Contract No. F41624-00-D8023
Delivery Order No. 0033, modification No. 3

INSTALLATION RESTORATION PROGRAM
OPERABLE UNIT 4 RECORD OF DECISION

FORMER MARCH AIR FORCE BASE AND
MARCH AIR RESERVE BASE, CALIFORNIA

FINAL

SEPTEMBER 2005

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ACRONYMS

AFB	Air Force Base
AFRC	Air Force Reserve Command
AFRPA	Air Force Real Property Agency
ANG	Air National Guard
AOC	Area of Concern
ARAR	applicable or relevant and appropriate requirement
ARB	Air Reserve Base
bgs	below ground surface
BLM	Bureau of Land Management
CCR	Code of California Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DOD	Department of Defense
DTSC	California Department of Toxic Substances Control
EBS	environmental baseline survey
EPA	Environmental Protection Agency
ESI	Expanded Source Investigation
FFA	Federal Facilities Agreement
FS	Feasibility Study
HI	hazard index
I-215	Interstate 215
IC	Institutional Control
IRP	Installation Restoration Program
MCL	Maximum Contaminant Level
$\mu g/m^3$	micrograms per cubic meter
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MJPA	March Joint Powers Authority
NA	No Action
NCO	Non-Commissioned Officer
NFA	No Further Action
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
OU	Operable Unit
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl
PP	Proposed Plan
PRE	preliminary risk evaluation
PRG	preliminary remediation goals (U.S. EPA Region IX)
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RI	remedial investigation
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act of 1986
SLUC	State Land Use Covenant

SVOC	semivolatile organic compound
TPH	total petroleum hydrocarbons
UCL	upper confidence limit
UST	underground storage tank
VOC	volatile organic compound

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1.0 DECLARATION

1.1 SITE NAME AND LOCATION

Former March Air Force Base(AFB)/Air Reserve Base (ARB)
Riverside County, California.

Comprehensive Environmental Response, Compensation, and Liability Information System identification number: CA4570024527.

1.2 STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected remedial alternatives for Operable Unit (OU) 4 at Former March AFB/March ARB, Riverside County, California. The selected remedial alternatives were chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 Code of Federal Regulations (CFR) § 300.430(f)(3). The remedial decisions were based on information contained in the focused Remedial Investigation (RI) report for OU4 dated July 2004 and the Administrative Record for March AFB. The Air Force and the U.S. Environmental Protection Agency (EPA) Region IX are selecting these remedial alternatives with the concurrence of the state of California.

1.3 ASSESSMENT OF SITES

Seven sites are addressed in this OU4 ROD. Site locations and proposed disposition of property are briefly described below:

- Site 21, Cordures Effluent Pond, was never Air Force property. The site is located 1.6 miles south of March ARB and is now a warehouse for Ross Department Stores.

- Site 41, Hawes Radio Relay Site, approximately 60 miles north of the base, is in the process of being returned to the Bureau of Land Management (BLM).

- Site 44, Water Tower 407, will be retained by the Air Force Reserve Command (AFRC) as part of March ARB.

- Water Tower 3410 is west of I-215 and is in the process of being transferred to the March Joint Powers Authority (MJPA).

- Water Tank 6601 is west of I-215 and is in the process of being transferred to the MJPA.

- Former Base Hospital/Dental Clinic is east of I-215 in the northeast corner of Former March AFB and is in the process of being transferred to the MJPA.

- Site L, Former Non-Commissioned Officer (NCO) Swimming Pool, is east of I-215 in the northeast corner of Former March AFB and will be transferred to MJPA.

1.4 DESCRIPTION OF SELECTED REMEDIAL ALTERNATIVES

The OU4 ROD-selected remedial alternatives are designed to protect human health and the environment. Contaminants in the soil and groundwater are the results of historical operations at March AFB. Selected remedial alternatives specified in this ROD are described below:

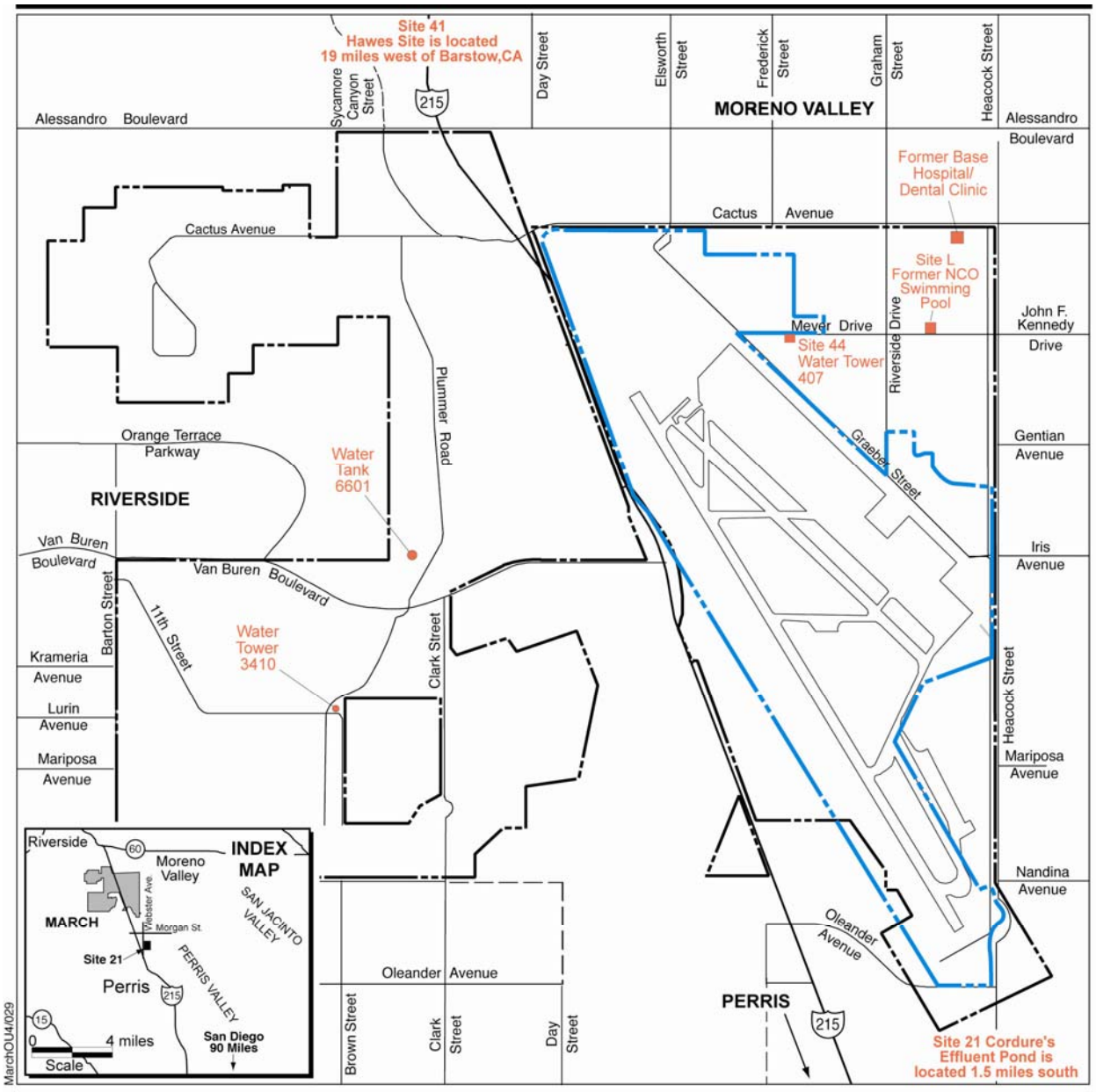
- **No Action (NA).** Site 21, Water Tower 3410, and the former base Hospital and Dental Clinic require NA. No evidence of contamination was found or concentrations of contaminants were determined to be below unrestricted levels and no action is necessary to be protective of human health and the environment.

- **Removal Action/No Further Action (NFA).** Removal actions were conducted at three sites (Sites 41, 44, and Water Tank 6601). Cleanup goals to unrestricted levels were attained, and NFA is necessary to ensure protection of human health and the environment.

- **Institutional Control (IC) Site.** The Air Force will require IC for Site L. Polychlorinated biphenyl (PCB) contamination is present in Site L soils at levels that do not allow for unrestricted use. In order to protect human health and the environment, the Air Force will include land use restrictions that run with the land to prohibit activities that may result in unacceptable exposure to residual contamination.

  A removal action was conducted at Site L to remove the former pool and PCB contamination from the immediate surrounding and underlying soil. Subsequent investigation of the surface soil in the area immediately adjacent to the removed pool showed that PCBs were present in surface soil at concentrations ranging from non-detect (0.03 milligrams per kilogram [mg/kg]) to 5.8 mg/kg. It was concluded that PCB-containing oil was used for dust suppression and that PCB-contaminated soil was present at low levels throughout the site. As part of the interim removal action, placement of 6 inches of clean fill over the contaminated soil and installation of a minimum of 4 inches of asphalt concrete was used to cover the 1.5-acre site.

The OU4 ROD site locations are shown on Figure 1-1. Table 1-1 lists the OU4 ROD sites, previous removal actions, and shows if ICs are required.



EXPLANATION

Former March AFB Boundary

March ARB Boundary

Site in Operable Unit 4

Operable Unit 4 Sites

0 900 1800 3600 Feet

Figure 1-1

Table 1-1. OU4 ROD Site Status Summary

Site Name	Site Description	Previous Removal Action	Remedial Action Required	Institutional Controls Required
21	Cordures Effluent Pond (21 miles south of base)	No	No	No
41	Hawes Site (60 miles north of base)	Yes	No	No
44	Water Tower 407 (east of I-215)	Yes	No	No
3410	Water Tower (west of I-215)	No	No	No
6601	Water Tank (west of I-215)	Yes	No	No
Hospital/ Dental Clinic	Former Base Hospital and Dental Clinic (east of I-215)	No	No	No
Site L	Former NCO Swimming Pool (east of I-215)	Yes	No	Yes

NCO = non-commissioned officer

1.5 STATUTORY DETERMINATIONS

Site 21, Water Tower 3410, and the former base Hospital/Dental Clinic are NA sites and require no statutory determinations. Removal actions at Sites 41 and 44 and Water Tank 6601 eliminated the need for further action. The selected remedial alternatives for Sites 41, 44, L, and Water Tank 6601 satisfy the mandates of CERCLA Section 121 and, to the extent practicable, the NCP. The selected remedial alternative for soil at Site L is an IC, which is protective of human health and the environment. The IC remedial alternative is cost effective and complies with federal and state requirements that are legally applicable, or relevant and appropriate to the remedial action. The IC remedial alternative is a permanent solution, but does not satisfy the statutory preference for treatment as a principal element of the selected alternative as the cost of treatment is prohibitive. Because the selected remedial alternative for Site L will result in hazardous substances, pollutants, or contaminants remaining on site, above levels that allow for unrestricted use and exposure, a 5-year statutory review will be conducted after initiation of remedial action to ensure that the remedial alternative remains protective of human health and the environment.

1.6 AUTHORIZING SIGNATURES

The U.S. EPA, the State of California Department of Toxic Substances Control (DTSC), and California Regional Water Quality Control Board (RWQCB), Santa Ana Region, had an opportunity to review and comment on the OU4 ROD and their concerns were addressed. This OU4 ROD may be executed and delivered in any number of counterparts, each of which when executed and delivered shall be deemed to be an original, but all such counterparts shall together constitute one and the same document.

_____ _____

KATHRYN M. HALVORSON
Director, Air Force Real Property Agency
U.S. Air Force

Date

_____ _____

KATHLEEN H. JOHNSON
Chief, Federal Facilities and Site Cleanup Branch
Region IX, U.S. Environmental Protection Agency

Date

_____ _____

JOHN SCANDURA
Branch Chief, Southern California Operations
Office of Military Facilities
State of California
Department of Toxic Substances Control

Date

_____ _____

GERARD J. THIBEAULT
Executive Officer
California Regional Water Quality Control Board
Santa Ana Region

Date

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2.0 DECISION SUMMARY

This section presents an overview of site characteristics for the Former March AFB and March ARB, the OU4 ROD sites, the risk analysis performed during the OU4 RI/Feasibility Study (FS), the alternatives evaluated for remedial action, identification of the selected remedial alternative, and the associated statutory determinations.

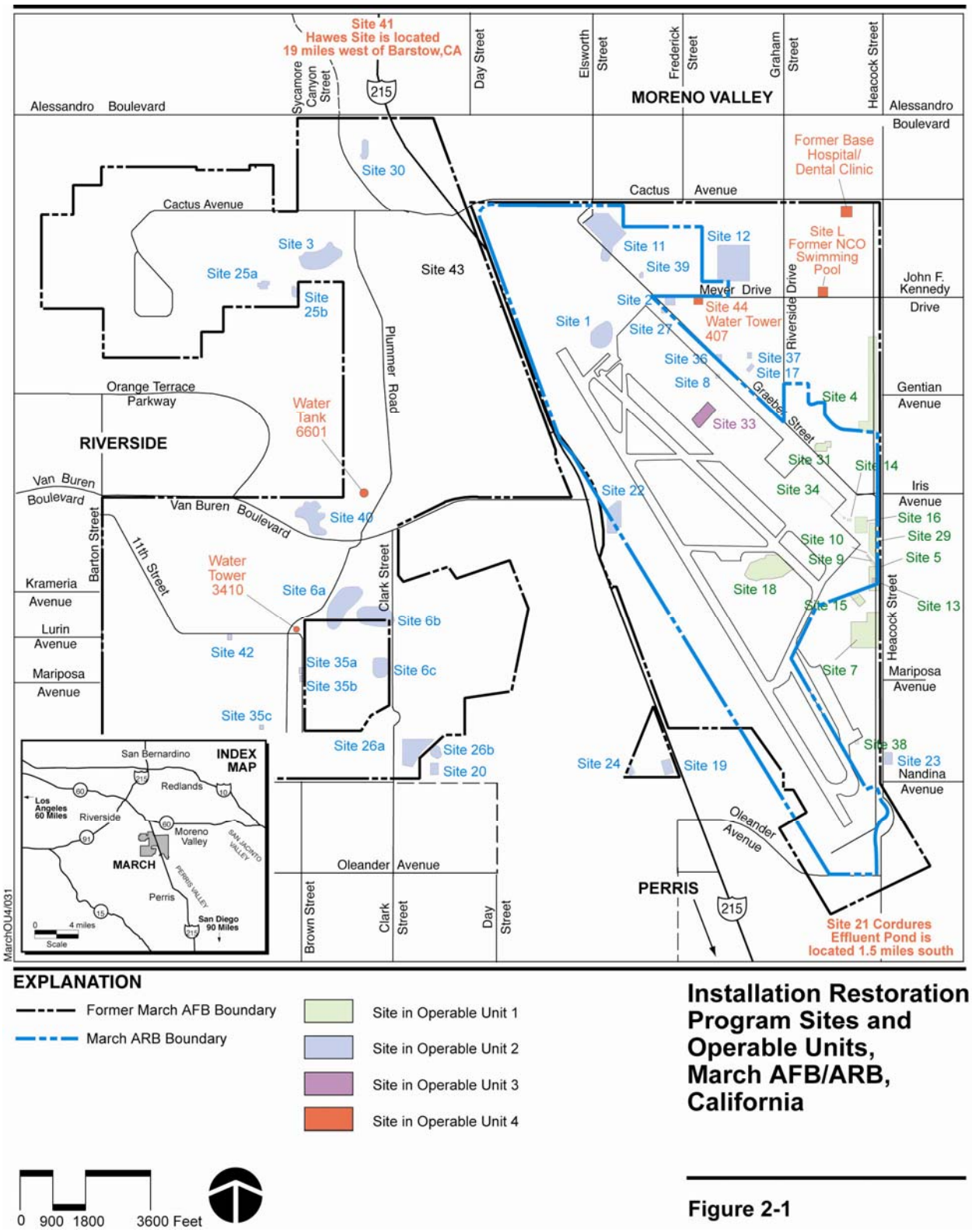
2.1 SITE NAME, LOCATION, AND DESCRIPTION

The former March AFB is in Riverside County at the northern end of Perris Valley, approximately 65 miles east of Los Angeles and 90 miles north of San Diego (see Figure 1-1). The base lies in sections of Township 3 South, Range 4 West and covers portions of the Riverside East, Steele Peak, Perris, and Sunnymead quadrangle maps. Interstate 215 (I-215) bisects the former March AFB in a northwest-southeast direction. The portion of the base east of the freeway is commonly referred to as the Main Base, and the portion of the base west of I-215 as West March. Realignment of the base in 1996 established March ARB, which included the cantonment (Main Base) area, and will be referred to herein as March ARB. The excess property (West March and other property surrounding March ARB) will be referred to as Former March AFB. The excess property is now managed by the Air Force Real Property Agency (AFRPA). Figure 2-1 shows the boundaries of the Former March AFB and March ARB.

