

June 27, 2014

#### MEMORANDUM FOR DISTRIBUTION

FROM: AFCEC/CZOW 550 Hickam Ave Travis AFB CA 94535

SUBJECT: Final Travis Air Force Base (AFB) Groundwater Record of Decision (ROD)

1. The attached final Travis AFB Groundwater ROD selects the remedial alternatives for 19 groundwater sites on Travis AFB. It describes the rationale behind their selection, summarizes previous field work that supports remedy selection, lists the cleanup levels that will be used to determine when a groundwater remedial action is complete, describes the land use controls (LUCs) associated with each remedy and site, and provides a signature page that has been signed by all four agency representatives. The ROD uses innovative technologies that have been shown to be effective through on-base demonstration projects and applies Green and Sustainable Remediation principles to the cleanup of groundwater contaminants beneath Travis AFB.

2. This final ROD contains all technical, legal and editorial revisions made to the draft groundwater ROD, dated 2 January 2013, including the LUC requirements that were negotiated by Air Force and Environmental Protection Agency representatives at the headquarters level during a two-month informal dispute resolution period. It supersedes the *Groundwater Interim Record of Decision for the North East West Industrial Operable Unit* and the *Groundwater Interim Record of Decision for the West/Annexes/Basewide Operable Unit* and replaces interim remedies that had been selected in those documents.

3. All parties will receive an electronic copy of the ROD, and those representatives with a paper copy of the revised draft final ROD will receive a packet of change pages to convert the draft final ROD into a final version. If you have any questions concerning this ROD, please contact Mr. Glenn Anderson at (707) 424-4359.

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MARK H. SMITH Restoration Program Manager

Attachment: Final Travis AFB Groundwater ROD

Distribution: (see attached)

#### **DISTRIBUTION:**

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## **Groundwater Record of Decision**

Final

### **TRAVIS AFB, CALIFORNIA**

Prepared by

### **United States Air Force**

### FAIRFIELD, CALIFORNIA

June 2014

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# **Acronyms and Abbreviations**

°F	degree(s) Fahrenheit
µg/L	microgram(s) per liter
AF	U.S. Air Force
AF332	Air Force Form 332
AF813	Air Force Form 813
AFB	Air Force Base
ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
BIR	Baseline Implementation Report
CCR	California Code of Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
CGWTP	Central Groundwater Treatment Plant
CIP	community involvement plan
COC	chemical of concern
COPC	chemical of potential concern
CRP	community relations plan
DCA	dichloroethane
DCB	dichlorobenzene
DCE	dichloroethene
DERP	Defense Environmental Restoration Program
DNAPL	dense nonaqueous phase liquid
DO	dissolved oxygen
DoD	Department of Defense
DTSC	Department of Toxic Substances Control
EA	enhanced attenuation

EAP	enzyme activity probe
EIAP	Environmental Impact Analysis Process
EIOU	East Industrial Operable Unit
ELCR	excess lifetime cancer risk
EPA	U.S. Environmental Protection Agency
ERA	ecological risk assessment
ERD	enhanced reductive dechlorination
ERP	Environmental Restoration Program
ESD	Explanation of Significant Differences
EVO	emulsified vegetable oil
FFA	Federal Facilities Agreement
FFS	focused feasibility study
FS	feasibility study
ft/ft	feet per foot
ft/year	feet per year
ft²	square foot
ft <sup>3</sup>	cubic foot
FTA	Fire Training Area
GET	groundwater extraction and treatment
GHG	greenhouse gas
GRIP	Groundwater Remediation Implementation Program
GRISR	Groundwater Remediation Implementation Status Report
GSAP	Groundwater Sampling and Analysis Program
GSR	green and sustainable remediation
HHRA	Human Health Risk Assessment
HI	hazard index
HQ	hazard quotient
IRA	interim remedial action
IRG	interim remediation goal
IROD	Interim Record of Decision

