

**FINAL  
RECORD OF DECISION/REMEDIAL ACTION PLAN  
OPERABLE UNIT 4, IR SITE 40  
NAVAL WEAPONS STATION SEAL BEACH  
SEAL BEACH, CALIFORNIA**

**May 2004**

# DECLARATION

# DECLARATION

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## SITE NAME AND LOCATION

Operable Unit 4, Installation Restoration (IR) Site 40, Concrete Pit/Gravel Area  
Naval Weapons Station (NAVWPNSTA) Seal Beach  
800 Seal Beach Boulevard, Seal Beach, Orange County, California 90740  
United States Environmental Protection Agency Identification Number: CA0170024491

## STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD)/Remedial Action Plan (RAP) presents the selected remedial action for groundwater at IR Site 40 at NAVWPNSTA Seal Beach at Seal Beach, California. Soil is recommended for no further action.

This document was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986, Title 42 *United States Code* Sections (§§) 9602 et seq., and in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 *Code of Federal Regulations* Part 300, et seq. This decision is based on the administrative record files for this site. A site-specific administrative record index is included as Attachment A.

The state of California (through the California Environmental Protection Agency [Cal/EPA] Department of Toxic Substances Control [DTSC] and the Regional Water Quality Control Board [RWQCB] Santa Ana Region) concur on the selected remedy. Attachment B includes the transcript from the public meeting.

## REMEDIAL ACTION PLAN

This ROD/RAP satisfies the Cal/EPA DTSC requirements for a RAP for hazardous substance release sites pursuant to *California Health and Safety Code* § 25356.1. The RAP requirements are summarized in Attachment C.

## ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from groundwater at IR Site 40, if not addressed by implementing the remedial action selected in this ROD, may present a current or potential threat to public health and welfare or to the environment.

## DESCRIPTION OF THE SELECTED REMEDY IN ACCORDANCE WITH UNITED STATES ENVIRONMENTAL PROTECTION AGENCY GUIDANCE

The shallow groundwater underlying IR Site 40 is contaminated with volatile organic compounds (VOCs). This groundwater contamination appears to have occurred when chlorinated solvents, used during locomotive maintenance activities, were spilled on the ground surface of the site and migrated through the subsurface soils and into the shallow groundwater beneath the site.

## Declaration

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A screening human-health risk assessment was conducted during the extended removal site evaluation to evaluate the potential risk to human health from exposure to contaminants in site soils and groundwater. The human-health risk screening for soils estimated an incremental cancer risk (i.e., the risk due to site-specific chemicals of potential concern [COPCs]) below the NCP-defined departure point, with total noncancer risks (as measured by the hazard index) driven by the presence of naturally occurring (background) metals. A fate and transport evaluation determined that the potential for COPCs in soil to further leach to groundwater and be transported within the groundwater was negligible. Adverse impacts to ecological receptors are not anticipated due to site development. Accordingly, soil at IR Site 40 is recommended for no further action.

The human-health risk screening for groundwater at IR Site 40 estimated a total cancer risk in excess of the NCP-defined generally acceptable range. Estimates of noncancer risk indicate a significant potential for systemic toxicity. No complete exposure pathway exists between contaminants in groundwater and ecological receptors. Thus, contaminants reported in groundwater were not evaluated further for ecological risk. However, since the groundwater at IR Site 40 poses an unacceptable threat to human health, groundwater is recommended for further action.

The selected remedy for groundwater at IR Site 40 is enhanced *in situ* bioremediation, monitored natural attenuation (MNA), and land-use controls. Sodium lactate or a comparable bioremediation substrate will be injected through application wells into groundwater at locations containing the highest reported concentrations of tetrachloroethene and trichloroethene to promote degradation of these VOCs to harmless by-products. It is anticipated that most of the VOCs will be degraded within the first year of operation. During the design phase, technology refinements such as bioaugmentation and cometabolic oxidation may also be applied to enhance this remedy pending results of additional testing.

The selected remedy for groundwater includes:

- construction, operation, and maintenance of groundwater monitoring wells and injection wells;
- treatment of groundwater using sodium lactate injection or comparable bioremediation substrate to accelerate natural biodegradation of chlorinated VOCs;
- MNA until cleanup goals are achieved;
- performance monitoring throughout the remedial action;
- confirmatory groundwater sampling at the end of the remediation to confirm that VOC concentrations meet specified cleanup levels; and
- land-use controls to prevent use of contaminated groundwater, protect equipment, and allow access for sampling, installing new monitoring wells, and implementing any remedial measures needed in the future.

*In situ* groundwater remediation addresses the risk posed by VOC contamination (which can be characterized as the primary threat at this site) by degrading VOCs to harmless

## Declaration

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by-products, thus permanently destroying the contaminants and significantly reducing the toxicity, mobility, and volume of hazardous substances in groundwater.

Land-use controls are necessary to protect the integrity of the groundwater application and monitoring wells and associated piping and equipment. Land-use controls are also necessary to prevent use of contaminated groundwater until remediation is complete.

## 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 as a principal element.

The effectiveness of the remedial action selected in this ROD/RAP will be reviewed, at a minimum, at 5-year intervals to assure that the remedy continues to adequately protect human health and the environment and is achieving cleanup goals. Once cleanup goals have been achieved, the 5-year review will no longer apply to this action because hazardous substances will not remain above health-based levels.

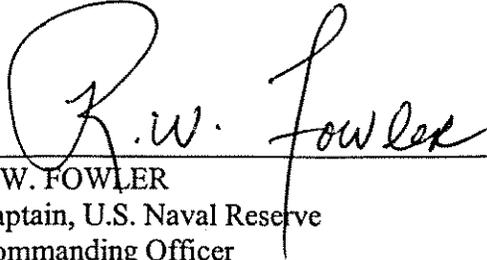
## ROD/RAP DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary:

- chemicals of concern and their respective concentrations (Section 5)
- risk represented by the chemicals of concern (Section 7)
- cleanup levels established for chemicals of concern and the basis for these levels (Section 8)
- how source materials constituting principal threats are addressed (Section 8)
- current and reasonably anticipated future land-use assumptions and current and potential future beneficial uses of groundwater used in the risk assessment (Sections 6 and 7)
- potential land and groundwater use that will be available at the sites as a result of the selected remedy (Section 10)
- 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 (Section 10)
- key factors that led to selecting the remedy (Sections 8, 9, and 10)

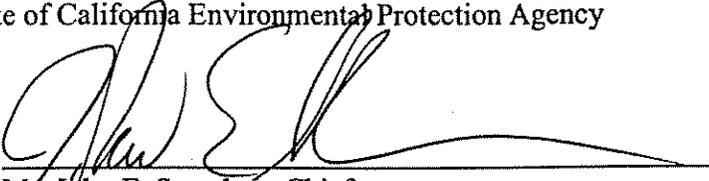
Additional information can be found in the administrative record file for this site.

For the United States Department of the Navy, Naval Weapons Station Seal Beach, Seal Beach, California

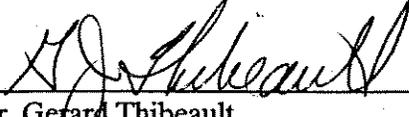
Signature:   
R.W. FOWLER  
Captain, U.S. Naval Reserve  
Commanding Officer

Date: 2 June 04

For the State of California Environmental Protection Agency

Signature:   
Mr. John E. Scandura, Chief  
Southern California Operations  
Office of Military Facilities  
Department of Toxic Substances Control

Date: 6/8/04

Signature:   
Mr. Gerard Thibeault  
Executive Officer  
Regional Water Quality Control Board Santa Ana Region

Date: 6/14/04

## ACRONYMS/ABBREVIATIONS

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AOC	area of concern
ARAR	applicable or relevant and appropriate requirement
BEI	Bechtel Environmental, Inc.
bgs	below ground surface
BNI	Bechtel National, Inc.
Cal. Code Regs.	<i>California Code of Regulations</i>
Cal/EPA	California Environmental Protection Agency
Cal. Fish & Game Code	<i>California Fish and Game Code</i>
Cal-Modified	California Environmental Protection Agency modified
Cal. Pub. Res. Code	<i>California Public Resources Code</i>
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	<i>Code of Federal Regulations</i>
ch.	chapter
COC	chemical of concern
COD	chemical oxygen demand
COPC	chemical of potential concern
COPEC	chemical of potential ecological concern
CZMA	Coastal Zone Management Act
DCA	dichloroethane
DCE	dichloroethene
div.	division
DON	Department of the Navy
DTSC	(Cal/EPA) Department of Toxic Substances Control
DWR	(California) Department of Water Resources
ERSE	extended removal site evaluation
ESA	Endangered Species Act
ESQD	explosives safety quantity distance
°F	degrees Fahrenheit
Fed. Reg.	<i>Federal Register</i>
FS	feasibility study
FSI	focused site inspection
GAC	granular activated carbon
gpd	gallons per day
HERD	(DTSC) Human and Ecological Risk Division
HHRA	human-health risk assessment

## Acronyms/Abbreviations

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HI	hazard index
HQ	hazard quotient
IAS	initial assessment study
IDW	investigation-derived waste
IR	Installation Restoration (Program)
JEG	Jacobs Engineering Group Inc.
µg/dL	micrograms per deciliter
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MNA	monitored natural attenuation
MSL	mean sea level
NAVWPNSTA	Naval Weapons Station
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEESA	Naval Energy and Environmental Support Activity
NHPA	National Historic Preservation Act
NOAEL	no observed adverse effects level
NPDES	National Pollutant Discharge Elimination System
NWR	National Wildlife Refuge
O&M	operation and maintenance
ORNL	Oak Ridge National Laboratory
OU	operable unit
PA	preliminary assessment
PCE	tetrachloroethene or perchloroethene
PRG	preliminary remediation goal
PVC	polyvinyl chloride
RAB	Restoration Advisory Board
RAO	remedial action objective
RAP	remedial action plan
RCRA	Resource Conservation and Recovery Act
Res.	resolution
RI	remedial investigation
ROD	record of decision
RSE	removal site evaluation
RWQCB	(California) Regional Water Quality Control Board

Acronyms/Abbreviations

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§	section
SARA	Superfund Amendments and Reauthorization Act
SCS	Soil Conservation Service
SDWA	Safe Drinking Water Act
SI	site inspection
SWDIV	Southwest Division Naval Facilities Engineering Command
SWMU	solid waste management unit
SWRCB	(California) State Water Resources Control Board
TBD	to be determined
TCE	trichloroethene
TDS	total dissolved solids
tit.	title
TRV	toxicity reference value
USACE	United States Army Corps of Engineers
U.S.C.	<i>United States Code</i>
U.S. EPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound
WBZ	water-bearing zone
WQCP	water quality control plan

# DECISION SUMMARY

## Section 1

# SITE NAME, LOCATION, AND DESCRIPTION

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This Record of Decision (ROD)/Remedial Action Plan (RAP) presents the selected remedial action for soil and groundwater at Installation Restoration (IR) Program Site 40 at Naval Weapons Station (NAVWPNSTA) Seal Beach in Orange County, California. The United States Environmental Protection Agency (U.S. EPA) identification number for this station is CA0170024491. This ROD/RAP satisfies the California Environmental Protection Agency (Cal/EPA) Department of Toxic Substances Control (DTSC) requirements for a RAP for hazardous substance release sites pursuant to *California Health and Safety Code* Section (§) 25356.1.

This 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 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The decision for this site is based on information contained in the administrative record. A copy of the site-specific administrative record index for IR Site 40 is in Attachment A.

## 1.1 SITE NAME

This decision document addresses soil and groundwater at one site at NAVWPNSTA Seal Beach: Operable Unit (OU)-4, IR Site 40, Concrete Pit/Gravel Area.

## 1.2 SITE LOCATION

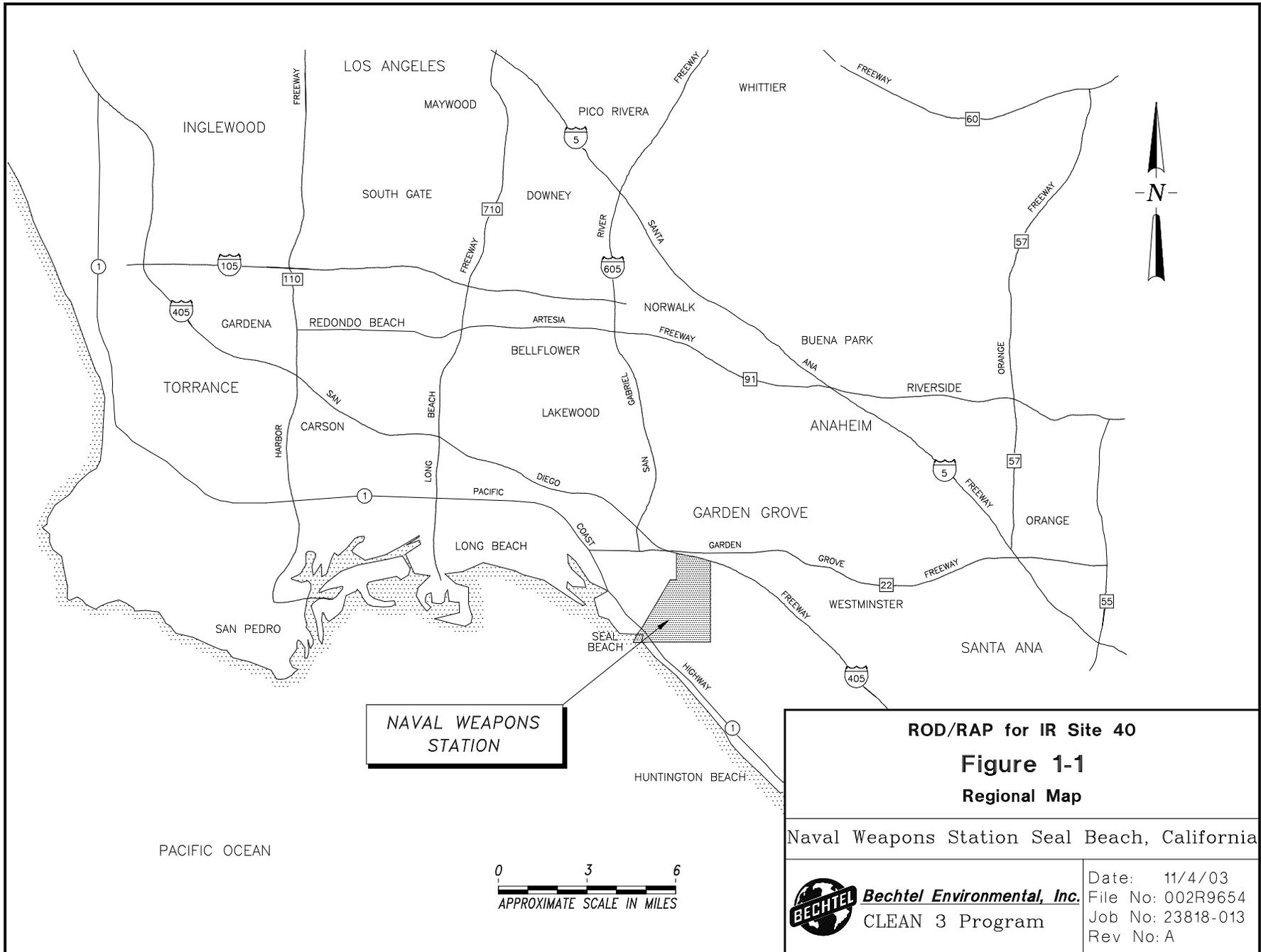
NAVWPNSTA Seal Beach consists of approximately 5,000 acres and is located in the city of Seal Beach and county of Orange, approximately 26 miles south of downtown Los Angeles (Figure 1-1). IR Site 40 is located in the southwestern portion of the base, approximately 0.6 mile west of the Seal Beach National Wildlife Refuge (NWR) (Figure 1-2).

## 1.3 LEAD AND SUPPORT AGENCIES

NAVWPNSTA Seal Beach is an active federal facility that is being remediated under the IR Program. The station is not on the National Priorities List. The lead agency for the investigation and remedial action at this station is the Department of the Navy (DON). State regulatory agencies providing support and oversight include DTSC and the California Regional Water Quality Control Board (RWQCB) Santa Ana Region.

## 1.4 SITE DESCRIPTION

An active locomotive shop (Building 240) is located on IR Site 40. Four railroad spurs terminate and provide access for locomotive repair in Building 240. Additional tracks traverse the asphalt-paved area to the south. The locomotive shop is equipped with three service bays for repair and maintenance activities. A concrete pit within the building floor provides access for repair and maintenance on the underside of the locomotives.



**NAVAL WEAPONS  
STATION**

**ROD/RAP for IR Site 40**  
**Figure 1-1**  
**Regional Map**

Naval Weapons Station Seal Beach, California

**BECHTEL** *Bechtel Environmental, Inc.*  
CLEAN 3 Program

Date: 11/4/03  
File No: 002R9654  
Job No: 23818-013  
Rev No: A

## Figure 1-2

This detailed station map has been deleted from the Internet-accessible version of this document as per Department of the Navy Internet security regulations.

## Section 1 Site Name, Location, and Description

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This pit also serves as a collection point for oil and solvents spilled during maintenance activities. Oil that collected in the pit was formerly discharged through a drainpipe onto the gravel area outside Building 240 until the pipe was plugged in 1978. At this time, the outlet of the pipe adjacent to the building is plugged with a standard threaded plastic pipe plug. Inside the concrete pit, the sump pump and associated piping has been removed and the inlet of the discharge line is plugged with a standard compression plug.

## Section 2

# SITE HISTORY AND INVESTIGATION ACTIVITIES

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This section provides an overview of the history of NAVWPNSTA Seal Beach and summarizes the investigation activities that have taken place at the facility.

## 2.1 SITE HISTORY

NAVWPNSTA Seal Beach is located in Orange County and is bordered by the city of Seal Beach on the north, west, and southwest; the city of Westminster on the northeast; the city of Huntington Beach on the southeast and south; and county land on the south between Edinger and Warner Avenues. The Pacific Ocean borders the station to the south (Figures 1-1 and 1-2).

NAVWPNSTA Seal Beach provides deployment-ready ordnance to ships and analyzes the performance of weapons. The station includes the headquarters, central administrative and support departments, and docking, storage, production, and test facilities. IR Site 40 is located in the western portion of the station and is an active locomotive repair shop. Past disposal and waste-handling practices at IR Site 40 resulted in a volatile organic compound (VOC)-contaminated groundwater plume at IR Site 40 that is addressed in this ROD/RAP.

## 2.2 INVESTIGATION ACTIVITIES

There are no enforcement activities related to IR Site 40. Environmental investigation and remediation activities associated with the site are implemented under the stationwide IR Program. The purpose of this program is to identify, investigate, assess, characterize, and clean or control releases of hazardous substances as well as to cost-effectively reduce the risk to human health and the environment from past waste-disposal operations and hazardous material spills at Navy/Marine Corps stations. The program is administered in accordance with:

- CERCLA, as amended by SARA;
- Resource Conservation and Recovery Act (RCRA); and
- *California Health and Safety Code* for sites located in the state of California.

The following subsections describe investigations, studies, and removal actions at IR Site 40.

### 2.2.1 General Facility Investigations

In 1985, the DON conducted an initial assessment study (IAS) to investigate potentially contaminated sites at NAVWPNSTA Seal Beach (NEESA 1985). The IAS was conducted under the Navy Assessment and Control of Installation Pollutants Program, which was the DON version of the Department of Defense IR Program at that time. Twenty-five potentially impacted sites at NAVWPNSTA Seal Beach (IR Sites 1 through 25) were identified on the basis of record searches, aerial photographs, field inspections, and facility personnel interviews. The study concluded that 9 of the 25 sites warranted further investigation.

## Section 2 Site History and Investigation Activities

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In response to DTSC comments on the IAS Report, Naval Energy and Environmental Support Activity (NEESA) completed a preliminary assessment (PA) as an addendum to the 1985 IAS Report (NEESA 1990). This PA reevaluated the 16 sites recommended for no further action in the IAS Report, recommended all 16 sites for further study, and identified 17 new sites (IR Sites 35 through 51), including IR Site 40 at NAVWPNSTA Seal Beach.

### 2.2.2 Site Inspections

In 1995, Jacobs Engineering Group Inc. (JEG), conducted a site inspection (SI) of the 16 OU-4 sites, including IR Site 40 (JEG 1995a) (see Section 4 for an explanation of OU). The SI found that two chemicals of potential concern (COPCs), carbon tetrachloride and tetrachloroethene (PCE), had been released to the groundwater at this site. The SI Report recommended a focused site inspection (FSI) to evaluate the nature and extent of chlorinated hydrocarbons in the groundwater.

The FSI of IR Site 40 was conducted in conjunction with further investigations at seven additional sites in OUs-4 and -5 (JEG 1998). The FSI concluded that a plume of chlorinated hydrocarbons containing PCE, trichloroethene (TCE), and 1,2-dichloroethene (DCE) was present in groundwater beneath IR Site 40. The study delineated the lateral extent of the plume in the shallow water-bearing zone (WBZ) as approximately 270 by 200 feet. Because PCE, TCE, and 1,2-DCE were detected at levels exceeding state and federal maximum contaminant levels (MCLs), further action was recommended.

### 2.2.3 Extended Removal Site Evaluation

In 1998, an extended removal site evaluation (ERSE) was conducted to supplement data from the previous investigations at IR Sites 40 and 70 (BNI 1999). The ERSE included soil and groundwater sampling. ERSE findings enabled the DON to support a decision of no further action, removal action, or further evaluation by:

- defining the nature and extent of soil and groundwater contamination,
- refining existing geological and hydrogeological site models,
- evaluating the fate and transport of COPCs from soil to groundwater and within groundwater, and
- evaluating soil and groundwater to assess the potential threat to human health and the environment through screening risk assessments.

Although results of the screening risk assessment indicated that there was no immediate threat to human health or the environment from groundwater (because groundwater is not currently used for domestic purposes), the ERSE Report recommended further action to address groundwater at IR Site 40 because the cumulative potential human-health risk exceeded the generally acceptable range as defined by the NCP (BNI 1999). The recommendation for no further action at IR Site 40 was based on soil results of the screening risk assessment (BNI 1999).

## Section 2 Site History and Investigation Activities

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The DON determined that the ERSE (BNI 1999) for IR Site 40 substantially complied with the requirements of a remedial investigation (RI) under CERCLA and that it was appropriate to proceed directly to a feasibility study (FS) for groundwater. Although a baseline risk assessment would normally be performed under the NCP, the DON determined that the screening risk assessment conducted during the ERSE adequately characterized the risk and identified the need for further action to address VOCs in groundwater. DTSC and RWQCB Santa Ana Region concurred with these determinations.

### 2.2.4 Groundwater Monitoring Program

In 2000, the final Work Plan for Long-Term Groundwater Monitoring at IR Sites 40 and 70 was issued (BEI 2000a). IR Site 40 was recommended for inclusion in a 5-year groundwater monitoring program to monitor VOCs, primarily from chlorinated solvents. The final Groundwater Monitoring Work Plan was issued in April 2000, and field activities began that same month. Fifteen wells located in and around the groundwater plume at IR Site 40 were monitored quarterly for VOCs and semiannually for natural attenuation parameters during the first year of the groundwater monitoring program. On the basis of analytical results from that year, a reduction in sampling and water-level measurement frequency was recommended.

### 2.2.5 Feasibility Study

In June 2000, the final Groundwater Feasibility Study Report for IR Sites 40 and 70 was issued. The FS evaluated five remedial alternatives to address the VOC groundwater plume at IR Site 40 (BNI 2002). Monitored natural attenuation (MNA) and *in situ* treatment with enhanced biodegradation using sodium lactate as a carbon source were ranked highest overall using U.S. EPA's selection criteria. On the basis of these results, the DON decided to perform a pilot test to evaluate the effectiveness of lactate enhancement to promote reductive dechlorination of VOCs at IR Site 40.

### 2.2.6 Pilot-Test Program

An *in situ* lactate enhanced bioremediation pilot test began in June 2001 at IR Site 40 (BEI 2002a). Approximately 55,000 gallons of 3 percent sodium lactate was injected into contaminated groundwater through an injection well to enhance anaerobic biodegradation between 31 July 2001 and 20 March 2002. Groundwater conditions were monitored before, during, and after the pilot-test study.

Results of the pilot-scale test indicated that conditions for reductive dechlorination were achieved through the injection of sodium lactate. PCE and TCE were reduced to DCE; however, DCE was not reduced further to vinyl chloride or ethene. Because the dechlorination process was incomplete, the pilot-test report recommended that technology refinements such as bioaugmentation and cometabolic oxidation be evaluated during the remedial design phase if this alternative is selected for implementation (BEI 2002a).

### Section 3

## HIGHLIGHTS OF COMMUNITY PARTICIPATION

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A Community Relations Plan (CH2M Hill 2001) was developed to document concerns identified during community interviews and to provide a detailed description of community relations activities planned in response to information received from the community. The initial plan was prepared in 1993 and revised in 1998 to update community issues and concerns and to identify information needs related to the ongoing environmental investigation and cleanup efforts at NAVWPNSTA Seal Beach.

The community relations program includes specific activities for obtaining community input and keeping the community informed. These activities include conducting interviews, holding public meetings, issuing fact sheets to provide updates on current cleanup activities, maintaining an information repository where the public can access technical documents and program information, disseminating information to local and regional media, and making presentations to local groups.

### 3.1 RESTORATION ADVISORY BOARD

A Restoration Advisory Board (RAB) was formed in February 1995 to review and discuss current and projected environmental investigation activities at NAVWPNSTA Seal Beach. Meetings of the RAB include updates on field activities, funding issues, and other technical and administrative matters. RAB meetings are open to the public and are attended by NAVWPNSTA Seal Beach staff, DTSC and RWQCB personnel, city and county health and environmental officials, and interested members of the community. By sharing information during regularly scheduled meetings with the groups they represent, RAB members help increase awareness and progress of the IR Program process. In addition, members of the public can contact RAB members to obtain information or express concerns to be discussed at subsequent meetings.

The RAB meets as needed to discuss project progress, review reports, and comment on investigation and cleanup activities. The RAB also reviews and provides comments on documents involving IR sites, such as SI reports, FSI reports, removal site evaluation (RSE) reports, RI/FS reports, risk assessments, work plans, engineering evaluation/cost analyses, decision documents, and site closure reports.

Currently, the RAB meets on the second Wednesday of the odd months, between 7:00 and 9:00 p.m. at the City of Seal Beach Council Chambers. Copies of the RAB meeting minutes as well as technical reports and other information about the investigation and cleanup of NAVWPNSTA Seal Beach are available at the NAVWPNSTA Seal Beach Information Repository, located at the Seal Beach Public Library, Mary Wilson Branch, 707 Electric Avenue, Seal Beach, California 90740-6196 and at NAVWPNSTA Seal Beach, Environmental Office, Building 110, Seal Beach, California 90740-5000. RAB meeting minutes are also located on the NAVWPNSTA Seal Beach Home Page, which can be found at:

<http://www.sbeach.navy.mil/programs/environmental/ir/ir.htm>

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## Section 3 Highlights of Community Participation

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### 3.2 PUBLIC MAILINGS

Public mailings, including information updates, fact sheets, and proposed plans, have been used to broaden the dissemination of information within the local community. NAVWPNSTA Seal Beach has compiled a mailing list of approximately 300 recipients including local residents; local, state, and federal regulatory agencies; government offices; news media; homeowner's associations; neighborhood watches; newsletters of environmental organizations; city mayors and council members; and other interested parties. Those on the mailing list receive publications, which include information concerning the status of the site investigations, the upcoming remedy selection process, ways the public can participate in the investigation and cleanup, and the availability of the NAVWPNSTA Seal Beach administrative record. Methods used to create and maintain the mailing list include documentation of telephone inquiries, meeting sign-in sheets, and annual updating of the list of elected officials. The mailing list will continue to be updated to support NAVWPNSTA Seal Beach's effectiveness in reaching interested and concerned parties.

### 3.3 COMMUNITY PARTICIPATION FOR IR SITE 40

The findings, conclusions, and recommendations from the ERSE conducted at IR Site 40 were reviewed with the community during the January 1999 RAB meeting. The final ERSE Report for this site was issued in October 1999. Results of the IR Site 40 groundwater FS were presented to the public during the November 1999 RAB meeting. The final Groundwater FS Report for this site was issued in June 2000. The ERSE Report and the FS Report were made available to the public at the information repository maintained at the Seal Beach Public Library, Seal Beach, California. A Proposed Plan/draft RAP for IR Site 40 was issued to the public on 26 August 2003. A public notice announcing the availability of the ERSE Report, FS Report, and Proposed Plan/draft RAP was published in the *Orange County Register* and the *Seal Beach Sun* on 28 August 2003, the day before the start of the public comment period. The public notice also announced the availability of the administrative record file for review and the date and location for the public meeting. The purpose of the public notice was to invite the interested community members to review these documents, attend the public meeting, and provide comments or questions. The public meeting was held on 16 September 2003 to discuss the DON's proposed remedy for IR Site 40. Comments received during the public comment period and the public meeting are addressed in the Responsiveness Summary portion of this ROD/RAP.

Complete administrative record files for NAVWPNSTA Seal Beach are available at Southwest Division, Naval Facilities Engineering Command, 1220 Pacific Highway, San Diego, California 92132-5190. An information repository is available for review at the NAVWPNSTA Seal Beach Environmental Office, Building 110, Seal Beach, California 90740-5000, as well as the Seal Beach Public Library, Mary Wilson Branch, 707 Electric Avenue, Seal Beach, California 90740-6196.

## Section 4

# SCOPE AND ROLE OF OPERABLE UNIT

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There are currently eight OUs at NAVWPNSTA Seal Beach: OU-1 through OU-8. An OU is defined as a discrete action that comprises an incremental step toward comprehensively addressing site problems (i.e., an action that manages, eliminates, or mitigates a release, threat of a release, or pathway of exposure). OUs may be actions that completely address a geographical portion of a site or a specific site problem or the entire site. IR Site 40, one of 16 IR sites in OU-4, is addressed in this ROD/RAP.

OU-1 comprises IR Site 1, Wastewater Settling Pond. A non-time-critical soil removal action was completed in 1999, and the site was subsequently addressed in a No Action ROD that was finalized in April 2002 (SWDIV 2002).

OU-2 comprises IR Sites 7 (Station Landfill) and 19 (Building 241 Disposal Pit). A non-time-critical removal action is currently planned at IR Site 7 to reduce the potential for exposure to landfill wastes. A non-time-critical soil removal action was completed at IR Site 19 in 1998, and the site was subsequently addressed in a No Action ROD that was finalized in April 2002 (SWDIV 2002).

OU-3 comprises IR Site 22, Oil Island. This site is being evaluated under the IR Program because of potential contamination from disposal of drilling muds, oily wastes, and drill cuttings. A study is currently being conducted at the site by the Oil Island tenant (Breitburn Energy Corporation), and future actions will depend on the results of this study.

Of the 16 sites that compose OU-4, IR Sites 2, 3, 13, 21, 23, 25, 35 to 38, and 46 were investigated and found not to pose an unacceptable level of risk to human health or the environment. No further response actions are planned at these 11 sites. Non-time-critical soil removal actions have been completed at IR Sites 5 (Clean Fill Disposal Area), 9 (Sandblast Grit Disposal Area), and 20 (Building 68 Mercury Spill). Confirmatory groundwater monitoring is planned at IR Site 5 and IR Site 6 (Explosives Burning Ground). IR Site 40, Concrete Pit/Gravel Area, is addressed in this ROD/RAP.

OU-5 comprises seven IR sites (8, 12, 16, 39, 42, 43, and 45) and three solid waste management units (SWMUs 41, 42, and 43). IR Sites 12 and 16 and SWMUs 41, 42, and 43 were investigated and found not to pose an unacceptable level of risk to human health or the environment. No further response actions are planned at these sites/SWMUs. IR Site 39 (Waste Missile Fuel Tanks) was initially included in OU-5 but was removed from the IR Program and placed under the underground storage tank (UST) program. A non-time-critical soil removal action was completed in 1998 at IR Site 8, Battery Shop Drainage From Building 235. Non-time-critical removal actions are also planned for IR Site 42 (Auto Shop Sump/Waste Oil Tank) and IR Site 45 (Building 88 Floor Drain Outlet) to reduce the risks from exposure to contaminated sediments.

Of the ten IR sites that compose OU-6, IR Sites 10, 11, 15, 17, 18, and 24 have been investigated and found not to pose an unacceptable level of risk to human health or the environment. No further response actions are planned at these six sites. IR Site 41 (Waste Otto Fuel Tank) was initially included in OU-6 but was removed from the IR Program and placed in the UST program. A non-time-critical removal action is planned at IR Site 44 (Former Waste Otto Fuel

#### Section 4 Scope and Role of Operable Unit

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Drum Storage) to mitigate potential risks from exposure to contaminated ditch sediments. Groundwater monitoring of a petroleum hydrocarbon plume is being conducted at IR Site 14 (Abandoned USTs). A non-time-critical removal action for lead in soil at two isolated areas and confirmatory groundwater monitoring are planned at IR Site 4 (Perimeter Road).

OU-7 consists of 2 IR sites (Sites 47 and 48), 21 SWMUs, and 2 areas of concern (AOCs 6 and 7). All IR sites, SWMUs, and AOCs included in OU-7 have been investigated and, with the exception of SWMUs 24 and 57, have been found not to pose an unacceptable risk to human health or the environment. No further response action is planned for these IR sites, SWMUs, and AOCs. A non-time-critical soil removal action has been completed at SWMU 24, Stationary Demilitarization Furnace. A non-time-critical removal action is planned at SWMU 57, Paint Locker Area, to mitigate human-health risks from exposure to contaminants (primarily arsenic) in soil.

OU-8 contains one site, IR Site 70 (Research, Testing, and Evaluation Area). Remedial action is planned at this site to remediate chlorinated solvents present in the groundwater. A separate ROD/RAP is currently being prepared to address remedy selection for this site.

In addition to the sites included within the eight OUs, two more sites (Sites 73 and 74) have been identified in recent years and added to the IR Program in the OU-4 and OU-5 Phase II FSI (CH2M Hill 2002). A non-time-critical removal action has been completed at IR Site 73 (Water Tower Area). A non-time-critical removal action is planned for IR Site 74 (Old Skeet Range) to mitigate ecological risks in soil.

## Section 5

# SITE CHARACTERISTICS

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This section describes the regional characteristics of NAVWPNSTA Seal Beach, provides a brief history of the sources of contamination at IR Site 40, and summarizes results of monitoring performed at this site. This section also discusses potential and future migration of the COPCs identified at this site and presents estimates of the mass of PCE present in groundwater. A complete discussion of sampling locations and methodologies, compounds reported at the site, and the nature and extent of contamination can be found in the ERSE Report (BNI 1999).

The nature and extent of contamination at IR Site 40 is based on ERSE data. The ERSE was conducted to supplement data from previous investigations at IR Site 40 and included soil and groundwater sampling. With concurrence of the regulatory agencies, the ERSE Report was determined to have fulfilled the requirements of the RI report in the CERCLA process. Results of the ERSE were used to support the FS.

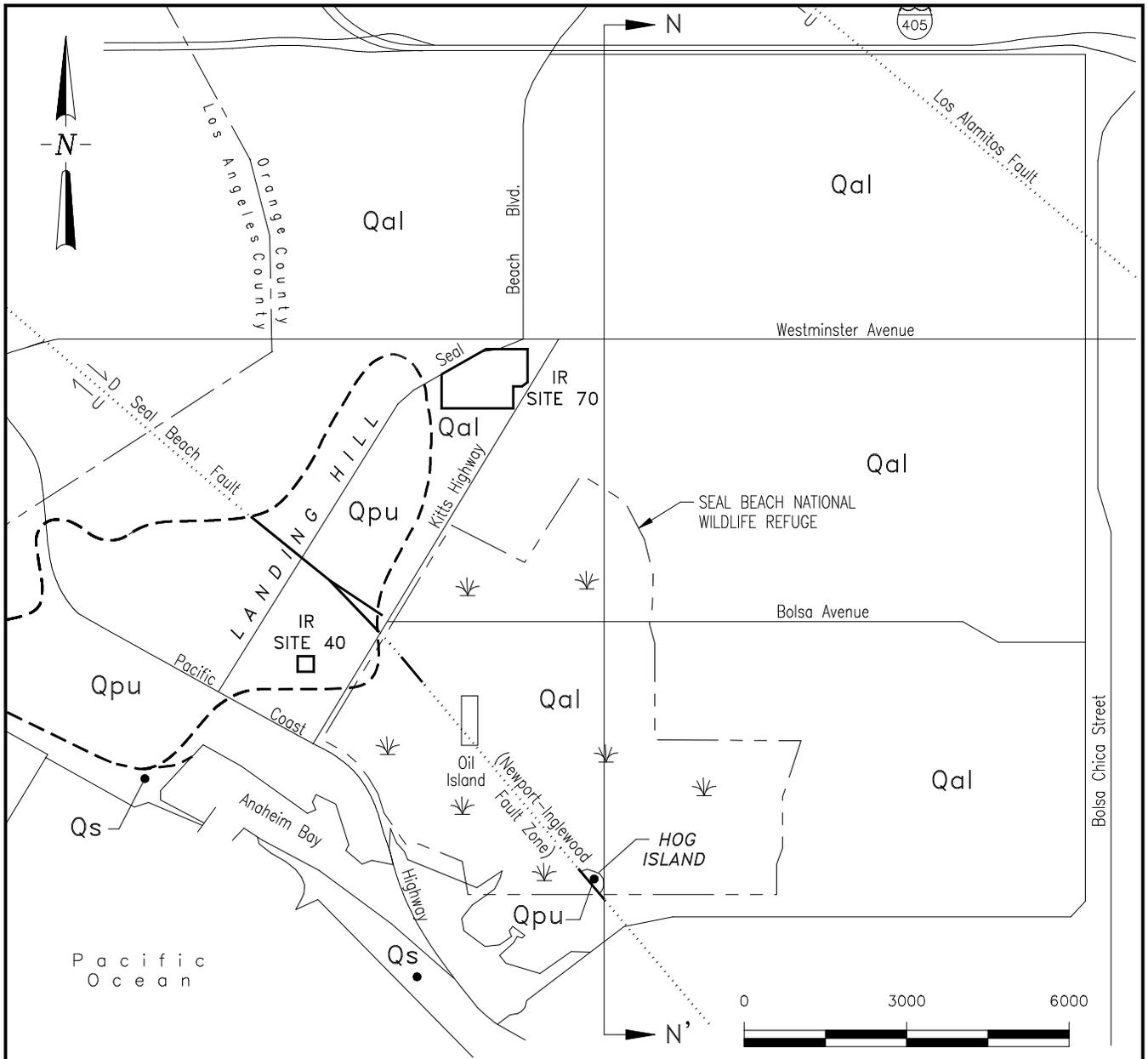
### 5.1 REGIONAL CHARACTERISTICS

NAVWPNSTA Seal Beach is situated at latitude 33°45'27" and longitude 118°04'22". The station is located within the Los Angeles-Orange County coastal plain. This northwest-trending structural basin is approximately 50 miles long and 20 miles wide with sediments as much as 20,000 feet thick. Basin morphology was developed through the mechanisms of folding, faulting, erosion, and fluctuating sea levels (JEG 1995b).

Most of the station lies on predominantly flat alluvial deposits in the southeastern portion of the Los Angeles Basin. The Los Angeles Basin is bounded on the north by the Santa Monica Mountains, on the northeast by the Repetto and Puente Hills, on the east and southeast by the Santa Ana Mountains and the San Joaquin Hills, and on the south, southwest, and west by the Palos Verdes Hills and the Pacific Ocean.

The land at NAVWPNSTA Seal Beach slopes evenly from approximately 20 feet above sea level in the northwestern part of the station to sea level in the tidal flats of the Seal Beach NWR in the southeast (Figure 5-1). The most pronounced topographic feature at the station is part of Landing Hill on the southwest. Landing Hill reaches a maximum elevation of about 50 feet above mean sea level (MSL) (JEG 1995b).

The area climate is classified as a marine-influenced southern California coastal region with mild winters that average 52 degrees Fahrenheit (°F) and summers that average 68 °F. Temperatures range from winter lows in the 30s °F to summer highs in the 90s °F. Annual precipitation averages 12.5 inches with approximately 90 percent occurring between the months of November and April. Although precipitation is low, a high humidity level is sustained due to the proximity of the Pacific Ocean (JEG 1995b). Prevailing winds average 3.8 miles per hour from the west. Occasional strong, dry winds from the northeast, known as the "Santa Anas," occur in the fall, winter, and early spring (JEG 1995b).



**LEGEND**

- Qs QUATERNARY BEACH AND DUNE DEPOSITS, SAND
- Qal QUATERNARY ALLUVIUM, UNDIFFERENTIATED, CONTINENTAL, AND LAGOONAL SAND, SILT, AND CLAY
- Qpu QUATERNARY LAKEWOOD FORMATION CONTINENTAL AND MARINE GRAVEL SAND, SILT, AND CLAY
- - - - - APPROXIMATE GEOLOGIC CONTACT
- N' ← → N' LOCATION OF CROSS-SECTION ON FIGURE 5-3
- U ..... ← D RIGHT LATERAL OBLIQUE FAULT (DOTTED WHERE CONCEALED) ARROWS INDICATE HORIZONTAL MOTION U/D INDICATE UP/DOWN (VERTICAL) MOTION
- ✎ SALT MARSH FROM NEESA (1985)

MODIFIED FROM: FINAL OPERABLE UNIT 4 SITE INSPECTION REPORT (JEG 1995).  
 LOCATION OF SEAL BEACH FAULT FROM SEAL BEACH AND LOS ALAMITOS QUADRANGLE SPECIAL STUDIES ZONES REVISED OFFICIAL MAPS, STATE OF CALIFORNIA (1986).  
 LOCATION OF LOS ALAMITOS FAULT FROM MONTGOMERY WATSON (1997).  
 LOCATION OF Qpu-Qal CONTACT FROM POLAND (1956).

<p><b>ROD/RAP for IR Site 40</b></p> <p><b>Figure 5-1</b></p> <p><b>Geologic Map</b></p>	
<p>Naval Weapons Station Seal Beach, California</p>	
<p><b>Bechtel Environmental, Inc.</b></p> <p>CLEAN 3 Program</p>	<p>Date: 11/4/03</p> <p>File No: 002R9923</p> <p>Job No: 23818-002</p> <p>Rev No: B</p>

## Section 5 Site Characteristics

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Periodically, the region is subjected to a phenomenon called “El Niño,” which brings unusually high precipitation, flooding, high winds, and temperatures outside the expected range. The station was subjected to this El Niño weather pattern in 1997–1998. This pattern resulted in extremely high winds, higher than normal tidal cycles, a rise in groundwater level, flooding, and ponding in otherwise dry areas.

### 5.1.1 Geology and Hydrogeology

Two faults, the Seal Beach Fault and the Los Alamitos Fault, traverse portions of the facility (Figure 5-1). They are part of the Newport-Inglewood Fault zone.

The Seal Beach Fault is located in the southern portion of the Newport-Inglewood Fault zone. It is a right lateral oblique fault with the south side displaced upward relative to the north side. Vertical displacement is approximately 5 feet in the upper Pleistocene units (Ebersold et al. 1997). Movement along the fault has not displaced Recent alluvial sediments. On the station, the Seal Beach Fault has uplifted Upper Pleistocene deposits at Landing Hill and Hog Island and cuts diagonally across the station, parallel to the coast (JEG 1995b). Apparent movement is nearly vertical with the south side displaced upward relative to the north side. There is also evidence of apparent right lateral motion (Ebersold et al. 1997).

The Los Alamitos Fault lies parallel to the Seal Beach Fault and is about 2.25 miles northeast of the Alamitos Gap. It has little effect on the movement and quality of groundwater in the Lower Pleistocene San Pedro Formation and is older than the active Seal Beach Fault (JEG 1995b).

Soils at the station contain abundant clay and silt and are in general poorly drained. Six soil types have been identified. The Bolsa series (JEG 1995a, SCS 1978) covers approximately two-thirds of NAVWPNSTA Seal Beach including IR Site 40 (Figure 5-2). These soils are moderately alkaline, and calcareous and have developed from largely flat alluvial and coastal deposits. The soils extend to approximately 49 inches below ground surface (bgs) and have moderate to slow permeability.

The stratigraphic sequence underlying NAVWPNSTA Seal Beach, from youngest to oldest, is:

- Recent alluvium,
- Upper Pleistocene Lakewood Formation,
- Lower Pleistocene San Pedro Formation, and
- Pliocene Pico Formation.

The maximum thickness of Recent alluvial deposits in the region is approximately 80 to 100 feet. The upper 50 feet consists of fine sands, silty clays, and clays, while the lower unit consists of sands and gravels, silty sands, silty clays, and clays.

Transitional, shallow marine, and fluvial deposits of great variability are part of the Upper Pleistocene sand and clay deposits, starting at approximately 80 to 100 feet and

## Figure 5-2

This detailed station map has been deleted from the Internet-accessible version of this document as per Department of the Navy Internet security regulations.

## Section 5 Site Characteristics

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continuing to depths beyond the scope of investigations at IR Site 40. Units are discontinuous and contain zones of high and low permeability. The maximum thickness of the Lakewood Formation is approximately 350 feet in the city of Lakewood (DWR 1961).

NAVWPNSTA Seal Beach is located at the southwestern corner of the Orange County Basin. The Orange County Basin contains the Artesia, Gage, Hollydale, Jefferson, Lynwood, and Silverado Aquifers. The Lynwood and Silverado Aquifers are merged across most of the station (JEG 1995b) (Figure 5-3).

There are four general aquifer zones at the station (JEG 1995b):

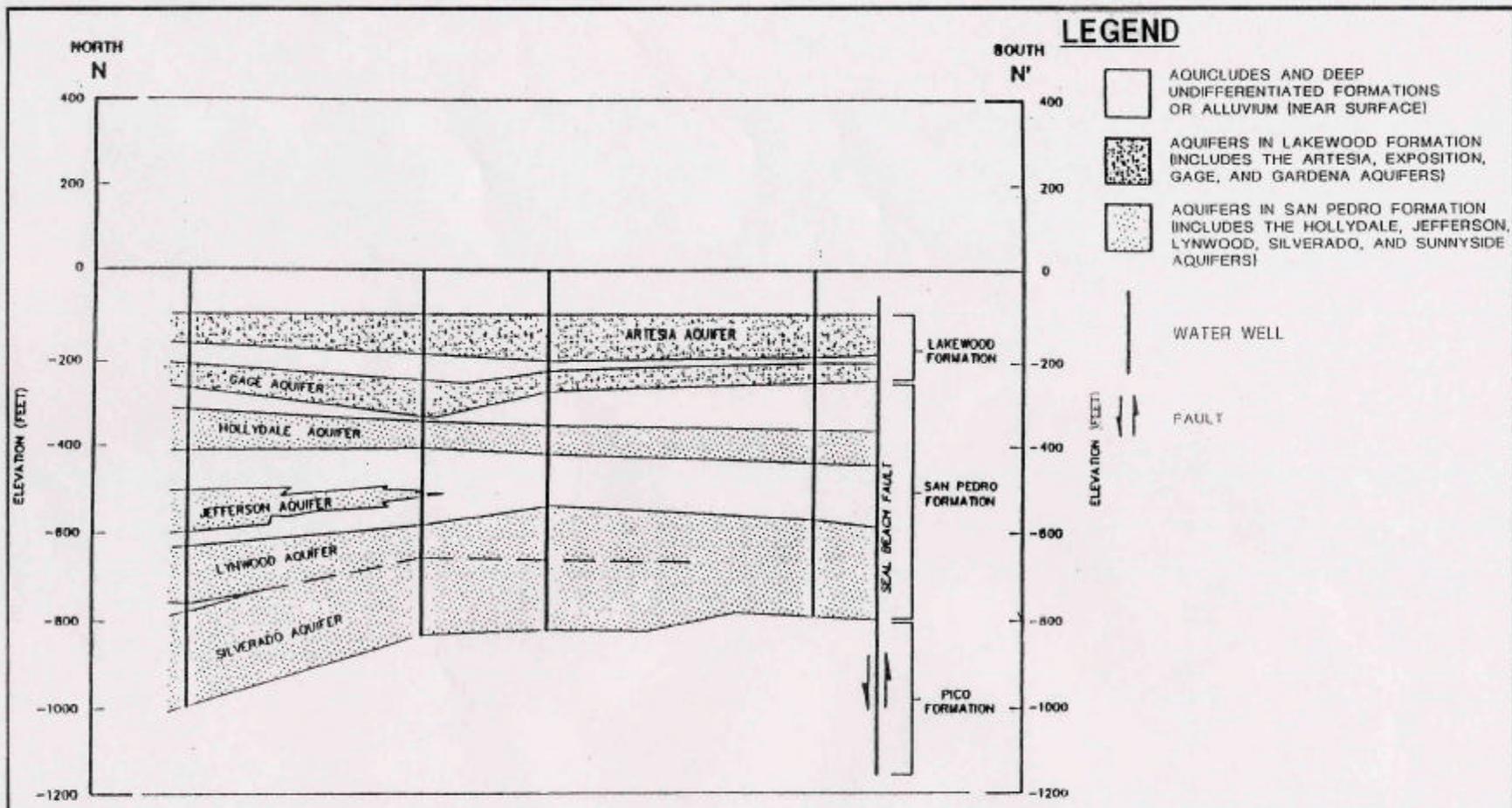
- a semiperched, unconfined zone within the upper Recent alluvial deposits;
- a confined fresh groundwater zone contained in lower Recent alluvial deposits;
- Late and Early Pleistocene deposits of the Lakewood and San Pedro Formations, respectively, and in some parts, deposits of the Late Pliocene Pico Formation; and
- a confined zone of saline water underlying the freshwater.

Shallow groundwater underlying the station (upper Recent alluvial deposits) is within the Lower Santa Ana River Groundwater Basin (Santa Ana Pressure Subbasin) (RWQCB 1995). Beneficial uses of groundwater within the Santa Ana Pressure Subbasin include municipal and domestic supply, agricultural, industrial service supply, and industrial process supply. Shallow groundwater underlying IR Site 40 currently does not serve as a water source for any of the beneficial uses designated in the Basin Plan (RWQCB 1995).

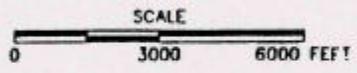
The principal freshwater body (lower Recent alluvial deposits and Upper Pleistocene Lakewood Formation) is a large, confined aquifer occupying two zones. The first zone is at about 75 to 200 feet bgs and saline. The second zone is approximately at 250 to 1,000 feet bgs. This aquifer is the primary water supply source for neighboring cities. Groundwater levels in the principal freshwater zone fluctuate from year to year due to variations in pumping, infiltration, and recharge. Recharge to this aquifer is primarily from unconfined areas upgradient and from rivers that are hydraulically connected to the aquifer. Seasonal variations occur with highs in the wet winter months and with lows in the dry summer months when large quantities of water are used for irrigation (JEG 1995b).

### 5.1.2 Surface Water Hydrology

Surface water at the station drains through ditches and tidal sloughs in flat-lying clay deposits. Ditch stream flow is intermittent and depends on rainfall and excess irrigation runoff. Ditches at the tidal flat margins also receive saltwater during high tides. Drainage from the station flows predominantly to Anaheim Bay, with minor amounts of discharge into the Bolsa Chica Flood Control Channel (JEG 1995b).



NOTE: FORMATION AND AQUIFERS NOT DIFFERENTIATED



ROD/RAP for IR Site 40

**Figure 5-3**

Geologic Cross Section Showing Aquifer  
Beneath Naval Weapons Station Seal Beach

Naval Weapons Station, Seal Beach, California

<b>Bechtel Environmental, Inc.</b> CLEAN 3 Program	Date: 10/28/03
	File No: - Job No: 23818-002 Rev No: A

SOURCE:  
DRAFT PRELIMINARY ASSESSMENT REPORT (JEG 1994)

## Section 5 Site Characteristics

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Seawater from Anaheim Bay flushes the salt marsh twice a day by flowing beneath the Pacific Coast Highway and into the tidal flats. Raised roadbeds serve as barriers to control tidal flooding.

Flooding brought about by a tsunami of the 100-year recurrence interval would affect only a small area along the beach because of the presence of seawalls and high street profiles. Only low-lying areas of NAVWPNSTA Seal Beach would be inundated in the event of a 500-year flood resulting from the Santa Ana River overflowing. The river lies approximately 12 miles east of the station (JEG 1995b).

### 5.2 SITE 40 CHARACTERISTICS

IR Site 40 is located in the southwestern portion of NAVWPNSTA Seal Beach (Figure 1-2). The site includes a locomotive shop (Building 240) and a gravel area located north of and adjacent to the building.

#### 5.2.1 Geology and Hydrogeology

The geologic units observed at IR Site 40 are as follows (BNI 2002):

- Surficial Soils – silty sands and clayey sands, as well as sandy clay and clays, with considerable lateral lithologic variation
- First Sand Unit – sands to silty sands within a few feet of the water table extending to 7.5 to 10 feet bgs
- Second Sand Unit – saturated, sands to silty sands at 9 to 21 feet bgs, extending to 28 to 41 feet bgs
- Third Sand Unit – saturated, sands to silty sands at 38 to 52 feet bgs, depending on the location

Lower permeability intervals containing clay, silty clay, and silt separate the coarser grained units noted above.

Groundwater is present in three WBZs within the shallow groundwater aquifer: shallow (9.5 to 20.5 feet bgs), intermediate (20.0 to 30.3 feet bgs), and deep (45 to 55 feet bgs) (BNI 2002). Calculated groundwater elevations ranged from 0.972 foot above MSL to 1.315 feet above MSL during April 2002 (Figure 5-4) (BEI 2003). Ranges of water levels, tidal fluctuation response, mean water levels, head differences at well pairs, and vertical gradients were evaluated to determine the presence of a slight overall downward hydraulic gradient to the southeast (BEI 2003).

#### 5.2.2 Site History

Building 240, located on IR Site 40, is an active locomotive repair shop. Four railroad spurs terminate in the building and provide access for locomotive repair (Figure 5-5). A concrete pit within the building floor provides access for repair and maintenance on the underside of the locomotives. This pit serves as a collection point for oils and solvents spilled during maintenance activities. Oil that collected in the pit was discharged through

## Section 5 Site Characteristics

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a drainpipe onto a gravel area to the north of the building until the pipe was plugged in 1978. Currently, the gravel area is partially paved (Figure 5-5).

### 5.2.3 Site Investigations

Inspections, bioremediation tests, and groundwater monitoring have been conducted at IR Site 40.

#### 5.2.3.1 GENERAL FACILITY INSPECTIONS

IR Site 40 was identified in a PA (NEESA 1990) that was conducted as an addendum to the 1985 IAS.

#### 5.2.3.2 SITE INSPECTION

In 1995, JEG conducted an SI of 16 OU-4 sites, including IR Site 40 (JEG 1995a). The SI found that two COPCs, carbon tetrachloride and PCE, had been released to groundwater at this site. The SI Report recommended an FSI to evaluate the nature and extent of chlorinated hydrocarbons in groundwater.

#### 5.2.3.3 FOCUSED SITE INSPECTION

The FSI was conducted at IR Site 40 in 1996 in conjunction with further investigation at seven additional sites. The study concluded that a plume of chlorinated hydrocarbons containing PCE, TCE, and 1,2-DCE was present in the groundwater beneath IR Site 40 and delineated the lateral extent of the plume in the shallow WBZ as approximately 270 by 200 feet. Further action was recommended because PCE, TCE, and 1,2-DCE were detected at levels exceeding state and federal MCLs (JEG 1998).

#### 5.2.3.4 EXTENDED REMOVAL SITE EVALUATION

In 1998, an ERSE was conducted to supplement data from the PA, SI, and FSI (BNI 1999). Soil samples were collected from 28 borings at three depth intervals of 1 to 2 feet bgs, 5 to 6 feet bgs, and 8 to 10 feet bgs. PCE was reported in 17 vadose zone soil samples with a maximum concentration of 1,450 micrograms per kilogram ( $\mu\text{g}/\text{kg}$ ). TCE was reported in four vadose zone soil samples with a maximum concentration of 11.7  $\mu\text{g}/\text{kg}$ . cis-1,2-DCE was reported in three vadose zone soil samples with a maximum concentration of 19.3  $\mu\text{g}/\text{kg}$ . No other degradation products of PCE were reported in the vadose zone soils at IR Site 40.

Groundwater samples were collected from 19 temporary wellpoints and 16 monitoring wells to delineate the vertical and lateral extent of chlorinated VOCs present in the groundwater. PCE, TCE, cis-1,2-DCE, and chloroform were the primary VOCs reported in groundwater at the site. PCE was reported in 31 of 56 samples collected and at a maximum concentration of 3,940 micrograms per liter ( $\mu\text{g}/\text{L}$ ); TCE was reported in 20 of 56 samples collected and at a maximum concentration of 273  $\mu\text{g}/\text{L}$  (Table 5-1). The plume appears to consist of two commingled plumes (PCE and TCE) of different origins

## Figures 5-4 - 5-5

These detailed station maps have been deleted from the Internet-accessible version of this document as per Department of the Navy Internet security regulations.

## Section 5 Site Characteristics

**Table 5-1**  
**Chemicals of Concern Reported in IR Site 40 Groundwater**  
**(reported in micrograms per liter)**

Analyte	Detection Frequency <sup>a</sup>	Concentration Range <sup>b</sup>
Tetrachloroethene	31/56	0.2 J-3,940
Trichloroethene	20/56	0.2 J-273

## Notes:

<sup>a</sup> number of samples in which the contaminant was detected/total number of groundwater samples collected during the extended removal site evaluation (BNI 1999)

<sup>b</sup> range of concentrations for samples reported above laboratory detection limits in micrograms per liter

## Acronym/Abbreviation:

IR – Installation Restoration (Program)

## Review Qualifier:

J – estimated value

with the source of one plume (the older of the two) located north of Building 240, in the vicinity of the concrete pit sump pump discharge, and the source of the other located west of the building.

A slight downward gradient exists at IR Site 40 groundwater and is indicated by the typical head difference of 0.1 to 0.2 foot at well pairs. Therefore, a potential for downward migration exists. The ERSE results indicated that the predominant mass of VOCs is located in the Second Sand Unit. Groundwater samples collected from depths greater than 45 feet bgs, within the Third Sand Unit, showed negligible concentrations of VOCs. For these samples, PCE and TCE concentrations were less than 2 µg/L at 16 temporary wellpoint locations and 5 monitoring wells (Table 5-1). At depths greater than 45 feet bgs, within the Third Sand Unit, VOCs generally were not present or existed at low concentrations (1 or 2 µg/L). Because there were not significant concentrations of chlorinated VOCs below the Second Interbedded Unit, the DON and cognizant state regulatory agencies (DTSC and RWQCB) jointly concluded during the field status review meetings that the vertical extent of contamination had been sufficiently defined.

### 5.2.3.5 TREATABILITY-TEST PROGRAM

A bench-scale test for lactate-enhanced bioremediation at IR Site 40 was performed (BEI 2000a,b); in June 2001, an *in situ* lactate-enhanced bioremediation pilot test was initiated to support the IR Site 40 FS. The purpose of these tests was to demonstrate the effectiveness of biodegradation of PCE and TCE through injection of sodium lactate into the contaminant plume. Approximately 55,000 gallons of 3 percent sodium lactate was injected into contaminated groundwater through one injection well, located within the area of the plume with highest reported PCE concentration, to enhance anaerobic biodegradation over an 8-month test period. Effects were monitored in seven wells located in the vicinity of the injection well. Groundwater conditions were monitored

## Section 5 Site Characteristics

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before, during, and after the pilot-test study. The conclusions of the pilot-test program were presented in a Technical Memorandum (BEI 2002a).

Results indicated that biological activity was stimulated in the pilot-test area. Reductive dechlorination was observed during the pilot-scale test, but the process was incomplete. PCE and TCE were reduced to DCE, but DCE was not reduced further to vinyl chloride or ethene. Although complete dechlorination from PCE to ethene was not accomplished, the partial dechlorination of PCE to DCE and associated *in situ* reactions were nevertheless considered beneficial to the overall cleanup strategy as follows.

- At many contaminated sites, VOC contaminants are sorbed to the saturated soil in the aquifer, providing a continuing source of contamination over time. The pilot-test results indicated the sodium lactate addition enhanced mass transfer of PCE from the sorbed phase to the dissolved phase. The effect has the benefit of increasing bioavailability of the contaminant.
- Conversion from PCE to DCE should result in a net reduction in toxicity of the contamination because DCE is generally considered less toxic than the parent compound PCE.
- Conversion from PCE to DCE accelerated the sequential dechlorination process that, under natural attenuation, could take considerably longer.
- DCE is more amenable to natural attenuation processes than PCE. DCE can be degraded in both anaerobic and aerobic conditions, whereas PCE is more recalcitrant and not amenable to aerobic degradation.

It may also be possible that technology refinements such as bioaugmentation and cometabolic oxidation and/or posttreatment could further accelerate remediation of the site. These technology refinements are being planned as part of the remedial design process.

### 5.2.3.6 GROUNDWATER MONITORING

A 5-year groundwater-monitoring program to monitor VOCs was implemented at IR Site 40 in spring 2000 (BEI 2000b). Results of the first year of groundwater monitoring (June 2000 to March 2001) indicate that the area of VOC contamination at IR Site 40 is not changing significantly over time. Although the lateral extent of the plume is slightly larger to the east and to the south than estimated during previous investigations, concentration trends at the plume boundaries appear to be stable and the plume does not pose an immediate threat to potential receptors. Geochemical indicator parameters for natural attenuation and the degradation process of chlorinated ethane show that reductive dechlorination from PCE to TCE and cis-1,2-DCE is occurring in the center of the plume. Concentrations of cis-1,2-DCE, which previously had not been identified as a chemical of concern (COC), were reported above MCLs. No observable seasonal variations in groundwater flow direction were noted (BEI 2002b).