The 7,123-acre March AFB has been used for aircraft maintenance and repair, refueling operations, and training activities since 1918. In 1980, the Installation Restoration Program (IRP) was developed by the Department of Defense (DOD) as the mechanism for the CERCLA process, incorporating applicable Resource Conservation and Recovery Act (RCRA) regulations as well as meeting requirements of the NCP. The Air Force conducted a Phase I records search of 30 potentially contaminated IRP sites on the base. During subsequent assessment and investigation phases, 14 additional sites were identified. There are now a total of 44 IRP sites at the former March AFB and current March ARB.

The primary contaminants identified in the IRP include aromatic hydrocarbons, chlorinated solvents, fuels, PCBs, and polycyclic aromatic hydrocarbons (PAH). Contamination by PAH and PCBs appears to be restricted to surface and near-surface soils, whereas fuel hydrocarbons and solvents tend to be the predominant contaminants in subsurface soils and groundwater.

In 1989, U.S. EPA placed March AFB on the National Priorities List (NPL), as a result of documented groundwater contamination by chlorinated solvents and other contaminants, encompassing 40 separate sites (Figure 2-1). As with many Superfund sites, the contamination issues at March AFB are complex. As a result, the work has been organized into four OUs, described in Section 2.2, “Summary of Operable Units.” In September 1990, the Air Force entered into a



Installation Restoration Program Sites and Operable Units, March AFB/ARB, California

Figure 2-1

Federal Facilities Agreement (FFA) with the U.S. EPA and the State of California to facilitate the assessment and cleanup process. The FFA establishes procedures for involving federal and state regulatory agencies as well as the public in the restoration process at March AFB.

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

March AFB opened on March 1, 1918, as Alessandro Aviation Field. This 640-acre facility was used during World War I as a training center for "Jenny" pilots. After World War I, the base was closed for about 4 years and reopened in 1927. By 1938, March AFB was considered a central location for bombing and gunnery training on the West Coast. During World War II, Camp Haan Army Base was constructed along the west side of I-215 (then Highway 395). Camp Haan extended from Alessandro Boulevard south along the highway to Nandina Avenue and to Barton Street to the west approximately 3 to 4 miles. Camp Haan was an anti-artillery camp and staging area for General Patton's tank force. After World War II, a portion of Camp Haan became part of March AFB. In 1949, the Strategic Air Command assumed control of the base. In June 1991, March AFB became an Air Mobility Command installation, with primary missions of air refueling and cargo airlifts from that time until realignment in 1996. The base served as a main location for bombers as well as refueling and cargo aircraft. In addition, AFRC and the California Air National Guard (ANG) units have operated cargo and fighter missions at the base.

In 1993, the Base Closure and Realignment Commission designated March AFB for realignment, resulting in the transfer, by May 1996, of most active duty Air Force personnel and aircraft to Travis AFB, California. AFRC and the California ANG units remained, and a portion of the Former March AFB (i.e., the cantonment area) was retained and redesignated as March ARB. Due to realignment, substantial areas of the base (particularly the portion west of I-215) have been or will be transferred to civilian agencies, decreasing the 1993 area of the base by about two-thirds.

The Air Force, at March AFB and elsewhere, has long been engaged in a wide variety of operations involving the use, storage, and disposal of hazardous materials, including fuel and solvents. Past waste disposal practices have resulted in contamination of soil and groundwater at several areas on the Former March AFB and March ARB.

Summary of Previous Investigations. In 1980, the Air Force developed the IRP to address soil and groundwater contamination at Air Force bases nationwide. The IRP process at March AFB began in 1983 with a records search that included interviews with base personnel and research of base records and historic aerial photographs (CH2MHill, 1984). The records search identified 30 potentially contaminated sites and recommended further investigation of most of those sites. Since 1983, numerous investigations have been conducted to delineate contaminants in the soil and groundwater. There are currently 44 IRP sites at the base. Concurrently with the IRP, the Air Force conducted investigations of sites classified under other environmental programs. RCRA Facility Assessment (RFA) sites, environmental baseline survey (EBS) sites, and

area of concern (AOC) sites have also been investigated. There are a total of 28 RFA sites, 24 EBS sites, and 9 AOCs on March AFB. A total of three IRP sites (IRP Sites 21, 41, and 44), three AOCs (Water Tower 3410, Water Tank 6601, and the former Base Hospital and Dental Clinic), and one RFA site (Site L) are addressed in this OU4 ROD.

Summary of Operable Units. At Former March AFB/March ARB, aircraft maintenance, fuel storage operations, fire-training exercises, and regular base operations have generated a variety of hazardous wastes. Past waste disposal practices have contaminated soil and groundwater in several areas on the base.

Three operable units (OU1, OU2, and OU3) were created to facilitate the restoration process. Categorization of OUs was based primarily on geographical location and similarities in contaminant types and distribution. Shortly after the three OUs were established, the Basewide OU was established to pick up any remaining sites that were identified following the original designations. Subsequently, the Basewide OU was renamed OU4 in 2003. OU4 sites include IRP Sites 21, 41, and 44, and four non-IRP sites, the Water Tower 3410, Water Tank 6601, the former Base Hospital and Dental Clinic, and Site L. The locations of OU1, OU2, OU3, and OU4 sites are shown in Figure 2-1.

OU1 encompasses 14 sites and the off-base portion of the groundwater plume at the eastern base boundary. An ROD was issued for OU1 in June 1996, which addressed: (1) soil at Sites 10, 15, 18, 31, and 34; and (2) groundwater at Sites 4, 18, 31, and the combined OU1 groundwater plume. Sites 21 and 23 were originally included in OU1. Site 21 was transferred to OU4, and Site 23 was transferred to OU2.

OU2 originally included 26 Sites. Site 41 was transferred to OU4. Sites 28 and 32 were originally listed in the FFA as OU2 sites but did not require additional investigation and, therefore, were not discussed in the OU2 ROD. Appendix C of the March FFA states that Sites 28 and 32 are not included in the OUs. Site 28 encompassed a network of monitoring wells (28MW1 through 28MW10) in the cantonment area of March AFB, but was not identified as a source of contamination. Site 32 was described as areas of construction debris for which locations were not specified. Therefore, Sites 28 and 32 are not shown on Figure 2-1.

OU3 covers IRP Site 33, the Panero Aircraft Refueling System, which has fuel-contaminated groundwater. A Decision Document issued for OU3 (March ARB, 1996), selected an upgrade of the existing jet fuel removal system. Major components of the Decision Document for OU3 include: (1) continued IC, including site use restrictions; (2) replacement of the vapor treatment system with a thermal oxidation system; (3) applying vacuum to fluids recovery wells to increase product recovery rates, enhance bioremediation rates, and remove fuel vapors from the soil; and (4) monitoring and reporting of chemical of concern concentrations in selected wells, fuel and groundwater elevations in selected wells, and fuel recovery rates, treatment rates, etc. OU3 was removed from the CERCLA process because it is a fuels-only site. Any CERCLA contamination

(e.g., volatile organic compounds [VOCs]) that may have migrated to IRP Site 33 groundwater will be addressed by the March ARB's OU2 ROD.

This ROD documents the appropriate responses for remediation of contamination at OU4 sites under CERCLA, which include remedial alternatives for Sites 21, 41, 44, Water Tower 3410, Water Tank 6601, and the former base Hospital and Dental Clinic as well as an IC and implementation mechanisms necessary to protect human health and the environment at Site L.

2.3 COMMUNITY PARTICIPATION

The Draft Final OU4 Focused RI/FS report was released to the public on July 23, 2004, followed by the Proposed Plan (PP) on August 31, 2004. These two documents are listed in the Administrative Record and were taken to the information repository at the Moreno Valley Library. The notice of availability was published in The Press-Enterprise, the primary local newspaper on August 31, 2004. The OU4 PP was sent to all persons in the March AFB mailing list, which includes Restoration Advisory Board (RAB) members, on September 1, 2004.

The public comment period for the 2004 OU4 PP was held from August 31, 2004 through September 29, 2004. In addition, a public meeting was held on September 15, 2004. Representatives of the Air Force, the U.S. EPA, and DTSC attended the public meeting to address questions and comments about the 2004 OU4 PP. The Responsiveness Summary is included in Section 3.0 of the OU4 ROD, which is part of the Administrative Record, and the transcript is included in Appendix B.

This ROD documents the appropriate response for remediation of contamination at OU4 sites under CERCLA, as amended by SARA and the NCP. Documents relating to the selection of the remedial actions for OU4 sites at Former March AFB/March ARB are listed in the Administrative Record Index in Appendix A. Public participation in the decision-making process for OU4 sites complied with the requirements of CERCLA § 113 (k)(2)(B)(I-v), 117, and the NCP.

2.4 SCOPE AND ROLE OF OPERABLE UNIT 4 SITES

OU4 consists of IRP Sites 21, 41, and 44, and four non-IRP sites, the Water Tower 3410, Water Tank 6601, the former base Hospital and Dental Clinic, and Site L. Table 1-1 summarizes the work completed at each of the OU4 sites.

2.5 SITE-SPECIFIC EVALUATIONS

The following subsections present a brief overview of the characteristics of each OU4 site. Detailed information is presented in Section 3 of the OU4 Focused RI (Earth Tech, 2004).

2.5.1 Site 21 – Cordures Effluent Pond

Site Description and History. Site 21 is off base approximately 1.5 miles south of the southern extension of the active March ARB runway. Although never

physically part of March AFB, the site is considered to be part of the former base for purposes of the IRP because treated wastewater produced on base was held in this off-base pond. John Cordures, property owner until his death, used the water for irrigation of surrounding agricultural land from 1941 to 1946 and again from 1955 to 1984. The estate was sold to Ross Department Stores in 2001. The site is near the intersection of Morgan Street and Webster Avenue, in the City of Perris. Site 21 encompasses 1.5 acres and is part of a landscaped berm and below-grade parking area for warehouse trucks associated with a Ross warehouse distribution facility. The general surface-water drainage in the area is to the east, following the gently sloping terrain (surface gradient at the site is approximately 20 to 40 feet per mile). Bedrock was not encountered during the investigation phases at Site 21. Groundwater at Site 21 is at a depth of more than 150 feet below ground surface (bgs) and the general groundwater flow direction is to the south and southeast.

Site 21 was used from 1941 to 1946, and again from 1955 to 1984, to hold treated wastewater from the base. Sanitary and industrial wastewater received primary and secondary treatment on the base prior to discharge into this holding pond. The treated effluent was held in the pond and used for irrigation of the surrounding agricultural land. The boundaries of the effluent pond were physically well defined by the pond's berm during the 1993 OU1 RI/FS. At that time the site covered an area of approximately 2.2 acres and was being used by private parties as an illegal dump. In approximately 1998, the berm was removed, and the site was incorporated into the surrounding sod farm. In 2001, the land was sold and the former pond area now consists of a landscaped berm on the west side of the site and a truck parking area that lies approximately 8 feet below grade on the east side. Based on historic use, the primary contaminants of concern at Site 21 include metals, VOCs, and pesticides.

Transport mechanisms of concern at Site 21 are those that act upon subsurface soils. Contaminant transport via surface water flow is not a concern at the site, as the soils in question are subsurface. Contaminant transport via air pathways is not a major concern, as the soils in question were buried beneath 2 to 3 feet of fill. In addition, as a result of the 2001 commercial development, impacted soils have been graded and mixed, and Site 21 soils currently lie below the landscaped berm at 5 to 6 feet below grade, or are covered with asphalt beneath a parking apron. Potential migration pathways may include direct contact with soil as a result of trenching or other excavation activities. Exposure to current workers is nonexistent, since overlying fill material and asphalt paving preclude direct contact or transport via air pathways. Site 21 has a limited capacity to transport site contaminants from the subsurface to the groundwater. The degree of infiltration of surface water is severely limited in areas of asphalt paving. With much of the area paved in asphalt, and future residential development unlikely to cause significant disturbance of the ground surface, transport mechanisms to groundwater are limited.

The sampling at Site 21 was conducted in accordance with the Basewide RI/FS Work Plan (Earth Tech, 1998). Near-surface soil and groundwater samples were collected. Soil samples were collected from 3 to 4 feet bgs. A total of 20 soil

samples were collected at the nodes of a 200-foot by 240-foot grid, set on a 40-foot spacing, which was established to completely cover the former pond area. Soil samples were analyzed for metals, pesticides, PCBs, VOCs, and semivolatile organic compounds (SVOCs). A total of three depth-discrete groundwater samples were collected from two boreholes. These screening-level groundwater samples were analyzed for VOCs, pesticides, PCBs, metals, and general minerals. Surface soil samples collected at Site 21 indicated that several VOCs, SVOCs, pesticides, and metals were present at the site. Organic compounds and pesticides were detected at low concentrations. Inorganic compounds aluminum, total chromium, cobalt, copper, iron, magnesium, manganese, nickel, potassium, sodium, vanadium, and thallium, were present at Site 21 above background levels. Of these inorganic compounds, only iron and thallium were present at levels above the residential U.S. EPA Region IX preliminary remediation goals (PRGs). Arsenic, molybdenum, and silver were detected at Site 21, but at concentrations consistent with background levels established for OU2. Arsenic and beryllium were detected, but none had concentrations above the reporting limit. Screening-level groundwater samples collected during drilling had trace levels of methylene chloride and chloroform present at levels below both drinking water PRGs and established federal maximum contamination levels (MCLs). Analytical results for both soil and groundwater samples indicated that no significant concentrations of contaminants were present that warranted further investigation or cleanup actions.

Current and Potential Future Site Use. Site 21 is part of a Ross warehouse distribution facility in the city of Perris. Adjacent and surrounding land uses consist of commercial/industrial development, and some land is in agricultural production. Although much of the surrounding property is currently agriculture, other properties are zoned for light industrial/commercial. As development occurs, agriculture zoning will likely change to general industrial (Perris, City of, 2005).

Summary of Site Risks. The OU4 Focused RI/FS concluded that Site 21 does not pose an unacceptable risk to human health.

Several VOCs, SVOCs, and pesticides were detected in near-surface soil at Site 21. All detected VOCs, SVOCs, and pesticides were below residential PRGs as defined by U.S. EPA Region IX (October 2002). Of the 23 inorganic compounds analyzed, 22 were routinely detected. Of the 22 detected inorganic compounds, only iron and thallium were present at levels above both the March AFB background levels and residential PRGs.

Carcinogenic risk and hazard evaluations of subsurface soils for Site 21 were estimated for both residential and industrial work receptors. Residential use was utilized in determining the risk for Site 21 because unrestricted reuse is most conservative. Future use is likely to remain light industrial and, as such, actual risk associated with the use of the property is much lower. Carcinogenic risk to the theoretical resident from subsurface soils is 8×10^{-6}. This risk estimate is within U.S. EPA's acceptable risk range of 10^{-6} to 10^{-4}. The potential risk to the future industrial worker is reduced to slightly above 10^{-6}. For non-carcinogens,

iron and thallium pose a slight non-carcinogenic hazard based on levels of these analytes in subsurface soils on Site 21. Iron concentrations in subsurface soils on Site 21 exceeded the residential PRGs; however, because iron concentrations were only slightly higher than background levels on March AFB, iron levels may be interpreted to be within the range of background levels. Thallium levels analyzed by U.S. EPA Method SW6010 have been recognized as potentially problematic. Detailed studies have indicated that false-positive thallium data are caused by interference of aluminum in the soil samples (Jacobs Engineering Group, Inc., 2002). Additionally, to further support the questionable thallium results, there is no known source of thallium on March AFB. Other compounds in the subsurface soil samples were either not detected or detected at levels well below their respective residential PRGs. Carcinogenic risk on Site 21 is within U.S. EPA's acceptable risk range. As a result of the 2001 commercial development of the Ross warehouse, soils have been graded and mixed, and Site 21 soils lie 5 to 6 feet below the landscaped berm or are covered with asphalt beneath a parking apron. The theoretical risk is well within the acceptable risk range, and the practical risk of exposure to Site 21 soils has been reduced by the Ross warehouse development.

Description of Selected Remedial Alternative. The selected remedial alternative for Site 21 is NA, which will allow unrestricted use of the site.

2.5.2 Site 41 – Hawes Radio Relay Station

Site Description and History. Site 41 is approximately 1 mile south of State Highway 58 and 11 miles east of Kramer Junction (the intersection of U.S. Highway 395 and State Highway 58) in San Bernardino County, California. Structures currently remaining at the site include a concrete bunker no longer in use. The general surface water drainage is to the northeast following the very gently sloping terrain (surface gradient at the site is approximately 20 to 40 feet per mile). Depth to beneficial groundwater is approximately 300 feet bgs. However, perched zone water is found between 100 and 150 feet bgs at nearby sites (CKY, Inc., 1996). A regional hardpan soil, approximately 3 to 4 feet thick at a depth of approximately 34 feet bgs, is reported in the area.