IRP	Installation Restoration Program
IST	Installation Support Team
J	estimated value
LGAC	liquid-phase granular activated carbon
LNAPL	light nonaqueous phase liquid
LTM	long-term monitoring
LTO	long-term operations
LTO&M	long-term operations and maintenance
LUC	land use control
MCL	maximum contaminant level
mg/L	milligram(s) per liter
MNA	monitored natural attenuation
msl	mean sea level
MTBE	methyl tert-butyl ether
MW	monitoring well
NA	not applicable
NAAP	natural attenuation assessment plan
NAAR	natural attenuation assessment report
NCP	National Contingency Plan
ND	not detected
NEWIOU	North, East, West Industrial Operable Unit
NFRAP	No Further Remedial Action Planned
NGWTP	North Groundwater Treatment Plant
NOU	North Operable Unit
NPL	National Priorities List
O&M	operations and maintenance
OEAA	OEA Aerospace
ORP	oxidation-reduction potential
OSA	Oil Spill Area
OU	operable unit

OWS	oil-water separator
PA	preliminary assessment
РСВ	polychlorinated biphenyl
PCE	tetrachloroethene
PCG	preliminary cleanup goal
РОСО	petroleum-only contaminated
PRB	permeable reactive barrier
QA/QC	quality assurance/quality control
QAPP	quality assurance project plan
qPCR	quantitative real-time polymerase chain reaction
RA	remedial action
RAB	Restoration Advisory Board
RAO	remedial action objective
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RD	remedial design
RfD	reference dose
RI	remedial investigation
ROD	record of decision
RPM	Travis AFB Restoration Program Manager
RPO	Remedial Process Optimization
RSL	regional screening level
RTF	remediation time frame
San Francisco Bay Regional Water Board	California Regional Water Quality Control Board, San Francisco Bay Region
SARA	Superfund Amendments and Reauthorization Act of 1986
SBBGWTP	South Base Boundary Groundwater Treatment Plant
SI	site inspection
SSA	Solvent Spill Area
State Water Board	California Environmental Protection Agency - State Water Resources Control Board

SVE	soil vapor extraction
SVOC	semivolatile organic compound
TARA	Tower Area Removal Action
TBC	to be considered
TCA	trichloroethane
TCDDeq	tetrachlordibenzo-p-dioxin equivalent
TCE	trichloroethene
TDS	total dissolved solid
TEFA	technical and economic feasibility analysis
ThOx	thermal oxidation
TOC	total organic carbon
TPH	total petroleum hydrocarbons
TPH-D	total petroleum hydrocarbons as diesel
TPH-G	total petroleum hydrocarbons as gasoline
USFWS	U.S. Fish and Wildlife Service
UV/Ox	ultraviolet oxidation
VGAC	vapor-phase granular activated carbon
VOC	volatile organic compound
WABOU	West/Annexes/Basewide Operable Unit
Weston	Roy F. Weston, Inc.
WIOU	West Industrial Operable Unit
WTTP	West Treatment and Transfer Plant

### 1.1 Site Name and Location

Facility Name: Travis Air Force Base (AFB)

Site Location: Fairfield, Solano County, California

CERCLIS ID Number: CA5570024575

#### U.S. Environmental Protection Agency (EPA) SSID Number: 09M7

**Operable Unit (OU)/Site:** Groundwater underlying 15 North, East, West Industrial Operable Unit (NEWIOU [EPA designation OU 1]) Environmental Restoration Program [ERP] sites (designated as FT004, FT005, LF006, LF007, SS015, SS016, ST027B, SS029, SS030, SD031, SD033, SD034, SS035, SD036, and SD037) and four (4) West/Annexes/Basewide Operable Unit (WABOU [EPA designation OU 3]) ERP sites (designated as LF008, DP039, SS041, and SD043). The interim NEWIOU and WABOU groundwater are combined into a single groundwater OU that EPA has designated for its own purpose as OU 6.