Fifteen wells were sampled during the second year of groundwater monitoring at IR Site 40 (April 2002). Samples from eight wells contained VOCs at concentrations above detection limits. Concentrations that exceeded the screening criteria in four wells (MW-40-05, MW-40-08, MW-40-14, and MW-40-19) included cis-1,2-DCE, 1,1-DCE,

## Section 5 Site Characteristics

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PCE, TCE, and vinyl chloride. Chloroform exceeded its screening level only once in one well (40-MW-05). cis-1,2-DCE exceeded its screening criteria in only one well (40-MW-05) in both the June 2001 and April 2002 sampling events. 1,1-DCE and 1,2-dichloroethane (DCA) each exceeded their screening criteria once, 1,1-DCE at 40-MW-05 in April 2002 and 1,2-DCA at MW-40-16 in June 2001.

PCE exceeded criteria in both sampling rounds during the second year of monitoring at each of the following wells: 40-MW-05, MW-40-08, MW-40-14, and MW-40-19. TCE exceeded screening criteria in both sampling rounds during the second year of monitoring at wells 40-MW-05 and MW-40-14. Figure 5-6 shows PCE and TCE concentrations based on groundwater samples collected in April 2002 (BEI 2003). Figures 5-7 through 5-9 show isoconcentration contours based on groundwater samples collected in March 2001 (BEI 2002b).

### 5.3 FATE AND TRANSPORT

The DON investigated soil contamination at IR Site 40 during the ERSE and concluded that the potential for continued leaching of soil COPCs to groundwater was low to negligible (BNI 1999). As discussed in the ERSE Report, releases of chlorinated solvents migrated through the soil, resulting in a groundwater plume containing primarily PCE, along with lesser concentrations of TCE, cis-1,2-DCE, trans-1,2-DCE, and chloroform.

However, concentrations of these VOCs in the vadose zone soil indicate most of the original releases have already leached to groundwater or volatilized to the atmosphere (BNI 1999). The potential for transport of soil COPCs through runoff is low to negligible.

### 5.4 EXPOSURE PATHWAYS

Pathways for exposure of humans to COPCs in soil include ingestion, inhalation of soil particles, inhalation of chemical vapors released to the atmosphere from soil, and contact of soil with the skin. Pathways for exposure of ecological receptors include direct ingestion, indirect ingestion of plant and animal tissues associated with COPC uptake from soil with subsequent transfer through the food chain, and direct contact with COPCs in soil by plant roots and soil macroinvertebrates. Inhalation exposures to COPCs in dust by mammalian and avian receptors were considered low when compared to direct ingestion of soil and plant and animal food items.

The shallow VOC-impacted groundwater at IR Site 40 is not currently used for domestic purposes. Should groundwater be used for such purposes in the future, pathways for human exposure to COPCs in groundwater may include ingestion, inhalation of vapor, and direct contact. Ecological exposure to groundwater contamination was not considered feasible because the majority of the contamination is contained within the second WBZ located 20 to 30 feet bgs. In addition, the potential for the COPC plume to reach the Seal Beach NWR boundary at concentrations exceeding acceptable levels is low due to lithologic controls on groundwater flow and the apparent degradation taking place.

## **5.5 MASS OF PCE**

The total mass of PCE in groundwater was estimated during the ERSE (BNI 1999) to be approximately 6.12 pounds at IR Site 40 (Table 5-2). Much of this is believed to be contained within the second WBZ, although dissolved VOCs have also migrated vertically into the sand layers of the first as well as the third WBZ.

## Figures 5-6 - 5-9

These detailed station maps have been deleted from the Internet-accessible version of this document as per Department of the Navy Internet security regulations.

## Section 5 Site Characteristics

**Table 5-2  
Groundwater Model Layer, Depth Interval, Stratigraphic Unit,  
and Estimated PCE Mass in Groundwater**

<b>Groundwater Model Layer</b>	<b>Depth Interval (feet bgs)</b>	<b>Stratigraphic Unit</b>	<b>PCE Mass (pounds)</b>
1	0–15	Surficial Soils, First Sand Unit, and First Interbedded Unit	1.17
2	15–35	Second Sand Unit	4.17
3	35–50	Lower portion of thicker Second Sand Unit and Second Interbedded Unit	0.78
		<b>Total</b>	<b>6.12</b>

## Acronyms/Abbreviations:

bgs – below ground surface

PCE – tetrachloroethene

## Section 6

# CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

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This section discusses the current and reasonably anticipated future land, groundwater, and surface water uses at NAVWPNSTA Seal Beach. This information can aid in identifying, enumerating, and characterizing human populations potentially exposed to site COPCs and in planning the most appropriate remedy for the site.

## 6.1 LAND USES

NAVWPNSTA Seal Beach encompasses about 5,000 acres. Explosives safety quantity distance (ESQD) arcs that restrict development to specific permitted uses cover approximately 75 percent of the 5,000 acres. Two agricultural outleasings totaling approximately 2,000 acres are used for farming (irrigated and dry land farming) and maintenance. Approximately 100 acres of land is currently being leased for oil production (including Oil Island). In addition to the outleased land, the Seal Beach NWR, a major biological resource, encompasses approximately 911 acres. The areas covered by the ESQD arcs overlap the agricultural outlease areas and portions of the Seal Beach NWR.

Other land uses on NAVWPNSTA Seal Beach include residential, ordnance transfer operations, weapons production/evaluation, quality assurance, storage (inert and explosive), and administration/community support.

Land to the south, southwest, northwest, north, and northeast of NAVWPNSTA Seal Beach is used for residential purposes. Boeing Space and Communications Group is the only major commercial/industrial use bordering the station on the west. The city of Seal Beach Police Department also borders the station on the west. The Bolsa Chica Channel borders NAVWPNSTA Seal Beach to the south and east. This channel is fenced in and discharges directly to Anaheim Bay. The Sunset Aquatic Park borders the station to the south and is situated on a 63-acre parcel within the corporate boundaries of the city of Seal Beach. The park is a commercial development consisting of 260 boat slips, park facilities, a marine repair yard, a boat launch, the harbor patrol office, and public picnic areas. Future land uses for the adjacent cities include commercial/industrial, limited residential, and open land uses.

NAVWPNSTA is an active base. Land use is expected to remain the same in the foreseeable future. NAVWPNSTA Seal Beach is fenced, and access is restricted/controlled; therefore, off-station populations would not likely be directly exposed to on-station COPCs.

## 6.2 GROUNDWATER USES

Groundwater in the area of NAVWPNSTA Seal Beach is used for drinking water and agriculture. Numerous wells are present in and around the station boundaries. To the west of NAVWPNSTA Seal Beach, production water is used to maintain a seawater intrusion barrier as part of the Los Alamitos Barrier Project. Thirty-two municipal wells

## Section 6 Current and Potential Future Site and Resource Uses

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are located within a 4-mile radius of the station, and 23 domestic, commercial, and community wells have been identified within this region (BNI 2002).

The groundwater underlying the station is within the Lower Santa Ana River Groundwater Basin (Santa Ana Pressure Subbasin) (BNI 2002). Beneficial groundwater uses within the Santa Ana Pressure Subbasin include municipal and domestic, agricultural, industrial service, and industrial process supply.

The city of Seal Beach supplies water to the station (JEG 1995a). One of the city wells, State Well No. 5S/11W-7C02 (Well SB-7), is located on the station and is screened in the Lynwood/Silverado Aquifer from approximately 625 to 1,000 feet bgs. This well is currently inactive.

The principal freshwater body tapped by the city to supply NAVWPNSTA Seal Beach is a large confined aquifer approximately 250 to 1,000 feet deep. This deeper zone is the primary water supply source both to the station and neighboring cities (BNI 2002). Nonpotable water used for agricultural purposes is supplied by on-station agricultural wells with screened intervals between 140 and 600 feet bgs.

Three DON-owned wells (former DON Wells 2, 3, and 6) were also screened in the Lynwood/Silverado Aquifer. Wells 2 and 3 were rendered inactive in 1991 because of poor water quality and findings of Facilities Engineering and others (BNI 2002) that these wells were in hydraulic continuity with an aquifer potentially degraded by saltwater intrusion. Well 2 was subsequently destroyed in May 2000 in accordance with applicable state of California water well standards (DWR 1981, 1990). Well 6, located at the northern boundary of IR Site 70 at Westminster Avenue, is also inactive.

Shallow groundwater underlying IR Site 40 currently does not serve as a water source for any of the beneficial uses designated in the Water Quality Control Plan (WQCP), Santa Ana River Basin (Basin Plan) (RWQCB 1995) nor is it anticipated to be used for those purposes in the future due to its high brackish to saline quality and hardness (BNI 1999).

### 6.3 SURFACE WATER USES

Surface water at the station drains through ditches and tidal sloughs in flat-lying clay deposits. Ditch stream flow is intermittent and depends on rainfall and excess irrigation runoff. Ditches at the tidal flat margins also receive saltwater during high tides. Drainage from the station flows predominantly to Anaheim Bay with minor amounts discharging into the Bolsa Chica Flood Control Channel (JEG 1995b). Surface waters from IR Site 40 are not expected to impact local on-station populations. The bulk of the surface runoff from IR Site 40 is directed by topography to a drainage ditch east of the site, with some localized areas directed to a French drain south of the site.

Seawater from Anaheim Bay flushes the salt marsh twice a day by flowing beneath the Pacific Coast Highway and into the tidal flats. Raised roadbeds serve as barriers to control tidal flooding.

## Section 6 Current and Potential Future Site and Resource Uses

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Flooding brought about by a tsunami of the 100-year recurrence interval would affect only a small area along the beach because of the presence of seawalls and high street profiles. Only low-lying areas of NAVWPNSTA Seal Beach would be inundated in the event of a 500-year flood resulting from the Santa Ana River overflowing. The river lies approximately 12 miles east of the station (JEG 1995b).

## Section 7

# SUMMARY OF SITE RISKS

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Risk assessments provide an evaluation of the potential threat to human health and the environment in the absence of remedial action. They also provide the basis for determining whether remedial action is necessary and the justification for performing remedial actions, and they identify the contaminant and exposure pathways that need to be addressed by the remedial actions (U.S. EPA 1988a, 1991).

Screening human-health risk assessments (HHRAs) for groundwater and soil and an ecological risk assessment for soil were conducted at IR Site 40 during the ERSE (BNI 1999). The screening HHRA and ecological risk assessment methodologies are described in Appendix P, Volume VII, of the final ERSE Report (BNI 1999). The screening HHRA results presented in this section support the need for remedial action of VOC-contaminated groundwater at IR Site 40.

### 7.1 SCREENING HUMAN-HEALTH RISK ASSESSMENT

The screening HHRA for IR Site 40 addressed all constituents in groundwater and soil within the investigation area and assessed potential human-health risks from exposure to groundwater and soil if no actions are taken to reduce the risk. The following assumptions were made.

- No remedial actions are undertaken.
- Untreated groundwater is used for domestic purposes.
- Chemical concentrations remain constant over the assumed exposure period.

At IR Site 40, potential human-health risks from exposure to groundwater and soil were calculated by comparing the maximum reported concentration for each COPC with the screening criteria. Groundwater COPCs were compared to tap water preliminary remediation goals (PRGs), and soil was compared to the U.S. EPA Region 9 residential and industrial PRGs (U.S. EPA 1996). The specific screening procedure used was recommended by U.S. EPA Region 9 (U.S. EPA 1995) and is described below.

1. The COPCs were matched to the respective PRG values (tap water for groundwater, and residential and industrial for soil) and were evaluated in groups based on the properties of the chemical. The first group was composed of those COPCs with cancer-based PRG values; the second was composed of the COPCs with noncancer hazard-based PRG values; the third (applicable to soil only) was composed of COPCs with PRGs based on saturation or ceiling limits in soil (U.S. EPA 1996).
2. The ratio of the maximum reported chemical concentrations and either the cancer, noncancer, or saturation-based PRG (for soil only) were calculated for each COPC.
3. The ratio of each carcinogen was multiplied by  $1 \times 10^{-6}$  to obtain a cancer risk estimate.
4. The cancer risk estimates were summed to obtain an estimate of total cancer risk.

## Section 7 Summary of Site Risks

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5. The ratios for the noncarcinogens were summed to obtain an estimate of total chronic toxicity. These ratios are called hazard indices (HIs).

Because the maximum reported lead concentration was above the Cal/EPA residential PRG of 130 milligrams per kilogram (mg/kg), a lead screening assessment was also conducted as part of the ERSE. The assessment involved a two-step process. First, the maximum concentration of lead in soil at each site was compared to the Cal/EPA residential PRG of 130 mg/kg and the U.S. EPA industrial PRG of 1,000 mg/kg. In the second step, the Cal/EPA pharmacokinetic model was used at IR Site 40 to estimate the blood lead concentration for a resident child and adult where lead exceeded either of the PRGs.

Data used for the risk screening were obtained from several previous reports, including the SI, FSI, and ERSE Reports. Samples collected from 16 monitoring wells and 10 temporary wellpoint locations were used in the groundwater screening risk assessment; data from 28 soil borings, 2 monitoring well soil samples, and 6 surface samples were used in the soil screening.

Potential carcinogenic health risks were analyzed by estimating the excess lifetime cancer risk. Excess lifetime cancer risk is the incremental increase in the probability of developing cancer during one's lifetime over the background probability of developing cancer if no exposure occurs. For example, an excess lifetime cancer risk of  $2 \times 10^{-6}$  means that for every 1 million people exposed to the carcinogen throughout their lifetimes, the average incidence of cancer may be increased by two additional cases.

Guidelines for managing cancer risks are promulgated in the NCP (40 *Code of Federal Regulations* [C.F.R.] § 300.430[e][2][i][A][2]). According to these regulations, an excess cancer risk of  $1 \times 10^{-6}$  is allowable, and excess cancer risks ranging from  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$  are considered generally allowable. Cancer risks greater than  $1 \times 10^{-4}$  require further evaluation and may indicate a need for remedial action. Excess cancer risks are only a prediction of a potential increase in cancer incidence and do not represent exact numbers. Because of the health protection methods followed in estimating cancer potency factors, the excess lifetime cancer risks estimated in the screening HHRA should be regarded as upper bounds on the potential cancer risks.

### 7.1.1 Groundwater

The following subsections describe the screening HHRA conducted for groundwater at IR Site 40.

#### 7.1.1.1 CHEMICALS OF POTENTIAL CONCERN

The identification of COPCs in groundwater was based on data from monitoring well and *in situ* samples. For IR Site 40, COPCs included 23 organics and 11 inorganics as shown in Table 7-1. Essential nutrients (e.g., calcium, iron, magnesium, potassium, and sodium) were eliminated from the assessment.

## Section 7 Summary of Site Risks

**Table 7-1  
Screening Human-Health Risk Results for Groundwater at IR Site 40**

Analyte	Maximum Reported Concentration (µg/L)	Cancer PRG <sup>a</sup> Value Tap Water (µg/L)	Tap Water Carcinogenic Risk	Noncancer PRG <sup>a</sup> Value Tap Water (µg/L)	Tap Water Hazard Index
<b>Metals</b>					
Aluminum	209		NA <sup>b</sup>	3.65E+04	5.73E-03
Antimony	16.1		NA	1.46E+01	1.10E+00
Arsenic	7.9	4.48E-02	1.76E-04	1.10E+01	7.21E-01
Barium	41.7		NA	2.56E+03	1.63E-02
Chromium	9		NA		NA
Copper	6.8		NA	1.36E+03	5.02E-03
Manganese	2,060		NA	1.70E+03	1.21E+00
Mercury	0.11		NA	1.10E+01	1.00E-02
Selenium	8.7		NA	1.83E+02	4.77E-02
Vanadium	33.8		NA	2.56E+02	1.32E-01
Zinc	5		NA	1.10E+04	4.57E-04
<b>Class Sum</b>			<b>1.76E-04</b>		<b>3.25E+00</b>
<b>Organic Compounds</b>					
1,1-Dichloroethane	1.55		NA	8.11E+02	1.91E-03
1,2-Dichloroethene (total)	88		NA	5.48E+01	1.61E+00
2-Butanone	6		NA	1.90E+03	3.15E-03
Acetone	62.8		NA	6.08E+02	1.03E-01
Benzene	0.24	3.86E-01	6.21E-07	1.04E+01	2.31E-02
Benzoic acid	2		NA	1.46E+05	1.37E-05
bis(2-ethylhexyl)phthalate	3	4.80E+00	6.25E-07	7.30E+02	4.11E-03
Carbon disulfide	0.3		NA	2.07E+01	1.45E-02
Carbon tetrachloride	9	1.71E-01	5.25E-05	3.58E+00	2.51E+00
Chlorobenzene	0.666		NA	3.95E+01	1.69E-02
Chloroform	14	1.65E-01	8.51E-05	6.08E+01	2.30E-01
cis-1,2-dichloroethene	248		NA	6.08E+01	4.08E+00
di-n-butyl phthalate	2		NA	3.65E+03	5.48E-04
Diethyl phthalate	4		NA	2.92E+04	1.37E-04
Dimethyl phthalate	0.9		NA	3.65E+05	2.47E-06
Methylene chloride	2	4.28E+00	4.68E-07	1.62E+03	1.23E-03
Nitrate	31,100		NA	5.84E+04	5.33E-01

(table continues)

## Section 7 Summary of Site Risks

Table 7-1 (continued)

Analyte	Maximum Reported Concentration (µg/L)	Cancer PRG <sup>a</sup> Value Tap Water (µg/L)	Tap Water Carcinogenic Risk	Noncancer PRG <sup>a</sup> Value Tap Water (µg/L)	Tap Water Hazard Index
Pentachlorophenol	0.7	5.60E-01	1.25E-06	1.10E+03	6.39E-04
Phenol	5		NA	2.19E+04	2.28E-04
Tetrachloroethene	3,940	1.08E+00	3.64E-03	6.08E+01	6.48E+01
Toluene	8		NA	7.23E+02	1.11E-02
trans-1,2-dichloroethene	7.09		NA	1.22E+02	5.83E-02
Trichloroethene	273	1.64E+00	1.66E-04	3.65E+01	7.48E+00
<b>Class Sum</b>			<b>3.95E-03</b>		<b>8.14E+01</b>
<b>Total Cancer Risk And Hazard</b>			<b>4.13E-03</b>		<b>8.47E+01</b>

## Notes:

<sup>a</sup> 1996 PRGs used in the screening risk assessment (U.S. EPA 1996)

<sup>b</sup> NA indicates cancer risk or hazard quotient cannot be calculated because PRG is not available and no surrogate compound has been identified

## Acronyms/Abbreviations:

IR – Installation Restoration (Program)

µg/L – micrograms per liter

NA – not applicable

PRG – preliminary remediation goal

### 7.1.1.2 EXPOSURE ASSESSMENT

The screening risk assessment for groundwater assumed a residential exposure scenario. The likely exposure pathways evaluated are consistent with the typical pathways assumed by U.S. EPA and Cal/EPA in establishing the soil and tap water PRGs used in the screening risk assessment. For groundwater, the likely exposure pathways include ingestion (drinking) and inhalation of volatiles. Dermal absorption from bathing was not considered a significant pathway since the groundwater COPCs consist mainly of volatiles, and the ability of the body to absorb volatiles through the lungs, via the inhalation pathway, is much more efficient than absorption through the skin.

The screening risk assessment was performed for a hypothetical exposure scenario and is designed to be conservative. There are currently no human populations exposed to VOC-affected groundwater in the shallow aquifer at NAVWPNSTA Seal Beach. All the government- and privately owned wells near the base are completed within the deeper regional aquifer, which has not been impacted by site-related contamination. In addition, the shallow aquifer at the base is not expected to be used as a source of water in the future due to its high salinity and hardness. Surface water surrounding NAVWPNSTA Seal Beach is not currently affected by the VOCs in shallow groundwater, and there are no completed exposure pathways between the IR Site 40 plume and potential ecological receptors.

## Section 7 Summary of Site Risks

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### 7.1.1.3 RESULTS

The total cancer risk associated with the groundwater at IR Site 40 was estimated at  $4.1 \times 10^{-3}$  by use of U.S. EPA tap water and Cal/EPA-modified (Cal-Modified) PRGs (Table 7-1). The risks are based on the highest reported concentrations at the site (including the maximum reported concentration for PCE [3,940  $\mu\text{g/L}$ ], collected at a depth of 14 to 17 feet bgs). PCE was identified as the principal risk driver, contributing 88 percent of the total cancer risk. Chlorinated VOCs contribute approximately 92.2 percent of the cumulative tap water carcinogenic risk (BNI 1999). Since the cancer risk drivers are overwhelmingly chlorinated VOCs and the background for VOCs is zero, no background risk or incremental risk estimates were made.

For groundwater, the HI at IR Site 40 was estimated at 85, indicating a potential for system toxicity (Table 7-1). PCE and TCE account for approximately 85 percent of the total HI.

### 7.1.2 Soil

The following subsections describe the screening HHRA conducted for soil at IR Site 40.

#### 7.1.2.1 CHEMICALS OF POTENTIAL CONCERN

COPCs used in the soil screening HHRA consisted of 9 organics and 17 metals (Table 7-2). Essential nutrients (e.g., calcium, iron, magnesium, potassium, and sodium) were eliminated from the assessment.

#### 7.1.2.2 EXPOSURE ASSESSMENT

For soil, the likely pathways at IR Site 40 include ingestion, inhalation of particulates and volatiles, and dermal adsorption. Exposure to indoor air from soil gas was not considered a significant pathway due to the presence of a surficial clay layer at the site which, based on soil gas sampling, does not readily release trapped gases to the atmosphere. Exposure to groundwater contaminated by soil leachate is not applicable at the subject sites since the static groundwater level is approximately 10 feet bgs. Ingestion via plant, meat, or dairy products is also not applicable since the subject sites are not currently used or expected to be used in the future for subsistence farming, i.e., where the population being assessed is subsisting on the plant, meat, or dairy products grown or raised in the exposure area.

#### 7.1.2.3 RESULTS

Although IR Site 40 was screened in the ERSE for both an industrial and a residential scenario, land use within NAVWPNSTA Seal Beach is generally characterized as heavy industrial use. The current and planned future use for the site is as a weapons support facility. It is assumed that personnel will occupy the area but will not reside at the site.

## Section 7 Summary of Site Risks

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### **Residential Land Use**

Under the residential scenario, the total cancer risk associated with the soil at IR Site 40 was estimated at  $2.9 \times 10^{-5}$  and  $3.0 \times 10^{-5}$  by use of U.S. EPA and Cal-Modified PRGs, respectively (Table 7-2). Arsenic and beryllium are identified as the principal risk drivers, contributing 69 and 29 percent, respectively, of the U.S. EPA derived total cancer risk and 68 and 28 percent, respectively, of the total cancer risk estimated by use of Cal-Modified PRGs. Risks are based on the highest reported concentration; the maximum reported concentrations for arsenic (7.53 mg/kg) and beryllium (1.2 mg/kg) were collected at 0 to 0.5 foot bgs and 5 to 6 feet bgs, respectively.

For perspective, a background risk was estimated for the naturally occurring metals identified as COPCs. As shown in Table 7-3, incremental carcinogenic risk was calculated for the site by subtracting background risk for the naturally occurring metals from their corresponding total lifetime risk. The incremental cancer risk values for the carcinogenic metals were combined with the total cancer risk values for the other carcinogens (i.e., organic compounds) to obtain the overall incremental risk estimate for IR Site 40. Using this methodology, the incremental residential cancer risk from exposure to the soil was estimated at  $2.8 \times 10^{-7}$  and  $5.0 \times 10^{-7}$  by use of U.S. EPA PRGs and Cal-Modified PRGs, respectively. Risks within this range are considered unconditionally allowable by U.S. EPA.

Under residential conditions, the HI at IR Site 40 was estimated at 2.8 (Table 7-3). For comparison, the residential HI from background metals was estimated at 2.4. Since the maximum reported lead concentration was 276 mg/kg, above the Cal-Modified PRG of 130 mg/kg, the Cal/EPA pharmacokinetic model was used to estimate the blood lead concentration for a resident child and adult. At IR Site 40 the estimated upper-bound concentrations of lead in the blood of the resident child and resident adult (8.1 and 3.1 micrograms per deciliter [ $\mu\text{g}/\text{dL}$ ], respectively, at the 99th percentile) fell below the benchmark of 10  $\mu\text{g}/\text{dL}$ . Therefore, the lead concentrations at this site are unlikely to result in potential adverse health effects for the scenarios assumed. Table 7-4 presents a summary of blood lead levels calculated using Cal/EPA LeadSpread.

### **Industrial Land Use**

Under the industrial scenario, the total cancer risk associated with the soil at IR Site 40 was estimated at  $4.4 \times 10^{-6}$  by use of U.S. EPA PRGs. Arsenic and beryllium are identified as the principal risk drivers, contributing 72 and 24 percent, respectively, of the U.S. EPA derived total cancer risk. The maximum reported concentrations for arsenic (7.53 mg/kg) and beryllium (1.2 mg/kg) were collected at 0 to 0.5 foot bgs and 5 to 6 feet bgs, respectively.

For perspective, a background risk was estimated for the naturally occurring metals identified as COPCs. Using the same methodology as that used for residential risk (Table 7-3), incremental cancer risk from exposure to soil under the industrial land-use

**Table 7-2  
Screening Human-Health Risk Results for Soil at IR Site 40**

Analyte	Maximum Detected Concentration (mg/kg)	RESIDENTIAL SOIL						INDUSTRIAL SOIL			
		Cancer PRG Value Residential Soil (mg/kg)	Cancer Cal-Modified PRG Value Residential Soil (mg/kg)	Residential Carcinogenic Risk	Residential Cal-Modified Carcinogenic Risk	Noncancer PRG Value Residential Soil (mg/kg)	Residential Hazard Index	Cancer PRG Value Industrial Soil (mg/kg)	Industrial Carcinogenic Risk	Noncancer PRG Value Industrial Soil (mg/kg)	Industrial Hazard Index
<b>Metals</b>											
Aluminum	25,900			NA <sup>a</sup>	NA	7.67E+04	3.38E-01		NA		NA
Antimony	23			NA	NA	3.07E+01	7.50E-01		NA	6.81E+02	3.38E-02
Arsenic	7.53	3.77E-01	3.77E-01	2.00E-05	2.00E-05	2.21E+01	3.40E-01	2.38E+00	3.16E-06	3.83E+02	1.96E-02
Barium	412			NA	NA	5.27E+03	7.82E-02		NA		NA
Beryllium	1.2	1.43E-01	1.43E-01	8.41E-06	8.41E-06	3.83E+02	3.13E-03	1.11E+00	1.08E-06	8.52E+03	1.41E-04
Cadmium	4.14	1.40E+03	9.00E+00	2.95E-09	4.60E-07	3.83E+01	1.08E-01	2.99E+03	1.39E-09	8.50E+02	4.87E-03
Chromium, total	33.4	2.11E+02	2.11E+02	1.59E-07	1.59E-07		NA	4.48E+02	7.45E-08		NA
Cobalt	12.6			NA	NA	4.57E+03	2.76E-03		NA	9.70E+04	1.30E-04
Copper	47.5			NA	NA	2.85E+03	1.67E-02		NA	6.33E+04	7.51E-04
Lead	276			NA	NA		NA		NA		NA
Manganese	2,980			NA	NA	3.18E+03	9.36E-01		NA	4.31E+04	6.91E-02
Nickel	33.5		1.50E+02	NA	2.23E-07	1.53E+03	2.18E-02		NA	3.41E+04	9.83E-04
Selenium	3.05			NA	NA	3.83E+02	7.96E-03		NA	8.52E+03	3.58E-04
Silver	5.6			NA	NA	3.83E+02	1.46E-02		NA	8.52E+03	6.58E-04
Thallium	0.24			NA	NA	6.13E+00 <sup>b</sup>	3.91E-02		NA	1.36E+02 <sup>b</sup>	1.76E-03
Vanadium	57.6			NA	NA	5.37E+02	1.07E-01		NA	1.19E+04	4.83E-03
Zinc	225			NA	NA	2.30E+04	9.78E-03		NA		NA
<b>Class Sum</b>				<b>2.86E-05</b>	<b>2.92E-05</b>		<b>2.77E+00</b>		<b>4.32E-06</b>		<b>1.37E-01</b>
<b>Organic Compounds</b>											
Acetone	4.49			NA	NA	2.09E+03	2.15E-03		NA	8.75E+03	5.13E-04
bis(2-ethylhexyl)phthalate	0.025	3.17E+01	3.17E+01	7.88E-10	7.88E-10	1.30E+03	1.92E-05	1.36E+02	1.83E-10	1.36E+04	1.83E-06
cis-1,2-dichloroethene	0.0193			NA	NA	3.09E+01	6.24E-04		NA	1.04E+02	1.85E-04
di-n-butyl phthalate	0.024			NA	NA	6.52E+03	3.68E-06		NA	6.81E+04	3.52E-07
Methylene chloride	0.00357	7.81E+00	7.81E+00	4.57E-10	4.57E-10	1.68E+03	2.12E-06	1.78E+01	2.01E-10		NA
Phenol	0.054			NA	NA	3.91E+04	1.38E-06		NA		NA
Tetrachloroethene	1.45	5.36E+00	5.36E+00	2.71E-07	2.71E-07	6.15E+01	2.36E-02	1.67E+01	8.69E-08	2.15E+02	6.75E-03
Toluene	0.00208			NA	NA	7.93E+02	2.62E-06		NA		NA
Trichloroethene	0.0117	3.16E+00	3.16E+00	3.70E-09	3.70E-09	2.68E+01	4.37E-04	7.01E+00	1.67E-09	9.18E+01	1.27E-04
<b>Class Sum</b>				<b>2.75E-07</b>	<b>2.75E-07</b>		<b>2.68E-02</b>		<b>8.90E-08</b>		<b>7.58E-03</b>
<b>Total Cancer Risk and Hazard</b>				<b>2.88E-05</b>	<b>2.95E-05</b>		<b>2.80E+00</b>		<b>4.41E-06</b>		<b>1.45E-01</b>

(table continues)

**Table 7-2** (continued)

Analyte	Maximum Detected Concentration (mg/kg)	Soil Saturation Concentration PRG Value (mg/kg)	Environmental Concentration Greater Than Soil Saturation Nonrisk PRG	Soil Maximum Concentration PRG Value (mg/kg)	Environmental Concentration Greater Than Soil Maximum Nonrisk PRG
Aluminum	25,900	NA	NA	100,000	No
Barium	412	NA	NA	100,000	No
Zinc	225	NA	NA	100,000	No
2-Cyclohexen-1-ol	0.086	NA	NA	100,000 <sup>b</sup>	No
Benzoic acid	0.16	NA	NA	100,000	No
Methylene chloride	0.00357	2,279	No	NA	NA
Phenol	0.054	NA	NA	100,000	No
Toluene	0.00208	880	No	NA	NA

Notes:

<sup>a</sup> NA indicates cancer risk or hazard quotient cannot be calculated because PRG is not available and no surrogate compound has been identified

<sup>b</sup> value based on surrogate PRG

Acronyms/Abbreviations:

Cal-Modified – California Environmental Protection Agency modified

IR – Installation Restoration (Program)

mg/kg – milligrams per kilogram

NA – not applicable

PRG – preliminary remediation goal

**Table 7-3  
Incremental Risk, Screening Human-Health Risk Results for Soil at IR Site 40**

Analyte	Maximum Detected Concentration (mg/kg)	Seal Beach Statistical Background Concentration (mg/kg)	Residential Carcinogenic Risk	Seal Beach Background Residential Carcinogenic Risk	Incremental Residential Carcinogenic Risk	Residential Cal-Modified Carcinogenic Risk	Seal Beach Background Residential Cal-Modified Carcinogenic Risk	Incremental Residential Cal-Modified Carcinogenic Risk	Residential Hazard Index	Residential Hazard Index from Background Metals	Industrial Carcinogenic Risk	Seal Beach Background Industrial Carcinogenic Risk	Incremental Industrial Carcinogenic Risk	Industrial Hazard Index	Industrial Hazard Index From Background Metals
<b>Metals</b>															
Aluminum	25,900	36,271.00	NA*	NA	NA	NA	NA	NA	3.38E-01	4.73E-01	NA	NA	NA	NA	NA
Antimony	23	12.40	NA	NA	NA	NA	NA	NA	7.50E-01	4.04E-01	NA	NA	NA	3.38E-02	1.82E-02
Arsenic	7.53	15.38	2.00E-05	4.08E-05	0.00E+00	2.00E-05	4.08E-05	0.00E+00	3.40E-01	6.95E-01	3.16E-06	6.46E-06	0.00E+00	1.96E-02	4.01E-02
Barium	412	412.16	NA	NA	NA	NA	NA	NA	7.82E-02	7.82E-02	NA	NA	NA	NA	NA
Beryllium	1.2	2.11	8.41E-06	1.48E-05	0.00E+00	8.41E-06	1.48E-05	0.00E+00	3.13E-03	5.50E-03	1.08E-06	1.90E-06	0.00E+00	1.41E-04	2.48E-04
Cadmium	4.14	2.22	2.95E-09	1.58E-09	1.37E-09	4.60E-07	2.47E-07	2.13E-07	1.08E-01	5.79E-02	1.39E-09	7.43E-10	6.42E-10	4.87E-03	2.61E-03
Chromium, total	33.4	46.24	1.59E-07	2.19E-07	0.00E+00	1.59E-07	2.19E-07	0.00E+00	NA	NA	7.45E-08	1.03E-07	0.00E+00	NA	NA
Cobalt	12.6	19.42	NA	NA	NA	NA	NA	NA	2.76E-03	4.25E-03	NA	NA	NA	1.30E-04	2.00E-04
Copper	47.5	39.04	NA	NA	NA	NA	NA	NA	1.67E-02	1.37E-02	NA	NA	NA	7.51E-04	6.17E-04
Lead	276	35.70	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	2,980	1,103.00	NA	NA	NA	NA	NA	NA	9.36E-01	3.47E-01	NA	NA	NA	6.91E-02	2.56E-02
Nickel	33.5	32.49	NA	NA	NA	2.23E-07	2.17E-07	6.73E-09	2.18E-02	2.12E-02	NA	NA	NA	9.83E-04	9.54E-04
Selenium	3.05	0.44	NA	NA	NA	NA	NA	NA	7.96E-03	1.15E-03	NA	NA	NA	3.58E-04	5.17E-05
Silver	5.6	10.11	NA	NA	NA	NA	NA	NA	1.46E-02	2.64E-02	NA	NA	NA	6.58E-04	1.19E-03
Thallium	0.24	0.49	NA	NA	NA	NA	NA	NA	3.91E-02	7.99E-02	NA	NA	NA	1.76E-03	3.60E-03
Vanadium	57.6	85.95	NA	NA	NA	NA	NA	NA	1.07E-01	1.60E-01	NA	NA	NA	4.83E-03	7.21E-03
Zinc	225	177.17	NA	NA	NA	NA	NA	NA	9.78E-03	7.70E-03	NA	NA	NA	NA	NA
<b>Class Sum</b>			<b>2.86E-05</b>	<b>5.58E-05</b>	<b>1.37E-09</b>	<b>2.92E-05</b>	<b>5.63E-05</b>	<b>2.20E-07</b>	<b>2.773</b>	<b>2.375</b>	<b>4.32E-06</b>	<b>8.47E-06</b>	<b>6.42E-10</b>	<b>0.137</b>	<b>0.101</b>
<b>Organic Compounds</b>															
Acetone	4.49	NA	NA	NA	NA	NA	NA	NA	2.15E-03	NA	NA	NA	NA	5.13E-04	NA
bis(2-ethylhexyl)phthalate	0.025	NA	7.88E-10	NA	7.88E-10	7.88E-10	NA	7.88E-10	1.92E-05	NA	1.83E-10	NA	1.83E-10	1.83E-06	NA
cis-1,2-dichloroethene	0.0193	NA	NA	NA	NA	NA	NA	NA	6.24E-04	NA	NA	NA	NA	1.85E-04	NA
di-n-butyl phthalate	0.024	NA	NA	NA	NA	NA	NA	NA	3.68E-06	NA	NA	NA	NA	3.52E-07	NA
Methylene chloride	0.00357	NA	4.57E-10	NA	4.57E-10	4.57E-10	NA	4.57E-10	2.12E-06	NA	2.01E-10	NA	2.01E-10	NA	NA
Phenol	0.054	NA	NA	NA	NA	NA	NA	NA	1.38E-06	NA	NA	NA	NA	NA	NA
Tetrachloroethene	1.45	NA	2.71E-07	NA	2.71E-07	2.71E-07	NA	2.71E-07	2.36E-02	NA	8.69E-08	NA	8.69E-08	6.75E-03	NA
Toluene	0.00208	NA	NA	NA	NA	NA	NA	NA	2.62E-06	NA	NA	NA	NA	NA	NA
Trichloroethene	0.0117	NA	3.70E-09	NA	3.70E-09	3.70E-09	NA	3.70E-09	4.37E-04	NA	1.67E-09	NA	1.67E-09	1.27E-04	NA
<b>Class Sum</b>			<b>2.75E-07</b>	<b>0.00E+00</b>	<b>2.75E-07</b>	<b>2.75E-07</b>	<b>0.00E+00</b>	<b>2.75E-07</b>	<b>0.027</b>	<b>0.000</b>	<b>8.90E-08</b>	<b>0.00E+00</b>	<b>8.90E-08</b>	<b>0.008</b>	<b>0.000</b>
<b>Total Cancer Risk and Hazard</b>			<b>2.88E-05</b>	<b>5.58E-05</b>	<b>2.77E-07</b>	<b>2.95E-05</b>	<b>5.63E-05</b>	<b>4.96E-07</b>	<b>2.800</b>	<b>2.375</b>	<b>4.41E-06</b>	<b>8.47E-06</b>	<b>8.96E-08</b>	<b>0.145</b>	<b>0.101</b>

Note:

\* NA indicates cancer risk or hazard quotient cannot be calculated because preliminary remediation goal is not available and no surrogate compound has been identified

Acronyms/Abbreviations:

Cal-Modified – California Environmental Protection Agency modified  
 IR – Installation Restoration (Program)  
 mg/kg – milligrams per kilogram  
 NA – not applicable

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**Table 7-4**  
**Summary of Estimates of Noncarcinogenic Effects of Lead**  
**Using Cal/EPA LeadSpread for IR Site 40**

Location	BLOOD LEAD LEVEL OF 99TH PERCENTILE OF POPULATION <sup>a</sup>			
	Adult (µg/dL) <sup>b</sup>	Child (µg/dL) <sup>b</sup>	Pica Child (µg/dL) <sup>b,c</sup>	Industrial Adult (µg/dL) <sup>b</sup>
Background	2.7	5.8	10	2.6
Site 40	3.1	8.1	40	2.9

## Notes:

- <sup>a</sup> estimates are based on pharmacokinetic model for calculating blood lead concentrations in children and adults
- <sup>b</sup> a blood lead level greater than the benchmark of 10 µg/dL indicates that a possible effect could occur
- <sup>c</sup> Pica Child blood lead levels are calculated for a scenario involving a childhood behavioral syndrome (Pica Child) characterized by unusual levels of soil ingestion

## Acronyms/Abbreviations:

- Cal/EPA – California Environmental Protection Agency
- IR – Installation Restoration (Program)
- µg/dL – micrograms per deciliter

scenario was quantified at  $9.0 \times 10^{-8}$ . Risks within this range are considered unconditionally allowable by the U.S. EPA. Under industrial conditions, the HI at IR Site 40 was estimated at 0.14, indicating the very low potential for system toxicity under the industrial scenario.

The Cal/EPA pharmacokinetic model was used to estimate the blood lead concentration for an industrial adult. At IR Site 40, the estimated upper-bound concentrations of lead in the blood of the industrial adult (2.9 µg/dL at the 99th percentile) fell below the benchmark of 10 µg/dL (Table 7-4); therefore, the lead concentrations at this site are unlikely to result in potential adverse health effects on industrial workers.

## 7.2 ECOLOGICAL RISK

Although chemicals were reported in groundwater beneath IR Site 40, no complete exposure pathways existed between chemicals in groundwater and ecological receptors. Thus, groundwater was not evaluated further in the screening ecological risk assessment.

The principal ecological concern at IR Site 40 was the potential effects to ecological receptors associated with exposures to metal and organic compounds adsorbed to soil particles. Two specific goals of the screening ecological risk assessment were to identify maximum reported concentrations of these chemicals in soil and to assess whether ecological receptors potentially using available habitat at IR Site 40 were at risk. Specifically, the screening ecological risk assessment identified:

- chemicals of potential ecological concern (COPECs) associated with IR Site 40,

## Section 7 Summary of Site Risks

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- likelihood of adverse effects to individuals and populations in the environment, and
- species-specific exposure pathways and chemical exposure concentrations.

An ecological risk assessment differs from a screening HHRA in that assessment endpoints do not necessarily focus on the individual, as with humans, but on populations and communities, with a final goal of evaluating the ecosystem. Thus, a certain degree of impact to individuals and species is considered within the context of impacts at higher ecological organization. The ecological risk screening evaluation was applied to IR Site 40 using the following steps.

1. Maximum concentrations of COPECs at the site were used as the chemical concentrations in soil.
2. COPEC concentrations in plants, invertebrates, and small mammals (i.e., food sources for other receptors) were estimated using either uptake factors or regression models obtained from the scientific literature.
3. Chemical intakes were estimated for mammalian and avian receptors at each site using general intake equations and exposure factors recommended by Cal/EPA (1996) or U.S. EPA (1993a).
4. Potential hazards to terrestrial plant and invertebrate receptors were estimated by comparing toxicity reference values (TRVs) with estimated daily doses.
5. Hazard quotients (HQs) for each avian and mammalian receptor were summed to obtain an estimate of total chronic toxicity or HI.

The basic tenet of this approach in the screening ecological risk assessment is the characterization of potential hazards to ecological receptors. Current and potential hazards to receptors and ecological components (which may be organisms [i.e., individual receptors], populations, communities, or ecosystems) are estimated. Estimation of potential hazard to ecological receptors is defined as the given concentration or estimated daily dose of a chemical compared to available toxicity information or benchmark values for biological effects. HQs and/or HIs less than 1.0 are reasonably good indicators that adverse effects are unlikely, provided that indicators of toxicity have been underestimated. However, an HQ or HI greater than 1.0 is not necessarily indicative of adverse effects associated with a given COPEC or ecological receptor because of the use of uncertainty factors to derive toxicity criteria and conservative exposure assumptions.

### 7.2.1 Chemicals of Potential Ecological Concern

COPECs in soil were identified using analytical data collected during the ERSE (BNI 1999). The following chemicals were selected as COPECs:

- inorganic chemicals reported above detection limits at least once, except for inorganic constituents commonly found in the environment at relatively nontoxic levels, including calcium, iron, magnesium, nitrate, phosphate, potassium, and sodium

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- organic chemicals reported above detection limits at least once and not identified as laboratory contaminants (i.e., concentrations in the samples are less than 10 times the concentrations in corresponding blank samples), or tentatively identified compounds that have been identified beyond the structural level

Because of the conservative nature of a screening ecological risk assessment, COPECs identified in soil samples up to 10 feet bgs were considered for the ecological screening; however, no exposure route for ecological receptors is considered complete at soil depths greater than 2 to 4 feet bgs (Hoffmeister 1986, Miller 1957, Reynolds and Wakkinen 1987, Linsdale 1946).

### 7.2.2 Assessment Endpoints

Ecological risk assessment guidance specifies two types of ecological endpoints: assessment and measurement endpoints (Cal/EPA 1996, U.S. EPA 1997). Assessment endpoints are defined as the environmental attributes upon which the ecological risk screening focuses. Measurement endpoints are defined as the measurable, observable changes used to estimate effects on the assessment endpoints.

Potential adverse effects on the reproductive success, growth, or survival of receptor species were used as assessment endpoints for this evaluation. Criteria that were used to select assessment endpoints for site investigations include regulatory and social significance, ecological relevance, amenability to measurement or prediction, and susceptibility to contaminants (U.S. EPA 1992, 1997).

Numerous characteristics of species, communities and ecosystems at IR Site 40 were considered as potential assessment endpoints. For example, species of regulatory or social significance (e.g., California least tern) may occur at these sites. These species could be susceptible to COPECs through ingestion of contaminated media or food items. COPECs could affect their growth, survival, or reproduction.

In terms of ecological relevance, functional groups, such as small mammals, were also considered since these are important prey items for higher trophic level organisms. A functional group refers to a group of species that, as a result of their physiologic and taxonomic similarities and/or dependence on the same types of food (energy) sources, are similar in their function within the ecosystem. Small mammals would also be susceptible to COPECs in soils due to their burrowing habits.

Only species or functional groups of species known to be abundant or common at the site were considered for selection as assessment endpoint species. For IR Site 40, selected species were plants, soil invertebrates, ground squirrels, western harvest mouse, American robin, striped skunk, and red-tailed hawk. These selected receptors were considered representative of others in each functional group, including threatened and endangered species, if present, with regard to potential exposure to COCs and toxicological effects.

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### 7.2.3 Exposure Pathways of Concern

For an exposure pathway to be complete, a chemical must be able to travel from the source to ecological receptors and be taken up by the receptors via one or more exposure routes. For the screening assessment, complete routes of exposure identified for selected ecological receptors at the site are the following:

- direct ingestion of COPECs in soil
- indirect ingestion of COPECs in plant and animal tissues associated with COPEC uptake from soil with subsequent transfer through the food chain
- direct contact with COPECs in soil by plant roots and soil macroinvertebrates

### 7.2.4 Ecological Screening With Toxicity Reference Values

For the screening ecological risk assessment, receptors representative of functional groups of species at the site were selected for toxicological comparison to assess potential environmental risks associated with COPECs at IR Site 40. No observed adverse effects levels (NOAELs) were used to develop TRVs for selected terrestrial receptors other than plants and invertebrates. NOAEL is a concentration or dose that did not produce observable toxicity in the test organism.

Several TRVs for avian and mammalian receptors have been developed by the Human and Ecological Risk Division (HERD) of Cal/EPA and were used in this screening ecological risk assessment. However, HERD-developed TRVs were not available for all receptors or for all COPECs at the station. In these cases, other toxicity data presented by researchers at Oak Ridge National Laboratory (ORNL) were used (Sample et al. 1996).

Most of the benchmarks were derived from chronic or subchronic studies in which reproductive and developmental endpoints were evaluated. An uncertainty factor of 0.1 was used to extrapolate from subchronic to chronic NOAELs and/or to extrapolate from lowest observed adverse effects levels to NOAELs.

### 7.2.5 Selection of Background Soil Concentrations

Background concentrations for metals were identified from sample results that represent soil conditions not affected by site operations. An ecological risk screening for the naturally occurring background metals that were among the chemicals identified as COPECs was conducted to understand how much of the on-site hazards can be attributed to site-related activities. For these metals, a comparison between their on-site and background concentrations was used to provide additional information to be used by risk managers in making site-specific decisions.

## 7.2.6 Screening Ecological Risk Assessment Results

The total HIs (i.e., sum of the individual HQs) for the selected receptors were all greater than 1.0 at IR Site 40. As shown in Table 7-5, the HIs ranged from approximately 50 to 2,000 for the selected receptors. By comparison, HIs were also greater than 1.0 for the selected receptors exposed to stationwide background metal concentrations. The HIs for background concentrations ranged from approximately 10 to 3,000 (Table 7-6). Furthermore, total HIs associated with exposures to background metal concentrations are approximately the same or greater than those for IR Site 40, the exceptions being metal exposures for the American robin and the red-tailed hawk at IR Site 40.

Metals associated with HQs greater than 1.0 and contributing the most to the HIs for IR Site 40, including background, are aluminum, antimony, barium, cadmium, selenium, and vanadium for the ground squirrel, western harvest mouse, and the striped skunk. HQs associated with these metal exposures for mammalian receptors tend to be equal or lower than those associated with stationwide background levels, except for antimony, cadmium, and selenium. Additionally, lead, manganese, molybdenum, and thallium HQs for the western harvest mouse were greater than 1.0 and slightly exceeded related background HQs.

Exposures to aluminum, antimony, and lead are the major contributors to the HIs for the American robin and the red-tailed hawk at IR Site 40. HQs that exceed 1.0 and exceed the metals HQs for stationwide background are antimony, cadmium, lead, selenium, and thallium for the American robin, and antimony and lead for the red-tailed hawk.

Ecological risks are based on the highest reported concentration of chemicals in soil at the site. The maximum concentrations for the major inorganic risk drivers at IR Site 40 were reported as follows: aluminum (25,900 mg/kg), antimony (23 mg/kg), barium (412 mg/kg), cadmium (4.14 mg/kg), lead (276 mg/kg), and selenium (3.05 mg/kg) and vanadium (57.6 mg/kg).

Several organic compounds were reported at IR Site 40 with resulting HIs for organics greater than 1.0 for all receptors. As shown in Table 7-5, the HIs ranged from 4 to approximately 300. Acetone and PCE are the major contributors to the total HIs of organic compounds at IR Site 40. In addition to acetone and PCE, exposures to di-n-butyl phthalate and TCE also contribute to the total organic HI for the American robin. Exposures to bis(2-ethylhexyl)phthalate and di-n-butyl phthalate contribute to the total organic HI for the red-tailed hawk.

The maximum concentrations for organic risk drivers at IR Site 40 were reported as follows: acetone (4.49 mg/kg), bis(2-ethylhexyl)phthalate (0.025 mg/kg), di-n-butyl phthalate (0.024 mg/kg), PCE (1.43 mg/kg), and TCE (0.0117 mg/kg).

Maximum reported concentrations of aluminum, chromium, manganese, vanadium, and zinc exceeded the microorganism benchmark values at IR Site 40. Correspondingly, the stationwide background concentrations for these metals are also greater than the benchmark values for soil microorganisms.

**Table 7-5  
Summary of Hazard Quotients and Indices for Selected Receptors at IR Site 40**

Analyte	GROUND SQUIRREL		HARVEST MOUSE		AMERICAN ROBIN	STRIPED SKUNK		RED-TAILED HAWK
	Method 1 <sup>a</sup>	Method 2 <sup>b</sup>	Method 1	Method 2	Method 2	Method 1	Method 2	Method 2
<b>Organic Compounds</b>								
Acetone	2E+00	5E-01	1E+01	1E+00	5E+01	2E+00	3E-01	6E-02
Benzoic acid	7E-03	2E-03	4E-02	4E-03	2E-01	7E-03	1E-03	3E-03
bis(2-ethylhexyl)phthalate	2E-02	6E-03	9E-02	2E-02	7E-01	7E-01	2E-01	1E+01
cis-1,2-dichloroethene	7E-03	3E-03	4E-02	7E-03	2E-01	7E-03	3E-03	3E-03
di-n-butyl phthalate	1E-03	6E-04	8E-03	1E-03	2E+01	2E-03	7E-04	3E+00
Methylene chloride	2E-02	4E-03	1E-01	1E-02	5E-01	2E-02	4E-03	2E-03
Phenol	2E-02	3E-03	8E-02	8E-03	4E-01	2E-02	3E-03	2E-03
Tetrachloroethene	8E+00	3E+00	4E+01	8E+00	2E+02	9E+00	3E+00	2E+01
Toluene	2E-03	1E-03	1E-02	2E-03	6E-02	3E-03	9E-04	2E-03
Trichloroethene	3E-01	1E-01	2E+00	3E-01	7E+00	3E-01	1E-01	2E-01
<b>Subtotal Hazard Index<sup>c</sup></b>	<b>1E+01</b>	<b>4E+00</b>	<b>5E+01</b>	<b>9E+00</b>	<b>3E+02</b>	<b>1E+01</b>	<b>4E+00</b>	<b>3E+01</b>
<b>Metals</b>								
Aluminum	4E+02	1E+02	2E+03	3E+02	4E+01	3E+02	1E+02	1E+00
Antimony	1E+01	4E+00	5E+01	5E+00	4E+02	1E+01	3E+00	1E+01
Arsenic	6E-01	1E-01	3E+00	3E-01	2E-01	4E-01	8E-02	3E-03
Barium	6E+00	1E+00	2E+01	2E+00	3E+00	4E+00	8E-01	7E-02
Beryllium	5E-02	1E-02	2E-02	2E-02	3E+00	5E-02	8E-03	7E-02
Cadmium	2E+01	7E+00	1E+02	2E+01	4E+00	2E+01	6E+00	4E-02
Chromium	3E-04	7E-05	2E-03	2E-04	5E+00	3E-04	6E-05	1E-01
Cobalt	3E-02	7E-03	2E-01	2E-02	8E-02	3E-02	5E-03	1E-03
Copper	6E-02	1E-02	3E-01	3E-02	3E-01	6E-02	1E-02	2E-02
Lead	9E-01	2E-01	4E+00	4E-01	3E+02	8E-01	1E-01	6E+00

(table continues)

**Table 7-5** (continued)

Analyte	GROUND SQUIRREL		HARVEST MOUSE		AMERICAN ROBIN	STRIPED SKUNK		RED-TAILED HAWK
	Method 1 <sup>a</sup>	Method 2 <sup>b</sup>	Method 1	Method 2	Method 2	Method 1	Method 2	Method 2
Manganese	1E+00	2E-01	4E+00	4E-01	7E-01	7E-01	1E-01	1E-02
Molybdenum	5E-01	2E-01	3E+00	5E-01	1E-01	4E-01	2E-01	1E-03
Nickel	1E+00	4E-01	7E+00	7E-01	5E-01	1E+00	2E-01	1E-02
Selenium	3E+01	8E+00	2E+02	2E+01	2E+01	3E+01	5E+00	1E-01
Silver	9E-03	2E-03	4E-02	4E-03	3E-01	7E-03	1E-03	1E-02
Thallium	3E-01	7E-02	2E+00	2E-01	1E-01	3E-01	6E-02	3E-01
Vanadium	7E+00	2E+00	3E+01	4E+00	7E-01	6E+00	1E+00	1E-02
Zinc	3E-01	6E-02	1E+00	1E-01	5E-01	3E-01	5E-02	2E-02
<b>Total Hazard Index<sup>d</sup></b>	<b>4E+02</b>	<b>2E+02</b>	<b>2E+03</b>	<b>4E+02</b>	<b>1E+03</b>	<b>4E+02</b>	<b>1E+02</b>	<b>5E+01</b>

Notes:

- <sup>a</sup> Method 1: toxicity reference value using uncertainty factors
- <sup>b</sup> Method 2: toxicity reference value using body weight extrapolation
- <sup>c</sup> includes organic compounds
- <sup>d</sup> includes inorganic and organic compounds

Acronym/Abbreviation:

IR – Installation Restoration (Program)

**Table 7-6**  
**Summary of Hazard Quotients and Indices for Selected Receptors**  
**Due to Background**

Analyte	GROUND SQUIRREL		HARVEST MOUSE		AMERICAN ROBIN	STRIPED SKUNK		RED-TAILED HAWK
	Method 1 <sup>a</sup>	Method 2 <sup>b</sup>	Method 1	Method 2	Method 2	Method 1	Method 2	Method 2
Aluminum	5E+02	2E+02	3E+03	5E+02	5E+01	5E+02	2E+02	1E+00
Antimony	6E+00	2E+00	3E+01	3E+00	2E+02	5E+00	2E+00	7E+00
Arsenic	1E+00	2E-01	5E+00	5E-01	4E-01	8E-01	1E-01	6E-03
Barium	6E+00	1E+00	2E+01	2E+00	3E+00	4E+00	8E-01	7E-02
Beryllium	9E-02	2E-02	4E-01	4E-02	5E+00	8E-02	1E-02	1E-01
Cadmium	1E+01	4E+00	6E+01	1E+01	2E+00	1E+01	4E+00	3E-02
Chromium	5E-04	1E-04	2E-03	2E-04	7E+00	4E-04	8E-05	2E-01
Cobalt	5E-02	1E-02	2E-01	2E-02	1E-01	4E-02	8E-03	2E-03
Copper	5E-02	1E-02	2E-01	2E-02	3E-01	5E-02	1E-02	2E-02
Lead	1E-01	3E-02	6E-01	6E-02	4E+01	1E-01	2E-02	1E+00
Manganese	4E-01	8E-02	2E+00	2E-01	3E-01	3E-01	5E-02	5E-03
Mercury	1E-01	3E-02	7E-01	7E-02	1E+00	1E-01	2E-02	1E-02
Nickel	1E+00	4E-01	7E+00	7E-01	5E-01	1E+00	2E-01	1E-02
Selenium	8E+00	2E+00	4E+01	4E+00	5E+00	8E+00	1E+00	3E-02
Silver	2E-02	4E-03	7E-02	7E-03	6E-01	1E-02	2E-03	2E-02
Thallium	5E-02	1E-02	3E-01	3E-02	2E+00	5E-02	9E-03	5E-02
Vanadium	1E+01	2E+00	5E+01	5E+00	1E+00	9E+00	2E+00	2E-02
Zinc	2E-01	5E-02	1E+00	1E-01	4E-01	2E-01	5E-02	2E-02
<b>Total Hazard Index</b>	<b>5E+02</b>	<b>2E+02</b>	<b>3E+03</b>	<b>5E+02</b>	<b>3E+02</b>	<b>5E+02</b>	<b>2E+02</b>	<b>1E+01</b>

Notes:

- <sup>a</sup> Method 1: toxicity reference value using uncertainty factors
- <sup>b</sup> Method 2: toxicity reference value using body weight extrapolation

## Section 7 Summary of Site Risks

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Maximum reported concentrations of chromium and zinc at IR Site 40 exceeded the earthworm benchmark values. The stationwide background concentrations for chromium and mercury exceeded their corresponding earthworm benchmark values.

The maximum reported concentrations for aluminum, antimony, chromium, lead, manganese, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc exceeded the plant benchmark values at IR Site 40. By comparison, stationwide background values for aluminum, antimony, arsenic, chromium, manganese, nickel, silver, vanadium, and zinc also exceeded their corresponding plant benchmark values.

### 7.2.7 Ecological Significance

Twenty-eight chemicals (18 metals and 10 organic chemicals) present in soil were screened for potential ecological impacts at IR Site 40. Although chemicals were reported in groundwater beneath the site, no complete exposure pathways existed between chemicals in groundwater and ecological receptors. Because of the proximity of IR Site 40 to the NWR area, there was a concern that groundwater beneath this site may be connected to the refuge; however, groundwater investigations revealed that the downward gradient and the presence of a surficial clay layer in the marsh appears to preclude a flow path that reaches the surface water.

At IR Site 40, HQs associated with metal exposures for mammalian receptors are generally equal to or lower than those associated with stationwide background concentrations, except for antimony, cadmium, and selenium. For avian receptors, the pattern is similar except for exposures to antimony and lead. The maximum concentrations for antimony, cadmium, lead, and selenium were all reported in a sample located just south of Building 240 at 0 to 0.5 foot bgs. Antimony was not reported above background in any other sample. For cadmium, all other concentrations were reported below the stationwide background concentration of 2.22 mg/kg, except for one sample collected at 0.5 foot bgs (3.53 mg/kg). Lead concentrations reported above the stationwide background value of 35.7 mg/kg ranged between 37.4 and 276 mg/kg at six locations (0 to 0.5 foot bgs) south of Building 240 and at one location at 8 to 10 feet bgs. HIs associated with organic chemical exposures at IR Site 40 are all greater than 1.0 for all receptors. The primary contributors to the HIs are acetone, bis(2-ethylhexyl)phthalate, di-n-butyl phthalate, PCE, and TCE.

Although several HQs are greater than 1.0, resulting in elevated HIs for all receptors at IR Site 40, the risks are considered to be overstated because the lack of suitable habitat for foraging and nesting (i.e., the site is generally covered with gravel, concrete, or paved) would indicate that wildlife receptors would not use the site. Additionally, the likelihood of complete pathways to soil with concentrations similar to those used in this assessment is small because the maximum reported concentrations for most compounds were reported from samples taken beneath paved areas, such as the area adjacent to the south wall of Building 240. Therefore, it is not likely that adverse impacts would be expected for IR Site 40.

## Section 7 Summary of Site Risks

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In addition, although screening benchmark values for plants and invertebrates were exceeded for several metals reported at the site, statewide background values for aluminum, antimony, arsenic, chromium, manganese, nickel, silver, vanadium, and zinc also exceeded their corresponding plant benchmark values. The authors of these toxicity benchmarks (Will and Suter 1995; Efroymsen et al. 1997a,b) note that in cases where local background soil concentrations exceed soil benchmark values, the benchmarks represent a poor measure of risk to the plant and invertebrate communities that may be present at the site.

## Section 8

# DESCRIPTION OF ALTERNATIVES

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This section describes the remedial alternatives for groundwater selected for detailed analysis in the IR Site 40 FS. The alternatives are based on the ERSE, screening HHRA, and a review of applicable or relevant and appropriate requirements (ARARs). Groundwater is the only medium of concern at IR Site 40. Soil is not a medium of concern because incremental excess cancer risk was less than the NCP-defined departure point of  $1 \times 10^{-6}$ , noncancer risk was comparable to background, risk to ecological receptors was evaluated and found to be acceptable, and the fate and transport model indicated that contaminants in soil do not have potential to leach to groundwater. Because there are no complete exposure pathways to ecological receptors, the remedial action objectives (RAOs) focus on mitigating potential human exposures to groundwater (BNI 2002).