The Air Force obtained right of entry for an approximate 315-acre parcel from the BLM in the late 1950s for construction and operation of a radio relay station for use by George AFB. The parcel was transferred to Edwards AFB in 1963 and to March AFB in February 1968. The Radio Relay Annex was declared excess and was scheduled for deactivation in October 1968. The station facilities included a septic system, storage tanks for water and petroleum products, 4 miles of runway, a radio tower, a water well, an aboveground bunker, and several support buildings. The Air Force closed the station in the mid-1980s. Investigations and cleanup actions were conducted between February 1995 and May 1996 and included identification and removal of asbestos-containing material and lead-based paint, destruction of the water-supply well, removal of underground storage tanks (USTs) (oil, water, and septic) and contaminated soil, and confirmation sampling. The two underground diesel tanks were removed by CKY (1996). Small amounts of diesel fuel leaked from the USTs. Based on historic

use, the primary contaminant of concern at the site is total petroleum hydrocarbons (TPH) diesel fuel.

Transport mechanisms of concern at the site are those that act upon subsurface soils as a result of leaking USTs that were present at the site. Contaminant transport via air pathways or direct contact with soil is not a major concern, as the soils in question are subsurface soils buried at depths greater than 20 feet bgs. The remote location of the site and future land use as a natural habitat additionally reduce the chance of contaminant transport via air pathways or direct contact. The potential for groundwater contamination from residual fuel contamination in the subsurface is limited due to the low mobility of TPH diesel fuel, the presence of a low-permeability soil layer at approximately 34 feet bgs, and the low surface water percolation rates due to low annual precipitation and high evaporation rates.

The OU4 RI/FS for Site 41 consisted of reviewing the existing data and summarizing the information (Earth Tech, 2004). No additional sampling was carried out for Site 41. Review of existing data indicates that remaining site contamination is limited to low levels of residual TPH diesel fuel in soils below 20 feet at the southern end of the former diesel UST location, as documented in the Site Closure Report prepared by Tetra Tech (1998). The former groundwater production well that supplied water to the on-site facility was destroyed in October 1995 (CKY, Inc., 1996). The California RWQCB, Santa Ana Region, clean closed the UST site in 1996 (California Regional Water Quality Control Board, 1996).

Current and Potential Future Site Use. Site 41 is in a remote area of the Mojave Desert. The Hawes site extends across 315 acres of desert land. The site is in the process of being transferred from the DOD back to the BLM, and the site will likely remain vacant due to its remote location and reversion to BLM control.

Summary of Site Risks. The OU4 Focused RI/FS concluded that Site 41 does not pose an unacceptable risk to human health.

No formal risk assessment was required for Site 41. A small amount of hydrocarbon-impacted soil remains at the site at depths greater than 20 feet bgs and is, therefore, not a concern with respect to direct exposure to human or ecological receptors. The naturally occurring hard pan, identified in soil borings at 35 to 40 feet bgs, acts as a natural barrier to the transport of hydrocarbon-impacted soil to the aquifer, which is located at depths greater than 300 feet bgs. Additionally, the arid climate at the site limits the migration of contamination at depth. Therefore, the residual fuel-related contamination at Site 41 does not pose a threat to the groundwater in the area. It was determined that no response action is necessary to ensure protection of human health and the environment.

Description of Selected Remedial Alternative. The selected remedial alternative for Site 41 is NFA, which will allow unrestricted use of the site.

2.5.3 Site 44 – Water Tower 407

Site Description and History. Site 44 is in the central portion of the March ARB, east of the intersection of Graeber Street and Meyer Drive. Site 44 includes a 110-foot-tall, 200,000-gallon water tower, two large water storage tanks, and several buildings used by March ARB water system maintenance personnel. The area is characterized by relatively flat topography. A concrete-lined drainage ditch, just north of the site, flows eastward to the Heacock Storm Drain that drains south along the eastern perimeter of the former base. Groundwater at Site 44 is estimated to be approximately 30 feet bgs. Groundwater flow direction in this area is generally to the south and southeast.

The water tower at Site 44 utilized a valve controller with a 6-inch mercury pot for water flow control. Past spills from the mercury pot caused mercury contamination of soils beneath and surrounding the valve controller. The flow controller at the water tower was in a subsurface valve box, 12 feet below grade. During a construction project to place a concrete floor in the below-grade box, approximately 80 cubic feet of soil were removed and stockpiled south and east of the valve box. In November 1995, the Air Force contracted to characterize the valve box and surrounding area for elemental mercury contamination. Based on the results of initial investigations at Site 44, the Air Force initiated a removal action (IT Corporation, 1997a). Soil was excavated in several discrete areas around the water tower. The primary soil removal areas were the valve box and surface soils in areas adjacent to the borings that identified “hot spots” of contamination. The excavated soil was segregated and packaged for off-site disposal. Once excavation of the valve pit was completed, the site was restored by filling the excavated area with sand to approximately 3 feet below the valve. A 6-inch-thick concrete floor was installed in the bottom of the valve pit.

Transport mechanisms are not a concern at Site 44, as the site contaminants have been removed to levels at, or below, established cleanup levels defined in the work plan (IT Corporation, 1996).

The OU4 RI/FS for Site 44 consisted of reviewing the existing data and summarizing the information (Earth Tech, 2004). No additional sampling was carried out for Site 44. Review of existing data indicates that remaining site contamination is limited to elemental mercury, which was removed to levels at or below 1 mg/kg within the valve box and 70 mg/kg in all other locations. The cleanup criteria of 1 mg/kg within the valve box and 70 mg/kg elsewhere on Site 44 were developed during a site-specific risk assessment process (IT Corporation, 1996, 1997b).

Due to regulatory concerns, groundwater samples were collected (IT Corporation, 1997a) from four groundwater-monitoring wells that surround the site. Results from this sampling indicated that mercury was present in the groundwater in the area adjacent to the water tower. Mercury concentrations were shown to be decreasing over time, and all but one well was below the U.S. EPA and California MCL (0.002 milligrams per liter [mg/L]). The concentration in that one well was essentially equal to the MCL (0.0021 mg/L). The regulators agreed that this single value at the MCL was not representative of

mercury contamination in groundwater, and agreed that no additional sampling for mercury was required. The removal action cleanup values were established to prevent any unacceptable transport of mercury from soil to groundwater; therefore, no additional groundwater sampling at Site 44 is warranted.

Current and Potential Future Site Use. Land uses on adjacent and surrounding properties are exclusively industrial and commercial. As Site 44 will remain Air Force property, Site 44 is expected to stay industrial/commercial in the foreseeable future.

Summary of Site Risks. The OU4 Focused RI/FS concluded that Site 44 does not pose an unacceptable risk to human health.

Confirmation samples collected within the valve box, taken after remediation of Site 44, were well below the remediation goal of 1 mg/kg. In addition, confirmation samples collected from other, shallower excavations were below the cleanup goal of 70 mg/kg (IT Corporation, 1996, 1997b). All samples collected following remediation of the site were well below the residential PRG of 23 mg/kg, with the exception of one sample, which had a mercury concentration of 270 mg/kg. However, a second sample collected immediately below that sample had a concentration of 1.8 mg/kg. It was concluded that the elevated mercury concentration in the first sample was an anomaly and that residual mercury contamination remaining at the site was below unrestricted levels. It was concluded that contaminants at Site 44 have been removed and are below approved cleanup levels for the removal action and below the residential PRG. It was determined that no response action is necessary to ensure protection of human health and the environment.

Description of Selected Remedial Alternative. The selected remedial alternative for Site 44 is NFA, which will allow unrestricted use of the site.

2.5.4 Water Tower 3410

Site Description and History. Water Tower 3410 is an aboveground water storage tank on Former March AFB at the intersection of Plummer Road and 11th Street. Water Tower 3410 is in an area characterized by relatively flat topography, with a gentle slope to the east/northeast. No surface water bodies or major surface water drainages are associated with the site. Groundwater levels underlying Water Tower 3410 are between approximately 33 and 48 feet bgs. The groundwater flow direction is to the east.

Although Water Tower 3410 was not specifically included in the Basewide RI/FS Work Plan, due to the presence of mercury pot water flow controllers at other March water storage facilities and the similarity of Water Tower 3410 with Water Tower 407 (Site 44), it was suspected that Water Tower 3410 might also have mercury-contaminated soils. March ARB Department of Public Works was contacted to determine if a mercury vault ever existed at the site. Interviews with Department personnel indicated that the building never contained a mercury vault. The only mercury controls at Water Tower 3410 are those that control

associated pumps. Four aboveground controls are attached to the water tower rather than in a vault and contain only small amounts of elemental mercury.

The sampling at Water Tower 3410, conducted pursuant to OU4 RI/FS objectives (Earth Tech, 2004), entailed soil sampling collected beneath the aboveground control boxes at the water tower in three separate locations. These sampling locations were chosen in areas with the highest potential for contamination and were collected by hand excavation from the surface to 5 inches below the surface. Soil samples were analyzed under U.S. EPA Method SW 7471A. Mercury concentrations detected in the three samples, plus a duplicate soil sample, were well below U.S. EPA Region IX residential PRG values. Mercury concentrations in the four samples ranged from 0.18 mg/kg to 0.064 mg/kg. The U.S. EPA Region IX residential PRG for mercury and compounds is 23 mg/kg. Groundwater contamination was not suspected at Water Tower 3410; therefore, a groundwater investigation was not conducted.

Transport mechanisms are not a concern at Water Tower 3410 based upon the confirmed absence of mercury contamination in the soils underlying the water tower mercury controls.

Current and Potential Future Site Use. Water Tower 3410 is in an area characterized by industrial/commercial land use intermixed with vacant parcels. Adjacent and surrounding land use is also a mix of industrial/commercial use and vacant parcels. MJPA plans for the area, including Water Tower 3410, are for an industrial/business park.

Summary of Site Risks. The OU4 Focused RI/FS concluded that Water Tower 3410 does not pose an unacceptable risk to human health.

Analytical results from Water Tower 3410 indicated only trace amounts of mercury in surface soils. All mercury concentrations were well below the residential PRG of 23 mg/kg; therefore, a site-specific preliminary risk evaluation (PRE) was not conducted. It was determined that no response action is necessary to ensure protection of human health and the environment.

Description of Selected Alternative. The selected remedial alternative for Water Tower 3410 is NA, which will allow unrestricted use of the site.

2.5.5 Water Tank 6601

Site Description and History. Water Tank 6601 is an aboveground storage tank north of Van Buren Boulevard and west of Plummer Road, west of I-215. Water Tank 6601 is at an elevation of approximately 1,660 feet above mean sea level. The site is characterized by highly dissected upland topography and consists of highly eroded gullies and exposures of weathered bedrock. The primary flow of surface water in the vicinity of Water Tank 6601 is to the east. One primary intermittent stream channel drains to the east near the facility. The site is underlain by shallow surface soils, with a maximum thickness of soil only tens of feet thick. Based on information presented by Tetra Tech in the OU2 RI/FS (Tetra Tech, 1997a), just south of the water tank, groundwater is

encountered in weathered bedrock at depths ranging from 10 to 40 feet bgs. Groundwater flow is generally to the east.

Water Tank 6601 is an active, 200,000-gallon water tank constructed in approximately 1942, with valves, piping, and electronic controls inside a fenced area with a concrete floor and a metal roof. The enclosure was constructed in the mid 1980s, in response to repeated vandalism at the site. Each incidence of vandalism resulted in releases of elemental mercury at the site due to breakage of a reservoir or "mercury pot." Some of the elemental mercury was recovered after each incident; however, no formal cleanup actions were performed. A cage was constructed to protect the controls from additional vandalism. The mercury control was removed and replaced with controls without mercury prior to the OU4 RI/FS investigation.

No previous investigations were conducted at Water Tank 6601. While the Basewide RI/FS Work Plan did not specifically include Water Tank 6601, the site was suspected of containing elevated concentrations of mercury because of its similar design to Water Tower 407 (Site 44), and the fact that Water Tank 6601 had repeatedly been vandalized, and the mercury pots had been broken during these incidents. The sampling at Water Tank 6601, conducted pursuant to OU4 RI/FS objectives (Earth Tech, 2004), and following the same protocol established for Site 44 in the Basewide RI/FS Work Plan (Earth Tech, 1999), entailed soil sampling with the same approach as that for Water Tower 3410. Sample collection was concentrated under the concrete slab and along the pipe from the water tank, with 11 samples taken in this location. Two additional samples were taken on the downgradient (north) side of the water tank outside of the caged concrete slab. All 13 soil samples were analyzed for mercury using U.S. EPA Method 7471A. Results of the analysis indicated that there was significant mercury contamination at the site. Remediation of surface and subsurface soil was performed during September 2000 (IT Corporation, 2001). Contaminated soils were excavated, confirmation soil sampling was performed in the active excavations to determine the final excavation depth, and clean fill was placed in the excavation to the original grade. Results from confirmation sampling indicated mercury concentrations ranging from 0.11 mg/kg to 0.52 mg/kg, far below the U.S. EPA Region IX residential PRG of 23 mg/kg.

There are no transport mechanisms of concern at Water Tank 6601, as mercury has a limited probability for transport due to very low residual concentrations, and to its limited mobility in soil.

Current and Potential Future Site Use. Water Tank 6601 is in an undeveloped area, which is fenced. Adjacent and surrounding land use is mixed industrial/ vacant. Water Tank 6601 is expected to remain industrial. MJPA plans for the adjacent and surrounding land are for industrial/commercial development.

Summary of Site Risks. The OU4 Focused RI/FS concluded that Water Tank 6601 does not pose an unacceptable risk to human health.

Soil excavation and off-site disposal of mercury-contaminated soil was conducted. Analytical results from confirmation samples around Water Tank

6601 indicate that elevated mercury concentrations have been removed. Confirmation sample results detected only trace amounts of mercury in site soils. All mercury results were well below the U.S. EPA Region IX residential PRG of 23 mg/kg; therefore, a site-specific PRE was not conducted. It was determined that no response action is necessary to ensure protection of human health and the environment.

Description of Selected Remedial Alternative. The selected remedial alternative for Water Tank 6601 is NFA, which will allow unrestricted use of the site.

2.5.6 Hospital and Dental Clinic

Site Description and History. The former base Hospital and Dental Clinic are in the northeast corner of the former base, near the intersection of Cactus Avenue and Heacock Street. The main Hospital building is five stories and the Dental Clinic is a one-story structure. The surface topography in and around the site is relatively flat with a gentle slope (surface gradient at the site is approximately 20 to 30 feet per mile). Major drainage features lie north and east of the site and consist of intermittent drainage channels (Cactus Channel Storm Drain and Heacock Storm Drain). There are no major drainages across the site, and there are no perennial water bodies near the site. While groundwater was not part of the investigation, groundwater is reported to be 25 to 30 feet bgs in the area of the former hospital and dental clinic. Groundwater flow direction is to the south and east (Montgomery Watson Harza, 2004).

Construction of the Hospital was completed in 1966 and modified in subsequent years. The latest addition was completed in 1974. The original construction of the Dental Clinic was completed in 1985. A sewer main extends from the Hospital/Dental Clinic complex, south along the eastern base boundary to the last manhole before the connection of the hospital lines with the “old trunk line” from western portions of the March ARB. The sewer line, which services both the Hospital and Dental Clinic, was first brought on line with completion of the original hospital building. Two primary lines collect effluent from the complex. The two lines ultimately empty into the old sewer main that flows directly south to the current lifting station, from which sewage is transferred around the south end of the active runway to the current wastewater treatment plant.

Sampling at the former Hospital and Dental Clinic was conducted pursuant to OU4 RI/FS objectives (Earth Tech, 2004) and followed the approach described in the Letter Work Plan (Earth Tech, 2002). Potential threats to human health posed by mercury within the sewer system of the Hospital and Dental Clinic were evaluated based on the sampling conducted during the OU4 RI/FS and results of earlier investigations. Previous investigations were conducted to evaluate the potential risk from release of mercury to the environment through leaks from sewer pipes, as well as the potential risk to workers inside the Hospital and Dental Clinic from mercury vapors (Earth Tech, 2004) emanating from the sink drains. The OU4 RI/FS sampling investigation consisted of sampling sediment/sludge from all manholes leading away from the Hospital and Dental Clinic to determine the extent of mercury contamination in the sewer line. At the

further point along the sewer line, where mercury concentrations in sewer sediment/sludge were below the residential PRG of 23 mg/kg, the investigation assumed that release to the environment would not be likely; therefore, a detailed investigation was not warranted beyond that point. For the area where mercury concentrations in the sediment/sludge within the sewer manholes exceeded residential PRGs, a video survey of the sewer line was made to identify broken or separated pipe that may have allowed the release of mercury to the surrounding soil. Where these breaks were encountered, subsurface soil samples were collected adjacent to and beneath the sewer pipe to determine if mercury was present in the soil at concentrations above the residential PRG of 23 mg/kg. Additionally, indoor air samples were collected within the former base Hospital and Dental Clinic to evaluate potential inhalation hazards.

