigation (RFI). The RFA identified five RCRA sites within Site 26 (DTSC 1992). These five sites included HW-1 and four nonpermitted NAS GAPs 19, 20, 21, and 22. HW-1 consisted of industrial wastewater treatment plant (IWTP) 24 (which was a RCRA Part B permitted unit) and Building 24. IWTP 24 was housed within Building 24A and included an associated GAP and tanks, which were used to store IWTP-related materials. IWTP 24 was closed with the approval of DTSC on January 21, 1998 (Bechtel 2003). An RFI was not recommended for NAS GAPs 19, 20, 21, and 22 because of the low potential for release since all sites were in self-contained sheds and on concrete surfaces (DTSC 1992).

An RFI for Alameda Point was implemented through the coordination of existing environmental programs; namely, CERCLA, Underground Storage Tank Corrective Action Program (Alameda Point TPH program), and the EBS. Functional equivalents of RFI documents (such as RFI work plans and RFI reports) have been and continue to be issued for various SWMUs and AOCs under each of these programs. These programs have and will continue to result in the full characterization of the nature, extent, and rate of migration of hazardous waste releases at all SWMUs and AOCs at Alameda Point. Many of the results of the RFA- and RFI-related activities at Alameda Point are summarized in the 2001 EBS (IT 2001).

Currently, the following 14 SWMUs, which are inactive, have been identified within Site 26:

- Seven ASTs (021B, 540, and 024A through 024E)
- One OWS (020)
- Two WDs (020 and 023)
- Four GAPs (NAS GAPs 19 through 22)

The RCRA units at Alameda Point no longer treat, store, or dispose of hazardous waste and each has been undergoing closure. Based on evaluations conducted by the Navy using requirements stipulated in the final hazardous waste facility permit for former NAS Alameda (SulTech 2005b), two of the SWMUs (AST 021B and AST 540) were recommended for integration with the Alameda Point TPH program because of the absence of CERCLA contaminants, and in a letter dated October 3, 2005 (DTSC 2005), DTSC asked the Navy to contact the Water Board for the closure determination on AST 021B and AST 540. The Water Board concurred with the Navy's recommendation of deferring AST 021B and AST 540 to the Alameda Point TPH program (Water Board 2006). Each of the remaining 12 SWMUs were recommended for integration with the CERCLA program and received a recommendation for further action or no further action. These findings are summarized in Table 2-2.

Ten of the SWMUs (ASTs 024A through 024E, NAS GAPs 19 through 22, and WD 023) were recommended for no further action (NFA) for the following reasons:

- ASTs 024A through E have relatively small capacities (100 gallons each), are located in a building with concrete floors that are in good condition, and showed no signs of leakage during a 2004 site visit.
- WD 023 has no history of releases in its vicinity, and it is associated with nearby soil and groundwater samples in which concentrations of TPH, metals, VOCs, semivolatile organic compounds (SVOC), and polynuclear aromatic hydrocarbons (PAH) were either not detected or detected at concentrations below residential preliminary remediation criteria (PRC) (Navy 2001a), EPA preliminary remediation goals (PRG) (EPA 2002a), or maximum contaminant levels (MCL) (California Department of Health Services 2003).

- NAS GAP 19 was recommended for NFA in a letter from DTSC dated November 4, 1999 (DTSC 1999). It has a low potential for releases into soil and groundwater because it was situated on concrete pavement and is associated with soil samples in which concentrations of TPH, metals, VOCs, SVOCs and PAHs were either not detected or detected at concentrations below residential PRCs (Navy 2001b) and EPA PRGs (EPA 2002a).
- NAS GAP 20 was recommended for NFA in a letter from DTSC dated November 4, 1999 (DTSC 1999). It has a low potential for releases into soil and groundwater because it was situated on concrete pavement and is associated with soil samples in which concentrations of TPH, metals, and VOCs did not have any detections, and reporting limits were below the residential PRCs (Navy 2001b) and EPA PRGs (EPA 2002a) except for mercury, which slightly exceeded the residential PRG.
- NAS GAP 21 was recommended for NFA in a letter from DTSC dated November 4, 1999 (DTSC 1999). It has a low potential for releases into soil and groundwater because it was inside a self-contained shed situated on concrete pavement, and VOCs were not detected in a nearby soil sample.
- NAS GAP 22A was recommended for NFA in a letter from DTSC dated November 4, 1999 (DTSC 1999). It has a low potential for releases into soil and groundwater because it was inside a self-contained shed situated on concrete pavement, and there were no detections of VOCs, SVOCs (groundwater only), and PAHs (groundwater only) in nearby soil and groundwater samples.

In a letter dated October 3, 2005 (DTSC 2005), DTSC concurred with the NFA determination for 5 of these 10 SWMUs (AST 024A through AST 024E) but requested further evaluation of WD 023 and 4 of the SWMUs (NAS GAP 19, NAS GAP 20, NAS GAP 21, NAS GAP 22) that previously had received a NFA recommendation in 1999 (DTSC 1999). On February 17, 2006, the Navy provided additional documentation on the previous corrective actions on the SWMUs (Navy 2006a). Based on this additional documentation, DTSC issued a letter, dated March 29, 2006, withdrawing its request for further evaluation of WD 023, NAS GAP 19, NAS GAP 20, NAS GAP 21, and NAS GAP 22 (DTSC 2006a). Table 2-3 summarizes the Navy's and DTSC's determinations for SWMUs located within Site 26.

Two of the SWMUs (OWS 020 and WD 020) were recommended for further action because activities conducted at OWS 020 and WD 020 are associated with the contaminated groundwater addressed by this ROD. DTSC concurred with the further evaluation determination for these two SWMUs (DTSC 2005). The selected CERCLA remedy will address the releases of hazardous substances from OWS 020 and WD 020 on the groundwater; no corrective action is needed for soil (Navy 2006b). Table 2-3 summarizes the Navy's and DTSC's determinations for SWMUs located within Site 26.

2.2.3 EBS Investigation Activities

As mandated by BRAC, the Navy conducted a series of basewide investigations at Alameda Point as part of the EBS. The objective of the EBS was to inventory all Alameda Point property, parcel by parcel, and identify known or suspected chemical releases associated with historical and recent uses. The EBS program at Alameda Point was implemented in two phases. Phase 1 of the investigation included site visits, employee interviews, and historical research (Environmental Resources Management [ERM]-West 1994). In addition, recommendations for additional investigations (Phase 2) were made. Based on the Phase I investigation, it was recommended that soil sampling be conducted at several parcels within Site 26 to confirm whether a release or disposal of hazardous substances had occurred (ERM-West 1994). Site 26 is composed of Parcels 30 through 36, 190, 191, 192, and 204, which lie within Zone 6.

Phase 2 activities, which consisted of Phases 2A, 2B, and 2C involved collection of environmental samples that targeted potentially contaminated areas and was conducted between October 1994 and December 1998 (IT 2001). Elevated concentrations of VOCs were identified in shallow groundwater southeast of Building 20, and elevated concentrations of petroleum hydrocarbons and VOCs were identified in shallow groundwater south of Building 23. No significant soil contamination or continuing source were identified (IT 2001). Based on these results, it was recommended that an RI under CERCLA be conducted to define the nature and extent of soil and groundwater contamination.

2.2.4 TPH Investigation Activities

TPH-related investigations were completed in 1996 and 1998 (Tetra Tech 1999). The investigations indicated the general extent of petroleum hydrocarbon contamination along segments of pipelines located southwest of Building 23 and at the fuel storage area at EBS Parcel 37. Some residual free product was noted in the subsurface during field activities. Approximately 3,600 feet of pipeline carried fuel to two 512,000-gallon tanks located at the fuel storage area immediately north of Site 26. Two fuel line segments were located within Site 26, a fueling manifold system and a fuel line segment. Fuel line removals and closures were conducted at Site 26 from 1998 until 2002 (Bechtel 2003). The fueling manifold system located west of Buildings 20 through 23 was closed in place, and the fuel line segment that was located south of Building 23 was removed. These activities were documented in reports, which underwent the regulatory review process. In addition, a letter was issued by the Water Board in 2003 that concurred with completion of the fuel line removals (Water Board 2003).

Confirmation results indicated that petroleum contamination remained in soil and groundwater at Site 26 southwest of Building 23 and in the northeast corner of the site (Bechtel 2003). These areas are designated as CAA Fuel Line C and CAA-6 and are currently being investigated and remediated under the Alameda Point TPH program, which is regulated by the Water Board.

See Table 2-4 for a summary of EBS and TPH investigation activities.

TABLES

TABLE 2-1: SUMMARY OF CERCLA INVESTIGATION ACTIVITIES

Record of Decision, Site 26, Alameda Point, Alameda, California

Date	Investigation/Activity	Objective	Summary of Findings
1982	Initial Assessment Study	Identify sites that posed risks to human health or the environment and to identify areas where hazardous materials were stored, transferred, processed, and disposed.	Documented a 1941 fuel line break (Naval Energy and Environmental Support Activity 1983).
1997	Time-Critical Removal Action Storm Sewer Removal Action	Prevent residual contamination in storm sewer lines and sediments in catch basins from washing into nearby surface water bodies.	Removed residual contamination in storm sewer lines and sediments in catch basins were removed (International Technology Corporation 1997).
1999	Non-Time-Critical Removal Action Storm Sewer Removal Action	Clean, remove, or leave in place segments of storm sewer lines and manholes with radiological readings.	Addressed a segment that runs east-west between Building 5 and Site 26 and 360 feet of sewer lines extending southward towards Seaplane Lagoon (Tetra Tech EM Inc. 2002). The removal action ceased approximately 360 feet south of Building 5 after the presence of heaving sands and shallow groundwater made the excavation and replacement of the lines in these areas difficult and costly. The Navy plans to address impacts to a storm sewer segment located between Buildings 23 and 24 at Site 26, which may have received waste from operations at Site 5, as part of Site 5 activities under the Comprehensive Environmental Response, Compensation, and Liability Act.
2002	Data Gaps Sampling	Investigate storm sewer bedding material.	Concluded that neither the storm sewers nor the bedding material were acting as preferential pathways for contaminant migration (Tetra Tech EM Inc. 2002).
2002	Remedial Investigation	Collection of soil, soil gas, and groundwater samples, and aquifer testing to refine the characterization of contamination at Site 26 and provide data for risk assessment.	Volatile organic compounds were detected in groundwater southeast of Building 20, and fuel hydrocarbons were detected in soil and groundwater southwest of Building 23 (Bechtel Environmental Incorporated 2003).
2002 to present	Basewide Groundwater Monitoring	Conducted to (1) monitor the status of contaminant plumes in groundwater, (2) determine the potential for natural degradation, (3) determine the groundwater flow direction and gradients, and (4) identify locations where additional wells are needed and locations where existing wells can be abandoned.	Select wells were identified for quarterly or semiannual monitoring (International Technology Corporation 2001).

TABLE 2-2: SUMMARY OF RCRA INVESTIGATION ACTIVITIES

Record of Decision, Site 26, Alameda Point, Alameda, California

Date	Investigation/Activity	Objective	Summary of Findings
1990	RCRA Facility Assessment	Identify SWMUs and AOCs, collect preliminary information on all actual or potential contaminant releases from these SWMUs and AOCs, and to evaluate the need and scope of a RCRA facility investigation.	The RFA identified five RCRA sites within Site 26 (DTSC 1992). These five sites included HW-1 and four nonpermitted NAS GAPs 19, 20, 21, and 22. HW-1 consisted of RCRA Part B permitted unit IWTP 24 and Building 24. IWTP 24 was housed within Building 24A and included an associated GAP and tanks, which were used to store IWTP-related materials. An RFI was not recommended in the RFA for NAS GAPs 19, 20, 21, and 22 because of the low potential for release since all sites were in self-contained sheds and on concrete surfaces (DTSC 1992). IWTP 24 was closed with the approval of DTSC on January 21, 1998 (Bechtel 2003).
1999	RCRA Facility Investigation	An RFI for Alameda Point was implemented through the coordination of existing environmental programs, namely CERCLA, Underground Storage Tank Corrective Action Program (Alameda Point TPH program), and the EBS.	A total of 14 SWMUs, which are inactive, were identified at Site 26 and include AST 021B, AST 540, ASTs 024A through 024E, OWS 020, WD 020, WD 023, and NAS GAPs 19 through 22. A letter dated November 4, 1999 (DTSC 1999), DTSC recommended NFA for NAS GAPs 19 through 22.
2005 and 2006	SWMU Evaluation	Identify the need for further actions at SWMUs, and identify SWMUs that should be managed under the Alameda Point TPH or CERCLA programs.	AST 021B and AST 540 were recommended for integration with the Navy's Alameda Point TPH program because of the absence of CERCLA contaminants. ASTs 024A through 024E, NAS GAPs 19 through 22, and WD 023 were recommended for NFA, and OWS 020 and WD 020 were recommended for further action under CERCLA and are addressed by this ROD. In a letter dated October 3, 2005 (DTSC 2005), DTSC concurred with the NFA determination for the following five SWMUs: AST 024A, AST 024B, AST 024C, AST 024D, and AST 024E. However, DTSC requested further evaluation of the following five SWMUs: NAS GAP 19, NAS GAP 20, NAS GAP 21, and NAS GAP 22, which had previously received a NFA recommendation, and WD-023. On February 17, 2006, the Navy provided additional documentation on the previous corrective actions on the SWMUs (Navy 2006a). In a letter dated March 29, 2006 (DTSC 2006a), DTSC withdrew its request for further evaluation of WD 023, NAS GAP 19, NAS GAP 20, NAS GAP 21, and NAS GAP 22. DTSC concurred with the further evaluation determination for OWS 020 and WD 020 and asked the Navy to contact the Water Board for the closure determination on AST 021B and AST 540. The Water Board concurred with the Navy's recommendation of deferring AST 021B and AST 540 to the Alameda Point TPH program (Water Board 2006).

TABLE 2-2: SUMMARY OF RCRA INVESTIGATION ACTIVITIES (CONTINUED)

Record of Decision, Site 26, Alameda Point, Alameda, California

Notes:

AOC	Area of concern
AST	Aboveground storage tank
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DTSC	California Environmental Protection Agency, Department of Toxic Substance Control
EBS	Environmental baseline survey
GAP	Generator accumulation point
IWTP	Industrial wastewater treatment plant
NFA	No further action
NAS	Naval air station
OWS	Oil-water separator
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
SWMU	Solid waste management unit
TPH	Total petroleum hydrocarbon
WD	Washdown area

TABLE 2-3: SUMMARY OF NAVY AND DTSC DETERMINATIONS FOR SWMUS LOCATED WITHIN SITE 26
Record of Decision, Site 26, Alameda Point, Alameda, California

SWMU Identification	Navy Determination (SulTech 2005b)	DTSC Letter Dated October 3, 2005 (DTSC 2005)	Navy FedEx® and E-mail Dated February 17, 2006 (Navy 2006a)	DTSC Letter Dated March 29, 2006 (DTSC 2006a)	Navy E-mail Dated May 16, 2006 (Navy 2006b)	Navy E-mail Dated May 18, 2006 (Navy 2006c)	Water Board E-mail Dated May 18, 2006 (Water Board 2006)	DTSC Concurrence Dated May 24, 2006 (DTSC 2006b)	Final Determination in the ROD
AST 024A	NFA recommended	NFA recommended	NFA recommended	NA	NA	NA	NA	NA	No RCRA correction action
AST 024B	NFA recommended	NFA recommended	NFA recommended	NA	NA	NA	NA	NA	No RCRA correction action
AST 024C	NFA recommended	NFA recommended	NFA recommended	NA	NA	NA	NA	NA	No RCRA correction action
AST 024D	NFA recommended	NFA recommended	NFA recommended	NA	NA	NA	NA	NA	No RCRA correction action
AST 024E	NFA recommended	NFA recommended	NFA recommended	NA	NA	NA	NA	NA	No RCRA correction action
NAS GAP 19	NFA recommended	Further evaluation recommended	The Navy provided additional documentation on the previous corrective actions on the SWMUs	NFA recommended	NA	NA	NA	NA	No RCRA correction action
NAS GAP 20	NFA recommended	Further evaluation recommended	The Navy provided additional documentation on the previous corrective actions on the SWMUs	NFA recommended	NA	NA	NA	NA	No RCRA correction action
NAS GAP 21	NFA recommended	Further evaluation recommended	The Navy provided additional documentation on the previous corrective actions on the SWMUs	NFA recommended	NA	NA	NA	NA	No RCRA correction action
NAS GAP 22	NFA recommended	Further evaluation recommended	The Navy provided additional documentation on the previous corrective actions on the SWMUs	NFA recommended	NA	NA	NA	NA	No RCRA correction action
OWS 020	Further evaluation recommended	Further evaluation recommended	Further evaluation recommended	NA	Requesting concurrence with the Navy's recommendation of no corrective action is needed for soil to address releases from OWS 020 and WD 020	NA	NA	The selected CERCLA remedy will address the hazardous releases from OWS 020 and WD 020 on the groundwater; no corrective action is needed on the soil.	The selected CERCLA remedy will address the hazardous releases from OWS 020 and WD 020 on the groundwater; no corrective action is needed on the soil.
WD 020	Further evaluation recommended	Further evaluation recommended	Further evaluation recommended	NA	Requesting concurrence with the Navy's recommendation of no corrective action is needed for soil to address releases from OWS 020 and WD 020	NA	NA	The selected CERCLA remedy will address the hazardous releases from OWS 020 and WD 020 on the groundwater; no corrective action is needed for soil.	The selected CERCLA remedy will address the hazardous releases from OWS 020 and WD 020 on the groundwater; no corrective action is needed for soil.

TABLE 2-3: SUMMARY OF NAVY AND DTSC DETERMINATIONS FOR SWMUS LOCATED WITHIN SITE 26 (CONTINUED)
 Record of Decision, Site 26, Alameda Point, Alameda, California

SWMU Identification	Navy Determination (SulTech 2005b)	DTSC Letter Dated October 3, 2005 (DTSC 2005)	Navy FedEx® and E-mail Dated February 17, 2006 (Navy 2006a)	DTSC Letter Dated March 29, 2006 (DTSC 2006a)	Navy E-mail Dated May 16, 2006 (Navy 2006b)	Navy E-mail Dated May 18, 2006 (Navy 2006c)	Water Board E-mail Dated May 18, 2006 (Water Board 2006)	DTSC Concurrence Dated May 24, 2006 (DTSC 2006b)	Final Determination in the ROD
WD 023	NFA recommended	Further evaluation recommended	The Navy provided additional documentation on the previous corrective actions on the SWMUs	NFA recommended	NA	NA	NA	NA	No RCRA correction action
AST 021B	NFA recommended	DTSC requested the Navy contact the Water Board for closure determination	NFA recommended	NA	NA	Requesting concurrence with the Navy's recommendation of deferring AST 021B and AST 540 to the Alameda Point TPH Program	The Water Board concurred with the Navy's recommendation of deferring AST 021B and AST 540 to the Alameda Point TPH program.	NA	RCRA corrective actions deferral to the Alameda Point TPH program
AST 540	Further evaluation recommended	DTSC requested the Navy contact the Water Board for closure determination	Further evaluation recommended	NA	NA	Requesting concurrence with the Navy's recommendation of deferring AST 021B and AST 540 to the Alameda Point TPH Program	The Water Board concurred with the Navy's recommendation of deferring AST 021B and AST 540 to the Alameda Point TPH program.	NA	RCRA corrective actions deferral to the Alameda Point TPH program

- Notes:
- AST Aboveground storage tank
 - CERCLA Comprehensive Environmental Response, Compensation, and Liability Act
 - DTSC Department of Toxic Substances Control
 - GAP Generator accumulation point
 - NA Not applicable
 - NAS Naval air station
 - Navy U.S. Department of the Navy
 - NFA No further action
 - OWS Oil-water separator
 - RCRA Resource Conservation and Recovery Act
 - ROD Record of decision
 - SWMU Solid waste management unit
 - TPH Total petroleum hydrocarbon
 - Water Board San Francisco Bay Regional Water Quality Control Board
 - WD Washdown area

TABLE 2-4: SUMMARY OF EBS AND TPH INVESTIGATION ACTIVITIES

Record of Decision, Site 26, Alameda Point, Alameda, California

Date	Investigation/Activity	Objective	Summary of Findings
1994	EBS Phase 1	Inventory all Alameda Point property on a parcel-by-parcel basis and identify known or suspected hazards associated with historical and recent uses of each parcel.	The results of the site visits, employee interviews, historical research, and inventory of all property indicated that sampling should be conducted to confirm whether a release or disposal of hazardous substances or petroleum products had occurred (ERM-West 1994).
1994 to 1998	EBS Phase 2	Further examine the environmental condition of Alameda Point property by collection and analysis of environmental samples.	Elevated concentrations of VOCs were identified in shallow groundwater southeast of Building 20, and elevated concentrations of petroleum hydrocarbons and VOCs were identified in shallow groundwater south of Building 23. No significant soil contamination or continuing source were identified (IT 2001). Based on these results, it was recommended that an RI be conducted to define the nature and extent of soil and groundwater contamination.
1996 and 1998	TPH-related	Examine the condition of fuel lines.	The investigations indicated petroleum hydrocarbon contamination along segments of fuel lines located southwest of Building 23 and at the fuel storage area at EBS Parcel 37 (Tetra Tech 1999).
1998 to 2002	Fuel Line Removals	Remove or close in place fuel lines.	The fueling manifold system located west of Buildings 20 through 23 was closed in place, and the fuel line segment that was located south of Building 23 was removed (Tetra Tech 2000). A letter was issued by the Water Board in 2003 that concurred with completion of the fuel line removals (Water Board 2003). Confirmation results indicated that petroleum contamination remained in soil and groundwater at Site 26 southwest of Building 23 and in the northeast corner of the site (Tetra Tech 2000).
2005	CAA Fuel Line C and CAA-6	Currently being investigated and remediated under the Alameda Point TPH program.	Currently being investigated and remediated.

Notes:

CAA	Corrective action area	RI	Remedial Investigation
EBS	Environmental baseline survey	Tetra Tech	Tetra Tech EM Inc.
ERM-West	Environmental Resources Management	TPH	Total petroleum hydrocarbons
IT	International Technology Corporation	VOC	Volatile organic compound

3.0 COMMUNITY PARTICIPATION

A community relations plan was developed to document interests, issues, and concerns raised by the community in regard to ongoing investigation and cleanup activities at Alameda Point, and to describe a specific community relations program designed to address community issues and concerns (Tetra Tech 2003). The initial plan was prepared in February 1989 and revised in 1996, 1998, 2002, and 2003. The revisions incorporated the most recent assessment of community issues, concerns, and informational needs related to the ongoing environmental investigation and remediation program at Alameda Point.

3.1 RESTORATION ADVISORY BOARD

In 1993, individuals from local communities began to play an increasingly significant role in the environmental restoration process with the establishment of the Alameda Point Restoration Advisory Board (RAB). Original membership in the board was solicited by the Navy through newspaper notices, including business and homeowners' representatives, residents, local elected officials, and regulatory agency staff.

The RAB currently consists of members of the Navy, the community, and regulatory agencies. The RAB meetings occur monthly and are open to the public. Meetings are held in the evenings after normal working hours at Building 1, Room 140, at 950 West Mall Square at Alameda Point. RAB members review and comment on technical documents.

The Navy and regulators reported information about Site 26, including the availability of Site 26 documents, to the RAB members during the monthly RAB meetings. Copies of the RAB meeting minutes and documents describing environmental investigations and removal actions are available at the following Alameda Point information repositories and administrative record file locations:

Alameda Point
950 West Mall Square
Building 1, Rooms 240 and 241
Alameda, California

Alameda Public Library
2200A Central Avenue
Alameda, California

Administrative Record
Naval Facilities Engineering Command, Southwest Division
937 North Harbor Drive, Building 1, 3rd Floor
San Diego, California 92132-5190

RAB meeting minutes also are available at the Navy BRAC Program Management Office website at: http://www.bracpmo.navy.mil/bracbases/california/alameda_annex/rab_mm.aspx.

3.2 PUBLIC MAILINGS

Public mailings, including information updates, fact sheets, and proposed plans, have been used to ensure a broad dissemination of information throughout the local community. Information updates announcing the IR program process at Alameda Point have been delivered to residents surrounding Alameda Point and mailed to city, state, and federal officials; agencies; local groups; and individuals identified in the community relations plan since March 1990 (Tetra Tech 2003). Updates and fact sheets have included information concerning the status of environmental investigations, the upcoming remedy selection process, ways the public can participate in the investigation and remediation, the history and geology of the area, and the availability of the administrative record for Alameda Point. Proposed plans provide an overview of environmental investigation results (including ecological risk assessment [ERA] and human health risk assessment [HHRA] results), remedial alternatives for a site or group of sites, and present the preferred alternative. The updates, fact sheets, and proposed plans are mailed to approximately 400 households, businesses, public officials, and agencies in an effort to reach as many community members as possible. Alameda Point updates, fact sheets, and proposed plans related to Site 26 are summarized in Table 3-1.

3.3 COMMUNITY PARTICIPATION FOR SITE 26

The RI report for Site 26 was finalized in November 2003, and the FS report was finalized in April 2005. The proposed plan (SulTech 2005a) was released to the public on October 24, 2005, at the beginning of the public comment period, to provide information and solicit public input on the Navy's recommended action. These documents are available to the public at the information repositories maintained at the Alameda Public Library and Alameda Point and at the administrative record file. The information repositories also contain a complete index of the administrative record file (see Attachment A), along with information about how to access the complete file at the Naval Facilities Engineering Command, Southwest Division, San Diego, California.

A 30-day public comment period for Site 26 extended from October 24, 2005 to November 23, 2005. In addition, a public meeting was held on November 9, 2005. A notice of the public comment period and public meeting was published in the *Alameda Journal* on October 21, 2005, and in the *Oakland Tribune* on October 24, 2005. A copy of these public notices is presented in Attachment C.

At the public meeting, the BRAC environmental coordinator and Navy remedial project manager gave presentations on the conditions at Site 26, and representatives from the Navy and environmental regulatory agencies were available to answer questions. A court reporter prepared a transcript of the meeting. Responses to written comments received during the public comment period are included in the responsiveness summary as part of this ROD (see Attachment D), and the transcript of the meeting is presented in Attachment C.

TABLES

TABLE 3-1: SUMMARY OF ALAMEDA POINT FACT SHEETS, NEWSLETTERS, AND PROPOSED PLANS RELATED TO SITE 26

Record of Decision, Site 26, Alameda Point, Alameda, California

Fact Sheets	Date	Title
1	March 1990	Fact Sheet 1: Remedial Investigation/Feasibility Study Update
2	September 1990	Fact Sheet 2: Remedial Investigation/Feasibility Study Update
3	May 1991	Fact Sheet 3: Remedial Investigation/Feasibility Study Update
4	March 1993	Fact Sheet 4: Installation Restoration Program Update
5	May 1995	Fact Sheet 5: Base Realignment and Closure Cleanup Plan
7	June 1996	Fact Sheet 7: History and Geology
9	June 13,2005	Fact Sheet 9: Draft Proposed Plan For Groundwater at the Western Hangar Zone
Newsletters		
--	July 1, 2003	Alameda Point Focus Environmental July 2003 Newsletter
--	March 1, 2004	Newsletter Regarding the Navy's Environmental Activities at Alameda Point
Proposed Plan		
--	October 24, 2005	Proposed Plan for Site 26, Western Hangar Zone

4.0 SCOPE AND ROLE OF OPERABLE UNIT AND RESPONSE ACTION

Responses associated with this ROD include no action for soil under CERCLA, remedial action and temporary institutional controls (IC) to address VOCs in groundwater near Building 20 under CERCLA, and closure of WD 020 and OWS 020 under RCRA. Because the RI indicated low incremental risk for soil, the Navy, together with the BCT, has agreed that no action for soil is required at Site 26. These responses should provide for unrestricted site use even though the planned future use is commercial.

Site 26 is a portion of OU-6, which also consists of Sites 27 and 28; RODs for these sites are being prepared separately. This ROD also addresses the storm sewer lines within the Site 26 boundaries (formerly Site 18), except for a storm sewer segment that extends from Site 5 into Site 26 between Buildings 23 and 24. This segment received waste from operations at Site 5 that may have included radium-containing paints and is being addressed as a part of Site 5 CERCLA activities. Petroleum-contaminated areas at Site 26, designated as Fuel Line CAA C and CAA-6, including the groundwater plume southwest of Building 23, are not addressed by this ROD and are currently being investigated and remediated under the Alameda Point TPH program because they are regulated by the Water Board.

5.0 SITE CHARACTERISTICS

This section summarizes information on the geology, hydrogeology, and the chemicals that are present in the soil and groundwater at Site 26. A complete discussion of sampling locations and methodologies, chemicals detected at each site, nature and extent of contamination, fate and transport, and evaluation of human and ecological risks is presented in the RI (Bechtel 2003). An evaluation of RCRA activities is presented in the SWMU evaluation report (SulTech 2005b).

5.1 GEOLOGY

Alameda Point occupies a depression between two uplifted areas; the Berkeley Hills on the east and the San Bruno and other mountains on the San Francisco Peninsula to the west. The depression and uplifted areas are formed by two subparallel, active faults: the San Andreas and the Hayward Faults. The installation and surrounding San Francisco Bay are underlain by 400 to 500 feet of unconsolidated sediments that overlie the metamorphosed sandstone, siltstone, shale, greywacke, and igneous bedrock, which forms the Franciscan Formation (Bechtel 2003).

Surface and near-surface soil at Alameda Point consists of artificial fill emplaced during historical filling of the tidal marshlands and the subtidal area of San Francisco Bay during site development. The fill material consists of sediments that were dredged from the San Francisco Bay and Oakland Inner Harbor and is characterized by sands, clays, and silts dredged from the tidal flats in the region (Bechtel 2003). The unconsolidated sediments that lie beneath the artificial fill consist of the following five units, from top to bottom: (1) the Bay Sediment Unit (BSU), (2) the Merritt Sand Formation, (3) the upper unit of the San Antonio Formation, (4) the lower unit of the San Antonio Formation (Yerba Buena Mud), and (5) the Alameda Formation.

A layer with high organic content, called the "marsh crust," typically marks the top of the BSU throughout the eastern portion of the installation. The marsh crust is a layer of contaminated sediment that was formed by the discharge of petroleum waste from two gas plants and an oil refinery. This waste migrated over much of the surface of the surrounding marshlands and was deposited through tidal actions under what would later become the Alameda Annex and the eastern portion of Alameda Point. The marsh crust has been identified in the vicinity and east of Site 26 but has not been identified beneath Site 26 (Bechtel 2003).

The surface of the artificial fill at Site 26 is mostly covered by an asphalt and concrete, ranging in thickness from 1 to 2 feet. Artificial fill was encountered at Site 26 from beneath surface pavement to a depth of approximately 12 to 18 feet below ground surface (bgs). The artificial fill material is predominantly poorly graded, fine- to medium-grained sand, with silt and clay.