The following overall RAOs were developed for IR Site 40 to focus the FS and define the scope of potential groundwater cleanup activities:

- consistent with U.S. EPA, SWRCB, and RWQCB Santa Ana Region policies and regulations, protect existing beneficial uses of the shallow aquifer underlying NAVWPNSTA Seal Beach to the extent practicable while preventing or minimizing VOC migration beyond the current NAVWPNSTA Seal Beach boundaries at concentrations exceeding site remediation goals
- protect human health by preventing extraction of VOC-impacted shallow groundwater for domestic use until site remediation goals are achieved

### 8.1 CHEMICALS OF CONCERN AND REMEDIATION GOALS

Two chlorinated VOCs, PCE and TCE, are the primary COCs for IR Site 40 (Table 8-1). These constituents were identified on the basis of their contribution to the screening-level carcinogenic risk and frequency of occurrence at the site. For each of these VOCs, Table 8-1 presents the detection frequency and the tap water carcinogenic risk resulting from the screening risk calculations. In identifying these compounds as COCs, it was assumed that background concentrations of chlorinated VOCs in NAVWPNSTA Seal Beach groundwater were below the detection limits of available U.S. EPA analytical methods.

Identification of TCE and PCE as the COCs for IR Site 40 groundwater was based on the screening HHRA. Since the biological degradation of TCE and PCE will result in the formation of 1,2-DCE and vinyl chloride, these chemicals were added to the list of COCs. Both chemicals were reported in groundwater during the pilot-test study (BEI 2002a). The preliminary remediation goals were defined in the FS Report as the lower of either the U.S. EPA or California MCLs for drinking water.

Development in the FS of numerical remediation goals for IR Site 40 groundwater was based on an analysis of ARARs. Table 8-2 lists target concentrations for PCE, TCE, DCE, and vinyl chloride at IR Site 40. These groundwater remediation goals support the RAO of

## Section 8 Description of Alternatives

**Table 8-1**  
**Chemicals of Concern in IR Site 40 Groundwater**  
**(reported in micrograms per liter)**

Analyte	Screening Level Tap Water Carcinogenic Risk	Percent of Total Tap Water Carcinogenic Risk (all constituents)	Number of Samples Analyzed	Number of Detections	Frequency of Detection (percent)
Tetrachloroethene	3.64E-03	88.2	56	31	55.4
Trichloroethene	1.66E-04	4.0	56	20	35.7
<b>Total</b>	—	<b>92.2</b>	—	—	—

Acronym/Abbreviation:

IR – Installation Restoration (Program)

**Table 8-2**  
**Remediation Goals for IR Site 40 Groundwater**  
**(reported in micrograms per liter)**

Analyte	Federal Maximum Contaminant Level <sup>a</sup>	California Maximum Contaminant Level <sup>b</sup>	Controlling ARAR	Maximum Concentration in Groundwater
cis-1,2-dichloroethene <sup>c</sup>	70	6	6	1,500 <sup>d</sup>
trans-1,2-dichloroethene <sup>c</sup>	100	10	10	7.09 <sup>e</sup>
Trichloroethene	5	5	5	3,940 <sup>e</sup>
Tetrachloroethene	5	5	5	273 <sup>e</sup>
Vinyl chloride <sup>c</sup>	2	0.5	0.5	1 <sup>d</sup>

Notes:

<sup>a</sup> United States Environmental Protection Agency Safe Drinking Water Act, Title 40 *Code of Federal Regulations* § 141<sup>b</sup> *California Code of Regulations* Title 22, § 64439, Requirements, and § 64444, Maximum Contaminant Levels<sup>c</sup> indicates analytes that have been identified as chemicals of potential concern subsequent to the feasibility study<sup>d</sup> maximum concentration in groundwater from pilot test (BEI 2002a)<sup>e</sup> maximum concentrations of chemicals of concern in groundwater are from Extended Removal Site Evaluation (BNI 1999)

Acronyms/Abbreviations:

ARAR – applicable or relevant and appropriate requirement

IR – Installation Restoration (Program)

§ – section

## Section 8 Description of Alternatives

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restoring the shallow aquifer underlying NAVWPNSTA Seal Beach as a potential drinking water supply to the extent practicable. The values listed in Table 8-2 are federal MCLs promulgated by U.S. EPA or California MCLs established by the Department of Health Services, whichever is lower for a given constituent.

The feasibility of cleaning up to background was evaluated in the IR Site 40 FS Report. The FS Report noted that past U.S. EPA efforts to restore VOC-affected aquifers to background levels using groundwater extraction have generally not been successful (U.S. EPA 1989a,b). When extraction systems are installed, experience at full-scale remediation sites has often shown that contaminant concentrations in the groundwater decline rapidly during the initial period of operation. However, a potentially significant fraction of the contaminant mass remains adsorbed to or otherwise entrained within the aquifer matrix (Table 8-3). The low-mobility contaminants remain an active, albeit low-level, source that is slowly released to groundwater via diffusion, desorption, or dissolution over an extended period of time. This leads to a leveling-off of contaminant concentrations, in many cases above remediation goals, and makes complete removal of contamination to background levels virtually impossible.

Similarly, at NAVWPNSTA Seal Beach, under a groundwater pump and treat scenario, PCE and TCE concentrations in extracted groundwater would be expected to decline rapidly during the first several years of remediation and then be maintained at an asymptotic level for a long period of time. Removal of all traces of PCE and TCE (or other VOC compounds) would require permanent operation of the extraction system, resulting in significant (unreasonable) long-term costs with negligible benefit. Because attaining background levels (i.e., VOC concentrations below the detection limit) is not considered technologically feasible, restoration of the shallow aquifer at NAVWPNSTA Seal Beach to pristine conditions was not included as an RAO, nor was background considered a potential remediation goal for VOCs in IR Site 40 groundwater. Other concentration limits determined to be protective of human health and the environment (i.e., MCLs), as provided for in *California Code of Regulations* (Cal. Code Regs.) Title (tit.) 22, § 66264.94(c), will be used to satisfy RCRA groundwater protection requirements.

### 8.2 AREA OF ATTAINMENT

U.S. EPA guidance defines the area of attainment for a CERCLA groundwater response action as the location where remediation goals will be achieved at the time a remedial action is considered complete (U.S. EPA 1988b). According to this guidance, the area of attainment generally coincides with the areal extent of groundwater contamination outside the boundary of waste remaining in place and up to the margin of the contaminant plume at the time restoration begins. The purpose of identifying an area of attainment is to facilitate development and evaluation of remedial alternatives (e.g., to determine where to place extraction wells, hydraulic containment systems, *in situ* treatment walls, or monitoring wells).

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**Table 8-3  
Estimated IR Site 40 PCE Mass**

<b>Groundwater Model Layer</b>	<b>Depth Interval (feet bgs)</b>	<b>Stratigraphic Unit</b>	<b>PCE Mass (pounds)</b>
1	0–15	Surficial soils, first sand unit, and first interbedded unit	1.17
2	15–35	Second sand unit	4.17
3	35–50	Lower portion of thicker second sand unit and second interbedded unit	0.78
<b>Total</b>			<b>6.12</b>

## Acronyms/Abbreviations:

- bgs – below ground surface
- IR – Installation Restoration (Program)
- PCE – tetrachloroethene

The attainment area for this remedial action is defined as the footprint of the PCE plume at IR Site 40 as defined by the area exceeding the MCL of 5 µg/L. The DON does not intend to establish a point of compliance for this remedial action. Because of the levels of contamination encountered, the affected medium (i.e., groundwater) is addressed as a *dissolved-phase contaminant plume*. Cleanup strategies were evaluated accordingly.

### 8.3 DEVELOPMENT OF REMEDIAL ALTERNATIVES

Remedial alternatives for IR Site 40 were developed on the basis of RAOs and according to requirements of CERCLA, as amended by SARA, 42 *United States Code* (U.S.C.) § 9602 et seq., and the NCP. CERCLA Section 121(b) identifies the following statutory preferences for remedial actions.

- Preferred remedial actions are those involving treatment that permanently and significantly reduces the volume, toxicity, or mobility of site-related contaminants.
- The least favorable remedial action is off-site transport and disposal of hazardous substances or contaminated materials without treatment when practical treatment technologies are available.
- Remedial actions using permanent solutions, alternative treatment technologies, or resource recovery technologies should be assessed.

Also considered were the criteria regarding eventual selection of a preferred remedial action (U.S. EPA 1988a). According to U.S. EPA technical guidance, the preferred remedial action for IR Site 40 should:

## Section 8 Description of Alternatives

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- protect human health and the environment;
- meet contaminant-specific ARARs and be consistent with location- and action-specific ARARs;
- be cost-effective;
- use permanent solutions and alternative treatment technologies to the maximum extent practicable; and
- satisfy the preference for treatment as a principal element of the remedial action to reduce the toxicity, mobility, or volume of contaminants.

The development of remedial alternatives was also guided by prior U.S. EPA experience at VOC-contaminated sites. Presumptive remedies are preferred technologies for categories of sites. The most appropriate technologies for addressing contamination at sites affected by chlorinated VOCs in soil and groundwater were considered (U.S. EPA 1993b, 1996, 1997). U.S. EPA expects presumptive remedies to be used at all appropriate sites, although alternative technologies may be considered when warranted (U.S. EPA 1993b). To that end, U.S. EPA has published several guidance documents, directives, and policy statements, which were followed in developing the remedial alternatives for Site 40 (U.S. EPA 1994, 1998).

The use of the U.S. EPA guidance resulted in development of the following five comprehensive remedial alternatives:

- Alternative 1 – no action
- Alternative 2 – MNA
- Alternative 3 – hydraulic containment
- Alternative 4 – pump and treat
- Alternative 5 – *in situ* treatment

Each of these alternatives (except no action) also includes MNA as a support technology used when active technology is no longer effective and land-use controls to prevent humans from being exposed to contaminated groundwater until remediation goals are achieved.

### 8.3.1 Alternative 1: No Action

Alternative 1 is required by CERCLA to provide a basis for developing and evaluating the other remedial alternatives. Under Alternative 1, no remedial measures or access or land-use controls would be initiated at IR Site 40, and the DON would conduct no groundwater extraction or other forms of remediation. It likewise would have no effect on the physical, biological, or chemical processes controlling the fate and transport of existing contamination.

### 8.3.2 Alternative 2: Monitored Natural Attenuation

MNA (Alternative 2) would not entail engineered response actions to collect, treat, or contain the contaminant plume at and downgradient from IR Site 40. However, Alternative 2 would include monitoring and land-use controls such as deed restrictions. MNA relies on naturally occurring *in situ* processes (e.g., biodegradation, chemical transformation, volatilization, dilution, dispersion, and adsorption) to achieve remediation goals within a reasonable time frame (U.S. EPA 1999). Under certain conditions,

these natural processes act to reduce the mass, toxicity, mobility, or volume of VOC-chlorinated soil and groundwater. Monitoring would be used to track VOC migration and support future evaluations of the protectiveness of natural attenuation processes. Land-use controls would be used to minimize potential human exposure to groundwater contamination, assure access for monitoring and maintenance, and protect the monitoring wells.

Alternative 2 is based on the following assumptions.

- Natural attenuation mechanisms in the subsurface at IR Site 40 would reduce contaminant concentrations and, thus, risk.
- Contaminant migration in the subsurface is primarily horizontal. Contamination in the shallow aquifer would not threaten the deeper aquifer.
- Contaminant migration in the shallow aquifer can be readily tracked and its impacts reliably predicted.

Groundwater modeling was performed to assist in evaluating the effectiveness of Alternative 2. Modeling results indicate Alternative 2 reduces the maximum concentration of PCE to 5 µg/L after 36 years. There are significant uncertainties in the modeling analysis; interpretation of the results should be based on the comparative effectiveness among the alternatives rather than on the absolute cleanup time frames, which could vary significantly from those predicted by the model.

Land-use controls prohibiting installation of new wells within the current and projected future footprint of the plume (and associated buffer zone) would be used to prevent human exposure to contaminated groundwater as it migrates beneath the station. Monitoring would be used to track the progress of natural attenuation and help verify model predictions. Periodic reviews would be scheduled at least every 5 years. These reviews would consider whether the modeling predictions were accurate and also determine whether the contaminant level/location could impact off-station human and environmental receptors.

In addition to preventing human exposure, the land-use controls would protect existing monitoring wells and grant access for sampling, installing new monitoring wells, and implementing additional remedial measures needed in the future. Because off-base migration is not likely, land-use controls on off-base property would not be necessary. The land-use controls would remain in effect until monitoring data show contamination levels are below remediation goals.

### 8.3.3 Alternative 3: Hydraulic Containment

Alternative 3 combines MNA with engineering and land-use controls. Groundwater would be extracted to hydraulically contain the plume in the shallow aquifer. The extracted groundwater would be conveyed to a treatment facility where the groundwater would be treated and discharged. The extraction system would operate until VOC concentrations in the shallow aquifer approach asymptotic levels. Thereafter, MNA alone would be used to reduce VOC concentrations in the plume to remediation goals. Long-term monitoring (including 5-year periodic reviews) would verify the effectiveness of the containment/natural attenuation. As is the case with Alternative 2, land-use controls would be used to prevent human exposure, protect the extraction and monitoring wells, and allow access to implement the remedy.

In the conceptual design of alternatives, a single groundwater extraction well would be installed in the upper water-bearing interval at the downgradient margins of the plume. Extracting water through this well would create a cone of depression that would act as a hydraulic barrier to prevent migration of VOCs. The exact number of extraction wells, well locations, and pumping rates required would be determined during remedial design.

Groundwater modeling results indicate Alternative 3 reduces PCE concentrations in the second sand unit (containing the bulk of contamination) to 5 µg/L within 5 years and concentrations of PCE in all model layers to 5 µg/L in 32 years. Simulations also indicate Alternative 3 removes approximately 4 pounds of PCE within 5 years by pumping.

On the basis of groundwater modeling, a groundwater extraction rate of 12 gallons per minute was assumed for cost-estimating purposes. The actual steady-state drawdowns would be determined during pilot tests. The extraction rates and drawdowns may vary from the initial estimates due to the heterogeneity of the shallow aquifer. This issue would be addressed through groundwater extraction tests conducted at the proposed well locations during remedial design. It was also assumed for cost-estimating purposes that the extraction and treatment system would operate for 5 years.

The extraction well would yield a nominal flow of 17,300 gallons per day (gpd). Groundwater would be pumped continuously from the extraction well and delivered to the treatment system via buried pipelines. For cost-estimating purposes, it was assumed that approximately 400 feet of conveyance piping would be required. Because most VOC concentrations are below the RCRA guidelines requiring double-contained conveyance piping, it is assumed that only single-walled conveyance piping would be used.

Water would be conveyed to a 10,000-gallon on-site equalization tank, sufficient to hold approximately 14 hours of flow under average conditions. The equalization tank would prevent flow surges due to cyclic operation of pumps in the individual extraction wells. (Such surges may affect the performance of the treatment system if not properly controlled.) The tank would also be equipped with level-control switches to shut down the extraction wells if necessary to prevent overflows.

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From the equalization tank, the extracted water would be pumped through a cartridge filtration system followed by two-stage granular activated carbon (GAC) adsorption. The treatment system would be designed to remove TCE, PCE, 1,2-DCE, vinyl chloride, and other contaminants to concentrations below remediation goals. Sample ports would allow discharge to be monitored for compliance. Samples could also be obtained from the equalization tank effluent and between the GAC vessels to monitor the performance of individual carbon units and determine when to replace spent GAC in the first adsorber.

Regeneration or disposal of the spent carbon would be contracted to the GAC supplier under a long-term service contract. It is anticipated that the spent GAC would be taken off-site for regeneration. Prior to shipment from the site, the spent carbon would be tested to determine its waste classification (nonhazardous, RCRA hazardous, and/or non-RCRA hazardous).

Effluent from the groundwater treatment facility would be piped to a nearby storm drain. The location of the storm drain would be determined during remedial design.

Discharge limits for treated groundwater would be established in accordance with Santa Ana RWQCB Order No. R8-2002-07, National Pollutant Discharge Elimination System (NPDES) CAG918001, for discharges of extracted and treated groundwater resulting from the cleanup of groundwater polluted by petroleum hydrocarbons and/or solvents.

Other treated groundwater discharge options may also be considered during remedial design. Such options would be considered because the groundwater would only be treated to remove VOCs. Concentrations of total dissolved solids (TDS) and other inorganic chemicals may be too high to meet waste discharge requirements. In this case, alternative uses for the discharge water that are compatible with the TDS and inorganic chemicals in the groundwater may be more cost-effective.

A performance monitoring program and periodic reviews would be implemented to evaluate the effectiveness of hydraulic containment, track VOC concentration trends, and assure that the remedy remains protective.

### **8.3.4 Alternative 4: Pump and Treat**

Alternative 4 combines the components of Alternative 3 (hydraulic containment) with a pump-and-treat option that would shorten the time required to remediate groundwater. This option would involve configuring extraction wells to provide optimal contaminant removal while also maintaining hydraulic containment.

As with Alternative 3, GAC adsorption would be used to reduce the contaminant concentrations. After containment and contaminant reduction, MNA would complete the remediation. The monitoring program would include periodic reviews. Land-use controls would be used to prevent human exposure, protect the extraction and monitoring wells, and allow access to implement the remedy.

Groundwater modeling results indicate Alternative 4 reduces PCE concentrations in the second sand unit (containing the bulk of contamination) to 5 µg/L within 1.5 years and

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concentrations of PCE in all model layers to 5 µg/L in 26 years. Simulations also indicate Alternative 4 removes approximately 5 pounds of PCE by pumping within the first 5 years and that most of the mass, in the second sand unit, is removed in 0.5 year.

Extracted groundwater would be delivered to a treatment facility via buried pipelines. Approximately 500 feet of conveyance piping is expected to be required. It is assumed that only single-walled conveyance piping would be used to transport the untreated water. The conveyance system would handle a flow rate of approximately 72,000 gpd.

The treatment plant would consist of an equalization tank, cartridge filters, modular GAC units, and associated pumps, piping, and controls. It was assumed that spent GAC would be taken off-site for regeneration. Prior to shipment from the site, the spent carbon would be tested to determine its waste classification (nonhazardous, RCRA hazardous, and/or non-RCRA hazardous).

Effluent from the groundwater treatment facility would be piped to a nearby storm drain. The location of the storm drain would be determined during remedial design. For cost-estimating purposes, it is assumed that 500 feet of single-walled piping would be used to connect the treatment facility to the discharge location. Other discharge options may also be considered during the remedial design phase. Discharge standards for treated groundwater would be established in accordance with RWQCB NPDES CAG918001, General Groundwater Cleanup Permit, for discharges of extracted and treated groundwater resulting from the cleanup of groundwater polluted by petroleum hydrocarbons and/or solvents.

Sample taps would be provided so that the effluent at the treatment plant could be monitored against discharge requirements. Samples could also be obtained from the equalization tank effluent and between the GAC vessels to monitor the performance of individual carbon units and determine when to replace spent GAC in the first adsorber.

The extraction wells would continue to operate until VOC concentrations in the shallow aquifer approach asymptotic levels; modeling results indicate this would occur during the first year of operation. Thus, it is assumed the pump-and-treat operation would cease after 1 year and MNA would continue for 25 years. A periodic review would be conducted in 1 year to confirm asymptotic levels. Additional periodic reviews would assess the effectiveness of MNA, per Alternative 2.

### 8.3.5 Alternative 5: *In Situ* Treatment

Alternative 5 consists of two innovative *in situ* technologies (5A and 5B) designed to lower contaminant levels within the plume while shortening the time to remediate VOC-affected groundwater. Alternative 5A involves *in situ* treatment using lactate enhancement to accelerate the natural biodegradation process. Alternative 5B employs a chemical oxidation process to destroy chlorinated VOCs. Contaminant concentrations would be initially lowered by short-term *in situ* treatment and MNA would then be used to complete remediation. Land-use controls would remain in place until remediation goals have been achieved.

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Because Alternatives 5A and 5B are considered innovative, this alternative includes bench-scale and pilot-scale testing prior to full-scale implementation to provide site-specific data to verify the effectiveness at this site.

**Alternative 5A** uses a nonproprietary lactate enhancement technology to accelerate biodegradation of chlorinated VOCs. Sodium lactate would be injected into the aquifer to initiate rapid reductive dechlorination. Lactate has been used in several pilot-scale studies to provide a carbon source for indigenous bacteria, enhancing natural anaerobic biodegradation. Because of the presence of sulfate in groundwater at IR Site 40, an initial injection would be used to remove sulfates and a second injection would be used to accelerate VOC reduction.

For Alternative 5A, it is assumed that treatment would occur over a 40,000-square-foot area and would require 12 injection wells. On the basis of groundwater modeling, it was assumed that a fivefold reduction in the chlorinated VOC half-life would be achievable using lactate enhancement.

Bench-scale testing would be performed using groundwater samples to demonstrate the ability of lactate to accelerate reduction of chlorinated VOCs to nonhazardous end products. Potential interferences from sulfate-reducing conditions would be evaluated at this stage.

Pilot-scale testing would be used to verify the ability of this technology to reduce contaminants to nonhazardous end products. The testing would provide data to design and cost a full-scale *in situ* biological treatment system. In addition, the testing would evaluate nutrient injection strategies to limit biofouling adjacent to the injection wells while allowing for addition of an adequate amount of the lactate.

Two phases of pilot testing would be performed. For the first stage, lactate would be injected to reduce the sulfate concentrations in the groundwater. The necessity to perform this first phase would be confirmed during bench-scale testing. During the second phase, lactate would be injected to facilitate rapid reductive dechlorination. Once the lactate reaches the downgradient intermediate monitoring well, recirculation would be discontinued and groundwater would be monitored for VOCs, ethene, lactate, propionate, chemical oxygen demand (COD), and acetate over time.

For full-scale implementation, lactate injection would be used for complete reductive dechlorination. The objective would be to maintain high electron donor concentrations in the aquifer long enough to complete remediation of end-stage chlorinated hydrocarbons (e.g., vinyl chloride). Dilute (3 to 30 percent) sodium-lactate solution would be injected biweekly. It is assumed that initial removal of sulfates followed by complete dechlorination of VOCs could be achieved in 1 year. Field COD test kits would primarily be used to measure electron donor concentrations in the aquifer. It is assumed for cost-estimating purposes that one 55-gallon drum of 60 percent sodium-lactate solution would be required per injection well per treatment event. Hydraulic containment is not included as part of Alternative 5A because 1) hydraulic gradients are low and the plume is not moving rapidly, and 2) complete dechlorination over a relatively short time is assumed.

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**Alternative 5B** would employ the ISOTEC<sup>SM</sup> chemical oxidation process, which utilizes Fenton-like chemistry to convert organic contaminants to water and carbon dioxide. Dilute (3 to 8 percent), stabilized hydrogen peroxide is injected into the contaminated WBZ. This is followed by the injection of chelated iron catalyst. The catalyst and hydrogen peroxide react to generate hydroxyl radicals. Hydroxyl radicals are powerful and nonspecific oxidizing agents. The hydroxyl radicals react with the hydrocarbon contaminants to produce carbon dioxide and water. Reagents used by ISOTEC are stabilized and at low concentration; the vendor claims this results in a less vigorous, longer duration, and safer chemical reaction than typical chemical oxidation. The reagent and catalyst would be applied through standard PVC 4-inch monitoring wells.

For Alternative 5B, it is assumed that a reduction in contaminant mass concentration to levels approaching remediation goals could be achieved via two sequential treatment events. MNA would then complete aquifer remediation. For evaluation purposes, it is assumed that treatment would occur over a 40,000-square-foot area and would require 30 injection wells.

It is assumed ISOTEC would perform bench-scale testing on a representative composite soil and groundwater sample under DON supervision. The test would determine the optimum chemical injection ratio and chemical compounds for subsequent pilot-scale testing and full-scale application. The quantity and composition of the selected reagents would be submitted for DTSC review and concurrence in pilot-scale testing.

Pilot-scale testing for Alternative 5B would proceed as follows.

- Install one injection and three monitoring wells.
- Perform baseline sampling.
- Perform first injection.
- Two weeks after injection, perform effectiveness monitoring.
- Determine whether second injection event is necessary.
- Perform second injection if necessary.
- Two weeks after injection, perform effectiveness monitoring.
- Determine whether third injection is necessary.
- Perform third injection if necessary.
- Two weeks after injection, perform effectiveness monitoring.
- Continue to perform effectiveness monitoring every 2 weeks until target contaminant reduction is achieved and/or COC concentrations are asymptotic.
- Evaluate technology effectiveness.

Radius of influence would govern the final spacing and screened interval of introduction points (monitoring wells and direct-push probes) for introduction of reagents to the aquifer.

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Following *in situ* treatment, MNA would complete remediation of the plume until remediation goals are met.

Monitoring for Alternative 5B would include water-level measurements as well as sampling and analysis from groundwater monitoring wells. Approximately seven wells would be monitored for chemical and physical parameters to assess contaminant treatment, geochemical effects, and process safety. Monitoring frequency would depend on the number of reagent injection events necessary to achieve the contaminant-reduction goals. It is assumed that only two reagent injection events would occur for Alternative 5B and that sampling and analysis would occur prior to remediation for baseline comparison and three times thereafter every 2 weeks. Monitoring would also track any contaminant migration beyond the containment system and support future assessments regarding the protectiveness of natural attenuation. This monitoring program would confirm both the rate of residual VOC migration and concentration trends. A periodic review would be conducted in 1 year to confirm effectiveness of *in situ* treatment. Additional periodic reviews would assess the effectiveness of MNA, per Alternative 2.

## Section 9

# SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

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This section presents the results of the comparative analysis conducted to evaluate the relative advantages and disadvantages of each remedial alternative in relation to the nine evaluation criteria outlined in CERCLA Section 121(b), as amended. A complete discussion of the evaluation of the alternatives for IR Site 40 is in the IR Sites 40 and 70 FS Report (BNI 2002).

CERCLA evaluation criteria are based on requirements promulgated in the NCP. As stated in the NCP (40 C.F.R. § 300.430[f]), evaluation criteria are arranged in the following hierarchical manner: threshold criteria, primary balancing criteria, and modifying criteria. Threshold criteria must be satisfied in order for an alternative to be eligible for selection. Primary balancing criteria are used to weigh major trade-offs among alternatives. Generally, modifying criteria are taken into account after public comments are received on the Proposed Plan.

### Threshold Criteria:

- Overall Protection of Human Health and the Environment
- Compliance With ARARs

### Primary Balancing Criteria:

- Long-Term Effectiveness and Permanence
- Reduction of Toxicity, Mobility, or Volume
- Short-Term Effectiveness
- Implementability
- Cost

### Modifying Criteria:

- State Acceptance
- Community Acceptance

Table 9-1 summarizes the comparative analysis of the Site 40 alternatives. Computer modeling supported the comparative analysis by assessing the effect of each alternative on VOC contamination. The modeling was used primarily to evaluate long-term effectiveness, short-term effectiveness (i.e., time to achieve cleanup objectives), and reduction of toxicity, mobility, or volume of contaminants.

Modeling for IR Site 40 was performed using a coupled fluid energy and solute transport model and considered only groundwater. SURFER<sup>®</sup>, VLEACH, MODFLOW, and MT3D computer codes were used with supporting information taken primarily from the ERSE Report (BNI 1999). Table 9-2 summarizes the results and compares Alternatives 1, 2, 3, 4, and 5A/B in terms of simulated time and cost to clean up the principal aquifer. The cleanup time is based on reducing concentrations of PCE throughout the plume to the MCL (5 µg/L).

**Table 9-1  
Comparative Analysis of Remedial Alternatives**

<b>Criterion</b>	<b>Alternative 1 No Action</b>	<b>Alternative 2 Monitored Natural Attenuation</b>	<b>Alternative 3 Hydraulic Containment</b>	<b>Alternative 4 Pump and Treat</b>	<b>Alternative 5a <i>In Situ</i> Treatment Enhanced Bioremediation</b>	<b>Alternative 5b <i>In Situ</i> Treatment Chemical Oxidation</b>
1. Overall Protection of Human Health and the Environment	Not protective	Protective	Protective	Protective	Protective	Protective
2. Compliance With ARARs	Not applicable	Complies	Complies	Complies	Complies	Complies
3. Long-Term Effectiveness and Permanence	○	◐	◑	◑	◑	◑
4. Reduction of Toxicity, Mobility, or Volume Through Treatment	○	○	◑	◑	◑	●
5. Short-Term Effectiveness	○	○	○	○	●	◑
6. Implementability	●	●	◑	◑	○	○
7. Cost	●	◑	◑	◑	◑	○
8. State Acceptance—State concurs with the preferred remedy, performance criteria to be determined for all other alternatives.						
9. Community Acceptance—This criterion will be addressed in the final Record of Decision.						

Acronym/Abbreviation:

ARAR – applicable or relevant and appropriate requirement

Relative Performance in Satisfying Criteria



## Section 9 Summary of the Comparative Analysis of Alternatives

**Table 9-2**  
**Summary of Remediation Time and Costs for IR Site 40 Alternatives**

Alternative	Simulated Time to Achieve PCE Concentration of 5 µg/L (years)	Present Worth Cost <sup>a</sup> (\$ million)
1	36	0
2	36	1
3	32	1.3
4	26 <sup>b</sup>	1.1
5A	<sup>c</sup>	1.1 <sup>d</sup>
5B	<sup>c</sup>	2.1

## Notes:

- <sup>a</sup> cost estimates are taken from the Feasibility Study Report and are presented in 2000 dollars
- <sup>b</sup> pump and treat does not provide significantly more effective remediation in model layer 1 than hydraulic containment because layer becomes partly dewatered, stagnation zone develops between two extraction wells, and fine-grained nature of soils keeps migration rate low
- <sup>c</sup> not modeled; present worth cost was based on 5 years to achieve remedial action objectives
- <sup>d</sup> these costs do not include costs associated with technology refinements or posttreatment

## Acronyms/Abbreviations:

- IR – Installation Restoration (Program)
- µg/L – micrograms per liter
- PCE – tetrachloroethene

## 9.1 THRESHOLD CRITERIA

Threshold criteria include overall protection of human health and the environment and compliance with ARARs. An alternative must meet both threshold criteria to be eligible for selection.

### 9.1.1 Overall Protection of Human Health and the Environment

*Assesses whether a cleanup remedy provides adequate public health protection and describes how health risks posed by the site will be eliminated, reduced, or controlled through treatment, engineering controls, or land use and regulatory controls.*

Although Alternatives 1 and 2 do not actively mitigate VOC contamination in groundwater at IR Site 40, naturally occurring, passive, *in situ* physical processes are expected to gradually attenuate the PCE and TCE concentrations in groundwater as the VOC plume migrates downgradient from the source area (concrete pit that formerly provided a collection point for spilled oil and solvents). Modeling results predict that these naturally occurring processes will reduce the maximum PCE concentrations in groundwater to levels below the MCL of 5 µg/L in 36 years. Therefore, Alternative 1

## Section 9 Summary of the Comparative Analysis of Alternatives

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would not be considered protective of human health and the environment for at least 36 years. Alternative 2, which would also take 36 years to reduce PCE concentrations in groundwater to levels below the MCL, is considered protective of human health and the environment because it incorporates land-use controls that would eliminate exposure to groundwater for the duration of the remediation.

Alternatives 3, 4 and 5A/B are considered protective of human health and the environment. These alternatives also reduce human-health risks by using land-use controls to prevent exposure to contaminated groundwater. In addition, they inhibit contaminant migration and reduce PCE concentrations rapidly.

### 9.1.2 Compliance With Applicable or Relevant and Appropriate Requirements

*Addresses whether a cleanup remedy will meet all federal, state, and local environmental statutes or requirements.*

CERCLA Section 121(d)(1) (42 U.S.C. § 9621[d]) specifies that remedial actions must attain a degree of cleanup that assures protection of human health and the environment. Additionally, remedial actions that leave hazardous substances, pollutants, or contaminants on-site must meet standards, requirements, limitations, or criteria that are ARARs. Federal ARARs for any site may include requirements under any federal environmental laws. State ARARs include promulgated requirements under state environmental or facility-siting laws that are more stringent than federal ARARs and that have been identified by the state in a timely manner.

CERCLA Section 121 states that, at the completion of a remedial action, a level or standard of control required by an ARAR will be attained for wastes that remain on-site. In addition, the NCP, 40 C.F.R. § 300.435(b)(2), requires compliance with ARARs during the remedial design/remedial action. Because ARARs are triggered only when a remedial action is taken, no discussion of ARARs is needed for Alternative 1.

Alternatives 2, 3, 4, and 5A/B are expected to comply with all ARARs for IR Site 40, meeting the remedial goals for the aquifer and thereby complying with the requirements of the WQCP, federal or state MCLs for organic compounds, and RCRA groundwater protection standards. The time needed to meet the remedial goals would be significant (Table 9-2). In the interim, these alternatives would rely on land-use controls to prevent exposure to contamination in groundwater.

Alternatives 2, 3, 4, 5A/B would also comply with RCRA hazardous waste management requirements for managing extracted groundwater (as needed) and other potentially hazardous waste such as drill cuttings from well installations (as needed).

The state of California interprets SWRCB Resolution (Res.) 68-16 as prohibiting migration of existing groundwater contamination. The DON has considered this position and has determined that further migration of already contaminated groundwater is not a discharge governed by the language of the resolution. That is, the resolution is intended to apply to new discharges to maintain existing high-quality waters and is not intended to

## Section 9 Summary of the Comparative Analysis of Alternatives

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apply to restoration of waters that have already been degraded. Therefore, the DON accepts Res. 68-16 as an ARAR for new discharges (e.g., injection, discharge to surface water) only. The DON and state of California do not agree on whether SWRCB Res. 68-16 is an ARAR for the remedial action. Each party's position on this issue is documented in Section 11.2.1.6.

Alternatives 3 and 4 involve extraction of groundwater, treatment at a treatment facility to remove VOCs, and discharge to surface water. The act of discharging to surface water will trigger ARARs (e.g., National Toxics Rule, California Toxics Rule, Inland Surface Waters Plan, California Ocean Plan) depending on the water body receiving the discharge. The DON would use NPDES Permit No. CAG918001 to comply with state and federal ARARs identified for the discharge of groundwater.

Alternatives 5A/B involve injection of chemicals into groundwater for *in situ* treatment. There are no specific federal or state ARARs concerning injection of nutrients/adjuvants and/or chemical reagents into the groundwater.

### 9.2 PRIMARY BALANCING CRITERIA

Primary balancing criteria include long-term effectiveness and permanence; reduction of toxicity, mobility, or volume; short-term effectiveness; implementability; and cost. These are used to weigh trade-offs among alternatives and identify the most favorable.

#### 9.2.1 Long-Term Effectiveness and Permanence

*Refers to the ability of a remedy to continue protecting human health and the environment over time after the cleanup action is completed.*

For each alternative, long-term effectiveness and permanence were evaluated on the basis of model-based predictions of groundwater quality. While modeling results presented in the FS Report suggest that several alternatives could achieve site remediation goals given sufficient time, Alternatives 5A and 5B were rated highest for long-term effectiveness and permanence. Alternatives 5A and 5B, which occur *in situ*, are expected to continue to promote degradation of VOCs even after the injection process has been completed. Alternatives 3 and 4 rated medium because while both employ extraction wells to remove groundwater and treat contamination *ex situ*, the alternative loses effectiveness when the active pumping is stopped. Alternatives 1 and 2 rated low in long-term effectiveness and permanence. Alternative 1 (no action) rated low because effectiveness of natural attenuation processes would not be verified, and plume migration patterns would not be monitored to demonstrate protectiveness. Alternative 2 rated low because MNA is expected to take longer to achieve remediation goals and may be less effective at degrading sorbed organic compounds than Alternatives 5A/B. Alternatives 2 through 5A/B each include MNA as part of the treatment remedy.

The residual risk remaining when Alternatives 2, 3, 4, and 5A/B attain remediation goals would be represented by MCLs and risk-based concentrations for VOCs, which U.S. EPA has determined are acceptable risk levels.

## Section 9 Summary of the Comparative Analysis of Alternatives

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### 9.2.2 Reduction of Toxicity, Mobility, or Volume

*This criterion assesses the degree to which the alternatives employ recycling or treatment that reduce 1) harmful effects to human health and the environment (toxicity), 2) the contaminant's ability to move (mobility), and 3) the amount of contamination (volume), including how treatment is used to address the primary threats posed by the site.*

Alternatives 1 and 2 rate lowest in this category because they provide no treatment or other active approach for the reduction of toxicity, mobility, or volume of the contaminants. Alternatives 3, 4, and 5A/B all involve an element of active treatment that would provide a significant reduction in toxicity, mobility, and volume over time. Of the alternatives, Alternative 5B ranked the most effective in this category. Alternative 5B relies on chemical reactions occurring within the aquifer to degrade halogenated VOCs such as PCE and TCE to nonhalogenated, nontoxic inert compounds by the Fenton-like reaction process. Because of the nature of the chemical reaction, toxicity, mobility, and volume are simultaneously reduced as the reaction occurs.

Alternatives 3, 4, and 5A are ranked moderate in their use of treatment to reduce toxicity, mobility, and volume of the contaminant. Alternatives 3 (hydraulic containment) and 4 (pump and treat) actively reduce the volume and mass of VOC contamination through use of a groundwater extraction system and treatment with GAC. Alternative 5A (lactate enhancement), which promotes complete dechlorination of VOCs by injection of lactic acid that serves as a carbon source for indigenous bacteria, enhancing natural anaerobic biodegradation to initiate rapid reductive dechlorination, ranked moderate because toxic by-products, such as DCE and vinyl chloride, are produced during the remediation process.

### 9.2.3 Short-Term Effectiveness

*The short-term effectiveness criterion assesses how well human health and the environment will be protected from impacts due to construction and implementation of a remedy. Also considers time to reach remediation goals.*

Considering all the factors listed in the U.S. EPA RI/FS guidance (U.S. EPA 1988a), Alternative 5A (lactate enhancement) was rated as the most effective option in the short term. Lactate enhancement would result in short-term effectiveness by complete dechlorination of PCE and TCE while accelerating biodegradation processes occurring at the site. Sodium lactate is an environmentally safe, nontoxic compound used in the food processing industry. Alternative 5B was rated medium in short-term effectiveness. Under this alternative, the majority of the VOC mass in the groundwater is rendered chemically inert within the first year of implementation; however, there are short-term risks associated with the technology, including potential for human contact with process chemicals. The process chemicals used, primarily acids, are toxic. These risks could be mitigated through proper design and through the site-specific safety and health plan and remedial action work plan. Alternatives 2, 3, and 4 were rated low because all of these

## Section 9 Summary of the Comparative Analysis of Alternatives

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alternatives are expected to require at least 5 times more time than Alternatives 5A/B to achieve cleanup of groundwater.

Alternative 1 would not entail any on-site remedial activities and, therefore, would not impact the surrounding community, workers, or the environment. The time required for Alternative 1 to achieve remediation goals protective of human health and the environment would be controlled by the rate of natural attenuation processes and is expected to be 36 years. However, without monitoring, actual remediation time cannot be verified. Alternatives 2, 3, and 4 are expected to achieve remediation goals in 36, 32, and 26 years, respectively (Table 9-2). Alternatives 5A and 5B are expected to reach the goals within 5 years. Actual time to achieve remediation goals is highly dependent on well location and subsurface conditions.

Short-term impacts associated with the implementation of Alternatives 2, 3, 4 and 5A/B include the increased risk of exposure to workers through the handling of contaminated groundwater. Additional short-term impacts include installation of monitoring wells for Alternatives 2, 3, and 4, and extraction wells, conveyance pipelines, and the treatment plant for Alternatives 3 and 4. This installation would pose relatively minor risks to workers because potential on-site exposures and risks from these activities would be controlled through use of personal protective equipment, monitoring, and compliance with a site-specific safety and health plan. Risk to the surrounding community is expected to be negligible.

### 9.2.4 Implementability

*Refers to the technical feasibility (how difficult the remedy is to construct and operate) and the administrative feasibility (coordination with other agencies) of a remedy. Factors such as availability of materials and services needed are considered.*

Alternative 1 is the most easily implemented alternative from a technical perspective because it would involve no on-site construction or other remediation activities.

Alternatives 2, 3, 4, and 5A/B all require the construction of monitoring wells and performance monitoring. Additionally, Alternatives 3, 4, and 5A/B require construction of conveyance piping and treatment facilities, extraction wells (Alternatives 3 and 4) and injection wells (Alternatives 5A/B). Construction and operation of these components entail standard, proven practices known to be readily implementable. Difficulties regarding feasibility, availability of equipment and services, or schedule are not anticipated. The monitoring program used by these alternatives would provide early warning of changes in contaminant concentrations or groundwater flow that may require modification of extraction rates, well locations, or treatment methods to attain remedial objectives.

The implementability of Alternative 2 is rated high because this alternative involves only construction of monitoring wells and performance monitoring. The implementability of Alternatives 3 and 4 is considered medium because both would employ reliable, widely available technologies. Implementation is somewhat complicated by the presence of an

## Section 9 Summary of the Comparative Analysis of Alternatives

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active maintenance operation. Each alternative would be installed using conventional equipment and construction methods.

For technical reasons, Alternatives 5A and 5B rated low in implementability. The lactate enhancement (Alternative 5A) and chemical oxidation (Alternative 5B) technologies are considered innovative, and bench- and pilot-scale testing would be necessary to verify effectiveness, implementability, and cost. Site conditions at the base, specifically the buffering capacity of the aquifer and TDS and sulfate concentrations of the shallow groundwater, raise concerns about possible chemical and/or microbial interferences that could adversely affect the short-term effectiveness of these technologies. The land-use controls associated with Alternatives 2, 3, 4, and 5A/B are not expected to prevent or unnecessarily complicate continued government use of the property. Difficulties are not anticipated with regard to reliability or scheduling.

### 9.2.5 Cost

*This criterion evaluates the alternatives in terms of estimated capital costs and present worth in today's dollars required for design and construction and long-term operation and maintenance (O&M) costs of a remedy.*

Table 9-2 presents cost estimates for the IR Site 40 alternatives. There are no costs associated with Alternative 1. Therefore, Alternative 1 (no action) was ranked the highest in this category. Alternatives 2, 3, 4, and 5A, ranging in estimated costs from \$1 million to \$1.3 million, ranked medium for cost. Capital costs for Alternative 2 (MNA) are lower than those for Alternatives 3, 4, and 5A/B. However, ongoing O&M costs associated with MNA would include monitoring and the anticipated need to install additional

wells as the plume migrates over time. In comparison, capital cost components for Alternative 5A include bench- and pilot-scale testing, installation of a chemical delivery system, reagent material costs, and operational labor. Chemical costs for this alternative are nominal. A cost differential for Alternative 5A would be realized in lower O&M costs resulting from an accelerated cleanup.

Alternative 5B, estimated to cost \$2.1 million, was rated the lowest alternative for this category. Higher capital costs include bench- and pilot-scale testing, installation of a chemical delivery system, reagent material costs, and operational labor. Reagent quantities and costs are generally higher than for Alternative 5A, owing in part to the nature of the process reagents and the anticipated chemical interferences from the groundwater buffering capacity. However, as with Alternative 5A, lower O&M costs are anticipated for Alternative 5B as the result of accelerated cleanup.

## 9.3 MODIFYING CRITERIA

Modifying criteria include state and community acceptance. State acceptance is taken into account during development of the proposed plan and ROD/RAP. Public acceptance is considered through comments received during the public comment period.

## Section 9 Summary of the Comparative Analysis of Alternatives

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### **9.3.1 State Acceptance**

*This criterion reflects whether the state of California's environmental agencies agree with, oppose, or have no objection to or comment on the DON's preferred alternative.*

DTSC and RWQCB have reviewed the IR Site 40 ERSE and FS Reports and the Proposed Plan, and they concur with the selected remedy for groundwater remediation at IR Site 40.

### **9.3.2 Community Acceptance**

*This criterion evaluates whether community concerns are addressed by the remedy and if the community has a preference for a remedy. Although public comment is an important part of the final decision, the DON is compelled by law to balance community concerns with other criteria.*

The Proposed Plan has been presented to the community and discussed at a public meeting. The responsiveness summary portion of this ROD/RAP addresses the public's comments and concerns about the selected remedy.

## Section 10

# SELECTED REMEDY

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The DON has selected Alternative 5A as the remediation method for groundwater at IR Site 40. Soil at IR Site 40 does not require action. This decision was based on the ERSE results for IR Site 40, the administrative record for this site, and an evaluation of comments submitted by interested parties during the public comment period.

The selected remedy for groundwater includes:

- construction, operation, and maintenance of groundwater monitoring wells and injection wells;
- treatment of groundwater using sodium lactate or a comparable bioremediation substrate injection to accelerate natural biodegradation of chlorinated VOCs;
- MNA until remediation goals are achieved;
- performance monitoring throughout the remedial action;
- confirmatory groundwater sampling at the end of the remediation to confirm that VOC concentrations meet specified remediation goals; and
- land-use controls to prevent use of contaminated groundwater, protect equipment, and allow access for sampling, installing new monitoring wells, and implementing any remedial measures needed in the future.

### 10.1 ENHANCED BIOREMEDIATION

Under Alternative 5A, sodium lactate or a comparable bioremediation substrate would be injected into the aquifer to initiate rapid reductive dechlorination. Lactate has been used in several pilot-scale studies, including a pilot-scale test at IR Site 40, to provide a carbon source for indigenous bacteria, enhancing natural anaerobic biodegradation. Because of the presence of sulfate in groundwater at IR Site 40, an initial injection would be used to remove sulfates and a second injection would be used to accelerate VOC reduction.

Results from the pilot-scale test conducted at IR Site 40 indicated conditions for reductive dechlorination were achieved through the injection of sodium lactate. PCE and TCE were reduced to DCE; however, DCE was not reduced further to vinyl chloride or ethene. The dechlorination process was incomplete, most likely due to the absence of an appropriate microbial consortium capable of complete reductive dechlorination.

Partial dechlorination of PCE to DCE, as evidenced in the pilot-scale test, is anticipated to accelerate the overall natural attenuation processes in the aquifer. In addition, two technology refinements, bioaugmentation and cometabolic oxidation, are being considered to further accelerate remediation of the site. Bioaugmentation involves adding to the groundwater aquifer a culture of bacteria that has been shown to completely dechlorinate PCE to ethene. Cometabolic oxidation involves oxidation of methane to produce an enzyme that breaks down DCE to harmless by-products. Pilot-scale testing of these technology refinements is scheduled to take place during the remedial design phase. The effectiveness and applicability at IR Site 40 will be evaluated following

## Section 10 Selected Remedy

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completion of these pilot-scale tests, and recommendations for inclusion as a component of Alternative 5A will be made.

Results of the pilot-scale test indicate the radius of influence at the site to be 20 to 25 feet from the injection point of lactate to groundwater. Therefore, it is assumed that 12 or more injection wells would be screened from 15 to 35 feet with a total depth of 35 feet for lactate injection (Figure 10-1). Dilute (3 to 30 percent) sodium-lactate solution would be injected biweekly. Technology refinements such as bioaugmentation or cometabolic oxidation may also be applied, pending results of additional testing. It is assumed that initial removal of sulfates followed by dechlorination of PCE to DCE could be achieved in 1 year.

### 10.2 MONITORED NATURAL ATTENUATION

Alternative 5A enhances natural biodegradation processes within the areas of highest PCE concentrations through injection of sodium lactate while employing MNA throughout the remaining portions of the plume. MNA relies on natural processes to reduce contaminant levels in the plume and will occur throughout the duration of the remediation at the site. When the subsurface benefits of enhanced bioremediation have been maximized (likely within 12 to 18 months following initiation), the remedy will revert to MNA on a sitewide basis. MNA appears viable because:

- geochemical indicators for natural attenuation and the degradation process of chlorinated ethenes show that reductive dechlorination is occurring under natural conditions in the center of the plume and
- contaminant concentrations at the plume boundary appear stable and the plume does not pose an immediate threat to potential receptors.

### 10.3 PERFORMANCE MONITORING

Performance monitoring would be used to optimize *in situ* bioremediation, track mass reduction, verify containment of the IR Site 40 plume, and demonstrate successful remediation of groundwater. Monitoring would include water-level measurements as well as the collection and analysis of samples from wells placed within the plume areas. A summary of the anticipated performance monitoring for the selected alternative is presented in Table 10-1. Field COD test kits would primarily be used to measure electron donor concentrations in the aquifer.

The monitoring well configuration will be designed to assess changes in VOC concentrations and plume configuration and to determine whether downgradient plume migration is occurring. Groundwater monitoring is anticipated to be performed using five groundwater monitoring wells in the second WBZ. The actual number of monitoring wells to be sampled and the locations and specifications (depth, screened interval, and well construction materials) for new monitoring wells would be determined during remedial design and documented in the long-term monitoring plan. This plan would also provide details concerning sampling procedures, target analytes, analytical methods, field

## Figure 10-1

This detailed station map has been deleted from the Internet-accessible version of this document as per Department of the Navy Internet security regulations.

## Section 10 Selected Remedy

**Table 10-1**  
**Performance Monitoring Requirements for Alternative 5A**

<b>Type of Monitoring Data</b>	<b>Monitoring Locations</b>	<b>Purpose/Use of Data</b>
Water levels	Monitoring wells throughout and around the IR Site 40 plume	Prepare potentiometric surface maps and hydrographs. Determine horizontal and vertical hydraulic gradients.
VOC concentrations in the aquifer	Monitoring wells throughout and around the IR Site 40 vicinity plume	Monitor contaminant distribution. Confirm remediation of plume and assess progress toward remediation goals. Estimate remaining contaminant mass.
Aquifer parameters, including pH, temperature, conductivity, ORP, dissolved oxygen, ethene	Monitoring wells throughout and around the IR Site 40 vicinity plume	Support data for assessment of process efficiency and affect of treatment on the aquifer.
Treatment reagent (COD)	Monitoring wells throughout and around the IR Site 40 vicinity plume	Assure that reagent concentrations remain conducive to chemical reaction.
Water quality parameters, including TDS, cations, anions, alkalinity	Monitoring wells throughout and around the IR Site 40 vicinity plume	Monitor buffering capacity of the aquifer, effect of treatment on aquifer chemistry.

## Acronyms/Abbreviations:

- COD – chemical oxygen demand
- IR – Installation Restoration (Program)
- ORP – oxidation reduction potential
- TDS – total dissolved solids
- VOC – volatile organic compound

and laboratory quality assurance/quality control, and reporting requirements. It is anticipated that groundwater sampling and water-level monitoring at each monitoring well will be conducted quarterly for the first year and semiannually thereafter until the RAOs for groundwater have been met. Water-level monitoring will be used to confirm the hydrogeologic model for the shallow groundwater unit. The initial quarterly water-level data will also be used to evaluate changes in the groundwater flow direction and the hydraulic gradients (horizontal and vertical) throughout the year.

## 10.4 TERMINATION OF REMEDIAL ACTION

The DON will review the effectiveness of the implemented remedial action every 5 years or less to assure that the remedy continues to adequately protect human health and the environment and is achieving cleanup goals. When the remediation goals for groundwater COCs have been achieved for 1 year of sampling, groundwater remediation will be considered complete. Land-use controls would remain in effect until monitoring data show contamination levels are below remediation goals.

## 10.5 LAND-USE CONTROLS

The objectives of the land-use controls are to prevent exposure to VOC-contaminated groundwater and maintain the integrity of the remedial action until remediation goals are achieved.

### 10.5.1 Land-Use Controls on Property Overlying IR Site 40 Groundwater Plume

The following are land-use controls on property overlying the IR Site 40 groundwater plume.

- No new groundwater extraction, injection, or drinking water wells shall be installed within the IR Site 40 groundwater plume or associated buffer zone without prior review and written concurrence from the DON, DTSC, and RWQCB.
- Injection and monitoring wells and associated piping and equipment that are included in the remedial action shall not be altered, disturbed, or removed without the prior review and written concurrence from the DON, DTSC, and RWQCB.
- The DON, DTSC, RWQCB, and their authorized agents, employees, contractors, and subcontractors will have the right to:
  - enter the premises to conduct investigations, tests, or surveys;
  - inspect field activities;
  - construct, operate, and maintain the remedial action described in this ROD/RAP; and
  - undertake any other remedial response or remedial action as required or necessary under the cleanup program.

Association of the above activities includes, but is not limited to, monitoring wells, pumping wells, and treatment facilities.

### 10.5.2 Implementation of Land-Use Controls

Land-use controls will be implemented over the footprint of the plume and an associated buffer zone. The buffer zone will extend 500 feet from the edge of the plume (Figure 10-2). Implementation of land-use controls will be addressed further during the remedial design phase.

The DON is responsible for implementing, inspecting, reporting, and enforcing the land-use controls described in this ROD/RAP in accordance with the approved land-use control remedial design. Although the DON retains ultimate responsibility for the performance of these obligations, the DON may arrange by contract or otherwise for another party(ies) to carry them out. Should any land-use control fail, the DON will consult with the appropriate environmental regulatory agencies to determine necessary

## Figure 10-2

This detailed station map has been deleted from the Internet-accessible version of this document as per Department of the Navy Internet security regulations.

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**Section 10 Selected Remedy**

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and appropriate actions to assure that the remedy remains protective. Further, the DON may initiate legal action to compel action by a third party(ies) and/or to recover the DON's cost for remediating any discovered land-use control violation(s).

## **10.6 PERIODIC REVIEWS**

As required by CERCLA Section 121(c), periodic reviews will occur at least every 5 years. Five-year reviews of federal facilities are a federal agency function intended to evaluate whether 1) immediate threats have been addressed, 2) the remedial action remains protective of public health and the environment, and 3) necessary long-term monitoring is being performed. The review of IR Site 40 is expected to focus on whether the land-use controls are in place and are sufficient to assure protection and whether groundwater remediation is reducing contaminant concentrations and preventing migration of VOCs.

The 5-year review will be conducted by the DON, which will prepare and submit a report to DTSC and RWQCB. The review will 1) clearly state whether the remedy is expected to be protective, 2) document any deficiencies identified during the review, and 3) recommend specific actions to assure that the remedy will continue to be protective. If necessary, the 5-year review report will include descriptions of follow-up actions needed to achieve or to continue to assure protectiveness along with a timetable for these actions.

## **10.7 LONG-TERM MONITORING PLAN**

A long-term monitoring plan will be developed during the remedial design phase. This plan will establish the exact number and location of monitoring wells. It will also outline sampling and analysis methods, periods and sampling frequency for each well, and major decision points to be made during monitoring (e.g., adding or removing wells, or changing sampling frequency or analytical parameters). The criteria for assessing the effectiveness of the remedial action will also be included in the long-term monitoring plan.

Each injection well will remain in operation until it has been demonstrated that remediation goals have been achieved or the injection well is no longer effective in contributing to the restoration of the aquifer. Contaminant concentrations would be initially lowered by short-term *in situ* treatment; MNA would then complete remediation once lactate injection is no longer effective. Criteria for shutoff will be developed during the remedial design phase and incorporated into the long-term monitoring plan.

The long-term monitoring plan will also include specifications for implementation and monitoring of the chosen technology refinements and/or posttreatment selections based on further bench- and pilot-scale testing.

## **10.8 RATIONALE FOR REMEDY SELECTION**

The selected alternative provides the best balance with respect to the NCP evaluation criteria. The information available at this time shows that the selected alternative offers:

## Section 10 Selected Remedy

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- a high level of performance when assessed against the following NCP evaluation criteria: short-term effectiveness (majority of PCE expected to be degraded within the first year); long-term effectiveness and permanence; reduction of toxicity, mobility, and volume; implementability; compliance with ARARs; and overall protection of human health and the environment; and
- a cost-effective means of accomplishing the RAOs for the site.

Table 10-2 summarizes the cost estimate for the selected alternative, including capital and long-term monitoring costs assumed to extend for 5 years. The assumed 5-year time frame does not necessarily reflect the duration of the long-term monitoring activities at the site; the results of sampling designed to evaluate the effectiveness of remediation will determine whether long-term monitoring activities are discontinued or extended. Technology refinements and/or posttreatment added to the alternative during the design phase may increase the duration and costs.

Some modifications to the selected remedy (e.g., technology refinements and/or posttreatment, locations and number of wells, pumping rates) may be necessary as a result of the remedial design and construction process. Detailed design specifications, performance evaluations, and schedule will be determined during the remedial design phase.

## Section 10 Selected Remedy

**Table 10-2**  
**Cost Estimate Summary\***  
**Alternative 5A – *In Situ* Lactate Enhancement, IR Site 40**

Description	Cost
<b>Direct capital costs</b>	
Groundwater monitoring wells (installation of 5 wells)	\$25,000
Injection wells (installation of 12 wells)	\$53,000
Bench-scale test and pilot study for <i>in situ</i> lactate enhancement	\$56,000
<i>In situ</i> lactate enhancement reagents	\$4,000
Field equipment and labor for reagent injections	\$30,000
Decontamination facilities	\$7,000
Off-site transportation and landfill disposal	\$17,000
Professional labor (includes monitoring reports and 5-year reviews)	\$114,000
<b>Total direct capital costs (based on 01 January 1999 dollars)</b>	<b>\$306,000</b>
<b>Direct monitoring costs</b>	
Groundwater monitoring (includes sampling and analysis)	\$171,000
General monitoring (includes mobilization and personnel)	\$32,000
QA/QC samples (20 percent)	\$34,000
<b>Total direct monitoring costs (based on 01 January 1999 dollars)</b>	<b>\$237,000</b>
<b>Indirect costs (overhead, profit) (based on 01 January 1999 dollars)</b>	<b>\$357,000</b>
<b>Contingency (20 percent)</b>	<b>\$180,000</b>
<b>Escalation</b>	<b>\$60,000</b>
<b>TOTAL COST (start date of July 2000)</b>	<b>\$1,138,000</b>
<b>NET PRESENT VALUE (based on January 2000 dollars)</b>	<b>\$1,070,000</b>

## Note:

- \* these costs do not include costs associated with technology refinements or posttreatment; these costs do not reflect actual costs based on the treatability test

## Acronyms/Abbreviations:

- IR – Installation Restoration (Program)  
 QA – quality assurance  
 QC – quality control

## Section 11

# STATUTORY DETERMINATIONS

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Under CERCLA, the DON's primary responsibility is to undertake remedial actions that achieve adequate protection of human health and the environment. Section 121 of CERCLA establishes several additional statutory requirements and preferences specifying that, when complete, the selected remedial action 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. The statute also includes a preference for remedies that, as their principal element, permanently and significantly reduce the volume, toxicity, or mobility of hazardous waste. The statute requires that periodic reviews be conducted at least every 5 years at sites where contamination is left in place to evaluate whether 1) the immediate threats have been addressed, 2) the remedial action remains protective of public health and the environment, and 3) necessary O&M is being performed.

The following sections discuss how the selected remedy meets these statutory requirements and preferences. Complete discussions are found in the Groundwater FS Report for IR Sites 40 and 70 (BNI 2002).

### 11.1 PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

RAOs for IR Site 40 are concerned with limiting future contaminant migration and exposures to contaminated media and restoring the beneficial use of the groundwater. The selected remedy protects human health and the environment by preventing use of contaminated groundwater until remediation is complete. Although groundwater is currently not used for potable purposes, contaminated groundwater is a potential future threat to human health if it is used for domestic purposes. Remediation of groundwater will eliminate this threat in time; in the interim, land-use controls will prevent inadvertent exposure to VOCs at concentrations above remediation goals by controlling new well drilling. Restrictions will also be used during remediation to prevent disturbance of injection and monitoring wells.

There are no short-term threats associated with the selected remedy that cannot be controlled. In addition, no adverse cross-media impacts are expected from the remedy.

### 11.2 COMPLIANCE WITH ARARs

The selected remedy will comply with the substantive portions of all ARARs. Section 121(e) of CERCLA, U.S.C. § 9621(e), states that no federal, state, or local permit is required for remedial actions conducted entirely on-site. Therefore, actions conducted entirely on-site must meet only the substantive requirements of the ARARs. Any action conducted off-site is subject to the full requirements of federal, state, and local regulations. The chemical-, location-, and action-specific ARARs for the selected remedy for IR Site 40 are listed in Tables 11-1, 11-2, and 11-3, respectively, and discussed below.

## Section 11 Statutory Determinations

**Table 11-1**  
**Chemical-Specific ARARs for Selected Remedy**

Action/Requirement	Citation	ARAR <sup>a</sup> Determination	Comments
<b>FEDERAL</b>			
<b>Safe Drinking Water Act, 42 U.S.C. § 300<sup>b</sup></b>			
National primary drinking water standards are health-based standards for public water systems (MCLs).	40 C.F.R. § 141.61(a)	Relevant and appropriate	<p>The NCP defines MCLs as relevant and appropriate for groundwater determined to be a current or potential source of drinking water, in cases where MCLGs are not ARARs. MCLs are relevant and appropriate for Class II aquifers such as the Santa Ana Pressure Subbasin. The Santa Ana RWQCB has designated the Santa Ana Pressure Subbasin for municipal/domestic use (potential drinking water) in addition to other uses. These designations also apply to the shallow groundwater system at NAVWPNSTA Seal Beach.</p> <p>Only the primary standards for organic chemicals (40 C.F.R. § 141.61[a]), specifically VOCs, are ARARs for this action. MCLs for inorganics specified in 40 C.F.R. § 141.11 and 40 C.F.R. § 141.62 are not identified as ARARs because these constituents are naturally occurring and are not the result of activities that occurred at IR Site 40.</p>
<b>Resource Conservation and Recovery Act<sup>b</sup></b>			
Definition of RCRA-characteristic hazardous waste.	Cal. Code Regs. tit. 22, § 66261.100(a)(1), 66261.21, 66261.22(a)(1), 66261.23, and 66261.24(a)(1)	Applicable	VOC-affected soil and groundwater, which may be generated during well construction or monitoring, is not a RCRA-listed hazardous waste. However, soil and groundwater will still be tested for hazardous waste characteristics at the point of generation.
Groundwater protection standards: owners/operators of RCRA treatment, storage, or disposal facilities must comply with conditions in this section designed to ensure that hazardous constituents entering the groundwater from a regulated unit do not exceed the concentration limits for contaminants of concern set forth under § 66264.94 in the uppermost aquifer underlying the waste management area.	Cal. Code Regs. tit. 22, § 66264.94(a)(1), (a)(3), (c), (d), and (e)	Relevant and appropriate	Not applicable because IR Site 40 is not a TSD facility. Based on available data, no RCRA-listed hazardous wastes were disposed at Site 40 and groundwater contamination did not result from release of RCRA-regulated waste. However, substantive provisions of this regulation are relevant and appropriate because the waste soil and groundwater proposed to be generated are similar in composition to hazardous waste. In addition, VOC constituents in groundwater may be found at concentrations exhibiting the characteristic of toxicity.