Twenty-seven sludge and sediment samples, and three replicates were collected from sewer manholes and analyzed for mercury using U.S. EPA Method SW7471A. Of the sludge and sediment samples taken, the maximum concentration came from a replicate sample, which was 999 mg/kg. Of the 30 sludge/sediment samples, only 4 exceeded the residential PRG of 23 mg/kg. Mercury is present in the sewer system at levels above residential PRGs up to 1,100 feet downstream of the Hospital. Based on these sludge/sediment analytical results, a video survey was conducted on the section of sewer line that contained mercury concentrations above residential PRGs. This video survey identified only one location of a potential leak source, where a circumferential crack was present at a joint (Earth Tech, 2004). To allow passage of the video equipment and enhance visual inspection for potential leaks, the sewer sludge was removed and cleaned (Earth Tech, 2003). A plug was installed at the downslope end (manhole 2-116) to prevent the passage of wastewater to the lifting station. High-pressure water was forced through the pipe to flush out any sludge and/or wastewater. A vacuum truck siphoned the liquid waste generated and the wastewater was transferred to an on-site Baker tank once the cleaning process was complete. All wash water and sludge collected during the cleaning process were properly disposed. Two subsurface soil samples, and a replicate sample, were collected from soils directly underlying the cracked section of the sewer pipe and analyzed for mercury using U.S. EPA Method SW7471A. Analytical results from the three soil samples had concentrations well below the residential PRG for mercury in soil (23 mg/kg), with mercury concentrations ranging from 0.024J mg/kg to 0.21 mg/kg. It was, therefore, determined that the pipe was in good condition and no release occurred.

Twelve ambient indoor air samples, and two replicates, were taken inside the Hospital and Dental Clinic to confirm previous results obtained in July 2000 (Tetra Tech, 2000). These samples were analyzed using National Institute of Occupational Safety and Health Method 6009. Every indoor air sample taken was below the residential PRG of 0.31 micrograms per cubic meter ($\mu g/m^3$), with the concentrations ranging from 0.060J $\mu g/m^3$ to 0.24 J $\mu g/m^3$.

The transport mechanism of concern at this site is contaminant transport via air pathways, as low levels of mercury vapor are present in ambient air within the buildings that comprise the site. Transport mechanisms that act on subsurface soils are not a concern at this site, as free mercury is not mobile in soils. Contaminant transport via surface water flow is not a concern at the site, as the soils in question are subsurface.

Current and Potential Future Site Use. The former base Hospital and Dental Clinic are in an area characterized by institutional (i.e., medical) land use. Adjacent and surrounding land use is a mix of residential, commercial, a small amount of vacant property and land in agricultural use, and a small corridor of public facilities to the east of the Hospital for an electrical transmission line easement. MJPA plans for the Hospital/Dental Clinic site are for similar reuse.

Summary of Site Risks. The OU4 Focused RI/FS concluded that the base Hospital and Dental Clinic does not pose an unacceptable risk to human health.

A video inspection of the sewer line in the area found it to be in excellent condition, and there was no evidence of breaks or leaks from the sewer system near the former base Hospital and Dental Clinic. Subsurface soil samples collected adjacent to, and immediately below, the single crack identified in the sewer line determined that mercury contamination was not present in concentrations above residential PRGs. The investigation concluded that the potential for release of mercury to the environment was very low. Sampling of indoor ambient air at several locations within both the Hospital and Dental Clinic also indicated that mercury vapors in ambient air were below residential PRGs. The potential risk to human health and the environment due to mercury in the sewer line at the former Hospital and Dental Clinic is *de minimis*. In addition, sampling of indoor air shows that mercury vapor is not a concern for potential future users of the facility. Therefore, the Air Force has determined that the mercury is not a potential risk for human health or the environment at this site.

Description of Selected Remedial Alternative. The selected remedial alternative for the Hospital and Dental Clinic is NFA, which will allow unrestricted use of the site.

2.5.7 Site L – Former NCO Swimming Pool

Site Description and History. Site L, formerly a swimming pool at the NCO Club, is east of Riverside Drive and north of Meyer Drive. The site is outside the boundary of March ARB that was established as a result of the realignment of March AFB in May 1996. It is part of the land identified as available for transfer by the AFRPA. Site L is in an area characterized by relatively flat topography. No major drainages are associated with the site. Groundwater levels at the site are approximately 26 feet bgs. The groundwater flow direction is to the southeast.

The swimming pool at Site L was reportedly constructed in 1953 along with the NCO Club. After decommissioning at an unspecified time, it was used as a repository for a variety of wastes, some potentially hazardous. The pool and

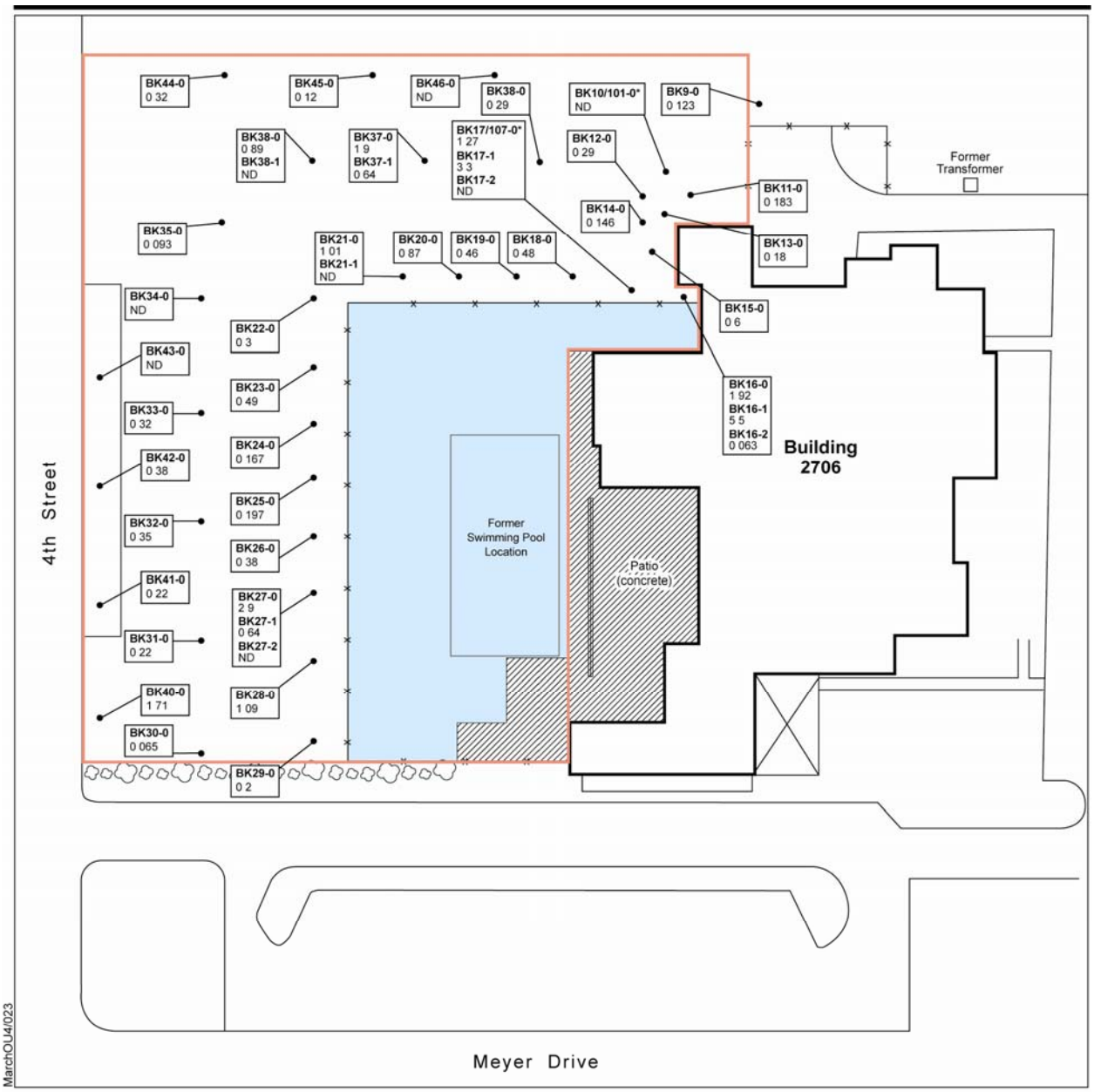
wastes were covered with soil, and the area was allowed to become overgrown with grass and weeds. The facility was abandoned and a chain-link fence restricted access to the former pool. In 1993, the pool was identified as an AOC during a comprehensive RFA/Expanded Source Investigation (ESI), which concluded that the pool was filled with a variety of wastes, including waste soils, solvents, and PCBs (Earth Tech, 1993). In 1994, as part of the RFA investigation, a soil gas survey was conducted to screen for the presence of VOCs (Tetra Tech, 1996c). No VOCs were detected above the laboratory reporting limits.

In 1996, an Engineering Evaluation/Cost Analysis indicated that Site L contained secondary sources of contamination, namely soil or debris saturated with or containing high concentrations of contaminants in the immediate area surrounding the primary source (Tetra Tech, 1996a). In June 1996, a removal action was conducted at Site L to excavate, characterize, remove, and dispose of wastes that had been buried in the former NCO swimming pool (Tetra Tech, 1999). The contents of the pool (primarily construction demolition debris and soil) were removed, characterized, and properly disposed. The pool structure was removed, and confirmation soil samples were collected from the sidewalls and bottom of the excavation. The only analyte detected in the confirmation soil samples was PCB, which was present in several samples at concentrations exceeding residential and industrial PRGs.

During the first round of excavation and confirmation sampling, in July and August 1996, 11 background samples were collected from 8 locations surrounding the former NCO swimming pool (Tetra Tech, 1999). Figure 2-2 shows the sampling locations. Seven samples contained PCBs at concentrations ranging from 0.054 mg/kg to 1.79 mg/kg. Concentrations in all but one sample exceeded the 1998 U.S. EPA Region IX residential PRG for PCBs (0.2 mg/kg), and one sample had PCB concentrations in excess of the 1998 industrial PRG of 1.3 mg/kg. As a result of this sampling effort, California DTSC requested additional surface soil sampling outside the perimeter fence to determine the extent of potential contamination. It was also recommended that sampling be conducted near the pad-mounted transformer, a suspected source of PCB contamination, at the northeast corner of the site.

Additional soil sampling was conducted at Site L in September 1996 and February 1997. Following three phases of excavation and sampling, final results indicated that contaminated soil exhibited PCB concentrations ranging from 0.091 mg/kg to 6.4 mg/kg at depths ranging from 14 to up to 20 feet bgs (maximum sampling depth) in the former pool area (Tetra Tech, 1999). Samples collected from the surface to 2 feet bgs around the perimeter of the pool also had low levels of PCBs. With the approval of regulators, the pool excavation was filled with 14 feet of imported, clean soil. The rationale was that the clean soil eliminates or greatly reduces the risk of exposure to potential receptors in the former pool area.

Several phases of additional surface soil sampling occurred between 1998 and 1999 to determine the vertical and lateral extent of PCB contamination outside the pool enclosure (Tetra Tech, 1999). As recommended in the regulatory



EXPLANATION

- Fence
- Block Wall
- Concrete
- Surface Soil Samples (approximate location)
- 1.5 acres covered with 6 inches of clean soil and 4 inches of asphalt concrete
- * Duplicate
- ND Not Detected
- Boundary of Institutional Control/ State Land Use Covenant (IC/SLUC)

0 32.5 65 Feet

Note: Concentrations are in mg/kg.
Concentrations are the sum of isonomers.

Site L
Former NCO Club Swimming Pool Sample Locations and PCB Concentrations

Figure 2-2

approved work plan a step-out approach was used, beginning with sampling of surface soil close to the enclosure, with additional samples taken at deeper levels and/or further away from the enclosure if initial concentrations were found to exceed the residential PRGs (Tetra Tech, 1998b). The result of these phases of sampling indicated that PCBs were present in areas north and west of the pool enclosure. However, it was concluded that a single contaminant source was unlikely and that contamination was probably the result of generalized application of PCB-containing oils for dust or weed control (Tetra Tech, 2001). A total of 28 of the 47 samples collected had total concentrations of PCBs exceeding the U.S. EPA 1998 residential PRG of 0.20 mg/kg. Additionally, concentrations in eight samples exceeded the 1998 industrial PRG of 1.30 mg/kg.

No pattern of contamination could be observed using the collected data from the 1998 and 1999 sampling. Neither the lateral nor vertical extent of the PCB contamination could be configured. It was observed, however, that PCB concentrations decreased with increased distance from the pool enclosure and with increased depth. Soil samples collected near the transformer indicated that only two of the four samples contained PCB concentrations above detection limits. It was concluded that the transformer could be excluded as a contributor of PCB contamination to the soils at Site L (Tetra Tech, 1999).

The site was mitigated by placement of 6 inches of clean fill over the contaminated soil, covering the 1.5-acre site with 4 inches of asphalt concrete and implementation of lease/deed restrictions on the property. The mitigation was completed in June 2000 (Tetra Tech, 2001).

The OU4 Focused RI consisted of reviewing the existing data and summarizing the information (Earth Tech, 2004). No additional sampling was carried out for Site L. From 1993 to 2000, several investigations, removal actions, and mitigation efforts have been conducted at Site L. Review of existing data (Earth Tech, 2004) indicates that PCB-impacted soils remain in the deep end of the former pool area. PCB contamination was also detected in surface and near-surface soils in areas to the north and west of the excavated pool area.

Current and Potential Future Site Use. Site L is currently open space (parking lot) with no structures, and is bordered on the north by vacant land and on the south by a parking area adjacent to Meyer Drive. The NCO Club is to the east of Site L, and the U.S. Army Reserve Center, with associated landscaping and parking, is to the west. Surrounding land uses include institutional/medical, commercial, public facilities/recreation, and vacant land. The MJPA plans for Site L and the surrounding land are commercial in nature. A portion of the parcel in which Site L is located is currently leased to a catering business.

Summary of Site Risks. The reasonable maximum exposure risks associated with Site L were recalculated based on the 2004 PRGs (shown in Table 2-1). Based on the 95 percent upper confidence limit (UCL) and the average residual concentration that remains at the site, the remaining risk is approximately 1×10^{-6} for the industrial reuse exposure scenario and approximately 1×10^{-5} for the theoretical residential reuse exposure scenario. The non-cancer hazard index for

Table 2-1. Summary of Risk for Site L

Site	Depth Sampled (ft bgs[1])	Risk: Based on 95% UCL[2] (2.14 mg/kg)		Risk: Based on Average Concentration (0.69 mg/kg)		Comments
		Cancer[3]	Non-cancer	Cancer[3]	Non-cancer	
Residential	Surface Soil	1×10^{-5}	HI[4] = 2	3×10^{-6}	HI[4] = 0.6	Within the risk management range of 1×10^{-4} to 1×10^{-6}
Industrial	Surface Soil	4×10^{-6}	HI[4] = 0.2	1×10^{-6}	HI[4] = 0.06	Acceptable risk under industrial/ commercial reuse scenario

Notes:
1 ft bgs = feet below ground surface
2 UCL = upper confidence limit
3 Cancer risk for industrial scenario is adult exposure only, and residential scenario is the sum of child and adult exposures. In general, action is not warranted at a site when the cancer risk is less than $10^{-4}$and the HI is less than 1. The 10^{-6} risk level was used as a point of departure for determining remediation goals for alternatives when ARARs are not available or are not sufficiently protective because the presence of multiple contaminants at a site or multiple pathways of exposure.
4 HI = Hazard Index

the industrial reuse exposure scenario is calculated at 0.2 and at 2 for the residential reuse exposure scenario.

Remedial Action Objectives (RAOs). The RAO for Site L is to reduce the non-cancer hazard index for the residential exposure scenario to below one (1) by prohibiting residential use of the site.

Analysis of Alternatives. Low levels of PCBs are present in surface and subsurface soils. A migration analysis of the site determined that future PCB contamination of groundwater was extremely unlikely. The following remedial alternatives were evaluated for Site L soils.

No further action alternative. The NFA alternative is potentially not protective of human health and the environment. This alternative would not reduce the potential for exposure to a resident should the site be developed in the future for residential purposes. Although the Site L risk assessment showed an excess cancer risk within the acceptable risk management range, PCBs are bioaccumulative and persistent in the environment. In addition, maximum detected PCB concentrations were over two times higher than the 95 percent UCL value. Correspondingly, the theoretical risk value using the maximum concentration would be over two times higher than the 95 percent UCL risk values. Due to the bioaccumulative and persistent nature of PCBs, and the nature and extent of PCB contamination at Site L, the risk management decision is that NFA is not protective of human health and the environment.

The NCP requires that remedial alternatives be evaluated against nine evaluation criteria. Overall protection of human health and the environment is a threshold evaluation criterion. The NFA alternative does not satisfy this criterion; therefore, further evaluation of this alternative is not necessary.

IC alternative. The IC alternative would prohibit residential reuse of the site (i.e., use restriction), and notify others about the presence of the soil contamination. The evaluation of the IC alternative against the nine NCP criteria is set forth below.

Threshold Criteria

Overall protection of human health and the environment. The IC alternative protects human health and the environment by limiting exposure to residual contamination. Principal threats identified at Site L were addressed in the removal action.