5.2 HYDROGEOLOGY

Groundwater across Alameda Point is typically encountered at depths between 3 to 8 feet bgs in the artificial fill. There are three hydrogeologic units present in the unconsolidated sediment column beneath Alameda Point. These units have been designated the first water-bearing zone

(FWBZ), second water-bearing zone (SWBZ), and the deep aquifer. At Site 26, the following shallow hydrogeologic units are present (Bechtel 2003):

- FWBZ
- Aquitard
- SWBZ
- Regional aquitard

The first of these units is the unconfined FWBZ, which is encountered within the artificial fill material at 2 to 6 feet bgs and extends to a depth of approximately 18 feet. The upper portion of the BSU acts as an aquitard between the FWBZ and the SWBZ; it varies in thickness from approximately 12 to 35 feet. The semiconfined SWBZ occupies the lower portion of the BSU, Merritt Sand, and upper unit of the San Antonio Formation and has a maximum thickness of 88 feet. The lower unit of the San Antonio Formation acts as the regional aquitard. EBS data from wells surrounding Site 26 indicated an upward vertical gradient from the SWBZ to the FWBZ of 0.01 to 0.04 (Bechtel 2003).

Groundwater flow at Alameda Point is highly variable. Seasonal variations are caused from precipitation levels, and diurnal variations are related to tidal cycles. In general, groundwater at Site 26 flows radially away from the site with a horizontal gradient of 0.003 (Bechtel 2003). Groundwater near the VOC plume southeast of Building 20, which is in the northern portion of the site, typically flows to the northeast.

Groundwater in the FWBZ underlying the central region of Alameda Point (which includes Site 26) is classified as a Class II aquifer based on total dissolved solids (TDS) and yield criteria. A Class II aquifer is a current or potential source of drinking water and has other beneficial uses. Other potential beneficial uses of groundwater include industrial supply and agricultural use (crop irrigation or livestock watering). EPA classifies groundwater having an existing or potential use as a drinking water supply (Class I or II) using the following criteria: a TDS concentration less than 10,000 milligrams per liter (mg/L) and a minimum well yield of 150 gallons per day or 0.104 gallons per minute (EPA 1988). The SWBZ is a Class III aquifer, not a potential source of drinking water and is of limited beneficial use, because TDS concentrations exceed 10,000 mg/L.

A beneficial use evaluation conducted for the purposes of CERCLA cleanup decisions presents other factors that determined groundwater in the central region of Alameda Point is unlikely to be used as a potential drinking water source (Tetra Tech 2000). These factors include:

- The safe yield and maximum pumping rate are inadequate to support common uses of water as well as multiple domestic users.
- Existing saltwater intrusion of the FWBZ based on groundwater flow from the San Francisco Bay, which would be accelerated by groundwater extraction.

- No supply wells currently exist within or downgradient of contaminated groundwater.
- State and county limitations on well construction because of a thin, vulnerable aquifer.

The only other possible uses for groundwater would be for watering livestock. Use for crop watering or industrial uses would require costly pretreatment for TDS. Groundwater beneath the central portions of Alameda Point (including Site 26) is not currently used for drinking water, irrigation, or industrial supply. Drinking water is supplied to Alameda Point by the East Bay Municipal Utilities District (Bechtel 2003).

In 2000, the Water Board adopted groundwater basin plan amendments (Water Board Resolution [or Res.] 00-024) that will dedesignate the municipal supply beneficial use for portions of Alameda Point, including Site 26 (Bechtel 2003). These amendments are still subject to approval by the California State Water Resources Control Board (SWRCB) and the State Office of Administrative Law. At this time, SWRCB staff has not yet determined when these amendments will be considered. However, in a letter dated July 21, 2003, the Navy received concurrence from the Water Board that groundwater meets the municipal and domestic water supply designation exemption criteria in the SWRCB source of drinking water policy Resolution 88-63 and Water Board Resolution 89-39 for groundwater west of Saratoga Street at Alameda Point (Water Board 2003). This includes groundwater beneath Site 26.

In addition, EPA stated that based on the shallow depth of the aquifer in this area, the likelihood of saltwater intrusion (based on groundwater flow directions) if any significant pumping takes place, and the fact that no wells currently exist within or close to this area, it seems unlikely that groundwater in this area will be a potential source of drinking water in the future and would concur with cleanup levels for Site 26 such that the threats posed by such exposures as inhalation (groundwater vapors into soils and from soils into residences), dermal contact, and those associated with irrigation use are eliminated, and any significant ongoing degradation of the groundwater from contamination is prevented (EPA 2000).

5.3 NATURE AND EXTENT OF CONTAMINATION IN SOIL AND GROUNDWATER

Activities associated with known or potential contaminant releases at Site 26 were identified, and environmental investigations were conducted to identify and assess the nature and extent of contaminants in soil and groundwater (see Section 2.2). Areas associated with historical aircraft parking, washdown, fueling, maintenance, and painting, which included Buildings 20 and 23, were evaluated to assess the nature and extent of chemicals in soil and groundwater (Bechtel 2003).

The chemicals detected in soil at Site 26 included metals, cyanide, SVOCs, polynuclear aromatic hydrocarbons, the pesticide alpha-chlordane, and the polychlorinated biphenyl Aroclor-1260 (Bechtel 2003). These chemicals were infrequently detected at concentrations predominately below residential PRGs (EPA 2002a). Arsenic was detected above its residential PRG; however, arsenic concentrations detected at Site 26 were considered naturally occurring or background

(Bechtel 2003) (see Table 5-1). VOCs were detected in only one soil sample collected near Building 20 and at concentrations below PRGs. The VOCs benzene and ethylbenzene only exceeded PRGs in soil along fuel lines near the southwest corner of Building 23, where past fuel releases have occurred (see Table 5-1). This fuel-related contamination is not addressed by this ROD because it is not regulated under the CERCLA, and thus is being investigated and remediated under the Alameda Point TPH program, which is regulated by the Water Board.

Results of the investigations indicated that groundwater at Site 26 is impacted with VOCs in the area southeast of Building 20 and with petroleum hydrocarbons southwest of Building 23 (Bechtel 2003) (see Figure 1-3). In groundwater southeast of Building 20, elevated concentrations of the VOCs 1,2-DCA, DCE, vinyl chloride, TCE, benzene, trimethylbenzene, and naphthalene were detected in the FWBZ at a depth of 2 to 6 feet bgs (see Table 5-2). While there are no documented releases at Building 20, the area was historically used for aircraft washdown activities and is near the former aircraft washdown area WD 020, which included OWS 020. The VOC groundwater plume has been defined as approximately 100 by 200 feet. Horizontal migration due to groundwater flow is an active transport pathway at Site 26; however, it is unlikely that the VOCs in groundwater will migrate in significant concentrations because of natural attenuation mechanisms that reduce chemical concentrations (Bechtel 2003). The presence of cis-1,2-DCE and vinyl chloride, both degradation products of chlorinated solvent, suggests that dechlorination of TCE is occurring in this area.

In the groundwater southwest of Building 23, the petroleum hydrocarbons benzene, toluene, and ethylbenzene were detected along with arsenic and manganese. The likely source of these contaminants is historical fuel line leaks, a 1941 fuel line release and a pipeline leak in 1998. The likely source of the elevated metals probably is naturally occurring metals in the soil that were mobilized by the reducing conditions that often occur during the natural biodegradation of petroleum hydrocarbons. This petroleum hydrocarbon plume is being evaluated and remediated under the Alameda Point TPH program.

The results of the investigations indicated that the storm sewers and bedding material at Site 26 are not acting as preferential pathways (Bechtel 2003).

TABLES

TABLE 5-1: CHEMICALS DETECTED IN SOIL

Record of Decision, Site 26, Alameda Point, Alameda, California

Chemical	Frequency of Detection (%)	Detection Limit	Range of Detected Concentrations	Background ¹ (yes/no)
Metals (mg/kg)				
Aluminum	97	4.7 to 4.7	3,440 to 7,950	Yes
Antimony	8	0.38 to 25	0.63 to 2	Yes
Arsenic	77	1 to 1.2	1.2 to 3.2	Yes
Barium	97	1.5 to 1.5	21.7 to 218	Yes
Beryllium	20	0.15 to 25	0.13 to 0.48	Yes
Cadmium	7	0.07 to 25	0.12 to 1.9	Yes
Chromium	43	25 to 25	25.1 to 40.2	Yes
Cobalt	91	1 to 5.8	3.4 to 7.5	Yes
Copper	41	0.95 to 25	5.3 to 48.7	No
Cyanide	7	0.11 to 0.59	0.30 to 0.32	Yes
Iron	100	NA	1.7 to 14,500	Yes
Lead	55	2.6 to 25	1.4 to 70.7	Yes
Manganese	97	0.27 to 0.27	66.8 to 198	Yes
Mercury	4	0.05 to 25	0.24 to 4.4	Yes
Nickel	89	2.1 to 25	19 to 90	Yes
Selenium	3	0.28 to 1.2	0.68 to 0.68	No
Silver	1	0.2 to 25	0.39 to 0.39	Yes
Thallium	55	0.27 to 3	1.4 to 5	No
Vanadium	97	1.6 to 1.6	15.7 to 32.2	Yes
Zinc	51	1.2 to 25	15.7 to 54.88	Yes
Polycyclic Aromatic Hydrocarbons (µg/kg)				
Anthracene	3	7 to 52.5	9 to 9	NA
Benz(a)anthracene	4	7 to 52.5	11 to 31	NA
Benzo(a)pyrene	9	7 to 52.5	8 to 54	NA
Benzo(b)fluoranthene	15	7 to 52.5	7 to 70	NA
Benzo(g,h,i)perylene	7	7 to 8	8 to 230	NA
Benzo(k)fluoranthene	1	7 to 52.5	11 to 11	NA
Chrysene	16	7 to 8	8 to 210	NA
Fluoranthene	9	7 to 8	10 to 110	NA
Fluorene	1	7 to 52.5	84 to 84	NA
Indeno(1,2,3-c,d)pyrene	3	7 to 52.5	10 to 27	NA
Phenanthrene	7	7 to 52.5	8 to 39	NA
Pyrene	13	7 to 8	8 to 180	NA

TABLE 5-1: CHEMICALS DETECTED IN SOIL (CONTINUED)

Record of Decision, Site 26, Alameda Point, Alameda, California

Chemical	Frequency of Detection (%)	Detection Limit	Range of Detected Concentrations	Background ¹ (yes/no)
Semivolatile Organic Compounds (µg/kg)				
Bis(2-ethylhexyl) phthalate	28	340 to 4,000	20 to 380	NA
Butyl benzyl phthalate	3	340 to 4,000	30 to 160	NA
4-Chloro-3-methylphenol	6	340 to 4,000	36 to 64	NA
2-Chlorophenol	5	340 to 4,000	53 to 58	NA
Di-n-butyl phthalate	28	340 to 4,000	23 to 290	NA
Diethyl phthalate	3	340 to 4,000	19 to 76	NA
2,4-Dinitrotoluene	5	340 to 4,000	26 to 38	NA
2-Methylnaphthalene	5	7 to 52.5	16 to 4,700	NA
Naphthalene	1	0.22 to 52.5	9 to 9	NA
4-Nitrophenol	3	830 to 9,800	45 to 51	NA
N-Nitroso-di-n-propylamine	5	340 to 4,000	32 to 36	NA
Pentachlorophenol	6	830 to 9,800	31 to 44	NA
Phenol	2	340 to 4,000	80 to 80	NA
Pesticides/Polychlorinated Biphenyls (µg/kg)				
Aroclor-1260	4	35 to 43	23 to 23	NA
alpha-Chlordane	5	1.8 to 2.2	1.9 to 1.9	NA
Volatile Organic Compounds (µg/kg)				
Benzene	15	60 to 13,000	2	NA
Ethylbenzene	15	510 to 21,000	2	NA
Toluene	46	13,000 to 75,300	6	NA
Total Xylenes	15	24,000 to 46,000	2	NA

Notes:

1 A "yes" indicates the metal in soil at the site is attributed to background.

µg/kg Microgram per kilogram

-- Not available

mg/kg Milligram per kilogram

NA Not applicable

TABLE 5-2: VOCs DETECTED IN GROUNDWATER NEAR BUILDING 20
 Record of Decision, Site 26, Alameda Point, Alameda, California

VOC	Frequency of Detection (%)	Range of Concentrations (µg/L)
Benzene	6	0.39 to 1.1
Chloroethane	2	1.4 to 1.4
Dichlorodifluoromethane	5	1 to 1.3
1,1-Dichloroethane	17	0.6 to 190
1, 2-Dichloroethane	2	0.53
1,1-Dichloroethene	4	1 to 1.2
cis-1,2-Dichloroethene	23	0.54 to 530
trans-1,2-Dichloroethene	7	0.3 to 3.1
Ethylbenzene	2	1.4
Isopropylbenzene	3	1.2 to 1.2
Methylene chloride	4	3.7 to 4
Naphthalene	19	0.25 to 570
p-Isopropyltoluene	6	0.27 to 12
n-Propylbenzene	3	2.9 to 2.9
Tetrachloroethane	4	0.64 to 0.78
Toluene	13	0.27 to 2.3
1,1,1-Trichloroethane	4	9 to 18
Trichloroethene	19	0.26 to 51
1,2,4-Trimethylbenzene	13	0.27 to 110
1,3,5-Trimethylbenzene	6	4 to 14
Vinyl chloride	21	0.35 to 18
Xylenes (total)	10	0.28 to 13

Notes:

µg/L Microgram per liter
 MCL Maximum contaminant level
 NA Not applicable
 VOC Volatile organic compound

6.0 CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

This section discusses (1) current and reasonably anticipated future land uses and (2) current and potential groundwater and surface water uses. This information was incorporated into the development of exposure scenarios for the HHRA.

6.1 LAND USES

Currently, Site 26 is an IR site at Alameda Point, which is under the jurisdiction of the Navy. Site 26 consists of approximately 32 paved acres, four buildings and several ancillary buildings (Buildings 20 through 24). Portions of Site 26 are currently leased for industrial purposes; Finding of Suitability to Lease documents (ERM-West, Inc. 1995a, 1995b) were prepared that allowed the Alameda Reuse and Redevelopment Agency to lease portions of Site 26. Subsequently, the Navy and Alameda Reuse and Redevelopment Agency signed a Lease in Furtherance of Conveyance (LIFOC) for portions of Alameda Point, including Site 26 (Navy and Alameda Reuse and Redevelopment Authority 2001). As of December 2005, the following following tenants are subleasing portions of Site 26 (City of Alameda 2005):

- Building 20 – Edge Innovations (animatronics company) and Ocean Systems (Ocean Technology company)
- Building 21 – St. George Spirits, Inc. (Spirit Production)
- Building 22 – Creative Technology (Audio/Video Rental Staging Equipment) and West Coast Novelties (wholesale distributor)
- Building 23 – West Coast Novelties (wholesale distributor)
- Building 24 – Area 51 Productions (car shows and events) and Coach Specialties (bus painting company)

Eventually, Site 26 will be transferred to a non-federal entity.

Site 26 is located in the Civic Core, which is located in the central portion of Alameda Point (City of Alameda 2002) (see Figure 6-1). The Civic Core is approximately 337 acres and is bordered by the proposed Wildlife Refuge and Northwest Territories to the west, the Estuary to the north, residential and community support uses to the east, and the Marina District to the south. All structures located within Site 26 have been recognized as a part of the NAS Alameda Historic District and upon conveyance will be subject to City of Alameda Ordinance 13-21, Preservation of Historical Monuments. Furthermore, upon conveyance, the property will be subject to Measure A, a 1973 amending article to Alameda City Charter that prohibits the construction of any multiple dwelling units in Alameda. According to the general plan amendment (City of Alameda 2002), potential redevelopment of the Civic Core includes the development of parks and public open space, medium-density residential, and public and institutional uses for the area along the Oakland Estuary. Further inland, and incorporating the NAS Historic District, redevelopment includes two or more uses on a single site or within a

single building and may include business park, office, and commercial uses. Current and proposed Site 26 land uses are listed in Table 6-1.

The reasonably anticipated future land use for Site 26 is commercial/industrial.

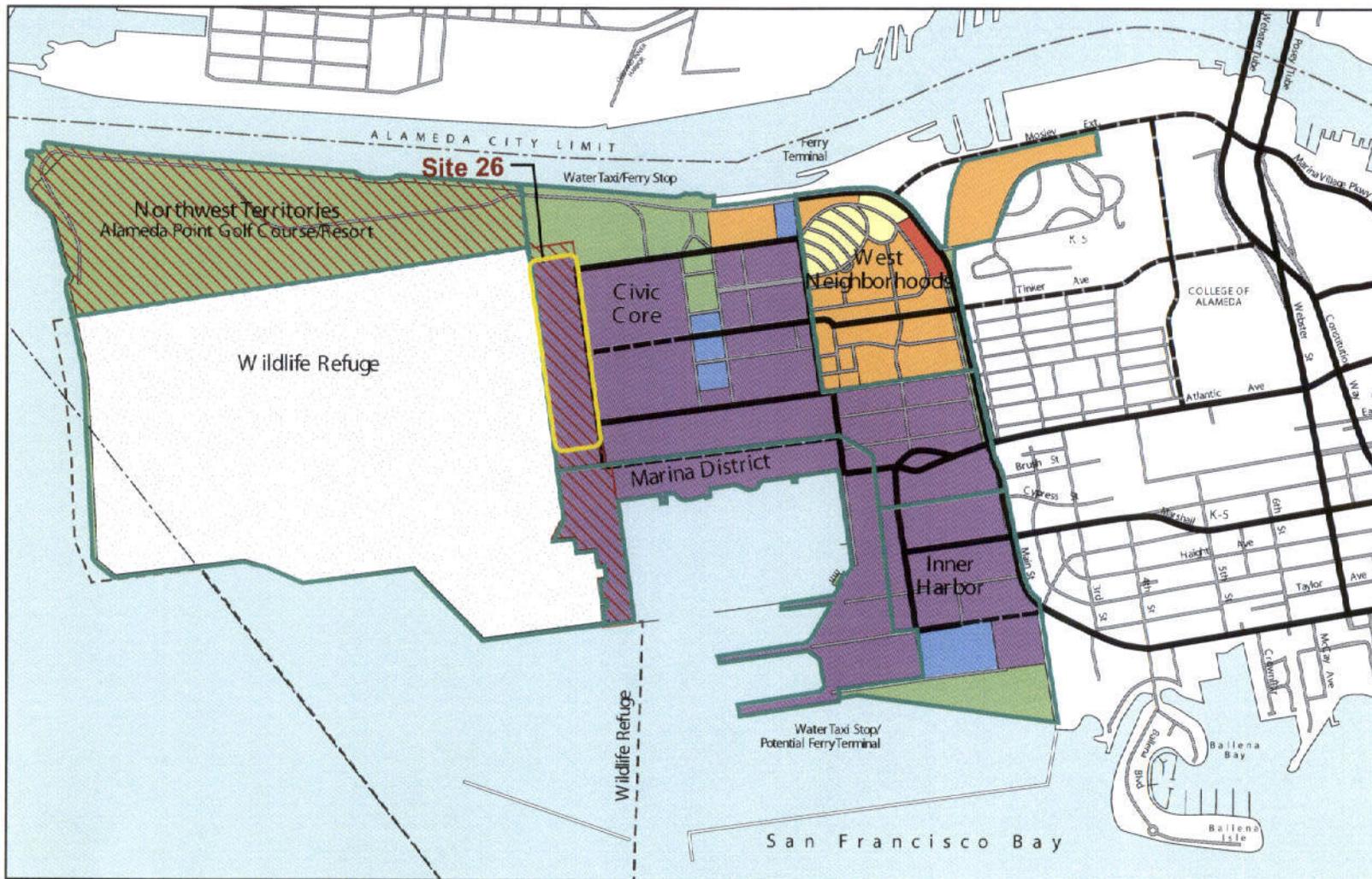
6.2 GROUNDWATER USES

As described in Section 5.2, groundwater beneath the central portions of Alameda Point (including Site 26) is not currently used for drinking water, irrigation, or industrial supply and meets SWRCB exemption criteria to dedesignate the municipal supply beneficial use for portions of Alameda Point (Water Board 2003). Drinking water is supplied to Alameda Point by the East Bay Municipal Utilities District. In addition, EPA stated that based on the shallow depth of the aquifer in this area, the likelihood of saltwater intrusion (based on groundwater flow directions) if any significant pumping takes place, and the fact that no wells currently exist within or close to this area, it seems unlikely that groundwater in this area will be a potential source of drinking water in the future and would concur with cleanup levels for Site 26 such that the threats posed by such exposures as inhalation (groundwater vapors into soils and from soils into residences), dermal contact, and those associated with irrigation use are eliminated, and any significant ongoing degradation of the groundwater from contamination is prevented (EPA 2000).

6.3 SURFACE-WATER USES

Site 26 does not have naturally occurring surface streams or ponds.

FIGURES



- | | | |
|----------------------------|--------------------------------------|-----------------------|
| Low-Density Residential | Public/Institutional/School (grades) | Major Street |
| Medium-Density Residential | Alameda Point Mixed Use | Proposed Major Street |
| Neighborhood Business | Parks & Public Open Space | Minor Street |
| General Industry | Open Space/Habitat | Planning Subareas |
| | Wildlife Refuge Impact Area | |



Alameda Point, Alameda, CA
 U.S. Department of the Navy, BRAC PMO West, San Diego, California

FIGURE 6-1
ALAMEDA POINT REUSE MAP
 Operable Unit 6 Site 26
 Record of Decision, Alameda Point

Reference: City of Alameda, 1991 General Plan as amended 2005, Chapter 9: Figure 9-2

TABLES

TABLE 6-1: CURRENT AND PROPOSED LAND USES

Record of Decision, Site 26, Alameda Point, Alameda, California

Site	Current Land Uses or Land Use Prior to Closure	Proposed Future Land Use	Reuse Parcel No.
26	Commercial/Industrial	Commercial/industrial	EDC-15

Note:

EDC Economic development conveyance

7.0 SUMMARY OF SITE RISKS

As part of the RI, an HHRA and an ERA were conducted for Site 26 using data collected during the RI, EBS, and fuel line investigation. As requested by EPA, additional HHRA calculations were also presented in the FS report for Site 26. The objective of the risk assessments was to estimate the risks to human and ecological receptors from exposure to chemicals in soil and groundwater at the site. They provide the basis for taking action and identify the chemicals of concern (COC) and exposure pathways that need to be addressed by the remedial action. The HHRA was performed as a baseline risk assessment, and the ERA was performed as a screening-level risk assessment.

A conceptual site model (see Figure 7-1) was presented in the RI and used to support these risk assessments by identifying the potential receptors and exposure pathways associated with each of the sources of contaminants at Site 26, which included a fuel spill and fuel line break southwest of Building 23 and an aircraft WD southeast of Building 20 (WD 020 and OWS 020). The residential exposure pathways, ingestion of homegrown produce and domestic use of groundwater, were initially identified in this conceptual site model and evaluated in the HHRA presented in the RI report; however, these pathways were later considered incomplete after further evaluations concluded that they do not represent a significant potential for human exposure. The conceptual site model and the detailed approach and results of the Site 26 risk assessments are presented in Sections 7.1 and 7.2 of the "Final Remedial Investigation Report, IR Site 26, Western Hangar Zone" (Bechtel 2003), and the additional HHRA calculations are presented in the "Final Feasibility Study Report, IR Site 26, Western Hangar Zone" (Bechtel 2005).

7.1 BASELINE HHRA APPROACH

The HHRA conducted for Site 26 identified chemicals of potential concern (COPC) in soil and groundwater, evaluated exposure scenarios based on possible future land uses, assessed toxicity, and characterized cancer and noncancer health risks based on conservative assumptions. Calculated risks were then compared with federally established risk ranges, and COCs were selected. Details of the HHRA methodology are provided in Section 5.2 and Appendix J of the RI report for Site 26 (Bechtel 2003).

The baseline HHRA approach and the results are discussed below.

7.1.1 Identification of Chemicals of Potential Concern

The methodology used to identify COPCs and evaluate risk is consistent with the EPA Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Part A (EPA 1989) and Part B (EPA 1991) and supporting documents and guidelines published by California Environmental Protection Agency (Cal/EPA) (1996). All chemicals reported in at least one sample, except for the essential human nutrients (calcium, magnesium, potassium, and sodium), were included as COPCs.

Data for Site 26 were combined into two exposure units: Building 20 and Building 23 (Bechtel 2003). Soil data for each exposure unit were aggregated in depth intervals of 0 to 6 feet bgs for residential receptors and construction workers to represent the vadose zone or depth of groundwater and 0 to 2 feet bgs for occupational workers to represent surface soil. Soil gas data were used to assess risk from indoor and ambient air pathways. The data were validated by independent validators. Detection limits were considered adequate for use in the risk assessment.

7.1.2 Exposure Assessment

An exposure assessment identifies the populations at potential risk and the mechanisms by which members of those populations could be exposed to the COPCs in each medium. It is also a process by which the chemical concentrations at the point of exposure and the chemical doses are calculated.

As recommended by EPA, the 95 percent upper confidence limit (95% UCL) of the average measured chemical concentration was used to represent the potential exposure point concentration (EPC) over a lifetime. Although, there are a variety of statistical methods to calculate the 95% UCL, the bootstrap method recommended by EPA (EPA 1997a) was selected for the Site 26 HHRA. For chemicals reported in fewer than five percent of the samples or in only one sample, the maximum concentration was set as the EPC. The detailed approach for calculating the EPC is presented in the RI report for Site 26 (Bechtel 2003).

Future reuse plans include industrial and commercial uses; therefore, an occupational exposure scenario was evaluated. In addition, the HHRA for Site 26 also evaluated residential and construction workers exposure scenarios (Bechtel 2003) (see Table 7-1). The residential scenario is considered to be the most conservative and least likely scenario at the site. The exposure assumptions for each of these scenarios are summarized below.

7.1.2.1 Residential Scenario

Potential future residents (children and adults) are assumed to be exposed to COPCs in soil from 0 to 6 feet bgs (Bechtel 2003). The residential receptor was assumed to live on the site for 30 years. The following potential exposure pathways for soil were initially identified and evaluated in the HHRA presented in the RI report: incidental ingestion of soil, dermal contact with soil, inhalation of particulates from soil, inhalation of VOCs in indoor air, and ingestion of homegrown produce (Bechtel 2003). Potential exposure pathways for groundwater initially identified and evaluated in the HHRA presented in the RI report include domestic use of groundwater (ingestion of groundwater, dermal contact with groundwater, and inhalation of vapors) and inhalation of VOCs in indoor air.

In a letter dated July 21, 2003, the Navy received concurrence from the Water Board that groundwater meets the exemption criteria in the SWRCB source of drinking water policy for groundwater west of Saratoga Street at Alameda Point, which includes groundwater beneath Site

26 (Water Board 2003). Consequently the groundwater is not reasonably expected to serve as a public drinking water supply.

Although two residential exposure pathways, ingestion of homegrown produce and domestic use of groundwater, were initially evaluated in the HHRA presented in the RI report, these pathways were later considered incomplete. Further evaluations concluded that they do not represent a significant potential for human exposure.

7.1.2.2 Occupational Scenario

If a site is redeveloped for commercial business, the individuals most likely exposed would be owners and employees of the businesses. Under the occupational scenario, COPCs in the upper 2 feet of soil are considered to be available. Potential exposure pathways include incidental soil ingestion, dermal contact with soil, inhalation of particulates from soil, and inhalation of VOCs in indoor air. Groundwater pathways are considered incomplete for the occupational scenario. The occupational receptor was assumed to use the site for 25 years with 2 weeks off per year.

7.1.2.3 Construction Worker Scenario

Under the construction worker scenario, COPCs in soil from 0 to 6 feet bgs are assumed to be available to an adult worker (Bechtel 2003). Potential exposure pathways include incidental soil ingestion, dermal contact with soil, inhalation of particulates from soil, inhalation of vapors in ambient air. Groundwater pathways are considered incomplete for the construction worker. Although construction workers may have transient dermal contact with groundwater, this exposure was considered insignificant due to the very short duration and limited extent expected. The construction worker was assumed to use the site for 8 hours per day for 20 days.

7.1.3 Toxicity Assessment

The toxicity assessment focuses on the toxicity of COPCs. Qualitative and quantitative toxicity values and EPA- and DTSC-derived toxicity values were gathered for all Site 26 COPCs, and assessments using EPA- and DTSC- derived toxicity values were prepared (dual tracking) (Bechtel 2003). Detailed toxicity profiles were also prepared. Sources of EPA toxicity values include EPA Region 9 (EPA 2002a) and are confirmed by Integrated Risk Information System (IRIS) (EPA 2002b) and Health Effects Assessment Summary Tables (HEAST) (EPA 1997b). DTSC-derived toxicity values developed by Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) (Cal/EPA 2002) were also used in the risk assessment.

IRIS is a computerized EPA database containing verified toxicity values and up-to-date human health toxicological and EPA regulatory information for most commonly used chemicals. HEAST is a source of nonverified provisional toxicity information that was used when toxicity information was not available from IRIS. The IRIS database and HEAST were also searched for toxicity criteria not listed in the EPA Region 9 PRG table (EPA 2002a). Cancer and noncancer toxicity values for some chemicals are available from OEHHA. These values are sometimes

identical to EPA values. OEHHA toxicity values were only used in risk calculations based on DTSC assumptions.

7.1.4 Risk Characterization

The final step in the HHRA is the characterization of the potential risks associated with exposure to detected chemicals. Risk characterization combines the exposure and toxicity assessments to produce quantitative estimates of risk from COPCs. Chemicals might present noncancer health effects in addition to cancer risks; therefore, the potential for both types of effects are evaluated. Noncancer health hazards and cancer risks are characterized separately, as described below.

It is important to note that the noncancer hazard index (HI) is estimated differently than lifetime cancer risk. Noncancer effects manifest over a specific time period, and once the exposure period is over, the hazard has also passed (that is, no latency is assumed). A HI of 1 or less is set by EPA as protective of noncancer health hazards.

Excess lifetime cancer risks are probabilities generally expressed in scientific notation (for example, 1×10^{-6} or 1E-6). An excess lifetime cancer risk of 1×10^{-6} indicates that, as a plausible upper bound, an individual has a one in a million probability of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at a site. The exposure conditions that are reasonably expected to occur at the site, as defined by EPA are termed the reasonable maximum exposure (EPA 1989). To assist with the characterization of cancer risks, a federally established risk management range was developed to protect human health and help risk managers determine whether site risks are significant enough to warrant cleanup. Guidelines for managing cancer risks are promulgated in the NCP (Title 40 CFR 300.430[e][2][i][A][2]). According to these regulations, when an excess cancer risk is above 10^{-4} action is generally warranted, and when excess cancer risks are within the risk management range from 10^{-6} to 10^{-4} , site-specific factors are considered when making decisions about whether action is required.