(table continues)

## Section 11 Statutory Determinations

Table 11-1 (continued)

Action/Requirement	Citation	ARAR <sup>a</sup> Determination	Comments
<b>STATE</b>			
<b>Cal/EPA Department of Toxic Substances Control<sup>b</sup></b>			
Definition of “non-RCRA hazardous waste.”	Cal. Code Regs. tit. 22, §§ 66261.22(a)(3) and (4), 66261.24(a)(2) to (a)(8), 66261.101(a)(1) and (a)(2), 66261.3(a)(2)(C), or 66261.3(a)(2)(F)	Applicable	Using the state definition for hazardous waste, groundwater extracted from IR Site 40 wells and soil removed during well construction are determined not to be listed non-RCRA hazardous waste but will be tested to determine if they meet the criteria for characteristic non-RCRA hazardous waste. If the waste is found to be characteristic non-RCRA hazardous waste, generator requirements are applicable.
Primary drinking water standards for public water systems (state MCLs).	Cal. Code Regs. tit. 22, § 64444	Relevant and appropriate	If more stringent than federal MCLs or nonzero MCLGs, state MCLs are tap water standards that are relevant and appropriate for groundwater determined to be a source of drinking water. Table 8-2 lists COCs at the site and their MCLs. The groundwater underlying the site is within the Santa Ana Pressure Subbasin and is a Class II aquifer designated by RWQCB for municipal and domestic use in addition to other uses. These use designations also apply to the shallow groundwater system at NAVWPNSTA Seal Beach.  Only the primary standards for organic chemicals (Cal. Code Regs. tit. 22, § 64444), specifically VOCs, which are more stringent than primary federal standards, are ARARs for this action. MCLs for inorganics specified in Cal. Code Regs. tit. 22, § 64431 are not identified as ARARs because NAVWPNSTA Seal Beach has not contributed to the groundwater inorganics contamination.
<b>State Water Resources and Regional Water Quality Control Boards<sup>b</sup></b>			
Authorizes SWRCB and RWQCB to establish, in WQCPs, beneficial uses and numerical and narrative standards to protect both surface and groundwater quality.	Cal. Water Code, div. 7, §§ 13241, 13243, 13263(a), 13269, and 13360 (Porter-Cologne Water Quality Act)	Applicable	The DON accepts the substantive provisions of §§ 13241, 13243, 13263(a), 13269, and 13360 of the Porter-Cologne Water Quality Act enabling legislation, as implemented through the beneficial uses and WQOs of the Basin Plan for the Santa Ana Region, as ARARs.

(table continues)

Section 11 Statutory Determinations

Table 11-1 (continued)

Action/Requirement	Citation	ARAR <sup>a</sup> Determination	Comments
<b>STATE</b>			
<b>State Water Resources and Regional Water Quality Control Boards<sup>b</sup></b> (continued)			
Describes water basins in the Santa Ana region; establishes beneficial uses of ground and surface waters; establishes WQOs, including narrative and numerical standards; establishes implementation plans to meet WQOs and protect beneficial uses; and incorporates statewide WQCPs and policies.	Comprehensive WQCP for the Santa Ana Basin 1995	Applicable	Substantive provisions of Chapters 2 through 4 are applicable. The beneficial uses for the Santa Ana Pressure Subbasin designated in the WQCP are municipal/domestic use (potential drinking water), agricultural supply, industrial service supply, and industrial process supply. These uses also apply to the shallow groundwater system at NAVWPNSTA Seal Beach.
Incorporated into all regional board basin plans. Designates all ground and surface waters of the state as drinking water except where the TDS is greater than 3,000 ppm, the well yield is less than 200 gpd from a single well, the water is a geothermal resource or in a water-conveyance facility, or the water cannot reasonably be treated for domestic use by either best management practices or best economically achievable treatment practices.	SWRCB Res. No. 88-63 (Sources of Drinking Water Policy)	Applicable	Substantive provisions are ARARs. The WQCP currently identifies the Santa Ana Pressure Subbasin and the overlying shallow groundwater at NAVWPNSTA Seal Beach as a source of drinking water.

Notes:

<sup>a</sup> where MCLs were not available, chemical-specific concentrations used to establish remediation goals may be based on the following:

- human-health risk-based concentrations (40 C.F.R. § 300.430[e][A][1] and [2])
- ecological risk-based concentrations (40 C.F.R. § 300.430[e][G])
- practical quantitation limits of contaminants (40 C.F.R. § 300.430[e][A][3]);

many potential action-specific ARARs contain chemical-specific limitations and are addressed in the action-specific ARAR tables

<sup>b</sup> statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statute or policy as a potential ARAR; specific potential ARARs are addressed in the table below each general heading; only substantive requirements of the specific citations are considered potential ARARs

(table continues)

Section 11 Statutory Determinations

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**Table 11-1** (continued)

## Acronyms/Abbreviations:

ARAR – applicable or relevant and appropriate requirement  
Cal. Code Regs. – *California Code of Regulations*  
Cal/EPA – California Environmental Protection Agency  
Cal. Water Code – *California Water Code*  
C.F.R. – *Code of Federal Regulations*  
COC – chemical of concern  
div. – division  
DON – Department of the Navy  
gpd – gallons per day  
IR – Installation Restoration (Program)  
MCL – maximum contaminant level  
MCLG – maximum contaminant level goal  
NAVWPNSTA – Naval Weapons Station  
NCP – National Oil and Hazardous Substances Pollution Contingency Plan  
ppm – parts per million  
RCRA – Resource Conservation and Recovery Act  
Res. – resolution  
RWQCB – (California) Regional Water Quality Control Board  
§ – section  
SWRCB – (California) State Water Resources Control Board  
TDS – total dissolved solids  
tit. – title  
TSD – treatment, storage, and disposal  
U.S.C. – *United States Code*  
VOC – volatile organic compound  
WQCP – water quality control plan  
WQO – water quality objective

## Section 11 Statutory Determinations

**Table 11-2**  
**Location-Specific ARARs for Selected Remedy**

Location/Requirement	Citation	ARAR Determination	Comments
<b>FEDERAL</b>			
<b>National Archaeological and Historical Preservation Act*</b>			
Construction within area where action may cause irreparable harm, loss, or destruction of significant artifacts requires data recovery and preservation.	Substantive requirements of 36 C.F.R. § 65, 40 C.F.R. § 6.301(c), 16 U.S.C. § 469	Relevant and appropriate	An archaeological survey for NAVWPNSTA Seal Beach indicates the presence of 186 out of the 250 structures surveyed as eligible for contributing to the historic district. Building 240 at IR Site 40 is listed. The DON will coordinate with the SHPO as required to minimize impacts on this structure.
<b>National Historic Preservation Act of 1966, as Amended*</b>			
Action should preserve historic properties; planning of action should minimize harm to properties listed on or eligible for listing on National Register of Historic Places.	16 U.S.C. § 470–470x-6, 36 C.F.R. pt. 800, and 40 C.F.R. § 6.301(b)	Applicable	An archaeological survey for NAVWPNSTA Seal Beach indicates the presence of 186 out of the 250 structures surveyed as eligible for contributing to the historic district. Building 240 at IR Site 40 is listed. The DON will coordinate with the SHPO as required to minimize impacts on this structure.
<b>Historic Sites, Buildings, and Antiquities Act of 1935*</b>			
Actions at historic sites should prevent undesirable impacts on landmarks.	16 U.S.C. § 461–467, 40 C.F.R. § 6.301(a)	Applicable	Please see comment under National Historic Preservation Act.
<b>Executive Order Number 11990, Protection of Wetlands*</b>			
Action should minimize the destruction, loss, or degradation of wetlands.	40 C.F.R. § 6.302(a)	Relevant and appropriate	Jurisdictional wetlands at NAVWPNSTA Seal Beach, identified by USACE, are close to IR Site 40. Remedial actions will include measures to prevent or mitigate any expected impacts on wetlands.
<b>Endangered Species Act of 1973*</b>			
Action should conserve endangered or threatened species, including consultation with the DOI.	16 U.S.C. 1536(c), 50 C.F.R. § 402	Applicable	IR Site 40 remedial activities may affect the Seal Beach NWR, which supports special species or habitat. Four bird species and one plant species are listed as endangered either by federal or state agencies and are known to inhabit NAVWPNSTA Seal Beach and the wetlands of the NWR. Salt marsh bird's beak is listed as an endangered plant species by federal and state agencies. Because of the rapidly disappearing habitat on the coast of southern California, two species of federally listed

(table continues)

Section 11 Statutory Determinations

Table 11-2 (continued)

Location/Requirement	Citation	ARAR Determination	Comments
<b>FEDERAL</b>			
<b>Endangered Species Act of 1973*</b> (continued)			
Action should conserve endangered or threatened species, including consultation with the DOI. (continued)			endangered birds, the California least tern and the light-footed clapper rail, rely on the limited habitat at NAVWPNSTA Seal Beach for their survival. The federally listed California brown pelican, along with the state-listed Belding’s Savannah sparrow, also use the habitat at NAVWPNSTA Seal Beach and the NWR wetlands. Remedial activities will be conducted in a manner that will avoid impact to these resources.
<b>Coastal Zone Management Act*</b>			
Activities affecting the coastal zone including lands thereunder and adjacent shore land should be conducted in a manner consistent with approved state management programs.	Section 307(c) of 16 U.S.C. § 1456(c); also see 15 C.F.R. §§ 930 and 923.45	Relevant and appropriate	Relevant and appropriate because NAVWPNSTA Seal Beach is within a coastal area. Not applicable because federal lands are excluded from the coastal zone.
<b>Migratory Bird Treaty Act*</b>			
Protects almost all species of native birds in the U.S. from unregulated “take” that can include poisoning at hazardous waste sites.	16 U.S.C. § 1372(2)	Relevant and appropriate	The American robin, red-tailed hawk, and California least tern are migratory birds listed in 50 C.F.R. § 10.13 that are known to occupy IR Site 40. The project site is in a coastal zone or area that might be habitat for migratory birds. Remedial activities will be conducted in a manner that will be protective of migratory birds.
<b>STATE</b>			
<b>California Endangered Species Act*</b>			
No person shall import, export, take, possess, or sell any endangered or threatened species or part or product thereof.	Cal. Fish & Game Code § 2080	Relevant and appropriate	Relevant and appropriate because federally endangered species are present in the vicinity of IR Site 40. Remedial activities will be conducted in a manner that will avoid impact to these resources. Not applicable because requisite federal sovereign immunity waiver does not exist to authorize applicability.

(table continues)

## Section 11 Statutory Determinations

Table 11-2 (continued)

Location/Requirement	Citation	ARAR Determination	Comments
<b>STATE</b>			
<b>California Coastal Act*</b>			
Regulates activities associated with development to control direct significant impacts on coastal waters and to protect state and national interests in California coastal resources.	Cal. Pub. Res. Code §§ 30000–30900; Cal. Code Regs. tit. 14, §§ 13001–13666.4	Relevant and appropriate	Relevant and appropriate because NAVWPNSTA Seal Beach is within a coastal area. Not applicable because federal lands are excluded from the coastal zone.

## Note:

- \* statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statute or policy as a potential ARAR; specific potential ARARs are addressed in the table below each general heading; only substantive requirements of the specific citations are considered potential ARARs

## Acronyms/Abbreviations:

ARAR – applicable or relevant and appropriate requirement  
 Cal. Code Regs. – *California Code of Regulations*  
 Cal. Fish & Game Code – *California Fish and Game Code*  
 Cal. Pub. Res. Code – *California Public Resources Code*  
 C.F.R. – *Code of Federal Regulations*  
 DOI – (United States) Department of the Interior  
 DON – Department of the Navy  
 IR – Installation Restoration (Program)  
 NAVWPNSTA – Naval Weapons Station  
 NWR – National Wildlife Refuge  
 § – section  
 SHPO – State Historic Preservation Officer  
 tit. – title  
 USACE – United States Army Corps of Engineers  
 U.S.C. – *United States Code*

## Section 11 Statutory Determinations

**Table 11-3  
Action-Specific ARARs for Selected Remedy**

Action/Requirement	Citation	ARAR Determination	Comments
<b>FEDERAL</b>			
<b>Resource Conservation and Recovery Act, 42 U.S.C. § 6901 et seq.*</b>			
Person who generates waste shall determine whether waste is a hazardous waste.	Cal. Code Regs. tit. 22, §§ 66262.10(a), 66262.11, and 66264.13(a) and (b)	Applicable	Applicable for any operation generating waste, including extracted groundwater and soil cuttings from well installation, or well purging. The determination of whether materials are RCRA hazardous will be made when the wastes are generated.
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, or inside buildings, and is labeled and dated, etc.	Cal. Code Regs. tit. 22, § 66262.34	Applicable	Applicable for any operation where hazardous waste is generated and transported. The determination of whether waste is hazardous will be made at the time of generation.
Requires that owners/operators of a RCRA surface impoundment, waste pile, land-treatment unit, or landfill shall conduct a monitoring and response program for each regulated unit.	Cal. Code Regs. tit. 22, § 66264.91(a) and (c), except as it cross-references permit requirements	Relevant and appropriate	Relevant and appropriate for groundwater monitoring at IR Site 40. Not applicable because the site is not a regulated unit. Table 8-1 identifies chemicals of concern at IR Site 40. A groundwater monitoring plan will be developed during the remedial design phase.
Requires that a groundwater monitoring system be established and provides requirements the system must meet.	Cal. Code Regs. tit. 22, § 66264.97(b) and (e)(1)–(5)	Relevant and appropriate	Relevant and appropriate for groundwater monitoring at IR Site 40. Not applicable because the site is not a regulated unit. A groundwater monitoring plan will be developed during the remedial design phase.
Requires that the owner or operator of a regulated unit develop a detection monitoring program that will provide reliable indication of a release.	Cal. Code Regs. tit. 22, § 66264.98	Relevant and appropriate	Relevant and appropriate for IR Site 40. Not applicable because the site is not a regulated unit. A groundwater monitoring plan will be developed during the remedial design phase.
Provides requirements for monitoring to demonstrate the effectiveness of a corrective action program for a regulated unit.	Cal. Code Regs. tit. 22, § 66264.100(d)	Relevant and appropriate	Relevant and appropriate for groundwater monitoring at IR Site 40. Not applicable because the site is not a regulated unit. A groundwater monitoring plan will be developed during the remedial design phase.

**Note:**

\* statutes and policies, and their citations, are provided as headings to identify general categories of potential applicable or relevant and appropriate requirements; specific potential applicable or relevant and appropriate requirements are addressed in the table below each general heading

**Acronyms/Abbreviations:**

ARAR – applicable or relevant and appropriate requirement  
 Cal. Code Regs. – *California Code of Regulations*  
 IR – Installation Restoration (Program)  
 RCRA – Resource Conservation and Recovery Act  
 § – section  
 tit. – title  
 U.S.C. – *United States Code*

### 11.2.1 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. If a chemical has more than one remediation goal, the most stringent level has been identified as an ARAR for this remedial action. The selected remedial action can be implemented to comply with chemical-specific ARARs.

Chemical-specific ARARs have been identified for groundwater and soil. Groundwater is a medium of concern at IR Site 40 because it is a potential source of drinking water. Soil is not a medium of concern, but soil cuttings generated from construction of monitoring and injection wells will require characterization as potential hazardous waste prior to disposal. Surface water is not a medium of concern.

The substantive provisions of the following requirements were identified as the most stringent of the potential federal and state groundwater ARARs for remedial actions at IR Site 40:

- WQCP for the Santa Ana Region, 1995 (specifying water quality objectives, beneficial use, waste discharge limitations)
- federal MCLs listed in the Safe Drinking Water Act (SDWA)
- state primary MCLs in Cal. Code Regs. tit. 22, § 64444
- RCRA groundwater protection standards in Cal. Code Regs. tit. 22, § 66264.94(a)(1), (a)(3), (c), (d), and (e)

The most stringent of these requirements are the RCRA groundwater protection standards and Cal. Code Regs. tit. 22, § 66264.94 requirements to restore affected groundwater to background conditions, if possible, or else attain the best water quality that is technically and economically feasible. A fate and transport study was conducted as part of the ERSE. Results indicate that migration through vadose zone soil leaching is considered negligible for existing conditions (Fate and Transport, Section 5.3).

The DON has determined that the substantive provisions of Cal. Code Regs. tit. 22, § 66264.94(a)(1), (a)(3), (c), (d), and (e) constitute relevant and appropriate federal requirements for groundwater. These provisions are considered a federal ARAR because this requirement was approved by U.S. EPA in its 23 July 1992 authorization of the state of California's RCRA program and is federally enforceable. The state of California disagrees with the DON; this regulation is a part of the state's authorized hazardous waste control program, so the state contends that the regulation is a state ARAR and not a federal ARAR. See *55 Federal Register* (Fed. Reg.) 8765, 08 March 1990, and *United States v. State of Colorado*, 990 F.2d 1565 (1993).

Discussions of chemical-specific ARARs for groundwater follow.

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**Section 11 Statutory Determinations**

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**11.2.1.1 GROUNDWATER CLASSIFICATION**

Under SDWA and RCRA, a significant issue in identifying ARARs for groundwater is whether the groundwater can be classified as a source of drinking water. The U.S. EPA groundwater policy set forth in the NCP preamble uses the system in the U.S. EPA Guidelines for Groundwater Classification Under the U.S. EPA Groundwater Protection Strategy (NCP, 55 Fed. Reg. 8752–8756). Under this policy, groundwater is classified in one of three categories (Class I, II, or III) based on ecological importance, its ability to be replaced, and vulnerability. Class I is irreplaceable groundwater currently used by a substantial population, or groundwater that supports a vital habitat. Class II consists of groundwater currently used or that might be used as a source of drinking water in the future. Class III is groundwater that cannot be used for drinking water because of its unacceptable quality (e.g., high salinity or widespread naturally occurring contamination) or insufficient quantity. The U.S. EPA guidelines define Class III as groundwater with TDS concentrations over 10,000 milligrams per liter (mg/L). The shallow aquifer underlying IR Site 40 at NAVWPNSTA Seal Beach is classified as a Class II aquifer and is designated by RWQCB Santa Ana Region as a potential source of drinking water, along with other beneficial uses such as agricultural and industrial.

**11.2.1.2 SAFE DRINKING WATER ACT**

MCLs under the SDWA are potential relevant and appropriate requirements for aquifers with Class I and II characteristics and, therefore, are potential federal ARARs. The point of compliance for MCLs under the SDWA is at the tap. For CERCLA remedies, however, U.S. EPA indicates that MCLs should be attained throughout the contaminated plume, or at and beyond the edge of the waste management area when the waste is left in place (55 Fed. Reg. 8753). In accordance with the RAOs, it is the DON's intent to restore potential beneficial uses of the shallow aquifer underlying NAVWPNSTA Seal Beach with regard to VOCs. The DON does not intend to establish a point of compliance for this remedial action.

**11.2.1.3 PRIMARY MCLs**

Primary state MCLs that are ARARs for the remedial action at IR Site 40 are set forth in Cal. Code Regs. tit. 22, § 64444 (Maximum Contaminant Levels—Organic Chemicals). MCLs for inorganics are not ARARs because there is no evidence that exceedances for these chemicals are caused by site-related activities.

**11.2.1.4 RCRA GROUNDWATER PROTECTION STANDARDS**

Cal. Code Regs. tit. 22, § 66264.94 states that concentration limits for RCRA groundwater protection standards are set for RCRA-regulated units. These regulations provide that compounds must not exceed their background levels in groundwater or some higher concentration limit set as part of the corrective action program. A limit greater than background may be approved if the owner can demonstrate that it is not technologically or economically feasible to achieve the background value and that the

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constituent at levels below the concentration limit will not pose a hazard to human health or the environment. A concentration limit greater than background must never exceed MCLs established under the federal SDWA (Cal. Code Regs. tit. 22, § 66264.94[e]).

RCRA groundwater protection standards are applicable only for regulated units managing hazardous wastes. These standards are not applicable to IR Site 40 because this site does not contain a RCRA waste management unit and the VOC-affected groundwater to be addressed by this remedial action is not a RCRA-listed hazardous waste. However, these standards are considered relevant and appropriate because they address circumstances and contaminants similar to those encountered in the plume at and downgradient of IR Site 40. Accordingly, the DON has determined that the RCRA groundwater protection standards are potential ARARs for this remedial action.

A discussion of the technical and economic infeasibility of remediating groundwater to background is presented in the Groundwater FS Report for IR Sites 40 and 70. This document was reviewed and accepted by U.S. EPA, DTSC, and RWQCB. Therefore, as provided for in Cal. Code Regs. tit. 22, § 66264.94, concentration limits based on MCLs are considered remedial goals for IR Site 40. However, RCRA waste management standards apply to the waste generated during remediation activities as addressed in the action-specific ARARs, Section 11.2.3.

### **11.2.1.5 WATER QUALITY CONTROL PLAN**

The DON accepts as state ARARs for groundwater the substantive provisions in Chapters 2 through 4 of the WQCP for the Santa Ana River Basin (RWQCB 1995), including beneficial uses and water quality objectives.

### **11.2.1.6 CALIFORNIA STATE WATER RESOURCES CONTROL BOARD RESOLUTIONS 92-49 AND 68-16**

The DON and the state of California have not agreed whether SWRCB Resolution (Res.) 92-49 and Res. 68-16 are ARARs for the remedial action at IR Site 40. Therefore, this ROD/RAP documents each party's position but does not attempt to resolve the issue.

#### ***The DON's Position Regarding SWRCB Resolutions 92-49 and 68-16***

The DON 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 to background levels unless such restoration proves to be technologically or economically infeasible and an alternative remediation goal will not pose a substantial present or potential hazard to human health or the environment. In addition, the DON recognizes that these provisions are more stringent than the corresponding provisions of 40 C.F.R. § 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 DON has also determined that SWRCB Res. 68-16 is not a chemical-specific ARAR for determining remedial action goals but is an action-specific ARAR for regulating

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discharged treated groundwater back into the aquifer (not a component of the selected alternative). The DON has determined that further migration of already contaminated 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 DON'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 groundwater 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 Section 121[d][2][A][ii] [42 U.S.C. § 9621(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 Position Regarding SWRCB Resolutions 68-16 and 92-49**

The state does not agree with the DON determination that SWRCB Res. 92-49 and Res. 68-16 and certain provisions of Cal. Code Regs. tit. 23, div. 3, ch. 15, are not ARARs for groundwater 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/RAP, 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]).

### **Conclusion**

Whereas the DON 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/RAP documents each of the parties' positions on the resolutions but does not attempt to resolve the issue.

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**11.2.1.7 REMEDIATION GOALS**

Remediation goals for groundwater are set at MCLs, reflecting current and potential use and exposure. COCs in groundwater at IR Site 40 are VOCs, several of which exceed federal or state MCLs. The remediation goals for these chemicals are based on federal and state MCLs. Table 8-2 shows the remediation goals for COCs in groundwater. The shallow groundwater at NAVWPNSTA Seal Beach contains elevated concentrations of organics, which result from sources unrelated to DON operations. Cleanup of this groundwater to below background conditions is not required by SWRCB under the Porter-Cologne Act. Therefore, the success of Alternative 5A would not be measured by reductions in any inorganic constituents that are not site-related contaminants.

**11.2.2 Location-Specific ARARs**

Location-specific ARARs are restrictions on the concentrations of hazardous substances or on activities solely because they are in specific locations such as floodplains, wetlands, historic places, and sensitive ecosystems or habitats. The selected remedial action will be implemented to comply with location-specific ARARs.

The substantive provisions of the following requirements were identified as the most stringent of the potential federal and state location-specific ARARs for the remedial actions at IR Site 40:

- 40 C.F.R § 6.302(a) (Executive Order No. 11990, Protection of Wetlands)
- 40 C.F.R. § 6.301(a) (Historic Sites, Buildings, and Antiquities Act of 1935 [16 U.S.C. §§ 461–167])
- 40 C.F.R § 6.301(b) (National Historic Preservation Act [NHPA] of 1966, as Amended [16 U.S.C. § 470–470x-6])
- 40 C.F.R. § 6.301(c) (Archaeological and Historic Preservation Act [16 U.S.C. § 469–469c-1])
- 16 U.S.C. §§ 1531–1543 (Endangered Species Act [ESA])
- 16 U.S.C. §§ 1451–1464 (Coastal Zone Management Act [CZMA])
- 16 U.S.C. §§ 703–712 (Migratory Bird Treaty Act)
- *California Fish and Game Code* (Cal. Fish & Game Code) § 2080 (California ESA)
- *California Public Resources Code* (Cal. Pub. Res. Code) §§ 30000–30900; Cal. Code Regs. tit. 14, §§ 13001–13666.4 (California Coastal Act)

**11.2.2.1 WETLANDS**

Jurisdictional wetlands exist at NAVWPNSTA Seal Beach, identified by the United States Army Corps of Engineers and are located close to IR Site 40. Title 40 C.F.R. § 6.302(c) requires that actions within wetlands be implemented to minimize the destruction, loss, or degradation of wetlands. The DON will take appropriate action during the remedial design and remedial action phase to minimize impact on wetlands

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## Section 11 Statutory Determinations

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and will consider the location of the wetlands in siting the injection and monitoring wells and their associated piping and equipment.

### **11.2.2.2 NATIONAL HISTORIC PRESERVATION ACT**

An archaeological survey conducted at NAVWPNSTA Seal Beach indicates the presence of 186 out of the 250 structures surveyed as eligible for contributing to the historic district. Building 240 located at IR Site 40 is listed. NHPA requires that potential impacts to federally funded properties included in or eligible for the National Register of Historic Places (National Register) be identified and mitigated. The DON will coordinate with the State Historic Preservation Officer as required to minimize impacts on this structure.

### **11.2.2.3 ENDANGERED SPECIES**

IR Site 40 remedial actions might affect areas that support federal and California-listed endangered species or habitat. The NAVWPNSTA Seal Beach NWR supports endangered species. Five bird species and one plant species are listed as endangered either by federal or state agencies and are known to inhabit NAVWPNSTA Seal Beach and the wetlands of the NWR. Salt marsh bird's beak is listed as an endangered plant species by federal and state agencies. Because of the rapidly disappearing habitat on the coast of southern California, two species of federally listed endangered birds, the California least tern and the light-footed clapper rail, rely on the limited habitat at NAVWPNSTA Seal Beach for their survival. One other federally listed endangered bird, the California brown pelican, along with the state-listed Belding's Savannah sparrow, also use the habitat at NAVWPNSTA Seal Beach and the NWR wetlands. The ESA of 1973 (16 U.S.C. §§ 1531–1543) provides a means for conserving various species of fish, wildlife, and plants that are threatened with extinction. The ESA defines an endangered species and provides for the designation of critical habitats. Federal agencies may not jeopardize the continued existence of any listed species or cause the destruction or adverse modification of critical habitat. Under Section 7(a) of the ESA, federal agencies must carry out conservation programs for listed species. 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. Consultation regulations at 50 C.F.R. § 402 are administrative in nature and therefore are not ARARs. However, the DON will comply with substantive provisions of the ESA (Cal. Fish & Game Code § 2080).

### **11.2.2.4 COASTAL ZONE MANAGEMENT ACT**

Under the CZMA, federal land is specifically excluded from the definition of a coastal zone. The CZMA (16 U.S.C. §§ 1451–1464) and the accompanying implementing regulations in 15 C.F.R. § 930 require that federal agencies conducting or supporting activities directly affecting the coastal zone conduct or support those activities in a manner that is consistent with the approved state coastal zone management programs. A state coastal zone management program (developed under state law and guided by the CZMA) sets forth objectives, policies, and standards to guide public and private uses

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## Section 11 Statutory Determinations

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of lands and water in the coastal zone. Activities affecting the coastal zone including lands thereunder and adjacent shore land will be conducted in a manner consistent with approved state management programs. This ARAR is relevant and appropriate. This ARAR is not applicable because federal land is excluded from the definition of coastal zone.

### 11.2.2.5 CALIFORNIA COASTAL ACT OF 1976

Cal. Pub. Res. Code §§ 30000–30900 and Cal. Code Regs. tit. 14, §§ 13001–13666.4 regulate activities associated with development to control direct significant impacts on coastal waters and to protect state and national interests in California coastal resources. The California Coastal Act policies set forth in the act constitute the standards used by the California Coastal Commission in its coastal development permit decisions and for the review of local coastal programs. These policies contain the following substantive requirements: protection and expansion of public access to the shoreline and recreation opportunities (Cal. Pub. Res. Code §§ 30210–30224); protection, enhancement, and restoration of environmentally sensitive habitats including intertidal and nearshore waters, wetlands, bays and estuaries, riparian habitat, grasslands, streams, lakes, and habitat for rare or endangered plants or animals (Cal. Pub. Res. Code §§ 30230–30240), protection of productive agricultural lands, commercial fisheries, and archaeological resources (Cal. Pub. Res. Code §§ 30234, 30241–30244), protection of the scenic beauty of coastal landscapes (Cal. Pub. Res. Code § 30251), and provisions for expansion, in an environmentally sound manner, of existing industrial ports and electricity-generating power plants (Cal. Pub. Res. Code § 30264).

### 11.2.2.6 MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (16 U.S.C. §§ 703–712) prohibits at any time, using any means or manner, the pursuit, hunting, capturing, and killing or attempting to take, capture, or kill any migratory bird. This act also prohibits the possession, sale, export, and import of any migratory bird or any part of a migratory bird, as well as nests and eggs. A list of migratory birds for which this requirement applies is found at 50 C.F.R. § 10.13.

## 11.2.3 Action-Specific ARARs

Action-specific ARARs are technology- or activity-based requirements or limitations for remedial activities and apply to particular remediation activities. Actions that trigger these ARARs at IR Site 40 include installation of injection and monitoring wells, and groundwater monitoring.

Injection of chemicals into groundwater for *in situ* treatment does not trigger federal or state ARARs. There are no specific federal or state ARARs concerning injection of nutrients/adjuvants and/or chemical reagents into the groundwater. In addition, RCRA § 3020(a), which bans hazardous waste disposal by underground injection above a formation that contains an underground source of drinking water, does not apply to this

## Section 11 Statutory Determinations

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action because commercial chemical or chemical by-products injected into groundwater for *in situ* treatment are not considered hazardous waste (U.S. EPA 2000).

Federal and state action-specific ARARs for installation of wells and groundwater monitoring are discussed in the following subsections.

### 11.2.3.1 FEDERAL

Federal laws that give rise to potential ARARs for actions to be undertaken as part of the selected alternative include RCRA requirements for monitoring and for characterizing, managing, and treating hazardous waste. These regulations are discussed below.

#### **RCRA**

RCRA requirements for monitoring and for identification, management, and treatment of hazardous wastes (soil cuttings, wastewater generated in the course of installing monitoring and injection wells) are federal action-specific ARARs identified for the selected alternative. Portions of the RCRA groundwater protection standards contained in Cal. Code Regs. tit. 22 are considered relevant and appropriate for the groundwater potentially impacted by the releases from IR Site 40 because the hazardous chemicals being addressed by this alternative are similar or identical to those found in RCRA hazardous wastes.

The DON has determined that soil and groundwater at IR Site 40 would not be classified as RCRA-listed hazardous wastes. However, testing would still be required to classify these materials with respect to the RCRA hazardous waste characteristics. This determination would be made at the time the waste is generated. If testing at the time of generation indicates a hazardous waste, then the appropriate RCRA requirements in Table 11-3 for storing, treatment, and disposal would be potentially applicable ARARs for on-site activities.

A groundwater monitoring program will be developed during the remedial design phase. Substantive provisions of the following requirements are relevant and appropriate to the development and implementation of the monitoring program:

- groundwater monitoring and response (Cal. Code Regs. tit. 22, § 66264.91[a] and [c]), except as it cross-references permit requirements
- requirements for monitoring groundwater, surface water, and the vadose zone (Cal. Code Regs. tit. 22, § 66264.97[e])
- detection monitoring (Cal. Code Regs. tit. 22, § 66264.98)
- corrective-action monitoring (Cal. Code Regs. tit. 22, § 66264.100[d])

These regulations are not applicable because the sites are not RCRA-regulated units.

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## Section 11 Statutory Determinations

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### 11.2.3.2 STATE

State laws that give rise to potential ARARs for actions to be undertaken as part of the selected alternative include state requirements for characterizing non-RCRA hazardous waste. This regulation is discussed below.

#### **RCRA**

Waste streams generated in the course of implementing the selected alternative would be characterized with respect to state criteria for identification of non-RCRA hazardous waste. Materials that would be tested under this requirement are the soil cuttings and development water from installation of monitoring and injection wells. Waste exhibiting a characteristic of non-RCRA hazardous waste (although existing sample results do not indicate this will occur) would be managed in accordance with the appropriate requirements of Cal. Code Regs. tit. 22, § 66264 already identified as federal ARARs in Section 11.2.3.1.

### 11.3 COST-EFFECTIVENESS

The selected remedy has been determined to provide overall effectiveness proportional to its costs; it is therefore considered cost-effective. The estimated net present-worth cost for this remedial action is approximately \$1.1 million. This total includes capital costs of approximately \$0.3 million and monitoring costs of approximately \$0.8 million. This includes costs associated with the bench-scale test, pilot study, and construction and operation of the shallow groundwater monitoring and injection wells and remediation system. Technologies included in Alternative 5A are innovative and require site-specific testing to verify their effectiveness. Much of this testing has been performed and has been demonstrated to be effective. Additional testing will be performed during the remedial design phase. The cost of the selected alternative, although higher than the cost of the no action alternative, is comparable to the cost of MNA or conventional pump and treat and is expected to achieve cleanup objectives much more quickly than either of these technologies. For this reason, Alternative 5A is considered to represent a low-cost, effective, permanent solution for groundwater remediation.

### 11.4 UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES (OR RESOURCE RECOVERY TECHNOLOGIES) TO THE MAXIMUM EXTENT PRACTICABLE

Alternative 5A uses an alternative treatment technology (lactate enhancement) to achieve a permanent solution to VOC contamination in groundwater at IR Site 40. This alternative is protective of human health and the environment and complies with the ARARs for the site. VOC contaminants within groundwater will be reduced to harmless by-products and therefore will be permanently destroyed. Although some residual contamination may remain in groundwater at the completion of remediation (as defined by MCLs), the concentration would not be high enough to present a risk to human health. The selected alternative has been tested and found to be effective at this particular site

## Section 11 Statutory Determinations

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although the process will require some modification to result in complete degradation of the VOCs. The concentrations of VOCs in groundwater are expected to be significantly reduced within approximately 1 year of operation. The effectiveness of the remedy will be evaluated throughout this time. Should this evaluation show that the effectiveness of the lactate injection has reached a plateau (i.e., the mass removal efficiency has reached an asymptotic state) before remediation goals are achieved, MNA will be used for the duration of the remediation period. In the meantime, the DON will protect human health by using the base project review process in accordance with the National Environmental Policy Act to implement restrictions prohibiting installation of wells and use of untreated groundwater for domestic purposes.

The most decisive factors in the selection of Alternative 5A are that this alternative will permanently reduce the toxicity and volume of VOC contaminants and will assist in restoring the groundwater to its designated beneficial uses within a very short period of time.

### **11.5 PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT**

CERCLA Section 121(b) identifies a statutory preference for alternatives that use treatment to reduce the toxicity, mobility, or volume of contamination. The selected alternative complies with this requirement.

**Section 12**

**DOCUMENTATION OF SIGNIFICANT CHANGES**

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The Proposed Plan for IR Site 40 was released for public comment in August 2003. The Proposed Plan identified Alternative 5A, *in situ* lactate enhanced bioremediation process, as the preferred alternative for remediation of groundwater at IR Site 40. The DON has reviewed all written and verbal comments submitted during the comment period and determined that no changes to the proposed remedy are required.

## Section 13

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# **RESPONSIVENESS SUMMARY**

**RESPONSES TO PUBLIC COMMENTS RECEIVED ON  
DRAFT RECORD OF DECISION/REMEDIAL ACTION PLAN**

**RESPONSIVENESS SUMMARY  
NAVAL WEAPONS STATION SEAL BEACH, CALIFORNIA  
DRAFT RECORD OF DECISION/REMEDIAL ACTION PLAN – IR SITE 40**

**Letter Received During Public Comment Period**

Comment by: Lee Whittenberg, City of Seal Beach to Navy, dated 7 January 2004

Response by: Robert Schilling and Betty Schmucker (Bechtel Environmental, Inc.)

**COMMENT**

City staff has reviewed the above referenced document and has a minor correction that should be made in the final document on page 6-1. The third paragraph of Section 6.1, Land Uses, indicates that Sunset Aquatic Park is located “...*in an unincorporated portion of Orange County.*” That statement is incorrect; Sunset Aquatic Park is located within the corporate boundaries of the City of Seal Beach. Please correct the Final ROD/RAP to reflect this correction.

**RESPONSE**

Comment incorporated; this change has been made in the text.

**RESPONSES TO PUBLIC COMMENTS RECEIVED ON  
PROPOSED PLAN/DRAFT REMEDIAL ACTION PLAN**

**RESPONSIVENESS SUMMARY**  
**NAVAL WEAPONS STATION SEAL BEACH – SEAL BEACH, CALIFORNIA**  
**PROPOSED PLAN, OPERABLE UNIT 4, IR SITE 40**

**Letters Received During Public Comment Period**

Comments by: Lee Whittenberg, City of Seal Beach to DTSC, dated 25 September 2003\*

Responses by: Robert Schilling and Elizabeth Barr (Bechtel Environmental, Inc.)

**COMMENTS**

The staff of the City of Seal Beach has reviewed the above referenced “Special Initial Study” and concurs with the determinations of your agency regarding the proposed project...

The City of Seal Beach concurs with your proposed determination of “No Evidence of Potential Adverse Effects”...

The City understands that the impacted groundwater at IR Site 40 does not serve as a source of water for any of the beneficial uses designated in the California Regional Water Quality Control Board’s (RWQCB) Water Quality Control Plan, Santa Ana River Basin (Basin Plan), and therefore does not pose an immediate threat to human health or the environment. However, the human health risk for groundwater exceeds the National Oil and Hazardous Substances Contingency Plan (NCP) defined acceptable cancer risk range.

The City supports the proposed use of institutional controls, in the form of land-use restrictions. The proposed land-use restrictions are necessary to protect the integrity of the groundwater injection and monitoring wells and associated piping and equipment, and to prevent the use of the contaminated groundwater until cleanup goals are achieved at IR Site 40. The proposed land-use restrictions are:

- No new groundwater extraction, injection, or drinking water wells shall be installed within the IR Site 40 groundwater plume or associated buffer zone (500 feet from the edge of the plume in all directions) without prior review and written approval from the Department of the Navy (DON) and the California Department of Toxic Substances Control (DTSC);
- Injection and monitoring wells and associated piping and equipment that are included in the remedial action shall not be altered, disturbed, or removed without prior review and written approval from the DON and DTSC; and

**RESPONSES**

The following land-use controls are included in Section 10.5.1 of the Record of Decision (ROD)/Remedial Action Plan (RAP):

- “• No new groundwater extraction, injection, or drinking water wells shall be installed within the IR Site 40 groundwater plume or associated buffer zone without prior review and written concurrence from the DON and DTSC.
- “• Injection and monitoring wells and associated piping and equipment that are included in the remedial action shall not be altered, disturbed, or removed without the prior review and written concurrence from the DON and DTSC.
- “• The DON, DTSC, and their authorized agents, employees, contractors, and subcontractors will have the right to:
  - “– enter the premises to conduct investigations, tests, or surveys;
  - “– inspect field activities;
  - “– construct, operate, and maintain the remedial action described in this ROD/RAP; and
  - “– undertake any other remedial response or remedial action as required or necessary under the cleanup program.

Association of the above activities includes, but is not limited to, monitoring wells, pumping wells, and treatment facilities.”

The following discussion of termination of the land-use controls is included in Section 10.4 of the ROD/RAP: “Groundwater remediation will be considered complete when the concentration of COCs in all monitoring wells achieves cleanup goals for 1 year of sampling.”

The remaining comments are acknowledged.

<b>RESPONSIVENESS SUMMARY</b> <b>NAVAL WEAPONS STATION SEAL BEACH – SEAL BEACH, CALIFORNIA</b> <b>PROPOSED PLAN, OPERABLE UNIT 4, IR SITE 40</b>					
<b>Letters Received During Public Comment Period</b>					
<ul style="list-style-type: none"> <li>The DON, DTSC, and their authorized agents, employees, contractors, and subcontractors will have the right to enter the premises to conduct investigation, test, or surveys; inspect field activities or construct, operate and maintain the remedial action or undertake any other remedial response or remedial action as required or necessary under the cleanup program, including but not limited to monitoring wells, pumping wells, and treatment facilities. Institutional controls will remain in place until groundwater remediation is complete. Groundwater remediation will be considered complete when the concentration of chemicals of concern (COCs) in all monitoring wells meet the cleanup goals for one year.</li> </ul>					
<p>Comments by: John Unrath, City of Seal Beach to Navy, dated 25 September 2003</p> <p>Responses by: Robert Schilling and Elizabeth Barr (Bechtel Environmental, Inc.)</p> <table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left; width: 50%;"><b>COMMENTS</b></th> <th style="text-align: left; width: 50%;"><b>RESPONSES</b></th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <p>The City of Seal Beach has reviewed the “Proposed Plan/Draft Remedial Action Plan, IR Site 40, Naval Weapons Station, Seal Beach.” If you recall, the City commented on this matter on December 13, 1999 and at that time, the City recommended that the Navy pursue option 5B, which includes the chemical oxidation procedure. Due to the overall cost of that alternative, and due to the results of the Pilot Testing, which has been done over the past 3 years, the City is now supportive of the Navy recommended Alternative 5A. This alternative will allow for great remediation of the contaminants in an appropriate amount of time.</p> </td> <td style="vertical-align: top;"> <p>Comment acknowledged.</p> </td> </tr> </tbody> </table>		<b>COMMENTS</b>	<b>RESPONSES</b>	<p>The City of Seal Beach has reviewed the “Proposed Plan/Draft Remedial Action Plan, IR Site 40, Naval Weapons Station, Seal Beach.” If you recall, the City commented on this matter on December 13, 1999 and at that time, the City recommended that the Navy pursue option 5B, which includes the chemical oxidation procedure. Due to the overall cost of that alternative, and due to the results of the Pilot Testing, which has been done over the past 3 years, the City is now supportive of the Navy recommended Alternative 5A. This alternative will allow for great remediation of the contaminants in an appropriate amount of time.</p>	<p>Comment acknowledged.</p>
<b>COMMENTS</b>	<b>RESPONSES</b>				
<p>The City of Seal Beach has reviewed the “Proposed Plan/Draft Remedial Action Plan, IR Site 40, Naval Weapons Station, Seal Beach.” If you recall, the City commented on this matter on December 13, 1999 and at that time, the City recommended that the Navy pursue option 5B, which includes the chemical oxidation procedure. Due to the overall cost of that alternative, and due to the results of the Pilot Testing, which has been done over the past 3 years, the City is now supportive of the Navy recommended Alternative 5A. This alternative will allow for great remediation of the contaminants in an appropriate amount of time.</p>	<p>Comment acknowledged.</p>				

**RESPONSIVENESS SUMMARY**  
**NAVAL WEAPONS STATION SEAL BEACH – SEAL BEACH, CALIFORNIA**  
***PROPOSED PLAN, OPERABLE UNIT 4, IR SITE 40***

**Letters Received During Public Comment Period**

Comments by: Mary Anne Skorpanich, Watershed Planner Public Facilities & Resources Department County of Orange, dated 26 September 2003

Responses by: Robert Schilling and Elizabeth Barr (Bechtel Environmental, Inc.)

**COMMENTS**

This (comment) is to express support for your proposed plan of action to remediate groundwater contamination at Installation Restoration 40. I commend your efforts to identify and clean up hazardous waste at Naval Weapons Station Seal Beach, and in particular, for your selection of methods at IR 40 that effects the cleanup in the shortest amount of time.

Thank you for the opportunity to comment,

**RESPONSES**

Comment acknowledged.

Comments by: Brad Fowler, Public Works Director, City of Westminster, dated 28 August 2003

Responses by: Robert Schilling and Elizabeth Barr (Bechtel Environmental, Inc.)

**COMMENTS**

Thank you for your notification of the subject groundwater cleanup plan. Upon review of the plan and the Proposed Plan/Draft Remedial Action Plan, the City is pleased to see the Navy and DTSC taking proactive efforts to clean up the groundwater from previous naval operations. We note that your recommendation makes best use of the taxpayers' money while providing assurance that potential negative effects of the VOC contaminants are mitigated in a timely fashion.

Positive actions like this continue to promote the Navy as a good neighbor to the City of Westminster.

**RESPONSES**

Comment acknowledged.

**RESPONSIVENESS SUMMARY**  
**NAVAL WEAPONS STATION SEAL BEACH – SEAL BEACH, CALIFORNIA**  
***PROPOSED PLAN, OPERABLE UNIT 4, IR SITE 40***

**Letters Received During Public Comment Period**

Again, thank you for your clear and succinct documents and the opportunity to provide input.

**Note:**

- \* the comments were made on the Special Initial Study for the proposed action at IR Site 40 prepared by the California Environmental Protection Agency Department of Toxic Substances Control to satisfy the states requirements under the California Environmental Quality Act; however, because the Initial Study covers the action documented in the ROD/RAP, it is deemed appropriate to include the comments and the DON's responses in the Responsiveness Summary to the ROD/RAP

# **ATTACHMENT A**

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## **ADMINISTRATIVE RECORD FOR IR SITE 40**

SEAL BEACH NWS

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

"SITE 40"

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000364	12-28-1994	NEESA PORT	ADDENDUM TO THE PRELIMINARY	ADMIN RECORD	IAS	002		BECHTEL
NEESA 13-062A	08-01-1990	HUENEME	ASSESSMENT (INITIAL ASSESSMENT	INFO	PA	003		NATIONAL
RPT	NONE		STUDY) (SEE AR #525 - IAS).	REPOSITORY		005		
NONE	01.3	NWS SEAL BEACH	***COMMENTS: AS PER RPM (SI LE) ON			008		
00150			5/21/03 - THIS DOCUMENT IS ADDENDUM			010		
			TO FINAL IAS (AR #525).***			011		
						012		
						014		
						015		
						016		
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						025		
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						034A		
						036		
						037		
						038		

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.							Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites			CD No.
									039
									040
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									050
									051
									052
									052A
									052B
									052C

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000351	12-28-1994	JACOBS	SITE INSPECTION SCOPING - SUMMARY	ADMIN RECORD	IAS	001	FRC - LAGUNA	
CLE-I01-01F041-10-	09-25-1990	ENGINEERING	REPORT		PCB	002	NIGEL	
S2-0001	00041	D. MARK			SI	003	181-03-0136	
RPT	01.2	NAVFAC -			SOW	004		
N68711-89-D-9296		SOUTHWEST			UST	005	IMAGED	
00042		DIVISION				006	SEAL_005	
						007		
						008		
						009		
						010		
						011		
						012		
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						043		
						044		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	Subject/Comments	Classification	Keywords	Sites	FRC Access. No.
Approx. # Pages	EPA Cat. #	Recipient					Box No.
							CD No.
						045	
						046	
						047	
						048	
						049	
						050	
						051	
						BLDG. 241	
						BLDG. 52	
						BLDG. 68	
						BLDG. 88	
						BLDG. 95	
						OU 1	
						OU 2	
						OU 3	
						OU 4	
						OU 5	
						OU 6	
						OU 7	
N60701 / 000510	10-02-1995		MAY 9, 1991 TRC MEETING MINUTES	ADMIN RECORD	MTG MINS	002	FRC - LAGUNA
	05-09-1991				TRC	003	NIGEL
MM	NONE	COMMUNITY				005	181-03-0136
NONE	10.4	MEMBERS				006	
00004						009	IMAGED
						013	SEAL_008
						020	
						021	
						023	
						025	
						035	
						036	
						037	
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						046	

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location	FRC Access. No.
Contr./Guid. No.	CTO No.	Recipient Affil.	Recipient	Subject/Comments	Classification	Keywords	Sites	Box No.
Approx. # Pages	EPA Cat. #							CD No.
N60701 / 000023	02-28-1994	NWS SEAL BEACH	MAY 09, 1991 TRC MEETING MINUTES	ADMIN RECORD	MTG MINS	002	FRC - LAGUNA	
	06-13-1991	T.L. RAYBACK	NUMBER FIVE		TRC	003	NIGEL	
MM	NONE	TRC MEMBERS				005	181-03-0136	
NONE	10.5					006		
00005						009	IMAGED	
						013	SEAL_001	
						020		
						021		
						023		
						025		
						035		
						036		
						037		
						038		
						040		
						046		
N60701 / 000511	10-02-1995	DTSC LONG	COMMENTS AND REVIEW ON THE HEALTH	ADMIN RECORD	COMMENTS	002	FRC - LAGUNA	
NONE	08-15-1991	BEACH	AND SAFETY PLAN (SEE AR #150 - DRAFT		H&SP	003	NIGEL	
LTR	NONE	J.M. JIMENEZ	SI WORK PLAN {H&SP INCLUDED IN SI})			005	181-03-0136	
NONE	01.6	PWC SEAL BEACH				006		
00012		T.L RAYBACK				009	IMAGED	
						013	SEAL_006	
						015		
						035		
						036		
						037		
						038		
						040		
						046		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000847	06-13-1997	CA DEPT OF	FEDERAL FACILITY SITE REMEDIATION	ADMIN RECORD	CEQA	001	FRC - LAGUNA	
NONE	09-24-1991	HEALTH	AGREEMENT (SEE AR #628, #629, & #631)	INFO	FFA	002	NIGEL	
MISC	NONE	SERVICES		REPOSITORY	FFSRA	003	181-03-0136	
NONE	03.0	NWS SEAL BEACH				004		
00079						005	IMAGED	
						006	SEAL_007	
						007		
						008		
						009		
						010		
						011		
						012		
						013		
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						035		
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						037		
						038		
						039		
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						041		
						042		
						043		
						044		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
						045		
						046		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 6		
N60701 / 000331	12-28-1994	JACOBS	FINAL SITE INSPECTION WORK PLAN {SEE	ADMIN RECORD	SI	002	BECHTEL	
CLE-C01-01F041-10	11-01-1991	ENGINEERING	AR #804 - COMMENTS BY DTSC}		WORK PLAN	003	NATIONAL	
B5-0003	00041	B. WONG				005		
PLAN	01.2	NAVFAC -				006		
N68711-89-D-9296		SOUTHWEST				009		
00250		DIVISION				013		
						020		
						021		
						023		
						025		
						035		
						037		
						038		
						040		
						046		
						36		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000804	05-22-1997	DTSC LONG BEACH	DTSC COMMENTS ON FINAL SITE INSPECTION WORK PLAN, DATED NOVEMBER 1, 1991 (APPROVAL GRANTED AFTER MODIFICATIONS) {SEE AR #331 - WORK PLAN}	ADMIN RECORD	COMMENTS	002	FRC - LAGUNA NIGEL	
	12-18-1991				SI	003		
LTR	NONE	A. ARELLANO			WORK PLAN	005	181-03-0136	
NONE	10.1	VARIOUS AGENCIES				006		
00006						009	IMAGED	
						013	SEAL_007	
						020		
						021		
						023		
						025		
						035		
						036		
						037		
						038		
						040		
						046		
N60701 / 000410	03-02-1995	JACOBS ENGINEERING	DRAFT OU 4 HEALTH AND SAFETY PLAN	ADMIN RECORD	H&SP	002	FRC - LAGUNA NIGEL	
	09-24-1992					003		
PLAN	00205					005	181-03-0136	
N68711-89-D-9296	01.5	NAVFAC - SOUTHWEST DIVISION				006		
00088						009	IMAGED	
						013	SEAL_004	
						020		
						021		
						023		
						025		
						035		
						036		
						037		
						038		
						040		
						046		
						OU 4		

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.					Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 000864	06-19-1997	NWS SEAL BEACH	ENVIRONMENTAL FACT SHEET 1	ADMIN RECORD	ESI	001	FRC - LAGUNA	
NONE	11-17-1992			INFO	FACT SHEET	002	NIGEL	
MISC	NONE	PUBLIC		REPOSITORY	IRP	003	181-03-0136	
NONE	10.3				PIM	004	IMAGED	
00004					PR	005	SEAL_007	
					PUBNOT	006		
					RI	007		
					SI	008		
						009		
						010		
						011		
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UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Contr./Guid. No.	CTO No.	Recipient Affil.	Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	Location FRC Access. No. Box No. CD No.
																046	
																047	
																048	
																070	
																071	
																072	
																OU 1	
																OU 2	
																OU 3	
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																OU 8	
																SWMU 17	
																SWMU 22	
																SWMU 24	
																SWMU 41	
																SWMU 42	
																SWMU 43	
																SWMU 48	
																SWMU 51	
																SWMU 52	
																SWMU 53	
																SWMU 54	
																SWMU 55	
																SWMU 56	
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																SWMU 61	
																SWMU 62	
																SWMU 63	
																SWMU 64	

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.		Subject/Comments	Classification	Keywords	Sites	Box No.
Approx. # Pages	EPA Cat. #	Recipient						CD No.
							SWMU 65	
							SWMU 66	
							SWMU 69	
N60701 / 000411	03-02-1995	JACOBS		DRAFT OU 4 HEALTH AND SAFETY PLAN	ADMIN RECORD	H&SP	002	FRC - LAGUNA
	<b>11-19-1992</b>	ENGINEERING					003	NIGEL
PLAN	00205						005	181-03-0136
N68711-89-D-9296	01.5	NAVFAC -					006	
00136		SOUTHWEST					009	IMAGED
		DIVISION					013	SEAL_004
							020	
							021	
							023	
							025	
							035	
							036	
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							038	
							040	
							046	
							OU 4	

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000422	03-02-1995	JACOBS	DRAFT HEALTH AND SAFETY PLAN SITE	ADMIN RECORD	H&SP	002	FRC - LAGUNA	
	11-19-1992	ENGINEERING	INSPECTION WORK PLAN OU 4		SI	003	NIGEL	
PLAN	00205					005	181-03-0136	
N68711-89-D-9296	01.2	NAVFAC -				006		
00137		SOUTHWEST				009	IMAGED	
		DIVISION				013	SEAL_004	
						020		
						021		
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						025		
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						037		
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						040		
						046		
						OU 4		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000367	12-29-1994	JACOBS	DRAFT COMMUNITY RELATIONS PLAN	ADMIN RECORD	CRP	001		BECHTEL
	01-01-1993	ENGINEERING	(MONTH AND DAY ON DOCUMENT LEFT			002		NATIONAL
PLAN	00229	B. WONG	BLANK)			003		
N68711-89-D-9296	10.2	NAVFAC -				004		
00090		SOUTHWEST				005		
		DIVISION				006		
						007		
						008		
						009		
						010		
						011		
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						044		
						045		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Contr./Guid. No.	CTO No.	Recipient Affil.	Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	Location FRC Access. No. Box No. CD No.
																046	
																OU 1	
																OU 2	
																OU 3	
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																OU 5	
																OU 6	
																OU 7	
																SWMU 22	
																SWMU 24	
																SWMU 48	
																SWMU 51	
																SWMU 52	
																SWMU 53	
																SWMU 54	
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																SWMU 64	
																SWMU 65	
																SWMU 66	
																SWMU 69	

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000416	03-02-1995	JACOBS	DRAFT SITE INSPECTION REPORT FOR	ADMIN RECORD	SI	002		FRC - LAGUNA
CLE-C01-01F205-	<b>07-20-1993</b>	ENGINEERING	OPERABLE UNIT 4 - VOLUMES I & II OF II			003		NIGEL
S2-0001	00205	G. GUHA				005		181-03-0136
RPT	01.2	NAVFAC -				006		
N68711-89-D-9296		SOUTHWEST				009		IMAGED
00676		DIVISION				013		SEAL_011
						020		
						021		
						023		
						025		
						035		
						036		
						037		
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						040		
						046		
						OU 4		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000344	12-28-1994	JACOBS	DRAFT COMMUNITY RELATIONS PLAN	ADMIN RECORD	CRP	001	FRC - LAGUNA	
	<b>08-03-1993</b>	ENGINEERING			IRP	002	NIGEL	
PLAN	00229	B. WONG			PUBNOT	003	181-03-0136	
N68711-89-D-9296	00.0	NAVFAC -				004		
00072		SOUTHWEST				005	IMAGED	
		DIVISION				006	SEAL_004	
						007		
						008		
						009		
						010		
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UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	Subject/Comments	Classification	Keywords	Sites	FRC Access. No.
Approx. # Pages	EPA Cat. #	Recipient					Box No. CD No.
						045	
						046	
						051	
						OU 1	
						OU 2	
						OU 3	
						OU 4	
						OU 5	
						OU 6	
						OU 7	
N60701 / 000104	03-01-1994	NAVFAC -	FEDERAL FACILITIES SITE REMEDIATION	ADMIN RECORD	ERA	002	FRC - LAGUNA
	<b>10-18-1993</b>	SOUTHWEST	AGREEMENT (FFSRA) PROJECT		FFSRA	003	NIGEL
MM	NONE	DIVISION	MANAGERS MEETING MINUTES OF		MTG MINS	005	181-03-0136
NONE	07.1	LAURA DUCHNAK	SEPTEMBER 9, 1993 FOR THE ECOLOGICAL			006	
00009		DTSC	RISK ASSESSMENT			009	IMAGED
		LETICIA SEGOVIA				013	SEAL_001
						020	
						021	
						023	
						025	
						035	
						040	
						046	
						OU 1	
						OU 2	
						OU 3	
						OU 4	

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 000438	11-01-2000	JACOBS	PROJECT NOTE NO. 28, FOURTH QUARTER	ADMIN RECORD	COC	005		FRC - LAGUNA
CLE-C01-01F205-13-0017	<b>10-20-1993</b>	ENGINEERING GROUP	GROUNDWATER SAMPLING - SITE INSPECTION		GW	006		NIGEL
MM	00205	B. ORR			MERCURY	013		181-03-0136
N68711-89-D-9296		NAVFAC -			METALS	040		IMAGED
00003		SOUTHWEST DIVISION			PCE			SEAL_006
					SI			
					SOIL			
					SOLVENTS			
					TCE			
					TPH			
					VOC			
N60701 / 000409	03-02-1995	JACOBS	DRAFT SITE INSPECTION REPORT	ADMIN RECORD	SI	002		FRC - LAGUNA
RPT	<b>10-28-1993</b>	ENGINEERING	VOLUMES I AND II (SEE AR #509 -			003		NIGEL
N68711-89-D-9296	00205	G. GUHA	COMMENTS BY HERS & #621 - DTSC			005		181-03-0136
00659	01.2	NAVFAC -	COMMENTS)			006		IMAGED
		SOUTHWEST DIVISION				009		SEAL_006
						013		
						020		
						021		
						023		
						025		
						035		
						036		
						037		
						038		
						040		
						046		
						OU 4		
N60701 / 000117	03-01-1994	NAVFAC -	REDUCED FOURTH QUARTER GROUND	ADMIN RECORD	GW	005		FRC - LAGUNA
LTR	<b>11-15-1993</b>	SOUTHWEST DIVISION	WATER SAMPLING FOR OU4 SELECTIVE		OU4	006		NIGEL
NONE	NONE	ELLEN CASADOS	ANALYSES WILL BE PERFORMED ON SITES		SAMPLING	013		181-03-0136
00001	02.1	CRWQCB	5, 6, 13, 40			040		IMAGED
		LARRY VITALE						SEAL_001