In the pool area, PCB-contaminated soils remain at depths of 14 to 20 feet bgs at concentrations ranging from 0.091 mg/kg to 6.4 mg/kg. In the near-surface soil (below 6 inches), PCBs ranged from 0.03 to 5.8 mg/kg on samples collected in 1996, 1998, and 1999.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs). The IC alternative to prohibit development for residential purposes complies with all ARARs. The ARARs are presented in Table 2-2.

Balancing Criteria

Long-term Effectiveness and Permanence. Maintenance of the use restriction under the IC alternative would ensure long-term effectiveness and permanence.

Reduction of Toxicity, Mobility or Volume through Treatment. The IC alternative does not actively reduce the toxicity, mobility or volume of the PCB contamination.

Short-term Effectiveness. The implementation of the IC alternative does not pose a risk to human health and the environment.

Implementability. The IC alternative is easy to implement. Use restrictions will be stated in recorded title documents and will be monitored.

Cost Effectiveness. In the judgment of the Air Force, the IC remedial alternative is cost effective ($4,000 capital and $2,000 annual).

The IC alternative for Site L meets four of the five balancing criteria. Implementing the balancing criteria will generally indicate a technically and economically preferable alternative. However, in many cases the apparent preference for one alternative over another may not be significant. Also, the most technically and economically preferred alternative might have other

Table 2-2. Applicable or Relevant and Appropriate Requirements (ARARs) for Site L

Requirement	ARAR Status	Source	Description
Action-Specific			
Land Use Covenant	Relevant and Appropriate	Code of California Regulations (CCR), Title 22, Section 67391.1(a)	Requires imposition of appropriate limitations on land use by recorded land use covenant when hazardous substances remain on the property at levels that are not suitable for unrestricted use of the land.
Land Use Covenant	Relevant and Appropriate	CCR, Title 22, Section 67391.1(b)	Requires that the cleanup decision document contain an implementation and enforcement plan for land use limitations.
Land Use Covenant	Relevant and Appropriate	CCR, Title 22, Section 67391.1(d)	Requires that the land use covenant be recorded in the county where the land is located.
Land Use Covenant	Relevant and Appropriate	CCR, Title 22, Section 67391.1(i)	Definitions
Land Use Covenant	Relevant and Appropriate	California Civil Code, Section 1471 (a) and (b)	Specifies requirements for land use covenants, due to the presence of hazardous materials on the property, to apply to successors in title to the land.

drawbacks. In these instances, modifying criteria are used to distinguish among alternatives that are otherwise closely ranked.

Modifying Criteria

State Acceptance. The State of California was actively involved in the OU4 RI/FS and remedial alternative selection process, and participated in the public meeting to inform the public of the PP. Final acceptance will occur with the State's concurrence of this OU4 ROD.

Community Acceptance. The public comment period for the OU4 Proposed Plan was from August 31 through September 29, 2004. In addition, a public meeting was held on September 15, 2004. Representatives of the Air Force, U.S. EPA, and DTSC attended the public meeting to address questions concerning the OU4 RI/FS and PP. The Responsiveness Summary is included in Section 3.0, and the transcript is included in Appendix B.

Description of Selected Remedial Alternative. The selected remedial alternative for Site L is an IC prohibiting residential land use.

Specific language is included in this ROD regarding implementation, monitoring, reporting, and enforcement of the selected IC. Therefore, compliance with the terms of this ROD will be protective of human health and the environment. Because the restrictions are specifically described below and the means for implementing the restrictions are detailed herein, it is not necessary for the Air Force to submit any new post-ROD, IC implementation documents, such as a Land Use Control Implementation Plan, new operation and maintenance plans, or remedial action work plans.

The IC alternative includes an enforceable use restriction and land use control on the use of the property. The Air Force is ultimately responsible for implementing, maintaining, and monitoring the remedial actions (including the IC) before and after property transfer. The Air Force will exercise this responsibility in accordance with CERCLA and the NCP.

Meeting the RAO shall be the primary and fundamental indicator of IC performance, the ultimate aim of which is to protect human health and the environment. The performance measures for the IC are the RAO plus the actions necessary to achieve those objectives. It is anticipated that successful implementation, operation, maintenance, and completion of these measures will achieve protection of human health and the environment and compliance with all legal requirements.

The Air Force may contractually arrange for third parties to perform any and all of the actions associated with the IC, although the Air Force is ultimately responsible under CERCLA for the successful implementation of the IC, including monitoring, maintenance, and review of the IC. Maintenance, monitoring, and other controls as established in the above documents will be continued until the IC is no longer necessary as specified within the description of alternatives for

Site L or the IC is modified due to reduction in toxicity or potential exposure to contamination.

The land use restriction will be incorporated in the deed as a grantee covenant. The IC will be implemented to fulfill the following use limitation:

- Grantee covenants and agrees that it will not use Site L for residential purposes, hospitals for human care, public or private schools for persons under 18 years of age, or day-care centers for children.

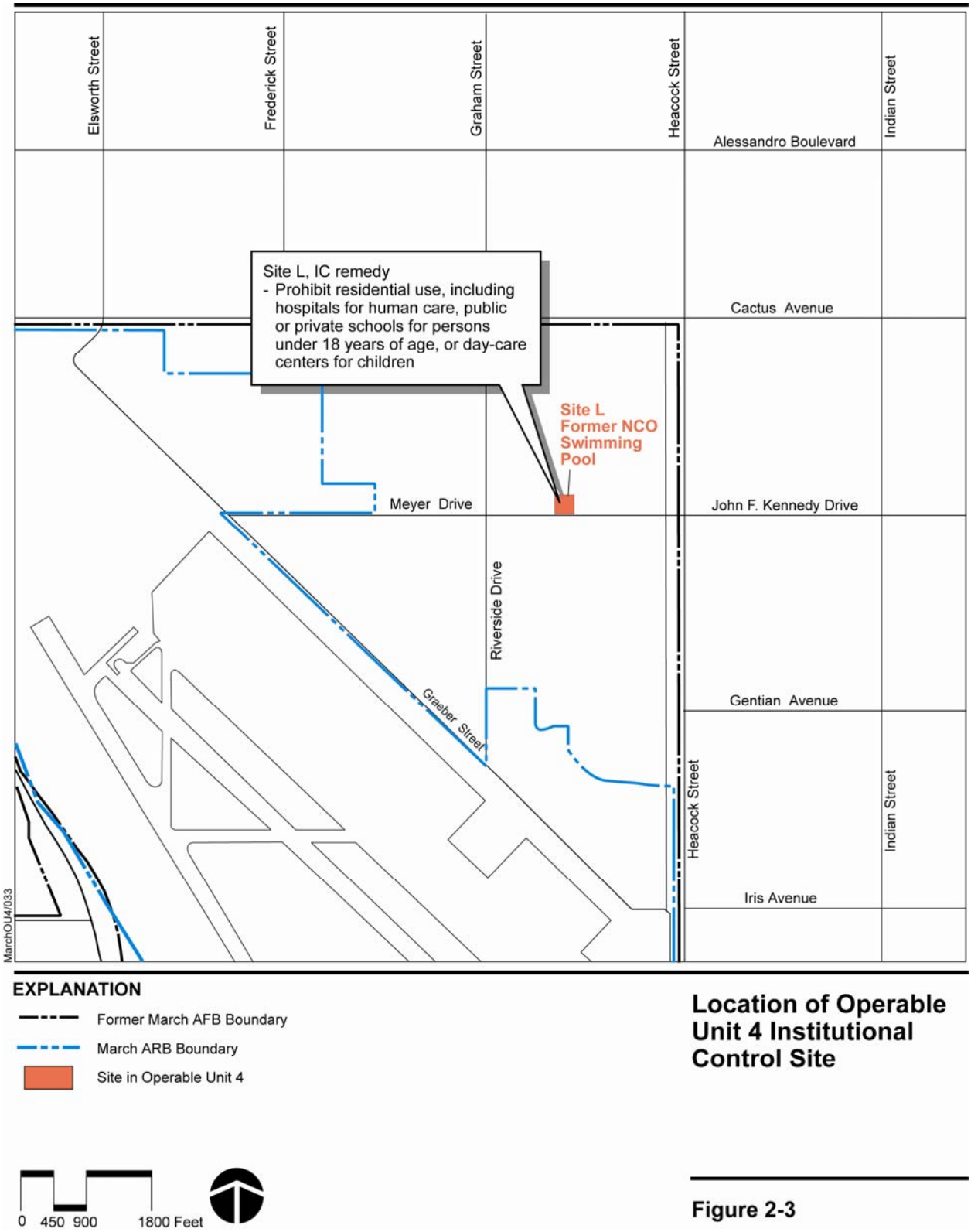
Figure 2-3 shows the location of Site L and summarizes the IC remedy. The parcel of property encompassing Site L is currently leased in furtherance of conveyance to the MJPA. The current lease restrictions, which are as protective as the IC alternative use restriction, are in place and operational, and will remain in place until the property is transferred by deed. At the moment of deed transfer, the lease restrictions will be superseded by the use restriction to be included in the federal deed and the State Land Use Covenant (SLUC).

Deed Restriction and Reservation of Access. The federal deed containing Site L will include a description of the residual contamination on the property, consistent with the Air Force's obligations under CERCLA Section 120(h) and the specific restriction set forth in the section above, "Description of Selected Remedial Alternative." The IC, in the form of a deed restriction, is an "environmental restriction" under California Civil Code Section 1471. The deed will contain appropriate provisions to ensure that the restrictions continue to run with the land, as provided in California Civil Code Section 1471 and will include a legal description of Site L.

The Air Force and regulatory agencies may conduct inspections of the IC at Site L. The deed will also contain a reservation of access to the property for the Air Force, U.S. EPA, and the State of California, and their respective officials, agents, employees, contractors, and subcontractors for purposes consistent with the Air Force IRP or the FFA (and the Air Force will provide such access to regulatory agencies prior to transfer).

The environmental restriction is the basis for part of the CERCLA 120(h)(3) covenant that the United States is required to include in the deed for any property that has had hazardous substances stored for one year or more or known to have been released or disposed of on the property. During the time between adoption of this ROD and deeding the property, appropriate restrictions are implemented at Site L by the lease between the Air Force and MJPA.

Notice of Institutional Control. The Air Force will include the specific deed restriction language set forth in this ROD in the deed for the parcel that includes Site L, and will provide a copy of the deed to the regulatory agencies as soon as practicable after transfer of fee title. The Air Force will provide information to the property owners regarding the necessary IC in the draft deed. The signed deed will also include the specific land use restriction as well as a condition that the transferee execute and record an SLUC, within 10 days of transfer, to address



Location of Operable Unit 4 Institutional Control Site

Figure 2-3

any state obligations pursuant to State law, including 22 Code of California Regulations (CCR), Section 67391.1. The Air Force will ensure that the transferee has met this condition. The information will also be communicated to appropriate state and local agencies with authority regarding any of the activities or entities addressed in the controls to ensure that such agencies can factor the information into their oversight, approval, and decision-making activities.

Prior to conveyance of Site L, U.S. EPA and DTSC representatives will be given reasonable opportunity to review and comment on the applicable deed language described in this section and associated rights of entry for DTSC and U.S. EPA for purposes of IC oversight and enforcement.

Annual Evaluations/Monitoring. Prior to property transfer, the Air Force will conduct annual monitoring and undertake prompt action to address activity that is inconsistent with the IC objective or use restriction, or any action that may interfere with the effectiveness of the IC. Upon the effective date of property conveyance, the transferee[1] or subsequent property owner(s) will conduct annual physical inspections of Site L to confirm continued compliance with all IC objectives unless and until the IC at the site is terminated. The transferee or subsequent property owner(s) will provide to the Air Force, U.S. EPA, and DTSC an annual monitoring report on the status of the IC and how any IC deficiency or inconsistent use has been addressed. The Air Force will place these transferee obligations in the transfer documentation.

The five-year review reports conducted by the Air Force will also address whether the IC in the ROD was inserted in the deed, if property was transferred during the period covered, whether the owners and State and local agencies were notified of the IC affecting the property, and whether use of the property has conformed to such an IC. Five-year review reports will make recommendations on the continuation, modification, or elimination of annual reports and IC monitoring frequencies. Five-year review reports are submitted by the Air Force to the regulatory agencies for review and comment.

Although the Air Force is transferring procedural responsibilities to the transferee and its successors by provisions to be included in the deed(s) transferring title to Site L and may contractually arrange for third parties to perform any and all of the actions associated with the IC, the Air Force is ultimately responsible for the remedy.

Response to Violations. Prior to property transfer, any activity inconsistent with the IC objective or any action that may interfere with the effectiveness of the IC will be addressed by the Air Force as soon as practicable, but no later than 10 days from the date of discovery of the inconsistent activity or action that interferes with the effectiveness of the IC.

Post-transfer, if the transferee fails to satisfy its obligations pursuant to the SLUC, DTSC may enforce such obligations against the transferee. If there is failure of the selected remedy or a violation of selected remedy obligations (for

[1] Or other entity accepting such obligations (which may include, without limitation, subsequent transferees)

example, an activity inconsistent with the IC objective or use restriction, or any action that may interfere with the effectiveness of the IC), DTSC will notify the Air Force and U.S. EPA in writing of such failure as soon as practicable (but no longer than 14 days) upon discovery of the inconsistent activity or action that interferes with the effectiveness of the IC, and initially seek corrective action or other recourse from the transferee. Within 21 days following DTSC's notification, the Parties shall confer to discuss re-implementation of the selected remedy or other necessary remedial actions to address the breach of the IC. Once DTSC reports that the transferee is unwilling or unable to undertake the remedial actions, the Air Force will within 10 days inform the other Parties of measures it will take to address the breach.

Approval of Land Use Modification. Any grantee of property constrained by the IC imposed through their transfer document(s) may request modification or termination of the IC. Modification or termination of the IC, except the SLUC (discussed below), requires Air Force, U.S. EPA, and DTSC approval.

State Land Use Covenant (SLUC) Modification. Any modification or termination of the SLUC must be undertaken in accordance with State law; and will be the responsibility of the transferee or then-current owner or operator.

2.6 STATUTORY DETERMINATIONS

Under the authority delegated to it by Executive Order 12580, the Air Force is selecting the IC alternative at Site L with the approval of U.S. EPA and the concurrence of DTSC. Under CERCLA §121 and the NCP, the lead agency must select remedial alternatives that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost-effective and utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedial alternatives that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element and a bias against off-site disposal of untreated wastes. The following discusses how the IC remedial alternative at Site L meets these requirements.

Protection of Human Health and the Environment. The IC protects human health and the environment by limiting exposure to residual contamination. Principal threats identified at Site L were addressed in the site's removal action.

Compliance with Applicable or Relevant and Appropriate Requirements. The selected remedial alternative of an IC to prohibit development for residential purposes complies with all ARARs. The ARARs are presented in Table 2-2.

Cost Effectiveness. In the judgment of the Air Force, the IC remedial alternative is cost-effective ($4,000 capital and $2,000 annual).

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable. The IC remedial alternative achieves the objective of limiting exposures to protective levels while allowing beneficial use of the site to continue. The selected remedial alternative satisfies the long-term

effectiveness criteria by limiting exposure to contaminated soils. The selected remedial alternative does not present short-term risks, and there are no implementability issues.

Preference of Treatment as a Principal Element. The IC remedial alternative does not satisfy the preference for remedial alternatives that employ treatment as a principal. The residual contamination remaining after the Site L removal action cannot be practicably removed and treated. Limiting exposure by IC is appropriate.

Five-Year Review Requirement. Because the Site L remedial alternative will result in soil contamination remaining on site above levels that allow for unlimited use and unrestricted exposure, a statutory review of this site will be conducted as part of the ongoing CERCLA 5-year reviews at the former March AFB to ensure that the remedy remains protective of human health and the environment.

Summary of Rationale for the Selected Remedial Alternative. Site L contains surface soil and subsurface soil (14 to 20 feet bgs) contaminated with PCBs. PCBs are highly persistent in the environment, toxic, and bio-accumulative. The projected long-term reuse of Site L is for industrial/commercial-related purposes. The site is currently a parking lot. The combined child/adult theoretical excess cancer risk for a residential exposure scenario is 1×10^{-5} and the non-cancer hazard index (HI) is 2.

The selected remedial alternative for Site L is an IC prohibiting use of the site for residential purposes. The remedial alternative will notify stakeholders about the nature and extent of the contaminated soil present at Site L. The selected remedial alternative is protective of human health and the environment by establishing an IC that runs with the land controlling use of, and exposure to, the soil at the site. The IC will ensure long-term protectiveness by preventing long-term exposure to the contaminated soils. Short-term exposure (e.g., commercial/industrial) risk is acceptable. The remedial alternative is readily implementable and cost effective using property transfer process that is currently in place at the former March AFB. The selected remedial alternative does not involve treatment. The PCB concentrations do not require treatment under waste management regulations, and treatment was determined to be cost prohibitive.

3.0 RESPONSIVENESS SUMMARY

PUBLIC COMMENTS ON THE MARCH OU4 PROPOSED PLAN

Verbal comments and responses made during the public meeting are summarized below. The Air Force did not receive any written comments on the Proposed Plan.