Based on all exposure pathways for Buildings 20 and 23, total cancer risks calculated for occupational and construction workers at Site 26, which include risk from background metals, are equal to or below a cancer risk of 10^{-6} , and the noncancer HIs are less than 1 (Bechtel 2003). Total cancer risk calculated for a resident at each of the exposure units (Building 20 and Building 23) within Site 26, including the homegrown produce and domestic use of groundwater pathways and background metals, is greater than the risk management range, and the noncancer HI is above 1. Most of this risk is based on the ingestion of homegrown produce and domestic use of groundwater pathways (see Table 7-2). Although these pathways were evaluated in the HHRA presented in the RI report, residential use of groundwater is hypothetical and unlikely to occur in the future. In addition, there is a high level of uncertainty associated with the homegrown produce pathway, thus the homegrown produce pathway overestimates risk. Consequently, these pathways were later considered incomplete. Potential residential cancer risks without these pathways for the Buildings 20 and 23 exposure units are 5×10^{-6} and 8×10^{-6} and the noncancer HIs are 1 and 2, respectively. Most of the remaining risk is from background arsenic in soil. Statistical analysis shows that concentrations of arsenic in soil are lower than

those typically found at Alameda Point. Potential soil risks presented in Table 7-3 do not include risk from ingestion of homegrown produce, and potential groundwater risks do not include risk from domestic use of groundwater.

As requested by EPA, additional HHRA calculations were presented in the FS report for Site 26 because indoor air risk for residents and occupational workers presented in the RI report were calculated using soil gas data rather than groundwater data and calculations did not reflect the potential future degradation of VOCs to vinyl chloride (Bechtel 2005). EPA requested that calculations assume that VOCs in groundwater degrade to vinyl chloride and that vinyl chloride did not degrade at all. Because DCE and TCE in groundwater may degrade further to vinyl chloride, there could be a further increase in risk from groundwater. Table 7-3 presents groundwater risk based on only the inhalation of indoor air pathway, and reflects risk from VOCs in groundwater degrading to vinyl chloride and vinyl chloride not degrading at all.

Lead was evaluated separately for both buildings by comparing concentrations in soil and groundwater to the California-modified residential PRG and the federal drinking water action level of 15 micrograms per liter ($\mu\text{g/L}$) (Bechtel 2003). The risks for lead at Site 26 are considered negligible based on the soil and groundwater lead concentrations (Bechtel 2003).

Section 7.1.4.1 discusses how contaminants that drive the risk at the site were determined, and Section 7.1.4.2 discusses incremental risk and risk due to background concentrations of metals.

7.1.4.1 Chemicals of Concern

Cancer and noncancer COCs were identified for Site 26. A COC is defined as a COPC that is not attributed to background and has one or more of the following characteristics:

- An individual cancer risk estimate exceeding 1×10^{-6}
- A cancer risk estimate that is less than 1×10^{-6} but that, when combined with other COPCs with cancer risk estimates less than 1×10^{-6} , causes the sum of the cancer risk estimates to exceed 1×10^{-6}
- An HI greater than 1
- An HI that is less than 1 but that, when combined with COPCs with the same mechanisms of toxic action and HIs also less than 1, causes the sum of the HIs to be greater than 1

Carcinogenic COCs for the residential scenario include cis-1,2-DCE, TCE, and vinyl chloride in groundwater through the inhalation of vapors in indoor air pathway (Bechtel 2003), and they are the COCs addressed by this ROD (see Table 7-4). Potential residential cancer risk from soil is posed by arsenic, and because arsenic in soil is considered background and not associated with Navy activities at the site, it was not identified as a COC.

7.1.4.2 Incremental Risk

Metals are natural components of the earth's crust. Some of the metals are carcinogenic and some are systemic toxicants that have noncancer health effects, such as arsenic, which can pose both cancer and noncancer risks. Metals can present risks at naturally occurring (background) concentrations. Human-caused release of a contaminant to the environment, where metals already exist, does not create risk; it increases risk. This increased risk is called "incremental risk." The incremental risk for a site is estimated by subtracting the risk from background metals from the total site risk.

For Site 26, a background comparison was conducted by statistically comparing the background data set for soil and groundwater with analytical results for metals in samples representative of Site 26 (Bechtel 2003). This comparison was used to determine which metals in soil and groundwater were detected at concentrations greater than background. The results of the comparisons for soil at Site 26 indicated that arsenic concentrations are consistent with background concentrations across Alameda Point.

Soil risks presented in Table 7-2 include risk from background arsenic. Based on the low levels of incremental contamination, no remedial action for soil is necessary at Site 26 to protect human health.

7.2 SCREENING-LEVEL ERA APPROACH

The ERA conducted for Site 26 identified the chemicals of potential ecological concern in soil and groundwater, evaluated exposure scenarios based on possible future land uses, assessed toxicity, and characterized potential risks. Details of the ERA methodology are provided in Section 5.3 and Appendix K of the RI report for Site 26 (Bechtel 2003).

Because of the limited habitat at Site 26, site-specific ecological sampling to support a baseline ERA is not feasible. Also, future land use, which is commercial/industrial, would not result in additional habitat, and it is unlikely that ecological receptors would use the site in any significant manner. Therefore, a screening-level ERA was conducted for Site 26, which is Tier 1 of the Navy policy for conducting ERAs (Navy 1999), and is consistent with EPA guidance for screening-level and baseline ERAs (EPA 1997a). The screening-level ERA approach and results are discussed below.

The screening-level ERA uses existing data and is intended to provide a conservative estimate. The primary objective is to determine whether complete exposure pathways exist for soil and groundwater and to estimate risk from chemicals through these complete exposure pathways.

The following potentially complete exposure pathways were identified for exposure of terrestrial receptors to soil: direct contact, inhalation, incidental ingestion, and ingestion of food items that have absorbed site contaminants (Bechtel 2003). Direct contact and inhalation exposure for terrestrial receptors were not evaluated in the ERA. Exposure of aquatic organisms to

groundwater at the site was considered insignificant. Investigations of storm sewers determined that the storm sewer lines and bedding material at Site 26 are not acting as preferential pathways for groundwater, and contaminated groundwater is not migrating to the San Francisco Bay or Seaplane Lagoon (Bechtel 2003).

Unlike the HHRA, which evaluates only one species, the ERA evaluates multiple species with different degrees of exposure and toxicological responses. The following representative receptors, which are birds and mammals of the major terrestrial trophic levels, were identified in the ERA: California ground squirrel (*Citellus beecheyi*), Alameda song sparrow (*Melospiza melodia pusillula*), American robin (*Turdus miratorius*), and red-tailed hawk (*Buteo jamaicensis*).

The ERA for soil at Site 26, with all factors considered, indicates that risk to ecological endpoints is negligible and does not warrant further assessment. This assessment is based on such factors as background concentrations at Alameda Point, absorption potential of the constituent, and frequency of detection and concentration detected at Site 26. Based on the ERA, no further action for soil and groundwater at Site 26 is necessary to protect the environment. A significant factor was that Site 26 supports only limited habitat, the presence of terrestrial receptors is limited, and future land uses would not create additional ecological habitat. Further, no ecological risk to the San Francisco Bay or Seaplane Lagoon was identified due to lateral groundwater movement or storm sewer system discharge.

FIGURES

PRIMARY SOURCE

TRANSPORT MECHANISM

SECONDARY SOURCE

TRANSPORT MECHANISM

TERTIARY SOURCES

EXPOSURE ROUTE

AIRCRAFT WASH DOWN AND MAINTENANCE ACTIVITIES SOUTHEAST OF BUILDING 20 AND FUEL RELEASE TO SOIL LOCATED SOUTHWEST OF BUILDING 23

INFILTRATION

GROUNDWATER

VOLATILIZATION

SOIL GAS

DIFFUSION

INDOOR AIR

INGESTION
 INHALATION OF VAPORS IN OUTDOOR AIR
 INHALATION OF PARTICULATES IN OUTDOOR AIR
 DERMAL CONTACT
 INGESTION OF HOME GROWN PRODUCE

INGESTION
 DERMAL CONTACT
 INHALATION OF VAPORS WHILE SHOWERING

INHALATION OF VAPORS IN BUILDING

	RECEPTORS			
	RESIDENT	OFFICE WORKER	CONSTRUCTION WORKER	ECOLOGICAL
INGESTION	●	●	●	●
INHALATION OF VAPORS IN OUTDOOR AIR	○	○	●	○
INHALATION OF PARTICULATES IN OUTDOOR AIR	●	●	●	○
DERMAL CONTACT	●	●	●	○
INGESTION OF HOME GROWN PRODUCE	●	X	X	X
INGESTION	●	X	X	○
DERMAL CONTACT	●	X	○	○
INHALATION OF VAPORS WHILE SHOWERING	●	X	X	○
INHALATION OF VAPORS IN BUILDING	●	●	X	X

LEGEND

- COMPLETE EXPOSURE PATHWAY
- X INCOMPLETE EXPOSURE PATHWAY
- COMPLETE EXPOSURE PATHWAY BUT NOT CONSIDERED A SIGNIFICANT SOURCE OF RISK

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Alameda Point
 Department of the Navy, BRAC PMO West, San Diego, California

FIGURE 7-1
CONCEPTUAL SITE MODEL
 Operable Unit 6 Site 26
 Record of Decision, Alameda Point

TABLES

TABLE 7-1: EXPOSURE SCENARIOS FOR THE HHRA
 Record of Decision, Site 26, Alameda Point, Alameda, California

Site	Exposure Scenarios			Proposed Future Land Use
	Residential	Occupational	Construction Worker	
26	X	X	X	Industrial and commercial

Note:

HHRA Human health risk assessment

TABLE 7-2: SUMMARY OF SITE 26 RESIDENTIAL RISK BY PATHWAY AS PRESENTED IN THE RI REPORT

Record of Decision, Site 26, Alameda Point, Alameda, California

Media and Pathway	Building 20		Building 23 ²	
	Cancer Risk ¹	Noncancer Hazard Index ¹	Cancer Risk ¹	Noncancer Hazard Index ¹
Soil				
Ingestion of Soil	4×10^{-6}	1	5×10^{-6}	1
Dermal Contact	6×10^{-7}	0.04	7×10^{-7}	0.05
Inhalation of Particulates	2×10^{-7}	0.006	2×10^{-7}	0.006
Inhalation of Indoor Air – Soil Gas	3×10^{-7}	0.06	2×10^{-6}	0.3
Subtotal:	5×10^{-6}	1	8×10^{-6}	2
Groundwater				
Ingestion of Groundwater	2×10^{-3}	26	2×10^{-3}	26
Dermal Contact with Groundwater	1×10^{-4}	3	1×10^{-4}	3
Inhalation of Groundwater Vapors While Bathing	6×10^{-5}	7	6×10^{-5}	7
Subtotal:	2×10^{-3}	36	2×10^{-3}	36
Ingestion of Homegrown Produce	5×10^{-4}	0.04	5×10^{-4}	0.4
TOTAL:	3×10^{-3}	38	3×10^{-3}	38

Notes:

- 1 Based on U.S. Environmental Protection Agency-derived toxicity values
- 2 This area is currently being investigated and remediated under the Alameda Point Total Petroleum Hydrocarbons program, which is regulated by the San Francisco Bay Regional Water Quality Control Board.

TABLE 7-3: SUMMARY OF SITE 26 HHRA RESULTS
 Record of Decision, Site 26, Alameda Point, Alameda, California

Exposure Scenarios	Media	Building 20 ¹	
		Cancer Risk ²	Noncancer Hazard Index ²
Residential	Soil	5×10^{-6}	1
	Groundwater	4×10^{-5}	0.03
Occupational	Soil	1×10^{-6}	0.08
	Groundwater	9×10^{-8}	0.0006
Construction Worker	Soil	6×10^{-7}	0.08

Notes:

- 1 Does not include risk for the petroleum plume southwest of Building 23 because it is deferred to the Alameda Point Total Petroleum Hydrocarbons program and is not addressed by this record of decision.
- 2 Based on U.S. Environmental Protection Agency-derived toxicity values

TABLE 7-4: SUMMARY OF SITE 26 CHEMICALS OF CONCERN IN GROUNDWATER
 Record of Decision, Site 26, Alameda Point, Alameda, California

Exposure Scenario	Exposure Pathway	Chemicals of Concern	Groundwater EPC (µg/L)	Building 20 ¹	
				Cancer Risk ²	Noncancer Hazard Index ²
Residential	Inhalation of Indoor Air - Groundwater	cis-1,2-Dichloroethene	71	NA	0.01
		Trichloroethene	6.5	2×10^{-6}	0.003
		Vinyl chloride ²	48	4×10^{-5}	0.03
			Total:	4×10^{-5}	0.03

Notes:

- 1 Does not include risk for Building 23 because it is deferred to the Alameda Point Total Petroleum Hydrocarbons program and is not addressed by this record of decision.
- 2 Based on U.S. Environmental Protection Agency-derived toxicity values, assumes that volatile organic compounds in groundwater degrade to vinyl chloride and that vinyl chloride does not degrade at all.

µg/L Microgram per liter
 EPC Exposure point concentration
 NA Not applicable

8.0 REMEDIAL ACTION OBJECTIVES

The HHRA results did not identify unacceptable risks associated with the current industrial and planned reuse of the site. However, it was concluded that potential residential risk is present from inhalation of vapors in indoor air that have migrated from groundwater. Remedial action objectives (RAO) for Site 26 were developed to guide the development and evaluation of remedial alternatives for the groundwater plume near Building 20. (Remedial alternatives do not address the petroleum plume southwest of Building 23 because it is deferred to the Alameda Point TPH program and is not addressed by this ROD.) RAOs are medium-specific (soil, groundwater, or air) goals for protecting human health or the environment and include remediation goals that are 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.

The RAOs for groundwater are to protect human health by preventing exposure of potential residents and occupational workers to VOCs in indoor air that have migrated from groundwater. The remediation goal for cis-1,2-DCE in groundwater is 6 µg/L, TCE is 5 µg/L and vinyl chloride is 0.5 µg/L. The Navy will also implement ICs at Site 26 until remediation goals are met, which is expected to be within 3 years. These remediation goals provide for unrestricted site use even though the planned future use is commercial. However, the cost associated with attaining unrestricted use remediation goals is expected to be comparable with the cost associated with commercial use remediation goals, when considering the associated long-term cost.

Because the RI indicated low incremental risk for soil, the Navy, together with the BCT has agreed that no action for soil under CERCLA is required for Site 26.

9.0 DESCRIPTION OF ALTERNATIVES

The development of groundwater alternatives for Site 26 followed the requirements identified in CERCLA, as amended by SARA of 1986, 42 USC Section 9601, et seq. and the NCP. Nine alternatives were developed for Site 26. These alternatives were presented in the FS report for Site 26 (Bechtel 2005). The evaluation of the technologies and screening process that led to the development of these alternatives is also documented in the FS report.

The alternatives, which are described in the following sections include:

- Alternative 1 – No Action
- Alternative 2 – Groundwater Confirmation Sampling
- Alternative 3 – Monitored Natural Attenuation (MNA) and ICs
- Alternative 4 – *In-Situ* Bioremediation (ISB), MNA, and ICs
- Alternative 5 – *In-Situ* Chemical Oxidation (ISCO), MNA, and ICs
- Alternative 6 – ISCO, ISB, and ICs – Selected Alternative
- Alternative 7 – ISCO, ISB, MNA, and ICs
- Alternative 8 – ISB and ICs
- Alternative 9 – Zero-Valent Iron (ZVI), MNA, and ICs

Common elements among these alternatives include ISB, ISCO, MNA, and ICs. ISB is a process that attempts to accelerate the natural biodegradation process for VOCs. A proprietary version of the technology is Hydrogen Release Compound[®] (HRC). HRC is injected into the groundwater and left in place where it passively works to stimulate rapid contaminant degradation. ISCO involves injection of chemical reagents that use Fenton chemistry into groundwater to convert organic contaminants to water and carbon dioxide. ISCO would employ the ISOTECSM chemical oxidation process. MNA would be conducted to document the reduction in contaminant concentrations and verify the stability of the plumes. ICs would be used, for varying durations, to restrict residential use of parcels overlying the Building 20 plume.

9.1 ALTERNATIVE 1 – NO ACTION

In this alternative, no actions are performed. This alternative provides a baseline for comparing all other alternatives. There is no cost associated with this alternative.

9.2 ALTERNATIVE 2 – GROUNDWATER CONFIRMATION SAMPLING

Alternative 2 consists of groundwater confirmation sampling to verify the extent and stability of the plume. A groundwater sampling program would be initiated to complete the definition of the Building 20 plume to the north and measure variations in groundwater conditions over time. The duration of sampling would be sufficient to demonstrate plume stability, which is approximately 3 years.

9.3 ALTERNATIVE 3 – MNA AND ICs

Alternative 3 consists of performing groundwater monitoring to evaluate natural attenuation, along with implementation of ICs to restrict residential reuse. A long-term monitoring program, including periodic reviews, would track plume migration and the cleanup process. Long-term monitoring would track variations in groundwater conditions, document reduction in plume concentrations over time, and verify plume stability. MNA would be required for approximately 70 years.

ICs are legal and administrative mechanisms used to implement land use and access restrictions that are used to limit the exposure of future landowner(s) and/or user(s) of the property to hazardous substances and to maintain the integrity of the remedial action until remediation is complete and remediation goals have been achieved. Monitoring and inspections are conducted to assure that the ICs are being followed.

ICs would be used to prohibit (1) residential and similar uses; (2) the installation of new groundwater wells of any type without prior review and written approval from the Navy, DTSC, EPA, and Water Board; (3) the alteration, disturbance, or removal of groundwater monitoring wells, groundwater extraction wells, treatment facilities, and associated equipment without prior review and written approval from the Navy, EPA, DTSC, and Water Board; and (4) removal of or damage to security features (such as locks on monitoring wells, survey monuments, signs or monitoring equipment and associated pipelines and appurtenances) without prior written approval by the Navy until remediation goals have been achieved.

These restrictions would be described in the preliminary and final remedial design reports, which would be developed and submitted to the Federal Facility Agreement (FFA) signatories for review pursuant to the FFA. The remedial design reports would identify procedures to determine when remediation goals have been met and the parties involved in this determination. The restrictions described in the remedial design reports would be released when it has been determined that remediation goals have been met.

9.4 ALTERNATIVE 4 – ISB, MNA, AND ICs

Alternative 4 includes ISB treatment to target and breakdown source area contaminants over time. Alternative 4 is similar to Alternative 3, but would additionally employ anaerobic ISB technology to accelerate VOC contaminant mass removal in the source area of the Building 20 groundwater plume for 1 year.

Groundwater confirmation sampling would be performed to complete the definition of the extent of the Building 20 groundwater plume. MNA would be conducted for 45 years to document the reduction in contaminant concentrations and verify the stability of the plumes. ICs would be imposed for approximately 46 years to restrict residential use of parcels overlying the Building 20 plume and preclude actions that would interfere with Alternative 4.

9.5 ALTERNATIVE 5 – ISCO, MNA, AND ICs

Alternative 5 includes ISCO source area treatment to accelerate the breakdown of contaminants through oxidation for 6 months. Groundwater confirmation sampling would be performed to complete the definition of the extent of the Building 20 plume. In addition, MNA would be conducted for approximately 50 years to document the reduction of contaminant concentrations and verify stability of any residual concentrations. ICs would be imposed for approximately 50 years to restrict residential use of parcels overlying the Building 20 plume and preclude actions that would interfere with Alternative 5 activities.

9.6 ALTERNATIVE 6 – ISCO, ISB, AND ICs – SELECTED ALTERNATIVE

Alternative 6 accelerates the reduction of VOC plume contaminant concentrations using full-scale ISCO for 6 months, followed by ISB treatment for 1 year to breakdown initial and remaining contaminants, respectively. Groundwater confirmation sampling would be conducted to further define the extent of the Building 20 plume, document the reduction in contaminant concentrations, and verify that contaminant concentrations do not rebound. One year of quarterly groundwater sampling following ISB is assumed for cost estimating purposes. ICs would be imposed for approximately 3 years to restrict residential use of parcels overlying the Building 20 plume and preclude actions that would interfere with Alternative 6 activities.

9.7 ALTERNATIVE 7 – ISCO, ISB, MNA, AND ICs

Alternative 7 would be similar to Alternative 6, except that only the area within the plume exhibiting the highest levels of contamination would be treated by ISCO. ISB, groundwater confirmation sampling, and ICs would be employed as described for Alternative 6. MNA would be conducted to document the reduction in contaminant concentrations and verify stability of any residual concentrations. ICs would be imposed for approximately 41.5 years to restrict residential use of parcels overlying the Building 20 plume and preclude actions that would interfere with Alternative 7 activities.

9.8 ALTERNATIVE 8 – ISB AND ICs

Alternative 8 would employ a combination of anaerobic (Phase I) for 12 months and aerobic (Phase II) for 6 months of ISB technologies to remediate the Building 20 plume contaminants. Anaerobic ISB using HRC would be employed first in an attempt to convert TCE, DCE, and vinyl chloride to innocuous bi-products. A cometabolic oxidation process would then be employed as necessary to further reduce remaining VOC concentrations to MCL-equivalent levels, allowing unrestricted site use.

Pilot-scale testing would be necessary to verify the site-specific effectiveness of the approach. Groundwater confirmation sampling would be performed to complete the definition of the extent of the Building 20 plume, document the reduction in contaminant concentrations, and verify that contaminant concentrations do not rebound. MNA would be conducted to document the reduction in contaminant concentrations and verify the stability of any residual concentrations. One year of quarterly groundwater sampling followed by ISB is assumed for cost estimating purposes. ICs would be imposed for approximately 4 years to restrict residential use of parcels overlying the Building 20 plume and preclude actions that would interfere with Alternative 8 activities.

9.9 ALTERNATIVE 9 – ZVI, MNA, AND ICs

Alternative 9 implements ZVI treatment to chemically break down VOCs. It is assumed that Ferox injection technology would be used to introduce ZVI into the source area and accelerate the degradation of VOCs for 1 year. Groundwater confirmation sampling would be performed to complete the definition of the extent of the Building 20 plume. MNA would be conducted to document the reduction in contaminant concentrations and verify stability of any residual concentrations. One year of quarterly groundwater sampling followed by ISB is assumed for cost estimating purposes. ICs would be imposed for approximately 41 years to restrict residential use of parcels overlying the Building 20 plume and preclude actions that would interfere with Alternative 9 activities.

10.0 COMPARATIVE ANALYSIS OF ALTERNATIVES

This section summarizes the comparative analysis that was conducted to evaluate the relative performance of each remedial alternative in relation to the nine criteria outlined in CERCLA § 121 (b), as amended. The purpose of the comparative analysis is to identify the relative advantages and disadvantages of each alternative. The evaluation criteria are based on requirements promulgated in the NCP. As stated in the NCP (40 CFR 300.430[f]), the evaluation criteria are arranged in a hierarchical manner that is then used to select a remedy for the site based on the following categories:

- Threshold criteria
 - Overall protection of human health and the environment
 - Compliance with applicable or relevant and appropriate requirement (ARAR)
- Primary balancing criteria
 - Long-term effectiveness and permanence
 - Reduction of toxicity, mobility, or volume through treatment
 - Short-term effectiveness
 - Implementability
 - Cost-effectiveness
- Modifying criteria
 - State acceptance
 - Community acceptance

10.1 OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

Alternative 1 is not fully protective of human health and the environment because plume stability and contaminant degradation is not verified. Alternatives 3, 4, 5, 6, 7, 8, and 9 meet the threshold criteria for overall protection of human health and the environment and provide a broad range of alternatives for consideration.

10.2 COMPLIANCE WITH ARARs

ARARs are not applicable to Alternative 1. Alternatives 3, 4, 5, 6, 7, 8, and 9 meet the threshold criteria of compliance with ARARs (see Section 13.2).

10.3 LONG-TERM EFFECTIVENESS AND PERMANENCE

Alternative 1, no action, received a rating of low in long-term effectiveness and permanence because the effectiveness of natural attenuation processes could not be verified, and plume migration patterns would not be monitored to demonstrate protectiveness. Alternative 3 also received a rating of low because the assumed 70-year duration would require management of ICs for a considerably longer time period than durations assumed for Alternatives 4, 5, 7, and 9.

Alternatives 4, 5, 7, and 9 rated medium in long-term effectiveness and permanence. The assumed duration of ICs (and associated long-term management) for these alternatives is longer than that assumed for Alternatives 6 and 8.

Alternatives 6 and 8 rated high in long-term effectiveness and permanence. These alternatives could potentially shorten the IC timeframe significantly. Alternative 2 also rated high in long-term effectiveness and permanence. Once plume definition and stability are verified, there would be no need to rely on ICs. Therefore, there would be no continuing need for repair and maintenance of wells. See Table 10-1 for a summary of this criterion.

10.4 REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT

Alternatives 6 and 8 rated highest in reduction of toxicity, mobility, or volume through full-scale active treatment. Chemical reactions occurring within the aquifer would remove VOCs from groundwater, and VOCs such as tetrachloroethene and TCE would be degraded to nontoxic, inert compounds by the ISCO and two-phase ISB processes.

Alternatives 4, 5, 7, and 9 rated medium in reduction of toxicity, mobility, or volume through treatment. These alternatives provide active treatment; however, Alternatives 4, 5, 7, and 9 target smaller masses of contaminants and smaller treatment areas than Alternatives 6 and 8.

Alternatives 1, 2, and 3 rated lowest in reduction of toxicity, mobility, or volume through treatment. Although MNA should reduce mobility, toxicity, and volume of VOCs, no active treatment is provided. See Table 10-1 for a summary of this criterion.

10.5 SHORT-TERM EFFECTIVENESS

The evaluation of this criterion considers the amount of time required to achieve RAOs. Action is not necessary to be protective of human health under the current and future commercial site use. However, unrestricted site use was also considered because the cost associated with attaining unrestricted use remediation goals is expected to be comparable with the cost associated with commercial use remediation goals, when considering the associated long-term cost.

Alternatives 2 and 3 are rated high in short-term effectiveness. These alternatives pose little risk to the community, and they present a minimal potential for impacts on workers.

Alternatives 4, 5, 6, 7, 8, and 9 rated medium in short-term effectiveness. Some risk could be posed by the HRC process included in Alternatives 4, 6, 7, and 8, which could generate methane and hydrogen sulfide vapors.

Transporting the process chemicals used for ISCO to the site would pose some short-term risks to the community, and the use of the chemicals in the ISCO process would pose some hazards to workers during implementation for Alternatives 5, 6, and 7.

Transporting the pressurized gasses (methane and oxygen) used for the aerobic ISB process and for injection of ZVI iron (nitrogen) would pose some short-term risks to the community, and the use of these gases in these alternatives would pose some hazards to workers during implementation.

10.6 IMPLEMENTABILITY

Alternative 1 scored the highest in implementability. However, there are no means by which to monitor effectiveness. Alternatives 2 and 3 also rated high in implementability.

Alternatives 4, 5, 7, and 9 rated medium in implementability. These alternatives would be more complex to implement than Alternatives 1, 2, and 3, and less complex than Alternatives 6 and 8.

Alternatives 6 and 8 rated low in implementability. Both of these alternatives involve implementation of a two-phase treatment, and pilot-scale testing would be necessary to verify the site-specific performance of this treatment approach. Additionally, the two-phased ISB process for Alternative 8 would require specialized expertise and the presence of specific indigenous bacteria to facilitate the reductive dechlorination and cometabolic oxidation reactions. See Table 10-1 for a summary of this criterion.

10.7 COST

Alternatives 1 and 2 received the highest ratings in regard to their cost. No costs are incurred for Alternative 1, and Alternative 2 had the next lowest cost. Alternatives 6 and 8 rated medium in cost, and Alternatives 3, 4, 5, 7, and 9 received low ratings in cost. Table 10-2 provides a cost comparison table, and Table 10-1 provides a summary of this criterion.

10.8 STATE ACCEPTANCE

The State of California concurs with the Navy's selected remedial alternative (Alternative 6).

10.9 COMMUNITY ACCEPTANCE

The proposed plan was presented to the community and discussed in a public meeting. The responsiveness summary portion of this ROD addresses the public's comments and concerns about the selected remedy for Site 26.