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000423	03-02-1995	JACOBS	DRAFT FOCUSED SITE INSPECTION WORK	ADMIN RECORD	SI	001	FRC - LAGUNA	
CLE-I01-01F297-I1-0001	07-07-1994	ENGINEERING	PLAN REVISION 0 (SEE AR #712 & AR #466 - COMMENTS)		WORK PLAN	002	NIGEL	
PLAN	00297	G.GUHA				003	181-03-0136	
N68711-89-D-9296	03.3	NAVFAC -				005		
00234		SOUTHWEST				006	IMAGED	
		DIVISION				007	SEAL_004	
						009		
						013		
						019		
						020		
						021		
						022		
						025		
						035		
						036		
						038		
						040		
						046		
						A37		
						OU 4		
						OU 5		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000727	04-09-1997	NWS SEAL BEACH	MARCH 29, 1994 TRANSMITTAL OF	ADMIN RECORD	MTG MINS	002	FRC - LAGUNA	
	<b>09-01-1994</b>	J. SICKLER	MEETING MINUTES OF THE TECHNICAL		PCB	003	NIGEL	
MM	NONE	SOUTH COAST	REVIEW COMMITTEE W/ENCLS		SI	005	181-03-0136	
NONE	03.6	AQMD			SOIL	006		
00008		P. FERNANDO			TRC	009	IMAGED	
					VOC	013	SEAL_007	
						020		
						021		
						023		
						025		
						035		
						036		
						037		
						038		
						040		
						046		
						BLDG. 68		
						BLDG. 95		
						OU 4		
N60701 / 000483	09-14-1995	JACOBS	PREFINAL FOCUSED SITE INSPECTION	ADMIN RECORD	SI	040	FRC - LAGUNA	
	<b>11-28-1994</b>	ENGINEERING	WORK PLAN REVISION 0 (REF. AR #706,		WORK PLAN	OU 4	NIGEL	
PLAN	00297	S. LIN	#707, #708, #710, & #831- RESPONSE TO			OU 5	181-03-0136	
N68711-89-D-9296	01.2	NAVFAC -	COMMENTS)					
00718		SOUTHWEST					IMAGED	
		DIVISION					SEAL_006	
N60701 / 000708	04-09-1997		REVIEW AND COMMENTS ON PREFINAL	ADMIN RECORD	COMMENTS	040	FRC - LAGUNA	
	<b>02-10-1995</b>	J. SPENCER	FOCUSED SITE INSPECTION WORK PLAN		GW	OU 4	NIGEL	
LTR	NONE	NWS SEAL BEACH	(SEE AR #483 & AR #706)		PCE	OU 5	181-03-0136	
NONE	10.1	B. MONROE			SI			
00002					SOIL		IMAGED	
					VOC		SEAL_007	
					WORK PLAN			

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000707	04-09-1997 <b>02-14-1995</b>	CRWQCB RIVERSIDE	APPROVAL OF FOCUSED SITE INSPECTION WORK PLAN (SEE AR #483)	ADMIN RECORD	COMMENTS SI	040 OU 4	FRC - LAGUNA NIGEL	
MEMO NONE 00001	NONE 10.1	L. VITALE DTSC LONG BEACH D. YAFFEY			WORK PLAN	OU 5	181-03-0136	IMAGED SEAL_007
N60701 / 000489	09-26-1995 <b>03-01-1995</b>	IT CORPORATION J. NEUHAUS	ARCHAEOLOGICAL RESOURCES PROTECTION PLAN	ADMIN RECORD	ARPP	005 008	FRC - LAGUNA NIGEL	
PLAN N68711-89-D-9296 00073	00297 09.3	NAVFAC - SOUTHWEST DIVISION				012 016 021 040 044 046	181-03-0136	IMAGED SEAL_005
N60701 / 000706	04-09-1997 <b>03-24-1995</b>	JACOBS ENGINEERING	RESPONSE TO LETTER FROM JAMES W. SPENCER, DATED FEBRUARY 10, 1995, REGARDING PRE-FINAL FOCUSED SITE INSPECTION WORK PLAN (REF. #000483)	ADMIN RECORD	RESPONSE SI	040 BLDG. 240	FRC - LAGUNA NIGEL	
LTR N68711-89-D-9296 00005	00297 10.1	J. NEUHAUS NAVFAC - SOUTHWEST DIVISION G. MCCLAIN			WORK PLAN	OU 4 OU 5	181-03-0136	IMAGED SEAL_007
N60701 / 000490	09-26-1995 <b>04-06-1995</b>	JACOBS ENGINEERING	FINAL FOCUSED SITE INSPECTION WORK PLAN REVISION 0 (SEE AR #710)	ADMIN RECORD	PCE SI	040 OU 4	FRC - LAGUNA NIGEL	
PLAN N68711-89-D-9296 00718	00297 03.3	G. GUHA NAVFAC - SOUTHWEST DIVISION			WORK PLAN	OU 5	181-03-0136	IMAGED SEAL_011

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Record Type	Record Date	Author	Author					FRC Access. No.
Contr./Guid. No.	CTO No.	Recipient Affil.	Recipient Affil.					Box No.
Approx. # Pages	EPA Cat. #	Recipient	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.
N60701 / 000831	06-10-1997	NWS SEAL BEACH	NWS SEAL BEACH	LETTER TO RAB MEMBERS CONCERNING	ADMIN RECORD	AIR	009	FRC - LAGUNA
	<b>04-06-1995</b>	G.C. WHITFIELD	G.C. WHITFIELD	HEALTH OF NATIONAL WILDLIFE REFUGE		ARPP	040	NIGEL
LTR	NONE	RAB MEMBERS	RAB MEMBERS	W/ENCL OF NAVY RESPONSE TO		COMMENTS	OU 4	181-03-0136
NONE	10.1			COMMENTS ON SANDBLAST GRIT		DUST	OU 5	IMAGED
00013				DISPOSAL SITE REMOVAL ACTION MEMO		EE/CA		SEAL_008
				AND THE PRE-FINAL FOCUSED SITE		GW		
				INSPECTION WORK PLAN (SEE AR #483 - SI		LF		
				WORK PLAN & #491 - ACTMEMO)		NTCRA		
						REFUGE		
						REMOVAL		
						RESPONSE		
						SI		
						TCRA		
						WORK PLAN		
N60701 / 000710	04-09-1997	JACOBS	JACOBS	CLARIFICATION TO THE FINAL FOCUSED	ADMIN RECORD	PCE	040	FRC - LAGUNA
	<b>06-05-1995</b>	ENGINEERING	ENGINEERING	SITE INSPECTION WORK PLAN (SEE AR		SI	OU 4	NIGEL
LTR	00297	J. NEUHAUS	J. NEUHAUS	#490 - FINAL SI WORK PLAN)		VOC	OU 5	181-03-0136
N68711-89-D-9296	03.6	NAVFAC -	NAVFAC -			WORK PLAN		IMAGED
00004		SOUTHWEST	SOUTHWEST					SEAL_007
		DIVISION	DIVISION					
		G. MC CLAIN	G. MC CLAIN					



UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.					Location
Record Type	Record Date	Author						FRC Access. No.
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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000470	09-13-1995	NWS SEAL BEACH	JULY 13, 1995 RAB MEETING MINUTES	ADMIN RECORD	MTG MINS	001	FRC - LAGUNA	
	<b>07-26-1995</b>	G.C. WHITFIELD			RAB	004	NIGEL	
MM	NONE	COMMUNITY				007	181-03-0136	
NONE	10.4	MEMBERS				009		
00006						012	IMAGED	
						019	SEAL_004	
						040		
						070		
						OU 8		
N60701 / 000595	11-27-1996	NAVFAC -	JULY 13, 1995 PROJECT MANAGERS	ADMIN RECORD	FFSRA	004	FRC - LAGUNA	
CLE-C01-01F229-I2-0026	<b>08-09-1995</b>	SOUTHWEST	MEETING MINUTES W/ENCLOSURES		MTG MINS	005	NIGEL	
MM	00229	DIVISION				008	181-03-0136	
N68711-89-D-9296	01.6	D. RINGEL				009		
00008		VARIOUS				012	IMAGED	
		AGENCIES				016	SEAL_007	
						020		
						021		
						040		
						044		
						046		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 6		
						OU 7		
						OU 8		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 000452	11-01-2000	JACOBS	PROJECT NOTE NO. 30 - KICK-OFF	ADMIN RECORD	COMMENTS	009		FRC - LAGUNA
CLE-C01-01F205-12-0010	08-10-1995	ENGINEERING GROUP	MEETING FOR FINAL SITE INSPECTION REPORT		GW	020		NIGEL
MISC	00205	T. SMITH			METALS	025		181-03-0136
N68711-89-D-9296		NAVFAC - SOUTHWEST DIVISION			MONITORING	040		IMAGED
00003					MTG MINS	OU 4		SEAL_006
					PRG			
					REMOVAL			
					SI			
					SOIL			
					TECH MEMO			

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Contr./Guid. No.	CTO No.	Recipient Affil.	Subject/Comments	Classification	Keywords	Sites	Location	FRC Access. No.	Box No.	CD No.
Approx. # Pages	EPA Cat. #	Recipient															
N60701 / 000693	04-09-1997	JACOBS								AUGUST 10, 1995 PROGRAM MANAGERS	ADMIN RECORD	FS	004	FRC - LAGUNA			
CLE-C01-01F229-I2-0027	08-25-1995	ENGINEERING								MEETING MINUTES		GW	005	NIGEL			
MM	00229	B. WONG										MTG MINS	008	181-03-0136			
N68711-89-D-9296	03.6	NAVFAC -										RAB	009				
00006		SOUTHWEST										RI	012	IMAGED			
		DIVISION										SI	014	SEAL_007			
		G. MC CLAIN										SOIL	016				
												UST	020				
													021				
													039				
													040				
													041				
													044				
													046				
													BLDG. 10				
													BLDG. 69				
													BLDG. 923				
													OU 1				
													OU 2				
													OU 3				
													OU 4				
													OU 5				
													OU 6				
													OU 7				
													OU 8				
													SWMU 24				
													SWMU 56				



UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.					Location
Record Type	Record Date	Author						FRC Access. No.
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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000924	09-11-1997	NWS SEAL BEACH	LETTER REQUESTING APPROVAL FOR THE	ADMIN RECORD	BACKGROUND	005	FRC - LAGUNA	
	<b>09-07-1995</b>	D. BAILLIE	DISCHARGE OF GROUNDWATER, WATER,		DATA	008	NIGEL	
LTR	NONE	CRWQCB	AND SOIL, W/ENCLOSURE OF		DISPOSAL	012	181-03-0136	
NONE	01.1	RIVERSIDE	BACKGROUND INFO. AND SUMMARY OF		GW	016		
00004		L. VITALE	ANALYTICAL RESULTS		INVESTIGATION	021	IMAGED	
					OU	040	SEAL_008	
					REQUEST	044		
					RESULTS	046		
					SOIL	BLDG. 235		
					WATER	BLDG. 241		
					WORK PLAN	BLDG. 246		
						OU 4		
						OU 5		
N60701 / 000526	03-04-1996	JACOBS	FINAL SITE INSPECTION REPORT -	ADMIN RECORD	SI	002	FRC - LAGUNA	
CLE-C01-01F205-	<b>10-09-1995</b>	ENGINEERING	VOLUMES I & II			003	NIGEL	
B6-0002	00205					005	181-03-0136	
RPT	01.2	NAVFAC -				006	IMAGED	
N68711-89-D-9296		SOUTHWEST				009	SEAL_006	
00838		DIVISION				013		
						020		
						023		
						025		
						035		
						037		
						038		
						040		
						046		
						OU 4		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 001392	05-01-2002	JACOBS	FINAL SITE MANAGEMENT PLAN	ADMIN RECORD	AHPA	001		BECHTEL
CLE-C01-01F229-S2-0004	10-18-1995	ENGINEERING GROUP	QUARTERLY UPDATE FOR THE		AOC	002		NATIONAL
PLAN	00229	B. WONG	INSTALLATION RESTORATION PROGRAM,		ARAR	003		
N68711-89-D-9296		NAVFAC -	REVISION 1 (THERE IS NO REV. 0 IN		ARPA	004		BNI 01/16/03
00350		SOUTHWEST DIVISION	DATABASE)		AST	005		
					ATEIP	006		
					CERCLA	007		
					COPC	008		
					CWA	009		
					DERA	010		
					DMP	011		
					DQO	012		
					DREDGING	013		
					EE/CA	014		
					EIS	015		
					ESA	016		
					FFSRA	017		
					FS	018		
					GW	019		
					HSWA	020		
					IAS	021		
					IRP	022		
					NCP	023		
					NFA	024		
					NHPA	025		
					NPL	035		
					ORDNANCE	036		
					PA	037		
					PCB	038		
					QC	039		
					RAB	040		
					RCRA	041		
					REFUGE	042		
					RFA	043		
					RFI	044		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.					Location
Record Type	Record Date	Author						FRC Access. No.
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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
						RI	045	
						ROD	046	
						SAP	047	
						SI	048	
						SLUDGE	049	
						SMP	050	
						SOIL	051	
						STORMWATER	BLDG. 128	
						SWMU	OU 1	
						TCA	OU 2	
						TCE	OU 3	
						TSCA		
						TSDF		
						UST		
						WATER		
N60701 / 000923	09-11-1997	IT CORPORATION	LETTER DOCUMENTING CLEARANCE TO	ADMIN RECORD	DATA	005	FRC - LAGUNA	
	11-07-1995	J. NEUHAUS	PLACE SOIL AND WATER WASTE FROM		GW	007	NIGEL	
LTR	00297	VARIOUS	FOCUSED SITE INSPECTION FOR OUS 4 & 5		IDW	008	181-03-0136	
NONE	06.3	AGENCIES	ON SITE 7 AND 16 W/ENCL. OF LETTERS		INVESTIGATION	012	IMAGED	
00005			BETWEEN NAVY & RWQCB		LANDFILL	016	SEAL_008	
					OU	021		
					REQUEST	040		
					RESULTS	044		
					SI	046		
					SOIL	BLDG. 235		
					UST	BLDG. 241		
					WATER	BLDG. 246		
					WELLS	OU 4		
					WORK PLAN	OU 5		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.					Location
Record Type	Record Date	Author						FRC Access. No.
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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000576	04-04-1996	NWS SEAL BEACH	RESTORATION ADVISORY BOARD (RAB)	ADMIN RECORD	MTG MINS	001		FRC - LAGUNA
NONE	12-19-1995	J.F. STEADLEY	MINUTES OF NOVEMBER 9, 1995 -		RAB	004		NIGEL
MM	NONE	RAB MEMBERS	INCLUDES JANUARY 11, 1996 MEETING			005		181-03-0136
NONE	10.3		AGENDA AND RAB STATUS UPDATE			007		
00017						008		IMAGED
						009		SEAL_007
						012		
						016		
						019		
						021		
						022		
						023		
						037		
						038		
						040		
						044		
						046		
						070		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 6		
						OU 7		
						OU 8		
						SWMU 56		

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Record Type	Record Date	Author						FRC Access. No.
Contr./Guid. No.	CTO No.	Recipient Affil.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000989	12-18-1997	NWS SEAL BEACH	NOVEMBER 9, 1995 RESTORATION	ADMIN RECORD	MTG MINS	005		FRC - LAGUNA
NONE	<b>12-19-1995</b>	J.F. STEADLEY	ADVISORY BOARD (RAB) MEETING		RAB	009		NIGEL
MM	NONE	COMMUNITY	MINUTES, JANUARY 11, 1996 MEETING			021		181-03-0136
NONE	01.6	MEMBERS	AGENDA AND RAB STATUS UPDATE (SEE			023		
00018			AR #770)			037		IMAGED
						038		SEAL_008
						040		
						BLDG. 434		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 8		
						SWMU 14		
						SWMU 18		
						SWMU 19		
						SWMU 44		
						SWMU 45		
						SWMU 49		
						SWMU 50		
						SWMU 67		
						SWMU 7		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.					Location
Record Type	Record Date	Author						FRC Access. No.
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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 000509	11-13-2000	DTSC - HERS -	HERS REVIEW OF DRAFT SITE	ADMIN RECORD	ARSENIC	002		FRC - LAGUNA
NONE	01-17-1996	LONG BEACH	INVESTIGATION REPORTS FOR COMMENT		BTEX	003		NIGEL
MEMO	NONE	L. VALOPPI	ON THE POTENTIAL MIGRATION		COC	004		181-03-0136
NONE		DTSC - OMF -	PATHWAYS OF CONTAMINANTS (SEE AR		DCA	005		
00017		LONG BEACH	#409 - DRAFT SI REPORT). ***COMMENTS:		DDD	006		IMAGED
		R. ABBASI	HERS: HUMAN AND ECOLOGICAL RISK		DDE	008		SEAL_008
			SECTION - DTSC		DDT	009		
			OMF: OFFICE OF MILITARY FACILITIES -		GW	012		
			DTSC***		METALS	013		
					OU	016		
					PAH	020		
					PCB	021		
					PESTICIDES	023		
					PRG	035		
					SI	036		
					SOIL	038		
					SOLVENTS	039		
					SVOC	040		
					TPH	042		
					VOC	043		
						044		
						045		
						046		
						BLDG. 10		
						BLDG. 229		
						BLDG. 230		
						BLDG. 235		
						BLDG. 245		
						BLDG. 246		
						BLDG. 247		
						BLDG. 252		
						BLDG. 255		
						BLDG. 410		
						BLDG. 434		
						BLDG. 56		

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	Record Type	Record Date	Author					FRC Access. No.
	Contr./Guid. No.	CTO No.	Recipient Affil.					Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
						BLDG. 68		
						BLDG. 69		
						BLDG. 88		
						OU 4		
						OU 5		
N60701 / 000577	04-04-1996	JACOBS	JANUARY 11, 1996 MEETING MINTUES ON	ADMIN RECORD	MTG MINS	001	FRC - LAGUNA	
CLE-C01-01F229-I2-0031	<b>01-18-1996</b>	ENGINEERING	IR PROGRAM STATUS AND RESTORATION		RAB	004	NIGEL	
MM	00229	K. TOMEO	ADVISORY BOARD (RAB)			005	181-03-0136	
N68711-89-D-9296	01.6	NAVFAC -				006	IMAGED	
00005		SOUTHWEST				008	SEAL_007	
		DIVISION				009		
						012		
						016		
						019		
						021		
						040		
						044		
						046		
						070		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 6		
						OU 7		
						OU 8		

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Contr./Guid. No.	CTO No.	Recipient Affil.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000546	03-28-1996	JACOBS	FEBRUARY 5, 1996 PROGRAM MEETING	ADMIN RECORD	MTG MINS	001		FRC - LAGUNA
	<b>02-05-1996</b>	ENGINEERING	MINUTES WITH REGULATOR			004		NIGEL
MM	00229	K. TOMEO	PARTICIPATION. ***COMMENTS: I2-0032***			005		181-03-0136
N68711-89-D-9296	01.6	VARIOUS				006		
00007						007		IMAGED
						008		SEAL_006
						009		
						012		
						016		
						019		
						021		
						040		
						044		
						046		
						070		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 8		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000531	03-28-1996	NAVFAC -	PROJECT MANAGERS MEETING MINUTES	ADMIN RECORD	MTG MINS	001		FRC - LAGUNA
CLE-C01-01F229-I2-0028	<b>02-23-1996</b>	SOUTHWEST	FROM SEPTEMBER 11, 1995, OCTOBER 18,			004		NIGEL
MM	00229	DIVISION	1995, DECEMBER 7, 1995 JANUARY 11,			005		181-03-0136
N68711-89-D-9296	01.6	D.E.A. RINGEL	1996, AND FEBRUARY 5, 1996.			008		
00028		CRWQCB	***COMMENTS: I2-0029; I2-0032; I2-0028; I2-			009		IMAGED
		RIVERSIDE	0031; I2-0030 (SWDIV SER 1822.DR/270)***			012		SEAL_006
		L. VITALE				016		
						019		
						021		
						040		
						044		
						046		
						070		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 6		
						OU 7		
						OU 8		

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.	Box No.				
Approx. # Pages	EPA Cat. #	Recipient	CD No.				
		Subject/Comments	Classification	Keywords			
			Sites				
N60701 / 000797	04-28-1997	JACOBS ENGIN. GROUP	MARCH 7, 1996 PROGRAM MANAGERS MEETING MINUTES W/ENCLOSURE OF DRAFT FINAL CLOSURE PLAN OUTLINE SITE 7	ADMIN RECORD	CLOSURE MTG MINS	001 004 005 007 008 009 012 016 019 021 040 044 046 BLDG. 923 OU 1 OU 2 OU 3 OU 4 OU 5 OU 8 SWMU 56	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_008
MM NONE 00007	NONE 10.4	VARIOUS AGENCIES					
N60701 / 000591	11-27-1996	NAVFAC - SOUTHWEST DIVISION	MARCH 14, 1996 PROJECT MANAGERS MEETING MINUTES (W/ ENCL.)	ADMIN RECORD	MTG MINS	001 004 005 007 008 009 012 016 019 021 040 044 046 OU 5	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_007
CLE-C01-01F229-I2-0002 MM N68711-89-D-9296 00014	03-29-1996 00229 01.6	E. CASADOS VARIOUS AGENCIES					

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Subject/Comments	Classification	Keywords	Sites	Location
	Record Type	Record Date	Author					FRC Access. No.
	Contr./Guid. No.	CTO No.	Recipient Affil.					Box No.
Approx. # Pages	EPA Cat. #	Recipient						CD No.
N60701 / 000774		04-17-1997	NAVFAC -	MINUTES FROM MAY 9, 1996 PROJECT	ADMIN RECORD	MTG MINS	001	FRC - LAGUNA
NONE		06-10-1996	SOUTHWEST	MANAGERS MEETING			004	NIGEL
MM		NONE	DIVISION				005	181-03-0136
NONE		03.6	K. REYNOLDS				007	
00007			CRWQCB				008	IMAGED
			RIVERSIDE				009	SEAL_008
			L. VITALE				012	
							016	
							019	
							021	
							040	
							044	
							046	
							BLDG. 923	
							OU 1	
							OU 2	
							OU 3	
							OU 4	
							OU 5	
							OU 8	
							SWMU 56	

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000796	04-28-1997	JACOBS	JUNE 13, 1996 PROGRAM MANAGERS	ADMIN RECORD	IRP	001	FRC - LAGUNA	
NONE	06-13-1996	ENGINEERING	MEETING MINUTES TO DISCUSS VARIOUS		MTG MINS	004	NIGEL	
MM	NONE	GROUP	IR ISSUES			005	181-03-0136	
N68711-89-D-9296	10.4	VARIOUS				007		
00005		AGENCIES				008	IMAGED	
						009	SEAL_008	
						012		
						016		
						019		
						021		
						040		
						044		
						046		
						BLDG. 923		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 8		
						SWMU 56		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000694	04-09-1997	JACOBS	JUNE 5, 1995 PROGRAM MANAGERS	ADMIN RECORD	FFSRA	004		FRC - LAGUNA
CLE-C01-01F229-I2-0025	06-14-1996	ENGINEERING	MEETING MINUTES		FS	005		NIGEL
MM	00229	B. WONG			MTG MINS	008		181-03-0136
N68711-89-D-9296	03.6	NAVFAC -			RI	009		IMAGED
00007		SOUTHWEST			SI	012		SEAL_007
		DIVISION			UST	016		
		G. MC CLAIN				020		
						021		
						040		
						044		
						046		
						BLDG. 10		
						BLDG. 11		
						BLDG. 69		
						BLDG. 923		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 6		
						OU 7		
						OU 8		
						SWMU 56		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	Author	Record Date	Author	Recipient Affil.	FRC Access. No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	Box No.
		Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.
N60701 / 000777	04-17-1997	NAVFAC -	JUNE 13, 1996, PROJECT MANAGERS'	ADMIN RECORD	MTG MINS	001	FRC - LAGUNA
	<b>07-05-1996</b>	SOUTHWEST	MEETING MINUTES			004	NIGEL
MM	NONE	DIVISION				005	181-03-0136
N68711-89-D-9296	10.4	K. REYNOLDS				007	
00010		CRWQCB				008	IMAGED
		RIVERSIDE				009	SEAL_008
		L. VITALE				012	
						016	
						019	
						021	
						040	
						044	
						046	
						BLDG. 923	
						OU 1	
						OU 2	
						OU 3	
						OU 4	
						OU 5	
						OU 8	
						SWMU 56	

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000784	04-17-1997	NWS SEAL BEACH	AUGUST 8, 1996 RAB MEETING MINUTES;	ADMIN RECORD	MTG MINS	001	FRC - LAGUNA	
	<b>08-08-1996</b>	J. KEESEE	SEPTEMBER 12, 1996 MEETING AGENDA		RAB	004	NIGEL	
MM	NONE	RAB MEMBERS				005	181-03-0136	
NONE	10.4					007		
00015						008	IMAGED	
						009	SEAL_008	
						012		
						016		
						019		
						021		
						022		
						040		
						044		
						046		
						070		
						AOC 1		
						AOC 10		
						AOC 2		
						AOC 3		
						AOC 4		
						AOC 5		
						AOC 6		
						AOC 7		
						AOC 8		
						AOC 9		
						BLDG. 112		
						BLDG. 923		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 8		
						SWMU 56		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000785	04-17-1997	NAVFAC -	AUGUST 8, 1996 PROGRAM MANAGERS	ADMIN RECORD	MTG MINS	001	FRC - LAGUNA	
NONE	08-30-1996	SOUTHWEST	MEETING MINUTES			004	NIGEL	
LTR	NONE	DIVISION				005	181-03-0136	
NONE	03.6	K. REYNOLDS				007		
00018		DTSC LONG				008	IMAGED	
		BEACH				009	SEAL_008	
		R. ABBASI				012		
						016		
						019		
						021		
						040		
						044		
						046		
						070		
						BLDG. 923		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 8		
						SWMU 56		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000802	05-22-1997	NAVFAC -	LETTER ENCLOSING SEPTEMBER 12, 1996	ADMIN RECORD	EE/CA	001	FRC - LAGUNA	
	<b>10-07-1996</b>	SOUTHWEST	PROGRAM MANAGERS' MEETING MINUTES		GW	004	NIGEL	
MM	00229	DIVISION			IRP	005	181-03-0136	
NONE	01.6	K. REYNOLDS			MTG MINS	007		
00028		VARIOUS			REMOVAL	008	IMAGED	
		AGENCIES			SI	009	SEAL_008	
					UST	012		
						016		
						019		
						021		
						040		
						044		
						046		
						070		
						BLDG. 923		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 8		
						SWMU 56		
N60701 / 000584	10-23-1996	BNI SAN DIEGO	SEPTEMBER 5, 1996, KICK-OFF MEETING	ADMIN RECORD	DQOP	040	FRC - LAGUNA	
CTO-0127/0009	<b>10-15-1996</b>	K. KAPUR	MINUTES FOR EXTENDED REMOVAL SITE		EVALUATION	070	NIGEL	
XMTL	00127	VARIOUS	EVALUATION ON SITES 40 AND 70		MTG MINS	OU 4	181-03-0136	
N68711-92-D-4670	10.4	AGENCIES			REMOVAL	OU 5		
00044					SI		IMAGED	
							SEAL_007	

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000787	04-17-1997	NAVFAC -	BREAKDOWN OF CURRENT IR PROJECT	ADMIN RECORD	IR	005	FRC - LAGUNA	
	<b>10-22-1996</b>	SOUTHWEST	ASSIGNMENTS BY RPM'S			007	NIGEL	
LTR	NONE	DIVISION				008	181-03-0136	
NONE	01.6	K. REYNOLDS				009	IMAGED	
00005		DTSC LONG				012	SEAL_008	
		BEACH				016		
		R. ABBASI				019		
						021		
						040		
						044		
						046		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 8		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	Author	Constr. No.	CTO No.	Recipient Affil.	FRC Access. No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	Box No.
							CD No.
N60701 / 000861	06-19-1997	NWS SEAL BEACH	NOVEMBER 14, 1996, 18TH RESTORATION	ADMIN RECORD	ARAR	001	FRC - LAGUNA
	12-12-1996	J. KEESEE	ADVISORY BOARD MEETING MINUTES		BACKGROUND	004	NIGEL
MM	NONE	COMMUNITY			RAB	005	181-03-0136
NONE	10.4	MEMBERS			RI	007	
00014					RSE	008	IMAGED
					SI	009	SEAL_008
					TCE	012	
						016	
						019	
						021	
						040	
						044	
						046	
						070	
						BLDG. 71	
						BLDG. 923	
						OU 1	
						OU 2	
						OU 3	
						OU 4	
						OU 5	
						OU 8	
						SWMU 56	
N60701 / 000616	01-21-1997	JACOBS	DRAFT FINAL FOCUSED SITE INSPECTION	ADMIN RECORD	EE/CA	005	FRC - LAGUNA
CLE-I01-01F297-B6-	12-20-1996	ENGINEERING	REPORT REV. 0 {SEE AR #686 -		GW	008	NIGEL
0007	00297		COMMENTS, #687 - DTSC COMMENTS, #64,		IRP	012	181-03-0136
RPT	01.4	NWS SEAL BEACH	#72, #73, #82, #646, #647, #916, & #919}		MONITORING	016	
N68711-89-D-9296		P. F. TAMASHIRO			SI	021	IMAGED
00373					SOIL	040	SEAL_007
					WATER	044	
					WELLS	046	
						OU 4	
						OU 5	

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000720	04-09-1997	NAVFAC -	TRANSMITTAL OF NOVEMBER 18, 1996	ADMIN RECORD	EE/CA	001	FRC - LAGUNA	
CLE-C01-01F229-I2-0039	01-06-1997	SOUTHWEST	PROGRAM MANAGERS MEETING MINUTES		FFSRA	002	NIGEL	
MM	00229	DIVISION	FOR REVIEW AND COMMENT		IR	003	181-03-0136	
N68711-89-D-9296	03.6	K. REYNOLDS			MTG MINS	004	IMAGED	
00007		DTSC LONG			RAB	005	SEAL_007	
		BEACH			RCRA	007		
		R. ABBASI			RI	008		
					RSE	009		
					SI	012		
					UST	016		
						019		
						021		
						022		
						040		
						044		
						046		
						BLDG. 10		
						BLDG. 69		
						BLDG. 923		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 8		
						SWMU 56		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Classification	Keywords	Sites	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	Recipient	Subject/Comments						FRC Access. No.
Approx. # Pages	EPA Cat. #									Box No.
										CD No.
N60701 / 000795	04-28-1997	JACOBS	JANUARY 9, 1997 PROGRAM MANAGERS	ADMIN RECORD	IRP	001	FRC - LAGUNA			
	<b>01-09-1997</b>	ENGINEERING	MEETING MINUTES TO DISCUSS VARIOUS		MTG MINS	002	NIGEL			
MM	00229	GROUP	IR ISSUES			003	181-03-0136			
N68711-89-D-9296	10.4	B. WONG				004				
00007		VARIOUS				005	IMAGED			
		AGENCIES				007	SEAL_008			
						008				
						009				
						012				
						016				
						019				
						021				
						036				
						040				
						044				
						048				
						056				
						OU 1				
						OU 2				
						OU 3				
						OU 4				
						OU 5				
						OU 8				
						SWMU 56				
N60701 / 000617	04-03-1997	BECHTEL	PRE-FINAL EXTENDED REMOVAL SITE	ADMIN RECORD	REMOVAL	040	FRC - LAGUNA			
CTO-0127/0025	<b>01-23-1997</b>	NATIONAL INC	EVALUATON WORK PLAN {SEE AR #688 -		RSE	070	NIGEL			
PLAN	00127	K. KAPUR	COMMENTS & #800 - RESPONSE TO		WORK PLAN		181-03-0136			
N68711-92-D-4670	02.0	NAVFAC -	COMMENTS}							
00605		SOUTHWEST					IMAGED			
		DIVISION					SEAL_007			
		R. SELBY								

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	Recipient	Subject/Comments	Classification	Keywords	FRC Access. No.
Approx. # Pages	EPA Cat. #						Box No.
							CD No.
N60701 / 000646	04-04-1997	CITY OF SEAL	COMMENTS ON FOCUSED SITE	ADMIN RECORD	COMMENTS	001	FRC - LAGUNA
NONE	<b>02-19-1997</b>	BEACH	INSPECTION REPORT (SEE AR #616 -		OU	008	NIGEL
LTR	NONE	M. VOCE	DRAFT FINAL SI REPORT, #64, #72, #73, #82,		SI	012	181-03-0136
NONE	10.1	NWS SEAL BEACH	#647, #686, #687, #916, & #919)			016	
00002		B. CRINIGAN				021	IMAGED
						040	SEAL_007
						044	
						046	
						BLDG. 235	
						BLDG. 246	
						OU 4	
						OU 5	
N60701 / 000686	04-08-1997	J. SPENCER	REVIEW AND COMMENTS ON THE	ADMIN RECORD	ARSENIC	005	FRC - LAGUNA
NONE	<b>02-19-1997</b>	NWS SEAL BEACH	FOCUSED SITE INSPECTION REPORT		COMMENTS	008	NIGEL
LTR	NONE	B. MONROE	W/ENCL {SEE AR #616 - REPORT, #687 -		OU	009	181-03-0136
NONE	10.1		COMMENTS BY DTSC, #64, #72, #73, #82,		RAB	016	
00008			#646, #647, #916, #919}		SI	021	IMAGED
					UXO	037	SEAL_007
						038	
						040	
						044	
						046	
						BLDG. 235	
						BLDG. 240	
						OU 4	
						OU 5	
N60701 / 000644	04-04-1997	BECHTEL	FEBRUARY 20, 1997 MEETING MINUTES -	ADMIN RECORD	MTG MINS	040	FRC - LAGUNA
CTO-0127/0042	<b>03-11-1997</b>	NATIONAL INC	REGULATORY AGENCY WORKSHOP FOR		REMOVAL	070	NIGEL
MM	00127	K. KAPUR	EXTENDED REMOVAL SITE EVALUATION		RSE	AOC 3	181-03-0136
N68711-92-D-4670	10.4	NAVFAC -	WORK PLAN		VOC		
00072		SOUTHWEST			WORK PLAN		IMAGED
		DIVISION					SEAL_007

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000685	04-08-1997	JACOBS	REVISED PROGRAM MANAGERS MEETING	ADMIN RECORD	IRP	001		FRC - LAGUNA
CLE-C01-01F229-I2-0040	03-20-1997	ENGINEERING	MINUTES		MTG MINS	002		NIGEL
MM	00229	B. WONG			RAB	003		181-03-0136
N68711-89-D-9296	01.6	NAVFAC -			REMOVAL	004		IMAGED
00007		SOUTHWEST				005		SEAL_007
		DIVISION				007		
		M. SCHEER				008		
						009		
						010		
						011		
						012		
						013		
						016		
						019		
						021		
						040		
						044		
						046		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 6		
						OU 7		
						OU 8		
						SWMU 56		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	Recipient	Subject/Comments	Classification	Keywords	FRC Access. No.
Approx. # Pages	EPA Cat. #						Box No.
							CD No.
N60701 / 000688	04-08-1997 <b>03-25-1997</b>	DTSC LONG BEACH	COMMENTS ON PRE-FINAL EXTENDED REMOVAL SITE EVALUATIONWORK PLAN, IR SITES 40 AND 70 W/ENCL {SEE AR #617 - WORK PLAN}	ADMIN RECORD	COMMENTS EVALUATION GW IR LUFT PID PRG REMOVAL RSE SI SOIL VOC WORK PLAN	040 070 AOC 11 AOC 2 AOC 3 AOC 4 BLDG. 240 OU 4	FRC - LAGUNA NIGEL 181-03-0136 IMAGED SEAL_007
LTR NONE 00036	NONE 10.1	R. ABBASI NWS SEAL BEACH D. BAILLIE					
N60701 / 000794	04-28-1997 <b>04-03-1997</b>	NWS SEAL BEACH	ANNOUNCEMENT OF NEXT RAB MEETING W/ENCLOSURE OF MARCH 13, 1997 MEETING MINUTES, DIRECTIONS TO BLDG. 10, AND MAY 8, 1997 RAB MEETING AGENDA. ***COMMENTS: PDCC #0259***	ADMIN RECORD	MTG MINS RAB	005 007 008 012 016 021 037 038 040 044 046 AOU 11 AOU 2 AOU 4 OU 1 OU 2 OU 3 OU 4 OU 5	FRC - LAGUNA NIGEL 181-03-0136 IMAGED SEAL_008
MM NONE 00010	NONE 10.4	J. W. KEESEE COMMUNITY MEMBERS					

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000916	07-21-1997	DON SEAL BEACH	RESPONSE TO COMMENTS ON THE	ADMIN RECORD	COMMENTS	005		BECHTEL
SWDIV SER	<b>04-07-1997</b>	D. BAILLIE	FOCUSED SITE INSPECTION REPORT (SEE		RESPONSE	008		NATIONAL
045/040301	NONE	VARIOUS	AR #616- DRAFT FINAL SI REPORT, #64,		SI	012		
LTR	01.6	INDIVIDUALS	#72, #73, #82, #646, #647, #686, #687, #919)			016		
NONE						021		IMAGED
00012						021		SEAL_010
						040		
						044		
						046		
						OU 4		
						OU 5		
N60701 / 000800	05-13-1997	BECHTEL	RESPONSE TO AGENCY COMMENTS ON	ADMIN RECORD	COMMENTS	040		FRC - LAGUNA
CTO-0127/0070	<b>04-18-1997</b>	NATIONAL INC	PRE-FINAL EXTENDED REMOVAL SITE		REMOVAL	070		NIGEL
XMTL	00127	J. KLUESENER	EVALUATION WORK PLAN, DATED APRIL		RESPONSE			181-03-0136
N68711-92-D-4670	10.1	VARIOUS	24, 1997 W/COVER LETTER {SEE AR #617 -		RSE			
00072		AGENCIES	WORK PLAN}		WORK PLAN			IMAGED
								SEAL_007

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	Subject/Comments	Classification	Keywords	Sites	FRC Access. No.
Approx. # Pages	EPA Cat. #	Recipient					Box No.
							CD No.
N60701 / 000918	07-21-1997	NAVFAC -	MARCH 13, 1997, PROGRAM MGRS (PM)	ADMIN RECORD	COMMENTS	001	FRC - LAGUNA
	<b>04-21-1997</b>	SOUTHWEST	MTG MIN. ALONG WITH JANUARY 9, 1997,		FFSRA	002	NIGEL
LTR	00229	DIVISION	FINAL REVISED PM MGRS. MTG. MIN. FOR		MTG MINS	003	181-03-0136
NONE	01.6	K. REYNOLDS	REVIEW AND COMMENTS (REFER			004	
00012		DTSC LONG	DOCS#000918 & #000795)			005	IMAGED
		BEACH				007	SEAL_008
		R. ABBASI				008	
						009	
						012	
						016	
						019	
						021	
						023	
						036	
						040	
						044	
						046	
						070	
						OU 1	
						OU 2	
						OU 3	
						OU 4	
						SWMU 56	

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N60701 / 001072	11-16-2000	JACOBS	DRAFT ECOLOGICAL ASSESSMENT	ADMIN RECORD	ARSENIC	002	FRC - LAGUNA	
CLE-C01-01F229-S1-0007	05-07-1997	ENGINEERING	REVISION 0 (SEE AR #927, #936, #937, #938, #939, #1277 - COMMENTS)		BTEX	003	NIGEL	
RPT	00229	B. WONG			COEC	005	181-03-0136	
N68711-89-D-9296		NAVFAC -			COPC	006	IMAGED	
00218		SOUTHWEST			DDD	008	SEAL_009	
		DIVISION			DDT	012		
					EOD	016		
					ERA	021		
					GW	023		
					IAS	025		
					METALS	035		
					NFRAP	036		
					ORDNANCE	037		
					PAH	038		
					PCB	040		
					PRG	042		
					RDX	043		
					SI	044		
					SOIL	045		
					SVOC	046		
					SWMU	BLDG. 235		
					TCFM	BLDG. 88		
					TPH	OU 4		
					UST	OU 5		
					VOC			



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			Subject/Comments	Classification	Keywords	Sites	Box No.
							CD No.
N60701 / 000939	09-15-1997	RAB MEMBER	COMMENTS ON ECOLOGICAL RISK	ADMIN RECORD	ARSENIC	005	FRC - LAGUNA
NONE	<b>06-15-1997</b>	J. SPENCER	ASSESSMENT REPORT FOR 21 SITES (SEE		BACKGROUND	008	NIGEL
LTR	NONE	VARIOUS	AR #1072 - DRAFT ERA)		COMMENTS	012	181-03-0136
NONE	10.1	AGENCIES			DATA	016	
00006					EE/CA	021	IMAGED
					ERA	037	SEAL_008
					FUEL	038	
					GW	040	
					METALS	044	
					RCRA	045	
					RISK	070	
					RSE	OU 4	
					SOIL	OU 5	
					UXO		
N60701 / 000933	09-15-1997	DTSC LONG	APPROVAL OF FINAL EXTENDED REMOVAL	ADMIN RECORD	REMOVAL	040	FRC - LAGUNA
NONE	<b>06-23-1997</b>	BEACH	SITE EVALUATION WORK PLAN (SEE AR		RSE	070	NIGEL
LTR	NONE	R. ABBASI	#806 - FINAL RSE)		WORK PLAN		181-03-0136
NONE	10.1	VARIOUS					
00004		AGENCIES					IMAGED
							SEAL_008
N60701 / 000907	07-17-1997	BECHTEL	JUNE 25, 1997, MEETING MINUTES ON	ADMIN RECORD	MTG MINS	013	FRC - LAGUNA
	<b>06-25-1997</b>	NATIONAL INC	FIELD STATUS REVIEW FOR EXTENDED		REMOVAL	040	NIGEL
MM	00127	K. KAPUR	REMOVAL SITE EVALUATION		RSE	070	181-03-0136
N68711-92-D-4670	10.4	VARIOUS					
00004		AGENCIES					IMAGED
							SEAL_008
						AOC 3	
						AOC 4	
						BLDG. 110	

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N60701 / 000941	09-15-1997	NWS SEAL BEACH	LETTER ANNOUNCING NO SCHEDULED	ADMIN RECORD	ARSENIC	001	FRC - LAGUNA
	<b>07-03-1997</b>	J. KEESEE	RAB MEETING FOR JULY 1997, AND		CLEANUP	004	NIGEL
MM	NONE	COMMUNITY	ENCLOSING JUNE 12, 1997 RAB MEETING		EE/CA	005	181-03-0136
NONE	10.4	MEMBER	AND COMMUNITY MINUTES		FFSRA	006	
00009					GW	025	IMAGED
					IRP	038	SEAL_008
					MTG MINS	040	
					RAB	070	
					RECYCLING	OU 4	
					RSE	OU 5	
					SOIL		
					UXO		
N60701 / 000930	09-11-1997	CH2MHILL	JULY 10, 1997 FINAL MINUTES FROM THE	ADMIN RECORD	CYANIDE	001	FRC - LAGUNA
NONE	<b>07-10-1997</b>		RESTORATION ADVISORY BOARD (RAB)		GW	005	NIGEL
MM	NONE		AND COMMUNITY MEETING SITE TOUR		MTG MINS	007	181-03-0136
NONE	10.4				RAB	008	
00006					RADIATION	019	IMAGED
					SOIL	040	SEAL_008
					TANK	070	
					TCE	BLDG. 241	
					WELLS		
N60701 / 000946	09-16-1997	BECHTEL	JUNE 25, 1997 MEETING MINUTES FOR	ADMIN RECORD	MTG MINS	040	FRC - LAGUNA
	<b>07-11-1997</b>	NATIONAL INC	FIELD REVIEW MEETING FOR EXTENDED		REMOVAL	070	NIGEL
MM	00127	K. KAPUR	REMOVAL SITE EVALUATION (SEE AR #617)		SOLVENTS	AOC 10	181-03-0136
N68711-92-D-4670	10.4	MEETING			TCE	AOC 11	IMAGED
00005		ATTENDEES			VOC	AOC 12	SEAL_008
					WATER	AOC 3	
						AOC 4	
						AOC 5	
						AOC 6	
						AOC 7	
						AOC 8	
						AOC 9	
						BLDG. 110	

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N60701 / 000945	09-15-1997	BECHTEL	25 JULY, 1997 FIELD STATUS REVIEW	ADMIN RECORD	AOC	040	FRC - LAGUNA	
CTO-0127/0108	<b>07-25-1997</b>	NATIONAL INC	MEETING MINUTES FOR EXTENDED		MTG MINS	070	NIGEL	
MM	00127	R. SCHLLING	REMOVAL SITE EVALUATION WITH		PCE		181-03-0136	
N68711-92-D-4670	10.4	VARIOUS	ATTACHMENTS A - K		PRG			
00017		AGENCIES			RISK			IMAGED
					RSE			SEAL_008
					SOIL			
					SVOC			
					TCE			
					VOC			
N60701 / 000949	09-17-1997	BECHTEL	JULY 9, 1997 MINUTES FROM THE FIELD	ADMIN RECORD	GW	040	FRC - LAGUNA	
CTO-0127/0105	<b>07-28-1997</b>	NATIONAL INC	STATUS REVIEW MEETING FOR EXTENDED		MTG MINS	070	NIGEL	
MM	00127	R. SCHILLING	REMOVAL SITE EVALUATION (SEE AR #617)		RSE		181-03-0136	
N68711-92-D-4670	10.4	VARIOUS			TCE			
00008		AGENCIES			VOC			IMAGED
								SEAL_008
N60701 / 000950	09-17-1997	BECHTEL	JULY 18, 1997 MINUTES FROM THE FIELD	ADMIN RECORD	GW	040	FRC - LAGUNA	
CTO-0127/0104	<b>07-28-1997</b>	NATIONAL INC	STATUS REVIEW MEETING FOR EXTENDED		MTG MINS	070	NIGEL	
MM	00127	R. SCHILLING	REMOVAL SITE EVALUATION		RSE		181-03-0136	
N68711-92-D-4670	10.4	VARIOUS			TCE			
00013		AGENCIES			VOC			IMAGED
								SEAL_008
N60701 / 000944	09-15-1997	BECHTEL	AUGUST 5, 1997 FIELD STATUS REVIEW	ADMIN RECORD	GW	040	FRC - LAGUNA	
CTO-0127/0118	<b>08-05-1997</b>	NATIONAL INC	MEETING MINUTES FOR EXTENDED		MTG MINS	070	NIGEL	
MM	00127	R. SCHLLING	REMOVAL SITE EVALUATION WITH		REMOVAL		181-03-0136	
N68711-92-D-4670	10.4	VARIOUS	ATTACHMENTS A - F		RSE			
00012		AGENCIES						IMAGED
								SEAL_008
N60701 / 000951	10-28-1997	BECHTEL	AUGUST 25, 1997, MEETING MINUTES,	ADMIN RECORD	MTG MINS	040	FRC - LAGUNA	
CTO-0127/0134	<b>08-15-1997</b>	NATIONAL INC	FIELD STATUS REVIEW MEETING FOR		REMOVAL	070	NIGEL	
MM	00127	R. SCHILLING	EXTENDED REMOVAL SITE EVALUATION		RSE	OU 6	181-03-0136	
N68711-92-D-4670	10.4	VARIOUS				OU 8		
00022		AGENCIES				SWMU 49		IMAGED
						SWMU 50		SEAL_008

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N60701 / 000987	12-17-1997	NAVFAC -	MINUTES OF SEPTEMBER 11, 1997	ADMIN RECORD	MTG MINS	040	FRC - LAGUNA	
	<b>10-01-1997</b>	SOUTHWEST	PROJECT MANAGERS MEETING; NEXT			070	NIGEL	
MM	NONE	DIVISION	PROJECT MANAGERS MEETING			OU 1	181-03-0136	
NONE	01.6	K. REYNOLDS	SCHEDULED FOR WEDNESDAY, OCTOBER			OU 2		
00014		VARIOUS	8, 1997			OU 3	IMAGED	
		AGENCIES				OU 4	SEAL_008	
						OU 5		
						OU 8		
						SWMU 49		
						SWMU 50		
N60701 / 000162	09-02-1999	CH2M HILL	FINAL MINUTES FROM THE RESTORATION	ADMIN RECORD	EE/CA	007	FRC - LAGUNA	
NONE	<b>10-02-1997</b>	M. EMBREE	ADVISORY BOARD MEETING HELD ON		IRP	040	NIGEL	
MM	NONE	NAVFAC -	SEPTEMBER 11, 1997		RAB	070	181-03-0136	
NONE	10.4	SOUTHWEST						
00011		DIVISION					IMAGED	
		K. REYNOLDS					SEAL_001	
N60701 / 000952	10-28-1997	BECHTEL	DRAFT FINAL TECHNICAL MEMORANDUM	ADMIN RECORD	EVALUATION	040	FRC - LAGUNA	
CTO-0127/0143	<b>10-15-1997</b>	NATIONAL INC	NO. 1 ADDENDUM TO THE FINAL		REMOVAL	070	NIGEL	
MEMO	00127	K. KAPUR	EXTENDED REMOVAL SITE EVALUATION		TECH MEMO	OU 6	181-03-0136	
N68711-92-D-4670	03.3	VARIOUS	WORK PLAN (SEE AR #806 - FINAL ERSE		WORK PLAN	OU 8		
00040		AGENCIES	WORK PLAN, #967 - CRWQCB COMMENTS,			SWMU 49	IMAGED	
			#1126 - DRAFT TECHNICAL MEMORANDUM			SWMU 50	SEAL_007	
			NO. 2)					
N60701 / 000966	12-17-1997	NWS SEAL BEACH	FOR REVIEW AND CONCURRENCE	ADMIN RECORD	EVALUATION	040	FRC - LAGUNA	
	<b>10-16-1997</b>	D. BAILLIE	TECHNICAL MEMORANDUM NO.1 DRAFT		IR	070	NIGEL	
LTR	NONE	VARIOUS	FINAL ADDENDUM TO THE FINAL		REMOVAL	OU 4	181-03-0136	
NONE	01.6	AGENCIES	EXTENDED REMOVAL SITE EVALUATION		TECH MEMO	OU 8		
00007			WORKPLAN IR SITES 40 & 70 (REF#000961)		WORK PLAN	SWMU 49	IMAGED	
						SWMU 50	SEAL_008	
N60701 / 000964	12-17-1997	NWS SEAL BEACH	INFORMATION PROVIDED TO SUMMARIZE	ADMIN RECORD	HAZ WASTE	040	FRC - LAGUNA	
	<b>10-23-1997</b>	J. FORD II	AND CLARIFY LETTER OF AUGUST 25, 1997		SOIL	BLDG. 240	NIGEL	
LTR	NONE	VARIOUS	REGARDING OIL CONTAMINATES BY			OU 4	181-03-0136	
NONE	01.6	AGENCIES	BUILDING 240 (SEE AR #996)			SWMU 49	IMAGED	
00039						SWMU 50	SEAL_008	

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						Sites	CD No.
N60701 / 000967 NONE LTR NONE 00001	12-17-1997 <b>10-24-1997</b> NONE 01.6	CRWQCB RIVERSIDE L. VITALE NAVFAC - SOUTHWEST DIVISION E. CASADOS	REVIEW OF DRAFT FINAL TECHNICAL MEMORANDUM NO. 1 ADDENDUM TO FINAL EXTENDED REMOVAL SITE EVALUATION WORK PLAN WITH NO SIGNIFICANT COMMENTS (SEE AR #952 - DRAFT FINAL TECH MEMO)	ADMIN RECORD	COMMENTS EVALUATION REMOVAL TECH MEMO WORK PLAN	040 070 OU 4 OU 8 SWMU 49 SWMU 50	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_008
N60701 / 000973 LTR NONE 00005	12-17-1997 <b>11-10-1997</b> NONE 01.6	DTSC LONG BEACH R. ABBASI  VARIOUS INDIVIDUALS	COMMENTS ON THE DRAFT TECHNICAL MEMORANDUM NO. 1 ADDENDUM TO THE FINAL REMOVAL SITE EVALUATION WORK PLAN (SEE AR #952 & AR #961)	ADMIN RECORD	COMMENTS EVALUATION REMOVAL TECH MEMO WORK PLAN	040 070 OU 4 OU 8 SWMU 49 SWMU 50	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_008
N60701 / 000961 CTO-0127/0153 MEMO N68711-92-D-4670 00041	12-17-1997 <b>11-26-1997</b> 00127 03.3	BECHTEL NATIONAL INC K. KAPUR VARIOUS AGENCIES	FINAL TECHNICAL MEMORANDUM NO. 1 ADDENDUM TO THE FINAL EXTENDED REMOVAL SITE EVALUATION WORK PLAN DATED NOVEMBER 1997	ADMIN RECORD	REMOVAL RSE TECH MEMO WORK PLAN	040 070 OU 4 OU 8 SWMU 49 SWMU 50	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_007
N60701 / 001116 MM NONE 00013	11-05-1998 <b>12-09-1997</b> NONE 01.1	NAVFAC - SOUTHWEST DIVISION K. REYNOLDS VARIOUS AGENCIES	NOVEMBER 12, 1997 PROJECT MANAGERS MEETING SUMMARY, AGENDA REVIEW AND CHANGES	ADMIN RECORD	MTG MINS RSE SI	001 004 005 006 007 008 009 019 022 040 070 OU 1 OU 2 OU 3 OU 4 OU 5	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_009

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N60701 / 000995	02-12-1998	BECHTEL		JANUARY 12, 1998, MEETING MINUTES	ADMIN RECORD	EVALUATION	040	FRC - LAGUNA
	<b>01-27-1998</b>	NATIONAL INC		REGARDING FIELD STATUS MEETING FOR		IR	070	NIGEL
XMTL	00127			EXTENDED REMOVAL SITE EVALUATION,		MTG MINS		181-03-0136
N6871192D4670	10.4	VARIOUS		IR SITES 40 AND 70. ***COMMENTS:		REMOVAL		
00007		AGENCIES		PDCC# 0193***				IMAGED
								SEAL_008
N60701 / 001077	09-08-1998	NAVFAC -		PROJECT MANAGERS (PM) MEETING	ADMIN RECORD	GW	001	FRC - LAGUNA
	<b>02-05-1998</b>	SOUTHWEST		MINUTES OF JANUARY 14, 1998		IRP	004	NIGEL
MM	NONE	DIVISION				MTG MINS	005	181-03-0136
NONE	01.6	K. REYNOLDS				RI	006	IMAGED
00015		DTSC LONG				RSE	007	SEAL_009
		BEACH				SI	008	
		R. ABBASI					009	
							019	
							040	
							070	
							OU 1	
							OU 2	
							OU 3	
							OU 4	
							OU 5	
N60701 / 001004	02-12-1998	BECHTEL		JANUARY 26, 1998, MEETING MINUTES ON	ADMIN RECORD	IRP	040	FRC - LAGUNA
	<b>02-11-1998</b>	NATIONAL INC		FIELD STATUS REVIEW MEETING FOR		MTG MINS	070	NIGEL
XMTL	00127	K. KAPUR		EXTENDED REMOVAL SITE EVALUATION		REMOVAL		181-03-0136
N68711-92-D-4670	10.4	VARIOUS		(SEE AR #961 - EXTENDED RSE)		RSE		
00008		AGENCIES						IMAGED
								SEAL_008
N60701 / 001129	11-06-1998	SOUTHWEST		LETTER REGARDING CURRENT STATUS OF	ADMIN RECORD	GW	040	FRC - LAGUNA
	<b>02-17-1998</b>	DIVISION		THE FIELDWORK PROPOSED IN THE FINAL		INVESTIGATION	070	NIGEL
LTR	NONE	E. CASADOS		EXTENDED REMOVAL SITE EVALUATION		RSE	OU 4	181-03-0136
NONE	01.6	DTSC LONG		WORK PLAN FOR SITES 40 AND 70		WORK PLAN	OU 8	IMAGED
00002		BEACH					SWMU 49	SEAL_010
		R. ABBASI					SWMU 50	

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N60701 / 001016	03-19-1998	NAVFAC -	FEBRUARY 14, 1998, PROJECT MANAGERS	ADMIN RECORD	ACTMEMO	001		FRC - LAGUNA	
	<b>02-20-1998</b>	SOUTHWEST	(PM) MEETING SUMMARY		ASSESSMENT	004		NIGEL	
MM	NONE	DIVISION			EE/CA	005		181-03-0136	
NONE	10.4	K. REYNOLDS			IRP	007			
00014		VARIOUS			LF	008		IMAGED	
		AGENCIES			MTG MINS	019		SEAL_008	
					RI	022			
					SI	040			
						070			
						OU 1			
						OU 2			
						OU 3			
						OU 4			
						OU 5			
						OU 6			
						OU 8			
N60701 / 001146	11-09-1998	BECHTEL	MEETING MINUTES DATED FEBRUARY 24,	ADMIN RECORD	MTG MINS	040		FRC - LAGUNA	
CTO-0127/0219	<b>02-24-1998</b>	NATIONAL INC	1998: FIELD STATUS REVIEW MEETING		RSE	070		NIGEL	
MM	00127	K. KAPUR	FOR EXTENDED REMOVAL SITE		SWMU	OU 4		181-03-0136	
N68711-92-D-4670	01.1	VARIOUS	EVALUATION			OU 8		IMAGED	
00021		AGENCIES				SWMU 49		SEAL_009	
						SWMU 50			

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N60701 / 001131	11-06-1998	CH2M HILL	MEETING MINUTES AND SUMMARY -	ADMIN RECORD	MTG MINS	001		FRC - LAGUNA
	<b>02-26-1998</b>	B. WONG	PROJECT MANAGERS MEETING OF		RI	004		NIGEL
MM	NONE	VARIOUS	JANUARY 14, 1998		SI	005		181-03-0136
NONE	01.1	AGENCIES				006		
00013						007		IMAGED
						008		SEAL_009
						019		
						040		
						070		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		

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N60701 / 001145	11-09-1998	NWS SEAL BEACH	FINAL SITE INSPECTION REPORT FOR	ADMIN RECORD	DATA	002	BECHTEL	
	03-19-1998	D. BAILLIE	OPERABLE UNIT 4 (REVISION 1) (SEE AR		GW	003	NATIONAL	
RPT	DO003	VARIOUS	#1162 - DTSC APPROVAL OF SI REPORTS)		SI	005		
N68711-96-D-2299	01.4	AGENCIES			SOIL	006		
00950					WATER	008		
						009		
						012		
						013		
						016		
						020		
						021		
						023		
						025		
						035		
						036		
						037		
						038		
						039		
						040		
						042		
						043		
						045		
						046		
						OU 4		

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N60701 / 001167	11-10-1998	CH2M HILL	FINAL FOCUSED SITE INSPECTION	ADMIN RECORD	GW	002	FRC - LAGUNA	
	<b>04-08-1998</b>	B. WONG	REPORT (SEE AR #1170 - DTSC		METALS	003	NIGEL	
RPT	DO003	VARIOUS	COMMENTS)		SI	005	181-03-0136	
N68711-96-D-2299	01.4	AGENCIES				006		
00488						008	IMAGED	
						009	SEAL_009	
						012		
						013		
						016		
						020		
						021		
						023		
						025		
						035		
						036		
						037		
						038		
						039		
						040		
						042		
						043		
						045		
						046		
						OU 4		
						OU 5		

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N60701 / 001162	11-10-1998	DTSC CYPRESS	DTSC APPROVAL OF SITE INSPECTION	ADMIN RECORD	SI	002		FRC - LAGUNA	
	<b>04-17-1998</b>	R. ABBASI	REPORTS (SEE AR #597 - OU 5 SI REPORT			003		NIGEL	
LTR	NONE	NWS SEAL BEACH	& AR #1145 - OU 4 SI REPORT)			005		181-03-0136	
NONE	01.6	D. BAILLIE				006			
00003						008		IMAGED	
						009		SEAL_008	
						012			
						013			
						016			
						020			
						021			
						023			
						025			
						035			
						036			
						037			
						038			
						039			
						040			
						042			
						043			
						045			
						046			
						OU 4			
						OU 5			

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Record Type	Record Date	Author						FRC Access. No.
Contr./Guid. No.	CTO No.	Recipient Affil.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001170	11-10-1998	DTSC CYPRESS	DTSC REVIEW OF FOCUSED SITE	ADMIN RECORD	COMMENTS	002		FRC - LAGUNA
	04-27-1998	R. ABBASI	INSPECTION REPORT WITH NO		SI	003		NIGEL
LTR	NONE	NWS SEAL BEACH	SIGNIFICANT COMMENTS (SEE AR #1167 -			005		181-03-0136
NONE	01.6	D. BAILLIE	FOCUSED SI)			006		
00003						008		IMAGED
						009		SEAL_009
						012		
						013		
						016		
						020		
						021		
						023		
						025		
						035		
						036		
						037		
						038		
						039		
						040		
						042		
						043		
						045		
						046		
						OU 4		
						OU 5		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001171	11-10-1998	NAVFAC -	APRIL 8, 1998 PROJECT MANAGERS	ADMIN RECORD	MTG MINS	001	FRC - LAGUNA	
	<b>04-28-1998</b>	SOUTHWEST	MEETING AGENDA AND MINUTES			004	NIGEL	
MM	NONE	DIVISION				005	181-03-0136	
NONE	01.6	A. DICK				006		
00013		VARIOUS				007	IMAGED	
		AGENCIES				008	SEAL_009	
						013		
						019		
						022		
						040		
						070		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
N60701 / 001067	08-19-1998	BECHTEL	JUNE 18, 1998, MEETING MINUTES	ADMIN RECORD	MTG MINS	040	FRC - LAGUNA	
CTO-0127/0348	<b>06-25-1998</b>	NATIONAL INC	REGARDING PRE-DRAFT PUMPING AND		RSE	070	NIGEL	
XMTL	00127	K. KAPUR	PILOT TEST PLAN REVIEW MEETING FOR			OU 4	181-03-0136	
N68711-92-D-4670	10.4	VARIOUS	EXTENDED RSE			OU 8		
00017		AGENCIES				SWMU 49	IMAGED	
						SWMU 50	SEAL_009	