Comment. Gerald Budlong, community co-chair for March AFB RAB. I'm very pleased with Mr. Phil Mook's clarification presentation, and his presentation was just absolutely excellent in my opinion, and I've removed most of my questions and comments. However, for the people who are concerned about OU4 and are not here tonight to benefit from hearing Phil's excellent presentation, would it be feasible for some of his clarification language to be incorporated in the draft document? I think that would remove a lot of the questions the public may have. The only other question I have is that the Hawes site has been historically in the program--been in the mapping right and left, and it would be redundant to include a map of the Hawes site, again, unless we really needed to do so. However, I don't remember Site 21 Cordures Effluent Pond, ever being in any of the mapping. I was wondering if it is feasible to include a little inset map showing that site?

Response. Map inset of location of Site 21 was added to ROD Figure 2-1.

Comment. Sheryl Lauth, Remedial Project Manager for Former March AFB/March ARB, U.S. EPA, Region IX. Is there another hospital that is on the reserve base?

Response. The hospital referred to in the OU4 PP was built in the 1960s. A 1930s era hospital was located next to the parade ground.

Comment. Ricardo Olalde, RAB member. I just wanted to compliment the Air Force and their consultants in the processes, in their interaction with the RAB, and the regulators as well. I think you've done a really good job in answering the questions to the RAB. And usually if there was something that needed to be clarified, it has been clarified. And as a citizen--local citizen--I appreciate your being there, and I just want to compliment you on the record.

Response. None required.

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4.0 REFERENCES

The number found with brackets [ ] at the end of each citation is the Administrative Record Index identifier for the document. The reviewer can use the Administrative Record document identifier to locate the document within the March AFB Administrative Record. The record can be accessed at the website http://www.afrpa.hq.af.mil/mcclellan.

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APPENDIX A

ADMINISTRATIVE RECORD INDEX

APPENDIX A
ADMINISTRATIVE RECORD

AR IR File Number	Document Date	Subject or Title	Author
02	Apr 84	Phase I Records Search	CH2M Hill
08-10	Mar 87	Phase II, Stage 1 confirmation/Quantification Report Vol.1-3	Engineering-Science, Inc.
11	Sep 93	Fact Sheet, Environmental Restoration Program	22 ARW/PA
15-19	Jun 88	Phase II Stage 2 Confirmation//Quantification Report Vol 1-5	Engineering-Science, Inc.
29	Sep 89	IP Stage 3 - Draft RI/Preliminary FS Area No. 5 (Vol. 1)	Engineering-Science
35/36	19 Oct 94	RPM/BCT Meeting Minutes	The Earth Technology Corp.
53	27 Sep 90	FFA	AF
59	20 Nov 90	RPM Meeting Minutes, 1 Nov 90	22 CSG/DEV
62	10 Dec 90	RPM Meeting Minutes	22 CSG/DEV
64	9 Nov 93	TRC Meeting Minutes	22 ARW/PAV
69	20 Nov 93	TRC Meeting Minutes	22 ARW/PAV
71	8 Jan 91	RPM Meeting Minutes	22 CSG/DEV
72	7 Sep 94	RAB Meeting Minutes	The Earth Technology Corp.
79	22 Feb 91	RPM Meeting Minutes, 5-6 Feb 91	22 CSG/DEV
83	27 Apr 94	RAB Meeting Minutes	The Earth Technology Crop.
84	21 Mar 91	RPM Meeting Minutes	22 CSG/DEV
87	May 91	IRP Stage 4 Site Characterization Summary	Earth Technology Corp.
91	24 Apr 91	RPM Meeting Minutes	22 CSG/DEV
92	May 91	Community Relations Plan	Ebasco Environmental
96	10 Jun 91	Press Release, Public Invited to TRC Meeting	22 CES/DEV
97	19 Oct 94	RAB Meeting Minutes	The Earth Technology Corp.
98/99	18 Jun 91	RPM/TRC Meeting Minutes	22 ARW/PAV
105	23 Aug 93	CDTSC Memorandum Concerning Draft RI/FS, OU1	Kathleen A. Considine
106	Jul 91	RI/FS, Draft SAP Addendum OU1	The Earth Technology Corp.
108	23 Aug 93	CRWQCB Letter to Base concerning Review Comments on the Draft RI/FS OU1	John Broderick
114	6 Nov 91	RPM Meeting Minutes, 15-16 Oct	22 CSG/DEV
121	27 Sep 91	EPA Letter to Base Transmitting Review Comments on Draft Basewide Work Plan; Draft Work Plan Addendum for OU1, Draft SAP, Draft SAP Addendum for OU1	Richard T. Russell
122	30 Sep 91	CDTSC Letter to Base Transmitting Review Comments on Draft Basewide Work Plan; Draft Work Plan Addendum for OU1, Draft SAP, Draft SAP Addendum for OU1	Emad B. Yemut
123	2 Oct 91	CRWQCB Letter to Base concerning Review Comments on the Draft Basewide Work Plan and SAP	Kenneth R. Williams
124	2 Oct 91	CRWQCB Letter to Base concerning Review Comments on the Draft Work Plan Addendum and Drat SAP Addendum OU1	Kenneth R. Williams

AR IR File Number	Document Date	Subject or Title	Author
126	1 Sep 93	EPA Letter to Base concerning Review Comments on the Draft RI/FS OU1	Richard T. Russell
129	6 Nov 91	RPM Meeting Minutes	22 CSG/DEV
134	19 Dec 91	EPA Letter to Base concerning Review Comments on the Draft Final Basewide Work Plan; Draft Final Work Plan Addendum for OU1; Draft Final SAP; Draft Final SAP Addendum for OU1RI/FS OU1	Richard T. Russell
135	20 Dec 91	CDTSC Letter to Base concerning Review Comments on the Draft Final Basewide Work Plan; Draft Final Work Plan Addendum for OU1; Draft Final SAP; Draft Final SAP Addendum for OU1RI/FS OU1	Emad B. Yemut
142	Jan 92	RI/FS, Basewide Work Plan	The Earth Technology Corp.
143	Jan 92	RI/FS, Basewide SAP	The Earth Technology Corp.
144	Jan 92	RI/FS Work Plan Addendum OU1	The Earth Technology Corp.
145	Jan 92	RI/FS SAP Addendum OU1	The Earth Technology Corp.
146	Jan 92	Fact Sheet, Public Participation in the Cleanup Process	22 ARW/PA
155	17 Feb 94	Press Release, Base Seeks Community Input on Cleanup Plan	22 ARW/PA
156	31 Jan 92	Stage 5, Draft Site Characterization Summary, ITIR, Vol I of II, HQ 15 AF Area Sites	Tetra Tech, Inc.
157	31 Jan 92	Stage 5, Draft Site Characterization Summary, ITIR, Vol I of II, HQ 15 AF Area Sites	Tetra Tech, Inc.
160	27 Jul 94	RAB Meeting Minutes	The Earth Technology Corp.
161	2 Feb 92	RPM Meeting Minutes 23 Jan 92	22 CSG/DEV
165	21 Mar 91	TRC Meeting Minutes	22 CSG/DEV
166	3 Mar 92	RPM Meeting Minutes	22 CSG/DEV
173	5 May 92	Press Release, Public Invited to TRC Meeting	22 ARW/PA
174	8 May 92	Newspaper Article “TRC Meeting, 14 May 92”	The Press-Enterprise
176	14 Sep 93	RPM Meeting Minutes	22 CES/CEV
180	16 Nov 94	RAB Meeting Minutes	The Earth Technology Corp.
181	24 Jun 92	TRC Meeting Minutes, 14 May 92	22 ARW/PA
187	27 Jul 92	RPM Meeting Minutes, 20 Jul 92	22 SPTG/DEV
189	11 Mar94	Press Release, Public Invited to Environmental Meeting	22 ARW/PA
193	25 Aug 92	RPM Meeting Minutes	22 CES/CEV
195	27 Aug 92	Stage 5, SAP Addendum, OU2	Tetra Tech, Inc.
196	27 Aug 92	Stage 5 Work Plan Addendum, OU2	Tetra Tech, Inc.
20	22 Aug 92	Newspaper Article, “Meeting on Progress of Base Cleanup Slated”	The Press-Enterprise
210	22 Oct 92	RPM Meeting Minutes, 6 Oct 92	22 CES/CEV
212	3 Dec 92	RPM Meeting Minutes	22 CES/CEV
214	20 Jan 93	RPM Meeting Minutes	22 CES/CEV
217	10 Mar 93	RPM Meeting Minutes, 23 Feb 93	22 CES/CEV

AR IR File Number	Document Date	Subject or Title	Author
218	30 Mar 93	Press Release, Public Invited to Technical Review Committee Meeting	22 ARW//PA
223/224	16 Nov 94	RPM/BCT Meeting Minutes	The Earth Technology Corp.
225	15 Apr 93	RPM Meeting Minutes 31 Mar 93 and Revised RPM Meeting Minutes 23 Feb 93	The Earth Technology Corp.
230	May 93	RFA, Expanded Source Investigation	The Earth Technology Corp.
234	30 Jun 93	RPM Meeting Minutes, 16 Jun 93	The Earth Technology Corp.
253	21 May 93	RPM Meeting Minutes	22 CES/CEV
254	21 May 92	Fact Sheet, Cleanup Program	22 ARW/PA
259	May 94	Press Release, March AFB RAB Public Meeting 11 May 94	22 ARW/PA
263	20 Jan 94	RAB Meeting Minutes 19 Jan 94	The Earth Technology Corp.
264	17 Feb 94	RAB Meeting Minutes, 16 Feb 94	The Earth Technology Corp.
265	17 Mar 94	RAB Meeting Minutes, 16 Mar 94	The Earth Technology Corp.
271	13 Jan 94	Press Release, Public Invited to Environmental Meeting	22 ARW/PA
373	Mar 95	SI, Final Site Specific HSP, ST41	Tetra Tech, Inc.
374	11 Jan 95	RAB Meeting Minutes, 11 Jan 95	The Earth Technology Corp.
392	29 Mar 95	RPM Meeting Minutes	The Earth Technology Corp.
415	22 Feb 95	RAB Meeting Minutes	The Earth Technology Corp.
416	22 Feb 95	RPM Meeting Minutes	The Earth Technology Corp.
421	Mar 95	SI, Final Work Plan, Tank Removal, Former Hawes Radio Relay Station	Tetra Tech, Inc.
427	Apr 94	Corrective Action Plan, Supplement to the Work Plan Addendum, OU2	Tetra Tech., Inc.
478	19 Apr 95	RPM Meeting Minutes	The Earth Technology Corp.
479	20 Jun 95	RPM Meeting Minutes	The Earth Technology Corp.
480	26 Jul 95	RPM Meeting Minutes, 11 Jan 95	The Earth Technology Corp.
481	20 Jun 95	RAB Meeting Minutes	The Earth Technology Corp.
484	13 Jun 95	Newspaper Article, “March AFB RAB Public Meeting 20 Jun 95”	The Press-Enterprise
492	Aug 95	EE/CA OU2 Site L	Tetra Tech, Inc.
500	Sep 95	Stage 5, Draft Supplement 2 to the Work Plan Addendum and SAP Addendum OU2	Tetra Tech, Inc.
501	1 Nov 93	Fact Sheet, RAB	22 ARW/PA
510	9 Aug 95	RI/FS Scoping Meeting Minutes	The Earth Technology Corp.

AR IR File Number	Document Date	Subject or Title	Author
516	20 Sep 95	CDTSC Letter to Base Concerning Draft EE/CA, Site L	Emad B. Yemut
517	27 Sep 95	RPM/BCT Meeting Minutes, 6 Sep 95	722 CES/CEVR
518	12 Oct 95	Newspaper Article, “RAB Meeting, 12 and 13 Oct 95”	The Press-Enterprise
520	Oct 95	Removal Work Plan Addendum, OU2 Site L	Tetra Tech, Inc.
532	19 Oct 95	RAB Meeting Minutes	The Earth Technology Corp.
534	19 Oct 95	RPM/BCT Meeting Minutes	The Earth Technology Corp.
537	21 Feb 92	Newspaper Article, “Health Officials Criticize Discharge of Mercury by Hospital at March”	The Press-Enterprise
561	7 Dec 95	RPM Meeting Minutes	The Earth Technology Corp.
563	25 Jan 96	Newspaper Article, “RAB Meeting 31 Jan 96”	The Press-Enterprise
564	Jan 96	EE/CA, Subsurface Investigation and Removal Action OU2 Site L	Tetra Tech, Inc.
572	Jan 96	SI, Summary of Tank Removal, Former Hawes Radio Relay Station, ST41	Tetra Tech, Inc.
581	31 Jan 96	Quality Project Plan, Soil and UST Removal Action	CKY, Inc.
582	31 Jan 96	Quality Project Plan, Soil and UST Removal Action	CKY, Inc.
588	11 Feb 96	Newspaper Article, “Public Comment Invited on Cleanup Document,” Site L	The Press-Enterprise
592	Feb 96	Site HSP, Subsurface Investigation and Removal Action, OU2 Site L	Tetra Tech, Inc.
593	Feb 96	Draft Final SOP for Hazardous Materials, Soil and UST Removal Action	CKY, Inc.
596	16 Feb 96	Resource Management Plan, Soil and UST Removal Action	CKY, Inc.
608	13 Mar 96	Newspaper Article, “Public Meeting on Proposed Environmental Cleanup Action Followed by RAB Meeting”	The Press-Enterprise
612	Mar 96	Site HSP Subsurface Investigation and Removal Action OU2 Site L	Tetra Tech, Inc.
622	Mar 96	RFA, EBS, and AOC Site Investigation Report, OU2 (Vol. 1)	Tetra Tech, Inc.
630	28 Mar 96	Action Memorandum, Subsurface Investigation and Removal Action for Site L, OU2	Tetra Tech, Inc.
641	28 Jul 93	Newspaper Article, “Hearing Tonight on March Cleanup”	The Press-Enterprise
642	31 Jan 96	RAB Meeting Minutes	Gutierrez-Palmenberg, Inc.
643	20 Mar 96	RAB Meeting Minutes	Gutierrez-Palmenberg, Inc.
645	5 Jun 96	Newspaper Article, “Public Notice, RAB Meeting, 12 Jun 96”	The Press-Enterprise
646	19 Oct 95	RPM Meeting Minutes	The Earth Technology Corp.
647	24 Jan 96	RPM Meeting Minutes	The Earth Technology Corp.
655	13 Jun 96	BCT Meeting Minutes	The Earth Technology Corp.

AR IR File Number	Document Date	Subject or Title	Author
656	18 Apr 96	BCT Meeting Minutes	The Earth Technology Corp.
659	Feb 96	Final EIS Disposal of Portions of March AFB, Vol I of II	The Earth Technology Corp.
660	Feb 96	Final EIS Disposal of Portions of March AFB, Vol II of II	The Earth Technology Corp.
671	15 Aug 96	BCT Meeting Minutes	AFBCA/OL-1A
678-694	Jul 97	OU2 RI/FS Draft Final Vol 1-17	Tetra Tech, Inc.
695	11 Sep 96	Newspaper Article, “RAB Meeting and Public Meeting on Proposed Environmental Cleanup Action at the Panero Refueling Site”	The Press-Enterprise
698	12 Jun 96	RAB Meeting Minutes	Gutierrez-Palmenberg, Inc.
699	18 Sep 96	RAB Meeting Minutes	Gutierrez-Palmenberg, Inc.
700	Oct 96	Final Decision Document March ARB OU3 Removal Action Upgrade	March ARB
701	30 Oct 96	Final Work Plan, Rapid Response for Mercury Spill Cleanup at Water Tower 407	IT Corp.
704	15 Nov 96	Newspaper Article, “March AFB RAB Meeting, 20 Nov 96”	The Press-Enterprise
716	24 Oct 96	BCT Meeting Minutes	The Earth Technology Corp.
717	19 Sep 96	BCT Meeting Minutes	The Earth Technology Corp.
718	2 Jan 97	Newspaper Article, “RAB Meeting 8 Jun 97”	The Press-Enterprise
719	20 Nov 96	RAB Meeting Minutes	Gutierrez-Palmenberg, Inc.
722	7 Jun 96	Newspaper Article, “Toxics Cleanup Group to Meet”	The Press-Enterprise
734	5 Dec 96	BCT Meeting Minutes	The Earth Technology Corp.
735	9 Jan 97	BCT Meeting Minutes	The Earth Technology Corp.
746	20 Dec 96	Action Memorandum, Removal Action for Mercury at Water Tower, SS-44	March ARB
747	16 Apr 97	Newspaper Article, “RAB Meeting Minutes, 23 Apr 97”	The Press-Enterprise
748	6 Mar 97	BCT Meeting Minutes	The Earth Technology Corp.
763	May 97	Community Relations Plan	Gutierrez-Palmenberg, Inc.
764	8 Jan 97	RAB Meeting Minutes	Gutierrez-Palmenberg, Inc.
768	31 May 97	Newspaper Article, “Cleanup of Mercury Finished at March Base”	The Press-Enterprise
769	May 97	Fact Sheet, Time Critical Removal Action for Mercury Contaminated Soil, Site 44	452CES/CEVR
772	12 Jun 97	Newspaper Article, “Community Relations Plan for March AFB Environmental Cleanup Now Available”	The Press-Enterprise
773	Nov 97	Final Report, Mercury Spill Cleanup and Soil Excavation, SS44, OT8	IT Corp.