TABLES

TABLE 10-1: COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES BY BALANCING CRITERIA
Record of Decision, Site 26, Alameda Point, Alameda, California

Alternative	Long-Term Effectiveness and Permanence	Reduction in Toxicity, Mobility, or Volume through Treatment	Short-Term Effectiveness	Implementability	Cost*
	<p>Parameters considered:</p> <ul style="list-style-type: none"> The expected long-term reduction in risk posed by the site The level of effort needed to maintain the remedy and monitor the area for changes in site conditions The compatibility of the remedy with planned future use of the site Adequacy and reliability, including reliance on land disposal, potential need to replace, and risks posed should components need replacement 	<p>Parameters considered:</p> <ul style="list-style-type: none"> Treatment processes used The amount of hazardous materials destroyed, recycled, or treated The degree of expected reduction in toxicity, mobility, or volume and the inherent hazard posed by principal threats at the site The degree to which the benefits of the remedial alternative are irreversible The types, quantities, persistence, toxicity, and propensity to bioaccumulate treatment residuals that remain following treatment 	<p>Parameters considered:</p> <ul style="list-style-type: none"> Protection of the community during the remedial alternative Protection of workers during the remedial alternative Environmental impacts during remediation Time required to achieve protection 	<p>Parameters considered:</p> <ul style="list-style-type: none"> Technical and administrative feasibility Availability of required resources 	<p>Parameters considered:</p> <ul style="list-style-type: none"> Capital costs Operations and maintenance costs Costs for long-term monitoring Costs for developing and maintaining institutional controls Net present value
Alternative 1 – No Action	<p>Low</p> <p>Under this alternative, there would be no method of addressing long-term effectiveness and permanence.</p>	<p>Low</p> <p>No treatment is performed. No means are available to assess reduction of toxicity, mobility, or volume.</p>	<p>Low</p> <p>Active treatment is not necessary to be protective of human health under the current and future site use. Risks to community and workers would be minimized; however, plume stability would not be verified.</p>	<p>High</p> <p>Easy to implement; however, no ability to monitor effectiveness.</p>	<p>High</p> <p>No costs occurred.</p>
Alternative 2 – Groundwater confirmation sampling	<p>High</p> <p>The assumed duration for this alternative is similar to that assumed for Alternatives 6 and 8. Once plume definition and stability are verified, there would be no need for continuing repair/maintenance.</p>	<p>Low</p> <p>Contaminant levels are reduced via natural attenuation processes.</p>	<p>High</p> <p>Active treatment is not necessary to be protective of human health under the current and future site use.</p>	<p>High</p> <p>Easy to implement. Groundwater sampling technology is proven.</p>	<p>High</p> <p>Higher present value compared to Alternative 1; however cost is low compared to Alternatives 3, 4, 5, 6, 7, 8, and 9.</p>
Alternative 3 – MNA/ICs	<p>Low</p> <p>The assumed duration for ICs for this alternative (70 years) is considerably longer than that assumed for other alternatives and would require a longer period of well maintenance/repair and management of ICs.</p>	<p>Low</p> <p>Contaminant levels are reduced via natural attenuation processes.</p>	<p>High</p> <p>Active treatment is not necessary to be protective of human health under the current and future site use.</p>	<p>High</p> <p>Easy to implement. Groundwater sampling technology is proven.</p>	<p>Low</p> <p>High present value cost compared to Alternatives 1,2,6, and 8.</p>
Alternative 4 – ISB source area treatment/MNA/ICs	<p>Medium</p> <p>The assumed duration for ICs for this alternative (46 years) is longer than that assumed for Alternatives 2, 6, and 8 and would require a longer period of well maintenance/repair and management of ICs.</p>	<p>Medium</p> <p>The HRC® process should permanently destroy a significant mass of VOCs within months under favorable conditions, resulting in innocuous end products. However, less of the plume is aggressively treated than for Alternatives 6 and 8.</p>	<p>Medium</p> <p>Active treatment is not necessary to be protective of human health under the current and future site use. Risks to community and workers should be minimal; however the ISB process could generate methane and hydrogen sulfide vapors.</p>	<p>Medium</p> <p>More complex to implement than Alternatives 1, 2, and 3.</p>	<p>Low</p> <p>High present value compared to Alternatives 1, 2, 6, and 8.</p>

TABLE 10-1: COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES BY BALANCING CRITERIA (CONTINUED)

Record of Decision, Site 26, Alameda Point, Alameda, California

Alternative	Long-Term Effectiveness and Permanence	Reduction in Toxicity, Mobility, or Volume through Treatment	Short-Term Effectiveness	Implementability	Cost*
Alternative 5 – ISCO source area treatment/MNA/ICs	Medium	Medium	Medium	Medium	Low
	The assumed duration for ICs for this alternative (50.5 years) is longer than that assumed for Alternatives 2, 6, and 8 and would require a longer period of well maintenance/repair and management of ICs.	The chemical oxidation process should permanently destroy a significant mass of VOCs within weeks under favorable conditions, resulting in innocuous end products. However, less of the plume is aggressively treated than for Alternatives 6 and 8.	Active treatment is not necessary to be protective of human health under the current and future site use; however the ISCO process poses some risks to site workers and the community.	More complex to implement than Alternatives 1, 2, and 3.	High present value compared to Alternatives 1, 2, 6, and 8.
Alternative 6 – ISCO/ISB/ICs	High	High	Medium	Low	Medium
	Most or all of the contamination would be eliminated within the first 2 years; therefore, only a limited time frame would be necessary for IC implementation and enforceability to protect human health.	The chemical oxidation process should permanently destroy a significant mass of VOCs within weeks under favorable conditions, resulting in innocuous by-products.	Active treatment is not necessary to be protective of human health under the current and future site use; however the ISCO and ISB processes poses some risks to site workers and the community. ISB process could generate methane and hydrogen sulfide vapors.	Design of chemical oxidation will require pilot-scale testing for full-scale application to verify if treatment aggressively lowers contaminant concentrations.	High present value compared to Alternatives 1 and 2; however cost is lower than Alternatives 3, 4, 5, 7, and 9.
Alternative 7 – ISCO source area treatment/ISB/MNA/ICs	Medium	Medium	Medium	Medium	Low
	The assumed duration for ICs for this alternative (4.5 years) is longer than that assumed for Alternatives 2, 6, and 8 and would require a longer period of well maintenance/repair and management of ICs.	The chemical oxidation process should permanently destroy a significant mass of VOCs within weeks under favorable conditions, resulting in innocuous end products. However, less of the plume is aggressively treated than for Alternatives 6 and 8.	Active treatment is not necessary to be protective of human health under the current and future site use; however the ISCO and ISB processes poses some risks to site workers and the community. ISB process could generate methane and hydrogen sulfide vapors.	More complex to implement than Alternatives 1, 2, and 3.	High present value compared to Alternatives 1, 2, 6, and 8.
Alternative 8 – ISB/ICs	High	High	Medium	Low	Medium
	Most or all of the contamination would be eliminated within the first 3 years; therefore, only a limited time frame would be necessary for IC implementation and enforceability to protect human health.	ISB should permanently destroy a significant mass of VOCs within months under favorable conditions, resulting in innocuous end products.	Active treatment is not necessary to be protective of human health under the current and future site use; however the two-phase ISB process poses some risks to site workers and the community. ISB process would generate methane and hydrogen sulfide vapors.	Design of the two-phase ISB process will require pilot-scale testing for full-scale application to verify if treatment aggressively lowers contaminant concentrations. There is limited experience in successfully implementing this two-phase process.	High present value compared to Alternatives 1 and 2; however cost is lower than Alternatives 3, 4, 5, 7, and 9
Alternative 9 – Zero-valent iron source area treatment/MNA/ICs	Medium	Medium	Medium	Medium	Low
	The assumed duration for ICs for this alternative (41 years) is longer than that assumed for Alternatives 2, 6, and 8 and would require a longer period of well maintenance/repair and management of ICs.	The zero-valent iron injection process should permanently destroy a significant mass of VOCs within months under favorable conditions, resulting in innocuous end products. However, less of the plume is aggressively treated than for Alternatives 6 and 8.	Active treatment is not necessary to be protective of human health under the current and future site use; however the need for compressed gas for the zero-valent iron injection process poses some risks to site workers and the community.	More complex to implement than Alternatives 1, 2, and 3.	High present value compared to Alternatives 1, 2, 6, and 8.

Notes:

* Based on net present value

HRC@ Hydrogen Release Compound

IC Institutional control

ISB *In-situ* bioremediation

ISCO *In-situ* chemical oxidation

MNA

RAO

VOC

Monitored natural attenuation

Remedial action objective

Volatile organic compound

TABLE 10-2: REMEDIAL ALTERNATIVES AND COST COMPARISON
Record of Decision, Site 26, Alameda Point, Alameda, California

Remedial Alternative	Estimated Cost ¹
Alternative 1 – No Action	\$0
Alternative 2 – Groundwater Confirmation Sampling	\$750,000
Alternative 3 – MNA and ICs	\$3,200,000
Alternative 4 – ISB Source Area Treatment, MNA, and ICs	\$3,200,000
Alternative 5 – ISCO Source Area Treatment, MNA, and ICs	\$3,400,000
Alternative 6 – ISCO, ISB, and ICs	\$3,100,000
Alternative 7 – ISCO Source Area Treatment, ISB, MNA, and ICs	\$3,500,000
Alternative 8 – ISB and ICs	\$2,800,000
Alternative 9 – Zero-Valent Iron Source Area Treatment, MNA, and ICs	\$3,300,000

Notes:

- 1 Present value
- IC Institutional control
- ISB *In-situ* bioremediation
- ISCO *In-situ* chemical oxidation
- MNA Monitored natural attenuation

11.0 PRINCIPAL THREAT WASTE

Principal threat wastes are source materials considered to be highly toxic, highly mobile, or those that would present a significant risk to human health or the environment should exposure occur. Contaminated groundwater is not generally considered to be source material unless it has the potential to be mobile. VOCs in groundwater at Site 26 are not considered a principal threat waste.

12.0 SELECTED REMEDY

Based on the RI report (Bechtel 2003), FS report (Bechtel 2005), and administrative record (see Attachment A) for Site 26, as well as an evaluation of all comments on the proposed plan (SulTech 2005a) submitted by interested parties during the public comment period, the Navy has selected no action for soil and Alternative 6 as the remedy for groundwater. Alternative 6 includes the following components:

- Installation of monitoring wells and additional sampling
- ISCO treatment
- ISB treatment
- Short-term ICs

The rationale for, a description, estimated costs, the expected outcome, and performance objectives for the selected remedy is presented in the following sections.

12.1 SUMMARY OF THE RATIONALE FOR THE SELECTED REMEDY

The Navy has determined that soil at Site 26 does not pose an unacceptable risk to human health or the environment. Accordingly, no remedial action is appropriate for Site 26 soil; the Navy's selection of no action for soil reflects the determination that site-specific releases do not represent a threat to human health or to the environment.

The Navy has determined that groundwater at Site 26 poses a potential risk to human health, based on potential residential risk from inhalation of vapors in indoor air that have migrated from groundwater. Even though the current and planned future use is commercial/industrial, the Navy has selected an alternative that provides for unrestricted site use. The cost associated with attaining unrestricted use remediation goals is expected to be comparable with the cost associated with commercial use remediation goals, when considering the associated long-term cost. Accordingly, remedial action is appropriate for Site 26 groundwater. Alternative 6 was selected as the preferred alternative for groundwater at Site 26 because it reduces the mobility, toxicity, and volume of VOCs in the groundwater by implementing an expedient, aggressive, and proven treatment strategy; provides the shortest term ICs (only 3 years); and has a low relative cost and moderate implementability while fully protecting human health and the environment and complying with all environmental regulations and laws. The selected remedy addresses the chlorinated VOC plume southeast of Building 20. ISCO and ISB treatment will be used to reduce the VOC plume concentrations and to breakdown remaining contaminants over time.

12.2 DESCRIPTION OF THE SELECTED REMEDY

The Navy has selected no action for soil and Alternative 6 as the remedy for groundwater. The following components of Alternative 6 are discussed further below: ISCO, ISB, installation of monitoring wells and additional sampling, and short-term ICs.

12.2.1 Installation of Monitoring Wells and Additional Sampling

During the remedial design phase, monitoring wells will be constructed and additional groundwater sampling will be performed to delineate the horizontal and vertical extent of the groundwater plume, monitor flow conditions, track plume movement, and verify treatment effectiveness. Additional sampling will provide remedial design parameters needed for successful implementation of ISCO and to assess treatment effectiveness. Design parameters including plume area, radius of influence, number of injection wells, ISCO injection dose rates, and injection delivery methods will be finalized based on initial sampling data collected during the remedial design phase. After each ISCO treatment, sampling will be performed to confirm treatment effectiveness and determine subsequent treatment design parameters. Post-ISCO sampling will also be used to evaluate if subsequent ISB treatment is required and to provide the remedial design parameters needed to successfully implement the ISB phase. Design parameters such as remaining plume area, radius of influence, number of injection wells, ISB injection dose rates, and injection delivery methods will also be derived by the final post-ISCO sampling event. Post-ISB confirmation sampling will be performed to document the successful completion of active remediation and verify RAOs and remediation goals are satisfied. Confirmation sampling results for VOCs in groundwater, along with the plume boundary, area, migration, and change in concentrations, will be documented following termination of ISCO and ISB.

12.2.2 ISCO Treatment

The selected alternative is Alternative 6 for groundwater at Site 26 because full-scale ISCO treatment would provide substantial reduction in contaminant concentrations throughout the VOC plume within 3 years. A 6-month pilot test will be performed to verify effectiveness for this aggressive approach to reduce chemical concentrations. The selected remedy employs the ISOTEC™ chemical oxidation process, which uses Fenton-like chemistry to convert organic contaminants to water and carbon dioxide. Using this process, dilute (3-to-8-percent) stabilized hydrogen peroxide is injected into the contaminated FWBZ. This is followed by the injection of a chelated iron catalyst. The catalyst and hydrogen peroxide react to generate hydroxyl radicals, which are powerful, nonspecific oxidizing agents. The hydroxyl radicals react with the hydrocarbon contaminants to produce carbon dioxide and water. Reagent and catalyst would be applied through standard 2-inch-diameter polyvinyl chloride monitoring wells in three sequential treatment events performed over 6 months. The treatment area would encompass approximately 16,000 square-feet (Bechtel 2005).

12.2.3 ISB Treatment

Enhanced aerobic ISB is a process that attempts to accelerate the natural biodegradation process for some contaminants by introducing oxygen into the subsurface to provide an aerobic environment for naturally occurring microorganisms that aerobically degrade pollutants into less toxic by-products. Oxygen Release Compound[®] (ORC) is a patented formulation of magnesium peroxide that produces a slow and sustained release of molecular oxygen when in contact with soil or groundwater. Enhanced anaerobic ISB is a process that uses the patented HRC formulation to accelerate the natural anaerobic bioremediation process for contaminants susceptible to anaerobic biodegradation. Current conditions in the aquifer appear to be mildly reducing, and there is evidence of ongoing natural anaerobic VOC biodegradation (that is, the presence of DCA, DCE, and vinyl chloride). The aquifer would be amended with HRC agents to enhance anaerobic bioremediation and/or ORC to enhance aerobic bioremediation (Bechtel 2005).

If the post-ISCO confirmation sampling results indicate that COCs remain, enhanced ISB would be used to further lower groundwater contaminant concentrations. Bioremediation is a process that uses microorganisms or their enzymes to return the environment altered by contaminants to its original condition. Depending on the post-test ISCO results, residual contaminants could be addressed through either HRC or ORC treatments. Either HRC or ORC can stimulate rapid contaminant degradation by supplying the necessary ions to support the oxidation and reduction reactions necessary to breakdown complex chemical contaminants over time. Delivery of HRC and ORC to the subsurface is accomplished by push-point injection or by injection into existing dedicated wells (Bechtel 2005).

12.2.4 Short-Term ICs

ICs are legal and administrative mechanisms used to implement land use and access restrictions that are used to limit the exposure of future landowner(s) and/or user(s) of the property to hazardous substances and to maintain the integrity of the remedial action until remediation is complete and remediation goals have been achieved. Monitoring and inspections are conducted to assure that the ICs are being followed.

Legal mechanisms include proprietary controls such as restrictive covenants, negative easements, equitable servitudes, lease restrictions, and deed notices. Administrative mechanisms include notices, adopted local land use plans and ordinances, construction permitting, or other existing land use management systems that may be used to ensure compliance with use restrictions.

The Navy has determined that it will rely upon proprietary controls in the form of lease restrictions contained in the "Lease in Furtherance of Conveyance Between the United States of America and the Alameda Reuse and Redevelopment Authority for the Former Naval Air Station Alameda" (or LIFOC) (Navy and Alameda Reuse and Redevelopment Authority 2001). These controls will continue until the property containing Site 26 is conveyed with environmental restrictive covenants as provided in the "Memorandum of Agreement Between the United States Department of the Navy and the California Department of Toxic Substances Control"

(hereinafter referred to as “Navy/DTSC MOA”) (Navy and DTSC 2000) and attached covenant models.

More specifically, the land use restrictions contained in the LIFOC will serve as interim ICs between the time the ROD is signed and the date upon which the Navy transfers the property. Through the LIFOC, the Navy will maintain conditions at Site 26 that are consistent with the IC objectives for the chosen remedial alternative. The LIFOC contains provisions that the Navy can use to prevent

- Changes in land use by requiring the lessee and sublessee(s) to get written consent of the Navy before beginning excavation, construction, alteration, or repairs of leased property (Section 8.1 of the LIFOC).
- The lessee from conducting operations that interfere with environmental restoration activities by the Navy, the EPA, state regulators, or their contractors, by requiring written approval for any work by lessee or sublessee in proximity to the site (Section 11 of the LIFOC).
- The lessee or sublessee from any excavation, digging, drilling or other disturbance of the subsurface without written approval of the Navy (Section 13.11 of the LIFOC).

Once the property is transferred, the following are the IC objectives to be achieved through land use restrictions for this site and which will be incorporated into the Quitclaim Deed and the Covenant to Restrict Use of Property:

1. If the property is transferred, restrictive covenants will be included in one or more Quitclaim Deeds from the Navy to the property recipient.
2. Restrictive covenants included in a “Covenant to Restrict Use of Property”¹ entered into by the Navy and DTSC as provided in Title (tit.) 22 Cal. Code Regs. Section 67391.1 and consistent with the Navy/DTSC MOA (Navy and DTSC 2000).

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

ICs will be applied to the property (see Figure 12-1) and included in findings of suitability to transfer, findings of suitability for early transfer, “Covenant to Restrict Use of Property” between the Navy and DTSC, and any Quitclaim Deeds conveying real property containing Site 26.

¹ See “Memorandum of Agreement Between the United States Department of the Navy and the California Department of Toxic Substances Control, Use of Model ‘Covenant to Restrict Use of Property’ at Installations Being Closed and Transferred by the United States Department of the Navy” dated March 10, 2000.

The following are the IC objectives to be achieved through land use restrictions for this site:

- The Site 26 area subject to ICs shall not be used for any of the following purposes unless otherwise approved by the Navy and FFA signatories:
 - a. a residence, including any mobile home or factory built housing, constructed or installed for use as residential human habitation,
 - b. a hospital for humans,
 - c. a school for persons under 21 years of age,
 - d. a day care facility for children, or
 - e. any permanently occupied human habitation other than those used for commercial or industrial purposes.
- Prohibit the installation of new groundwater wells of any type without prior review and written approval from the Navy, DTSC, EPA, and Water Board until cleanup objectives have been achieved.
- Prohibit the alteration, disturbance, or removal of groundwater monitoring wells, groundwater extraction wells, treatment facilities, and associated equipment without prior review and written approval from the Navy, DTSC, EPA, and Water Board.
- Removal of or damage to security features (such as locks on monitoring wells, survey monuments, signs or monitoring equipment and associated pipelines and appurtenances) is prohibited without prior written approval by the Navy.

ICs will remain in place until RAOs and the following remediation goals have been achieved (anticipated to be approximately 3 years from the date of commencement of the selected remedial action):

- Cis-1,2-DCE: 6 µg/L
- TCE: 5 µg/L
- Vinyl chloride: 0.5 µg/L

The Navy and FFA signatories and their authorized agents, employees, contractors and subcontractors shall have the right to enter upon Site 26/Parcel 192/Alameda Point to conduct investigations, tests, or surveys; inspect field activities; or construct, operate, and maintain any response or remedial action as required or necessary under the cleanup program, including but not limited to monitoring wells, pumping wells, treatment facilities, and landfill cap/containment systems. These access restrictions will be included in the deed and covenant.

The Navy shall address IC implementation and maintenance actions including periodic inspections in the preliminary and final remedial design reports to be developed and submitted to the FFA signatories for review pursuant to the FFA (see "Navy Principles and Procedures for

Specifying, Monitoring and Enforcement of Land Use Controls and Other Post-ROD Actions” attached to January 16, 2004 DoD Memorandum titled “Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Record of Decision (ROD) and Post-ROD Policy”). The preliminary and final remedial design reports are primary documents as provided in Section 10.3 of the FFA.

The preliminary and final remedial design reports will include a “LUC Remedial Design” section to describe IC implementation actions including:

- Requirements for CERCLA 5-year remedy review;
- Frequency and requirements for periodic monitoring or visual inspections;
- Reporting for monitoring and inspections;
- Notification procedures to the regulators for planned property conveyance, changes, and/or corrective action required for the remedy;
- Development of wording for land use restrictions and parties to be provided copies of the deed language once executed;
- Identification of responsibilities for the Navy, EPA, DTSC, Water Board, other government agencies, and the new property owner for implementation, monitoring, reporting, and enforcement of ICs;
- Providing a list of ICs with the expected duration; and
- Maps identifying where ICs are to be implemented.

The Navy will be responsible for implementing, inspecting, reporting, maintaining, and enforcing the IC objectives described in the ROD in accordance with the approved remedial design reports. Although the Navy may later transfer these procedural responsibilities to another party by contract, property transfer agreement, or other means, the Navy shall retain ultimate responsibility for remedy integrity. Should any of the IC objectives fail, the Navy shall ensure that appropriate actions are taken to reestablish protectiveness of the remedy and may initiate legal action to either compel action by a third party(ies) and/or recover the Navy’s costs for mitigating any discovered IC violation(s).

12.3 ESTIMATED COSTS

No costs are associated with no action for soil, and Alternative 6 is estimated to cost \$3,100,000. This is based on the best available information regarding the anticipated scope of the remedy, includes capital and operation and maintenance costs, and is based on present costs. A summary of the estimated costs is presented in Table 12-1. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost for remedial design/remedial action phase of site cleanup. A detailed cost estimate is presented in the FS report (Bechtel 2005). Cost may change as a result of new information and data collected during

implementation of the selected remedy. Significant changes may be documented in a memorandum to the administrative record, explanation of significant differences, or as an amendment to this ROD (EPA 1999a).

12.4 EXPECTED OUTCOMES OF THE SELECTED REMEDY

The selected remedy for Site 26 considers the groundwater-to-air migration pathway and provides for cleanup of the shallow groundwater aquifer to be protective of beneficial uses of the site and allow for transfer. The expected outcome of the selected remedy at Site 26 is to restore the shallow aquifer quality by reducing the mass of contaminants of concern in groundwater to levels that no longer pose a threat to human health through the inhalation exposure pathway.

The remedy involves a treatment train comprised of two sequentially implemented groundwater treatment systems, which are supported by groundwater monitoring, and are supplemented by interim ICs. The treatment system will be operated and optimized as necessary to meet performance objectives that are based on the remedial action objectives that are presented in this ROD. In addition, the performance objectives will include detailed criteria, to be developed during the remedial design, to allow for periodic evaluations of each treatment system to determine whether the system is operating effectively or whether to discontinue operation of the system. During the implementation of the selected remedial alternative, the Navy will periodically report the system evaluation results to the regulatory agencies. The performance objectives for the selected remedy include the following:

- **Mass reduction of each chemical of concern** – Reductions in the mass of each COC will be estimated based on the chemical concentrations measured in groundwater at monitoring wells and the areal extent of the COC in groundwater. The mass for a comparison baseline will be calculated using the remediation goal concentration for each COC and the appropriate areal extent. In addition, fate and transport modeling may be used to evaluate the threat to human health.
- **Achieve asymptotic mass removal** – Evaluate the continued efficiency of operating any active remedial component of the selected remedy. Asymptotic conditions will be achieved when the slope of the cumulative mass removed curve approaches zero over time. In addition, rebound of COC concentrations will be evaluated during temporary shutdown periods.
- **Cost effectiveness** – The operation of any phase of active remediation will continue as long as it is cost-effective. Cost-effectiveness for a treatment alternative is based on the operating costs for the treatment and the mass of removed contaminants.

To allow the Navy to determine whether or not each of the above-listed performance objectives are being met, detailed performance criteria will be established during the remedial design phase in collaboration with the regulatory agencies. The Navy will collect additional information during the design phase to finalize the development of the groundwater monitoring network, and design the treatment systems. The information collected during remedial design might include:

- Hydrogeological conditions of the contaminated aquifer including stratigraphy, hydraulic and physical properties of aquifer, groundwater recharge, hydraulic gradients, and depth to groundwater
- Lateral and vertical extent of COCs
- Estimates of mass for each COC
- Temporal trends in concentrations of COCs
- Potential for aquifer to support bioremediation including microbial populations, nutrient status, and decay potential of COCs

The Navy will coordinate the planning and collection of information during remedial design with the regulatory agencies.

During remedial design, the existing groundwater monitoring network will be evaluated to ensure its adequacy to monitor plume migration and effectiveness of the selected remedy. Necessary changes will be recommended at that time. Finally, the objectives of the ICs for the selected remedy will be achieved through lease restrictions in the existing LIFO (discussed previously) while the Navy still owns Site 26. Once the property is transferred, the ICs will be implemented through restrictive covenants. The ICs will continue until the Navy, the regulatory agencies, and the transferee determine the remedial response is complete and/or they are deemed no longer necessary.

The selected remedy proposes to use ISCO and ISB as active components that will be operated sequentially as separate phases. ISCO will be used as the first phase followed by in situ bioremediation, if necessary, upon conclusion of the ISCO phase. The transition from ISCO to ISB will be based on decisions that will follow after each injection of chemical reagent during ISCO. Following each injection of chemical reagent and an appropriate amount of time to allow the groundwater to reach a steady-state, concentrations of COCs in performance monitoring data will be used to evaluate the operation of the ISCO system. The evaluation will determine if performance objectives have been achieved, whether there is significant rebound in COC concentrations, if asymptotic rates of removal have been achieved, and if it is cost-effective to continue using ISCO.

If the cumulative removal of COC mass over time approaches an asymptotic state, the cost-effectiveness of using ISCO will diminish. The Navy intends to use ISCO only as long as it is cost-effective. The Navy in collaboration with the regulatory agencies will develop the specific details to define allowable rebound, asymptotic rates of removal, and cost-effectiveness during the remedial design.

Following implementation of the active phases (both ISCO and ISB) of the selected remedy, the Navy, in collaboration with the regulatory agencies, will determine if the performance objectives (including the RAOs) have been achieved. If it is determined the RAOs have not been achieved,

and that the system is no longer operating cost-effectively, the Navy will conduct a remedy performance analysis and restoration timeframe analysis to evaluate the practicability of continued groundwater restoration. This remedy performance analysis could include

- Data and information on source removal or containment
- Groundwater data collected from sources inside and outside the plume to evaluate mass reduction and plume migration or containment
- Operations history of the ISCO and ISB treatment systems
- A projected timeframe for achieving the remediation goal by continuing ISB or reinstating ISCO
- Estimates of cost to continue ISB or reinstate ISCO
- Determine if there is another alternative that is more cost-effective than ISB or ISCO
- Whether further remedial actions are necessary to protect human health and the environment

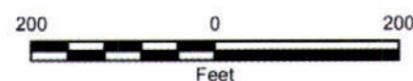
The Navy, in collaboration with the regulatory agencies, will develop an Explanation of Significant Differences or a ROD amendment if the analysis shows it is still practicable to continue groundwater restoration but any further remedial action might represent a significant or fundamental change in the cleanup approach for Site 26. If it is determined that it is not practicable to continue groundwater restoration, the Navy, in collaboration with the regulatory agencies will develop alternative remedial strategies that meet the remedial action objective. This decision will be made in accordance with EPA's "Guidance for Evaluating the Technical Impracticability of Groundwater Restoration" (EPA 1993).

FIGURES



- Generator Accumulation Point
- Oil Water Separator
- Catch Basin
- Aboveground Storage Tanks**
- PRESENT
- REMOVED
- Fence Line
- Storm Sewer Line
- CERCLA Site Boundary
- Environmental Baseline Survey Parcel
- Buildings**
- Present
- Removed
- Benzene Plume Extent
- VOC Plume Extent
- Corrective Action Area
- Institutional Control Restrictions
- Approximate Location of Former Aircraft Washdown Area

Note:
 AST Aboveground Storage Tank
 CAA Corrective Action Area
 CERCLA Comprehensive Environment Response, Compensation, and Liability Act
 GAP Generator Accumulation Point
 IWTP Industrial Wastewater Treatment Plant
 VOC Volatile Organic Compound



Alameda Point, Alameda, CA
 U.S. Navy, BRAC PMO West, San Diego, CA

**FIGURE 12-1
 BOUNDARIES OF SHORT-TERM
 INSTITUTIONAL CONTROLS**

Operable Unit 6 Site 26
 Record of Decision, Alameda Point

TABLES

TABLE 12-1: COST ESTIMATE SUMMARY FOR ALTERNATIVE 6

Record of Decision, Site 26, Alameda Point, Alameda, California

Cost Category	Capital Costs	Operation and Maintenance Costs
Pilot Study for <i>In-Situ</i> Chemical Oxidation	\$500,000	
Monitoring Well Installation	\$98,000	
Injection Wells	\$102,000	
<i>In-Situ</i> Chemical Oxidation	\$555,000	
Hydrogen Release® Treatment	\$72,000	
Institutional Controls	\$70,000	\$4,000
Professional Labor	\$200,000	\$902,000
Escalation	\$81,000	\$54,000
Contingency Groundwater Confirmation Sampling		\$9,000
Subtotal:	\$1,678,000	\$969,000
Contingency		\$529,000
Total Alternative 6 Costs	\$3,108,000	

13.0 STATUTORY DETERMINATIONS

The Navy's primary responsibility in regard to CERCLA is to undertake remedial actions that achieve the statutory requirements for adequate protection of human health and the environment. In addition, Section 121 of CERCLA establishes several statutory requirements and preferences. These specify that completed remedial actions must comply with ARARs established under federal and state laws unless a statutory waiver is justified. The selected remedy also must be cost-effective and use permanent solutions and alternative treatment technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that, as their principal element, permanently and significantly reduce the volume, toxicity, or mobility of hazardous substances. The following sections discuss how the selected remedy meets these statutory requirements and preferences. Complete discussions are found in the FS report for Site 26 (Bechtel 2005).

13.1 PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The RAO for Site 26 is designed to prevent exposures of potential residents and occupational workers to VOCs in indoor air that migrated from groundwater. The selected remedial action protects human health by assuring the continued prevention of inhalation of VOCs in air that have migrated from groundwater. Groundwater is not used for domestic purposes or for irrigation at Site 26. There are no short-term risks associated with the selected remedy that cannot be readily controlled. In addition, no adverse cross-media impacts are expected from the remedy.

13.2 COMPLIANCE WITH ARARs

The selected remedial action will comply with the substantive provisions of the federal and state requirements identified as ARARs. The chemical-, location-, and action-specific ARARs for the selected remedy for groundwater at Site 26 are presented in Tables 13-1, 13-2, and 13-3, respectively, and discussed below.

13.2.1 Chemical-Specific ARARs

Chemical-specific ARARs are health- or risk-based numerical values or methodologies that, when applied to site-specific conditions, establish the acceptable amount or concentration of a chemical that may be found in, or discharged to, the ambient environment. Chemical-specific ARARs for the selected alternative are presented in Table 13-1 and described below by medium.

13.2.1.1 Groundwater

Groundwater is the only medium of concern at Site 26. The long-term reuse of Site 26 is expected to be commercial and industrial. As described in Sections 5.2 and 6.2, groundwater beneath the central portions of Alameda Point (including Site 26) is not currently used for drinking water, irrigation, or industrial supply and meets SWRCB exemption criteria to

dedesignate the municipal supply beneficial use for portions of Alameda Point (Water Board 2003). Drinking water is supplied to Alameda Point by the East Bay Municipal Utilities District. In addition, EPA stated that they would concur with cleanup levels for Site 26 groundwater such that the threats posed by such exposures as inhalation (groundwater vapors into soils and from soils into residences), dermal contact, and those associated with irrigation use are eliminated, and any significant ongoing degradation of the groundwater from contamination is prevented (EPA 2000).