### 1.2 Statement of Basis and Purpose

This decision document presents the selected remedies for groundwater at Travis AFB, Fairfield, California. The selected remedies 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 (SARA) of 1986, and to the extent practicable, the National Contingency Plan (NCP). These decisions are based on the Administrative Record for 19 ERP sites, which are designated as Sites FT004, FT005, LF006, LF007, LF008, SS015, SS016, ST027B, SS029, SS030, SD031, SD033, SD034, SS035, SD036, SD037, DP039, SS041, and SD043, that were historically organized into two (2) OUs, the NEWIOU and WABOU, to facilitate the overall cleanup program. Site LF007 is also divided into three (3) subareas (LF007B, LF007C, and LF007D) to address different chemicals of concern (COCs). This ROD consolidates the previous NEWIOU (EPA-designated OU 1) and WABOU (EPA-designated OU 3) groundwater interim records of decision (IRODs) into a single decision document for groundwater at Travis AFB (EPA-designated OU 6) that supersedes the previous IRODs.

This Record of Decision (ROD) is issued by the U.S. Air Force (AF) as the lead agency and contains the final remedy that was jointly selected by EPA and the AF consistent with CERCLA Section 120(e)(4). The AF is managing remediation of groundwater contamination originating from releases associated with the sites at the NEWIOU and WABOU in accordance with CERCLA as required by the Defense Environmental Restoration Program (DERP). The EPA is the federal regulatory oversight agency, and the California Department of Toxic Substances Control (DTSC) and the California Regional Water Quality Control Board, San Francisco Bay Region (San Francisco Bay Regional Water Board) are regulatory

oversight agencies representing the State of California. The AF and EPA have jointly evaluated and selected the remedies for groundwater. The California DTSC and San Francisco Bay Regional Water Board concur with the selected remedies.

### 1.3 Assessment of Sites

The selected remedies presented in this ROD are necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances from groundwater into the environment. The selected remedies are also necessary to protect the public health or welfare or the environment from actual or threatened releases of pollutants or contaminants that may present an imminent and substantial endangerment to public health or welfare.

Groundwater contamination at Travis AFB has resulted from past waste management and disposal practices typical of an active AF facility. This ROD addresses groundwater contamination associated with the following activities and originating from 19 sites:

- Fire training areas (FTAs) (Sites FT004 and FT005)
- Areas used as general refuse landfills (Site LF006 and three [3] subareas of Site LF007 LF007B, LF007C, and LF007D)
- Facilities used for aircraft maintenance and repair and oil-water separator (OWS) activities (Site SS015)
- Flight line support areas subject to oil spills, degreasing operations, equipment maintenance and repair, aircraft and vehicle maintenance, hazardous materials storage, aircraft and vehicle washing, OWS activities, and stormwater runoff (Site SS016)
- An area used for aircraft engine testing (Site ST027B)
- Areas where the origin of contamination is unknown (Sites SS029 and SS030)
- An area used for maintenance and repair of diesel generators, wash rack activities, OWS activities, and aircraft maintenance (Site SD031)
- Support areas used for management of stormwater runoff, fuel transport, aircraft maintenance, and aircraft washing, including the use of wash racks and OWS (Site SD033)
- An aircraft wash rack facility with OWS and overflow pond (Site SD034)
- Facilities used for aircraft repair, painting, and washing (Site SS035)
- Facilities consisting of multiple-use shops, including a wash rack and OWS, paint shops, electrical shops, landscape maintenance, paint mixing, and paint accumulation (Site SD036)
- Support areas used for management of domestic and industrial wastewater, aircraft maintenance, heavy equipment maintenance, air cargo handling, vehicle washing, fuel transport, and waste accumulation (Site SD037)
- An area used as a landfill for disposal of pesticide containers (Site LF008)

- A battery and electric shop (Site DP039)
- A facility used to prepare pesticides and herbicides for on-base use (Site SS041)
- An emergency electric power facility (Site SD043)