AR IR File Number	Document Date	Subject or Title	Author
774	24 Apr 97	BCT Meeting Minutes	The Earth Technology Corp.
775	6 Jun 97	RAB Meeting Minutes, 23 Apr 97	AFBCA/DD March
776	17 Jul 97	Newspaper Article, “RAB Meeting, 23 Jul 97”	The Press-Enterprise
777	22 Jul 97	Newspaper Article, “Citizens Panel on Cleanup to Meet”	The Press-Enterprise
785	Aug 97	Fact Sheet, March AFB Environmental Cleanup Program	Gutierrez-Palmenberg, Inc.
796	5 Jun 97	BCT Meeting Minutes	The Earth Technology Corp.
799	22 Oct 97	Newspaper Article, “RAB Meeting 29 Oct 97”	The Press-Enterprise
806	31 Jul 97	BCT Meeting Minutes	The Earth Technology Corp.
807	11 Sep 97	BCT Meeting Minutes	The Earth Technology Corp.
818	23 Jul 97	RAB Meeting Minutes	Gutierrez-Palmenberg, Inc.
826	1998	Draft Final March AFB OU2 ROD	Tetra Tech, Inc.
827	30 Oct 97	BCT Meeting Minutes	The Earth Technology Corp.
828	11 Dec 97	BCT Meeting Minutes	The Earth Technology Corp.
829	14 Jan 98	Newspaper Article, “March AFB RAB Meeting”	22 CES/CEVR
835	18 Nov 96	Final Site closure Report, UST Removal and Waste Oil Tank Cavity Remediation at Hawes Radio Relay Station	CKY, Inc.
836	7 Jun 96	Subsurface Investigation at the UST Excavation Area Hawes Radio Relay Station	CKY, Inc.
856	Apr 98	Draft Final Site Closure Report, Hawes Radio Relay Station Township 10 North, Range 4 West, Section 30, and Township 10 North, Range 5 West, Section 26 and 35	Tetra Tech, Inc.
867	Jun 98	RI/FS Draft Final Basewide Work Plan and Quality Project Plan	The Earth Technology Corp.
874	22 Jan 98	BCT Meeting Minutes	Gutierrez-Palmenberg, Inc.
875	21 Jan 98	RAB Meeting Minutes	Gutierrez-Palmenberg, Inc.
883	Aug 98	Draft Final Removal Action Work Plan, Proposed Additional Soil Sampling, Former NCO Club Swimming Pool, Site L	Tetra Tech, Inc.
891	28 Jul 93	BCT Meeting Minutes	The Earth Technology Corp.
896	21 Oct 94	Fact Sheet, The Green Sheet	722 CES/CEVR
924	Sep 97	Draft Final Proposed Plan, Cleanup of Contaminated Soil and Groundwater, OU2	Tetra Tech, Inc.
932	29 Oct 97	RAB Meeting Minutes	AFBCA/DD March
941	20 Feb 98	CRWQCB Letter to Base concerning Review Comments on the RI/FS Draft Work Plan and Quality Project Plan	John Broderick

AR IR File Number	Document Date	Subject or Title	Author
942	23 Feb 98	CDTSC Letter to Base concerning Review Comments on the RI/FS Draft Work Plan and Quality Project Plan	Emad B. Yemut
946	12 Mar 98	BCT Meeting Minutes	AFBCA/DD March
947	1 Apr 98	Newspaper Article, “RAB Meeting 8 Apr 98”	The Press-Enterprise
948	8 Apr 98	RAB Meeting Minutes	AFBCA/DD March
955	21 May 98	BCT Meeting Minutes	AFBCA/DD March
961	24 Jun 98	EPA Letter to Base concerning Review Comments on the Basewide RI/FS Draft Work Plan and Quality Project Plan	Richard T. Russell
963	9 Jul 98	Newspaper Article, “RAB Meeting 15 Jul 98”	The Press-Enterprise
971	6 Aug 98	BCT Meeting Minutes	AFBCA/DD-March
974	9 Sep 98	RAB Meeting Minutes	AFBCA/DD-March
975	17 Sep 98	CDTSC Letter to Base concerning RI/FS Draft Final Work Plan and Quality Project Plan	Sharon Fair
976	24 Sep 98	BCT Meeting Minutes	AFBCA/DD-March
977	28 Sep 98	CRWQCB Letter to Base concerning RI/FS Draft Final Work Plan and Quality Project Plan	Emad B. Yemut
980	13 Nov 98	Newspaper Article, “RAB Meeting”	The Press-Enterprise
981	19 Nov 98	BCT Meeting Minutes	AFBCA/DD-March
982	19 Nov 98	RAB Meeting Minutes	AFBCA/DD-March
992	Mar 99	RI/FS Final Basewide Work Plan	Earth Tech, Inc.
1013	Aug 97	Fact Sheet, Environmental Cleanup Program	AFBCA/DD-March
1023	Apr 99	Additional Soil Sampling Results, RFA Site L	Tetra Tech, Inc.
1034	20 Jan 99	RAB Meeting Minutes	Gutierrez-Palmenberg, Inc.
1035	21 Apr 99	RAB Meeting Minutes	Gutierrez-Palmenberg, Inc.
1036	21 Jul 99	RAB Meeting Minutes	Gutierrez-Palmenberg, Inc.
1037	21 Jan 99	RPM Meeting Minutes	Gutierrez-Palmenberg, Inc.
1038	22 Apr 99	RPM Meeting Minutes, 21-22 Apr 99	Gutierrez-Palmenberg, Inc.
1039	17 Jun 99	RPM Meeting Minutes, 16-17 Jun 99	Gutierrez-Palmenberg, Inc.
1040	26 Aug 99	RPM Meeting Minutes, 25-26 Aug 99	Gutierrez-Palmenberg, Inc.
1041	28 Oct 99	RPM Meeting Minutes, 27-28 Oct 99	Gutierrez-Palmenberg, Inc.
1042	20 Jan 00	RPM Meeting Minutes, 19-20 Jan 00	Gutierrez-Palmenberg, Inc.
1043	14 Apr 99	Newspaper Article, “RAB Meeting, 21 Apr 99”	The Press-Enterprise
1045	25 Oct 99	Newspaper Article, “March AFB Environmental Cleanup Actions”	The Press-Enterprise
1047	15 Jul 99	Newspaper Article, “March AFB RAB Meeting, 21 Jul 99”	The Press-Enterprise
1048	21 Oct 99	Newspaper Article, “March AFB RAB Meeting, 27 Oct 99”	The Press-Enterprise
1049	29 Sep 99	Newspaper Article, “March AFB Seeks New Members for RAB, Open House Scheduled”	The Press-Enterprise

AR IR File Number	Document Date	Subject or Title	Author
1077	Oct 98	Community Relations Plan	Gutierrez-Palmenberg, Inc.
1082	13 Jun 89	IRP Meeting Minutes, 30 Mar 89	452 CES/CE
1097	24 Mar 92	EPA Letter to Base concerning Review Comments on the Draft Stage 5 Work Plan Addendum and SAP Addendum for OU2	Richard T. Russell
1098	8 Dec 00	EPA Letter to Base Concerning Comments on Draft Report of Mitigation Action, Site L	Melissa W. Pennington
1100	31 Mar 92	CRWQCB Letter to Base concerning Review Comments on Stage 5 Work Plan Addendum, SAP Addendum OU2	Kenneth R. Williams
1101	9 Apr 92	RPM Meeting Minutes	22 CSG/DEV
1107	15 May 92	RPM Meeting Minutes	22 SPTG/DEV
1141	7 Oct 93	RPM Meeting Minutes	22 CES/CEVR
1144	10 Nov 93	RPM Meeting Minutes	22 CES/CEVR
1153	12 Jan 93	CRWQCB Letter to Base concerning Review Comments on RFA, Expanded Source Investigation	John Broderick
1173/1174	19 Jan 94	RPM/BCT Meeting Minutes	722 CES/CEVR
1180/1181	10 Feb 97	RPM/BCT Meeting Minutes	722 CES/CEVR
1183	14 Feb 94	CRWQCB Letter to CDTSC No Comments on the Draft Corrective Action Work Plan, OU2	John Broderick
1184	15 Feb 94	EPA Letter to Regulators concerning Comments from Meeting with Contractor, Corrective Action Plan	Richard T. Russell
1187	2 Mar 94	EPA Letter to Base concerning Comments on the Draft Site Specific Corrective Action Plan, OU2	Richard T. Russell
1189	7 Mar 94	CDTSC Letter to Base concerning Review Comments on the Draft Corrective Action Plan, OU2	Rizgar A. Ghazi
1190/1191	16 Mar 94	RPM/BCT Meeting Minutes	722 CES/CEVR
1196	21 Feb 94	EPA Letter to Base Concerning Sites 21 and 23	Thelma K. Estrada
1199	5 May 94	CDTSC Letter to Base concerning Review Comments on the Draft Work Plan, Additional Investigations OU2	Rizgar A. Ghazi
1200	19 May 94	RAB Meeting Minutes, 11 May 94	722 CES/CEVR
1201/1202	12 May 94	RPM/BCT Meeting Minutes	722 CES/CEVR
1210/1211	22 Jun 94	RPM/BCT Meeting Minutes	722 CES/CEVR
1213	24 Jun 94	EPA Letter to Base concerning Concurrence, Draft Final Correction Action Plan	Richard T. Russell
1217	Jul 94	RI/FS Report, Vol I of II, OU1	The Earth Technology Corp.
1218	Jul 94	RI/FS Report, Vol II of II, OU1	The Earth Technology Corp.
1222	14 Jul 94	CDTSC Letter to Base concerning No Comments on the Corrective Action Plan Supplement of Work Plan Addendum OU2	John E. Scandura
1223/1224	3 Aug 94	RPM/BCT Meeting Minutes	722 CES/CEVR
1229/1230	7 Sep 94	RPM/BCT Meeting Minutes	722 CES/CEVR
1237	8 Nov 94	EPA Letter to Base concerning Comments on the Draft Work Plan, Additional Investigations, OU2	Richard T. Russell
1241	8 Dec 94	BCT Meeting Minutes	722 CES/CEVR
1246/1247	12 Jan 95	RPM/BCT Meeting Minutes	722 CES/CEVR
1249	19 Jan 95	Site Assessment Report, Summary of Tank Removal, ST41	Tetra Tech, Inc.

AR IR File Number	Document Date	Subject or Title	Author
1255	22 Feb 95	CDTSC Letter to Base Transmitting Comments on Draft Work Plan, Tank Removal and SI, ST41	Emad B. Yemut
1260	14 Mar 95	EPA Letter to Base Transmitting Comments on Draft Work Plan, Tank Removal and Investigation, ST41	Richard T. Russell
1263	29 Mar 95	BCT Meeting Minutes	722 CES/CEVR
1265	04 Apr 95	CDTSC Letter to Base Concerning Approval of Draft Final Work Plan Tank Removal and Investigation, ST41	Albert A. Arellano, Jr.
1276	31 May 95	County of San Bernardino Letter to March ARB Concerning No Objection on Final Work Plan, Hawes Site, ST-41	Len Smith
1277	5 Jun 95	CDTSC Letter to Base concerning Comments on RI Draft Report OU2	Emad B. Yemut
1281	30 Jun 95	CDTSC Letter to Base concerning Comments on the Draft RI	Emad B. Yemut
1283	26 Jul 95	BCT Meeting Minutes	722 CES/CEVR
1284	14 Aug 95	CDTSC Letter to Base concerning Review Comments on the Draft FS OU2	Emad B. Yemut
1291	20 Sep 95	BLM Letter to Base Concerning Review, Comments on Final Work Plan, ST41	Tim Read
1292	21 Sep 95	EPA Letter to Base concerning Comments on the Draft RI OU2	Emad B. Yemut
1302	Apr 01	Final Report of Mitigation Action Site L	Tetra Tech, Inc.
1307	96	EPC Meeting Minutes, 21 Aug 96	AFBCA/OL-1A
1321	6 Mar 96	CDTSC Letter to Base concerning Review Comments on the Draft RI, OU2	Emad B. Yemut
1327	21 Mar 96	BCT Meeting Minutes	The Earth Technology Corp.
1334	Apr 96	Subsurface Investigation and Removal Action Work Plan Addendum Site L	Tetra Tech, Inc.
1344	30 Apr 96	CRWQCB Letter to Base Concerning Concurrence to Backfill, ST41	John Broderick
1346	30 Apr 96	CDTSC Letter to Base Concerning Approval of Tank Removal and SI, ST41	Albert A. Arellano, Jr.
1357	20 Jun 96	CDTSC Letter to Base concerning Review Comments on the Draft RFA, EBS and SI	Emad B. Yemut
1365	7 Aug 96	EPA Letter to Base concerning Review Comments on the Draft RFA, EBS and SI	Richard T. Russell
1368	12 Aug 96	IT Letter to USACE Transmitting Rapid Response Work Plan Mercury Contaminated Soils, SS44	IT Corp.
1379	17 Oct 96	CRWQCB Letter to Base Concerning Approval of Case Closure Former USTs, ST41	Gerald J. Thibeault
1383	5 Nov 96	IT Corp Letter to USACE Transmitting Comments and Responses on Rapid Response Work Plan, SS44	IT Corp.
1392	13 Jan 97	CDTSC Letter to Base concerning No Comments on the Draft Final RFA, EBS and SI	Emad B. Yemut
1398	26 Dec 00	CDTSC Letter to Base concerning No Comments on Final Work Plan for Five Year Review of RAs	Stephen Niou
1399	28 Apr 97	EPA Letter to Base concerning Comments on the Draft Final RI/FS OU2	Richard T. Russell

AR IR File Number	Document Date	Subject or Title	Author
1415	15 Jul 97	CRWQCB Letter to Base Concerning Approval of Final Mercury Spill Cleanup and Soil Excavation Report, OT8, SS44	John Broderick
1417	29 Jul 97	CDTSC Letter to Base Concerning Approval of Final Mercury Spill Cleanup Report, SS44	John E. Scandura
1418	30 Jul 97	CDTSC Letter to Base concerning Approval of RI/FS Final, OU2	John E. Scandura
1424	29 Aug 97	EPA Letter to Base Transmitting Comments on Final Mercury Spill Cleanup and Soil Excavation Report, OT8, SS44	Richard T. Russell
1446	13 Nov 97	CRWQCB Letter to Base Concerning No Comments on Site Closure Report, ST41	John Broderick
1451	5 Dec 97	CDTSC Letter to Base Concerning Comments on Site Closure Report, ST41	Aaron Yue
1454	15 Dec 97	CRWQCB Letter to March ARB Concerning No Comments on Final Mercury Spill Cleanup and Soil Excavation Report, OT8, SS44	John Broderick
1465	17 Apr 98	CRWQCB Letter to Base Concerning Approval of Draft Final Site Closure Report, ST41	John Broderick
1496	24 Jul 98	EPA Letter to Base Transmitting Comments on Removal Action Draft Work Plan Proposed Additional Soil Sampling, Site L	Richard T. Russell
1498	28 Jul 98	CDTSC Letter to Base Concerning Approval of Removal Action Draft Work Plan Proposed Additional Soil Sampling Site L	Emad B. Yemut
1500	4 Aug 98	CDTSC Letter to Base Concerning Approval of Draft Final Closure Report, ST41	John E. Scandura
1503	02 Sep 98	CRWQCB Letter to Base Concerning No Comments on Removal Action Draft Final Work Plan Proposed Additional Soil Sampling, Site L	John Broderick
1512	30 Oct 98	CRWQCB Letter to Base concerning No Comments on Basewide Supplemental Groundwater Investigation, OU2	John Broderick
1519	14 Dec 98	CDTSC Letter to Base concerning No Comments on Draft Basewide Supplemental Groundwater Investigation, OU2	Emad B. Yemut
1542	21 Jun 99	CDTSC Letter to Base Concerning Comments on Results of Additional Soil Sampling, Site L	Emad B. Yemut
1549	5 Jul 99	EPA Letter to Base concerning Comments Basewide RI/FS	Richard T. Russell
1553	20 Dec 00	RPM Meeting Minutes, 6 Dec 00	AFBCA/DD-March
1554	11 Dec 00	CDTSC Letter to Base Concerning comments on Draft Report of Mitigation Action, Site L	Emad B. Yemut
1556	20 Sep 99	CRWQCB Letter to March ARB Concerning Comments on Recommendation for Sampling Mercury, SS44	John Broderick
1558	27 Sep 99	CDTSC Letter to March ARB Concerning No Comments on Recommendation for Discontinuation of Mercury Sampling, SS44	Emad B. Yemut
1598	20 Apr 00	RAB Meeting Minutes	The Earth Technology Corp.