The substantive provisions of the following requirements are the most stringent of the potential federal and state chemical-specific ARARs for remediation of groundwater at Site 26:

- Chapters 2 and 3 of the Comprehensive Water Quality Control Plan for the San Francisco Bay (Basin Plan), except for the municipal beneficial use designation (*California Water Code*, Division 7, §§ 13241, 13243, 13263(a), 13269, and 13360)
- SWRCB Res. 88-63
- RCRA groundwater protection standards in *California Code Regulations* (Cal. Code Regs.) tit. 22, § 66264.94(a)(1), (a)(3), (b), (c), and (e)

Because the groundwater is unlikely to be used as drinking water (see Section 5.2 regarding beneficial use of groundwater), MCLs are not ARARs for the groundwater. In addition, it is the Navy's position that SWRCB Res. 68-16 (Statement of Policy With Respect to Maintaining High Quality of Waters in California) and 92-49 (Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Cal. Water Code § 13304) do not constitute chemical-specific ARARs for this response action because they are state requirements and are not more stringent than federal ARAR provisions of Cal. Code Regs. tit. 22, § 66264.94.

The Navy's Position Regarding SWRCB Resolutions 92-49 and 68-16

The Navy and the state of California have not agreed whether the SWRCB Res. 92-49 and Res. 68-16 are ARARs for the remedial action at Site 26. Therefore, this ROD documents each party's position but does not attempt to resolve the issue.

The Navy recognizes that the key substantive requirements of Cal. Code Regs. tit. 22, § 66264.94 (and the identical requirements of Cal. Code Regs. tit. 23, § 2550.4 and Section III.G of SWRCB Res. 92-49) require cleanup of constituents to background levels unless that is technologically or economically infeasible and an alternative cleanup level will not pose a substantial present or potential hazard to human health or the environment. In addition, the Navy recognizes that these provisions are more stringent than the corresponding provisions of 40 CFR § 264.94 and, although they are federally enforceable under RCRA, they are also independently based on state law to the extent that they are more stringent than the federal regulations.

The Navy has also determined that SWRCB Res. 68-16 is not a chemical-specific ARAR for determining remedial action goals, but it is an action-specific ARAR for regulating discharged treated groundwater to surface water. The Navy has determined that further migration of VOCs through groundwater is not a discharge governed by the language in Res. 68-16. More specifically, the language of SWRCB Res. 68-16 indicates that it is prospective in intent, applying to new discharges in order to maintain existing high-quality waters. It is not intended to apply to restoration of waters that are already degraded.

The Navy's position is that SWRCB Res. 68-16 and Res. 92-49 and Cal. Code Regs. tit. 23, § 2550.4 do not constitute chemical-specific ARARs for this remedial action because they are state requirements and are not more stringent than the federal ARAR provisions of Cal. Code Regs. tit. 22, § 66264.94. The NCP set forth in 40 C.F.R. § 300.400(g) provides that only state standards more stringent than federal standards may be ARARs (see also CERCLA § 121[d][2][A][ii]).

The substantive technical standard in the equivalent state requirements (i.e., Cal. Code Regs. tit. 23, Division (div.) 3, Chapter (ch.) 15 and SWRCB Res. 92-49 and Res. 68-16) is identical to the substantive technical standard in Cal. Code Regs. tit. 22, § 66264.94. This section of Cal. Code Regs. tit. 22 will likely be applied in a manner consistent with equivalent provisions of other regulations, including SWRCB Res. 92-49 and Res. 68-16.

State of California's Position Regarding SWRCB Resolutions 92-49 and 68-16

The state does not agree with the Navy determination that SWRCB Res. 92-49 and Res. 68-16 and certain provisions Cal. Code Regs. tit. 23, div. 3, ch. 15 are not ARARs for this response action. SWRCB has interpreted the term "discharges" in the California Water Code to include the movement of waste from soils to groundwater and from contaminated to uncontaminated water (SWRCB 1994). However, the state agrees that the proposed action would comply with SWRCB Res. 92-49 and Res. 68-16, and compliance with Cal. Code Regs. tit. 22 provisions should result in compliance with Cal. Code Regs. tit. 23 provisions. The state does not intend to dispute the ROD, but reserves its rights if implementation of the Cal. Code Regs. tit. 22 provisions is not as stringent as state implementation of Cal. Code Regs. tit. 23 provisions. Because the Cal. Code Regs. tit. 22 regulation is part of the state's authorized hazardous waste control program, it is also the state's position that Cal. Code Regs. tit. 22, § 66264.94 is a state ARAR and not a federal ARAR (*United States v. State of Colorado*, 990 F.2d 1565 [1993]).

Whereas the Navy and the state of California have not agreed on whether SWRCB Res. 92-49 and Res. 68-16 and Cal. Code Regs. tit. 23, § 2550.4 are ARARs for this response action, this ROD documents each of the parties' positions on the resolutions but does not attempt to resolve the issue.

13.2.1.2 Soil

VOC-contaminated soil that may be encountered during implementation of groundwater remedial actions (such as drilling) at Site 26 is not a RCRA-listed hazardous waste and is unlikely to be a RCRA-characteristic hazardous waste. However, waste must still be tested for RCRA hazardous waste characterization at the point of generation.

13.2.1.3 Air

The treatment technologies considered for groundwater include monitoring and injection of chemicals into the groundwater. Neither activity is expected to be a potential source of air emissions. Therefore, no chemical-specific air ARARs are identified for this response action.

13.2.2 Location-Specific ARARs

Location-specific ARARs are restrictions on the concentrations of hazardous substances or on conducting activities solely because they are in specific locations. Specific locations include floodplains, wetlands, historic places, and sensitive ecosystems or habitats. The selected remedial action can be implemented to comply with location-specific ARARs. Location-specific ARARs for the selected alternative are presented in Table 13-2. The substantive provisions of the following requirements are the most stringent of the potential federal and state location-specific ARARs for remediation of groundwater at Site 26:

- National Historic Preservation Act of 1966, as Amended 16 USC § 470-470x-6(36 CFR Part 800 and 40 CFR § 6.301(b); 16 USC §§ 461-467; 40 CFR § 6.301(a)
- Endangered Species Act of 1973 (16 USC § 1536(a)(h)(1)(B))
- Migratory Bird Treaty Act of 1972 (16 USC §§ 703-712)
- California Endangered Species Act (Cal. Fish & Game Code § 2080)

13.2.3 Action-Specific ARARs

Action-specific ARARs are technology- or activity-based requirements or limitations for remedial activities. These requirements are triggered by the particular remedial activities conducted at the site. Action-specific ARARs for the selected alternative are presented in Table 13-3 and include ISCO, ISB, and ICs. The substantive provisions of the following requirements are the most stringent of the potential federal and state action-specific ARARs for remediation of groundwater at Site 26. These RCRA requirements are potentially applicable for characterization of waste generated during monitoring and construction of monitoring wells:

- Resource Conservation and Recovery Act (42 USC, ch. 82, §§ 6901-6991[i]; Cal. Code Regs., tit. 22 §§ 66262.10(a), 66262.11, 66264.13(a) and (b), 66262.34, 66264.171, 66264.172, 66264.173, 66264.174, 66264.175(a) and (b), 66264.178, 66264.93)

The substantive portions of the following state statutes have been accepted by Navy as ARARs for implementing ICs and entering into a Covenant to Restrict Use of Property with DTSC :

- California Civil Code Land Use Controls § 1471 (Cal. Civ. Code § 1471)
- California Health and Safety Code Land Use Controls §§ 25202.5, 25222.1, 25233(c), 25234, and 25355.5.

DTSC promulgated a regulation 19 April 2003 regarding “Requirements for Land-Use Covenants” at Cal. Code Regs., tit. 22, § 67391.1. The substantive provisions of this regulation have been determined to be “relevant and appropriate” state ARARs by Navy.

The substantive provisions of Cal. Civ. Code § 1471 are the following general narrative standard: “... to do or refrain from doing some act on his or her own land ... where ...: (c) Each such act relates to the use of land and each such act is reasonably necessary to protect present or future human health or safety of the environment as a result of the presence on the land of hazardous materials, as defined in § 25260 of the Health and Safety Code.” This narrative standard would be implemented through incorporation of restrictive environmental covenants in the deed at the time of transfer. These covenants would be recorded with the Covenant to Restrict Use of Property and run with the land.

The substantive provision of California Health and Safety Code § 25202.5 is the general narrative standard to restrict “present and future uses of all or part of the land on which the ... facility ... is located” This substantive provision will be implemented by incorporation of restrictive environmental covenants in the Covenant to Restrict Use of Property at the time of transfer for purposes of protecting present and future public health and safety.

California Health and Safety Code §§ 25222.1 and California Health and Safety Code § 25355.5(a)(1)(C) provide the authority for the state to enter into voluntary agreements to establish land-use covenants with the owner of property. The substantive requirements of the following California health and Safety Code § 25222.1 provisions are “relevant and appropriate”: (1) the general narrative standard: “restricting specified uses of the property, ...” and (2) “... the agreement is irrevocable, and shall be recorded by the owner, ... as a hazardous waste easement, covenant, restriction or servitude, or any combination thereof, as appropriate, upon the present and future uses of the land.” The substantive requirements of the following California Health and Safety Code § 25355.5(a)(1)(C) provisions are “relevant and appropriate”: “... execution and recording of a written instrument that imposes and easement, covenant, restriction, or servitude, or combination thereof, as appropriate, upon the present and future uses of the land.”

The Navy will comply with the substantive requirements of California Health and Safety Code §§ 25222.1 and 25355.5 (a)(1)(C) by incorporating CERCLA use restrictions into the Navy's deed of conveyance in the form of restrictive covenants under the authority of Cal. Civ. Code § 1471. The substantive provisions of California Health and Safety Code §§ 25222.1 and 25355.5 (a)(1)(C) may be interpreted in a manner that is consistent with the substantive provisions of Cal. Civ. Code § 1471. The covenants shall be recorded with the deed and run with the land.

California Health and Safety Code § 25233(c) sets forth "relevant and appropriate" substantive criteria for granting variances from prohibited uses based upon specified environmental and health criteria. California Health and Safety Code § 25234 sets for the following "relevant and appropriate" substantive criteria for the removal of a land-use restriction on the grounds that "... the waste no longer creates a significant existing or potential hazard to present or future public health or safety."

In addition to being implemented through the Covenant to Restrict Use of Property between the Navy and DTSC, the appropriate and relevant portions of California Health and Safety Code §§ 25202.5, 25222.1, 25233(c), 25234, and 25355.5(a)(1)(C) and Cal. Civ. Code § 1471 shall also be implemented through the deed between the Navy and the transferee.

EPA agrees that the substantive portions of the state statutes and regulations referenced in this section are ARARs. EPA specifically considers sections (a), (b), (d), and (e) of Cal. Code Regs., tit. 22 § 67391.1, to be ARARs for this ROD. DTSC's position is that all of the state statutes and regulations referenced in this section are ARARs.

13.3 COST-EFFECTIVENESS

The remediation goals at Site 26 provide for unrestricted site use even though the planned future use is commercial. However, the costs associated with unrestricted use are expected to be comparable with commercial use at this site, when considering the associated long-term costs.

The Navy has concluded that Alternative 6, the selected remedy, would provide overall effectiveness proportional to its cost; it is therefore considered cost-effective. The present value for Alternative 6 is approximately \$3,108,000. Alternative 6 effectively provides a level of protection to human health and the environment that is similar to Alternatives 3, 4, 5, 7, 8, and 9. All of the technologies included in the selected remedy are readily implementable and have been widely used and demonstrated to be effective.

13.4 USE OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES (OR RESOURCE RECOVERY TECHNOLOGIES) TO THE MAXIMUM EXTENT PRACTICABLE

The Navy has determined that the selected remedy represents the maximum extent practicable to which permanent solutions and alternative treatment technologies can be used in a cost-effective manner for Site 26. Of all the alternatives that are protective of human health and the

environment and comply with ARARs, the Navy has concluded that the selected remedy would provide the best balance of tradeoffs amongst the short-term effectiveness, long-term effectiveness and permanence, implementability, and cost. The selected remedy is expected to be permanent and effective over the long-term land use.

13.5 PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

This remedy satisfies the statutory preference for treatment as a principal element of the remedy (that is, reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment).

13.6 5-YEAR REVIEW REQUIREMENTS

A 5-year review pursuant to CERCLA § 121 and the NCP is required if the selected remedy results in hazardous waste or contaminants remaining at the site above levels allowing for unrestricted use of the site. A 5-year review will be conducted, if the RAO and remediation goals are not met before. This selected remedy will not result in contaminants remaining on-site above levels that allow for unrestricted use and is expected to be completed within 3 years.

TABLES

TABLE 13-1: CHEMICAL-SPECIFIC^a ARARs

Record of Decision, Site 26, Alameda Point, Alameda, California

Requirement	Prerequisite	Citation ^b	ARAR Determination	Comments
State and Regional Water Quality Control Boards^c				
<p>Authorizes the SWRCB and the Water Board to establish beneficial uses in water quality control plans and numerical and narrative standards to protect both surface water and groundwater quality. Authorizes regional water boards to issue permits for discharges to land or surface or groundwater that could affect water quality, including NPDES permits, and to take enforcement action to protect water quality.</p>	<p>Waters of the State</p>	<p>California Water Code, div. 7, §§ 13241, 13243, 13263(a), 13269, and 13360 (Porter-Cologne Water Quality Control Act)</p>	<p>Applicable</p>	<p>The Navy accepts the substantive provisions of §§ 13241, 13243, 13263(a), 13269, and 13360 of the Porter-Cologne Act enabling legislation, as implemented through the beneficial uses, water quality objectives, waste discharge requirements, and promulgated policies of the Basin Plan as ARARs.</p>
<p>Describes the water basins in the San Francisco Bay Region, establishes beneficial uses of groundwater and surface water, establishes water quality objectives, including narrative and numerical standards, and incorporates statewide water quality control plans and policies.</p>	<p>Waters of the State</p>	<p>Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) Chapter 2 and Chapter 3 (California Water Code §13240)</p>	<p>Applicable</p>	<p>Substantive provisions in Chapters 2 and 3 of the Water Quality Control Plan for the San Francisco Bay are ARARs, except for the municipal beneficial use designation. See Section B2.2.1.2. The beneficial uses for the East Bay subbasin are agricultural supply, industrial service supply, and industrial process supply. These uses also apply to the shallow groundwater system at Alameda Point. The pertinent substantive water quality objectives are narrative as quoted in the requirement column.</p>
<p>Incorporated into all regional board basin plans. Designates all groundwater and surface waters of the state as drinking water except where the total dissolved solids exceed 3,000 milligrams per liter, and it is not reasonably expected by the Water Board to supply a public water system.</p>	<p>Waters of the State</p>	<p>SWRCB Resolution 88-63 (Sources of Drinking Water Policy)</p>	<p>Applicable</p>	<p>This resolution is an ARAR for the alternatives addressing groundwater.</p>

TABLE 13-1: CHEMICAL-SPECIFIC^a ARARs (CONTINUED)

Record of Decision, Site 26, Alameda Point, Alameda, California

Requirement	Prerequisite	Citation ^b	ARAR Determination	Comments
Resource Conservation and Recovery Act (Title 42 USC, Chapter 82, Sections 6901 through 6991[i])^c				
Owners/operators of RCRA TSD facilities must comply with conditions designated to assure that hazardous constituents entering groundwater from a regulated unit do not exceed concentration limits for chemicals of concern set forth under Cal. Code Regs. tit. 22, § 66264.94 in the uppermost aquifer underlying the waste management area beyond the point of compliance.	Waste	Cal. Code Regs., tit. 22, § 66264.94 (a)(1), (a)(3), (b), (c), and (e)	Relevant and Appropriate	Applicable only for regulated TSD facilities. Based on available data, no RCRA-listed hazardous wastes were disposed at Site 26, and groundwater contamination did not result from release of RCRA-regulated waste. However, substantive provisions of these requirements are potentially relevant and appropriate to site circumstances. VOC constituents in groundwater are similar to those found in RCRA wastes, making this a potential chemical-specific ARAR for development of site remediation goals.
Defines RCRA hazardous waste. A solid waste is characterized as toxic, based on the TCLP, if the waste exceeds the TCLP maximum concentrations.	Waste	Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100	Applicable	Applicable for determining whether waste is hazardous.

Notes:

a Chemical-specific concentrations used for feasibility study evaluation may not be ARARs indicated in this table but may be based on other factors, including: human health risk-based concentrations (40 CFR § 300.430[e][2][i][A][1] and [2]), ecological risk-based concentrations (40 CFR § 300.430 [e][2][i][G]), or practical quantification limits of contaminants (40 CFR § 300.430[e][2][i][A][3]). Many potential action-specific ARARs contain chemical-specific limitations and are addressed in the action-specific ARAR tables.

b Only the substantive provisions of the requirement(s) cited in this table are ARARs.

c Statutes and policies, and their citations, are provided as headings to identify general categories of ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the Navy accepts the entire statutes or policies as ARARs; specific ARARs are addressed in the table below each general heading; only pertinent substantive requirements of specific citations are considered ARARs.

§	Section	SWRCB	State Water Resources Control Board
§§	Sections	TCLP	Toxic Characteristic Leaching Procedure
ARAR	Applicable or relevant and appropriate requirement	tit.	Title
Cal. Code Regs	<i>California Code of Regulations</i>	TSD	Treatment, storage, and disposal
CFR	<i>Code of Federal Regulations</i>	USC	<i>United States Code</i>
NPDES	National pollution discharge elimination system	VOC	Volatile organic compound
RCRA	Resource Conservation and Recovery Act	Water Board	San Francisco Bay Regional Water Quality Control Board

TABLE 13-2: LOCATION-SPECIFIC ARARS

Record of Decision, Site 26, Alameda Point, Alameda, California

Location	Requirement	Prerequisite	Citation ^a	ARAR Determination	Comments
National Historic Preservation Act of 1966, as Amended 16 USC Section 470-470x-6					
Historic project owned or controlled by federal agency	Action should preserve historic properties; planning of action should minimize harm to properties listed on or eligible for listing on the National Register of Historic Places.	Property included in or eligible for the National Register of Historic Places	16 USC § 470-470x-6; 36 CFR pt. 800 and 40 CFR § 6.301(b)	Applicable	There are no buildings in or adjacent to Site 26 listed on the National Register of Historic Places. However, four buildings at Site 26 (Buildings 20, 21, 22, and 23) are included in the Alameda Point Historic District.
Historic sites	Avoid undesirable impacts on landmarks	Areas designated as historic sites	16 USC §§ 461-467, 40 CFR § 6.301(a)	Applicable	There are no buildings in or adjacent to Site 26 listed on the National Register of Historic Places. However, four buildings at Site 26 (Buildings 20, 21, 22, and 23) are included in the Alameda Point Historic District.
Endangered Species Act of 1973 (16 USC Sections 1531-1543)^b					
Habitat upon which endangered species or threatened species depend	Federal agencies may not jeopardize the continued existence of any listed species or cause the destruction or adverse modification of critical habitat. The Endangered Species Committee may grant an exemption for agency action if reasonable mitigation and enhancement measures such as propagation, transplantation, and habitat acquisition and improvement are implemented.	Determination of effect upon endangered or threatened species or its habitat. Critical habitat upon which endangered species or threatened species depend.	16 USC § 1536(a), (h)(1)(B)	Applicable	The California least tern is known to exist at Alameda Point. However, Site 26 remedial activities should not affect any areas that support special-status species or habitat. Consultation regulations at 50 CFR § 402 are administrative in nature and, therefore, not ARARs.

TABLE 13-2: LOCATION-SPECIFIC ARARs (CONTINUED)

Record of Decision, Site 26, Alameda Point, Alameda, California

Location	Requirement	Prerequisite	Citation ^a	ARAR Determination	Comments
Migratory Bird Treaty Act of 1972 (16 USC Sections 703-712)^b					
Migratory bird area	Protects almost all species of native birds in the U.S. from unregulated "take" that can include poisoning at hazardous waste sites.	Presence of migratory birds.	16 USC § 703	Relevant and appropriate	The paved urban habitat at Site 26 does not support special-status species. However, a wildlife refuge is located directly west of Site 26. Migratory birds are not likely to be exposed to VOC-contaminated groundwater or affected by remedial activities. Coordination with the U.S. Fish and Wildlife Service during planning and implementation of remedial activities should be sought to further minimize potential risk.
California Endangered Species Act (Cal. Fish & Game Code §§ 20050-2116)^b					
Endangered species habitat	No person shall import, export, take, possess, or sell any endangered or threatened species or part or product thereof.	Threatened or endangered species determination on or before January 1, 1985 or a candidate species with proper notification.	Cal. Fish & Game Code § 2080	Relevant and Appropriate	Several endangered species are known to exist at Alameda Point. However, Site 26 remedial activities should not affect any areas that support special-status species or habitat.

Notes:

- a Only the substantive provisions of the requirements cited in this table are ARARs.
- b Statutes and policies, and their citations, are provided as headings to identify general categories of ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the Navy accepts the entire statutes or policies as ARARs; specific ARARs are addressed in the table below each general heading; only substantive requirements of the specific citations are considered ARARs.

§	Section	Cal. Code Reg.	California Code of Regulations
§§	Sections	CFR	Code of Federal Regulations
ARAR	Applicable or relevant and appropriate requirement	USC	United States Code
Cal.	California	VOC	Volatile organic compound

TABLE 13-3: ACTION-SPECIFIC ARARS

Record of Decision, Site 26, Alameda Point, Alameda, California

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comments
Resource Conservation and Recovery Act (42 USC, Chapter 82, Sections 6901-6991[j])^a					
On-site waste generation	Definition of RCRA hazardous waste	Generator of waste	Cal. Code Regs., tit. 22, §§ 66262.10(a), 66262.11	Applicable	Potentially applicable for characterization of waste generated during monitoring and construction of monitoring wells.
	Requirement for analyzing waste to determine whether waste is hazardous.	Generator of waste	Cal. Code Regs., tit. 22, § 66264.13(a) and (b)	Applicable	Potentially applicable for characterization of waste generated during monitoring and construction of monitoring wells.
Hazardous waste accumulation	On-site hazardous waste accumulation is allowed for up to 90 days as long as the waste is stored in containers or tanks, on drip pads, inside buildings, is labeled and dated, etc.	Accumulated hazardous waste	Cal. Code Regs., tit. 22, § 66262.34	Applicable	Potentially applicable for any operation where hazardous waste is generated and transported that will be based on characterization above. Since hazardous levels are not expected, these requirements will not be implemented unless hazardous waste levels are found. The determination of whether wastes generated during remedial action activities, such as soil cuttings from well installations, are hazardous will be made at the time the wastes are generated.
Container storage	Containers of RCRA hazardous waste must be: <ul style="list-style-type: none"> maintained in good condition, be compatible with hazardous waste to be stored, and closed during storage, except to add or remove waste. 	Storage in a container of RCRA hazardous waste not meeting small quantity generator criteria held for a temporary period greater than 90 days before treatment, disposal, or storage elsewhere.	Cal. Code Regs. tit. 22, § 66264.171, 66264.172, and 66264.173	Applicable	Substantive provisions are potentially applicable if waste is determined to be RCRA hazardous.

TABLE 13-3: ACTION-SPECIFIC ARARs (CONTINUED)

Record of Decision, Site 26, Alameda Point, Alameda, California

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comments
Resource Conservation and Recovery Act (42 USC, Chapter 82, Sections 6901-6991[i])^a (Continued)					
Container storage (cont.)	Inspect container storage areas weekly for deterioration.	--	Cal. Code Regs. tit. 22, § 66264.174	Applicable	Substantive provisions are potentially applicable if waste is determined to be RCRA hazardous.
	Place containers on a sloped, crack-free base, and protect from contact with accumulated liquid. Provide containment system with a capacity of 10 percent of the volume of containers of free liquids. Remove spilled or leaked waste in a timely manner to prevent overflow of the containment system.	Storage in a container of RCRA hazardous waste not meeting small-quantity generator criteria held for a temporary period greater than 90 days before treatment, disposal, or storage elsewhere.	Cal. Code Regs. tit. 22, § 66264.175(a), (b)	Applicable	Substantive provisions are potentially applicable if waste is determined to be RCRA hazardous.
	At closure, remove all hazardous waste and residues from the containment system, and decontaminate or remove all containers and liners.	--	Cal. Code Regs. tit. 22, § 66264.178	Applicable	Substantive provisions are potentially applicable if waste is determined to be RCRA hazardous.
Monitoring	Requirement for identifying constituents of concern that are reasonably expected.	Hazardous waste treatment, storage, or disposal facility.	Cal. Code Regs., tit. 22, § 66264.93	Applicable	Substantive provisions potentially relevant and appropriate requirements for groundwater sampling and analysis
California Civil Code (Cal. Civil Code § 1471)^a DTSC's position is that this statute is an ARAR					
Land use controls	Provides conditions under which land use restrictions will apply to successive owners of land	Transfer property from the Navy to a nonfederal agency	Cal. Civil Code § 1471	Relevant and Appropriate	Substantive provisions are the following general narrative standard: "to do or refrain from doing some act on his or her own land ... where (c) Each such act relates to the use of land and each such act is reasonably necessary to protect present or future human health or safety of the environment as a result of the presence of hazardous materials, as defined in § 25260 of the California Health & Safety Code." This narrative standard would be implemented through incorporation of restrictive covenants in the deed at the time of transfer.

TABLE 13-3: ACTION-SPECIFIC ARARs (CONTINUED)

Record of Decision, Site 26, Alameda Point, Alameda, California

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comments
California Health and Safety Code Land Use Controls (Cal. Health & Safety Code § 25202.5, § 25222.1, Cal. Health & Safety Code § 25233(c), § 25234, § 25355.5) ^a DTSC's position is that all of the statutes and regulations below are ARARs					
Land use controls	Allows DTSC to enter into an agreement with the owner of a hazardous waste facility to restrict present and future land uses.	Transfer property from the Navy to a nonfederal agency	Cal. Health & Safety Code § 25202.5	Relevant and Appropriate	The substantive provisions of this section are the general narrative standards to restrict "present and future uses of all or part of the land on which the facility ...is located."
	Provides a streamlined process to be used to enter into an agreement to restrict specific use of property in order to implement the substantive use restrictions.	Transfer property from the Navy to a nonfederal agency.	Cal. Health & Safety Code § 25222.1	Relevant and Appropriate	Cal. Health & Safety Code § 25222.1 provides the authority for the state to enter into voluntary agreements to establish land use covenants with the owner of the property. The substantive provision of Cal. Health & Safety Code § 25222.1 is the general narrative standard: "restricting specified uses of the property."
	Provides a process for obtaining a written variance from a land use restriction.	Transfer property from the Navy to a nonfederal entity.	Cal. Health & Safety Code § 25233(c)	Relevant and Appropriate	Cal. Health & Safety Code § 25233(c) sets forth substantive criteria for granting variances from the uses prohibited in § 25232(b)(1)(A)-(E) based on specific environmental and health criteria.
	Provides a process by which DTSC can remove land use restrictions	Transfer property from the Navy to a nonfederal entity	Cal. Health & Safety Code § 25234	Relevant and Appropriate	Cal. Health & Safety Code § 25234 sets forth the following "relevant and appropriate" substantive criteria for the removal of a land-use restriction on the grounds that "...the waste no longer creates a significant existing or potential hazard to present or future public health or safety."
	Authorizes DTSC to enter into an enforceable agreement that imposes restrictions on present and future uses of the property	Transfer property from the Navy to a nonfederal entity	Cal. Health & Safety Code § 25355.5(a)(1)(C)	Relevant and Appropriate	The substantive requirements of the following Cal. Health & Safety Code § 25355.5(a)(1)(C) provisions are "relevant and appropriate": "...execution and recording of a written instrument that imposes an easement, covenant, restriction, or servitude, or combination thereof, as appropriate, upon the present and future uses of the site."

TABLE 13-3: ACTION-SPECIFIC ARARs (CONTINUED)

Record of Decision, Site 26, Alameda Point, Alameda, California

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comments
Cal/EPA Department of Toxic Substances Control (Cal. Code Regs., tit. 22, § 67391.1) ^a					
Land use covenants	A land use covenant imposing appropriate limitations on land use shall be executed and recorded when facility closure, corrective action, remedial or removal action, or other response actions are undertaken and hazardous materials, hazardous wastes or constituents, or hazardous substances will remain at the property at levels which are not suitable for unrestricted use of the land.	Property transfer by federal government to nonfederal entity.	Cal. Code Regs., tit. 22, § 67391.1	Relevant and Appropriate	Relevant and appropriate when the Navy is transferring property to a nonfederal agency. EPA specifically considers substantive portions of §§ (a), (b), (d), and (e) to be ARARs for this ROD

Notes:

- a Statutes and policies, and their citations, are provided as headings to identify general categories of ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the Navy accepts the entire statutes or policies as ARARs; specific ARARs are addressed in the table below each general heading; only substantive requirements of the specific citations are considered ARARs.
- § Section
- §§ Sections
- ARAR Applicable or relevant and appropriate requirement
- Cal. Code. Regs. *California Code of Regulations*
- Cal/EPA California Environmental Protection Agency
- CFR *Code of Federal Regulations*
- DTSC California Environmental Protection Agency Department of Toxic Substances Control
- RCRA Resource Conservation and Recovery Act
- tit. Title
- USC *United States Code*

14.0 DOCUMENTATION OF SIGNIFICANT CHANGES

The proposed plan for Site 26 was released for public comment on October 24, 2005 (SulTech 2005a). The proposed plan recommended no action for soil at Site 26. Additionally, the proposed plan recommended Alternative 6, ISCO and in situ bioremediation combined with ICs and confirmation sampling, as the preferred remedial alternative for groundwater at Site 26.

The Navy has reviewed all written and oral comments submitted during the public comment period. Upon review of these comments, it was determined that no significant changes to the selected remediation of no action for soil and active remediation for groundwater using ISCO and ISB, as it was originally identified in the proposed plan, were necessary or appropriate.