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Record Type	Record Date	Author						FRC Access. No.
Contr./Guid. No.	CTO No.	Recipient Affil.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001043	08-14-1998	NWS SEAL BEACH	LETTER FORWARDING JUNE 10, 1998 RAB	ADMIN RECORD	DISPOSAL	001	FRC - LAGUNA	
	<b>07-01-1998</b>	T.R. BERNITT	MEETING MINUTES, JULY 8, 1998 MEETING		EVALUATION	004	NIGEL	
MM	NONE	COMMUNITY	AGENDA, AND PROJECT STATUS REPORT		LANDFILL	005	181-03-0136	
NONE	10.4	MEMBERS			MTG MINS	006		
00010					RAB	007	IMAGED	
					SOIL	008	SEAL_009	
						019		
						022		
						040		
						070		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
						OU 6		
						OU 8		
						SWMU 1		
						SWMU 29		
						SWMU 30		
						SWMU 31		
						SWMU 32		
						SWMU 33		
						SWMU 34		
						SWMU 36		
						SWMU 46		
						SWMU 49		
						SWMU 50		
						SWMU 67		
						SWMU 8		
						SWMU 9		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.					Location
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Contr./Guid. No.	CTO No.	Recipient Affil.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001070	09-03-1998	NAVFAC -	PROJECT MANAGERS' (PM) MEETING	ADMIN RECORD	GW	001	FRC - LAGUNA	
	<b>07-29-1998</b>	SOUTHWEST	MINUTES OF JULY 8, 1998		MTG MINS	004	NIGEL	
MM	NONE	DIVISION			RI	005	181-03-0136	
NONE	01.6	A. DICK			RSE	006		
00016		DTSC				007	IMAGED	
		R. ABBASI				008	SEAL_009	
						013		
						019		
						040		
						070		
						OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		
N60701 / 000056	08-31-1999	PARSON	PRELIMINARY DRAFT EVALUATION OF	ADMIN RECORD	GW	040	FRC - LAGUNA	
NONE	<b>08-21-1998</b>		REMEDATION BY NATURAL ATTENUATION		IRP	070	NIGEL	
RPT	NONE	NAVFAC -	FOR CONTAMINATED GROUNDWATER		RI		181-03-0136	
NONE	03.3	SOUTHWEST			TCE			
00104		DIVISION					IMAGED	
							SEAL_008	
N60701 / 001191	11-11-1998	NWS SEAL BEACH	MINUTES OF AUGUST 12, 1998 RAB	ADMIN RECORD	MTG MINS	040	FRC - LAGUNA	
	<b>08-24-1998</b>	T. BERNITT	TRAINING SESSION, SEPTEMBER 9, 1998		RAB	070	NIGEL	
MM	NONE	COMMUNITY	RAB MEETING AGENDA AND PROJECT			BLDG. 241	181-03-0136	
NONE	01.6	MEMBERS	STATUS REPORT			OU 1	IMAGED	
00012						OU 2	SEAL_009	
						OU 3		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Author	Location				
Record Type	Record Date	Author	Author	FRC Access. No.					
Contr./Guid. No.	CTO No.	Recipient Affil.	Recipient	Subject/Comments	Classification	Keywords	Sites	Box No.	CD No.
Approx. # Pages	EPA Cat. #	Recipient							
N60701 / 001192	11-11-1998	NAVFAC -	MINUTES OF THE AUGUST 12, 1998	ADMIN RECORD	MTG MINS	001	FRC - LAGUNA		
	<b>08-26-1998</b>	SOUTHWEST	PROJECT MANAGERS MEETING			004	NIGEL		
MM	NONE	DIVISION				005	181-03-0136		
NONE	01.6	A. DICK				006			
00015		VARIOUS				007	IMAGED		
		AGENCIES				040	SEAL_009		
						070			
						OU 1			
						OU 2			
						OU 3			
						OU 4			
						OU 5			
N60701 / 001245	07-22-1999	DON	RAB MEETING MINUTES FROM	ADMIN RECORD	EE/CA	001	FRC - LAGUNA		
NONE	<b>09-30-1998</b>	T. BERNITT	SEPTEMBER 9, 1998		GW	004	NIGEL		
MM	NONE				MSDS	006	181-03-0136		
NONE	03.6	COMMUNITY			PRG	010			
00013		MEMBER			RA	019	IMAGED		
					RAB	040	SEAL_009		
					REMOVAL	070			
					RI				
					SMP				
N60701 / 000105	09-01-1999		RESTORATION ADVISORY BOARD	ADMIN RECORD	EE/CA	001	FRC - LAGUNA		
NONE	<b>11-25-1998</b>	R. BERNITT	MEETING MINUTES - NOVEMBER 4, 1998		GW	007	NIGEL		
MM	NONE	COMMUNITY			IRP	040	181-03-0136		
NONE	10.4	MEMBERS			RAB	070			
00011		VARIOUS					IMAGED		
							SEAL_001		
N60701 / 000218	09-09-1999	BECHTEL	DRAFT EXTENDED REMOVAL SITE	ADMIN RECORD	IRP	040	FRC - LAGUNA		
CTO0127/0420	<b>12-28-1998</b>	NATIONAL, INC.	EVALUATION REPORT - DATED		RSE	070	NIGEL		
RPT	00127	K. KAPUR	DECEMBER 22, 1998 VOL III OF VII (SEE AR		SOIL BORING		181-03-0136		
N68711-92-D-4670	03.4	NAVFAC -	#327 - FINAL). ***COMMENTS: SEVEN		WATER				
00646		SOUTHWEST	VOLUMES - THIS VOLUME INCLUDES				IMAGED		
		DIVISION	APPENDICES A-H***				SEAL_002		

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Record Type	Record Date	Author						FRC Access. No.
Contr./Guid. No.	CTO No.	Recipient Affil.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000219	09-09-1999	BECHTEL	DRAFT EXTENDED REMOVAL SITE	ADMIN RECORD	IRP	040	FRC - LAGUNA	
CTO-0127/0420	<b>12-28-1998</b>	NATIONAL, INC.	EVALUATION REPORT - DATED DECEMBER		RSE	070	NIGEL	
RPT	00127	K. KAPUR	22, 1998 VOL IV OF VII (SEE AR #327 -		SOIL		181-03-0136	
N68711-92-D-4670	03.4	NAVFAC -	FINAL). ***COMMENTS: SEVEN VOLUMES -		SOIL BORING			
00741		SOUTHWEST	THIS VOLUME INCLUDES APPENDICES I-L***		WATER		IMAGED	
		DIVISION					SEAL_002	
N60701 / 000220	09-09-1999	BECHTEL	DRAFT EXTENDED REMOVAL SITE	ADMIN RECORD	GW	040	FRC - LAGUNA	
CTO-0127/0420	<b>12-28-1998</b>	NATIONAL, INC.	EVALUATION REPORT - DATED DECEMBER		IRP	070	NIGEL	
RPT	00127	K. KAPUR	22, 1998 VOL V OF VII (SEE AR #327 -		RSE		181-03-0136	
N68711-92-D-4670	03.4	NAVFAC -	FINAL). ***COMMENTS: SEVEN VOLUMES -		SOIL			
00986		SOUTHWEST	THIS VOLUME INCLUDES APPENDICES M-		SOIL BORING		IMAGED	
		DIVISION	N***		WATER		SEAL_002	
N60701 / 000221	09-09-1999	BECHTEL	DRAFT EXTENDED REMOVAL SITE	ADMIN RECORD	IRP	040	FRC - LAGUNA	
CTO-0127/0420	<b>12-28-1998</b>	NATIONAL, INC.	EVALUATION REPORT - DATED DECEMBER		RSE	070	NIGEL	
RPT	00127	K KAPUR	22, 1998 VOL VI OF VII (SEE AR #327 -		SOIL		181-03-0136	
N68711-92-D-4670	03.4	NAVFAC -	FINAL). ***COMMENTS: SEVEN VOLUMES -		SOIL BORING			
00928		SOUTHWEST	THIS VOLUME INCLUDES APPENDIX N***		WATER		IMAGED	
		DIVISION					SEAL_002	
N60701 / 000222	09-09-1999	BECHTEL	DRAFT EXTENDED REMOVAL SITE	ADMIN RECORD	GW	040	FRC - LAGUNA	
CTO-0127/0420	<b>12-28-1998</b>	NATIONAL, INC.	EVALUATION REPORT - DATED DECEMBER		IRP	070	NIGEL	
RPT	00127	K. KAPUR	22, 1998 VOL VII OF VII (SEE AR #327 -		RSE		181-03-0136	
N68711-92-D-4670	03.4	NAVFAC -	FINAL). ***COMMENTS: SEVEN VOLUMES -		SOIL			
00310		SOUTHWEST	THIS VOLUME INCLUDES APPENDICES O-		SOIL BORING		IMAGED	
		DIVISION	R***		WATER		SEAL_002	
N60701 / 001215	07-21-1999	NAVFAC -	MEETING MINUTES FOR DECEMBER 9,	ADMIN RECORD	EE/CA	001	FRC - LAGUNA	
NONE	<b>12-28-1998</b>	SOUTHWEST	1998 PROJECT MANAGERS MEETING		ERSE	004	NIGEL	
MM	NONE	DIVISION			GW	005	181-03-0136	
NONE	03.6	A. DICK			NWR	006		
00013		DTSC - CYPRESS			RA	007	IMAGED	
		R. ABBASI			RAP	008	SEAL_009	
					RSE	019		
						022		
						040		
						070		

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	Record Type	Record Date	Author					FRC Access. No.
	Contr./Guid. No.	CTO No.	Recipient Affil.					Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 000107 NONE LTR NONE 00023	09-01-1999 <b>12-29-1998</b> NONE 03.6	DON R. ROBINSON SCAQMD W. THOMPSON	DRAFT EXTENDED REMOVAL SITE EVALUATION REPORT - LETTER FOR REVIEW (SEE AR #216-#222 - DRAFT EXTENDED RSE REPORT, VOL. 1-7)	ADMIN RECORD	GW IRP	040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_005	
N60701 / 000216 CTO-0127/0420 RPT CTO-0127/0420 00273	09-09-1999 <b>12-29-1998</b> 00127 03.4	BECHTEL NATIONAL, INC. K. KAPUR NAVFAC - SOUTHWEST DIVISION	DRAFT EXTENDED REMOVAL SITE EVALUATION REPORT VOL I OF VII (INCLUDES ERRATA SHEET AND ASSOCIATED REPORT REPLACEMENT PAGES DATED 1/4/99) {SEE AR #327- FINAL}. ***COMMENTS: SEVEN VOLUMES***	ADMIN RECORD	IRP PCE RSE SB SOIL TCE TPH WATER	040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_002	
N60701 / 000217 CTO-0127/0420 RPT N68711-92-D-4670 00203	09-09-1999 <b>12-29-1998</b> 00127 03.4	BECHTEL NATIONAL, INC. K. KAPUR NAVFAC - SOUTHWEST DIVISION	DRAFT EXTENDED REMOVAL SITE EVALUATION REPORT - DATED DECEMBER 22, 1998 VOL II OF VII (SEE AR #327 - FINAL). ***COMMENTS: SEVEN VOLUMES - THIS VOLUME INCLUDES TABLES***	ADMIN RECORD	IRP RSE SB SOIL WATER	040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_002	
N60701 / 000108 NONE LTR NONE 00002	09-01-1999 <b>01-04-1999</b> NONE 03.6	BNI K. KAPUR NAVFAC - SOUTHWEST DIVISION R. SELBY	DRAFT EXTENDED REMOVAL SITES EVALUATION REPORT - LETTER	ADMIN RECORD	IRP	040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_001	
N60701 / 001213 NONE MM NONE 00010	07-21-1999 <b>01-28-1999</b> NONE 03.6	DOD D. BAILLIE COMMUNITY MEMBER	MINUTES FOR RESTORATION ADVISORY BOARD - JANUARY 13, 1999	ADMIN RECORD	AM ERSE FS GW RAB RAP	001 007 040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_009	

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Record Type	Record Date	Author	Author					FRC Access. No.
Contr./Guid. No.	CTO No.	Recipient Affil.	Recipient Affil.					Box No.
Approx. # Pages	EPA Cat. #	Recipient	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.
N60701 / 000118	09-01-1999	ORANGE COUNTY WATER DISTRICT	ORANGE COUNTY WATER DISTRICT	REVIEW OF AND COMMENTS REGARDING DRAFT EXTENDED REMOVAL SITE EVALUATION REPORT BY ORANGE COUNTY WATER DISTRICT	ADMIN RECORD	COMMENTS	040	FRC - LAGUNA NIGEL
NONE	03-01-1999	M. RIGBY	M. RIGBY			GW	070	181-03-0136
LTR	NONE	VARIOUS	VARIOUS			MONITORING		
NONE	03.6					RAB		IMAGED
00007						TCE		SEAL_001
N60701 / 000121	09-01-1999	CRWQCB	CRWQCB	COMMENTS EXTENDED REMOVAL SITE EVALUATION REPORT	ADMIN RECORD	IRP	040	FRC - LAGUNA NIGEL
NONE	03-02-1999	P HANNON	P HANNON				070	181-03-0136
LTR	NONE	R. ROBINSON	R. ROBINSON					IMAGED
NONE	10.1							SEAL_001
00001								
N60701 / 001216	07-21-1999	DOD	DOD	RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES - APRIL 14, 1999	ADMIN RECORD	AWQC	001	FRC - LAGUNA NIGEL
NONE	03-02-1999	M. O'MOORE	M. O'MOORE			FSI	004	181-03-0136
MM	NONE	COMMUNITY MEMBER	COMMUNITY MEMBER			GW	005	
NONE	03.6					MW	006	IMAGED
00012						NEAP	007	SEAL_009
						NWR	040	
						POLB	070	
N60701 / 001252	07-23-1999	DON	DON	THE DEPARTMENT OF THE NAVY REQUESTING ACTION SPECIFIC, CHEMICAL SPECIFIC, & LOCATION SPECIFIC ARARS FOR A GROUNDWATER FEASIBILITY STUDY	ADMIN RECORD	ARAR	040	FRC - LAGUNA NIGEL
NONE	04-27-1999	M. GOOD	M. GOOD			CERCLA	070	181-03-0136
LTR	NONE	DTSC, CYPRESS	DTSC, CYPRESS			FS		
NONE	03.6	R. ABBASI	R. ABBASI			GW		IMAGED
00005								SEAL_009
N60701 / 001228	07-21-1999	NAVFAC - SOUTHWEST DIVISION	NAVFAC - SOUTHWEST DIVISION	PROJECT MANAGER MEETING MINUTES FROM JUNE 9, 1999	ADMIN RECORD	CAP	001	FRC - LAGUNA NIGEL
NONE	06-23-1999	M. GOOD	M. GOOD			EA	004	181-03-0136
MM	NONE	DTSC - CYPRESS	DTSC - CYPRESS			EE/CA	005	
NONE	03.6	K. LEIBEL	K. LEIBEL			ERSE	006	IMAGED
00012						ESA	007	SEAL_009
						IRP	008	
						SMP	014	
							019	
							022	
							040	
							070	

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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001199	07-20-1999	DEPARTMENT OF THE NAVY	RESTORATION ADVISORY BOARD MEETING MINUTES REGARDING A TOUR OF INSTALLATION RESTORATION SITES AND COMMUNITY MEMBERS ON JUNE 9, 1999	ADMIN RECORD	IRP	001	FRC - LAGUNA	
NONE	07-01-1999				LF	004	NIGEL	
MM	NONE	D. BAILLIE			MTG MINS	005	181-03-0136	
NONE	03.4	COMMUNITY MEMBER			OSR	006		
00013					UST	007	IMAGED	
					WATER	014	SEAL_009	
						024		
						040		
						070		
N60701 / 000002	08-06-1999	NAVFAC - SOUTHWEST DIVISION	FEDERAL FACILITIES SITE REMEDIATION AGREEMENT JULY 14, 1999 PROJECT MANAGERS MEETING MINUTES	ADMIN RECORD	CAP	001	FRC - LAGUNA	
NONE	07-28-1999				DQO	004	NIGEL	
MM	NONE	M. GOOD			DTSC	005	181-03-0136	
NONE	03.6	DTSC			EA	006		
00011		K. LEIBEL			EE/CA	007	IMAGED	
					ERSE	014	SEAL_001	
					FSI	022		
					IRP	040		
					MTG MINS	070		
					NPL	BLDG. 112		
					RAB	OU 4		
					RAP	OU 5		
					ROICC			
					RWQCB			
N60701 / 000192	09-02-1999	NAVFAC - SOUTHWEST DIVISION	PROJECT MANAGERS MEETING MINUTES FROM AUGUST 11, 1999 - CONFIDENTIAL MAILING LIST	ADMIN RECORD	EE/CA	001	FRC - LAGUNA	
NONE	08-24-1999			CONFIDENTIAL	IRP	007	NIGEL	
MM	NONE	M. GOOD			RA	008	181-03-0136	
NONE	03.6	DTSC - CYPRESS			RAB	014		
00012		K. LEIBEL				019	IMAGED	
						040	SEAL_001	
						070		

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Contr./Guid. No.	CTO No.	Recipient Affil.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000234	10-05-1999	NAVFAC -	MINUTES OF THE SEPTEMBER 8, 1999	ADMIN RECORD	MTG MINS	001	FRC - LAGUNA	
522.AD/532	09-23-1999	SOUTHWEST	PROJECT MANAGERS MEETING			004	NIGEL	
MM	NONE	DIVISION				005	181-03-0136	
NONE	01.6	M. GOOD				006		
00013		VARIOUS				007	IMAGED	
		AGENCIES				008	SEAL_001	
						014		
						019		
						022		
						040		
						070		
						OU 4		
						OU 5		

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Record Type	Record Date	Author						FRC Access. No.
Contr./Guid. No.	CTO No.	Recipient Affil.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000327	06-01-2000	BECHTEL	FINAL EXTENDED REMOVAL SITE	ADMIN RECORD	AOC	040	FRC - LAGUNA	
CTO-0127/0549	10-04-1999	NATIONAL INC	EVALUATION REPORT REPLACEMENT		ARAR	070	NIGEL	
RPT	00127	R. TAIT	PAGES WHICH MAKES THE DRAFT A FINAL		BTEX	AOC 11	181-03-0136	
N68711-92-D-4670		NAVFAC -	DOCUMENT AS OF 10/4/99 - VOLUMES I-VII		CAH	AOC 2		
01012		SOUTHWEST	(SEE AR #216 - #222 - DRAFT EXTENDED		COPC	AOC 3	IMAGED	
		DIVISION	RSE REPORT, VOL. 1-7 & AR #328 -		COPEC	AOC 4	SEAL_002	
		R. SELBY	COMMENTS BY CRWQCB)		DCA	BLDG. 112		
					DCE	BLDG. 240		
					DQO			
					FFSRA			
					GPR			
					GW			
					HW			
					IAS			
					IRP			
					MEK			
					METALS			
					NFA			
					OU			
					PA			
					PAH			
					PCB			
					PCE			
					PID			
					PRG			
					PVC			
					QA			
					QAPP			
					QC			
					RCRA			
					RFA			
					RSE			
					SARA			
					SB			
					SI			

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.

SOIL  
SVOC  
SWMU  
TCA  
TCE  
TIC  
TOC  
TPH  
UST  
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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 000253	04-26-2000	BECHTEL	DRAFT GROUNDWATER FEASIBILITY	ADMIN RECORD	AOC	040		FRC - LAGUNA
CTO-0127/0569	10-27-1999	NATIONAL INC.	STUDY REPORT FOR THE INSTALLATION		ARAR	070		NIGEL
RPT	00127	R. SCHILLING	RESTORATION PROGRAM, VOLUMES I & II		CAH	AOC 11		181-03-0136
N68711-92-D-4670		NAVFAC -	{INCLUDES ERRATA SHEET REPLACEMENT		COC	AOC 2		IMAGED
00794		SOUTHWEST	PAGES, DATED 11/8/99} (REFERENCE AR		COPC	AOC 3		SEAL_005
		DIVISION	#256, AR #267, #301, #302 & #303)		DCE	AOC 4		
		R. SELBY			FS	BLDG. 240		
					GAC	OU 4		
					GW	OU 8		
					IAS			
					IRP			
					MCL			
					OU			
					PA			
					PCB			
					PCE			
					PRG			
					RACER			
					RCRA			
					RFA			
					RI			
					RSE			
					SI			
					SVE			
					SWMU			
					TCE			
					UST			
					VEE			
					VOC			
					VPC			
					WELLS			

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Contr./Guid. No.	CTO No.	Recipient Affil.	FRC Access. No.	Approx. # Pages	EPA Cat. #	Recipient	Box No.
						Subject/Comments	Classification
							Keywords
							Sites
							CD No.
N60701 / 000258	05-15-2000	DTSC	REVIEW OF FINAL EXTENDED REMOVAL	ADMIN RECORD	COMMENTS	040	FRC - LAGUNA
NONE	12-06-1999	K. LEIBEL	SITE EVALUATION REPORT, DATED 10/4/99,			070	NIGEL
LTR	NONE	NWS SEAL BEACH	DTSC CONCURS WITH REPORT AND HAS				181-03-0136
NONE		P. F. TAMASHIRO	NO FURTHER COMMENT				
00002							IMAGED
							SEAL_002
N60701 / 000271	05-18-2000	NAVFAC -	TRANSMITTAL LETTER W/ENCLOSURE OF	ADMIN RECORD	AOC	001	FRC - LAGUNA
SER 522.KR/619	12-06-1999	SOUTHWEST	MEETING MINUTES FROM THE NOVEMBER		ARAR	004	NIGEL
MM	NONE	DIVISION	17, 1999 PROJECT MANAGERS MEETING		EA	005	181-03-0136
NONE		K. REYNOLDS	FOR REVIEW		EE/CA	006	
00012		DTSC			FFSRA	007	IMAGED
		K. LEIBEL			GW	008	SEAL_002
					IRP	014	
					MONITORING	019	
					RA 8	022	
					RAB	040	
					RSE	070	
					SI	OU 4	
						OU 5	
N60701 / 000260	05-15-2000	DTSC	LETTER REGARDING PRIORITY FOR	ADMIN RECORD	COMMENTS	001	FRC - LAGUNA
NONE	12-07-1999	K. LEIBEL	DOCUMENT REVIEW BY DEPARTMENT OF		FS	022	NIGEL
LTR	NONE	NAVFAC -	TOXIC SUBSTANCES CONTROL		GW	040	181-03-0136
NONE		SOUTHWEST				070	
00003		DIVISION					IMAGED
		A. DICK					SEAL_002
N60701 / 000256	04-27-2000	CITY OF SEAL	COMMENTS ON THE DRAFT	ADMIN RECORD	COMMENTS	040	FRC - LAGUNA
CTO-0127/0569	12-13-1999	BEACH	GROUNDWATER FEASIBILITY STUDY		COPC	070	NIGEL
LTR	00127	W. DOANE	REPORT (REFERENCE AR #253 -		FS	BLDG. 240	181-03-0136
N68711-92-D-4670		NAVFAC -	GROUNDWATER FEASIBILITY STUDY		GW		
00004		SOUTHWEST	REPORT & AR #267, COMMENTS BY		IRP		IMAGED
		DIVISION	ORANGE COUNTY WATER DISTRICT, & AR		PCE		SEAL_002
		P. TAMASHIRO	#301 - COMMENTS BY DTSC, AR #302 -		TCE		
			COMMENTS BY CRWQCB & AR #303,				
			RESPONSES)				

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Record Type	CTO No.	Recipient Affil.						Box No.
Contr./Guid. No.	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001467 CTO-0002/0020 PLAN N68711-95-D-7526 00200	07-10-2003 <b>12-14-1999</b> 00002	BECHTEL ENVIRONMENTAL, INC. G. CAGLE NAVFAC - SOUTHWEST DIVISION	DRAFT WORK PLAN FOR THE LONG-TERM GROUNDWATER MONITORING	ADMIN RECORD INFO REPOSITORY	GW PCE TCE TDS VOC	040 070		BECHTEL NATIONAL  BNI - 08/01/03
N60701 / 000276 CTO-0002/0020 PLAN N68711-95-D- 7526_____ 00251	05-22-2000 <b>12-15-1999</b> 00002	BECHTEL NATIONAL INC G. CAGLE NAVFAC - SOUTHWEST DIVISION R. SELBY	DRAFT WORK PLAN FOR LONG-TERM GROUNDWATER MONITORING (REFERENCE AR #268, #297, #298, #307 - DRAFT ADDENDUM NO. 1, #310, #311, & #312)	ADMIN RECORD	COC COPC DQO FS GW IAS IRP MONITORING PA PCE QAPP RCRA RFA RSE SI TCE UST VOC WATER WELLS WORK PLAN	040 070 BLDG. 240		FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_004

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N60701 / 000305	05-31-2000	NAVFAC -	TRANSMITTAL LETTER WITH ENCLOSURE	ADMIN RECORD	COMMENTS	001		FRC - LAGUNA
SER 522.AD/639	12-24-1999	SOUTHWEST	OF DECEMBER 8, 1999 PROJECT		EE/CA	004		NIGEL
MM	NONE	DIVISION	MANAGERS MEETING MINUTES FOR		ERA	005		181-03-0136
NONE		K. REYNOLDS	REVIEW		FS	006		
00011		DTSC - CYPRESS,			MTG MINS	007		IMAGED
		CA			RAB	014		SEAL_002
		K. LEIBEL			RSE	019		
					SI	022		
					WORK PLAN	040		
						070		
						AOC 4		
						OU 4		
						OU 5		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000313	06-01-2000	CH2MHILL	FINAL OPERABLE UNITS (OU) 4 AND 5	ADMIN RECORD	ARSENIC	005	FRC - LAGUNA	
PROJ#	12-29-1999	B. WONG	SCREENING ECOLOGICAL RISK	INFO	BTEX	006	NIGEL	
141950.03.EC	NONE	NAVFAC -	ASSESSMENT (REFERENCE AR #314)	REPOSITORY	COEC	012	181-03-0136	
RPT		SOUTHWEST			COPC	013		
N68711-89-D-2299		DIVISION			DDD	016	IMAGED	
00280					DDE	025	SEAL_002	
					DDT	037		
					ERA	038		
					GW	040		
					IAS	042		
					METALS	044		
					PAH	045		
					PCB	OU 4		
					PESTICIDES	OU 5		
					PRG			
					RCRA			
					RDX			
					RFA			
					RSE			
					SI			
					SVOC			
					SWMU			
					TCFM			
					TPH			
					UST			
					VOC			
N60701 / 000302	05-31-2000	CRWQCB -	COMMENTS BY CALIFORNIA REGIONAL	ADMIN RECORD	ARAR	040	FRC - LAGUNA	
NONE	12-30-1999	RIVERSIDE	WATER QUALITY CONTROL BOARD ON		COMMENTS	070	NIGEL	
LTR	NONE	P. HANNON	THE DRAFT GROUNDWATER FEASIBILITY		FS		181-03-0136	
NONE		NWS SEAL BEACH	STUDY REPORT (REFERENCE AR #253 -		GW			
00001		P.F. TAMASHIRO	DRAFT GW FS, AR #256, AR #267, AR #301		MONITORING		IMAGED	
			&AR #303)		WELLS		SEAL_002	

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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 000267 CTO-0127/0569 LTR N68711-92-D-4670 00002	05-18-2000 <b>01-03-2000</b> 00127	ORANGE COUNTY WATER DISTRICT M. RIGBY NWS SEAL BEACH P.F. TAMASHIRO	COMMENTS BY ORANGE COUNTY WATER DISTRICT ON DRAFT GROUNDWATER FEASIBILITY STUDY REPORT (REFERENCE AR #253 - DRAFT GW FS, AR #256 - COMMENTS BY CITY OF SEAL BEACH, AR #301 - COMMENTS BY DTSC, AR #302 - COMMENTS BY CRWQCB, & AR #303 RESPONSES)	ADMIN RECORD	COMMENTS FS GW RAB TCE VOC WATER	040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_002	
N60701 / 000301 NONE LTR NONE 00009	05-31-2000 <b>01-19-2000</b> NONE	DTSC - CYPRESS, CA K. LEIBEL NWS SEAL BEACH P.F. TAMASHIRO	DEPARTMENT OF TOXIC SUBSTANCES CONTROL REVIEW OF AND COMMENTS ON THE DRAFT GROUNDWATER FEASIBILITY STUDY REPORT (REFERENCE AR #253 - GROUNDWATER FEASIBILITY STUDY REPORT, #256, #267, #302, & #303). ***COMMENTS: ACTUAL COMMENTS WRITTEN BY MARIE MCCRINK OF THE GEOLOGIC SERVICES UNIT (GSU)***	ADMIN RECORD	COMMENTS FS GW PCE TCE VOC WATER WELLS	040 070 BLDG. 240	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_002	
N60701 / 000261 NONE MM NONE 00008	05-15-2000 <b>01-26-2000</b> NONE	NWS SEAL BEACH P. F. TAMASHIRO  COMMUNITY MEMBER	MEETING MINUTES FROM JANUARY 12, 2000 RESTORATION ADVISORY BOARD (RAB) MEETING, AND AGENDA FOR MARCH 08, 2000 MEETING	ADMIN RECORD	GW IRP MONITORING MTG MINS PCB PESTICIDES RAB SOIL WELLS	001 004 005 006 040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_002	
N60701 / 000328 NONE LTR NONE 00001	06-02-2000 <b>02-09-2000</b> NONE	CRWQCB - RIVERSIDE P. HANNON NWS SEAL BEACH P.F. TAMASHIRO	REVIEW OF AND NO COMMENTS ON THE FINAL EXTENDED REMOVAL SITE EVALUATION REPORT BY WATER QUALITY CONTROL BOARD (SEE AR #327 - FINAL RSE REPORT)	ADMIN RECORD	COMMENTS RSE	040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_003	

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Contr./Guid. No.	CTO No.	Recipient Affil.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000354 NONE LTR NONE 00006	08-15-2000 <b>02-09-2000</b> NONE	DTSC - CYPRESS, CA. K. LEIBEL NWS SEAL BEACH P. F. TAMASHIRO	REVIEW OF RESPONSE TO AGENCY COMMENTS BY DTSC ON DRAFT TECHNICAL MEMORANDUM NO. 6, SUPPLEMENTAL SHALLOW PILOT TEST (SEE AR #309 - RESPONSE TO COMMENTS)	ADMIN RECORD	COMMENTS PRG SOIL TECH MEMO	040 070		FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_004
N60701 / 000297 NONE LTR NONE 00001	05-25-2000 <b>02-11-2000</b> NONE	CARLSBAD FISH & WILDLIFE OFFIC A. YUEN NWS SEAL BEACH P.F. TAMASHIRO	COMMENTS BY THE US DEPARTMENT OF THE INTERIOR - FISH & WILDLIFE SERVICE - REGARDING THE DRAFT WORK PLAN FOR LONG-TERM GROUNDWATER MONITORING (REFERENCE AR - #268, #276 - DRAFT WORK PLAN, #298, #310, #311, & #312)	ADMIN RECORD	COMMENTS METALS MONITORING WELLS WORK PLAN	040 070		FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_005
N60701 / 000298 NONE LTR NONE 00003	05-25-2000 <b>02-14-2000</b> NONE	CITY OF SEAL BEACH L. WHITTENBERG NWS SEAL BEACH P.F. TAMASHIRO	COMMENTS ON THE DRAFT WORK PLAN FOR LONG-TERM GROUNDWATER MONITORING (REFERENCE AR #268, #276 - DRAFT WORK PLAN, #297, #310, #311, & #312)	ADMIN RECORD	COMMENTS DQO GW MONITORING WELLS	040 070		FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_005
N60701 / 000310 NONE LTR NONE 00005	06-01-2000 <b>02-18-2000</b> NONE	DTSC - CYPRESS, CA K. LEIBEL NWS SEAL BEACH P.F. TAMASHIRO	COMMENTS BY THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL ON THE DRAFT WORK PLAN FOR LONG-TERM GROUNDWATER MONITORING DATED 12/15/99 (REFERENCE AR #268, #276, #297, #298, #311, & #312). ***COMMENTS: ACTUAL COMMENTS MADE BY MARIE MCCRINK OF THE GEOLOGIC SERVICES UNIT***	ADMIN RECORD	COC DQO GW METALS MONITORING VOC WELLS WORK PLAN	040 070		FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_005

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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000306	05-31-2000	NAVFAC -	TRANSMITTAL LETTER WITH ENCLOSURE	ADMIN RECORD	COMMENTS	001	FRC - LAGUNA	
SER 5NEN.AD/067	<b>02-28-2000</b>	SOUTHWEST	OF FEBRUARY 9, 2000 PROJECT		EE/CA	004	NIGEL	
MM	NONE	DIVISION	MANAGERS MEETING MINUTES FOR		ERA	005	181-03-0136	
NONE		K. REYNOLDS	REVIEW		FS	006		
00011		DTSC - CYPRESS,			IRP	007	IMAGED	
		CA			RAB	014	SEAL_002	
		K. LEIBEL			RSE	022		
					SI	040		
					SOIL	070		
						OU 4		
						OU 5		
N60701 / 000311	06-01-2000	ORANGE COUNTY	COMMENTS BY ORANGE COUNTY WATER	ADMIN RECORD	GW	040	FRC - LAGUNA	
NONE	<b>02-28-2000</b>	WATER DIST.	DISTRICT ON DRAFT LONG-TERM		MONITORING	070	NIGEL	
LTR	NONE	M. RIGBY	GROUNDWATER MONITORING WORK PLAN		WATER		181-03-0136	
NONE		NWS SEAL BEACH	(REFERENCE AR #268, #276, #297, #298,		WORK PLAN			
00002		P.F. TAMSHIRO	#310, & #312)				IMAGED	
							SEAL_005	
N60701 / 000312	06-01-2000	CRWQCB	COMMENTS BY WATER QUALITY CONTROL	ADMIN RECORD	GW	040	FRC - LAGUNA	
NONE	<b>02-29-2000</b>	P. HANNON	BOARD ON THE WORK PLAN FOR LONG-		MONITORING	070	NIGEL	
LTR	NONE	NWS SEAL BEACH	TERM GROUNDWATER MONITORING		VOC		181-03-0136	
NONE		P.F. TAMASHIRO	(REFERENCE AR #268, #276, #297, #298,		WELLS			
00003			#310, & #311)		WORK PLAN		IMAGED	
							SEAL_005	
N60701 / 000265	05-17-2000	NAVFAC -	TRANSMITTAL LETTER W/ENCLOSURE OF	ADMIN RECORD	CAP	007	FRC - LAGUNA	
SER 522.AD/109	<b>03-16-2000</b>	SOUTHWEST	MEETING MINUTES FROM THE MARCH 8,		EE/CA	014	NIGEL	
MM	NONE	DIVISION	2000 PROJECT MANAGERS MEETING FOR		FFA	022	181-03-0136	
NONE		K. REYNOLDS	REVIEW		FFSRA	040		
00012		DTSC			FS	070	IMAGED	
		K. LEIBEL			GW	AOC 4	SEAL_002	
					IRP	OU 4		
					MONITORING	OU 5		
					RAB			
					RSE			
					SI			
					SOIL			

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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 000268 CTO-0002/0051 MISC N68711-95-D-7526 00015	05-18-2000 <b>03-16-2000</b> 00002	BECHTEL NATIONAL INC. VARIOUS NAVFAC - SOUTHWEST DIVISION R. SELBY	COMPILED RESPONSES TO COMMENTS BY DTSC, CRWQCB, ORANGE COUNTY WATER DISTRICT, CITY OF SEAL BEACH, & US FISH & WILDLIFE SERVICE ON THE DRAFT WORK PLAN FOR LONG-TERM GROUNDWATER MONITORING (REFERENCE AR #276, #297, #298, #310, #311, & #312)	ADMIN RECORD	COC COMMENTS DCA DQO GW METALS MONITORING ROD TCE VOC WELLS WORK PLAN	040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_002	
N60701 / 000307 CTO-0002/0050 RPT N68711-95-D-7526 00023	05-31-2000 <b>03-16-2000</b> 00002	BECHTEL NATIONAL INC  NAVFAC - SOUTHWEST DIVISION	DRAFT ADDENDUM NO. 1 (BENCH-SCALE TEST FOR IR SITE 40) WORK PLAN FOR LONG-TERM GROUNDWATER MONITORING (SEE AR #276 - DRAFT WORK PLAN, AR #340 - CRWQCB COMMENTS, AR #345 - DTSC COMMENTS AND AR #377 - CITY OF SEAL BEACH COMMENTS)	ADMIN RECORD	GW MONITORING PCE SOIL VOC	040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_004	
N60701 / 000371 NONE LTR NONE 00005	09-19-2000 <b>03-17-2000</b> NONE	DTSC, CYPRESS K. LEIBEL NAVFAC - SOUTHWEST DIVISION P. TAMASHIRO	REVIEW OF RESPONSE TO COMMENT ON DRAFT TECHNICAL MEMORANDUM NO. 7, SUPPLEMENTAL SHALLOW GROUNDWATER PILOT TEST REPORT. DTSC FOUND THE RESPONSE IS ADEQUATE AND HAS NO FURTHER COMMENTS (MAILING LIST IS CONFIDENTIAL)	ADMIN RECORD CONFIDENTIAL	COMMENTS GW RESPONSE TECH MEMO	040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_005	

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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000303	05-31-2000	BECHTEL	COMPILED RESPONSES TO COMMENTS BY	ADMIN RECORD	FS	040	FRC - LAGUNA	
CTO-0127/0612	<b>03-22-2000</b>	NATIONAL INC	DTSC-GSU, CRWQCB, CITY OF SEAL		GW	070	NIGEL	
LTR	00127		BEACH & ORANGE COUNTY WATER		MONITORING		181-03-0136	
N68711-92-D-4670		NAVFAC -	DISTRICT ON THE DRAFT GROUNDWATER		PCE		IMAGED	
00020		SOUTHWEST	FEASIBILITY STUDY REPORT (REFERENCE		ROD		SEAL_002	
		DIVISION	AR #253 - DRAFT GW FS, AR #256, AR #267,		RSE			
			AR #301 & AR #302)		SOIL			
					TCE			
					VOC			
					WATER			
					WELLS			
N60701 / 000377	09-19-2000	EQCB, CITY OF	REVIEW AND COMMENT ON DRAFT	ADMIN RECORD	GW	040	FRC - LAGUNA	
NONE	<b>03-29-2000</b>	SEAL BEACH	ADDENDUM NO. 1 - WORK PLAN FOR LONG-		IR	070	NIGEL	
LTR	NONE	J. PORTER, III	TERM GROUNDWATER MONITORING,		MONITORING		181-03-0136	
NONE		NAVFAC -	BENCH-SCALE TEST (SEE AR #307 -				IMAGED	
00003		SOUTHWEST	DOCUMENT)				SEAL_005	
		DIVISION						
		P. TAMASHIRO						

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Record Type	Record Date	Author						FRC Access. No.
Contr./Guid. No.	CTO No.	Recipient Affil.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000252	04-26-2000	BECHTEL	FINAL WORK PLAN FOR LONG TERM	ADMIN RECORD	COC	040	FRC - LAGUNA	
CTO-0002/0056	<b>03-30-2000</b>	NATIONAL INC	GROUNDWATER MONITORING (SEE AR		COPC	070	NIGEL	
RPT	00002	G. CAGLE	#264 - FINAL ADDENDUM NO. 1, AR #358 -		CR(VI)	BLDG. 112	181-03-0136	
N68711-95-D-7526		NAVFAC -	COMMENTS BY CRWQCB, AR #375 - DTSC		DQO	BLDG. 240	IMAGED	
00268		SOUTHWEST	COMMENTS)		FS	OU 4	SEAL_004	
		DIVISION			GW	OU 5		
		R. SELBY			IDWMP			
					OU			
					PA			
					PCE			
					QAPP			
					RCRA			
					RFA			
					RSE			
					SI			
					TCE			
					TDS			
					UST			
					VOC			
N60701 / 000340	08-14-2000	CRWQCB -	WATER QUALITY CONTROL BOARD	ADMIN RECORD	COMMENTS	040	FRC - LAGUNA	
NONE	<b>04-04-2000</b>	RIVERSIDE	APPROVES DRAFT ADDENDUM NO. 1		GW	070	NIGEL	
LTR	NONE	P. HANNON	(BENCH SCALE TEST FOR IR SITE 40)		WORK PLAN		181-03-0136	
NONE		NWS SEAL BEACH	WORK PLAN FOR LONG-TERM				IMAGED	
00001		P. F. TAMASHIRO	GROUNDWATER MONITORING (SEE AR				SEAL_004	
			#307 - DRAFT ADDENDUM NO. 1)					
N60701 / 000342	08-14-2000	DTSC - CYPRESS,	DTSC HAS REVIEWED THE RESPONSE TO	ADMIN RECORD	COMMENTS	040	FRC - LAGUNA	
NONE	<b>04-05-2000</b>	CA.	AGENCY COMMENTS REGARDING THE		GW	070	NIGEL	
LTR	NONE	K. LEIBEL	DRAFT WORK PLAN FOR LONG-TERM		MONITORING		181-03-0136	
NONE		NWS SEAL BEACH	GROUNDWATER MONITORING, FOUND THE		WORK PLAN		IMAGED	
00003		P.F. TAMASHIRO	RESPONSES ADEQUATE & HAVE NO				SEAL_004	
			FURTHER COMMENTS (SEE AR #268 -					
			RESPONSE TO COMMENTS)					

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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 000345 NONE LTR NONE 00003	08-14-2000 <b>04-05-2000</b> NONE	DTSC - CYPRESS, CA. K. LEIBEL NWS SEAL BEACH P. F. TAMASHIRO	DTSC CONCURS WITH PROPOSALS OF DRAFT ADDENDUM NO. 1 WORK PLAN FOR LONG-TERM GROUNDWATER MONITORING AND HAS NO COMMENTS (SEE AR #307 - DRAFT ADDENDUM NO. 1)	ADMIN RECORD	COMMENTS GW WORK PLAN	040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_004	
N60701 / 000358 NONE LTR NONE 00001	08-23-2000 <b>04-10-2000</b> NONE	CRWQCB - RIVERSIDE P.HANNON NWS SEAL BEACH P.F. TAMASHIRO	REGIONAL WATER QUALITY CONTROL BOARD HAS REVIEWED THE FINAL WORK PLAN FOR LONG-TERM GROUNDWATER MONITORING AND APPROVES THE PLAN (SEE AR #252 - FINAL WORK PLAN)	ADMIN RECORD	COMMENTS GW MONITORING WORK PLAN	040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_004	
N60701 / 000341 NONE LTR NONE 00003	08-14-2000 <b>04-18-2000</b> NONE	DTSC - CYPRESS, CA. K. LEIBEL NWS SEAL BEACH P. F. TAMASHIRO	DTSC HAS REVIEWED THE FINAL TECHNICAL MEMORANDUM NO. 7 - SUPPLEMENTAL SHALLOW GROUNDWATER PILOT TEST REPORT (SEE AR #319 - FINAL TECH MEMO NO. 7)	ADMIN RECORD	COMMENTS GW	040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_004	
N60701 / 000346 NONE LTR NONE 00005	08-14-2000 <b>04-18-2000</b> NONE	DTSC - CYPRESS, CA. K. LEIBEL NWS SEAL BEACH P. F. TAMASHIRO	DTSC HAS REVIEWED THE RESPONSE TO COMMENTS ON THE DRAFT GROUNDWATER FEASIBILITY STUDY REPORT AND FOUND THAT ALL BUT ONE WERE ADEQUATELY ADDRESSED (SEE AR #303 - RESPONSE TO COMMENTS)	ADMIN RECORD	COMMENTS FS GW RSE WATER	040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_004	
N60701 / 000264 CTO-0002/0067 RPT N68711-95-D-7526____ 00032	05-16-2000 <b>04-19-2000</b> 00002	BECHTEL NATIONAL INC  NAVFAC - SOUTHWEST DIVISION R. SELBY	FINAL ADDENDUM NO. 1 (BENCH-SCALE TEST FOR IR SITE 40) WORK PLAN FOR LONG-TERM GROUNDWATER MONITORING (SEE AR #252 - WORK PLAN AND AR #376 - DTSC COMMENT)	ADMIN RECORD INFO REPOSITORY	DCE DQO FS GW H2S PCE QAPP SOIL TCE TOC VOC WELLS	040 070	FRC - LAGUNA NIGEL 181-03-0136  IMAGED SEAL_004	

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Approx. # Pages	EPA Cat. #	Recipient						CD No.
N60701 / 000266	05-17-2000	NAVFAC -		TRANSMITTAL LETTER W/ENCLOSURE OF	ADMIN RECORD	CAP	001	FRC - LAGUNA
SER 5NEN.AD/172	<b>04-27-2000</b>	SOUTHWEST		MEETING MINUTES OF APRIL 19, 2000		COMMENTS	004	NIGEL
MM	NONE	DIVISION		PROJECT MANAGERS MEETING		EE/CA	005	181-03-0136
NONE		K. REYNOLDS				ERA	006	
00011		DTSC				FFSRA	007	IMAGED
		K. LEIBEL				FS	014	SEAL_002
						GW	019	
						LUST	022	
						MONITORING	040	
						RAB	070	
						ROD		
						RSE		
N60701 / 000375	09-19-2000	DTSC, CYPRESS		REVIEW AND COMMENT ON FINAL WORK	ADMIN RECORD	GW	040	FRC - LAGUNA
NONE	<b>05-09-2000</b>	K. LEIBEL		PLAN, LONG-TERM GROUNDWATER		MONITORING	070	NIGEL
LTR	NONE	NAVFAC -		MONITORING. DTSC CONCURS WITH THE				181-03-0136
NONE		SOUTHWEST		WORK PLAN'S PROPOSALS AND HAS NO				
00004		DIVISION		FURTHER COMMENTS (SEE AR #252 -				IMAGED
		P. TAMASHIRO		DOCUMENT)				SEAL_005
N60701 / 000376	09-19-2000	DTSC, CYPRESS		REVIEW AND COMMENT ON FINAL	ADMIN RECORD	GW	040	FRC - LAGUNA
NONE	<b>05-10-2000</b>	K. LEIBEL		ADDENDUM NO. 1, GROUNDWATER		MONITORING		NIGEL
LTR	NONE	NAVFAC -		MONITORING PROGRAM, BENCH-SCALE				181-03-0136
NONE		SOUTHWEST		TEST. DTSC CONCURS WITH THE				
00005		DIVISION		ADDENDUM AND HAS NO COMMENTS (SEE				IMAGED
		P. TAMASHIRO		AR #264 - DOCUMENT, MAILING LIST IS				SEAL_005
				CONFIDENTIAL)				

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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000348	08-15-2000	NWS SEAL BEACH	MEETING MINUTES FROM MAY 12, 2000	ADMIN RECORD	BTEX	001		FRC - LAGUNA
NWS SB SER	<b>05-24-2000</b>	P.F. TAMASHIRO	RESTORATION ADVISORY BOARD (RAB)		CRP	004		NIGEL
N45W/0102	NONE		MEETING WITH INVITATION TO TOUR OF		GW	005		181-03-0136
MM		COMMUNITY	PERTINENT RESTORATION SITES ON JUNE		IRP	006		IMAGED
NONE		MEMBER	14, 2000 (SEE AR #347)		LUST	007		SEAL_004
00006					MTBE	014		
					MTG MINS	022		
					MW	040		
					RAB	070		
					SB	074		
					SI			
					SOIL			
					TPH			
					WATER			
N60701 / 000347	08-15-2000	NWS SEAL BEACH	LETTER REGARDING JUNE 14, 2000	ADMIN RECORD	LF	001		FRC - LAGUNA
NWS SB SER	<b>06-20-2000</b>	P. F. TAMASHIRO	RESTORATION ADVISORY BOARD AND		METALS	004		NIGEL
N45W/0130	NONE		COMMUNITY MEMBER SITE TOUR AND		MTG MINS	005		181-03-0136
LTR		COMMUNITY	AGENDA FOR JULY 12, 2000 RAB MEETING		ORDNANCE	006		IMAGED
NONE		MEMBER	WITH MEETING MINUTES FROM SITE TOUR		RAB	007		SEAL_004
00008			(SEE AR #348)		UXO	014		
						022		
						040		
						070		
						074		

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	Contr./Guid. No.	CTO No.	Recipient Affil.					Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 000349	08-15-2000	NAVFAC -	MEETING MINUTES OF THE JUNE 14, 2000	ADMIN RECORD	ACTMEMO	001	FRC - LAGUNA	
SWDIV SER	<b>06-27-2000</b>	SOUTHWEST	PROJECT MANAGERS MEETING FOR		CAP	004	NIGEL	
5NEN.AD/258	NONE	DIVISION	REVIEW		EE/CA	005	181-03-0136	
MM		A. DICK			ERA	006		
NONE		DTSC - CYPRESS,			GW	007	IMAGED	
00010		CA.			LUST	014	SEAL_004	
		K. LEIBEL			MONITORING	019		
					MTG MINS	022		
					MW	040		
					RA	070		
					RAB	OU 4		
					RI	OU 5		
					RSE			
					SI			
					WELLS			
					WORK PLAN			

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Contr./Guid. No.	CTO No.	Recipient Affil.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 000356	08-15-2000	BECHTEL	FINAL GROUNDWATER FEASIBILITY STUDY	ADMIN RECORD	AOC	040	FRC - LAGUNA	
CTO-0127/0609 & 0609-1	<b>06-29-2000</b> 00127	NATIONAL INC. R. SCHILLING	REPORT FOR THE INSTALLATION RESTORATION PROGRAM, VOLUMES I & II OF II (SEE AR#368 - COMMENTS BY CRWQCB, AR #372 - COMMENTS BY CITY OF SEAL BEACH AND AR #379 - DTSC COMMENTS). ***COMMENTS: INCLUDES REPLACEMENT PAGES WHICH CONVERT DOCUMENT TO REVISION 1: SEE ENCLOSED ERRATA SHEET FOR DETAILS *NOTE: REPLACEMENT PAGES WERE SUBMITTED TO CHOICE FOR IMAGING ON 11/07/02 IN PACKAGE #SW02110701***	INFO REPOSITORY	ARAR CAH COC COPC DCE FFSRA FS GW HW IAS MONITORING MW NCP PA PCB PCE PRG RACER RCRA RFA RI ROD RSE SARA SI SVE SWMU TCE TSDF UST VOC WELLS	070	NIGEL 181-03-0136	
RPT N68711-92-D-4670 00832		NAVFAC - SOUTHWEST DIVISION					IMAGED SEAL_005	

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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000353	08-15-2000	NAVFAC -	MEETING MINUTES FROM THE JULY 12,	ADMIN RECORD	ACTMEMO	001	FRC - LAGUNA	
SWDIV SER	<b>07-24-2000</b>	SOUTHWEST	2000 PROJECT MANAGERS MEETING FOR		CAP	004	NIGEL	
5NEN.AD/289	NONE	DIVISION	REVIEW		EE/CA	005	181-03-0136	
MM		K. REYNOLDS			ERA	006		
NONE		DTSC - CYPRESS			FFSRA	007	IMAGED	
00010		CA.			FS	014	SEAL_004	
		K. LEIBEL			GW	019		
					MONITORING	022		
					MTG MINS	040		
					MW	070		
					RAB	OU 4		
					RSE	OU 5		
					SI			
					WELLS			
N60701 / 000379	09-19-2000	DTSC, CYPRESS	REVIEW AND COMMENT ON FINAL	ADMIN RECORD	FS	040	FRC - LAGUNA	
NONE	<b>08-11-2000</b>	K. LIEBEL	GROUNDWATER FEASIBILITY STUDY		GW	070	NIGEL	
LTR	NONE	NAVFAC -	REPORT. DTSC CONCURS WITH THE		IR		181-03-0136	
NONE		SOUTHWEST	REPORT AND HAS NO FURTHER				IMAGED	
00002		DIVISION	COMMENTS (SEE AR #356 - DOCUMENT)				SEAL_005	
		P. TAMASHIRO						
N60701 / 000368	09-05-2000	CRWQCB -	COMMENTS BY REGIONAL WATER	ADMIN RECORD	ARAR	040	FRC - LAGUNA	
NONE	<b>08-21-2000</b>	RIVERSIDE	QUALITY CONTROL BOARD ON FINAL		COMMENTS	070	NIGEL	
LTR	NONE	J. BRODERICK	GROUNDWATER FEASIBILITY STUDY		FS		181-03-0136	
NONE		NWS SEAL BEACH	REPORT (SEE AR #356 - FINAL FS REPORT)		GW		IMAGED	
00001		P.F. TAMASHIRO					SEAL_008	

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N60701 / 000362	08-28-2000	NAVFAC -	MEETING MINUTES OF AUGUST 17, 2000	ADMIN RECORD	ACTMEMO	001	FRC - LAGUNA	
SWDIV SER	<b>08-23-2000</b>	SOUTHWEST	PROJECT MANAGERS MEETING		EBS	004	NIGEL	
5NEN.AD/313	NONE	DIVISION	FORWARDED FOR REVIEW		EE/CA	005	181-03-0136	
MM		K. REYNOLDS			ERA	006		
NONE		DTSC - CYPRESS,			FFSRA	007	IMAGED	
00010		CA.			FS	014	SEAL_004	
		K. LEIBEL			GW	019		
					MONITORING	022		
					MTG MINS	040		
					RAB	070		
					RSE			
					SI			
N60701 / 000372	09-19-2000	CITY OF SEAL	REVIEW AND COMMENT ON FINAL	ADMIN RECORD	FS	040	FRC - LAGUNA	
NONE	<b>08-30-2000</b>	BEACH	GROUNDWATER FEASIBILITY STUDY		GW	070	NIGEL	
LTR	NONE	L. WHITTENBERG	REPORT (SEE AR #356 - DOCUMENT)		IR		181-03-0136	
NONE		NAVFAC -					IMAGED	
00001		SOUTHWEST					SEAL_005	
		DIVISION						
		P. TAMASHIRO						
N60701 / 000387	09-20-2000	BECHTEL	DRAFT WORK PLAN FOR PILOT-TEST	ADMIN RECORD	DCE	040	FRC - LAGUNA	
CTO-0002/0112	<b>09-13-2000</b>	NATIONAL INC.	PROGRAM DATED SEPTEMBER 2000 (SEE		FS	070	NIGEL	
PLAN	00002	J. FRENCH	AR #1289 - COMMENTS BY DTSC & #1297 -		IR		181-03-0136	
N68711-95-D-		NAVFAC -	COMMENTS BY CRWQCB)		OU		IMAGED	
7526		SOUTHWEST			PCE		SEAL_006	
00363		DIVISION			RCRA			
					RI			
					SI			
					VOC			

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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000388	09-26-2000	BECHTEL	DRAFT QUARTERLY GROUNDWATER	ADMIN RECORD	DATA	040	FRC - LAGUNA	
CTO-0002/0121	<b>09-21-2000</b>	NATIONAL INC.	MONITORING DATA SUMMARY - JUNE 2000		DCA	070	NIGEL	
RPT	00002	R. SCHILLING	(SEE AR #1287 - COMMENTS BY CRWQCB)		DCE		181-03-0136	
N68711-95-D-7526____		NAVFAC -			GW		IMAGED	
00278		SOUTHWEST			MONITORING		SEAL_001	
		DIVISION			MW			
					PCE			
					PRG			
					QC			
					SOLVENTS			
					TCE			
					TOC			
					VOC			
					WATER			
					WELLS			
N60701 / 000397	10-12-2000	NAVFAC -	MEETING MINUTES OF 9/13/00 PROJECT	ADMIN RECORD	ACTMEMO	001	FRC - LAGUNA	
SWDIV SER	<b>10-03-2000</b>	SOUTHWEST	MANAGERS MEETING		EE/CA	004	NIGEL	
5NEN.AD/341	NONE	DIVISION			ERA	005	181-03-0136	
MM		K. REYNOLDS			FFA	006		
NONE		DTSC - CYPRESS,			FFSRA	007	IMAGED	
00010		CA.			FS	014	SEAL_006	
		K. LEIBEL			GW	019		
					MONITORING	022		
					MTG MINS	040		
					RA	070		
					RAB			
					REMOVAL			
					RSE			
					SI			

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Record Type	Record Date	Author						FRC Access. No.
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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000415	10-25-2000	NAVFAC -	TRANSMITTAL LETTER WITH ENCLOSURE	ADMIN RECORD	COMMENTS	001	FRC - LAGUNA	
NONE	<b>10-20-2000</b>	SOUTHWEST	OF OCTOBER 11, 2000 PROJECT		CRP	004	NIGEL	
MM	NONE	DIVISION	MANAGERS MEETING MINUTES FOR		EE/CA	005	181-03-0136	
NONE		K. REYNOLDS	REVIEW		ERA	006		
00009		VARIOUS			FFSRA	007	IMAGED	
		VARIOUS			FS	014	SEAL_006	
					GW	019		
					MONITORING	022		
					MTG MINS	040		
					PCE	070		
					RAB			
					REMEDIAL ACTIO			
					REMOVAL			
					ROD			
					RSE			
					SI			
					SMP			
					TCE			
					WORK PLAN			
N60701 / 001287	12-28-2000	CRWQCB -	COMMENTS ON THE DRAFT QUARTERLY	ADMIN RECORD	COMMENTS	040	FRC - LAGUNA	
NONE	<b>10-30-2000</b>	RIVERSIDE	GROUNDWATER MONITORING DATA		DATA	070	NIGEL	
LTR	NONE	J. BRODERICK	SUMMARY - JUNE 2000 (SEE AR #388 -		GW		181-03-0136	
NONE		NWS SEAL BEACH	DATA SUMMARY)		MONITORING			
00001		P.F. TAMASHIRO			WATER		IMAGED	
							SEAL_010	

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Contr./Guid. No.	CTO No.	EPA Cat. #	Recipient	Recipient									
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N60701 / 001282	12-19-2000		BECHTEL			MEETING MINUTES FROM MEETING TO	ADMIN RECORD	DCE	040	FRC - LAGUNA			
CTO-0002/0129	<b>11-01-2000</b>		NATIONAL, INC.			REVIEW BENCH-SCALE TEST RESULTS		FS	BLDG. 240	NIGEL			
MM	00002					AND RELATED INFORMATION		GW				181-03-0136	
N68711-95-D-7526			NAVFAC -					MTG MINS					
00051			SOUTHWEST					PCE				IMAGED	
			DIVISION					ROD				SEAL_010	
								SB					
								SOIL					
								SOLVENTS					
								SOW					
								TCE					
N60701 / 001289	12-28-2000		DTSC - CYPRESS			COMMENTS ON THE DRAFT WORK PLAN	ADMIN RECORD	COMMENTS	040	FRC - LAGUNA			
NONE	<b>11-14-2000</b>		K. LEIBEL			FOR PILOT-TEST PROGRAM (SEE AR #387 -		GW	070	NIGEL			
LTR	NONE		NWS SEAL BEACH			WORK PLAN)		PCE	BLDG. 240			181-03-0136	
NONE			P.F. TAMASHIRO					TCE					
00008								VOC				IMAGED	
								WORK PLAN				SEAL_010	
N60701 / 001292	12-28-2000		DTSC - CYPRESS			DTSC CONCURS THAT SOIL FROM THE	ADMIN RECORD	REMOVAL	004	FRC - LAGUNA			
NONE	<b>11-20-2000</b>		S. LOWE			MAINTENANCE PROJECTS CAN BE		SOIL	013	NIGEL			
LTR	NONE		NWS SEAL BEACH			RETURNED TO THE EXCAVATION AT IRP			016			181-03-0136	
NONE			P.F. TAMASHIRO			SITES WITHOUT TREATMENT AT ONLY			040				
00002						FOUR SITES			070			IMAGED	
									073			SEAL_010	
									BLDG. 206				
N60701 / 001294	12-28-2000		DTSC - CYPRESS			COMMENTS ON THE DRAFT QUARTERLY	ADMIN RECORD	COMMENTS	040	FRC - LAGUNA			
NONE	<b>11-21-2000</b>		K. LEIBEL			GROUNDWATER MONITORING DATA		DATA	070	NIGEL			
LTR	NONE		NWS SEAL BEACH			SUMMARY - JUNE 2000 (SEE AR #388 -		GW				181-03-0136	
NONE			P.F. TAMASHIRO			DRAFT SUMMARY)		MONITORING					
00005								MW				IMAGED	
								WELLS				SEAL_010	

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Approx. # Pages	EPA Cat. #	Recipient	CD No.				
		Subject/Comments	Classification	Keywords			
			Sites				
N60701 / 001299	01-03-2001	NAVFAC -	TRANSMITTAL OF PROJECT MANAGERS	ADMIN RECORD	ACTMEMO	001	FRC - LAGUNA
SWDIV SER	<b>11-21-2000</b>	SOUTHWEST	MEETING MINUTES OF 11/8/00 FOR REVIEW		EE/CA	004	NIGEL
5NEN.AD/379	NONE	DIVISION			ERA	005	181-03-0136
MM		K. REYNOLDS			FFSRA	006	
NONE		DTSC - CYPRESS			FS	007	IMAGED
00010		K. LEIBEL			GW	014	SEAL_010
					MONITORING	019	
					MTG MINS	022	
					RAB	040	
					REMOVAL	070	
					RSE		
					SI		
N60701 / 001297	12-29-2000	CRWQCB -	COMMENTS ON THE DRAFT WORK PLAN	ADMIN RECORD	ARAR	040	FRC - LAGUNA
NONE	<b>12-18-2000</b>	RIVERSIDE	FOR PILOT-TEST PROGRAM (SEE AR #387 -		COMMENTS	070	NIGEL
LTR	NONE	J. BRODERICK	DRAFT WORK PLAN)		FS		181-03-0136
NONE		NWS SEAL BEACH			GW		IMAGED
00002		P.F. TAMASHIRO			METALS		SEAL_010
					MW		
					VOC		
					WATER		
					WELLS		
					WORK PLAN		
N60701 / 001300	01-04-2001	NAVFAC -	TRANSMITTAL OF MINUTES OF 12/13/00	ADMIN RECORD	ACTMEMO	001	FRC - LAGUNA
SWDIV SER	<b>01-02-2001</b>	SOUTHWEST	PROJECT MANAGERS MEETING MINUTES		EE/CA	004	NIGEL
5NEN.AD/411	NONE	DIVISION	FOR REVIEW		ERA	005	181-03-0136
MM		K. REYNOLDS			FFSRA	006	
NONE		DTSC - CYPRESS			FS	007	IMAGED
00008		K. LEIBEL			GW	014	SEAL_010
					MONITORING	019	
					MTG MINS	040	
					REMOVAL	070	
					RISK		
					RSE		
					SI		