AR IR File Number	Document Date	Subject or Title	Author
1626	8 Jun 00	EPA Letter to Base concerning Comments on the Draft Work Plan for Five Year Review of Remediation Actions	Melissa W. Pennington
1629	Jul 00	Draft Final Proposed Plan for Cleanup of Contaminated Soil and Groundwater, OU2	Tetra Tech, Inc.
1643	24 Aug 00	EPA Letter to Base concerning Comments on Draft Final ROD	Melissa W. Pennington
1668	22 Nov 00	EPA Letter to Base concerning Comments on OU2 ROD	Melissa W. Pennington
1682	7 Mar 97	Addendum to Final Work Plan, Rapid Response for Mercury Spill Cleanup at Water Tower 407	IT Corp.
1689	31 Jan 96	CDTSC Letter to Base Concerning Final EE/CA, Site L	John E. Scandura
1695	29 Apr 96	Subsurface Investigation and Removal Action Draft Memorandum, Site L	Richard T. Russell
1697	01 May 96	CDTSC Letter to Base Concerning Action Memorandum Subsurface Investigation and Removal Action, Site L	John E. Scandura
1704	31 Jul 96	Base Letter to Regulators Concerning Removal Action, Site L	Jon M Satrom
1705	11 Aug 98	Tetra Tech Letter to AFCEE Transmitting Draft Final Work Plan and Response to Comments, Site L	Brenda S. Meyer
1714	07 Feb 97	Base Letter to Regulators Concerning Final Analytical Results, Site L	Jon M. Satrom
1722	06 Mar 97	CDTSC Letter to Base concerning Final Soil Analytical Results, Site L	Emad B Yemut
1736	29 Jan 98	Base Letter to Regulators concerning Final Analytical Results, Site L	Jon M Satrom
1737	19 Feb 98	CDTSC Letter to Base Concerning Final Analytical Results, Site L	Emad B Yemut
1740	29 Jun 98	CRWQCB Letter to Base Concerning Draft Work Plan, Site L	John Broderick
1742	16 Aug 98	Draft Final Work Plan, Removal Action, Proposed Additional Soil Sampling, Site L	Sharon Fair
1749	14 May 99	CRWQCB Letter to Base Concerning Review of Results, Site L	John Broderick
1754	08 Sep 99	CRWQCB Letter to March ARB Concerning Review of Work Plan for Mitigation Action, Site L	John Broderick
1757	06 Oct 99	CDTSC Letter to March ARB Concerning Final Work Plan for Mitigation action, Site L	Sharon Fair
1764	03 Feb 00	EPA Letter to Base Concerning Mitigation Plans, Site L	Melissa W Pennington
1766	26 Feb 97	CRWQCB Letter to CDTSC Concerning Review of Analytical Results, Site L	John Broderick
1819	12 Mar 02	EPA Letter to Base Concerning Review Comments on Closure Letter and Reports, Site, ST-43	James A. Ricks
1824	11 Dec 00	EPA Letter to Base Concerning Mitigation Action Report, Site L	Melissa W Pennington
1857	01 Nov 01	Semi-Annual Inspection Report, Site L	Tetra Tech, Inc.

AR IR File Number	Document Date	Subject or Title	Author
1864	23 May 01	CDTSC Letter to March ARB Concerning Comments on Draft Regional and Basewide Numerical Groundwater Report, Site L, 99-00	Stephen Niou
1865	23 May 01	CDTSC Letter to March ARB Concerning Mitigation Action Report, Site L	Stephen Niou
1870	02 Apr 02	Semi-Annual Inspection Report, Site L	Tetra Tech, Inc.
1872	20 Jun 01	CRWQCB Letter to Base Concerning Comments on Final Report of Mitigation Action, Site L	John Broderick
	92	22nd Medical Group Hospital Sanitary Sewer Mercury Characterization Study	Earth Tech, Inc.
	Feb 00	Summary of Mercury Investigation at Former Base Hospital	Tetra Tech, Inc.
	Mar 01	Closure Report Mercury Removal at Tank 6601	IT Corp.
	Apr 01	Site L Mitigation Action Report	Tetra Tech, Inc.
	Sep 02	Site L Semi-Annual Inspection	Tetra Tech, Inc.
	Oct 02	Work Plan Additional Mercury Characterization Main Hospital and Dental Clinic	Earth Tech, Inc.
	Jun 03	Site L Semi-Annual Inspection	Earth Tech, Inc.
	Sep 03	Five-year review	Earth Tech, Inc.
	Oct 03	EA Hawes Demolition of Structures and Restoration of Property	Earth Tech, Inc.
	Dec 03	Site L Semi-Annual Inspection	Earth Tech, Inc.
	Jun 04	Site L Semi-Annual Inspection	Earth Tech, Inc.
	Jul 04	Focused RI, OU4	Earth Tech, Inc.
	Aug 04	OU4 Proposed Plan	AFRPA/DD-Norton
	Oct 04	Draft OU4 ROD	Earth Tech, Inc.
	Mar 04	Annual Monitoring Report AFRC and AFRPA Long-Term Groundwater Monitoring Program	Montgomery Watson Harza

APPENDIX B

REPORTER'S TRANSCRIPT, PROPOSED PLAN PUBLIC HEARING

CERTIFIED COPY

REPORTER'S TRANSCRIPT OF PROCEEDINGS

BASEWIDE OPERABLE UNIT PROPOSED PLAN

PUBLIC MEETING

SAN BERNARDINO CITY COUNCIL CHAMBERS

300 NORTH D STREET, SAN BERNARDINO, CALIFORNIA

AUGUST 11, 2004, 6:30 P.M.

Reported by Kelly Paulson, CSR No. 8295

SAN BERNARDINO, CALIFORNIA, AUGUST 11TH, 2004

* * *

MR. CHANG: Thank you, Phil. I'm James Chang. I'm the project manager from EPA and, you know, if you guys realized some of the things that Phil has shared, you might have also wondered, golly, you know, if the site had become -- or when the site was on the NPL list since 1987, why did it take us so long.

Well, you know, you can see that the CERCLA process, even though it's very cumbersome, it's a very methodical process. Phil kind of walked you through some of that already, you know, how he's had to do the investigation, then followed by the feasibility study, then by the ROD, and then, of course, the removals.

So it is a very methodical process that EPA ensures that it's followed closely, and the reason why we do that, of course, is to protect the public. And this is probably what I would consider the CERCLA process at its best because in addition to what Phil has done to be sure that the remedies are protective, CERCLA also ensures that the public is well informed.

So at this time I just want to thank Phil and the two Linda's here who have put this presentation together because it is very important that the public

1 understands what has been done.

2 And I'd also like to follow up on what Phil

3 said a little bit about Norton being a good news story,

4 and I truly agree with that. As you can see, you know,

5 Phil shared a little bit about the pump and treat

6 system. The pump and treat system from an EPA

7 perspective is probably one of the most difficult

8 remedies to implement, and I think the Air Force here

9 has done an exceptional job.

10 I would consider Norton probably being one of

11 the best in the nation I've seen, and I'm glad to say

12 that we're very near closure to that. And with the

13 baseline ROD coming up, you know, I'm looking forward to

14 signing that ROD from the EPA perspective, you know,

15 based upon, of course, the type of comments we get from

16 the public, but Phil has shared and EPA does agree that

17 what has been written in the ROD, which you guys have a

18 chance to comment on, we agree with the remedy selected.

19 We feel that they are protective and it will support

20 reuse and, of course, that's really the bottom line is

21 that, you know, we can get this land transferred working

22 with the Air Force so that the public can have its

23 beneficial use.

24 So I just wanted to also thank Phil for what

25 he's done from the Air Force perspective where, you

1 know, since '87 we've had a lot of tough decisions, and
2 some of these remedies you see, you know, we just didn't
3 pull them out of the air. You know, some of these
4 decisions have been hashed and rehashed three, four,
5 five, six, seven times until we've come to where we are
6 today.
7 So they are very tough methodical, you know,
8 thought-through decisions, and it's been a long time
9 coming. So I just want to thank the State and the
10 Air Force for coming along in the CERCLA process with
11 that. So thank you for being mere.
12 MR. MOOK: I had one thing before I turned it
13 over to clarifying questions. I had it written here and
14 I missed it, but I want to talk about schedule for the
15 ROD. It was our intention to sign this ROD before the
16 end of our fiscal year which was -- which is
17 30 September.
18 A couple of things have happened. One of
19 them is we've extended the public comment period to
20 10 September. If we were to get, you know, some really
21 salient hard-hitting comments that took, you know,
22 review and decision making, that could affect the
23 30 September.
24 There is another issue that doesn't deal with
25 the remedy that could slow down the ROD, and it's one

1 that DTSC, the State of California, and then my managers
2 back in Washington D.C. are working, you know, at this
3 higher level about the reimbursement of state costs
4 after the record of decision is signed.
5 So a site like Site 2, the landfill, that has
6 waste in place after the ROD is signed and there is an
7 ongoing remedy and there are institutional controls and
8 there's state land use covenants and there's deed
9 restrictions and stuff, DTSC wants/needs to stay
10 involved during that, and their involvement needs to be
11 paid for. The disagreement right now is who is going to
12 pay for that and how it's going to be paid for.
13 So we can go forward with our remedies. We
14 can be protective of human health and the environment
15 for a considerable period of time while the State and
16 the Air Force work out the mechanism for reimbursement
17 of their direct costs for oversight of our site. The
18 right people are involved. The decision makers are
19 involved. So it shouldn't take too long for these guys
20 to -- it shouldn't take too long for these guys to make
21 the resolution.
22 They're supposed to talk again, I think, on
23 the 16th of August, next week, and maybe something
24 substantial and permanent will come out of that
25 teleconference, but that is another thing that might

slow us down a little bit here. We will not sign the ROD until that is resolved. So that's the schedule, and with that I'll turn it back to Linda if there's questions.

MS. GEISSINGER: Yes. This is the Q and A part of it. So if there's something that you didn't understand that you'd like more clarification on, if Phil used too many acronyms, you want to know what ROD and CERCLA stands for, this is the time to ask those questions. It is not the public comment time.

Does anybody have any questions?

MR. CATOE: I do have one question. In regards to the one site that was exposed to Radium 226 and the plan to excavate to an off-site disposal site, you stated that site was in Utah and Wyoming, was it?

MR. MOOK: The question -- I think everybody heard it, but I'll just try and restate it for my own good -- was where is the soil from the radium paint facility removal action, where will it be in turn. And the two facilities, I think there's only two that are in the Western United States this side of the Mississippi, there's one in Utah, EnviroCare, and then there's one in Idaho.

So those are the two places, and they are licensed by the NRC regulatory commission, Nuclear

1 Regulatory Commission, to have this kind of waste, and
2 then they would be placed in a cell or an area and
3 monitored. Radium has a very long half life. It
4 doesn't actually decay, but it takes about 2,000 years
5 to go one half of its contamination. They figure to go
6 to zero, to approach zero, it has to do five half lives.
7 So that's like 10,000 years.
8 And you know from the news and things that
9 are going on, radionuclei disposal is a big issue and
10 this -- our side is just not -- compared to, you know,
11 some of the stuff they're talking about at DOE sites
12 and, you know, the nuclear testing facilities and stuff,
13 we just have a little bit of naturally occurring radium
14 that's been concentrated.
15 MR. CATOE: Well, my main question was
16 basically how was it transported.
17 MR. MOOK: Yes. Well, we have a
18 transportation plan. The soil is put into a specially
19 designed box. It's a covered lid. It's not, you know,
20 dumped into an open truck or anything like that. It's
21 put into -- they're called B-25 boxes. They're sealed
22 up. They're taken to a staging area. The whole
23 exterior of the box is scanned.
24 Radium is an alpha emitter. That's the
25 particle that it emits, and it is stopped by almost any

physical barrier. A piece of paper can actually shield the radium paint or the alpha particle. What happens if somebody ingests it and it gets stuck in your lungs or like the ladies who used the paint and they'd lick their paintbrushes, it can be very bad. But if there's any kind of clothing or anything, it's fine.

So they put it in a box. They take it to an area. They scan all around the box and make sure that there's no loose material on the outside of it, and then it's shipped off by a truck to one of those two facilities.

MS. GEISSINGER: Any other questions?

MR. ROBERTS: Was there any evolution of technology in going through this clean-up? Did you learn anything new that you can use?

MR. MOOK: Well, yes, and not so much about the decisions that we're making tonight, not so much about the Basewide ROD as we did on the soil vapor extraction and the pump and treat systems that were installed for the central base unit.

You know, we made a lot of -- we were able to do a much better job cleaning up at Norton than is typical for other sites around the country, and it mainly is the luck of the draw or heredity or whatever that Norton Air Force Base has the right type of geology

1 that lends itself for pump and treat and vapor
2 extraction.
3 We also did a lot of investigations, and we
4 were able to enhance or do ways of investigating, both
5 radionuclei investigation and other investigations to
6 help save money, that then can be used for cleanup
7 rather than, you know, the characterization of the site.
8 And I guess the final one that I'd like to
9 say that was an enhancement or whatever for the process
10 is we used removal actions extensively. We went in
11 there early, determined we had an issue, and got it
12 taken care of, and that both saved money and reduced the
13 risk to human health and the environment, and it let the
14 property get into reuse quicker.
15 So we had a real good team, like you heard
16 from James and EPA and the State, working together for
17 this common goal of getting the place cleaned up as
18 quickly as possible. Even though we're talking about
19 1982, we did a lot of work and, you know, turned over a
20 lot of property.
21 MS. GEISSINGER: Any other questions?
22 All right. This is the point at which we ask for
23 official on-the-record public comments, and if you're
24 interested in making a comment, written responses will
25 be made available in the responsiveness summary which is

1 a supplement to the record of decision.

2 So it does become a public document, and it

3 is part of the administrative record for Norton. If you

4 don't want to make a verbal public comment, again, you

5 have until September 10th to fill out one of these and

6 send it to us in writing.

7 Anybody? Any comments? Jim, you always have

8 something to say.

9 MR. GOURLEY: Sure, I'll make a comment, as

10 long as I don't have to go down to the microphone.

11 MS. GEISSINGER: Okay. Just if you could

12 spell your name for the court reporter.

13 MR. GOURLEY: Yeah. It's Jim Gourley,

14 G-o-u-r-l-e-y, and I'd just like to express appreciation

15 of the agencies. As many of you know, when the base was

16 closed it was leased and turned over to Inland Valley

17 Loan Agency and San Bernardino International Airport

18 Authority, and that was in 1994 and 1995. And I've been

19 here since 1998 working with all of these folks on this

20 process, and there's a couple things I want to mention.

21 There's Phil, EPA, State of California, and

22 many others in the room who worked on this, and what's

23 really important frankly is getting this cleanup

24 approval and getting the title to the property because

25 title to the property allows us to go into

1 redevelopment.

2 And, in fact, we have a representative from

3 (inaudible) here tonight. They've been putting in some

4 very modern and up-scale buildings into this project

5 which is a tremendous development for the community,

6 adding jobs and so forth. So it's been a long road, but

7 I think as Phil said too, we've been very fortunate that

8 the cleanup has gone very well.

9 A lot of money has been spent too. I don't

10 know the number, and I don't know if anybody in the room

11 knows the number. Phil can maybe give us that number,

12 but it's not just a lot of time. It's a lot of money.

13 So what we're doing here tonight is really a milestone

14 because as these comments come in and we finish the

15 record of decision, we then frankly will shortly own all

16 the property and will be in the full development or

17 redevelopment program.

18 So again, thanks to you all. I've enjoyed

19 working with you. I've spent about six to seven years

20 myself that I've been here, and we've made an awful lot

21 of progress. So thank you for the opportunity to

22 comment.

23 MS. GEISSINGER: You're welcome. Thank you.

24 MR. MOOK: I did write down those numbers.

25 Overall to date to the end of fiscal year '04,

$133 million. FY '04 to completion, the estimate cost, $8.5 million. The selected alternatives that we discussed up here, their estimated cost is around $3.4 million once you kind of round off. These estimates are that, they're estimates. So I could say $3,396,000, but that would be accuracy that I don't have.

So 3.4 is plenty accurate, and hopefully there's still some cost savings. There isn't a cost savings on the $133 million that's already spent, but as we go through to completion, hopefully we can, you know, spend less taxpayer dollars on the eight and a half million that we have estimated to complete.

MS. GEISSINGER: Anyone else? Comments? No. Okay. Well, thank you very much for coming, and again, if you have second thoughts or want to put your comments in writing, we would appreciate those as well.

Thank you, Phil. Thank you very much.

(Meeting adjourned)

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CERTIFICATION

I, Kelly S. Paulson, Certified Shorthand Reporter, in and for the State of California, do hereby certify:

That the foregoing proceedings were reported and transcribed into typewriting under my direction; that the foregoing is a true record to the best of my ability of the proceedings reported at that time.

IN WITNESS WHEREOF, I have subscribed my name this 26th day of August, 2004.

Kelly Paulson

Kelly S. Paulson, CSR No. 8295