15.0 REFERENCES

- Bechtel Environmental Incorporated (Bechtel). 2003. "Final Remedial Investigation Report, IR Site 26 Western Hangar Zone, Alameda Point, Alameda, California." November 17.
- Bechtel. 2005. "Final Feasibility Study Report, Installation Restoration Program Site 26 Western Hangar Zone, Alameda Point, Alameda, California." April.
- California Department of Health Services. 2003. "Maximum Contaminant Levels." *California Code of Regulations*. Title 22, Division 4, Chapter 15, Article 4. September 12.
Available Online at: <http://www.dhs.ca.gov/ps/ddwem/chemicals/MCL/regextract.pdf>
- California Environmental Protection Agency (Cal/EPA). 1996. Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazard Waste Sites and Permitted Facilities. The Office of Science Advisor. August.
- Cal/EPA. 2002. Toxicity Criteria Database. Office of Environmental Health Hazard Assessment (OEHHA). Available Online at:
<http://www.oehha.ca.gov/risk/ChemicalDB/>
- Department of Toxic Substances Control (DTSC). 1992. "RCRA Facility Assessment, Naval Air Station, Alameda, California." April.
- DTSC. 1999. Letter Regarding Review of RCRA Status for Environmental Baseline Survey at Alameda Point, Alameda, California. From DTSC. To Commanding Officer, Engineering Field Activity, West, Facilities Command. November 4.
- DTSC. 2005. Letter Regarding the Proposed Plan for Site 26, Alameda Point, Alameda, California. From DTSC. To BRAC Environmental Coordinator, Southwest Division Naval Facilities Engineering Command. October 3.
- DTSC. 2006a. Letter Regarding the Draft Record of Decision for Site 26, Alameda Point, Alameda, California. From DTSC. To BRAC Environmental Coordinator, Base Realignment and Closure Program Management Office West. March 29.
- DTSC. 2006b. E-mail Regarding Requesting Deferral and NFA on OWS 020 & WD 020. From Dot Lofstrom, P.G., Senior Engineering Geologist, DTSC. To Lou Ocampo, Remedial Project Manager, Southwest Division Naval Facilities Engineering Command. May 24.
- City of Alameda. 2002. "Alameda Point General Plan Amendment, Environmental Impact Report." Public Review Draft. December 10.
- City of Alameda. 2005. Fax Regarding Tenants Subleasing Portions of Site 26. Between Hannah Thompson, SulTech, and Elizabeth Johnson, City of Alameda. December.
- Environmental Resources Management-West, Inc. (ERM-West). 1994. "Final Environmental Baseline Survey (EBS)/Community Environmental Response Facilitation Act Report for NAS/NADEP Alameda." October.

- ERM-West. 1995a. "Final Site-Specific Environmental Baseline Survey, Parcel 192, Naval Air Station Alameda." October 16.
- ERM-West. 1995b. "Final Finding of Suitability to Lease, Parcel 192, Naval Air Station Alameda." October 16.
- International Technology Corporation (IT). 1992. "Resource Conservation and Recovery Act Facility Assessment, Naval Air Station Alameda, California."
- IT. 1997. "Final Project Closure Report, Site 18 – Storm Drain System, Naval Air Station Alameda, California." October.
- IT. 2001. "Environmental Baseline Survey Data Evaluation Summaries, Alameda Point, California." Final. January.
- Naval Energy and Environmental Support Activity (NEESA). 1983. "Initial Assessment Study, Naval Air Station Alameda, Alameda, California." April.
- New World Technology. 1998. "Final Report, Alameda Naval Air Station Radiological Characterization of Storm Drains, Project Number USN 97-032." January 21.
- San Francisco Bay Regional Water Quality Control Board (Water Board). 2003. Letter to Navy Concurring That Groundwater Meets the Exemption Criteria in the State Water Resources Control Board Source of Drinking Water Policy Resolution 88-63, and San Francisco Bay Regional Water Quality Control Board Resolution 89-39 for Groundwater West of Saratoga Street at Alameda Point, City of Alameda, Alameda County. July 21.
- Water Board. 2006. E-mail Regarding ASTs 021B & 540 & IR26 ROD. From Judy Huang, P.E., Water Board. To Lou Ocampo, Remedial Project Manager, Southwest Division Naval Facilities Engineering Command. May 18.
- State Water Resources Control Board (SWRCB). 1994. *California Water Code*. Available Online at: <http://www.leginfo.ca.gov/cgi-bin/calawquery?codesection=wat&codebody=&hits=20>.
- SulTech. 2005a. "Proposed Plan for Site 26 Western Hangar Zone, Alameda Pt. CA." Prepared for Department of Navy, Naval Facilities Engineering Command, Southwest Division. October 2005.
- SulTech. 2005b. "Draft Compilation of Outstanding Solid Waste Management Unit (SWMU) Evaluation Reports, Hazardous Waste Permit EPA ID Number CA 2170023236, Alameda Point, California." Prepared for Department of Navy, Naval Facilities Engineering Command, Southwest Division. November 29.
- Tetra Tech EM Inc. (Tetra Tech). 1997. "Radiation Survey Report, Naval Air Station, Alameda, California." Prepared for Department of the Navy, Naval Facilities Engineering Command, Engineering Field Activity West. November.

- Tetra Tech. 1999. "Final F Line Field Sampling Work Plan, Alameda Point, Alameda, California." Prepared for Department of Navy, Naval Facilities Engineering Command, Southwest Division. August 30.
- Tetra Tech. 2000. "Determination of the Beneficial Uses of Groundwater, Alameda Point, Alameda, California." Prepared for Department of Navy, Naval Facilities Engineering Command, Southwest Division. July 13.
- Tetra Tech. 2002. "CERCLA Site 5, Radiological Non-Time-Critical Removal Action, Action Memorandum, Alameda Point, Alameda, California." Internal Draft. Prepared for Department of Navy, Naval Facilities Engineering Command, Southwest Division. May 6.
- Tetra Tech. 2003. "Final Community Relations Plan for Alameda Point, Alameda, California." Prepared for Department of Navy, Naval Facilities Engineering Command, Southwest Division. September 29.
- U.S. Department of the Navy (Navy). 1999. Navy Policy for Conducting Ecological Risk Assessments. Chief of Naval Operations. Letter: 5090 Ser N453E/9U595355. April 5.
- Navy. 2001a. "Guidance for Optimizing Remedial Action Operation, Interim Final." April. Available Online at: http://enviro.nfesc.navy.mil/erb/erb_a/support/wrk_grp/raoltm/rao_interim_final2.pdf
- Navy. 2001b. "Preliminary Remediation Criteria and Closure Strategy for Petroleum Contaminated Sites at Alameda Point, Alameda, California." May 16.
- Navy. 2006a. FedEx® and E-mail Regarding Documentation-Unresolved Issues SWMUs IR 26. From Lou Ocampo, Remedial Project Manager, Naval Facilities Engineering Command, Southwest Division. To Dot Lofstrom, P.G., Senior Engineering Geologist, DTSC. February 17.
- Navy. 2006b. E-mail Regarding Requesting Deferral and NFA on OWS 020 & WD 020. From Lou Ocampo, Remedial Project Manager, Naval Facilities Engineering Command, Southwest Division. To Dot Lofstrom, P.G., Senior Engineering Geologist, DTSC. May 16.
- Navy. 2006c. E-mail Regarding ASTs 021B & 540 & IR26 ROD. From Lou Ocampo, Remedial Project Manager, Naval Facilities Engineering Command, Southwest Division. To Judy Huang, P.E., Water Board. May 18.
- Navy and DTSC. 2000. "Memorandum of Agreement Between the United States Department of the Navy and the California Department of Toxic Substances Control." March 10.
- Navy and Alameda Reuse and Redevelopment Authority. 2001. "Lease in Furtherance of Conveyance Between the United States and the Alameda Reuse and Redevelopment Authority for the Former Naval Air Station Alameda." June 6.

- U.S. Environmental Protection Agency (EPA). 1988. "Guidelines for Ground-Water Classification Under the EPA Ground-Water Protection Strategy." Office of Ground-Water Protection. Washington, DC. June.
- EPA. 1989. "Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A), Interim Final." EPA/540/1-89/002. Washington, DC. Available Online at: <http://www.epa.gov/superfund/programs/risk/ragsa/>
- EPA. 1991. "Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part B)" Washington, DC. Available Online at: <http://www.epa.gov/superfund/programs/risk/ragsa/>
- EPA. 1993. "Guidance for Evaluating Technical Impracticability of Ground-Water Restoration." OSWER Directive 9234.2-25. September. Available Online at: <http://www.epa.gov/superfund/resources/gwdocs/techimp.htm>
- EPA. 1997a. "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final." EPA/540/R-97/006. OSWER 9285.7-25. June.
- EPA. 1997b. "Health Effects Assessment Summary Tables (HEAST), FY 1997 Update." OSWER. EPA/540/R-97/036. July.
- EPA. 1999a. "A Guide To Preparing Superfund Proposed Plans, Records Of Decision, And Other Remedy Selection Decision Documents." OSWER. EPA 540-R-98-031. July. Available Online at: <http://www.epa.gov/superfund/resources/remedy/rods/>
- EPA. 1999b. *Federal Register*. Volume 64, No. 140. Pages 39,878 through 39,885. July 22.
- EPA. 2000. Letter Regarding the Revised Draft Determination of the Beneficial Uses of Groundwater at Alameda Point, Alameda. From Anna-Marie Cook, EPA. To Patricia McFadden, Department of the Navy. January 3.
- EPA. 2002a. "Region IX Preliminary Remediation Goals." Available Online at: <http://www.epa.gov/region09/waste/sfund/prg/index.htm>.
- EPA. 2002b. "Integrated Risk Information System (IRIS)." Office of Health and Environmental Assessment and Office of Research and Development. Washington, DC. Available Online at: <http://www.epa.gov/iris/>

ATTACHMENT A
ADMINISTRATIVE RECORD INDEX

ALAMEDA POINT NAS

ADMINISTRATIVE RECORD FILE INDEX - UPDATE (SORTED BY RECORD DATE/RECORD NUMBER)

SITE 26 AND OPERABLE UNIT 6

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Recipient Affil.	Subject	Classification	Keywords	Sites	Location FRC Access. No. FRC/SWDIV Box No. FRC Warehouse Loc. CD No.
Approx. # Pages	CTO No.	EPA Cat. #	Recipient									
N00236 / 002329 NONE CORRESP NONE 00002	06-19-2006 02-22-2006 NONE	BRAC PMO WEST L. OCAMPO DTSC D. LOFSTROM	ELECTRONIC MAIL REGARDING DOCUMENTATION OF UNRESOLVED ISSUES FOR SOLID WASTE MANAGEMENT UNITS (SWMUS) SITE 26	ADMIN RECORD INFO REPOSITORY	SWMU	026	SOUTHWEST DIVISION - BLDG. 1					
N00236 / 002330 NONE CORRESP NONE 00002	06-19-2006 05-16-2006 NONE	BRAC PMO WEST L. OCAMPO DTSC D. LOFSTROM	ELECTRONIC MAIL REQUESTING DEFERRAL AND NO FURTHER ACTION (NFA) ON OIL-WATER SEPARATOR (OWS) 020 AND WASH DOWN (WD) 020 (FIGURE 4 ENCLOSED)	ADMIN RECORD INFO REPOSITORY	OWS SWMU VOC WD	026 OWS 020 WD 020	SOUTHWEST DIVISION - BLDG. 1					
N00236 / 002331 NONE CORRESP NONE 00001	06-19-2006 05-18-2006 NONE	BRAC PMO WEST L. OCAMPO CRWQCB J. HUANG	ELECTRONIC MAIL REQUESTING DEFERRAL OF CORRECTION ACTION AND NO FURTHER ACTION (NFA) FOR ABOVE STORAGE TANKS (ASTS) 021B AND 540	ADMIN RECORD INFO REPOSITORY	AST ROD TPH	026 AST 021B AST 540	SOUTHWEST DIVISION - BLDG. 1					

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Recipient Affil.	Subject	Classification	Keywords	Sites	Location FRC Access. No. FRC/SWDIV Box No. FRC Warehouse Loc. CD No.
Contr./Guid. No.	CTO No.	EPA Cat. #	Recipient	Approx. # Pages								
N00236 / 002332	06-19-2006	05-18-2006	CRWQCB J. HUANG	NONE	06-19-2006	05-18-2006	BRAC PMO WEST L. OCAMPO	ELECTRONIC MAIL RESPONSE TO REQUEST ON DEFERRAL OF CORRECTION ACTION AND NO FURTHER ACTION (NFA) FOR ABOVE STORAGE TANKS (ASTS) 021B AND 540	ADMIN RECORD INFO REPOSITORY	AST NFA ROD	026 AST 021B AST 540	SOUTHWEST DIVISION - BLDG. 1
CORRESP NONE 00002												
N00236 / 002333	06-19-2006	05-24-2006	DTSC D. LOFSTROM	NONE	06-19-2006	05-24-2006	BRAC PMO WEST L. OCAMPO	ELECTRONIC MAIL RESPONSE ON REQUEST DEFERRAL AND NO FURTHER ACTION (NFA) ON OIL-WATER SEPARATOR (OWS) 020 AND WASH DOWN (WD) 020	ADMIN RECORD INFO REPOSITORY	NFA OWS WD	026 OWS 020 WD 020	SOUTHWEST DIVISION - BLDG. 1
CORRESP NONE 00002												

Total Estimated Record Page Count: 9

Total - Administrative Records: 5

((([RECORD NUMBER]>=2329 And [RECORD NUMBER]<=2333)) AND [UIC NUMBER]='N00236')

ALAMEDA POINT NAS

ADMINISTRATIVE RECORD FILE INDEX - UPDATE (SORTED BY RECORD DATE/RECORD NUMBER)

IR SITE 26

UIC No. / Rec. No.	Prc. Date	Author Affil.				Location
Doc. Control No.	Record Date	Author				FRC Access. No.
Record Type	CTO No.	Recipient Affil.				FRC/SWDIV Box No.
Contr./Guid. No.	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	FRC Warehouse Loc.
Approx. # Pages						CD No.
N00236 / 000227 1103 PLAN N62474-98-D-2076 00300	08-14-2001 07-13-2001 00048	IT CORPORATION NAVFAC - SOUTHWEST DIVISION	DRAFT PROJECT PLAN FOR FUEL LINE ABANDONMENT/REMOVAL, REVISION 1. ***COMMENTS: *NOTE: AS PER RPM GREG LORTON, REVISION 0 OF THIS DOCUMENT WAS AN "INTERNAL DRAFT" AND WILL NOT BE SUBMITTED TO THE ADMINISTRATIVE RECORD***	ADMIN RECORD INFO REPOSITORY	FUEL H&SP REMOVAL SAP WORK PLAN	005 026 41074200
N00236 / 000737 TC.A021.10075 MM N68711-00-D-0005 00016	06-17-2003 07-17-2001 DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	FINAL BASE REALIGNMENT AND CLOSURE (BRAC) CLEANUP TEAM (BCT) MONTHLY TRACKING MEETING MINUTES FOR THE AFTER ACTION REPORT FOR THE 17 JULY 2001 MEETING - INCLUDES AGENDA AND SIGN-IN SHEET	ADMIN RECORD INFO REPOSITORY	MTG MINS PAH	015 023 025 026 027 028 SOUTHWEST DIVISION - BLDG. 1 181-03-0188 15 OF 17 RF5258
N00236 / 000207 CTO-0014/0025 & SWDIV SER 06CA.GC/0774 PLAN N68711-95-D-7526 00275	08-08-2001 08-01-2001 00014	BECHTEL NATIONAL, INC. P. STANG NAVFAC - SOUTHWEST DIVISION	DRAFT REMEDIAL INVESTIGATION WORK PLAN, WESTERN HANGAR ZONE [INCLUDES SWDIV TRANSMITTAL LETTER BY G. CLARK] (PORTION OF THE MAILING LIST IS CONFIDENTIAL)	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	RI VOC WORK PLAN	026 CHOICE IMAGING SOLUTIONS 181-03-0179 10 OF 46 SW06032301 41074200

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Location				
Record Type	Record Date	Author		FRC Access. No.				
Contr./Guid. No.	CTO No.	Recipient Affil.		FRC/SWDIV Box No.				
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	FRC Warehouse Loc.	CD No.
N00236 / 000607 TC.A021.10074 MM N68711-00-D-0005 00030	06-11-2003 08-07-2001 DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY FOR THE 07 AUGUST 2001 MEETING - INLCUDES AGENDA, SIGN- IN SHEETS, AND VARIOUS HANDOUTS	ADMIN RECORD	MTG MINS PAH RAB TCE	025 026	SOUTHWEST DIVISION - BLDG. 1 181-03-0188 13 OF 17	RF5258
N00236 / 000738 TC.A021.10075 MM N68711-00-D-0005 00010	06-17-2003 08-21-2001 DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	FINAL BASE REALIGNMENT AND CLOSURE (BRAC) CLEANUP TEAM (BCT) MONTHLY TRACKING MEETING MINUTES FOR THE AFTER ACTION REPORT FOR THE 21 AUGUST 2001 MEETING - INCLUDES AGENDA AND SIGN-IN SHEET	ADMIN RECORD INFO REPOSITORY	MTG MINS	009 011 016 021 026	SOUTHWEST DIVISION - BLDG. 1 181-03-0188 15 OF 17	RF5258
N00236 / 000266 NONE COMMENTS NONE 00008	11-02-2001 10-10-2001 NONE	USEPA - SAN FRANCISCO A. COOK NAVFAC - SOUTHWEST DIVISION G. CLARK	EPA COMMENTS ON DRAFT REMEDIAL INVESTIGATION WORK PLAN, WESTERN HANGAR ZONE	ADMIN RECORD INFO REPOSITORY	COMMENTS PAH RI VOC	026	CHOICE IMAGING SOLUTIONS 181-03-0179 13 OF 46 SW06030901 41074200	
N00236 / 000739 TC.A021.10075 MM N68711-00-D-0005 00050	06-17-2003 10-16-2001 DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	FINAL BASE REALIGNMENT AND CLOSURE (BRAC) CLEANUP TEAM (BCT) MONTHLY TRACKING MEETING MINUTES FOR THE AFTER ACTION REPORT FOR THE 16 OCTOBER 2001 MEETING - INCLUDES AGENDA, SIGN-IN SHEET, AND VARIOUS HANDOUTS	ADMIN RECORD INFO REPOSITORY	MTG MINS TPH	002 014 015 026	SOUTHWEST DIVISION - BLDG. 1 181-03-0188 15 OF 17	RF5258

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Doc. Control No.	Record Date	Author				FRC Access. No.	
Record Type	CTO No.	Recipient Affil.				FRC/SWDIV Box No.	
Contr./Guid. No.	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	FRC Warehouse Loc.	
Approx. # Pages						CD No.	
N00236 / 000294 CTO-0014/0035 RESPONSE N68711-95-D-7526 00020	12-03-2001 11-09-2001 00014	BECHTEL ENVIRONMENTAL, INC. NAVFAC - SOUTHWEST DIVISION	RESPONSE TO USEPA COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION WORK PLAN, WESTERN HANGAR ZONE	ADMIN RECORD INFO REPOSITORY	COMMENTS DCA DCE DQO GW MW PAH PRG RESPONSE SOIL TCE VOC WELLS	026 BLDG. 21 BLDG. 22 BLDG. 23 BLDG. 24	CHOICE IMAGING SOLUTIONS 181-03-0179 13 OF 46 SW06022302 41074200
N00236 / 000300 CTO-0014/0037 & SWDIV SER 06CA.GC/1278 PLAN N68711-95-D-7526 00300	12-06-2001 12-06-2001 00014	BECHTEL ENVIRONMENTAL, INC. P. STANG NAVFAC - SOUTHWEST DIVISION	DRAFT FINAL REMEDIAL INVESTIGATION WORK PLAN, WESTERN HANGAR ZONE - INCLUDES SWDIV TRANSMITTAL LETTER BY G. CLARK [PORTION OF THE MAILING LIST IS CONFIDENTIAL]	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	PAH RI VOC WORK PLAN	026	CHOICE IMAGING SOLUTIONS 181-03-0179 14 OF 46 SW06030901 41074200

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Doc. Control No.	Prc. Date	Author Affil.					FRC Access. No.
Record Type	Record Date	Author					FRC/SWDIV Box No.
Contr./Guid. No.	CTO No.	Recipient Affil.					FRC Warehouse Loc.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.
N00236 / 000313	01-04-2002	IT CORPORATION	DRAFT WORK PLAN FOR BASEWIDE	ADMIN RECORD	BTEX	001	SOUTHWEST
2700.0	12-18-2001	J. MCGUIRE	GROUNDWATER MONITORING PROGRAM,	INFO	DCA	003	DIVISION - BLDG.
PLAN	00078	NAVFAC -	REVISION 0. ***COMMENTS: THIS WORK	REPOSITORY	DCE	004	110
N62474-98-D-2076		SOUTHWEST	PLAN PERTAINS TO BOTH ALAMEDA		DQO	005	
00600		DIVISION	ANNEX AND ALAMEDA POINT***		DVE	006	BX-003
		R. WEISSENBORN			GW	007	
					LEAD	008	
					MONITORING	009	
					MTBE	010	
					PAH	011	
					PCB	012	
					PCE	014	
					SVE	016	
					SVOC	021	
					TCA	025	
					TCE	026	
					TPH	027	
					VOC		
					WORK PLAN		
N00236 / 000346	02-26-2002	US EPA, SAN	EPA REVIEW AND CONCURRENCE OF THE	ADMIN RECORD	RI	026	SOUTHWEST
NONE	01-11-2002	FRANCISCO, CA	DRAFT FINAL REMEDIAL INVESTIGATION	INFO	WORK PLAN		DIVISION - BLDG.
LTR	NONE	A. COOK	WORK PLAN, WESTERN HANGAR ZONE	REPOSITORY			110
NONE		NAVFAC -	{SEE AR #300 - DRAFT FINAL WORK PLAN}				181-03-0188
00001		SOUTHWEST					1 OF 17
		DIVISION					BOX 1 - 04/21/06
		G. CLARK					RF5258

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Record Type	Record Date	Author		FRC Access. No.				
Contr./Guid. No.	CTO No.	Recipient Affil.		FRC/SWDIV Box No.				
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	FRC Warehouse Loc.	CD No.
N00236 / 000354 2119.9285 (LMM) LTR NONE 00008	04-10-2002 01-28-2002 NONE	CRWQCB, OAKLAND, CA L. MEILLIER NAVFAC - SOUTHWEST DIVISION R. WEISSENBORN	COMMENTS ON THE DRAFT WORK PLAN FOR BASEWIDE GROUNDWATER MONITORING PROGRAM - INCLUDES CONFIDENTIAL DISTRIBUTION LIST	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	COMMENTS GW MONITORING MTBE PAH PCB SVOC TPH VOC WORK PLAN	004 005 008 009 016 025 026 027 BLDG. 410 OU 1 UST 608-1	SOUTHWEST DIVISION - BLDG. 110 181-03-0188 1 OF 17 BOX 1 - 04/21/06 RF5258	
N00236 / 000616 TC.A021.10074 MM N68711-00-D-0005 00020	06-12-2003 02-05-2002 DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	DRAFT RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY FOR THE 05 FEBRUARY 2002 MEETING - INCLUDES MEETING AGENDA, SIGN-IN SHEETS, AND VARIOUS HANDOUTS	ADMIN RECORD INFO REPOSITORY	MTG MINS PAH RAB	025 026 BLDG. 162 OU 5	SOUTHWEST DIVISION - BLDG. 1 181-03-0188 13 OF 17 RF5258	
N00236 / 000747 TC.A021.10075 MM N68711-00-D-0005 00100	06-17-2003 04-16-2002 DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	FINAL BASE REALIGNMENT AND CLOSURE (BRAC) CLEANUP TEAM (BCT) MONTHLY TRACKING MEETING MINUTES FOR THE AFTER ACTION REPORT FOR THE 16 APRIL 2002 MEETING - INCLUDES AGENDA, SIGN- IN SHEET, AND VARIOUS HANDOUTS	ADMIN RECORD INFO REPOSITORY	MTBE MTG MINS PAH	001 002 004 009 011 014 015 016 021 026 OU 1 OU 2	SOUTHWEST DIVISION - BLDG. 1 181-03-0188 15 OF 17 RF5258	

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Doc. Control No.	Record Date	Author				FRC Access. No.	
Record Type	CTO No.	Recipient Affil.				FRC/SWDIV Box No.	
Contr./Guid. No.	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	FRC Warehouse Loc.	
Approx. # Pages						CD No.	
						Sites	
N00236 / 000620 TC.A021.10074 MM N68711-00-D-0005 00030	06-12-2003 05-01-2002 DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	FINAL RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY FOR THE 01 MAY 2002 MEETING - INCLUDES MEETING AGENDA, SIGN-IN SHEETS, AND VARIOUS HANDOUTS	ADMIN RECORD INFO REPOSITORY	MTG MINS RAB	026 OU 1 OU 2 OU 3 OU 4A OU 5	SOUTHWEST DIVISION - BLDG. 1 181-03-0188 13 OF 17 RF5258
N00236 / 001808 3834 RPT N62474-98-D-2076 00400	04-22-2004 05-03-2002 00078	IT CORPORATION R. CONDIT NAVFAC - SOUTHWEST DIVISION	DRAFT WORK PLAN FOR BASEWIDE GROUNDWATER MONITORING PROGRAM, REVISION 0	ADMIN RECORD INFO REPOSITORY	BTEX DCA DCE MTBE PAH PCB PCE SVOC TCE TDS TPH VOC	001 003 GROUP 005 GROUP 006 007 008 009 014 016 025 026 027	SOUTHWEST DIVISION - BLDG. 1
N00236 / 001809 4100 RPT N62474-98-D-2076 00600	04-22-2004 06-13-2002 00078	IT CORPORATION R. CONDIT NAVFAC - SOUTHWEST DIVISION	DRAFT FINAL WORK PLAN FOR BASEWIDE GROUNDWATER MONITORING PROGRAM, REVISION 0, [CD COPY ENCLOSED OF WELL INVENTORY]	ADMIN RECORD INFO REPOSITORY	BTEX DCA DCE MTBE PAH PCB PCE SVOC TCE TDS TPH VOC	001 003 GROUP 005 GROUP 006 007 008 009 014 016 025 026 027	SOUTHWEST DIVISION - BLDG. 1

UIC No. / Rec. No.	Prc. Date	Author Affil.				Location	
Doc. Control No.	Record Date	Author				FRC Access. No.	
Record Type	CTO No.	Recipient Affil.				FRC/SWDIV Box No.	
Contr./Guid. No.	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	FRC Warehouse Loc.	
Approx. # Pages						CD No.	
N00236 / 000367	06-18-2002	NAVFAC -	TRANSMITTAL OF THE DRAFT SITE	ADMIN RECORD	BCT	001	SOUTHWEST
SWDIV SER	06-14-2002	SOUTHWEST	MANAGEMENT PLAN AMENDMENT IN	INFO	BRAC	002	DIVISION - BLDG.
06CA.AD/0624	NONE	DIVISION	ACCORDANCE WITH THE FEDERAL	REPOSITORY	CHARACTERIZATI	006	110
PLAN		A. DICK	FACILITIES AGREEMENT FOR ACTIVITY		COMMENTS	007	181-03-0188
NONE		US EPA - SAN			CRP	008	2 OF 17
00035		FRANCISCO			FFA	009	BOX 2 - 04/21/06
		A. COOK			FS	013	RF5258
					GW	014	
					ORDNANCE	015	
					RD	016	
					RESPONSE	017	
					RI	019	
					ROD	020	
					SEDIMENTS	022	
					SMP	023	
					SOIL	024	
					TECH MEMO	025	
					UXO	026	
					WORK PLAN	027	
						028	
						029	
						AREA 1	
						AREA 2	
						AREA 3	
						OU 1	
						OU 2A	
						OU 2B	
						OU 2C	
						OU 3	
						OU 4A	
						OU 4B	
						OU 4C	
						OU 5	
						OU 6	

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Approx. # Pages	EPA Cat. #	Recipient												
N00236 / 000412	08-29-2002	TETRA TECH EM		DRAFT SUPPLEMENTAL ENVIRONMENTAL	ADMIN RECORD	ASBESTOS	001	SOUTHWEST						
TC.0190.11423 -	08-16-2002	INC.		BASELINE SURVEY (SEE AR #1054 - EBS)	INFO	AST	002	DIVISION - BLDG.						
MOD. 2	00190	G. FOULK			REPOSITORY	BCP	003	1						
RPT		NAVFAC -				BCT	004	181-03-0188						
N62474-94-D-7609		SOUTHWEST				BGS	005	4 OF 17						
00400		DIVISION				BRAC	006	BOX 4 OF 17 -						
						CAA	007	CHECKED OUT						
						DDT	008	BY L. O'CAMPO						
						EBS	009	ON 9/22/04 (X 2-						
						EIS	010	0969)						RF5258
						EOD	011							
						FOST	012							
						FS	013							
						GW	014							
						HAZ WASTE	015							
						LUST	016							
						MEK	017							
						NFA	019							
						NPL	020							
						ORDNANCE	021							
						PAH	022							
						PCB	023							
						RCRA	024							
						REMEDIAL ACTIO	025							
						RFA	026							
						RFI	027							
						RI	028							
						ROD	029							
						SOIL	OU 1							
						SVOC	OU 2A							
						SWMU	OU 2B							
						TPH	OU 2C							
						TSCA	OU 3							
						UST	OU 4A							
						VOC	OU 4B							

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													FRC Access. No. FRC/SWDIV Box No. FRC Warehouse Loc. CD No.
											WATER	OU 4C OU 5 OU 6	
N00236 / 000436	DS.A033.10075	10-31-2002	TETRA TECH EM INC.	MEMO	10-08-2002	B. KELLY	NAVFAC - SOUTHWEST DIVISION	L. OCAMPO	DRAFT TECHNICAL MEMORANDUM: EVALUATION OF ISSUES RELATED TO THE RESOURCE CONSERVATION AND RECOVERY ACT; FACILITY PERMIT EPA ID CA 2170023236, TIERED PERMITS, AND THE NONPERMITTED AREAS (INCLUDES SWDIV TRANSMITTAL LETTER FROM L. OCAMPO). ***COMMENTS: DISTRIBUTION LIST CONTAINS A CONFIDENTIAL ADDRESS***	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	AOC ARAR AST BCT BRAC EBS GW HAZ WASTE NFA PERMIT RCRA RFA RFI SOIL SWMU TECH MEMO TPH UST WATER WWTP	001 002 003 004 006 007 008 009 013 014 015 016 019 020 022 023 025 026 027 028	SOUTHWEST DIVISION - BLDG. 1 181-03-0188 6 OF 17 RF5258
												BLDG. 13 OU 1 OU 2A OU 2B OU 2C OU 3 OU 4A OU 4B OU 4C OU 5 OU 6	