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N60701 / 001302	CTO-0002/0154	01-17-2001	BECHTEL NATIONAL, INC.				COMPILED RESPONSES TO CRWQCB AND DTSC COMMENTS ON THE DRAFT QUARTERLY GROUNDWATER MONITORING DATA SUMMARY - JUNE 2000 (SEE AR #1287 - CRWQCB COMMENTS & #1294 - DTSC COMMENTS)	ADMIN RECORD	COMMENTS DATA GW MONITORING RESPONSE WATER WELLS	040 070	FRC - LAGUNA NIGEL	181-03-0136		
MISC N68711-95-D-7526 00004		01-11-2001			NAVFAC - SOUTHWEST DIVISION									
N60701 / 001305	SWDIV SER 5NEN.AD/424	01-31-2001	NAVFAC - SOUTHWEST DIVISION				TRANSMITTAL OF THE MINUTES OF THE JANUARY 10, 2001, PROJECT MANAGERS MEETING	ADMIN RECORD CONFIDENTIAL	ACTMEMO CRP EE/CA FFSRA FS GW MONITORING MTG MINS RAB REMEDIAL ACTIO REMOVAL ROD RSE SI SMP	001 004 005 006 007 019 022 040 070	FRC - LAGUNA NIGEL	181-03-0136		
MM NONE 00002		NONE		M. GOOD DTSC - CYPRESS K. LEIBEL										

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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001306	01-31-2001	BECHTEL	COMPILED RESPONSES TO COMMENTS	ADMIN RECORD	ARAR	040	FRC - LAGUNA	
CTO-0002/0158	<b>01-23-2001</b>	NATIONAL, INC.	ON THE DRAFT WORK PLAN FOR PILOT-		COMMENTS	070	NIGEL	
MISC	00002		TEST PROGRAM (COMMENTS BY DTSC -		DCE		181-03-0136	
N68711-95-D-7526		NAVFAC -	GEOLOGIC SERVICES UNIT & CRWQCB)		DQO		IMAGED	
00018		SOUTHWEST	{SEE AR #1289 - GSU COMMENTS & #1297 -		GW		SEAL_010	
		DIVISION	CRWQCB COMMENTS}		MW			
					PCE			
					RESPONSE			
					RSE			
					TCE			
					VOC			
					WATER			
					WELLS			
N60701 / 001309	03-06-2001	NAVFAC -	TRANSMITTAL OF THE 21 FEBRUARY 2001	ADMIN RECORD	ACTMEMO	001	P3-C - BECHTEL	
SWDIV SER	<b>02-28-2001</b>	SOUTHWEST	PROJECT MANAGERS' MEETING MINUTES -		ARAR	004	NATIONAL	
5NEN.AD/463	NONE	DIVISION	INCLUDES CONFIDENTIAL DISTRIBUTION		COMMENTS	005		
MM		M. GOOD	LIST		CRP	006	SW03020301	
NONE		DTSC - CYPRESS			EBS	007	IMAGED	
00011		K. LEIBEL			EE/CA	014	SEAL_011	
					FFSRA	019		
					FS	022		
					GW	040		
					MONITORING	070		
					MTG MINS			
					RAB			
					REMOVAL			
					ROD			
					RSE			
					SI			
					SMP			

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001313	04-02-2001	NAVFAC -	PROJECT MANAGERS MEETING MINUTES	ADMIN RECORD	ACTMEMO	001	P3-C - BECHTEL	
SWDIV SER	<b>03-21-2001</b>	SOUTHWEST	OF 3/14/01 (DISTRIBUTION LIST CONTAINS	CONFIDENTIAL	CRP	004	NATIONAL	
5NEN.SL/484	NONE	DIVISION	AN ADDRESS THAT SHOULD BE		EBS	005		
MM		M. GOOD	CONSIDERED CONFIDENTIAL)		EE/CA	006	SW03020301	
NONE		DTSC - CYPRESS			FFSRA	007	IMAGED	
00010		K. LEIBEL			GW	014	SEAL_011	
					MONITORING	019		
					MTG MINS	022		
					ORDNANCE	040		
					RAB	070		
					REMOVAL	074		
					RSE			
					SI			
					SMP			
					UXO			
N60701 / 001314	04-02-2001	BECHTEL	QUARTERLY GROUNDWATER MONITORING	ADMIN RECORD	DATA	040	P3-C - BECHTEL	
CTO-0002/0150	<b>03-22-2001</b>	NATIONAL, INC.	DATA SUMMARY - JUNE 2000	INFO	DCA	070	NATIONAL	
MISC	00002	R. SCHILLING		REPOSITORY	DCE			
N68711-95-D-7526		NAVFAC -			GW		SW03020301	
00284		SOUTHWEST			METALS		IMAGED	
		DIVISION			MONITORING		SEAL_011	
					MW			
					PCE			
					PRG			
					QC			
					SOIL			
					SOLVENTS			
					TCE			
					TOC			
					VOC			
					WATER			
					WELLS			

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	FRC Access. No.	Approx. # Pages	EPA Cat. #	Recipient	Box No.
			Subject/Comments	Classification	Keywords	Sites	CD No.
N60701 / 001315	04-02-2001	BECHTEL	QUARTERLY GROUNDWATER MONITORING	ADMIN RECORD	DATA	040	P3-C - BECHTEL
CTO-0002/0148	<b>03-22-2001</b>	NATIONAL, INC.	DATA SUMMARY - SEPTEMBER 2000	INFO	DCA	070	NATIONAL
MISC	00002	R. SCHILLING		REPOSITORY	DCE		
N68711-95-D-7526		NAVFAC -			GW		SW03020301
00168		SOUTHWEST			METALS		IMAGED
		DIVISION			MONITORING		SEAL_011
					MW		
					PCE		
					QC		
					TCE		
					VOC		
					WELLS		
N60701 / 001316	04-02-2001	BECHTEL	QUARTERLY GROUNDWATER MONITORING	ADMIN RECORD	DATA	040	P3-C - BECHTEL
CTO-0002/0171	<b>03-22-2001</b>	NATIONAL, INC.	DATA SUMMARY - DECEMBER 2000	INFO	DCA	070	NATIONAL
MISC	00002	R. SCHILLING		REPOSITORY	DCE		
N68711-95-D-7526		NAVFAC -			GW		SW03020301
00221		SOUTHWEST			METALS		IMAGED
		DIVISION			MONITORING		SEAL_011
					MW		
					PCE		
					PRG		
					QC		
					TCA		
					TCE		
					TOC		
					VOC		
					WATER		
					WELLS		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001320	05-24-2001	NAVFAC -	TRANSMITTAL OF THE MINUTES OF THE	ADMIN RECORD	ACTMEMO	001		P3-C - BECHTEL
SWDIV SER	<b>04-18-2001</b>	SOUTHWEST	APRIL 11, 2001 PROJECT MANAGERS	CONFIDENTIAL	CRP	004		NATIONAL
5NEN.SL/509	NONE	DIVISION	MEETING - INCLUDES CONFIDENTIAL		EE/CA	005		
MM		M. GOOD	DISTRIBUTION LIST		FFSRA	006		SW03020301
NONE		DTSC - CYPRESS			FS	007		IMAGED
00010		K. LEIBEL			GW	014		SEAL_011
					MONITORING	019		
					MTG MINS	022		
					PCE	040		
					RAB	070		
					RD			
					REMOVAL			
					RSE			
					SI			
					SMP			
					TCE			

UIC No. / Rec. No.	Prc. Date	Author Affil.						Location
Doc. Control No.	Record Date	Author						FRC Access. No.
Record Type	CTO No.	Recipient Affil.						Box No.
Contr./Guid. No.	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
Approx. # Pages								
N60701 / 001321	06-06-2001	CH2M HILL	DRAFT COMMUNITY RELATIONS PLAN	ADMIN RECORD	AOC	001		P3-C - BECHTEL
158283.09.RT	05-30-2001				ARSENIC	002		NATIONAL
PLAN	DO 9	NAVFAC -			CERCLA	003		
N68711-96-D-2299		SOUTHWEST			COC	007		SW03020301
00095		DIVISION			COPC	008		IMAGED
					CRP	013		SEAL_011
					ECOC	016		
					GW	019		
					IRP	021		
					METALS	023		
					MTBE	025		
					NCP	035		
					NPL	036		
					PCB	037		
					PCE	038		
					PIM	040		
					RAB	043		
					ROD	044		
					SOIL	045		
					SVOC	046		
					TPH	070		
					UST	BLDG. 241		
					VOC	OU 1		
						OU 2		
						OU 3		
						OU 4		
						OU 5		

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Doc. Control No.	Record Date	Author						FRC Access. No.
Record Type	CTO No.	Recipient Affil.						Box No.
Contr./Guid. No.	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001326	06-18-2001	BECHTEL	FINAL WORK PLAN FOR THE PILOT-TEST	ADMIN RECORD	ARAR	040		P3-C - BECHTEL
CTO-0002/0175	<b>06-01-2001</b>	NATIONAL, INC.	PROGRAM AT THE CONCRETE PIT/GRAVEL	CONFIDENTIAL	AST	070		NATIONAL
PLAN	00002	J. FRENCH	AREA & THE RESEARCH, TESTING, AND	INFO	COC	BLDG. 110		
N68711-95-D-7526		NAVFAC -	EVALUATION (RT&E) AREA (SEE AR #1439 -	REPOSITORY	COPC	BLDG. 112		SW03020301
00462		SOUTHWEST	DRAFT ADDENDUM NO. 1 AND AR #1452 -		DCE	BLDG. 128		IMAGED
		DIVISION	FINAL ADDENDUM NO. 1) [PORTION OF THE		DQO	BLDG. 130		SEAL_011
			MAILING LIST IS CONFIDENTIAL]		FFSRA	BLDG. 240		
					GW	OU 4		
					PA	OU 8		
					PCE			
					PRG			
					RFA			
					RI			
					RSE			
					SI			
					SOLVENTS			
					SVOC			
					SWMU			
					TCE			
					VOC			
					WATER			
					WORK PLAN			

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001328	07-09-2001	NAVFAC -	TRANSMITTAL OF THE JUNE 13, 2001	ADMIN RECORD	ACTMEMO	001	P3-C - BECHTEL	
SWDIV SER	07-03-2001	SOUTHWEST	PROJECT MANAGERS MEETING MINUTES	CONFIDENTIAL	CRP	005	NATIONAL	
5NEN.SL/566	NONE	DIVISION	FOR REVIEW (PORTION OF MAILING LIST IS		EBS	007		
MM		M. GOOD	CONFIDENTIAL)		EE/CA	014	SW03020301	
NONE		REGULATORY			FFSRA	019	IMAGED	
00012		AGENCIES			GW	022	SEAL_011	
		VARIOUS			MONITORING	040		
		REGULATORS			MTG MINS	070		
					MW	OU 4		
					RAB	OU 5		
					RD	OU 6		
					REMOVAL			
					RSE			
					SI			
					SMP			
					SOIL			
					WELLS			
					WORK PLAN			

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001332	08-06-2001	NAVFAC -	MINUTES OF THE 11 JULY 2001, PROJECT	ADMIN RECORD	ACTMEMO	001		P3-C - BECHTEL
SWDIV SER	07-17-2001	SOUTHWEST	MANAGERS MEETING FOR REVIEW	CONFIDENTIAL	CRP	004		NATIONAL
5NEN.SL/578	NONE	DIVISION	(DISTRIBUTION LIST CONTAINS		EE/CA	005		
MM		M. GOOD	CONFIDENTIAL ADDRESS)		FFSRA	006		SW03020301
NONE		VARIOUS OFFICES			FS	007		IMAGED
00011		DISTRIBUTION			GW	014		SEAL_011
		LIST			MONITORING	019		
					MTG MINS	022		
					MW	040		
					RAB	070		
					RD	073		
					REMEDIAL ACTIO	SWMU 24		
					REMOVAL			
					ROD			
					RSE			
					SI			
					SMP			
					SWMU			
					WELLS			
N60701 / 001336	08-22-2001	NWS SEAL BEACH	MINUTES FROM THE RESTORATION	ADMIN RECORD	CRP	001		P3-C - BECHTEL
NWSSB SER	08-15-2001	P.F. TAMASHIRO	ADVISORY BOARD MEETING OF JULY 11,		EE/CA	004		NATIONAL
N45S/0167	NONE	RESTORATION	2001 -INCLUDING: AGENDA FOR THE		LF	005		
MM		ADVISORY BOARD	SEPTEMBER 19, 2001 RAB MEETING AND		MTG MINS	006		SW03020301
NONE		COMMUNITY	RAB RULES OF OPERATION		NFA	007		IMAGED
00019		MEMBERS			PIM	019		SEAL_011
					PUBNOT	040		
					RAB	070		
					RCRA			
					REMOVAL			
					ROD			
					RSE			
					SOIL			

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001339	08-29-2001	NAVFAC -	TRANSMITTAL OF THE MINUTES OF THE	ADMIN RECORD	ACTMEMO	001	P3-C - BECHTEL	
SWDIV SER	<b>08-27-2001</b>	SOUTHWEST	AUGUST 8, 2001 PROJECT MANAGERS		CRP	004	NATIONAL	
5NEN.SL/616	NONE	DIVISION	MEETING FOR REVIEW		EE/CA	005		
MM		M. GOOD			FFSRA	006	SW03020301	
NONE		DTSC - CYPRESS			FS	007	IMAGED	
00010		K. LEIBEL			GW	014	SEAL_012	
					METALS	019		
					MONITORING	022		
					MTG MINS	040		
					RAB	070		
					RD	073		
					REMOVAL	SWMU 24		
					RSE			
					SI			
					SMP			
					SWMU			

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001340	09-13-2001	CH2M HILL -	FINAL INSTALLATION RESTORATION	ADMIN RECORD	AOC	001		P3-C - BECHTEL
PROJECT NO.	09-04-2001	SANTA ANA	PROGRAM COMMUNITY RELATIONS PLAN	INFO	CERCLA	002		NATIONAL
158283.09.RT	DO 9			REPOSITORY	CRP	003		
PLAN		NAVFAC -			ORDNANCE	004		SW03020301
N68711-96-D-2299		SOUTHWEST			PCB	005		IMAGED
00106		DIVISION			PESTICIDES	006		SEAL_012
					PIM	007		
					PUBNOT	008		
					RCRA	009		
					RFA	010		
					SARA	011		
					SOLVENTS	012		
					SWMU	013		
					UST	014		
						015		
						016		
						017		
						018		
						019		
						020		
						021		
						022		
						023		
						024		
						025		
						035		
						036		
						037		
						038		
						039		
						040		
						041		
						042		
						043		
						044		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
						045		
						046		
						047		
						048		
						049		
						050		
						051		
						070		
						073		
						074		
N60701 / 001343	10-19-2001	BECHTEL	QUARTERLY GROUNDWATER MONITORING	ADMIN RECORD	DATA	040	P3-C - BECHTEL	
CTO-0002/0215	<b>10-02-2001</b>	NATIONAL, INC.	DATA SUMMARY (JUNE 2001) [INCLUDES	INFO	DCA	070	NATIONAL	
DATA	00002	R. TAIT	TRANSMITTAL LETTERS TO REGULATORS	REPOSITORY	DCE			
N68711-95-D-7526		NAVFAC -	AND RAB MEMBERS] (SEE AR #1354 - DTSC		GW		SW03022801	
00252		SOUTHWEST	COMMENTS}		MONITORING		IMAGED	
		DIVISION			MW		SEAL_013	
					PCE			
					QC			
					TCE			
					TOC			
					VOC			
					WATER			
					WELLS			

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	FRC Access. No.	Approx. # Pages	EPA Cat. #	Recipient	Box No.
							CD No.
						Subject/Comments	Classification
							Keywords
							Sites
N60701 / 001005	11-07-2001	NWS SEAL BEACH	TRANSMITTAL OF THE MINUTES FROM THE	ADMIN RECORD	ACTMEMO	004	P3-C - BECHTEL
NWSSB SER	10-22-2001	P.F. TAMASHIRO	47TH RESTORATION ADVISORY BOARD	INFO	CRP	005	NATIONAL
N45W/0265	NONE	GENERAL PUBLIC	MEETING OF OCTOBER 10, 2001 -	REPOSITORY	EE/CA	006	
MM		COMMUNITY	INCLUDES THE AGENDA FOR THE		FS	007	SW03020301
NONE		MEMBERS	NOVEMBER 14, 2001 MEETING		GW	014	IMAGED
00012					LF	040	SEAL_011
					MONITORING	070	
					MTG MINS	073	
					PIM		
					RAB		
					ROD		
					RSE		
					SMP		
					TCE		
					UST		
					WELLS		
N60701 / 000652	11-02-2001	NAVFAC -	TRANSMITTAL OF THE MINUTES OF THE 10	ADMIN RECORD	ACTMEMO	001	P3-C - BECHTEL
SWDIV SER	10-30-2001	SOUTHWEST	OCTOBER 2001 PROJECT MANAGERS		ARAR	004	NATIONAL
5NEN.SL/674	NONE	DIVISION	MEETING FOR REVIEW - INCLUDES		CRP	005	
MM		M. GOOD	CONFIDENTIAL DISTRIBUTION LIST		EE/CA	006	SW03020301
NONE		DTSC - CYPRESS			FFSRA	007	IMAGED
00011		K. LEIBEL			FS	014	SEAL_011
					GW	019	
					MONITORING	022	
					MTG MINS	040	
					MW	070	
					RAB	073	
					RD	SWMU 24	
					REMOVAL		
					ROD		
					RSE		
					SI		
					SMP		
					WELLS		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	FRC Access. No.	Approx. # Pages	EPA Cat. #	Recipient	Box No.
			Subject/Comments	Classification	Keywords	Sites	CD No.
N60701 / 001346	11-07-2001	BECHTEL	DRAFT ANNUAL GROUNDWATER	ADMIN RECORD	COC	040	P3-C - BECHTEL
CTO-0002/0237	<b>11-05-2001</b>	NATIONAL, INC.	MONITORING REPORT FOR THE	CONFIDENTIAL	COPC	070	NATIONAL
RPT	00002	E. JOHANSEN	CONCRETE PIT/GRAVEL AREA AND THE	INFO	DCA		
N68711-95-D-7526		NAVFAC -	RESEARCH, TESTING, AND EVALUATION	REPOSITORY	DCE		SW03020301
00485		SOUTHWEST	AREA (INCLUDES TRANSMITTAL LETTERS		DQO		IMAGED
		DIVISION	TO REGULATORS AND RAB MEMBERS)		GW		SEAL_012
			(SEE AR #1369 - RESPONSE TO		METALS		
			COMMENTS). ***COMMENTS: ONE LETTER		MONITORING		
			CONTAINS AN ADDRESS THAT SHOULD BE		PCE		
			CONSIDERED CONFIDENTIAL ***		PRG		
					TCA		
					TCE		
					VOC		
					WELLS		
N60701 / 001354	12-12-2001	DTSC - CYPRESS	DTSC HAS NO COMMENTS ON THE	ADMIN RECORD	COMMENTS	040	P3-C - BECHTEL
NONE	<b>11-09-2001</b>	K. LEIBEL	QUARTERLY GROUNDWATER MONITORING		DATA	070	NATIONAL
MISC	NONE	NWS SEAL BEACH	DATA SUMMARY (SEE AR #1343 -		GW		
NONE		P.F. TAMASHIRO	SUMMARY)		MONITORING		SW03020302
00001							IMAGED
							SEAL_012
N60701 / 001350	12-12-2001	BECHTEL	MINUTES OF AN AGENCY WORKSHOP ON	ADMIN RECORD	DATA	040	P3-C - BECHTEL
CTO-0002/0244	<b>11-14-2001</b>	NATIONAL, INC.	THE DRAFT ANNUAL GROUNDWATER		GW	070	NATIONAL
MM	00002		MONITORING REPORT		METALS	BLDG. 240	
N68711-95-D-7526		NAVFAC -			MONITORING		SW03020302
00038		SOUTHWEST			MTG MINS		IMAGED
		DIVISION			MW		SEAL_012
					PCE		
					TCE		
					VOC		
					WATER		
					WELLS		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 001357	12-28-2001	NWS SEAL BEACH	MINUTES OF 48TH RESTORATION	ADMIN RECORD	ACTMEMO	004		P3-C - BECHTEL
NWSSB SER	11-14-2001	P. F. TAMASHIRO	ADVISORY BOARD MEETING OF	INFO	CEQA	005		NATIONAL
N45W/0307	NONE		NOVEMBER 14, 2001 - INCLUDES AGENDA	REPOSITORY	EE/CA	006		SW03020302
MM		COMMUNITY	FOR JANUARY 9, 2002 MEETING		FS	007		IMAGED
NONE		MEMBERS			GW	014		SEAL_012
00012					LF	022		
					MONITORING	040		
					MTG MINS	070		
					MW	073		
					PIM	SWMU 24		
					PUBNOT			
					RAB			
					REMOVAL			
					ROD			
					RSE			
					SI			
					SMP			
					SOIL			
					SWMU			

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001348	11-19-2001	CH2M HILL	DRAFT SITE MANAGEMENT PLAN UPDATE	ADMIN RECORD	AOC	001		P3-C - BECHTEL
PROJECT NO.	11-15-2001	B. WONG	FOR THE INSTALLATION RESTORATION	INFO	ARAR	003		NATIONAL
158091.06.RT	DO 6	NAVFAC -	PROGRAM	REPOSITORY	AST	006		SW03020302
PLAN		SOUTHWEST			ATEIP	007		IMAGED
N68711-96-D-2299		DIVISION			BTEX	008		SEAL_012
00147		S. LE			CAA	009		
					CEQA	010		
					COC	011		
					COEC	012		
					COPC	013		
					CRP	014		
					CWA	015		
					DDT	016		
					DERA	017		
					DQO	018		
					EIS	019		
					EOD	020		
					FFSRA	021		
					FS	022		
					GW	023		
					IRP	024		
					MONITORING	025		
					MTBE	026		
					MW	027		
					NCP	028		
					NEPA	029		
					NFA	030		
					NHPA	031		
					NPL	032		
					PA	033		
					PAH	034		
					PCB	035		
					PCE	036		
					PID	037		
					QC	038		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Contr./Guid. No.	CTO No.	Recipient Affil.	Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	Location	FRC Access. No.	Box No.	CD No.
															RAB	039				
															RCRA	040				
															RFA	041				
															RFI	042				
															RI	043				
															ROD	044				
															RSE	045				
															SARA	046				
															SI	047				
															SMP	048				
															SVOC	049				
															SWMU	050				
															TCA	051				
															TCE	052				
															TPH	053				
															TSCA	054				
															UST	055				
															UXO	056				
															VOC	057				
																058				
																059				
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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
Contr./Guid. No.	CTO No.	CTO No.	Recipient	Approx. # Pages	EPA Cat. #	Recipient						FRC Access. No.
												Box No.
												CD No.
											BLDG. 241	
											OU 1	
											OU 2	
											OU 3	
											OU 4	
											OU 5	
											OU 6	
											OU 7	
N60701 / 001352	12-12-2001	12-12-2001	BECHTEL					COMPILED RESPONSE TO COMMENTS ON	ADMIN RECORD	ARSENIC	040	P3-C - BECHTEL
CTO-0002/0246		<b>11-28-2001</b>	NATIONAL, INC.					THE DRAFT ADDENDUM NO. 2 (AQUIFER		COMMENTS	070	NATIONAL
MISC		00002						TEST FOR IR SITE 70) WORK PLAN FOR		DQO		
N68711-95-D-7526			NAVFAC -					LONG-TERM GROUNDWATER MONITORING		GW		SW03020302
00019			SOUTHWEST					AT THE RESEARCH, TESTING, &		METALS		IMAGED
			DIVISION					EVALUATION AREA [COMMENTS BY DTSC		MW		SEAL_012
								& CRWQCB] {SEE AR #1341 - ADDENDUM}		RESPONSE		
										TCE		
										VOC		
										WELLS		
N60701 / 001351	12-12-2001	12-12-2001	NAVFAC -					MINUTES OF THE 14 NOVEMBER 2001	ADMIN RECORD	ACTMEMO	001	P3-C - BECHTEL
SWDIV SER		<b>11-30-2001</b>	SOUTHWEST					PROJECT MANAGERS MEETING	CONFIDENTIAL	CRP	004	NATIONAL
5NEN.SL/695		NONE	DIVISION					(DISTRIBUTION LIST CONTAINS		EBS	005	
MM			M. GOOD					CONFIDENTIAL ADDRESS)		EE/CA	006	SW03020302
NONE			DTSC - CYPRESS							FFSRA	007	IMAGED
00012			K. LEIBEL							FS	014	SEAL_012
										MTG MINS	019	
										RD	022	
										REMOVAL	040	
										RSE	070	
										SMP	073	
										WORK PLAN	SWMU 24	

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Doc. Control No.	Record Date	Author						FRC Access. No.
Record Type	CTO No.	Recipient Affil.						Box No.
Contr./Guid. No.	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 000549	01-11-2002	NAVFAC -	TRANSMITTAL OF MINUTES OF 12	ADMIN RECORD	ACTMEMO	001		P3-C - BECHTEL
SWDIV SER	<b>01-03-2002</b>	SOUTHWEST	DECEMBER 2001 PROJECT MANAGERS	CONFIDENTIAL	ARAR	004		NATIONAL
5NEN.SL/705	NONE	DIVISION	MEETING FOR REVIEW - INCLUDES		EE/CA	005		
MM		M. GOOD	CONFIDENTIAL DISTRIBUTION LIST		EOD	006		SW03020301
NONE		DTSC - CYPRESS			FFSRA	007		IMAGED
00011		K. LEIBEL			GW	014		SEAL_011
					MONITORING	019		
					MTG MINS	022		
					MW	040		
					NFA	070		
					ORDNANCE	073		
					RAB	SWMU 24		
					RD			
					REMEDIAL ACTIO			
					REMOVAL			
					RSE			
					SI			
					SMP			
					SOIL			
					WELLS			
N60701 / 001360	01-17-2002	NAVFAC -	MINUTES OF THE 9 JANUARY 2002	ADMIN RECORD	ACTMEMO	001		P3-C - BECHTEL
SWDIV SER	<b>01-16-2002</b>	SOUTHWEST	PROJECT MANAGERS MEETING	CONFIDENTIAL	EE/CA	004		NATIONAL
5NEN.SL/720	NONE	DIVISION	(DISTRIBUTION LIST CONTAINS		FFSRA	005		
MM		S. LE	CONFIDENTIAL ADDRESS)		FS	006		SW03020302
NONE		DTSC - CYPRESS			GW	007		IMAGED
00011		& VARIOUS			MTG MINS	014		SEAL_012
		K. LEIBEL &			RAB	019		
		REGULATORS			REMEDIAL ACTIO	022		
					REMOVAL	040		
					RSE	070		
					SI	073		
					SMP	SWMU 24		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	Recipient	Subject/Comments	Classification	Keywords	FRC Access. No.
Approx. # Pages	EPA Cat. #						Box No.
							CD No.
N60701 / 001364	03-05-2002	NAVFAC -	MINUTES OF THE 13 FEBRUARY 2002	ADMIN RECORD	ACTMEMO	001	BECHTEL
SWDIV SER	<b>02-25-2002</b>	SOUTHWEST	PROJECT MANAGERS MEETING	CONFIDENTIAL	EE/CA	004	NATIONAL
5NEN.SL/756	NONE	DIVISION	(DISTRIBUTION LIST CONTAINS	INFO	EOD	005	
MM		M. GOOD	CONFIDENTIAL ADDRESS)	REPOSITORY	FFSRA	007	BNI 01/16/03
NONE		DTSC;			FS	014	
00010		REGULATORS &			GW	019	
		OTHERS			MTG MINS	022	
		K. LEIBEL &			PCE	040	
		DISTRIBUTION			RAB	070	
					RD	073	
					ROD	SWMU 24	
					SI		
					SMP		
					SOIL		
					SWMU		
					TCE		
					WELLS		
N60701 / 001369	03-27-2002	BECHTEL	RESPONSE TO COMMENTS ON THE DRAFT	ADMIN RECORD	COMMENTS	040	P3-C - BECHTEL
CTO-0002/0301-1	<b>03-12-2002</b>	ENVIRONMENTAL,	ANNUAL GROUNDWATER MONITORING	INFO	DCE	070	NATIONAL
MISC	00002	INC.	REPORT FOR THE CONCRETE PIT/GRAVEL	REPOSITORY	GW		SW03020302
N68711-95-D-7526		NAVFAC -	AREA AND THE RESEARCH, TESTING, AND		MONITORING		IMAGED
00006		SOUTHWEST	EVALUATION AREA (COMMENTS BY DTSC		RESPONSE		SEAL_012
		DIVISION	& CRWQCB) {SEE AR #1346 - REPORT}		TCE		
					VOC		
					WELLS		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001365	03-27-2002	CH2M HILL	FINAL SITE MANAGEMENT PLAN UPDATE	ADMIN RECORD	ARAR	001	P3-C - BECHTEL	
PROJECT	03-19-2002	B. WONG	FOR THE INSTALLATION RESTORATION	INFO	AST	005	NATIONAL	
NUMBER	DO 6	NAVFAC -	PROGRAM	REPOSITORY	ATEIP	007		SW03020302
158091.06.RT		SOUTHWEST			ATIR	008		IMAGED
PLAN		DIVISION			BTEX	009		SEAL_012
N68711-96-D-2299		S. LE			CEQA	011		
00172					COC	012		
					COEC	013		
					COPC	014		
					CRP	015		
					CWA	016		
					DERA	017		
					DQO	018		
					EBS	019		
					EE/CA	020		
					EIS	021		
					EOD	022		
					FFSRA	023		
					FS	024		
					GW	025		
					IRP	035		
					MONITORING	036		
					MTBE	037		
					NFA	038		
					NPL	039		
					ORDNANCE	040		
					PA	041		
					PAH	042		
					PCB	043		
					PCE	044		
					PESTICIDES	045		
					PID	046		
					PRG	047		
					RAB	048		
					RCRA	049		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Contr./Guid. No.	CTO No.	Recipient Affil.	Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	Location	FRC Access. No.	Box No.	CD No.
															RFA	050				
															RFI	051				
															RI	070				
															ROD	073				
															RSE	074				
															SARA	BLDG. 128				
															SMP	BLDG. 235				
															SVOC	BLDG. 241				
															SWMU	BLDG. 68				
															TCA	OU 1				
															TCE	OU 2				
															TPH	OU 3				
															TSCA	OU 4				
															UST	OU 5				
															UXO	OU 6				
															VOC	OU 7				
N60701 / 001371	03-27-2002	03-25-2002	NAVFAC - SOUTHWEST DIVISION	SWDIV SER	NONE	M. GOOD	5NEN.SL/788	NONE	DTSC, CYPRESS & VARIOUS	MM	NONE	00013	K. LEIBEL & DISTRIBUTION	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	ACTMEMO AOPC EE/CA EOD FFSRA FS GW MONITORING MTG MINS ORDNANCE RAB RD REMOVAL SI SMP SOIL SWMU WELLS	004 005 007 014 022 040 070 073 SWMU 24	P3-C - BECHTEL NATIONAL		SW03020302 IMAGED SEAL_012	

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	Recipient	Subject/Comments	Classification	Keywords	FRC Access. No.
Approx. # Pages	EPA Cat. #	Recipient	Recipient				Box No.
							CD No.
N60701 / 001374	04-02-2002	NWS SEAL BEACH	TRANSMITTAL OF THE MINUTES FROM THE	ADMIN RECORD	FS	005	P3-C - BECHTEL
NWSSB SER	<b>03-25-2002</b>	P.F. TAMASHIRO	50TH RESTORATION ADVISORY BOARD	INFO	GW	007	NATIONAL
N45W/0142	NONE	RESTORATION	MEETING OF 13 MARCH 2002 WITH	REPOSITORY	MONITORING	014	SW03020302
MM		ADVISORY BOARD	AGENDA FOR 10 APRIL 2002 MEETING		MTG MINS	040	IMAGED
NONE		COMMUNITY			MW	070	SEAL_012
00010		MEMBERS			NTCRA	073	
					ORDNANCE	SWMU 24	
					PCE		
					PIM		
					RAB		
					ROD		
					SOIL		
					SOIL BORING		
					SWMU		
					TCE		
					UST		
					UXO		
					WELLS		

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 001372	03-27-2002	BECHTEL	FINAL ANNUAL GROUNDWATER	ADMIN RECORD	BIOREMEDIATION	040	P3-C - BECHTEL	
CTO-0002/0302	<b>03-26-2002</b>	ENVIRONMENTAL,	MONITORING REPORT FOR THE	CONFIDENTIAL	COC	070	NATIONAL	
AND NWSSB SER	00002	INC.	CONCRETE PIT GRAVEL AREA AND THE	INFO	COPC		SW03020302	
N45S/0129		E. JOHANSEN	RESEARCH, TESTING & EVALUATION AREA	REPOSITORY	DATA		IMAGED	
THROUGH 0140		NAVFAC -	(CONTAINS SOME TRANSMITTAL LETTERS		DCA		SEAL_012	
RPT		SOUTHWEST	WITH CONFIDENTIAL ADDRESSES)		DCE			
N68711-95-D-7526		DIVISION			DQO			
00501					GW			
					METALS			
					MONITORING			
					MW			
					PCE			
					PRG			
					SOLVENTS			
					TCA			
					TCE			
					VOC			
					WATER			
					WELLS			

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001400	05-08-2002	NAVFAC -	TRANSMITTAL OF MINUTES OF PROJECT	ADMIN RECORD	ACTMEMO	001	P3-C - BECHTEL	
SWDIV SER	04-26-2002	SOUTHWEST	MANAGERS MEETING OF 10 APRIL 2002	INFO	AOPC	004	NATIONAL	
5NEN.MR/851	NONE	DIVISION	FOR REVIEW	REPOSITORY	CEQA	005		SW03020303
MM		M. GOOD			EE/CA	006		IMAGED
NONE		DTSC - CYPRESS			EOD	007		SEAL_012
00010		K. LEIBEL			FFSRA	014		
					FS	019		
					GW	022		
					LEAD	040		
					MONITORING	070		
					MTG MINS	073		
					ORDNANCE	SWMU 24		
					QA			
					QC			
					RAB			
					RD			
					REMOVAL			
					ROD			
					SI			
					SMP			
					SOIL			
					SWMU			
					WELLS			

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001402	05-23-2002	NAVFAC -	TRANSMITTAL OF MINUTES OF PROJECT	ADMIN RECORD	ACTMEMO	001	P3-C - BECHTEL	
SWDIV SER	<b>05-21-2002</b>	SOUTHWEST	MANAGERS MEETING OF 8 MAY 2002 FOR	INFO	CEQA	004	NATIONAL	
5NEN.SL/878	NONE	DIVISION	REVIEW	REPOSITORY	EE/CA	005		
MM		M. GOOD			ERA	006	SW03020303	
NONE		DTSC - CYPRESS			FFSRA	007	IMAGED	
00011		K. LEIBEL			GW	014	SEAL_012	
					LEAD	019		
					MONITORING	022		
					MTG MINS	040		
					RAB	070		
					RD	073		
					REMOVAL	074		
					SI	SWMU 24		
					SOIL			
					UST			
N60701 / 001409	07-01-2002	NWS SEAL BEACH	TRANSMITTAL OF MINUTES FOR 52ND	ADMIN RECORD	ACTMEMO	005	P3-C - BECHTEL	
SB SER N45S/0287	<b>06-20-2002</b>	P.F. TAMASHIRO	RESTORATION ADVISORY BOARD	INFO	DCE	007	NATIONAL	
MM	NONE	COMMUNITY	MEETING OF 12 JUNE 2002	REPOSITORY	EE/CA	014		
NONE		MEMBERS			GW	040	SW03020303	
00011					MTBE	070	IMAGED	
					MTG MINS	073	SEAL_012	
					PCE	074		
					RAB	OU 7		
					REMOVAL	SWMU 24		
					SOIL			
					UST			
N60701 / 001417	07-24-2002	BECHTEL	MINUTES OF MEETING REGARDING IN SITU	ADMIN RECORD	BIOREMEDIATION	040	P3-C - BECHTEL	
CTO-0002/0342	<b>06-27-2002</b>	ENVIRONMENTAL,	ENHANCED BIOREMEDIATION PILOT TEST	INFO	DCE	BLDG. 240	NATIONAL	
MM	00002	INC.	RESULTS AND FOLLOW-ON ACTIVITIES	REPOSITORY	GW			
N68711-95-D-7526		NAVFAC -			MONITORING		SW03020303	
00068		SOUTHWEST			MTG MINS		IMAGED	
		DIVISION			PCE		SEAL_012	
					SOLVENTS			
					WELLS			

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	Subject/Comments	Classification	Keywords	Sites	FRC Access. No.
Approx. # Pages	EPA Cat. #	Recipient					Box No. CD No.
N60701 / 001413	07-23-2002	BECHTEL	NEWSLETTER OF THE ENVIRONMENTAL	ADMIN RECORD	AOC	001	P3-C - BECHTEL
CTO-0151/0407	07-01-2002	NATIONAL, INC.	INVESTIGATION AND CLEANUP PROGRAM	CONFIDENTIAL	CAA	002	NATIONAL
MISC	00151		(INCLUDES MAILING LIST, PORTIONS OF	INFO	CERCLA	003	
N68711-92-D-4670		NAVFAC -	WHICH ARE CONFIDENTIAL)	REPOSITORY	CWA	004	SW03020303
00014		SOUTHWEST			ESA	005	IMAGED
		DIVISION			FS	006	SEAL_012
					GW	007	
					HAZ WASTE	008	
					IRP	009	
					METALS	010	
					NEPA	011	
					NHPA	012	
					ORDNANCE	013	
					PAH	014	
					PCB	015	
					PESTICIDES	016	
					PIM	017	
					RAB	018	
					RCRA	019	
					REFUGE	020	
					REMEDIAL ACTIO	021	
					RSE	022	
					SARA	023	
					SOIL	024	
					SOLVENTS	025	
					SWMU	035	
					TCA	036	
					TCE	037	
					UST	038	
					VOC	039	
					WATER	040	
						041	
						042	
						043	
						044	

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Contr./Guid. No.	CTO No.	Recipient Affil.	Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	Location	FRC Access. No.	Box No.	CD No.
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																046				
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																050				
																051				
																070				
																073				
																074				
																AOC 6				
																AOC 7				
																BLDG. 235				
																BLDG. 71				
																SWMU 17				
																SWMU 20				
																SWMU 21				
																SWMU 22				
																SWMU 23				
																SWMU 24				
																SWMU 41				
																SWMU 42				
																SWMU 43				
																SWMU 50				
																SWMU 51				
																SWMU 52				
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																SWMU 58				
																SWMU 59				
																SWMU 60				
																SWMU 61				

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.							Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites			CD No.
						SWMU 62			
						SWMU 63			
						SWMU 64			
						SWMU 65			
						SWMU 66			
						SWMU 69			
N60701 / 001419	08-01-2002	NWS SEAL BEACH	MINUTES FROM 10 JULY 2002 SITE TOUR	ADMIN RECORD	BIOREMEDIATION	001		P3-C - BECHTEL	
SEAL BEACH SER	07-25-2002	D. BAILLIE	OF RELEVANT INSTALLATION	INFO	DRINKING WATE	005		NATIONAL	
N45S/0342	NONE		RESTORATION SITES FOR RESTORATION	REPOSITORY	GW	007			
MM		COMMUNITY	ADVISORY BOARD AND COMMUNITY		IRP	022		SW03020303	
NONE		MEMBERS	MEMBERS W/ATTACHMENT OF AGENDA		MONITORING	040		IMAGED	
00008			FOR RAB MEETING OF 11 SEPTEMBER 2002		MTG MINS	070		SEAL_012	
					MW	073			
					PCE	074			
					PIM	OU 7			
					RAB	SWMU 24			
					SOIL				
					SV				
					SWMU				
					WELLS				

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001424	08-28-2002	NAVFAC -	TRANSMITTAL OF THE MINUTES OF THE 14	ADMIN RECORD	ACTMEMO	004		P3-C - BECHTEL
SWDIV SER	08-27-2002	SOUTHWEST	AUGUST 2002 PROJECT MANAGERS	CONFIDENTIAL	CEQA	005		NATIONAL
5NEN.SL/953	NONE	DIVISION	MEETING FOR REVIEW (DISTRIBUTION	INFO	EE/CA	006		
MISC		M. GOOD	LIST CONTAINS CONFIDENTIAL ADDRESS)	REPOSITORY	ERA	007		SW03020304
NONE		DTSC, CYPRESS			FFSRA	014		IMAGED
00011		& VARIOUS			FS	022		SEAL_013
		K. LEIBEL &			GW	040		
		DISTRIBUTION			MONITORING	070		
					MTG MINS	073		
					ORDNANCE	074		
					PROPOSED PLAN	SWMU 24		
					RAB			
					RD			
					REMOVAL			
					ROD			
					SI			
					SWMU			

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.					Location
Record Type	Contr./Guid. No.	Record Date	Author	Subject/Comments	Classification	Keywords	Sites	FRC Access. No.
Approx. # Pages	CTO No.	EPA Cat. #	Recipient Affil.					Box No.
			Recipient					CD No.
N60701 / 001425	09-17-2002	BECHTEL	DRAFT TECHNICAL MEMORANDUM ON	ADMIN RECORD	ARAR	040	P3-C - BECHTEL	
CTO-0002/0382 SB	09-11-2002	ENVIRONMENTAL,	PILOT TEST FOR IN SITU ENHANCED	CONFIDENTIAL	BIOREMEDIATION	070	NATIONAL	
SER N45S/0381-0389	00002	INC.	BIOREMEDIATION AT SITE 40 (INCLUDES	INFO	COC	BLDG. 240	SW03020304	
MEMO		E. JOHANSEN	SEAL BEACH TRANSMITTAL LETTERS	REPOSITORY	COPC	OU 4	IMAGED	
N68711-95-D-7526		NAVFAC -	FROM P.F. TAMASHIRO SOME OF WHICH		DCE	OU 5	SEAL_012	
00275		SOUTHWEST	CONTAIN CONFIDENTIAL ADDRESSES)		DMP			
		DIVISION			DQO			
					FFSRA			
					FS			
					GW			
					HAZ MAT			
					HAZ WASTE			
					MW			
					NCP			
					PCE			
					PRG			
					QAPP			
					RFA			
					RI			
					SOIL			
					SOIL BORING			
					SOP			
					SWMU			
					TCE			
					TECH MEMO			
					VOC			
					WELLS			

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.	Record Type	Record Date	Author	Location
Contr./Guid. No.	CTO No.	Recipient Affil.	Recipient	Subject/Comments	Classification	Keywords	FRC Access. No.
Approx. # Pages	EPA Cat. #						Box No. CD No.
N60701 / 001426 CTO-0002/0345 RPT N68711-95-D-7526 00840	09-20-2002 <b>09-18-2002</b> 00002	BECHTEL ENVIRONMENTAL, INC. R. TAIT NAVFAC - SOUTHWEST DIVISION	DRAFT SECOND ANNUAL GROUNDWATER MONITORING REPORT FOR THE CONCRETE PIT/GRAVEL AREA AND THE RESEARCH, TESTING, AND EVALUATION AREA	ADMIN RECORD INFO REPOSITORY	BGS COC COPC DCA DCE DQO GW METALS MONITORING MW PCE PRG SOIL TCE VOC WELLS	040 070	P3-C - BECHTEL NATIONAL  SW03020304 IMAGED SEAL_013
N60701 / 001436 CTO-0002/0410 PLAN N68711-95-D-7526 00044	11-05-2002 <b>10-01-2002</b> 00002	BECHTEL ENVIRONMENTAL, INC.  NAVFAC - SOUTHWEST DIVISION	DRAFT PROPOSED PLAN/REMEDIAL ACTION PLAN FOR SITE 40 [INCLUDES MULTIPLE SEAL BEACH TRANSMITTAL LETTERS FROM P.F. TAMASHIRO]	ADMIN RECORD INFO REPOSITORY	BIOREMEDIATION CANCER DCE GW PCE PROPOSED PLAN RAP REMEDIAL ACTIO SOIL SOLVENTS TCE VOC WELLS	040 BLDG. 240 OU 4	P3-C - BECHTEL NATIONAL  SW03020304 IMAGED SEAL_013

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001431	10-08-2002	NWS SEAL BEACH	TRANSMITTAL OF MINUTES FOR 53RD	ADMIN RECORD	ACTMEMO	004		P3-C - BECHTEL
SEAL BEACH SER	10-02-2002	P.F. TAMASHIRO	RESTORATION ADVISORY BOARD	INFO	BIOREMEDIATION	005		NATIONAL
N45S/0435	NONE	COMMUNITY	MEETING OF 18 SEPTEMBER 2002	REPOSITORY	DCE	006		SW03020304
MM		MEMBERS	INCLUDES AGENDA FOR 16 OCTOBER 2002		EE/CA	007		IMAGED
NONE			MEETING		ERA	014		SEAL_013
00010					FS	022		
					GW	040		
					MONITORING	070		
					MTG MINS	073		
					PCE	074		
					PROPOSED PLAN	SWMU 24		
					RAB			
					ROD			
					SOIL			
					WELLS			
					WORK PLAN			
N60701 / 001437	11-05-2002	NWS SEAL BEACH	TRANSMITTAL OF MINUTES FOR 54TH	ADMIN RECORD	ACTMEMO	004		P3-C - BECHTEL
SEAL BEACH SER	10-30-2002	P.F. TAMASHIRO	RESTORATION ADVISORY BOARD	INFO	EE/CA	005		NATIONAL
N45S/0473	NONE	GENERAL PUBLIC	MEETING OF 16 OCTOBER 2002 INCLUDES	REPOSITORY	ERA	006		SW03020304
MM		COMMUNITY	AGENDA FOR 13 NOVEMBER 2002 MEETING		GW	007		IMAGED
NONE		MEMBERS			MONITORING	014		SEAL_013
00007					MTG MINS	040		
					MW	070		
					PAH	073		
					RAB	074		
					REFUGE	SWMU 24		
					REMOVAL			
					SWMU			
					UST			

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.						Box No.
Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001438	11-21-2002	NAVFAC -	TRANSMITTAL OF THE MINUTES OF THE	ADMIN RECORD	ACTMEMO	004		P3-C - BECHTEL
SWDIV SER	<b>11-06-2002</b>	SOUTHWEST	PROJECT MANAGERS MEETING HELD 16	CONFIDENTIAL	ARAR	005		NATIONAL
5NEN.SL/007	NONE	DIVISION	OCTOBER 2002 [DISTRIBUTION LIST	INFO	EE/CA	006		
MM		M. GOOD	CONTAINS A CONFIDENTIAL ADDRESS]	REPOSITORY	ERA	007		SW03020304
NONE		DTSC, CYPRESS			FFSRA	014		IMAGED
00012		& VARIOUS			FS	022		SEAL_013
		K. LEIBEL &			GW	040		
		DISTRIBUTION			MTG MINS	070		
					PROPOSED PLAN	073		
					RAB	074		
					RD	SWMU 24		
					REMOVAL			
					ROD			
					SOIL			
					SWMU			
					TECH MEMO			
N60701 / 001439	12-02-2002	BECHTEL	DRAFT ADDENDUM NO. 1 (PHASE II PILOT	ADMIN RECORD	DCE	040		P3-C - BECHTEL
CTO-0002/0429 &	<b>11-20-2002</b>	ENVIRONMENTAL,	TEST AT IR SITE 40) TO THE WORK PLAN	CONFIDENTIAL	DQO	070		NATIONAL
SEAL BEACH SER	00002	INC.	FOR THE PILOT-TEST PROGRAM AT THE	INFO	GW			SW03020304
N45W/0493-0503		J. FRENCH	CONCRETE PIT/GRAVEL AREA AND	REPOSITORY	PCE			IMAGED
PLAN		NAVFAC -	RESEARCH, TESTING, AND EVALUATION		TCE			SEAL_011
N68711-95-D-7526		SOUTHWEST	AREA (SEE AR #1326 - FINAL WORK PLAN).		VOC			
00264		DIVISION	***COMMENTS: INCLUDES TRANSMITTAL		WORK PLAN			
			LETTERS FROM P.F. TAMASHIRO WHICH					
			CONTAIN SOME CONFIDENTIAL					
			ADDRESSES***					
N60701 / 001442	01-16-2003	BECHTEL	COMPILED RESPONSES TO COMMENTS	ADMIN RECORD	BIOREMEDIATION	040		P3-C - BECHTEL
CTO-0002/0443	<b>12-16-2002</b>	ENVIRONMENTAL,	ON THE DRAFT TECHNICAL MEMORANDUM	INFO	COMMENTS			NATIONAL
MISC	00002	INC.	ON PILOT TEST FOR IN SITU ENHANCED	REPOSITORY	DCE			SW03020304
N68711-95-D-7526		NAVFAC -	BIOREMEDIATION AT SITE 40 (COMMENTS		GW			IMAGED
00012		SOUTHWEST	BY DTSC & CRWQCB) (SEE AR #1425 -		MW			SEAL_013
		DIVISION	TECH MEMO)		PCE			
					RESPONSE			
					TCE			
					TECH MEMO			
					WELLS			

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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001441	01-16-2003	NWS SEAL BEACH	MINUTES FROM THE 13 NOVEMBER 2002	ADMIN RECORD	BGS	004		P3-C - BECHTEL
SEAL BEACH SER	<b>12-18-2002</b>	P. F. TAMASHIRO	RESTORATION ADVISORY BOARD (RAB)	INFO	DCE	005		NATIONAL
N45WW/0509	NONE	GENERAL PUBLIC	MEETING WITH AGENDA FOR 8 JANUARY	REPOSITORY	DRINKING WATE	006		
MM		COMMUNITY	2003 MEETING		ERA	007		SW03020304
NONE		MEMBERS			GW	014		IMAGED
00011					MONITORING	040		SEAL_013
					MTG MINS	070		
					RSE	073		
					SOIL	074		
					UST	SWMU 24		
					WELLS			
N60701 / 001449	02-25-2003		RESTORATION ADVISORY BOARD	ADMIN RECORD	MTBE	004		P3-C - BECHTEL
SWDIV SER	<b>01-08-2003</b>		MEETING MINUTES FROM JANUARY 8, 2003	INFO		005		NATIONAL
N45S/0050	NONE	NAVFAC -	MEETING AND AGENDA - INCLUDES	REPOSITORY		007		
MM		SOUTHWEST	TRANSMITTAL LETTER BY P. TAMASHIRO			014		SW03050801
NONE		DIVISION				040		IMAGED
00009						070		SEAL_013
						073		
						SWMU 24		
N60701 / 001450	02-25-2003	BECHTEL	FINAL TECHNICAL MEMORANDUM ON	ADMIN RECORD	DCE	040		P3-C - BECHTEL
CTO-0002/0470 &	<b>02-06-2003</b>	ENVIRONMENTAL,	PILOT TEST FOR IN SITU ENHANCED	INFO	PCE			NATIONAL
SER N45WW/0039 -	00002	INC.	BIOREMEDIATION	REPOSITORY	TCE			
0048 & 0052		E. JOHANSEN			TDS			SW03050801
MISC		NAVFAC -			VOC			IMAGED
N68711-95-D-7526		SOUTHWEST						SEAL_013
00284		DIVISION						
N60701 / 001448	02-25-2003	VARIOUS	COMPILED RESPONSES TO COMMENTS	ADMIN RECORD	PCE	040		P3-C - BECHTEL
CTO-0002/0478	<b>02-10-2003</b>	AGENCIES	ON DRAFT SECOND ANNUAL	INFO	TCE	070		NATIONAL
MISC	00002		GROUNDWATER MONITORING REPORT	REPOSITORY	VOC			
N68711-95-D-7526		VARIOUS						SW03050801
00013		AGENCIES						IMAGED
								SEAL_013

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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001447 CTO-0002/0488 MISC N68711-95-D-7526 00006	02-25-2003 <b>02-11-2003</b> 00002	BECHTEL ENVIRONMENTAL, INC. B. SCHILLING SEAL BEACH, DTSC RWQCB UNRATH, MCCRINK, BRODERICK	COMPILED RESPONSES TO COMMENTS ON DRAFT ADDENDUM NO. 1 (PHASE II PILOT TEST AT IR SITE 40) WORKPLAN FOR PILOT-TEST PROGRAM - INCLUDES BECHTEL TRANSMITTAL LETTER BY D. CROSSLEY	ADMIN RECORD INFO REPOSITORY		040 070	P3-C - BECHTEL NATIONAL  SW03050801 IMAGED SEAL_013	
N60701 / 001452 CTO-0002/0481 SWDIV SER N45W/0077 TO 0087 PLAN N68711-95-D-7526 00258	03-11-2003 <b>03-05-2003</b> 00002	BECHTEL ENVIRONMENTAL, INC. J. FRENCH NAVFAC - SOUTHWEST DIVISION	FINAL ADDENDUM NO. 1 (PHASE II PILOT TEST AT IR SITE 40) TO THE WORK PLAN FOR THE PILOT-TEST PROGRAM AT THE CONCRETE PIT/GRAVEL AREA AND RESEARCH, TESTING, AND EVALUATION AREA (SEE AR #1326, FINAL WORK PLAN) - INCLUDES NWS TRANSMITTAL LETTERS BY D. BAILLE	ADMIN RECORD INFO REPOSITORY	DCE PCE TCE VOC	040 070	P3-C - BECHTEL NATIONAL  SW03050801 IMAGED SEAL_011	
N60701 / 001453 CTO-0002/0503 MISC N68711-95-D-7526 00017	03-12-2003 <b>03-05-2003</b> 00002	BECHTEL ENVIRONMENTAL, INC. R. SHILLING NAVFAC - SOUTHWEST DIVISION K. ROONEY	RESPONSE TO AGENCY AND RAB COMMENTS ON PROPOSED PLAN/DRAFT REMEDIAL ACTION PLAN FOR SITE 40 - SEE AR #1436 [INCLUDES BEI TRANSMITTAL LETTER BY D. CROSSLEY]	ADMIN RECORD INFO REPOSITORY	DCE PCE VOC	040	P3-C - BECHTEL NATIONAL  SW03050801 IMAGED SEAL_013	
N60701 / 001456 CTO-0002/0541 & NWS SB SER N45WW/0123 - 0136 PLAN N68711-95-D-7526 00047	05-07-2003 <b>04-01-2003</b> 00002	BECHTEL ENVIRONMENTAL, INC.  VARIOUS AGENCIES	DRAFT PROPOSED PLAN/REMEDIAL ACTION PLAN FOR SITE 40 [INCLUDES MULTIPLE SEAL BEACH TRANSMITTAL LETTERS FROM P.F. TAMASHIRO]	ADMIN RECORD INFO REPOSITORY	DCE PA PCE RAP ROD TCE VOC	040 BLDG. 240	P3-C - BECHTEL NATIONAL  SW03091101 IMAGED SEAL_013	

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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites		CD No.
N60701 / 001457	05-07-2003	NWS SEAL BEACH	MEETING MINUTES FROM THE 57TH	ADMIN RECORD	MTG MINS	004		P3-C - BECHTEL
SER N45WW/0103	<b>04-10-2003</b>	P. TAMASHIRO	RESTORATION ADVISORY BOARD	INFO	RAB	005		NATIONAL
MM	NONE	NAVFAC -	MEETING OF 12 MARCH 2003 AND AGENDA	REPOSITORY		007		
NONE		SOUTHWEST	FOR 13 MAY 2003 MEETING - INCLUDES			014		SW03091101
00009		DIVISION	TRANSMITTAL LETTER BY NWS SB P.			040		IMAGED
			TAMASHIRO (WITH ENCLOSURES) (SEE AR			070		SEAL_013
			#1460 - TYPO CORRECTION)			073		
						SWMU 24		
N60701 / 001466	06-25-2003	NWS SEAL BEACH	RESTORATION ADVISORY BOARD (RAB)	ADMIN RECORD	MTG MINS	004		P3-C - BECHTEL
SER N45W/0166	<b>05-13-2003</b>	P. TAMASHIRO	MEETING MINUTES HELD ON 13 MAY 2003 -	INFO		005		NATIONAL
MM	NONE	PUBLIC	INCLUDES TRANSMITTAL LETTER BY P.	REPOSITORY		006		
NONE			TAMASHIRO			007		SW03091101
00007						014		IMAGED
						040		SEAL_013
						070		
						073		
						074		
						SWMU 24		
N60701 / 001463	06-05-2003	BECHTEL	RESPONSES TO COMMENTS ON DRAFT	ADMIN RECORD	COMMENTS	040		P3-C - BECHTEL
CTO-0002/0556	<b>05-28-2003</b>	ENVIRONMENTAL,	SECOND ANNUAL GROUNDWATER	INFO	TCE	070		NATIONAL
MISC	00002	INC.	MONITORING REPORT	REPOSITORY	VOC			
N68711-95-D-7526		B. SCHILLING						SW03091101
00010		NAVFAC -						IMAGED
		SOUTHWEST						SEAL_013
		DIVISION						
N60701 / 001480	09-23-2003	NWS SEAL BEACH	08 JULY 2003 MEETING MINUTES FOR THE	ADMIN RECORD	MTG MINS	007		BECHTEL
NWS SB SER	<b>07-08-2003</b>		RESTORATION ADVISORY BOARD AND	INFO		014		NATIONAL
N45W/0256	NONE	RAB MEMBERS	COMMUNITY MEETING SITE TOUR AND 09	REPOSITORY		022		
MM			SEPTEMBER 2003 MEETING AGENDA -			040		BNI - 03/18/04
NONE			INCLUDES NWS SB TRANSMITTAL LETTER			070		
00007			BY P. TAMASHIRO			073		
						074		

UIC No. / Rec. No.	Doc. Control No.	Prc. Date	Author Affil.					Location
Record Type	Record Date	Author	Author					FRC Access. No.
Contr./Guid. No.	CTO No.	Recipient Affil.	Recipient Affil.					Box No.
Approx. # Pages	EPA Cat. #	Recipient	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.
N60701 / 001472	07-16-2003	BECHTEL	BECHTEL	FINAL SECOND ANNUAL GROUNDWATER	ADMIN RECORD	DCA	040	P3-C - BECHTEL
CTO-0002/0581	<b>07-15-2003</b>	ENVIRONMENTAL, INC.	ENVIRONMENTAL, INC.	MONITORING REPORT	INFO	DCE	070	NATIONAL
RPT	00002	B. SCHILLING	B. SCHILLING		REPOSITORY	PCE		
N68711-95-D-7526		NAVFAC -	NAVFAC -			TCE		SW03091101
00867		SOUTHWEST	SOUTHWEST			TDS		IMAGED
		DIVISION	DIVISION			VOC		SEAL_013
N60701 / 001473	07-31-2003	BECHTEL	BECHTEL	RESPONSE TO COMMENTS ON THE	ADMIN RECORD	COMMENTS	040	BECHTEL
CTO-0002/0592	<b>07-30-2003</b>	ENVIRONMENTAL, INC.	ENVIRONMENTAL, INC.	PROPOSED PLAN/DRAFT REMEDIAL	INFO			NATIONAL
MISC	00002	R. SCHILLING	R. SCHILLING	ACTION PLAN	REPOSITORY			
N68711-95-D-7526		NAVFAC -	NAVFAC -					BNI - 03/18/04
00004		SOUTHWEST	SOUTHWEST					
		DIVISION	DIVISION					
N60701 / 001479	09-05-2003	BECHTEL	BECHTEL	PROPOSED PLAN/DRAFT REMEDIAL	ADMIN RECORD	DCE	040	BECHTEL
CTO-0002/0602	<b>08-01-2003</b>	ENVIRONMENTAL, INC.	ENVIRONMENTAL, INC.	ACTION PLAN: NAVY PROPOSES	INFO	PCE		NATIONAL
PLAN	00002			GROUNDWATER CLEANUP PLAN,	REPOSITORY	TCE		
N68711-95-D-7526		NAVFAC -	NAVFAC -	REQUESTS PUBLIC COMMENTS -		VOC		BNI - 03/18/04
00025		SOUTHWEST	SOUTHWEST	INCLUDES CONFIDENTIAL DISTRIBUTION				
		DIVISION	DIVISION	LIST				
N60701 / 001491	12-24-2003	NAVFAC -	NAVFAC -	RESTORATION ADVISORY BOARD (RAB) 09	ADMIN RECORD		004	BECHTEL
NWS SER	<b>09-09-2003</b>	SOUTHWEST	SOUTHWEST	SEPTEMBER 2003 MEETING MINUTES -	INFO		005	NATIONAL
N45W/0343	NONE	DIVISION	DIVISION	INCLUDES 12 NOVEMBER 2003 MEETING	REPOSITORY		007	
MM		P. TAMASHIRO	P. TAMASHIRO	AGENDA AND NWS TRANSMITTAL LETTER			014	BNI - 03/18/04
NONE		RAB MEMBERS	RAB MEMBERS	BY P. TAMASHIRO			040	
00010							070	
							073	
							074	
							SWMU 24	

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Constr./Guid. No.	CTO No.	CTO No.	Recipient Affil.	Constr./Guid. No.	CTO No.	Recipient	FRC Access. No.	
Approx. # Pages	EPA Cat. #	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Box No.	
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N60701 / 001490	12-24-2003	12-24-2003	HAHN & BOWERSOCK CORPORATION	FINAL TRANSCRIPT OF PUBLIC MEETING HELD ON 16 SEPTEMBER 2003	ADMIN RECORD		040	BECHTEL NATIONAL
CTO-0002/0635	<b>09-16-2003</b>	<b>09-16-2003</b>	G. LIMON		INFO REPOSITORY			
MISC	00002	00002	NAVAFAC - SOUTHWEST DIVISION					BNI - 03/18/04
N68711-95-D-7526								
00020								
N60701 / 001481	12-23-2003	12-23-2003	BECHTEL ENVIRONMENTAL, INC.	DRAFT THIRD ANNUAL GROUNDWATER MONITORING REPORT - INCLUDES NWS TRANSMITTAL LETTER BY D. BAILLIE	ADMIN RECORD	DCA	040	BECHTEL NATIONAL
CTO-0002/0518 & NWS SER	<b>09-26-2003</b>	<b>09-26-2003</b>	R. TAIT		INFO REPOSITORY	DCE	070	
N45W/0305	00002	00002	NAVAFAC - SOUTHWEST DIVISION			GW		BNI - 03/18/04
THROUGH 0316						PCE		
RPT						TCE		
N68711-95-D-7526						TDS		
00600						VOC		
N60701 / 001484	12-23-2003	12-23-2003	BECHTEL ENVIRONMENTAL, INC.	DRAFT RECORD OF DECISION/REMEDIAL ACTION PLAN FOR OPERABLE UNIT (OU) 4	ADMIN RECORD	DCA	040	BECHTEL NATIONAL
CTO-0002/0650	<b>12-01-2003</b>	<b>12-01-2003</b>			INFO REPOSITORY	DCE	OU 4	
PLAN	00002	00002	NAVAFAC - SOUTHWEST DIVISION			PCE		BNI - 03/18/04
N68711-95-D-7526						PVC		
00150						ROD		
						TCE		
						TDS		
						VOC		
N60701 / 001483	12-23-2003	12-23-2003	BECHTEL ENVIRONMENTAL, INC.	GROUNDWATER MONITORING DATA SUMMARY (OCTOBER 2003)	ADMIN RECORD	DCA	040	BECHTEL NATIONAL
CTO-0002/0631	<b>12-19-2003</b>	<b>12-19-2003</b>	R. TAIT		INFO REPOSITORY	DCE	070	
RPT	00002	00002	NAVAFAC - SOUTHWEST DIVISION			GW		BNI - 03/18/04
N68711-95-D-7526						TCE		
00150						TDS		
						VOC		

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Approx. # Pages	EPA Cat. #	Recipient	Subject/Comments	Classification	Keywords	Sites	CD No.	
N60701 / 001494	01-09-2004	BECHTEL	FINAL THIRD ANNUAL GROUNDWATER	ADMIN RECORD	DCA	040	BECHTEL	
CTO-0002/0652	<b>12-23-2003</b>	ENVIRONMENTAL,	MONITORING REPORT FOR INSTALLATION	INFO	DCE	070	NATIONAL	
RPT	00002	INC.	RESTORATION SITE 40 AND 70	REPOSITORY	GW			
N68711-95-D-7526		R. TAIT			PCE		BNI -03/18/04	
01000		NAVFAC -			TCE			
		SOUTHWEST			TDS			
		DIVISION			VOC			
N60701 / 001501	03-05-2004	BECHTEL	RESPONSE TO COMMENTS ON THE	ADMIN RECORD	COMMENTS	040	BECHTEL	
CTO-0002/0694	<b>02-12-2004</b>	ENVIRONMENTAL,	GROUNDWATER MONITORING DATA	INFO		070	NATIONAL	
MISC	00002	INC.	SUMMARY (OCTOBER 2003)	REPOSITORY				
N68711-95-D-7526		R. SCHILLING					BNI -03/18/04	
00003		DTSC						
		M. MCCRINK						

**Total Estimated Record Page Count: 27,039**

**Total - Administrative Records: 266**

[UIC NUMBER]='N60701'

No Keywords

Sites=040

No Classification

## **ATTACHMENT B**

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### **TRANSCRIPT FROM PUBLIC MEETING**

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NAVAL WEAPONS STATION SEAL BEACH  
INSTALLATION RESTORATION PROGRAM - SITE 40  
PUBLIC MEETING

HELD ON: TUESDAY, SEPTEMBER 16, 2003

REPORTED BY: GAYE L. LIMON, CSR NO. 7416





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TUESDAY, SEPTEMBER 16, 2003

SEAL BEACH, CALIFORNIA

7:20 P.M.