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Record Type	Record Date	Author		FRC Access. No.			
Contr./Guid. No.	CTO No.	Recipient Affil.		FRC/SWDIV Box No.			
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	FRC Warehouse Loc. CD No.
N00236 / 000754 TC.A021.10075 MM N68711-00-D-0005 00040	06-17-2003 11-19-2002 DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	FINAL BASE REALIGNMENT AND CLOSURE (BRAC) CLEANUP TEAM (BCT) MONTHLY TRACKING MEETING MINUTES FOR THE AFTER ACTION REPORT FOR THE 11 NOVEMBER 2002 MEETING - INCLUDES AGENDA, SIGN-IN SHEET, AND VARIOUS HANDOUTS	ADMIN RECORD INFO REPOSITORY	MTG MINS TPH	026	SOUTHWEST DIVISION - BLDG. 1 181-03-0188 15 OF 17 RF5258
N00236 / 000627 TC.A021.10074 MM N68711-00-D-0005 00016	06-12-2003 12-03-2002 DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	FINAL RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY FOR THE 03 DECEMBER 2002 MEETING - INCLUDES MEETING AGENDA, SIGN-IN SHEETS, AND VARIOUS HANDOUTS	ADMIN RECORD INFO REPOSITORY	MTG MINS RAB	025 026 031 OU 5	SOUTHWEST DIVISION - BLDG. 1 181-03-0188 13 OF 17 RF5258
N00236 / 000452 SWDIV SER 06CA.GC\0240 MEMO NONE 00005	12-16-2002 12-10-2002 NONE	NAVFAC - SOUTHWEST DIVISION G. CLARK US EPA - SAN FRANCISCO A. COOK	TRANSMITTAL OF A TECHNICAL MEMORANDUM AND MAP FOR ADDITIONAL SAMPLING AT THE BUILDING 20 AREA - WESTERN HANGAR ZONE (INCLUDES SWDIV TRANSMITTAL LETTER FROM G. CLARK WHICH CONTAINS A CONFIDENTIAL ADDRESS]	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	EBS GW SOLVENTS TECH MEMO VOC	026 BLDG. 20 OU 6	SOUTHWEST DIVISION - BLDG. 1 181-03-0188 9 OF 17 RF5258

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Doc. Control No.	Record Date	Author				FRC Access. No.	
Record Type	CTO No.	Recipient Affil.				FRC/SWDIV Box No.	
Contr./Guid. No.	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	FRC Warehouse Loc.	
Approx. # Pages						CD No.	
N00236 / 000473 CTO 0014/0124 & SWDIV SER 06CA.GC/0422 RPT N68711-95-D-7526 01500	02-19-2003 02-18-2003 00014	BECHTEL ENVIRONMENTAL, INC. C. YAMANE NAVFAC - SOUTHWEST DIVISION	DRAFT REMEDIAL INVSTIGATION REPORT FOR WESTERN HANGAR ZONE [INCLUDES SWDIV TRANSMITTAL LETTER BY G. CLARK]	ADMIN RECORD INFO REPOSITORY	BTEX DCA DCE MTBE PAH PCB SVOC TCE TDS TPH TRPH VOC	026 BLDG. 20 BLDG. 23 BLDG. 582	SOUTHWEST DIVISION - BLDG. 1 181-03-0188 10 OF 17 RF5258
N00236 / 001983 SWDIV SER 06CA.GC/0527 CORRESP NONE 00002	03-10-2005 03-07-2003 NONE	NAVFAC - SOUTHWEST DIVISION G. CLARK DTSC - BERKELEY M. LIAO	REQUEST TO IDENTIFY STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) FOR THE WESTERN HANGAR ZONE	ADMIN RECORD	ARARS	026	SOUTHWEST DIVISION - BLDG. 1
N00236 / 001921 NONE CORRESP NONE 00003	01-05-2005 04-04-2003 NONE	CRWQCB - SAN FRANCISCO J. HUANG NAVFAC - SOUTHWEST DIVISION G. CLARK	COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION REPORT FOR THE WESTERN HANGAR ZONE	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	COMMENTS GW RI	005 026 BLDG. 23 BLDG. 24	SOUTHWEST DIVISION - BLDG. 1
N00236 / 001050 TC.A021.10126 MTG MINS N68711-00-D-0005 00040	08-20-2003 05-06-2003 DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	FINAL RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES SUMMARY FOR THE 06 MAY 2003 MEETING - INCLUDES AGENDA, SIGN-IN SHEETS AND HANDOUT MATERIALS	ADMIN RECORD INFO REPOSITORY	MTG MINS PAH	026 027	SOUTHWEST DIVISION - BLDG. 1 SW05072801

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Contr./Guid. No.	CTO No.	Recipient Affil.					FRC Warehouse Loc.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.
N00236 / 001916	01-05-2005	DTSC - BERKELEY	REVIEW AND COMMENT ON DRAFT	ADMIN RECORD	COMMENTS	026	SOUTHWEST
NONE	05-13-2003	M. LIAO	REMEDIAL INVESTIGATION REPORT	INFO	GW	OU 6	DIVISION - BLDG.
CORRESP	NONE	NAVFAC -	DATED FEBRUARY 2003	REPOSITORY	RCRA		1
NONE		SOUTHWEST			SOIL		
00015		DIVISION			VOCS		
		G. CLARK					

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Approx. # Pages	EPA Cat. #	Recipient												FRC Access. No. FRC/SWDIV Box No. FRC Warehouse Loc. CD No.
N00236 / 000772	08-04-2003	NAVFAC -	ALAMEDA POINT FOCUS ENVIRONMENTAL	ADMIN RECORD									001	SOUTHWEST
NONE	07-01-2003	SOUTHWEST	JULY 2003 NEWSLETTER										002	DIVISION - BLDG.
MISC	NONE	DIVISION											003	1
NONE		M. MCCLELLAND											004	181-03-0188
00016		GENERAL PUBLIC											005	16 OF 17
													006	RF5258
													007	
													008	
													009	
													010	
													011	
													012	
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UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Recipient Affil.	Subject/Comments	Classification	Keywords	Sites	Location FRC Access. No. FRC/SWDIV Box No. FRC Warehouse Loc. CD No.
Contr./Guid. No.	CTO No.	EPA Cat. #	Recipient									
N00236 / 001922	01-05-2005	07-25-2003	NAVFAC - SOUTHWEST DIVISION	TRANSMITTAL OF RCRA/CERCLA RESEARCH	ADMIN RECORD INFO REPOSITORY	PCBS RCRA SOIL SVOCS TPH VOCS	014 026 PARCEL 23	SOUTHWEST DIVISION - BLDG. 1				
SWDIV SER 06CA.GC\1096 CORRESP NONE 00009		NONE	G. CLARK DTSC - BERKELEY M. LIAO									
N00236 / 001803	04-22-2004	08-05-2003	SULTECH	FINAL RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY FOR THE 05 AUGUST 2003 MEETING - INCLUDES MEETING AFENDA, SIGN-IN SHEETS, AND VARIOUS HANDOUTS	ADMIN RECORD INFO REPOSITORY	MTG MINS	001 002 003 005 006 007 008 009 011 014 016 021 025 026 027 BLDG. 195	SOUTHWEST DIVISION - BLDG. 1				
TC.B010.10187 MM N68711-03-D-5104 00020		00010	NAVFAC - SOUTHWEST DIVISION									
N00236 / 001544	09-09-2003	09-03-2003	BECHTEL ENVIRONMENTAL, INC.	DRAFT FOCUSED FEASIBILITY STUDY REPORT FOR THE WESTERN HANGAR ZONE [INCLUDES SWDIV TRANSMITTAL LETTER BY G. CLARK] (PORTION OF MAILING LIST IS CONFIDENTIAL)	ADMIN RECORD INFO REPOSITORY	DCA DCE PCE PVC TCE TPH VOC	026	SOUTHWEST DIVISION - BLDG. 110 BX-003				
CTO-0014/0169 & SWDIV SER 06CA.GC/1245 RPT N68711-95-D-7526 00300		00014	J. FRENCH NAVFAC - SOUTHWEST DIVISION									

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Record Type	Record Date	Author					FRC/SWDIV Box No.
Contr./Guid. No.	CTO No.	Recipient Affil.					FRC Warehouse Loc.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.
N00236 / 001934 NONE CORRESP NONE 00011	01-11-2005 09-05-2003 NONE	DEPT. OF TOXIC SUBSTANCES CTRL M. LIAO NAVFAC - SOUTHWEST DIVISION G. CLARK	COMMENTS ON THE DRAFT FINAL REMEDIAL INVESTIGATION REPORT BY THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL (DTSC)	ADMIN RECORD INFO REPOSITORY	DTSC OU	026 OU 6	SOUTHWEST DIVISION - BLDG. 1
N00236 / 000765 CTO-0014/0154-1 RPT N68711-95-D-7526 00400	07-22-2003 11-01-2003 00014	BECHTEL ENVIRONMENTAL, INC. C. YAMANE NAVFAC - SOUTHWEST DIVISION	FINAL REMEDIAL INVESTIGATION WORK PLAN, WESTERN HANGAR ZONE [INCLUDES SWDIV TRANSMITTAL LETTER BY G. CLARK] (PORTION OF MAILING LIST IS CONFIDENTIAL) [CD COPY ENCLOSED] (CONSISTS OF 3 VOLUMES AND IN 2 FOLDERS). ***COMMENTS: DRAFT FINAL DATED 07/15/03 (CTO-0014/0154). INCLUDES REPLACEMENT PAGES TO MAKE DOCUMENT FINAL. REPLACED PAGES: VOLUME 1 - SPINE; COVER PAGE; TITLE SHEET; TABLE OF CONTENTS VII THROUGH VIII; EXECUTIVE SUMMARY ES-1 THROUGH ES-6 AND ES-11 THROUGH ES- 12; SECTION 1 - PAGES 1-9 THROUGH 1-10 AND PAGES 1-13 THROUGH 1-16; SECTION 3 - PAGES 3-7 THROUGH 3-8, PAGES 3-11 THROUGH 3-12B, PAGES 3-17 THROUGH 3- 20, PAGES 3-25 THROUGH 3-26; SECTION 5 - PAGES 5-19 THROUGH 5-20; AND SECTION 6 - PAGES 6-1 THROUGH 6-2. VOLUME II - SPINE; COVER SHEET, AND TITLE PAGE. VOLUME 3 - SPINE; TITLE PAGE; COVER PAGE; APPENDIX J - PAGE J- I, PAGE J-XI, AND PAGES J-19 THROUGH J- 20B, TABLE J7-1, ATTACHMENT J-2I, AND INSERT "UNCERTAINTY ANALYSIS" PAGES. APPENDIX L - FIGURE L-13. APPENDIX M - PAGE M-I AND INSERT RESPONSE TO COMMENTS.***	ADMIN RECORD CONFIDENTIAL	RI WORK PLAN	026	SOUTHWEST DIVISION - BLDG. 1 181-03-0188 16 OF 17 RF5258

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Record Type	Record Date	Author	Author	FRC Access. No.				
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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	FRC Warehouse Loc.	CD No.
N00236 / 001981 NONE CORRESP NONE 00004	03-09-2005 11-04-2003 NONE	CRWQCB - S.F. BAY REGION J. HUANG NAVFAC - SOUTHWEST DIVISION G. CLARK	REVIEW AND COMMENTS ON THE DRAFT FOCUSED GROUNDWATER FEASIBILITY STUDY REPORT	ADMIN RECORD	VOC	026	SOUTHWEST DIVISION - BLDG. 1	
N00236 / 001982 NONE CORRESP NONE 00015	03-09-2005 12-04-2003 NONE	U.S. EPA - SAN FRANCISCO A. COOK NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA	REVIEW AND COMMENTS ON THE DRAFT FOCUSED GROUNDWATER FEASIBILITY STUDY REPORT	ADMIN RECORD	DCE PCE TCE VOC	026	SOUTHWEST DIVISION - BLDG. 1	
N00236 / 001853 NONE MISC NONE 00010	07-22-2004 12-05-2003 NONE	DTSC - BERKELEY M. LIAO NAVFAC - SOUTHWEST DIVISION G. CLARK	COMMENTS ON THE DRAFT FOCUSED GROUNDWATER FEASIBILITY STUDY (FS) REPORT	ADMIN RECORD INFO REPOSITORY	COMMENTS GW VOC WATER WELLS	026 OU 6	SOUTHWEST DIVISION - BLDG. 1	
N00236 / 001841 NONE MISC NONE 00004	06-15-2004 03-01-2004 NONE	NAVFAC - SOUTHWEST DIVISION	NEWSLETTER REGARDING THE NAVY'S ENVIRONMENTAL ACTIVITIES AT ALAMEDA POINT	ADMIN RECORD IR-READY	GW PAH SOIL	005 009 014 015 016 025 026	SOUTHWEST DIVISION - BLDG. 1	

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Author	Recipient Affil.	Recipient	Subject/Comments	Classification	Keywords	Sites	Location FRC Access. No. FRC/SWDIV Box No. FRC Warehouse Loc. CD No.
Record Type	Record Date	CTO No.	Author	Recipient Affil.	Recipient	Subject/Comments	Classification	Keywords	Sites	Location	
Contr./Guid. No.	CTO No.	EPA Cat. #	Author	Recipient Affil.	Recipient	Subject/Comments	Classification	Keywords	Sites	Location	
Approx. # Pages	EPA Cat. #	EPA Cat. #	Author	Recipient Affil.	Recipient	Subject/Comments	Classification	Keywords	Sites	Location	
N00236 / 001855 CTO-0014/0243 & SWDIV SER.06CA.GC/773 RPT N68711-95-D-7526 00600	08-03-2004 08-01-2004 00014		BECHTEL ENVIRONMENTAL, INC. C. YAMANE NAVFAC - SOUTHWEST DIVISION	Author	Recipient Affil.	REVISD DRAFT FEASIBILITY STUDY (FS) REPORT INSTALLATION RESTORATION PROGRAM (IRP) [INCLUDES SWDIV TRANSMITTAL LETTER BY T. MACCHIARELLA] {PORTION OF THE MAILING LIST IS CONFIDENTIAL} (SEE AR #1544 DRAFT FEASIBILITY STUDY (FS) REPORT)	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	COMMENTS DCE FS PCE REPORT TCE VOC	026	SOUTHWEST DIVISION - BLDG. 110 02/17/06	
N00236 / 001892 TC.B010.10261 RPT N68711-03-D-5104 00020	11-22-2004 08-17-2004 00010		SULTECH NAVFAC - SOUTHWEST DIVISION	Author	Recipient Affil.	FINAL BRAC CLEANUP TEAM (BCT) MONTHLY TRACKING MEETING AFTER ACTION REPORT - INCLUDES AGENDA, 07/20/04 MEETING MINUTES AND VARIOUS HANDOUTS {CD COPY ENCLOSED}	ADMIN RECORD INFO REPOSITORY	GW MTG MINS TPH VOC	026 030 BLDG. 20 BLDG. 23 OU 1 OU 2A OU 2B	SOUTHWEST DIVISION - BLDG. 1	
N00236 / 001900 NONE CORRESP NONE 00001	12-02-2004 09-23-2004 NONE		EPA - SAN FRANCISCO A. COOK NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA	Author	Recipient Affil.	EPA REQUEST A THIRTY DAY EXTENSION FOR REVIEW OF THE REVISED DRAFT FEASIBILITY STUDY	ADMIN RECORD INFO REPOSITORY		026	SOUTHWEST DIVISION - BLDG. 1	
N00236 / 001899 NONE CORRESP NONE 00011	12-02-2004 11-01-2004 NONE		USEPA - SAN FRANCISCO A. COOK NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA	Author	Recipient Affil.	EPA REVIEW AND COMMENT ON THE REVISED DRAFT FEASIBILITY STUDY (FS) REPORT	ADMIN RECORD INFO REPOSITORY	DCE GW VOCS	026	SOUTHWEST DIVISION - BLDG. 1	

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Record Type	Record Date	Author	FRC Access. No.				
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Approx. # Pages	EPA Cat. #	Recipient	FRC Warehouse Loc.				
		Subject/Comments	Classification	Keywords	Sites	CD No.	
N00236 / 001897 NONE CORRESP NONE 00003	12-02-2004 11-04-2004 NONE	DTSC - BERKELEY M. LIAO NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA	DTSC REVIEW OF AND CONCURRENCE ON THE REVISED DRAFT FEASIBILITY STUDY REPORT (SEE AR #1855 - REVISED DRAFT FEASIBILITY STUDY REPORT)	ADMIN RECORD INFO REPOSITORY	GW	026 BLDG. 20 1	SOUTHWEST DIVISION - BLDG. 1
N00236 / 001904 SWDIV SER BPMOW.GC\0165 CORRESP NONE 00003	12-07-2004 12-01-2004 NONE	BRAC - SAN DIEGO R. PLASEIED EPA - SAN FRANCISCO A. COOK	REQUEST FOR EXTENSION ON THE DRAFT FINAL FEASIBILITY STUDY REPORT	ADMIN RECORD INFO REPOSITORY		026 OU 6 1	SOUTHWEST DIVISION - BLDG. 1
N00236 / 001905 SWDIV SER BPMOW.GC\0165 CORRESP NONE 00003	12-08-2004 12-01-2004 NONE	BRAC - SAN DIEGO R. PLASEIED USEPA - SAN FRANCISCO A. COOK	REQUEST FOR EXTENSION ON THE RESPONSES TO COMMENTS AND DRAFT FINAL REMEDIAL INVESTIGATION REPORT	ADMIN RECORD INFO REPOSITORY		003 004 011 021 026 OU 2B	SOUTHWEST DIVISION - BLDG. 1
N00236 / 001943 SWDIV SER BPMOW.GC\0368 CORRESP NONE 00050	02-04-2005 02-02-2005 NONE	BRAC - SAN DIEGO T. MACCHIARELLA EPA - SAN FRANCISCO A. COOK	TRANSMITTAL OF RESPONSES TO COMMENTS ON THE REVISED DRAFT FEASIBILITY STUDY REPORT FOR WESTERN HANGAR ZONE {PORTION OF MAILING LIST IS CONFIDENTIAL}	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	FS IRP VOC	026 1	SOUTHWEST DIVISION - BLDG. 1

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Record Type	Record Date	Author	FRC Access. No.				
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Approx. # Pages	EPA Cat. #	Recipient	FRC Warehouse Loc.	Subject/Comments	Classification	Keywords	CD No.
						Sites	
N00236 / 002012 NONE CORRESP NONE 00003	04-19-2005 03-31-2005 NONE	U.S. EPA - SAN FRANCISCO A. COOK NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA		COMMENTS ON THE DRAFT FINAL FEASIBILITY STUDY (FS) REPORT	ADMIN RECORD INFO REPOSITORY	COMMENTS FS	026 SOUTHWEST DIVISION - BLDG. 1
N00236 / 001995 CTO-0014/0271 & SWDIV SER BPMOW.GC\0458 RPT N68711-95-D-7526 00600	03-14-2005 04-04-2005 00014	BECHTEL ENVIRONMENTAL, INC. C. YAMANE BRAC - SAN DIEGO		DRAFT FINAL FEASIBILITY STUDY REPORT FOR INSTALLATION RESTORATION PROGRAM {PORTION OF MAILING LIST IS CONFIDENTIAL}. ***COMMENTS: REPLACEMENT PAGES CONVERT DRAFT FINAL TO FINAL DOCUMENT.***	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	DCA DCE DHE DNA FS IRP PCE PVC TCE TPH VOC	026 SOUTHWEST DIVISION - BLDG. 1
N00236 / 002020 SWDIV SER BPMOW.GC/0638 CORRESP NONE 00003	05-02-2005 04-19-2005 NONE	NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA U.S. EPA - SAN FRANCISCO A. COOK		REQUEST FOR AN EXTENSION ON THE DRAFT PROPOSED PLAN	ADMIN RECORD INFO REPOSITORY	OU	026 OU 6 SOUTHWEST DIVISION - BLDG. 1
N00236 / 002045 NONE PUB NOTICE NONE 00015	06-17-2005 06-13-2005 NONE	NAVFAC - SOUTHWEST DIVISION GENERAL PUBLIC		FACT SHEET : DRAFT PROPOSED PLAN FOR GROUNDWATER AT THE WESTERN HANGAR ZONE	ADMIN RECORD INFO REPOSITORY	COC VOC	026 SOUTHWEST DIVISION - BLDG. 1

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Location				
Record Type	Record Date	Author		FRC Access. No.				
Contr./Guid. No.	CTO No.	Recipient Affil.		FRC/SWDIV Box No.				
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	FRC Warehouse Loc.	CD No.
N00236 / 002052 SER BPMOW.GC\0843 CORRESP N68711-03-D-5104 00030	06-29-2005 06-20-2005 00005	NAVFAC - SOUTHWEST DIVISION VARIOUS AGENCIES	DRAFT PROPOSED PLAN FOR GROUNDWATER WESTERN HANGAR ZONE FOR INSTALLATION RESTORATION SITE	ADMIN RECORD INFO REPOSITORY	IR VOC	026	SOUTHWEST DIVISION - BLDG. 1	
N00236 / 002104 NONE COMMENTS NONE 00010	08-23-2005 08-04-2005 NONE	EPA - SAN FRANCISCO A. COOK NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA	COMMENTS ON DRAFT PROPOSED PLAN FOR INSTALLATION RESTORATION SITE	ADMIN RECORD INFO REPOSITORY	COMMENTS IR	026	SOUTHWEST DIVISION - BLDG. 1	
N00236 / 002119 NONE CORRESP NONE 00006	09-19-2005 08-26-2005 NONE	DTSC - BERKELEY M. LIAO NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA	REVIEW AND COMMENT ON THE DRAFT PROPOSED PLAN (PP)	ADMIN RECORD INFO REPOSITORY	COMMENTS PP	026	SOUTHWEST DIVISION - BLDG. 1	
N00236 / 002132 DS.B005.13008 RPT N68711-03-D-5104 00028	10-13-2005 09-01-2005 00005	SULTECH NAVFAC - SOUTHWEST DIVISION	DRAFT FINAL PROPOSED PLAN FOR WESTERN HANGAR ZONE (INCLUDES RESPONSES TO COMMENTS ON THE DRAFT PROPOSED PLAN FOR GROUNDWATER)	ADMIN RECORD INFO REPOSITORY	FS GW PROPOSED RESPONSE ROD VOC	026	SOUTHWEST DIVISION - BLDG. 1	

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N00236 / 002143 DS.B005.13009 AND BRAC SER BPMOW.GC\1300 PUB NOTICE N68711-03-D-5104 00013	10-31-2005 10-01-2005 00005	SULTECH BRAC	PROPOSED PLAN FOR WESTERN HANGAR ZONE (INCLUDES BRAC TRANSMITTAL LETTER BY T. MACCHIARELLA)	ADMIN RECORD INFO REPOSITORY	ARARS BRAC ISB ISCO PLUME RA VOC	026 SOUTHWEST DIVISION - BLDG. 1
N00236 / 002135 NONE CORRESP NONE 00005	10-14-2005 10-03-2005 NONE	DTSC - BERKELEY M. LIAO NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA	REVIEW OF AND CONDITIONAL CONCURRENCE WITH THE PROPOSED PLAN FOR WESTERN HANGAR ZONE (PORTION OF MAILING LIST IS CONFIDENTIAL)	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	COMMENTS EBS PROPOSED PLAN ROD VOC	026 SOUTHWEST DIVISION - BLDG. 1
N00236 / 002158 BRAC SER BPMOW.GC\1366 RESPONSE NONE 00007	11-21-2005 11-08-2005 NONE	BRAC T. MACCHIARELLA USEPA - SF A. COOK	RESPONSES TO REGULATORY AGENCY COMMENTS ON THE DRAFT FINAL PROPOSED PLAN, WESTERN HANGAR ZONE	ADMIN RECORD INFO REPOSITORY	AOC PAH SVOC SWMU VOC	026 SOUTHWEST DIVISION - BLDG. 1
N00236 / 002170 NONE COMMENTS NONE 00002	12-05-2005 11-23-2005 NONE	DTSC - BERKELEY M. LIAO BRAC T. HACCHIARELLA	REVIEW AND COMMENTS ON THE PROPOSED PLAN, WESTERN HANGAR ZONE, AND RESPONSE TO COMMENTS ON THE DRAFT FINAL PROPOSED PLAN	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	BRAC COMMENTS PP ROD	026 SOUTHWEST DIVISION - BLDG. 1

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Doc. Control No.	Prc. Date	Author Affil.					FRC Access. No.
Record Type	Record Date	Author					FRC/SWDIV Box No.
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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.
N00236 / 002172	12-07-2005	SULTECH	DRAFT COMPILATION OF OUTSTANDING	ADMIN RECORD	BRAC	001	SOUTHWEST
BRAC SER	11-29-2005		SOLID WASTE MANAGEMENT UNIT(SWMU)	INFO	FED	002	DIVISION - BLDG.
BPMOW.LAO\1417	00012	BRAC	EVALUATION REPORTS, HAZARDOUS	REPOSITORY	RCRA	014	1
RPT			WASTE PERMIT EPA ID NUMBER CA		RI	026	
N68711-03-D-5104			2170023236 (INCLUDES BRAC		SI	027	
00275			TRANSMITTAL LETTER BY T.		SWMU	032	
			MACCHIARELLA)		TPA	034	
						OU 1	
						OU 3	
						OU 4A	
						OU 6	
						PARCEL 12	
						PARCEL 17	
						PARCEL 1A	
						PARCEL 9	
N00236 / 002245	03-16-2006	BRAC	TRANSMITTAL OF DRAFT RECORD OF	ADMIN RECORD	BRAC	026	SOUTHWEST
BRAC SER	01-19-2006	T. MACCHIARELLA	DECISION (ROD) [SEE AR #2244 - DRAFT	INFO	ROD		DIVISION - BLDG.
BPMOW.LO\0046	NONE	VARIOUS	RECORD OF DECISION (ROD)]	REPOSITORY			1
CORRESP		AGENCIES					
NONE							
00002							
N00236 / 002244	03-16-2006	SULTECH	DRAFT RECORD OF DECISION (ROD) [SEE	ADMIN RECORD	AOC	026	SOUTHWEST
DS.B005.13011	01-23-2006		AR #2245 - BRAC TRANSMITTAL BY T.	INFO	ARAR		DIVISION - BLDG.
RPT	00005	BRAC	MACCHIARELLA]	REPOSITORY	CAA		1
N68711-03-D-5104					COC		
00100					COPC		
					DCA		
					DCE		
					VOC		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Location			
Record Type	Record Date	Author		FRC Access. No.			
Contr./Guid. No.	CTO No.	Recipient Affil.		FRC/SWDIV Box No.			
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	FRC Warehouse Loc.
							CD No.
N00236 / 002271 NONE COMMENTS NONE 00008	04-11-2006 03-23-2006 NONE	USEPA - SAN FRANCISCO A. COOK BRAC PMO WEST T. MACCHIARELLA	REVIEW AND COMMENTS ON THE DRAFT RECORD OF DECISION (ROD)	ADMIN RECORD INFO REPOSITORY	ARAR BRAC COMMENTS GW ROD	026	SOUTHWEST DIVISION - BLDG. 1
N00236 / 002273 NONE COMMENTS NONE 00002	04-11-2006 03-23-2006 NONE	CRWQCB - OAKLAND J. HUANG BRAC PMO WEST T. MACCHIARELLA	REVIEW AND COMMENTS ON THE DRAFT RECORD OF DECISION (ROD), WESTERN HANGAR ZONE	ADMIN RECORD INFO REPOSITORY	BRAC COMMENTS ROD TCE	026	SOUTHWEST DIVISION - BLDG. 1
N00236 / 002272 NONE COMMENTS NONE 00003	04-11-2006 03-29-2006 NONE	DTSC - SACRAMENTO D. LOFSTROM BRAC PMO WEST T. MACCHIARELLA	REVIEW AND COMMENTS ON THE DRAFT RECORD OF DECISION (ROD) [PORTION OF THE MAILING LIST IS CONFIDENTIAL]	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	BRAC COMMENTS GW RCRA ROC	026	SOUTHWEST DIVISION - BLDG. 1

Total Estimated Record Page Count: 7,716

Total - Administrative Records: 64

[UIC NUMBER]='N00236'

No Keywords

Sites=026

No Classification

ATTACHMENT B
AGREEMENT WITH SELECTED REMEDY

By attaching their signature to this Final Record of Decision for Site 26, the U.S. Environmental Protection Agency, California Department of Toxic Substances Control, and the San Francisco Bay Regional Water Quality Control Board have indicated their agreement with the selected remedy. Consequently, no letters of agreement are necessary for Attachment B.

ATTACHMENT C
TRANSCRIPT FROM PUBLIC MEETING, SIGN-IN SHEET, AND PUBLIC NOTICE

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PROPOSED PLAN FOR WESTERN HANGAR ZONE (IR SITE 26)

ALAMEDA POINT, CALIFORNIA

PUBLIC MEETING

Wednesday, November 9, 2005

Alameda City Hall West
950 W. Mall Square
Building 1
Community Conference Room
Alameda Point, California

Reported by: Valerie E. Jensen, CSR No. 4401

JAN BROWN & ASSOCIATES
CERTIFIED SHORTHAND REPORTERS
701 Battery Street, 3rd Floor
San Francisco, California 94111
(415) 981-3498

PARTICIPANTS

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PRESENTERS:

THOMAS MACCHIARELLA, Navy BRAC Environmental
Coordinator
GLENN CLARK, Navy Project Manager

OTHER AGENCY, NAVY STAFF AND CONSULTANT REPRESENTATIVES:

DEANNA RHOADES, P.E., Sultech
CAROL L. YAMANE, P.G., Sr. Geologist,
Bechtel National, Inc.
MARCIA LIAO, Department of Toxic Substances Control
JUDY HUANG, Regional Water Quality Control Board
PETER RUSSELL, Russell Resources, Inc. (ARRA)

COMMUNITY MEMBERS AND INTERESTED PARTIES:

(None.)

TETRA TECH SUPPORT STAFF:

TOMMIE JEAN DAMREL, Tetra Tech EMI
CRAIG HUNTER, Tetra Tech EMI

1 NOVEMBER 9, 2005

6:45 P.M.

2
3 MR. MACCHIARELLA: Okay, folks. Let's get
4 started.

5 Good evening. And thank you for coming
6 to the Proposed Plan Public Meeting for the Western
7 Hangar Zone, Site 26, at Alameda Point.

8 My name is Thomas Macchiarella. I'm the
9 Navy's BRAC Environmental Coordinator for Alameda
10 Point.

11 Before we go any further, let me run through
12 the agenda.

13 We just had a posterboard viewing session,
14 and now we're in Thomas Macchiarella's introduction
15 of the Installation/Restoration Program where I'll
16 talk about general items with the IR Program and
17 the CERCLA process with regard to Alameda Point.

18 After that we'll go into the Specific
19 Proposed Plan Summary, specific to Site 26, by
20 Ms. Glenna Clark.

21 After that we'll open it up for clarifying
22 questions prior to a public comment period.

23 At that point we will go into listening mode
24 and record public comments, which would be addressed
25 in the next step of the process, which is the Record

1 of Decision.

2 Next slide, please.

3 Okay. What is the purpose of the
4 Installation/Restoration Program? The purpose is to
5 identify and assess potential release sites at Alameda
6 Point.

7 The program itself is managed by the BRAC
8 Program Management Office West, with support from the
9 Southwest Division of the Naval Facilities Engineering
10 Command. The BRAC PMO West reports directly to the
11 Deputy Assistant Secretary of the Navy for Installations
12 and Environment.