\* \* \*

MS. TAMASHIRO: THANKS VERY MUCH FOR COMING TO THE PUBLIC MEETING FOR OUR PROPOSED PLAN TO A GROUNDWATER REMEDIATION PROJECT AT ONE OF OUR INSTALLATION RESTORATION PROGRAM SITES CALLED IR SITE 40. AND I WOULD START THE MEETING BY INTRODUCING SOME OF THE PEOPLE THAT ARE WORKING ON THE PROJECT.

FIRST I HAVE KATHERINE LEIBEL HERE. SHE'S THE DTSC REPRESENTATIVE. AND SHE WILL GIVE HER PROSPECTIVE OF THE MEETING.

THE REASON WHY WE HAVE A MEETING -- ACTUALLY, PART OF THE MEETING IS ALSO A PUBLIC MEETING FOR THE NEGATIVE DECLARATION THAT WAS PREPARED ACCORDING TO CEQA.

WE ALSO HAVE GREGG SMITH HERE. HE'S OUR PUBLIC AFFAIRS OFFICER. AND SI LE, S-I, L-E, IS WITH SOUTHWEST DIV. HE'S THE RPM OR -- REMEDIAL PROJECT MANAGER FOR THE IR PROGRAM HERE IN SEAL BEACH, AND HE WORKS OUT OF SAN DIEGO, SOUTHWEST DIVISION OF NAVFAC, WHICH IS NAVAL FACILITY ENGINEERING COMMAND.

AND I HAVE BOB SCHILLING HERE. HE'S WITH BECHTEL. AND HE'S THE CTOL MANAGER FOR THIS PROJECT. AND TODAY HE WILL GIVE US A PRESENTATION ON THE TECHNICAL ASPECT OF THE PROJECT.

SO WITH THAT, I AM GOING TO TURN IT OVER TO SI LE. HE'S GOING TO GIVE US BACKGROUND OF THE IR PROGRAM HERE

1 IN SEAL BEACH.

2 MR. LE: AS PEI-FEN SAID, MY NAME IS SI LE, AND I AM  
3 THE REMEDIAL PROJECT MANAGER WITH THE NAVAL FACILITIES  
4 ENGINEERING COMMAND. I'LL PROVIDE YOU WITH A BRIEF  
5 BACKGROUND ON THE NAVY'S IR PROGRAM HERE AT SEAL BEACH. THE  
6 GOAL OF THE INSTALLATION RESTORATION PROGRAM IS TO IDENTIFY,  
7 INVESTIGATE, AND, IF NECESSARY, CLEAN UP HAZARDOUS WASTE  
8 RELEASE SITES AT DOD INSTALLATIONS OR NAVY INSTALLATIONS TO  
9 PROTECT HUMAN HEALTH AND THE ENVIRONMENT IN A TECHNICALLY  
10 FEASIBLE MANNER AS WELL AS A COST EFFECTIVE MANNER.

11 THE IR PROGRAM STARTED IN 1985. SINCE THEN WE'VE  
12 IDENTIFIED 73 POTENTIAL HAZARDOUS WASTE LOCATIONS AT THE  
13 NAVAL WEAPONS STATION SEAL BEACH AND HAVE BEEN HANDLED BY THE  
14 IR PROGRAM AT ONE TIME OR THE OTHER. OF THE 73 SITES, 46  
15 SITES WERE DETERMINED TO CONTAIN NO SIGNIFICANT CONTAMINATION  
16 THROUGH VARIOUS INVESTIGATIONS AND STUDIES, AND IT HAS BEEN  
17 PROPOSED OR DETERMINED NO FURTHER ACTION IS NEEDED.

18 SEVEN SITES WERE REMOVED FROM THE IR PROGRAM  
19 BECAUSE THEY'VE BEEN DETERMINED NOT TO BE -- WHERE THERE WERE  
20 RELEASES OF HAZARDOUS WASTE FROM THESE SITES. SIX SITES HAVE  
21 HAD CLEANUP ACTIONS COMPLETED PRIMARILY THROUGH SOIL REMOVAL  
22 ACTION AND CLEANUP AT SEAL BEACH, AND 14 SITES ARE CURRENTLY  
23 IN VARIOUS STAGES OF INVESTIGATION AND CLEANUP OF WHICH SITE  
24 40 IS ONE OF THE SITES IN THE 14 SITES.

25 THE PURPOSE OF THE MEETING IS TO PRESENT TO YOU  
26 ALL THE PROPOSED PLAN AND DRAFT REMEDIAL ACTION PLAN FOR  
27 GROUNDWATER CLEANUP AT INSTALLATION RESTORATION SITE 40. THE  
28 PROPOSED PLAN PRESENTS OUR PREFERRED CLEANUP ACTION

1 ALTERNATIVE TO ADDRESS VOLATILE ORGANIC COMPOUND  
2 CONTAMINATION AT SITE 40 WHICH PRIMARILY CONSISTS OF  
3 TETRACHLOROETHENE OR PCE CONTAMINATION. PCE IS A CHEMICAL  
4 THAT WAS WIDELY USED IN THE PAST IN VARIOUS INDUSTRIAL  
5 SOLVENTS APPLICATION, AND PCE WAS USED AT SITE 40 IN SEAL  
6 BEACH.

7 ANOTHER PURPOSE IS TO PROVIDE THE PUBLIC WITH AN  
8 OPPORTUNITY TO LEARN MORE ABOUT OUR CLEANUP EFFORT AT SITE 40  
9 AND TO PROVIDE PUBLIC COMMENTS REGARDING THE GROUNDWATER  
10 CONTAMINATION AT SITE 40 AND CLEANUP ALTERNATIVES DEVELOPED  
11 AND EVALUATED IN THE FEASIBILITY STUDY THAT WAS RECENTLY  
12 COMPLETED AND TO PROVIDE AN OPPORTUNITY FOR YOU TO COMMENT ON  
13 THE PREFERRED REMEDY FOR THE GROUNDWATER CLEANUP AT SEAL  
14 BEACH. WE HIGHLY ENCOURAGE YOUR PARTICIPATION AND ASK  
15 QUESTIONS, AND WE WILL TRY TO ANSWER YOUR QUESTIONS AS BEST  
16 WE CAN. AND IF WE DON'T KNOW THE ANSWER TO YOUR QUESTION, WE  
17 WILL GO AND RESEARCH IT AND WE WILL PROVIDE AN ANSWER TO YOU  
18 IN WRITING AT A LATER DATE.

19 SO AT THIS POINT I WOULD LIKE TO TURN IT OVER TO  
20 KATHERINE LEIBEL, WHO IS FROM THE DEPARTMENT OF TOXIC  
21 SUBSTANCES CONTROL. SHE IS WITH THE LEAD REGULATORY AGENCY  
22 OVERSEEING THE NAVY'S CLEANUP EFFORTS AT NAVAL WEAPONS  
23 STATION SEAL BEACH, AND SHE WILL BE TALKING ABOUT HER PUBLIC  
24 NOTIFICATION PROCESS OF THIS PROPOSED PLAN.

25 MS. LEIBEL: THANK YOU, SI.

26 GOOD EVENING. MY NAME IS KATHERINE LEIBEL. I'M  
27 WITH THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL REFERRED TO  
28 AS DTSC. DTSC SERVES AS A REGULATORY AGENCY IN THE NAVY'S IR

1 PROGRAM AT SEAL BEACH NAVAL WEAPONS STATION.

2 TONIGHT WE INVITE YOU TO COMMENT ON A DRAFT  
3 NEGATIVE DECLARATION FOR THE PROPOSED CLEANUP ACTION AT SITE  
4 40. IN ORDER TO COMPLY WITH THE CALIFORNIA ENVIRONMENTAL  
5 QUALITY ACT, ALSO KNOWN AS CEQA, DTSC PREPARED AN INITIAL  
6 STUDY. THE INITIAL STUDY CONSISTS OF AN ENVIRONMENTAL IMPACT  
7 ANALYSIS WHICH DESCRIBES THE ENVIRONMENTAL RESOURCES EXISTING  
8 AT SITE 40. THE INITIAL STUDY THEN ANALYZED WHETHER OR NOT  
9 THE PROPOSED CLEANUP ACTION WILL POTENTIALLY IMPACT THESE  
10 RESOURCES, ONE BY ONE, VARY IN DETAIL. BASED ON THE  
11 ANALYSIS, DTSC CONCURS IN THE INITIAL STUDY THAT THE PROPOSED  
12 ACTION WOULD NOT HAVE A SIGNIFICANT IMPACT ON THE ENVIRONMENT  
13 AND ITS RESOURCES. THE DRAFT NEGATIVE DECLARATION WAS  
14 PUBLICLY NOTICED ON AUGUST 27, 2003, IN THE ORANGE COUNTY  
15 REGISTER AND THE SEAL BEACH SUN.

16 THE PUBLIC COMMENT PERIOD ENDS ON SEPTEMBER 27,  
17 2003.

18 AGAIN, WE WELCOME YOUR COMMENTS, AND THE  
19 DOCUMENTS, INCLUDING THE INITIAL STUDY, ARE AVAILABLE FOR  
20 YOUR REVIEW.

21 WE ALSO DEVELOPED A FORM FOR YOU TO SIGN IN AND  
22 ANY COMMENTS THAT -- OR CONCERNS THAT YOU HAVE ON THESE  
23 DOCUMENTS. AND MY E-MAIL IS ALSO ON THE FORM. IF YOU DON'T  
24 HAVE COMMENTS TONIGHT BUT YOU HAVE COMMENTS LATER, PLEASE  
25 FEEL FREE TO E-MAIL ME OR SEND IT TO ME BY SEPTEMBER 27,  
26 2003.

27 THANK YOU AND HAVE A GOOD NIGHT.

28 MS. TAMASHIRO: NOW WE WILL JUST HAVE BOB SCHILLING TO

1 PRESENT A PRESENTATION FOR US ON THE PROPOSED PLAN.

2 MR. SCHILLING: GOOD EVENING. MY NAME IS BOB SCHILLING  
3 WITH BECHTEL. BECHTEL IS AN ENVIRONMENTAL CONTRACTOR FOR  
4 SOUTHWEST DIVISION NAVAL FACILITIES ENGINEERING COMMAND, AND  
5 THE SCOPE OF OUR INVOLVEMENT IS PRIMARILY WITH ENVIRONMENTAL  
6 INVESTIGATIONS AND REMEDIAL DESIGN TYPE WORK ON A NUMBER OF  
7 BASES AND FACILITIES THAT ARE WITHIN THE PURVIEW OF SOUTHWEST  
8 DIVISION. SO THIS EVENING IN THE INTEREST OF TIME AND AS  
9 REQUESTED I WILL GO THROUGH THIS VERY QUICKLY.

10 THIS SLIDE SHOWS THE INSTALLATION RESTORATION  
11 PROGRAM PROCESS AS IT RELATES TO SITE 40 AT SEAL BEACH. AND  
12 THIS EVENING I AM GOING TO TALK BRIEFLY ABOUT THE  
13 ENVIRONMENTAL INVESTIGATIONS THAT WERE CONDUCTED AT THE SITE  
14 THAT ESSENTIALLY PROVIDED THE BASIS FOR THIS REMOVAL OR THIS  
15 REMEDIAL ACTION AT SITE 40. WE WILL TALK A LITTLE ABOUT THE  
16 FEASIBILITY STUDY THAT EVALUATED A NUMBER OF REMEDIAL  
17 ALTERNATIVES FOR REMEDIATING THE SITE.

18 AND HERE WE ARE TODAY AT THE PROPOSED PLAN STAGE  
19 IN WHICH THE NAVY HAS SELECTED A PREFERRED REMEDIAL  
20 ALTERNATIVE AND IS NOW SOLICITING PUBLIC INPUT.

21 AND THEN WE WILL BRIEFLY LOOK AT WHAT HAS YET TO  
22 BE DONE THAT WILL ULTIMATELY LEAD UP TO A REMEDIAL ACTION AND  
23 CLEANUP OF THE SITE.

24 IN TERMS OF SITE LOCATION, SITE 40 IS LOCATED IN  
25 THE SOUTHERN PORTION OF THE NAVAL WEAPONS STATION. IT'S  
26 BETWEEN SEAL BEACH BOULEVARD, WHICH RUNS ALONG THE WESTERN  
27 EDGE OF THE STATION, AND KITS HIGHWAY. AND HERE IS PACIFIC  
28 COAST HIGHWAY AT THIS POINT. SO IT IS JUST NORTH OF PACIFIC

1 COAST HIGHWAY.

2 THE SITE IS REFERRED TO AS THE CONCRETE  
3 PIT/GRAVEL AREA. IT IS ESSENTIALLY A CONCRETE PIT LOCATED IN  
4 THE LOCOMOTIVE REPAIR SHOP, BUILDING 240. THAT PIT PROVIDES  
5 A COLLECTION POINT FOR OIL AND SOLVENTS DURING LOCOMOTIVE  
6 MAINTENANCE.

7 THE GRAVEL AREA WHICH IS NORTH AND ADJACENT TO  
8 THE BUILDING WAS THE POINT AT WHICH MATERIALS THAT WERE  
9 COLLECTED IN THE PIT WERE ULTIMATELY DISCHARGED IN THE PAST,  
10 AT LEAST UP UNTIL 1978 WHEN THOSE DISCHARGES WERE THEN  
11 COLLECTED IN APPROPRIATE CONTAINERS AND DISPOSED OF IN AN  
12 ENVIRONMENTALLY SAFE MANNER. THE AREA TODAY LARGELY CONSISTS  
13 OF PAVED AND SOME UNPAVED AREAS AND PETROLEUM PRODUCTS AND  
14 CHLORINATED SOLVENTS SUCH AS TETRACHLOROETHENE, OR PCE, WERE  
15 TYPICALLY USED FOR LOCOMOTIVE MAINTENANCE AND REPAIR  
16 ACTIVITIES.

17 THIS IS A MAP OF THE SITE. YOU CAN SEE HERE IS  
18 BUILDING 240 WHICH IS THE LOCOMOTIVE REPAIR SHOP, AND YOU CAN  
19 SEE A NUMBER OF RAILROAD TRACKS TERMINATE INSIDE THE  
20 BUILDING.

21 AND THIS SHOWS THE CONCRETE PIT AND A DRAINAGE  
22 PIPE THAT DISCHARGES TO THE NORTH OF THE BUILDING. AND IT'S  
23 THOSE DISCHARGES AS WELL AS THIS AREA HERE WHICH WAS JUST  
24 WEST OF THE BUILDING WHICH WAS A LIKELY SITE AT WHICH PCE WAS  
25 PERHAPS STORED BECAUSE, AS YOU'LL SEE HERE, SOME OF THE  
26 HIGHER CONCENTRATIONS OF THE PCE DETECTED IN GROUNDWATER WERE  
27 LOCATED TO THE WEST OF THE BUILDING.

28 THESE ARE PHOTOGRAPHS OF SITE 40. HERE'S

1 BUILDING 240, THE LOCOMOTIVE REPAIR SHOP LOOKING TO THE  
2 NORTHWEST. THE CENTER BAY HERE IS THE BAY THAT CONTAINS THE  
3 CONCRETE PIT. HERE'S THE SAME BUILDING LOOKING FROM THE  
4 SOUTHWEST.

5 AND RIGHT BETWEEN THESE TWO TELEPHONE POLES HERE  
6 IS -- HISTORICALLY THE DISCHARGE POINT FOR MATERIALS THAT  
7 WERE COLLECTED IN THE PIT. AND THIS IS A VIEW OF THE GRAVEL  
8 AREA LOOKING EAST TOWARD BUILDING 240.

9 THERE WERE A NUMBER OF ENVIRONMENTAL  
10 INVESTIGATIONS THAT HAVE BEEN CONDUCTED AT SITE 40 UNDER THE  
11 INSTALLATION RESTORATION PROGRAM. BEGINNING IN 1990, A  
12 PRELIMINARY ASSESSMENT WAS CONDUCTED. THIS ASSESSMENT  
13 INCLUDED A DOCUMENT REVIEW, AN AERIAL PHOTOGRAPH  
14 INVESTIGATION, AND A VISUAL INSPECTION, AND INTERVIEWS WITH  
15 STATION PERSONNEL TO GET SOME UNDERSTANDING OF WHETHER OR NOT  
16 A RELEASE TO THE ENVIRONMENT POTENTIALLY OCCURRED AT THE  
17 SITE. THAT WAS FOLLOWED BY A SITE INSPECTION THAT CONCLUDED  
18 IN 1995 IN WHICH SOME LIMITED GROUNDWATER SAMPLING WAS DONE  
19 AND THAT IS WHEN THE CHLORINATED SOLVENTS WERE FIRST REPORTED  
20 IN THE GROUNDWATER. THAT WAS FOLLOWED IN 1996 WITH A  
21 FOCUSED SITE INSPECTION -- IN WHICH SOME ADDITIONAL  
22 SUPPLEMENTAL GROUNDWATER SAMPLING WAS DONE TO GET A BETTER  
23 UNDERSTANDING OF THE CONTAMINANTS THAT ARE PRESENT IN THE  
24 GROUNDWATER.

25 IN 1998 WE BEGAN AN EXTENDED REMOVAL SITE  
26 EVALUATION THAT WAS ACTUALLY COMPLETED IN 1999, AND THE  
27 OBJECTIVE OF THAT INVESTIGATION WAS TO FULLY EVALUATE THE  
28 NATURE AND EXTENT OF CONTAMINATION IN THE SOIL AND THE

1 GROUNDWATER AND TO ASSESS ANY POTENTIAL RISK THAT THOSE  
2 CONTAMINANTS MIGHT POSE TO HUMAN HEALTH AND THE ENVIRONMENT.

3 THE MAJOR ACTIVITIES INCLUDED EXTENSIVE FIELD  
4 INVESTIGATION WITH SAMPLING AND ANALYSIS OF SOIL AND  
5 GROUNDWATER; FATE AND TRANSPORT ANALYSIS, WHICH ESSENTIALLY  
6 LOOKS AT THE CHEMICALS AND DETERMINES WHAT WILL HAPPEN TO  
7 THOSE CHEMICALS OVER TIME AND WHETHER OR NOT THEY WILL BE  
8 TRANSPORTED WITHIN AN ENVIRONMENTAL MEDIUM; AND, LASTLY, A  
9 SCREENING HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT.

10 WITH RESPECT TO THE SOILS, IT WAS CLEAR FROM THAT  
11 INVESTIGATION THAT THE VOLATILE ORGANIC COMPOUNDS THAT WERE  
12 IN SOIL HAD MIGRATED INTO THE GROUNDWATER AND THE POTENTIAL  
13 FOR IT TO CONTINUE TO DO THAT WAS NEGLIGIBLE. IN OTHER  
14 WORDS, OVER THE YEARS EVERYTHING THAT WAS DISCHARGED OR MOST  
15 EVERYTHING THAT WAS DISCHARGED TO THE SOIL HAS ALREADY MADE  
16 ITS WAY INTO THE GROUNDWATER OR HAS EVAPORATED. THE SOIL  
17 ITSELF WAS NOT CONSIDERED TO BE A HUMAN HEALTH OR AN  
18 ECOLOGICAL HAZARD AT THIS SITE, AND THE SOIL WAS RECOMMENDED  
19 FOR NO FURTHER RESPONSE ACTION PLANNED OR NFRAP. THE  
20 REGULATORY AGENCIES CONCURRED WITH THE NAVY'S RECOMMENDATION.

21 WITH RESPECT TO THE GROUNDWATER, THE  
22 INVESTIGATION DETERMINED THAT CHLORINATED SOLVENTS, PRIMARILY  
23 PCE AND SELECTED DAUGHTER PRODUCTS OR BREAKDOWN PRODUCTS,  
24 TRICHLOROETHENE, TCE, AND 1,2-DICHLOROETHENE, DCE, WERE  
25 IDENTIFIED IN THE GROUNDWATER.

26 A GROUNDWATER PLUME, CONTAMINANT PLUME, MEASURED  
27 ABOUT 460 FEET BY 320 FEET BY 66 FEET DEEP. THE MASS OF THE  
28 PLUME WAS ESTIMATED TO BE APPROXIMATELY 6.1 POUNDS OF

1 CONTAMINANTS, ABOUT ONE GALLON WHICH DISSOLVED IN GROUNDWATER  
2 OVER QUITE A CONSIDERABLE AREA.

3 SO THE ONE THING YOU CAN SAY ABOUT THESE  
4 CHLORINATED SOLVENTS IS A LITTLE GOES A LONG WAY WHEN IT GETS  
5 INTO THE GROUNDWATER. IT DOESN'T TAKE A LOT OF THIS STUFF TO  
6 CONTAMINATE A RELATIVELY SUBSTANTIAL PORTION.

7 THERE IS SOME EVIDENCE THAT THE CONTAMINANTS ARE  
8 DEGRADING WITH TIME NATURALLY, AND THERE'S A NEGLIGIBLE  
9 POTENTIAL FOR IT TO CONTINUE TO MIGRATE MUCH DEEPER THAN THE  
10 66 FEET JUST DUE TO THE LITHOLOGY AND GEOLOGY OF THE AREA.

11 THERE WAS NO COMPLETE EXPOSURE PATHWAY BETWEEN  
12 THE GROUNDWATER AND POTENTIAL ECOLOGICAL RECEPTORS. SO THE  
13 PRESENCE OF THE CONTAMINANTS IN GROUNDWATER DON'T POSE A  
14 ECOLOGICAL RISK.

15 NOW, ALTHOUGH THE GROUNDWATER IS NOT CURRENTLY  
16 USED FOR DOMESTIC PURPOSES DUE TO ITS BRACKISH NATURE, THE  
17 VOCs THAT WERE REPORTED IN THE GROUNDWATER COULD ADVERSELY  
18 AFFECT HUMAN HEALTH IF THE WATER WERE EVER USED FOR DOMESTIC  
19 PURPOSES SUCH AS DRINKING, COOKING, OR BATHING. SO ON THE  
20 STRENGTH OF THAT POTENTIAL FUTURE USE, THE GROUNDWATER WAS  
21 RECOMMENDED FOR FURTHER ACTION, INCLUDING GROUNDWATER  
22 MONITORING AND A FEASIBILITY STUDY; AND THE REGULATORY  
23 AGENCIES IN EFFECT CONCURRED WITH THAT RECOMMENDATION.

24 THE AGENCIES ALSO CONCURRED WITH THE NAVY'S  
25 DETERMINATION THAT THE EXTENDED REMOVAL SITE EVALUATION  
26 LARGELY MET THE REQUIREMENTS FOR A REMEDIAL INVESTIGATION.  
27 SO ON THAT BASIS THE NAVY RECOMMENDED THAT THEY GO DIRECTLY  
28 TO A FEASIBILITY STUDY. SO IN EFFECT THE EXTENDED REMOVAL

1 SITE EVALUATION IS THE REMEDIAL INVESTIGATION FOR THIS SITE.

2 THIS DRAWING SHOWS THE NATURE OF CHLORINATED  
3 SOLVENT PLUMES IN GROUNDWATER. TYPICALLY, WHEN YOU GET A  
4 RELEASE TO THE SURFACE SOILS, THE MATERIALS WORK THEIR WAY  
5 DOWN THROUGH THE SOIL UNTIL THEY HIT THE GROUNDWATER. THIS  
6 PORTION OF THE SOIL IS KNOWN AS VODOSE ZONE WHICH IS PRETTY  
7 MUCH FREE OF GROUNDWATER. ONCE THE MATERIALS ENTER THE  
8 GROUNDWATER, IT DISSOLVES IN THE GROUNDWATER AND WILL  
9 TYPICALLY MOVE IN THE DIRECTION OF THE GROUNDWATER FLOW AND  
10 THAT'S PREDOMINANTLY WHAT YOU SEE HERE.

11 THIS SHOWS THE EXTENT OF THE CHLORINATED SOLVENT  
12 PLUME AT SITE 40. THE APPROXIMATE RELEASE POINTS WERE JUST  
13 WEST OF THE BUILDING AND TO A LESSER EXTENT NORTH OF THE  
14 BUILDING.

15 AND YOU CAN SEE THE DIRECTION OF GROUNDWATER FLOW  
16 FOLLOWS THIS ARROW, AND THE PLUME IS ESSENTIALLY MOVING IN  
17 THE DIRECTION OF THE GROUNDWATER FLOW.

18 SO IN RESPONSE TO THE EXTENDED REMOVAL SITE  
19 EVALUATION, A GROUNDWATER MONITORING PROGRAM BEGAN IN JUNE OF  
20 2000. GROUNDWATER SAMPLING AND ANALYSIS WERE CONDUCTED  
21 QUARTERLY DURING THE FIRST YEAR AND THEN SEMI-ANNUALLY AND  
22 ANNUALLY DURING YEARS TWO THROUGH FOUR, AND YEAR FOUR IS THE  
23 YEAR THAT WE ARE CURRENTLY IN ON THE GROUNDWATER MONITORING  
24 PROGRAM.

25 AT THE CONCLUSION OF EACH YEAR'S MONITORING, WE  
26 EVALUATE WHAT THE FREQUENCY SHOULD BE FOR THE NEXT YEAR. SO  
27 WE DON'T KNOW WHAT THE FIFTH YEAR IS GOING TO LOOK LIKE AT  
28 THIS POINT IN TIME. WE WILL FIND OUT AFTER WE GET DONE

1 EVALUATING AT THE FOURTH YEAR DATA. GROUNDWATER LEVEL  
2 MONITORING IS CONDUCTED MONTHLY THE FIRST YEAR AND QUARTERLY  
3 THEREAFTER. THE LEVEL TELLS US WHETHER THERE ARE PERHAPS  
4 SEASONAL CHANGES IN THE DIRECTION OF GROUNDWATER FLOW OR IF  
5 SOMEBODY STARTS PUMPING THE GROUNDWATER THOSE LEVELS  
6 DETERMINED BY MONITORING WOULD GIVE US AN INDICATION THAT  
7 SOMEONE WAS HYDRAULICALLY INFLUENCING THE AQUIFER. AND THEN  
8 WE PREPARE QUARTERLY DATA SUMMARIES AND ANNUAL REPORTS AS  
9 PART OF THAT PROGRAM.

10 WE ALSO EMBARKED ON A FEASIBILITY STUDY WHICH WAS  
11 CONCLUDED IN 2002 TO DEVELOP AND EVALUATE THE REMEDIAL ACTION  
12 ALTERNATIVES TO MITIGATE THE RISKS TO HUMAN HEALTH FROM  
13 EXPOSURE TO CONTAMINANTS IN THE GROUNDWATER. THIS SLIDE  
14 OUTLINES THE SIX MAJOR STEPS IN THE FEASIBILITY STUDY, AND I  
15 WILL GO THROUGH EACH ONE OF THESE IN THE SUBSEQUENT SLIDES.  
16 I WON'T BOTHER TALKING TOO MUCH ABOUT THAT HERE.

17 THE FIRST STEP IN THE PROCESS IS TO IDENTIFY YOUR  
18 REMEDIAL ACTION OBJECTIVES WHICH ARE TO PROTECT THE EXISTING  
19 BENEFICIAL USES OF THE SHALLOW AQUIFER UNDERLYING THE NAVAL  
20 WEAPONS STATION SEAL BEACH TO THE EXTENT PRACTICABLE WHILE  
21 PREVENTING OR MINIMIZING THE VOC MIGRATION BEYOND THE CURRENT  
22 STATION BOUNDARIES AT CONCENTRATIONS EXCEEDING SITE CLEANUP  
23 GOALS. IN EFFECT, WE WANT TO ARREST THE PLUME SO IT DOESN'T  
24 MIGRATE FURTHER THAN IT IS OR TO A POINT THAT SOMEONE MIGHT  
25 BE ABLE TO ACCESS THAT WATER.

26 PROTECT HUMAN HEALTH BY PREVENTING EXTRACTION OF  
27 THE VOC-IMPACTED SHALLOW GROUNDWATER FOR DOMESTIC USE UNTIL  
28 SITE CLEANUP GOALS ARE ACHIEVED, WHICH IS PART OF THE

1 REMEDIAL ACTION OBJECTIVES. NOW, THE REMEDIAL OBJECTIVES ARE  
2 ALSO MEDIUM SPECIFIC. IN THIS CASE IT IS GROUNDWATER  
3 SPECIFIC. THEY ARE SPECIFIC TO THE PARTICULAR CHEMICAL  
4 CONTAMINANTS WE ARE INTERESTED IN. IN THIS CASE, OUR  
5 CHLORINATED SOLVENTS. IT IS SPECIFIC TO THE POTENTIAL  
6 EXPOSURE ROUTE AND WHAT THE POTENTIAL RECEPTORS ARE. IN THIS  
7 CASE, IT WOULD BE INGESTION OF GROUNDWATER BY SOME FUTURE  
8 RESIDENTIAL USER.

9 ON THAT BASIS, WE'VE THEN ESTABLISHED PRELIMINARY  
10 REMEDIATION GOALS WHICH ARE ESSENTIALLY TARGET VALUES FOR THE  
11 CLEANUP AND GIVE US A GOAL TO WORK FOR THAT WOULD ALLOW US TO  
12 ASSESS PERFORMANCE OF THE REMEDIAL ACTION SELECTED, AND THEY  
13 ESSENTIALLY ARE THE END POINTS OF THE REMEDIATION PROCESS.

14 AND IN THIS CASE, THEY WERE SELECTED BASED ON THE  
15 LOWER OF EITHER THE FEDERAL OR STATE MAXIMUM CONTAMINANT  
16 LEVELS FOR DRINKING WATER.

17 I WON'T GO THROUGH THIS IN DETAIL BUT IT IS TO  
18 GIVE YOU SOME UNDERSTANDING THAT WHEN WE DO A FEASIBILITY  
19 STUDY THERE ARE A MULTITUDE OF DIFFERENT TECHNOLOGIES AND  
20 OPTIONS FOR THOSE TECHNOLOGIES THAT ARE CAPABLE OF  
21 REMEDIATING OR POTENTIALLY REMEDIATING THESE CONTAMINANTS.

22 THIS LIST OF REMEDIAL TECHNOLOGIES AND OPTIONS  
23 GOES THROUGH A PRELIMINARY SCREENING PROCESS BASED ON  
24 EFFECTIVENESS, IMPLEMENTABILITY, OR THE ABILITY TO  
25 SUCCESSFULLY IMPLEMENT THE TECHNOLOGY, AND COST. SO WE GO  
26 THROUGH A PRELIMINARY SCREENING. AND THE ONES THAT ARE  
27 HIGHLIGHTED HERE IN GREEN ARE THE ONES THAT ESSENTIALLY  
28 SURVIVED THAT SCREENING PROCESS FOR SITE 40 AND WERE THEN

1 USED TO ASSEMBLE A LIST OF, OR MANAGEABLE LIST OF, REMEDIAL  
2 ALTERNATIVES THAT WOULD THEN BE SUBJECTED TO A MORE RIGOROUS  
3 ANALYSIS.

4 AND HERE ARE THE SIX ALTERNATIVES THAT WERE  
5 COMPILED BASED ON THAT INITIAL SCREENING.

6 THE FIRST ALTERNATIVE IS NO ACTION, WHICH IS  
7 PRECISELY WHAT IT STATES. IT IS ESSENTIALLY TAKING NO  
8 REMEDIAL ACTION WHATSOEVER. AND THAT'S EVALUATED SIMPLY AS A  
9 COMPARATIVE TOOL, SOMETHING TO BENCHMARK THE OTHER  
10 ALTERNATIVES AGAINST.

11 ALTERNATIVE 2 IS MONITORED NATURAL ATTENUATION,  
12 AND IT IS ALLOWING THE NATURAL CONDITIONS OF THE GROUNDWATER  
13 TO REMEDIATE THE SITE WITH CLOSE SCRUTINY AND MONITORING.

14 ALTERNATIVE 3 IS HYDRAULIC CONTAINMENT, TO  
15 ESSENTIALLY ARREST THE PLUME SO IT DOESN'T MOVE ANYMORE.

16 PUMP AND TREAT IS TO ACTUALLY REMOVE THE  
17 CONTAMINANTS AND TREAT THE CONTAMINANTS WITH SOME  
18 ABOVE-GROUND TREATMENT.

19 ALTERNATIVE 5A IS IN SITU TREATMENT, LACTATE  
20 ENHANCED BIOREMEDIATION, WHICH WE WILL TALK ABOUT IN MORE  
21 DEPTH HERE BECAUSE IT IS THE NAVY'S PREFERRED ALTERNATIVE.

22 AND ALTERNATIVE 5B, WHICH IS IN SITU TREATMENT  
23 CHEMICAL OXIDATION.

24 IN THE COMPARATIVE RANKING OF ALL OF THESE  
25 ALTERNATIVES, ALTERNATIVE 5A SCORED THE HIGHEST WHEN YOU  
26 LOOKED AT ALL OF THE CRITERIA, AND WE WILL TALK SPECIFICALLY  
27 ABOUT THE CRITERIA HERE IN A MINUTE.

28 SO BASED ON THAT RANKING, THE NAVY IDENTIFIED AS

1 THEIR PREFERRED ALTERNATIVE, WHICH IS ALSO DISCUSSED IN  
2 DETAIL IN THE PROPOSED PLAN, ALTERNATIVE 5A, IN SITU  
3 TREATMENT; AND IT IS ESSENTIALLY INJECTING SODIUM LACTATE,  
4 WHICH IS AN ENVIRONMENTALLY SAFE SUBSTANCE USED IN THE FOOD  
5 INDUSTRY, INJECTING THAT SUBSTANCE INTO THE GROUNDWATER IN  
6 ORDER TO STIMULATE THE GROWTH OF NATURALLY OCCURRING BACTERIA  
7 THAT THEN WILL UTILIZE THE CONTAMINANTS AND BREAK THOSE  
8 CONTAMINANTS DOWN AND THAT WOULD BE INTO NON-HAZARDOUS  
9 BY-PRODUCTS AND THAT WOULD THEN BE FOLLOWED WITH MONITORED  
10 NATURAL ATTENUATION UNTIL THE GOALS ARE MET.

11 THIS KIND OF SHOWS YOU THE PROCESS WITH A SERIES  
12 OF APPLICATION OR INJECTION WELLS IN WHICH THE SODIUM LACTATE  
13 IS INJECTED INTO THE GROUNDWATER THAT STIMULATES BIOLOGICAL  
14 ACTIVITY IN THE GROUNDWATER AND RESULTS IN CONVERTING THE  
15 CONTAMINANTS TO HARMLESS BY-PRODUCTS.

16 THIS IS THE TYPICAL FATE OF OUR CONTAMINANT. OUR  
17 PARENT CONTAMINANT IS PCE. AND AS IT DEGRADES BIOLOGICALLY  
18 OR THROUGH BIOLOGICAL ACTION, IT WILL DEGRADE TO  
19 TRICHLOROETHENE AND THEN TO DICHLOROETHENE WHICH DEGRADES TO  
20 VINYL CHLORIDE AND SOME LESSER COMPOUNDS HERE CALLED ETHENES  
21 AND ETHANES AND THEN TO CARBON DIOXIDE AND WATER. SO THIS  
22 PROCESS OCCURS NATURALLY, IF THE CONDITIONS ARE APPROPRIATE  
23 IN THE AQUIFER, AND WE WANT TO HELP IT ALONG A LITTLE AND  
24 THAT'S THE FOCUS OF OUR BIOREMEDIATION OR IN SITU  
25 BIOREMEDIATION IS TO FACILITATE THAT REACTION.

26 FOLLOWING THE FEASIBILITY STUDY, IT WAS  
27 DETERMINED THAT PILOT TESTING OF THIS TECHNOLOGY WOULD BE  
28 APPROPRIATE AT SITE 40 TO ESSENTIALLY DETERMINE THE ECONOMIC

1 FEASIBILITY AND THE TECHNICAL FEASIBILITY AND TO GIVE US SOME  
2 IDEA OF ANY PROBLEMS THAT MIGHT RESULT IF THIS PROCESS WERE  
3 SCALED UP TO A FULL-SCALE OPERATION. SO A PILOT TEST  
4 ESSENTIALLY LOOKS AT A VERY SMALL AREA WITHIN THE CONTAMINANT  
5 PLUME AND APPLIES THE TECHNOLOGY TO THAT SMALL AREA TO SEE IF  
6 WE CAN EFFECT A CHANGE IN THAT SMALL AREA. AND IF WE CAN, WE  
7 CAN ASK OURSELVES WILL IT WORK IN THE LARGER AQUIFER?

8 PHASE ONE OF THAT TEST BEGAN IN AUGUST 2001 AND  
9 WENT FOR ABOUT AN EIGHT-MONTH PERIOD THROUGH MARCH OF 2002.  
10 WE SET UP A SMALL TEST AREA WEST OF THE BUILDING, INJECTED  
11 SOME SODIUM LACTATE AND SOME POTABLE WATER, MONITORED THE  
12 RESULTS OVER AN EIGHT-MONTH PERIOD; AND WE FOUND THAT WE WERE  
13 ABLE TO SUCCESSFULLY STIMULATE THE BIOLOGICAL ACTIVITY AND  
14 ACTUALLY CAUSE THE INDIGENOUS BACTERIA TO MULTIPLY AND GROW  
15 AND BEGIN TO CONSUME THE PCE. AND WE ACTUALLY CONVERTED THE  
16 PCE WITHIN THE TEST CELL ENTIRELY TO DICHLOROETHENE OR DCE  
17 WHICH IS A LESS TOXIC SUBSTANCE.

18 AS IT SITS TODAY, THAT TEST AREA IS ACTUALLY IN A  
19 BETTER STATE. EVEN THOUGH WE DIDN'T GET ALL THE WAY DOWN TO  
20 OUR CARBON DIOXIDE AND WATER, IT IS IN A BETTER STATE TODAY  
21 THAN IT WAS BEFORE WE STARTED.

22 WE FOUND THERE WERE SOME BIOLOGICAL LIMITATIONS  
23 THAT PREVENTED US FROM DEGRADING THAT COMPOUND BEYOND DCE.  
24 IN OTHER WORDS, IT WAS KIND OF STUCK AT DCE AND WOULDN'T GO  
25 ANY FURTHER.

26 WHAT I MEAN BY BIOLOGICAL LIMITATIONS IS THAT THE  
27 RIGHT TYPES OF MICRO-ORGANISMS WERE NOT PRESENT IN THE  
28 GROUNDWATER AT SITE 40.

1                   SO WE LOOKED AT A PHASE 2 PILOT TEST WHICH BEGAN  
2 IN MARCH OF 2003, AND IS ONGOING AS WE SPEAK, TO EVALUATE  
3 TECHNOLOGY REFINEMENTS TO SEE IF WE CAN COMPLETE THE REACTION  
4 AND DEGRADE THAT DCE DOWN TO INNOCUOUS BY-PRODUCTS. A COUPLE  
5 OF ALTERNATIVES THAT ARE BEING REVIEWED RIGHT NOW ARE  
6 BIO-AUGMENTATION AND COMETABOLIC OXIDATION. AND THE  
7 BIO-AUGMENTATION IS THE TEST THAT IS CURRENTLY WAY. AGAIN,  
8 WE INJECT SODIUM LACTATE AND POTABLE WATER INTO THE AQUIFER.  
9 WE OBTAINED A COMMERCIALY AVAILABLE AND PREVIOUSLY TESTED  
10 BACTERIAL CULTURE WHICH IS KNOWN AS KB-1TM WHICH IS CAPABLE  
11 OF CONVERTING CONTAMINANTS TO HARMLESS BY-PRODUCTS. IT'S  
12 BEEN TESTED IN A NUMBER OF SITES THROUGHOUT THE UNITED  
13 STATES.

14                   WE INJECTED 40 LITERS OF THE BACTERIAL CULTURE AT  
15 SITE 40 AND MONITORING IS IN PROGRESS. WE HAVE BEEN  
16 MONITORING THAT PROGRESS FOR ABOUT THREE MONTHS NOW AND WE  
17 ARE GETTING PROMISING RESULTS. THE CONTAMINANTS ARE  
18 DEGRADING NOW PAST THE DCE, AND WE ARE SEEING VINYL CHLORIDE  
19 AND SOME OF THE ETHENES, AND WE ARE OPTIMISTIC THAT WILL HELP  
20 IMPROVE THE OVERALL PROCESS.

21                   NOW, DURING THE FEASIBILITY STUDY, WE EVALUATED  
22 THE ALTERNATIVES AGAINST NINE U.S. EPA CRITERIA. THE FIRST  
23 TWO ARE REFERRED TO AS THRESHOLD CRITERIA WHICH THE EASIEST  
24 WAY TO EXPLAIN THE THRESHOLD CRITERIA IT IS A GO, NO GO. IF  
25 A PARTICULAR TECHNOLOGY CANNOT SATISFY EITHER ONE OF THESE  
26 THEN IT CANNOT BE SELECTED AS A REMEDIAL ALTERNATIVE. SO IT  
27 IS A GO, NO GO.

28                   THE FIRST ONE IS THE OVERALL PROTECTION OF HUMAN

1 HEALTH AND THE ENVIRONMENT. THE SECOND, COMPLIANCE WITH THE  
2 APPLICABLE OR RELEVANT APPROPRIATE REQUIREMENTS OR REGULATORY  
3 REQUIREMENTS.

4 THE NEXT SERIES OF FIVE CRITERIA ARE REFERRED TO  
5 AS PRIMARY BALANCING CRITERIA. THOSE TYPICALLY CAN VARY FROM  
6 HIGH TO LOW. THEY INCLUDE LONG-TERM EFFECTIVENESS AND  
7 PERMANENCE. THE LONG TERM IS THAT POINT AFTER WE'VE ACHIEVED  
8 OUR REMEDIATION GOALS. SO IT'S ACTUALLY BEYOND THE POINT OF  
9 REMEDIATION. HOW EFFECTIVE IS IT AND IS IT PERMANENT? ARE  
10 WE GOING TO GET SOMETHING THAT WE HAVE TO LIVE WITH AS A  
11 LEGACY BEYOND ACHIEVING OUR REMEDIATION GOALS?

12 REDUCTION OF TOXICITY MOBILITY THROUGH VOLUME AND  
13 TREATMENT. THERE'S A PREFERENCE BY U.S. EPA THAT WE SELECT  
14 ALTERNATIVES THAT WILL ACTUALLY CAUSE A REDUCTION IN THE  
15 TOXICITY, MOBILITY, OR VOLUME OR MASS OF A CONTAMINANT.

16 SHORT TERM EFFECTIVENESS IS THAT PERIOD OF TIME  
17 FROM THE START OF REMEDIATION UNTIL YOU ACHIEVE YOUR  
18 REMEDIATION GOALS. IT'S CALLED THE SHORT TERM BUT ON SOME  
19 ALTERNATIVES IT CAN TAKE 35, 40 YEARS TO DO IT WHICH ISN'T A  
20 VERY SHORT PERIOD OF TIME BUT IN TERMS OF EVALUATION THAT'S  
21 CONSIDERED THE SHORT TERM.

22 IMPLEMENTABILITY IS JUST WHAT IT SAYS. IS IT  
23 EASY TO IMPLEMENT? IS IT HARD TO DO? ARE THE MATERIALS  
24 AVAILABLE TO DO IT? ARE WE OUT ON THE CUTTING EDGE AND DO WE  
25 HAVE TO DEVELOP SOMETHING NEW?

26 COST. WE LOOK AT CAPITAL COSTS, CAPITAL  
27 EXPENDITURES AS WELL AS OPERATION AND MAINTENANCE COSTS.

28 THE LAST TWO ARE MODIFYING CRITERIA. ARE THE

1 STATE REGULATORY AGENCIES ACCEPTING THE PREFERRED ALTERNATIVE  
2 AND IN THIS CASE FOR SITE 40? WE HAVE CONCURRENCE FROM THE  
3 REGULATORS FROM DTSC AND REGIONAL WATER QUALITY CONTROL  
4 BOARD.

5 LASTLY, COMMUNITY ACCEPTANCE, WHICH IS PART OF  
6 THE PROCESS THAT WE ARE GOING THROUGH TONIGHT TO SOLICIT  
7 INPUT FROM THE COMMUNITY.

8 HERE IS A SUMMARY OF THE COSTS AND THE TIME TO  
9 REACH THE CLEANUP GOALS FOR THE SIX ALTERNATIVES THAT WERE  
10 INCLUDED AS PART OF THE FEASIBILITY STUDY. AS YOU MIGHT  
11 EXPECT, THE NO ACTION ALTERNATIVE IS A ZERO COST ITEM.  
12 RELYING ON JUST MOTHER NATURE TO CLEAN UP THOSE CONTAMINANTS  
13 IT LIKELY WILL TAKE FROM OUR MODELING APPROXIMATELY 36 YEARS  
14 TO ACHIEVE THAT.

15 AND MONITORED NATURAL ATTENUATION HAS AN  
16 ATTENDANT COST OF ABOUT A MILLION DOLLARS, AND THESE ARE IN  
17 YEAR 2000 DOLLARS. AGAIN, APPROXIMATELY 36 YEARS TO CLEAN  
18 UP.

19 HYDRAULIC CONTAINMENT. ABOUT THE SAME COSTS, A  
20 LITTLE IMPROVEMENT ON THE TIME TO CLEAN UP, JUST SIMPLY  
21 BECAUSE WHEN YOU CONTAIN THE PLUME, YOU CAN'T HELP BUT REMOVE  
22 SOME OF THE CONTAMINANTS AS WELL. SO IT TENDS TO SPEED IT UP  
23 A LITTLE.

24 PUMP AND TREAT. COST ABOUT THE SAME. A LITTLE  
25 IMPROVEMENT, AGAIN, FOR THE TIME FOR REMEDIATION.

26 OUR PREFERRED ALTERNATIVE, IN SITU  
27 BIOREMEDIATION. COSTS, AGAIN, ARE COMPARABLE TO THE FIRST  
28 THREE ALTERNATIVES, BUT WE HAVE A MUCH IMPROVED ESTIMATE OF

1 TIME TO CLEAN UP ON THE ORDER OF FIVE YEARS.

2 LASTLY, ALTERNATIVE 5B, WHICH IS A VERY  
3 AGGRESSIVE CHEMICAL OXIDATION PROCESS. COSTS ARE ALMOST  
4 TWICE AS HIGH AS THE OTHER ALTERNATIVES, AND TIME TO REACH  
5 CLEANUP IS ABOUT EQUIVALENT TO THE BIOREMEDIATION PROCESS.

6 AND, AGAIN, THIS SLIDE IS TAKEN FROM THE PROPOSED  
7 PLAN AND IS BASED ON WORK THAT WAS DONE IN THE FEASIBILITY  
8 STUDY. IT EVALUATES ALL NINE OF THE CRITERIA. AGAIN, THE  
9 FIRST TWO ARE EVALUATED QUALITATIVELY AS GO, NO GO. IN THE  
10 CASE OF THE FIRST ITEM, IS IT PROTECTIVE OF HUMAN HEALTH OR  
11 IS IT NOT? AND IN THIS CASE ALL OF THEM WITH THE EXCEPTION  
12 OF THE NO ACTION PASSED THE TEST.

13 AND COMPLIANCE WITH THE ARAR OR APPLICABLE OR  
14 RELEVANT AND APPROPRIATE REQUIREMENTS. AGAIN, ALL OF THE  
15 ALTERNATIVES WITH THE EXCEPTION OF THE ALTERNATIVE 1 WILL  
16 SATISFY THAT REQUIREMENT.

17 THAT LEAVES US THEN WITH THE BALANCING CRITERIA,  
18 THE LONG-TERM EFFECTIVENESS. AGAIN, IN THE LONG TERM, WHICH  
19 IS AFTER THE REMEDIATION GOALS ARE ACHIEVED, ALL OF THESE  
20 THINGS ARE PRETTY WELL RELYING ON MONITORED NATURAL  
21 ATTENUATION OR MOTHER NATURE TO COMPLETE THE PROCESS. SO ALL  
22 OF THEM SCORE MEDIUM ON THAT PARTICULAR CRITERIA.

23 REDUCTION OF TOXICITY, MOBILITY, AND VOLUME.  
24 AGAIN, WE DON'T GET ANY REDUCTION WITH NATURAL ATTENUATION  
25 AND NO ACTION. THE HYDRAULIC CONTAINMENT AND PUMP AND TREAT  
26 AS WELL AS THE ENHANCED BIO SCORE MEDIUM IN THAT REGARD. THE  
27 ONE THAT GETS THE HIGHEST RANKING HERE IS THE CHEMICAL  
28 OXIDATION, WHICH IS JUST A TREMENDOUSLY AGGRESSIVE PROCESS OF

1 DESTRUCTION OF THE CONTAMINANTS.

2 AGAIN, SHORT-TERM EFFECTIVENESS. THE ONE THAT  
3 SCORES THE BEST OVERALL IS ALTERNATIVE 5A.

4 IMPLEMENTABILITY, OBVIOUSLY, THE NO ACTION AND  
5 THE NATURAL ATTENUATION ARE EASILY IMPLEMENTABLE.

6 THE ALTERNATIVES 3 AND 4 ARE A LITTLE MORE  
7 DIFFICULT TO PUMP THE GROUNDWATER.

8 AND THE LAST TWO ALTERNATIVES ARE PROBABLY MORE  
9 DIFFICULT TO IMPLEMENT, JUST SIMPLY BECAUSE THEY'RE EMERGING  
10 TECHNOLOGIES.

11 AND THE COST OVERALL, IN ORDER TO GET A HIGH  
12 SCORE OR SHOW A REAL FAVORABLE COST HERE, THE COST MUST BE  
13 LOW. SO IT IS NO SURPRISE THAT NO ACTION HAS THE BEST  
14 RESULT. ALL THE OTHER ONES AS YOU CAN SEE FROM THAT EARLIER  
15 COST CHARTS, ALTERNATIVES 2, 3, 4, AND 5A, WERE ALL  
16 COMPARABLE AND THEN THE HIGHEST COST ITEM HERE IS 5B.

17 IN THE AGGREGATE, IF YOU WOULD NUMERICALLY SCORE  
18 THESE, ALTERNATIVE 5A WOULD PROVE TO BE THE MOST VIABLE  
19 ALTERNATIVE OR WOULD CERTAINLY SCORE THE HIGHEST AND,  
20 ACCORDINGLY, IT WAS SELECTED BY THE NAVY AS THEIR PREFERRED  
21 ALTERNATIVE.

22 AND THE RATIONALE FOR THE NAVY'S SELECTION IS  
23 THAT IT IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT;  
24 PROVIDES SHORT-TERM AND LONG-TERM PROTECTION; PERMANENTLY  
25 REDUCES THE TOXICITY, MOBILITY, AND VOLUME OF THE  
26 CONTAMINANTS IN GROUNDWATER; INCORPORATES AN INNOVATIVE  
27 CLEANUP TECHNOLOGY; MEETS THE ARARS; COST EFFECTIVE AT  
28 MEETING CLEANUP OBJECTIVES; PILOT TESTING HAS DEMONSTRATED

1 THE TECHNOLOGY TO BE EFFECTIVE AND EFFICIENT TO IMPLEMENT;  
2 THE TECHNOLOGY CAN ALSO BE READILY REFINED TO IMPROVE AND  
3 ACCELERATE THE CLEANUP TIME. AND THE CAL/EPA'S, THE  
4 DEPARTMENT OF TOXIC SUBSTANCES CONTROL, AND REGIONAL WATER  
5 QUALITY CONTROL BOARD SUPPORT THE NAVY'S PREFERRED  
6 ALTERNATIVE.

7 AND THE NEXT STEP IN THE PROCESS IS PUBLIC  
8 COMMENTS THROUGH SEPTEMBER 27TH OF THIS YEAR. TONIGHT, FEEL  
9 FREE TO COMMENT VERBALLY OR GIVE IT TO THE COURT REPORTER OR  
10 FILL OUT A COMMENT SHEET WHICH ARE UP HERE AND -- OR YOU CAN  
11 MAIL IT OR E-MAIL IT OR FAX IT TO THE NUMBERS SHOWN HERE.

12 AND THE SAME GOES AS KATHERINE TALKED ABOUT  
13 EARLIER FOR THE DTSC DRAFT NEGATIVE DECLARATION.

14 THE NEXT STEP IN THE PROCESS IS TO COMPLETE A  
15 RECORD OF DECISION FINAL REMEDIAL ACTION PLAN WHICH IS  
16 ESSENTIALLY THE NAVY'S DECISION MAKING DOCUMENT THAT SAYS WE  
17 HAVE THIS PREFERRED ALTERNATIVE AND NOW WE ARE SELECTING THAT  
18 ALTERNATIVE FOR IMPLEMENTATION. IT WILL CONTAIN A  
19 RESPONSIVENESS SUMMARY WHICH IS A RESPONSE TO THE INPUT THAT  
20 THE NAVY RECEIVES FROM THE PUBLIC AND THE REGULATORY  
21 AGENCIES.

22 THAT WILL BE FOLLOWED BY A PHASE OF REMEDIAL  
23 DESIGN AND THEN REMEDIAL ACTION IN WHICH THE REMEDY IS  
24 ACTUALLY IMPLEMENTED.

25 AND THAT'S THE CRASH COURSE, FOLKS.

26 ANY QUESTIONS? ANYONE? HAPPY TO --

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28 (NO RESPONSE.)

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MS. TAMASHIRO: IF THERE ARE NO OTHER QUESTIONS, YOU ARE WELCOME TO HANG AROUND AND LOOK AT THE BOARD AGAIN IF YOU HAVEN'T DONE SO. AND IF YOU HAVE, WE WILL CALL THE MEETING ADJOURNED. AND YOU ARE WELCOME TO WRITE ADDITIONAL COMMENTS IN THE FUTURE. JUST REMEMBER THE CUT-OFF DATE IS THE 27TH OF SEPTEMBER, THIS YEAR. SO THANKS VERY MUCH FOR ATTENDING. THANKS, BOB, FOR THE PRESENTATION.

(WHEREUPON, THE MEETING WAS  
ADJOURNED AT 8:05 P.M.)

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REPORTER'S CERTIFICATE

THE UNDERSIGNED SHORTHAND REPORTER  
DOES HEREBY DECLARE:

THAT THE FOREGOING WAS TAKEN BEFORE ME  
AT THE TIME AND PLACE THEREIN SET FORTH AND WAS  
RECORDED STENOGRAPHICALLY BY ME AND WAS THEREAFTER  
TRANSCRIBED, SAID TRANSCRIPT BEING A TRUE COPY OF  
MY SHORTHAND NOTES THEREOF.

IN WITNESS WHEREOF, I HAVE SUBSCRIBED  
MY NAME THIS DATE:           OCT 29 2003          .



## **ATTACHMENT C**

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### **REMEDIAL ACTION PLAN REQUIREMENTS**

## Attachment C

# REMEDIAL ACTION PLAN REQUIREMENTS

The California Environmental Protection Agency Department of Toxic Substances Control (DTSC) Remedial Action Plan (RAP) requirements are provided in Table 1. These requirements are summarized from *California Health and Safety Code*, Section 25356.1. The DTSC has concurred that the referenced sections of the Installation Restoration (IR) Sites 40 and 70 Extended Removal Site Evaluation (ERSE) Report (BNI 1999a) and IR Sites 40 and 70 Feasibility Study Report (BNI 2002) satisfy the RAP requirements. (Note that the United States Department of the Navy determined that the ERSE [BNI 1999a] for IR Site 40 substantially complied with the requirements for a remedial investigation under the Comprehensive Environmental Response, Compensation, and Liability Act.) Any revised or additional RAP requirements will be provided and administered by the DTSC.

**Table 1**  
**Remedial Action Plan Requirements**

<b>RAP Requirement</b>	<b>Reference Location</b>
Health and safety risks posed by the conditions at the site. When considering these risks, DTSC or the regional board shall consider scientific data and reports that may have a relationship to the site.	Final ERSE Report for IR Sites 40 and 70, Section 4, Appendix P (BNI 1999a)
The effect of contamination or pollution levels on present, future, and probable beneficial uses of contaminated, polluted, or threatened resources.	Final ERSE Report for IR Sites 40 and 70, Section 6 (BNI 1999a)
The effect of alternative remedial action measures on the reasonable availability of groundwater resources for present, future, and probable beneficial uses.	Final FS Report for IR Sites 40 and 70, Sections 4, 5, and 6 (BNI 2002)
Site-specific characteristics, including the potential for off-site migration of hazardous substances, the surface or subsurface soil, and the hydrogeologic conditions, as well as preexisting background contamination levels.	Final ERSE Report for IR Sites 40 and 70, Sections 4, 5, and 6; Appendices K, L, and O (BNI 1999a)
Cost-effectiveness of alternative remedial action measures.	Final FS Report for IR Sites 40 and 70, Sections 5 and 6 (BNI 2002)
The potential environmental impacts of alternative remedial action measures, including but not limited to land disposal of the untreated hazardous substance as opposed to treatment of the hazardous substance to remove or reduce its volume, toxicity, or mobility prior to disposal.	Final FS Report for IR Sites 40 and 70, Sections 4, 5, and 6 (BNI 2002)

**Acronyms/Abbreviations:**

DTSC – (California Environmental Protection Agency) Department of Toxic Substances Control  
ERSE – extended removal site evaluation  
FS – feasibility study  
RAP – remedial action plan