13 As the point spec for Alameda Point, I
14 have responsibility and authority to conduct the IR
15 program here at Alameda Point. The purpose of the
16 Navy's IR Program is to identify, investigate, assess
17 characterize, and clean up the hazardous substances at
18 Alameda Point, to reduce the risk to human health and
19 the environment from past waste disposal operations
20 and to be consistent with CERCLA, the Comprehensive
21 Environmental Response, Compensation And Liability
22 Act, otherwise known -- sometimes known as "Superfund."

23 Eventually the goal is to move all of
24 the Installation/Restoration sites through the site
25 closeout status. At some sites this will involve

1 remedial actions or cleanup actions. In some cases,
2 lengthy cleanup actions. Others will be a case where,
3 after thorough investigation and analysis, we discover
4 that remediation is not necessary.

5 Next slide, please.

6 Here is a figure showing the CERCLA process
7 and its various steps. I'll run through them briefly.

8 The PA, slash, SI is a review of records.
9 It includes interviews, limited sampling.

10 At BRAC facilities we're sometimes
11 benefited by an extra step in the BRAC process,
12 called "Environmental Baseline Surveys," which provide
13 information. The RI/FS is intended to delineate and
14 characterize the contamination. The FS is where we
15 analyze remedial alternatives.

16 The proposed plan is where we are now for
17 Site 26. This is where we seek public comment on our
18 preferred alternative.

19 The Record of Decision is where we
20 incorporate any changes, based on comments received
21 during the proposed plan stage, and where we document
22 the selected remedy.

23 The RD/RA -- or Remedial Design/Remedial
24 Action -- phase includes a detailed work plan and
25 design of a selected alternative. The remedial action

1 phase is the actual fieldwork and cleanup. Sometimes
2 cleanup can involve long-term management or operations
3 and maintenance.

4 Next slide, please.

5 At Alameda Point, the Installation/Restoration
6 Program includes 10 operable units comprised of 35
7 sites. NAS Alameda is listed on the National Priorities
8 List. And the U.S. Environmental Protection Agency is
9 the lead regulatory agency.

10 A Federal Facilities Agreement exists between
11 the U.S. EPA and the Navy for NAS Alameda.

12 The BRAC cleanup team is composed of the
13 U.S. EPA, the Navy, the California Department of Toxic
14 Substances Control and the San Francisco Bay Regional
15 Water Quality Control Board.

16 We have a Site Management Plan, which is a
17 detailed schedule for all the Alameda Point IR sites,
18 which is updated annually and, often, more frequently
19 than that.

20 The BRAC cleanup team is a concept that was
21 initiated to streamline the process by ensuring timely
22 and thorough coordination among the parties.

23 The current phase, or the Proposed Plan,
24 provides for community involvement, summarizes the
25 environmental efforts to date, proposes a decision

1 known as the Preferred Alternative and proceeds and
2 leads to the Record of Decision.

3 Do we have any questions on the
4 Installation/Restoration Program or the CERCLA process?

5 Thank you.

6 Let's move now to the presentation specific
7 to Site 26, the Western Hangar Zone.

8 Ms. Glenna Clark is the Navy's Project
9 Manager for this site and others on Alameda Point.

10 MS. CLARK: Thank you, Thomas.

11 Tonight I would like to give you a quick
12 summary of the site description, environmental
13 investigations for Site 26, site-specific risk
14 assessments, remedial action objectives that we've
15 come up with, remedial alternatives that we looked
16 at for remedies, the preferred alternative that we
17 decided on -- the BCT decided on -- conclusions and
18 the next step in the CERCLA process.

19 And this is a map of Site 26 right here.
20 It's right in the center of the base. That's an
21 aerial photo. Site 26 is just about here (indicating).

22 I'm sorry it's not a very good photo.

23 Site 26 is approximately 32 acres of
24 paved area. Buildings 20 through 23 -- and I'll show
25 you a slide of these in just a minute -- are former

1 aircraft hangars. Building 24 was used for painting
2 and finishing. And there are several other smaller
3 buildings around the site that -- most of which
4 have been removed at this point.

5 At Site 26 we had multiple solid waste
6 management units we refer to as "SWMUs." There
7 were seven aboveground storage tanks, one oil-water
8 separator, two washdown areas and four generator
9 accumulation points that we call "GAPs."

10 There are also two Corrective Action --
11 actually, one Corrective Action Area at Site 26.
12 That's Corrective Action Area 6. And there was
13 a Corrective Action Area that's just -- I'm sorry.
14 That one is just above Site 26. And then there is
15 Corrective Action Area Fuel Line C that's on Site
16 26. Those are being handled under the Navy's petroleum
17 program.

18 There is also a storm sewer segment between
19 Buildings 23 and 24 that may have received waste from
20 operations at Building 5 that is east of Site 26. And
21 the Navy plans to address any impacts to the storm sewer
22 as part of the Site 5 CERCLA actions.

23 Now, these are the features of the site.

24 We'll talk about tonight the VOC plume. You
25 can see it right here.

1 This is Hangars 020, 021, 022 and 023. This
2 is the painting facility. The Corrective Action Area
3 Fuel Line C is located right here. There is a benzene
4 plume, but that's being handled under the petroleum
5 program. The former washdown areas are located right
6 here and right here. And the oil-water separator was
7 actually part of the former washdown area under Building
8 20 or South Building 20.

9 And most of these little buildings are no
10 longer here. I think there were a few up here, but
11 that's about all that's left.

12 The storm sewer segment I was referring to
13 that would be covered under Site 5 there is right here,
14 Building 23. Our main focus tonight is the VOC plume
15 southeast of Building 20.

16 Can we go back one? I'm sorry.

17 By the way, this is Corrective Action --
18 Petroleum Corrective Action Area 6. It's a little
19 above IR Site 26.

20 There was remediation going on there.
21 The system has been turned off for about a month
22 now. There are three monitoring wells right along
23 this border. And they have been checked. And there
24 is non-detects there. So it looks like they've done
25 a good job of cleaning up.

1 Environmental Investigations performed at
2 Site 26 include EBS, the Environmental Baseline
3 Survey, the Storm Sewer Investigations, Fuel Line
4 Removal Actions and Studies, Total Petroleum
5 Hydrocarbon Corrective Action and Remedial
6 Investigation.

7 Now, as I was saying about the plume, you
8 can see it right here. This is a VOC plume. We
9 found there cis-1, 2, dichloroethene, trichloroethene
10 and vinyl chloride. That's just off of where the
11 washdown area is located right here. So we suspect
12 that's probably around where the source started. The
13 problem is in the first water-bearing zone at a depth
14 of two to six feet.

15 Next slide, please.

16 And this is a photograph of Hangar 20.
17 This is actually the area where the plume is. You
18 can see it's all paved. There is a little bit of
19 grass this way. It starts about here and goes that
20 way -- just a little strip. And there is a picnic
21 table on it. As you can see, the plume goes right in
22 front of this building.

23 We have a little further investigation we
24 need to do to see if the plume actually goes underneath
25 the corner of the building, but that will be done during

1 the Remedial Design. As you can see, there is AST here.

2 This isn't one of the ones I was talking
3 about. I think that was a new one put by the tenants
4 in there.

5 Next slide, please.

6 There is no significant soil contamination
7 or continuing sources of contamination identified.
8 The contaminants have not migrated to the Oakland
9 Inner Harbor, and it's unlikely that storm sewers
10 or bedding materials around storm sewers near Site
11 26 would be acting as a preferential pathway.

12 The RCRA SWMU evaluation process is still
13 in progress. The Navy plans to complete this process
14 prior to the completion of the ROD, Record of Decision.

15 Now I'd like to tell you a little bit --
16 touch on the Human Health Risk Assessment we did and
17 the Ecological Risk Assessment.

18 Here we wanted to show some of the animals
19 that are around Alameda. This is actually the Alameda
20 Song Sparrow. That's the American Red Robin, and that's
21 the California Ground Squirrel, who's very cute.

22 For the Human Health Risk Assessment I would
23 like to give you an idea of what to listen for when I
24 start talking about 10 to the minus 6 and 10 to the
25 minus 4.

1 For risks greater than 10 to the minus 4,
2 action is generally required. For risks that are
3 between 10 to the minus 4 and 10 to the minus 6,
4 action is generally not warranted. However,
5 site-specific factors are considered. And that has
6 happened in Site 26. The risk is less than 10 to
7 the minus 6, so no action is required.

8 For the hazard index, anything below 1 is
9 considered protective.

10 Now, these numbers from the Risk
11 Assessment of soil considered dermal contact, ingestion
12 and inhalation of parcels. The groundwater is based
13 solely on inhalation from the groundwater of volatiles.
14 For example, the soil risk came to 10 to the minus 6,
15 which is very, very low. The groundwater is 9 times
16 10 to the minus 8, which is even lower. And, of
17 course, you see that they have very low cancer.

18 The construction worker was only run for
19 soil. And it's 6 times 10 to the minus 7, with a
20 hazard index of 0.08. For residential soil, it was
21 5 times 10 to the minus 6, with a non-cancer hazard
22 index of 1. The groundwater was 4 times 10 to the
23 minus 5 -- that's right in the risk management
24 range -- with a hazard index of 0.03.

25 So, the risk drivers -- as I mentioned,

1 these chemicals before, are the cis-1, 2-
2 dichloroethene, trichloroethene and the vinyl chloride.
3 As far as the soil is concerned, anything that was
4 elevating the soil was, basically, from background,
5 from elevated arsenic found naturally.

6 So the recommendations of the Human Health
7 Risk Assessment.

8 Based on potential cancer risk to residents
9 through inhalation of vapor in indoor air, remedial
10 action of VOCs in groundwater is necessary to protect
11 human health. Based on the low levels of incremental
12 contamination, with the risks minus background metals,
13 no remedial action for soil is necessary at Site 26 to
14 protect human health.

15 Now, with regard to Ecological Risk
16 Assessment, we performed this in conjunction with
17 the U.S. EPA, the California Department of Toxic
18 Substances Control and the California Regional
19 Water Quality Control Board. We evaluated whether
20 unacceptable risk is posed to the California Ground
21 Squirrel, the Alameda Song Sparrow, the American Robin
22 and the Red-tailed hawk.

23 And that's actually a picture of the
24 red-tailed hawk.

25 The conclusions from that study. Site 26

1 only supports limited habitat, and the presence of
2 terrestrial receptors is very limited, and future land
3 uses would not create additional ecological habitat.

4 Now we get into the cleanup of the plume
5 I was talking about. Our remedial objectives for
6 groundwater is to protect human health by preventing
7 exposure of potential residents and occupational
8 workers to VOCs in indoor air that have migrated
9 from groundwater.

10 Our remedial goals are 6 parts per billion
11 for cis-1, 2-dichloroethene, 4 parts per million for
12 trichloroethene, 0.5 parts per billion for vinyl
13 chloride. And the BCT -- that's the Navy, the EPA,
14 DTSE and the Water Board -- have all concurred with
15 that.

16 Now I'd like to take you briefly through
17 our Remedial Alternatives. There were nine of them,
18 so, please, be patient.

19 The first one we considered is no action.
20 That's basically -- no money is involved. No action
21 is performed. It just provides a baseline for comparing
22 all other alternatives.

23 The remedial alternative number 2 was
24 groundwater confirmation sampling. That would include
25 three years of groundwater confirmation sampling, with

1 an estimated cost of \$750,000. Basically, that was just
2 to verify the extent and stability of the plume of the
3 plume. There were no institutional controls associated
4 with that alternative.

5 Alternative 3 was monitor natural attenuation
6 and institutional controls. That would be monitoring
7 groundwater for 70 years. We figured the plume would
8 be gone in 70 years if we left it alone and didn't do
9 anything to it. We would have to have ICs to restrict
10 residential reuse there. The estimated cost would be
11 \$3,200,000.

12 Alternative 4 included in-situ bioremediation
13 of the source area. That was just -- by "source area,"
14 I mean -- we refer to it sometimes as a "hot spot."
15 That's where the highest concentration of contaminant
16 was found.

17 Then groundwater monitoring and
18 implementation of controls. That would include
19 groundwater monitoring for 45 years and implementation
20 of institutional controls to restrict residential reuse
21 during the period of time. The estimated cost was
22 \$3,200,000.

23 Alternative 5 -- these start sounding the
24 same. That included in-situ chemical oxidation
25 for the source area, monitoring attenuation and

1 institutional controls. Doing this remedy, we
2 would have groundwater monitoring for 50 years and
3 implementation of institutional controls for 50 years
4 to restrict residential reuse. The estimated cost is
5 \$3,400,000.

6 Alternative 6 included in-situ chemical
7 oxidation, in-situ bioremediation and institutional
8 controls. This is what we selected as our preferred
9 alternative. This actually is compared to a couple
10 I just -- well, a couple alternatives ago that I said
11 institute chemical oxidation. This includes the whole
12 plume instead of just the high-concentration area.

13 That would be followed with bioremediation
14 just to pick up any residual leftover from the chemical
15 oxidation. This should take about three years. So we
16 only have to have institutional controls for that long.
17 And the estimated cost is \$3,100, 000 for this remedy.

18 Alternative 7 was chemical oxidation in the
19 source area -- I'm sorry. This is the one. It includes
20 in-situ bioremediation, monitored natural attenuation
21 and institutional controls. This would include, if we
22 did just the source area, groundwater monitoring for
23 40 years. We would have to have institutional controls
24 for that period of time to restrict residential reuse.
25 The estimated cost would be \$3,500,000.

1 Alternative 8 is in-situ bioremediation and
2 institutional controls. That would be over the whole
3 plume area, not just the source area. That would only
4 take four years to implement. And ICs would have to
5 last that long to prevent residential reuse. The
6 estimated cost is \$2,800,000.

7 Redmedial Alternative 9 is the zero-valent
8 iron source area treatment, monitoring natural
9 attenuation and institutional controls. Groundwater
10 monitoring would be required for 40 years, and we would
11 have to have institutional controls for that period of
12 time to restrict residential reuse. The estimated cost
13 of that was \$3,300,000.

14 Excuse me for a minute.

15 Now I'd like to briefly touch -- don't
16 worry. I'm not going to read all this.

17 I would like to briefly touch the nine
18 criteria we considered in selecting our alternative.

19 First we considered the overall
20 protection of human health and the environment;
21 second, compliance with ARARs -- that's rules and
22 regulations we need to comply with; three, long-term
23 effectiveness and permanence; four, reduction of
24 toxicity, mobility or volume through treatment; five,
25 short-term effectiveness; six, implementability; seven,

1 cost; eight, state acceptance; and, nine, community
2 acceptance.

3 I would like to talk about alternative
4 number six for just a couple of minutes.

5 Of course, as I said, it uses the full scale
6 institution of chemical oxidation treatment to reduce
7 the VOC plume in about three years. It incorporates
8 the in-situ bioremediation to accelerate and break
9 down the remaining contaminants over time.

10 There is always a possibility, when we go
11 to cleanup, that the institution of chemical oxidation
12 will take care of the whole problem, and in-situ
13 bioremediation will be used as backup if we need it.
14 The good thing about this alternative is it provides
15 the shortest-term institutional controls, and the cost
16 is moderate.

17 Implementability -- I have -- on my
18 slide, it says "low," but I believe that's low to
19 moderate. That would fully protect human health
20 and the environment, while complying with all the
21 environmental regulations and laws.

22 Also, I would like to mention that, during
23 the remedial design phase, we will be installing
24 additional monitoring wells to be sampled to further
25 delineate the horizontal and vertical extent of the

1 groundwater plume, monitor flow conditions, plume
2 movement and verify treatment effectiveness.

3 In conclusion, based on the potential
4 cancer risk to residents and occupational workers
5 through inhalation of vapors in indoor air, remedial
6 action for VOCs in groundwater is necessary at Site 26
7 to protect human health.

8 Alternative 6, institute chemical oxidation,
9 institute bioremediation and institutional controls, is
10 the preferred released alternative for groundwater at
11 Site 26.

12 Based on the low levels of incremental
13 contamination, no remedial action for soil is
14 necessary at Site 26 to protect human health or
15 ecological receptors.

16 This is -- just to let you know, this is a
17 picture outside Hangar 20. That's the green area I was
18 talking about it. You can see it's a pretty nice area.

19 Next slide, please.

20 The next step in the CERCLA process is
21 we will accept public comments on the proposed plan.
22 Response to public comments will be provided in a
23 Responsiveness Summary, which will be included in
24 the Record of Decision.

25 To document the preferred alternative, we

1 will complete a ROD, the Record of Decision. Public
2 notice will be placed in a local newspaper to announce
3 the availability of the signed ROD. And then we will
4 prepare a Remedial Design and Remedial Action Work Plan.

5 Any questions?

6 MR. MACCHIARELLA: Okay. Now we'll move on
7 to the next item in the agenda, which is clarifying
8 questions.

9 Do we have any questions?

10 Okay. Since we don't have any questions,
11 we'll move on to the public comment.

12 Do we have any public comments?

13 Since there are no comments at this time,
14 we will take a recess and reconvene if any public
15 members arrive to provide comments.

16 We will adjourn at 7:30, unless members of
17 the public arrive prior to that.

18 (Off the record at 7:12 p.m.)

19 ///

20 ///

21 ///

22 (On the record again at 7:30 p.m.)

23 MR. MACCHIARELLA: Okay. It's now after
24 7:30, and we don't have any new public comments
25 arriving. So we're going to adjourn now.

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Thank you for coming.

(Record closed at 7:30 p.m.)

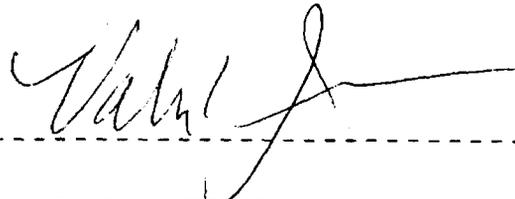
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STATE OF CALIFORNIA) SS.

I do hereby certify that the meeting was held at the time and place therein stated; that the statements made were reported by me, a certified shorthand reporter and disinterested person, and were, under my supervision, thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the participants in said hearing nor in any way personally interested or involved in the matters therein discussed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal of office this 5th day of December 2005.



VALERIE E. JENSEN

Certified Shorthand Reporter

Sign-In Sheet Public Meeting for Site 26, Western Hangar Zone, Alameda Point, California – November 9, 2005

Name	Address (Optional)	How Did you Hear About this Meeting? (✓)				
		Mailer	Notice in the Alameda Journal	Notice in the Oakland Tribune	Word of Mouth	Other (Please list)
Name Craig Hunter	Street				✓	
Affiliation Tetra Tech	City, State and Zip Rancho Cordova, CA 95741					
Name Tommy Jean Dannel	Street 175 Main St #2 1800					
Affiliation Tetra Tech	City, State and Zip SF, CA 94105					
Name Deanna Rhoades	Street					
Affiliation SciTech	City, State and Zip San Diego CA 92141					
Name Glenna Clark	Street					
Affiliation NAVY	City, State and Zip					
Name Thomas Macchiavello	Street San Diego					
Affiliation Navy	City, State and Zip					
Name Carol Yemane	Street S.F					
Affiliation Bechtel	City, State and Zip					
Name Anna-Marie Cook	Street					
Affiliation USEPA	City, State and Zip					
Name Judy Huang	Street					
Affiliation SF BAY RWQCB	City, State and Zip					
Name Peter Russell	Street				✓	
Affiliation ARRA (City)	City, State and Zip					



NOTICE OF PROPOSED PLAN AND PUBLIC COMMENT PERIOD

Proposal of No Action for Soil and Remediation of Groundwater at Site 26, Western Hangar Zone Alameda Point, California



The U.S. Navy, in coordination with state and environmental regulatory agencies, encourages the public to comment on its Proposed Plan for remediation of groundwater and no action for soil at the Western Hangar Zone, which is identified as Site 26 at the former Alameda Naval Air Station, now referred to as Alameda Point, in Alameda, California.

Site 26 is located in the central portion of Alameda Point. The site was used by the Navy for aircraft washdown and housed aircraft hangars. As a result, groundwater at Site 26 is impacted by volatile organic compounds, and cleanup of groundwater has been recommended. The Proposed Plan provides a summary of investigations performed at the site including a remedial investigation, human health and ecological risk assessments, and feasibility study and presents the proposed groundwater remedy. Based on data collected and analyzed for the site, no action is proposed for soil because the potential risk to humans and animals is insignificant. However, there is potential risk to humans from groundwater, thus a proposed groundwater remedy is presented. These findings support the eventual transfer to and redevelopment of the property by the Alameda Reuse and Redevelopment Authority.

PUBLIC COMMENT PERIOD

The Navy invites interested members of the public to review and comment on the Proposed Plan during the 30-day public comment period which is from October 24th to November 23rd, 2005. Public comments must be submitted in writing and postmarked or e-mailed no later than November 23rd, 2005, or attend the public meeting on November 9th, 2005. Please send all comments to: Mr. Thomas Macchiarella, BRAC Environmental Coordinator, BRAC Program Management Office West, 1455 Frazee Road, Suite 900, San Diego, California 92108-4310, Thomas.macchiarella@navy.mil, (619) 532-0907, fax (619) 532-9858.

PUBLIC MEETING

The Navy will host a public meeting to discuss the Proposed Plan, answer questions, and accept public comments.
Date: Wednesday, November 9th, 2005
Time: 6:30 p.m. to 8:00 p.m.
Location: 950 West Mall Square, Building 1, Room 201, Alameda Point, CA

FOR MORE INFORMATION

A copy of the Proposed Plan, Remedial Investigation, Human Health and Ecological Risk Assessments, Feasibility Study, and other site documents are available for review at:

Alameda Point
950 West Mall Square
Building 1, Rooms 240-241
Alameda, California

Alameda Public Library
2200 A Central Avenue
Alameda, California
(510) 747-7777

If you have any questions or wish to discuss the Site 26 project, please contact Mr. Thomas Macchiarella, BRAC Environmental Coordinator, at (619) 532-0907, fax (619) 532-9858.

ATTACHMENT D
RESPONSIVENESS SUMMARY

D.1 STAKEHOLDER COMMENTS AND LEAD AGENCY RESPONSES

PROPOSED PLAN, OPERABLE UNIT 6 SITE 26, ALAMEDA POINT – ALAMEDA, CALIFORNIA		
Letters Received During Public Comment Period		
Comments by: Patrick Lynch		
Number	Comments	Responses
1	The preferred alternative, Alternative No. 6, does not appear to be technically feasible. In-situ chemical oxidation involves the injection of strong oxidants such as hydrogen peroxide. One of the many uses of hydrogen peroxide is as an antiseptic to kill microorganisms. In-situ bioremediation will therefore not be effective in the sterile environment resulting from the injection of an oxidant.	Section 5.1.6 of the final feasibility study (FS) report references past documented evidence at three sites where in-situ bioremediation (ISB) has been used after in-situ chemical oxidation (ISCO). Pilot testing is included in the alternative to verify the effectiveness of this approach (ISCO followed by ISB).
2	The FS Report should have evaluated alternatives that recover contaminants through groundwater or soil vapor extraction. The cleanup times for such technologies would be far less than the 40 to 70 years cleanup times of many of the alternatives evaluated. The recovery of trichloroethylene and 1,2-dichloroethylene would eliminate the formation of vinyl chloride in an uncontrolled environment. Alternatives including recovery technologies should have been evaluated in the FS Report.	The FS report evaluated in-situ physical removal technologies that recover contaminants through groundwater or soil vapor extraction; however, these technologies were eliminated from further consideration as alternatives. Although volatile organic compound (VOC) contaminant mass may be reduced using extraction methods, this technology has been shown as an inefficient and high-cost means for removing contaminants at low levels (API 1993, Bartow and Davenport 1992, Doty and Travis 1991, MacDonald and Kavanaugh 1994, Mackay and Cherry 1989, and NRC 1994).
3	Alternative 2, does not meet the threshold criteria and should not have been evaluated in the FS. Alternative 2 is presented in Table 3 of the Proposed Plan as the highest rated alternative receiving “high performance” ratings in four of the five evaluation criteria. This is an absurd representation that seriously undermines the credibility of both the Proposed Plan and subsequent Record of Decision.	In accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), the purpose of the remedy selection process is to select remedies that are protective of human health and the environment, maintain protection over time, and minimize untreated waste. Alternative 2 was included for consideration by risk management decision makers because, based on current site data, the Navy believes that active remedy or mass removal contaminant reduction is not necessary to be protective of human health under the current and future site use. Alternative 2 consists of confirmation sampling to verify the extent and stability of the VOCs in groundwater.

PROPOSED PLAN, OPERABLE UNIT 6 SITE 26, ALAMEDA POINT – ALAMEDA, CALIFORNIA

3 (cont.)	(see above)	However, Navy is choosing to remediate to unrestricted site use because the cost associated with attaining unrestricted use remediation goals is expected to be comparable with the cost associated with commercial use remediation goals, when considering the associated long-term cost. In addition, risk management decision makers chose a more conservative approach to the risk at Site 26 by basing decisions on a scenario where VOCs in groundwater degrade to vinyl chloride and vinyl chloride does not degrade at all. (Because dichloroethene and trichloroethene in groundwater may degrade further to vinyl chloride, there could be a further increase in risk from groundwater.)
4	Table 3 of the Proposed Plan disagrees with the description of the preferred alternative on Page 9. Page 9 describes Alternative 6 as “low relative cost” and “moderate implementability.” Table 3 describes Alternative 6 as “moderate performance for cost” and “low performance for implementability.” Explain this contradiction.	Based on the FS report, Alternative 6 should have been described as moderate performance for cost and low performance for implementability in the proposed plan.
5	Alternative 4 and Alternative 6 have cost estimates of \$3.2 million and \$3.1 million, respectively. Alternative 4 was rated “low” and Alternative 6 was rated “moderate” for cost performance (high cost = low performance). Within the range of cost estimate accuracy, I fail to see how the Navy distinguished a difference in cost performance between these two alternatives.	The cost ratings are a relative comparison with Alternative 6 being less than Alternative 4. The Navy agrees that within the range of cost estimate accuracy it is difficult to distinguish a difference in cost performance between these two alternatives.
6	With costs ranging from \$2.8 to \$3.5 million each of the viable alternatives has essentially the same cost for comparison purposes. If cost is to be a consideration in the selection of a cleanup alternative, alternatives must be developed that have a range of costs.	The NCP does not require a range of costs to be established for the viable alternatives.
7	Alternative 6 and Alternative 8 could reach cleanup objectives in 3 to 4 years and the remaining viable alternatives would reach cleanup objectives in 40 to 50 years. The FS should have included more than two alternatives with cleanup times that would have some acceptance in this community.	The FS report identified the remedial alternatives for Site 26 by conducting screening evaluations, in accordance with the NCP, on a wide range of general response actions and technologies. Therefore, the range of restoration time periods were driven mainly by the criteria (effectiveness, implementability, and cost) that were used in the screening evaluations. The FS report evaluated a suitable number of alternatives.

PROPOSED PLAN, OPERABLE UNIT 6 SITE 26, ALAMEDA POINT – ALAMEDA, CALIFORNIA

8	<p>The Proposed Plan refers the public to a website site, www.navybracpmo.org, for more information on Site 26. The only information about Site 26 on the website is the Proposed Plan making the reference. It is interesting in looking for more information on Site 26 I came across a dead link to the Navy's most recent Focus newsletter. The February 2005 newsletter, which was widely distributed, invited Alamedans to attend the Restoration Advisory Board's March 3, 2005, meeting. Those who responded to the invitation where probably not aware that the meeting date had been changed to March 14, 2005. Whether the Navy is claiming information is on a website that isn't, or the Navy is changing the date of a widely publicized RAB meeting, the result is the same. The Navy's failed public participation efforts continue to discourage public participation and the result is cleanup remedies that lack public support.</p>	<p>The proposed plan refers the public to Navy's website for further information regarding Site 26, closure of Alameda Point, and the Installation Restoration Program. In addition to the proposed plan for Site 26, the Navy's website includes fact sheets and newsletters related to the site (see Table 3-1 of this ROD), the public notice for Site 26, Restoration Advisory Board minutes, closure and Installation Restoration Program information, and photos. The website also informs the user where to obtain additional information specific to Site 26 and contact information for Navy and regulatory personnel.</p> <p>It should be noted that the March 2005 meeting date was changed to allow members of the Restoration Advisory Board to attend a community meeting of the Alameda Reuse and Redevelopment Authority on the planned reuse of Alameda Point. It is unfortunate that the meeting dates conflicted. Although the March 2005 meeting date was published as March 3 in the February 2005 newsletter, the Navy sent a flyer with the new date to the Restoration Advisory Board mailing list. The March 14 meeting was not related to Site 26. The public meeting for the Site 26 proposed plan was advertised in the Alameda Journal and the Oakland Tribune newspapers with readership of approximately 24,000 and over 180,000 respectively. The proposed plan was mailed to the Alameda Point mailing list of approximately 370 recipients, at that time. The Navy is proud of its community relations program at Alameda Point and believes it meets or exceeds the requirements of the installation restoration program.</p>
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Comments by: California Environmental Protection Agency, Department of Toxic Substances Control (DTSC)		
Number	Comments	Responses
1	DTSC has concluded that data gaps exist at Site 26 and the soil may potentially be impacted (see DTSC comment letter dated October 3, 2005). With the information available at this time, DTSC is unable to reach a conclusive determination that no significant soil contamination or continuing sources exist at Site 26 and no remedial action for soil is required.	The Navy disagrees that data gaps exist for Site 26 soil or continuing sources exist. A Draft Compilation of Outstanding SWMU Evaluation Reports, which includes Site 26 and further explains Navy's conclusions and recommendations, was submitted to DTSC on December 5, 2005. As stated in the proposed plan, the Navy will complete the RCRA evaluation process prior to issuance of the ROD.
2	DTSC, in our comment letter dated October 3, 2005, has recommend further action on five SWMUs and floor drains and areas outside of hangar doors. The RTC, however, requests DTSC withdraw such recommendation. DTSC proposes a meeting with the Navy to resolve this issue.	The Navy coordinated with DTSC and resolved the issues related to the five SWMUs and the floor drains. In response to DTSC's letter of October 3, 2005, the Navy provided additional documentation on February 17, 2006. DTSC withdrew its request for additional investigation per its letter of March 26, 2006 and agreed with the Navy's determination of the SWMUs at Site 26.
3	Instead of citing the storm sewer report (Tetra Tech 2001) and the data summary report (Tetra Tech 2002) and making general statements to support the original conclusions, the RTC should 1) provide the exact full title of the reports to allow easier document retrieval and 2) furnish sufficient specific (e.g. pertinent page numbers, figure or table IDs as shown in the cited documents) to facilitate the agency review. DTSC will conclude the storm sewer review upon receipt of such information.	The comment from DTSC on the draft final proposed plan pertained to the RI report for Site 26, which is now final. The information requested by DTSC in their original comment was included in the final RI report for Site 26; therefore, the Navy's response referred DTSC to the final RI report for Site 26 in addition to providing text from the RI report. The Navy believes that this response is sufficient to facilitate DTSC's review.