For more than a decade, Travis AFB has implemented and successfully operated interim actions for groundwater, which were selected in the *Groundwater Interim Record of Decision for the North, East, and West Industrial Operable Unit* (NEWIOU Groundwater IROD) (Travis AFB, 1998) and the *Groundwater Interim Record of Decision for the West/Annexes/ Basewide Operable Unit* (WABOU Groundwater IROD) (Travis AFB, 1999). Descriptions of these interim actions are documented in the Administrative Record and described further in Sections 2.2 and 2.7. Two (2) basic interim remedial action (IRA) strategies were employed, either singly or in combination, at each site:

- Groundwater extraction and treatment (GET) (synonymous with "pump and treat")
- Monitored natural attenuation (MNA) assessment

During this period, groundwater contamination has been reduced, but concentrations of COCs remain in groundwater above levels that allow for designated beneficial uses of groundwater (domestic, municipal, agricultural, and industrial supply) as well as unlimited use and unrestricted exposure (concentrations of some volatile organic compounds [VOCs] also pose a potential indoor air risk based on industrial and hypothetical residential land use exposure scenarios). Routine groundwater monitoring continues to identify chlorinated VOCs (primarily trichloroethene [TCE]), non-chlorinated VOCs, and organochlorine pesticides in the groundwater at concentrations above the lowest of either the State of California or federal primary maximum contaminant levels (MCLs) or risk-based cleanup levels based on EPA's Regional Screening Levels (RSLs). The chlorinated VOCs include TCE, 1,1-dichloroethene (DCE), 1,2-dichloroethane (DCA), chloroform, bromodichloromethane, 1,2-dichloropropane, chlorobenzene, cis-1,2-DCE, 1,4-dichlorobenzene (DCB), 1,1,2-trichloroethane (TCA), 1,1,1-TCA, carbon tetrachloride, methylene chloride, chloromethane, tetrachloroethene (PCE), and vinyl chloride. Non-chlorinated VOCs include acetone, benzene, toluene, and naphthalene. Organochlorine pesticides include aldrin, alpha-chlordane, and heptachlor epoxide.

A petroleum fuel constituent, methyl tert-butyl ether (MTBE), is also detected above the MCL. Total petroleum hydrocarbons (TPH) as gasoline (TPH-G) and as diesel (TPH-D) are also detected in groundwater, but MCLs are not established for these compounds. They are addressed in this ROD because they are detected being commingled with COCs subject to CERCLA. Otherwise, groundwater contamination comprising solely petroleum fuel constituents is managed under the Travis AFB Petroleum-only Contaminated Sites (POCO) program, which is overseen by the San Francisco Bay Regional Water Board.

In addition, Stoddard solvent was detected in Site SD034 monitoring wells. During 2010, floating Stoddard solvent was found at thicknesses of 0.12 and 0.44 foot at Site SD034 monitoring wells. During the second quarter of 2011, Stoddard solvent was measured in only one (1) well (thickness of 0.44 foot) (CH2M HILL, 2012a). Although there is not an MCL for Stoddard solvent, it is a non-aqueous medium containing dissolved COCs, primarily cis-1,2-DCE, at concentrations above MCLs.

No on-base wells are currently used for potable water production at Travis AFB, and none are planned for the future. Currently, one (1) privately owned domestic water well (DWSET1x30) is located at the southern extent of Site SS030. No COCs originating from Travis AFB have been detected in this well, and it is sampled annually under the Travis AFB Groundwater Remediation Implementation Program (GRIP). The amount and rate of groundwater production from this privately owned well is unknown because no flow meter is installed and the AF does not monitor the occupancy of the private property.

Travis AFB does not use groundwater from beneath its geographical footprint and does not plan to do so in the future. Approximately 90 percent of the water currently used at Travis AFB is surface water originating from Lake Berryessa and Lake Oroville. This water is conveyed to a water treatment facility managed by the City of Vallejo, which provides potable water to the Base. Groundwater production wells located at the Travis AFB Cypress Lakes Golf Course Annex intermittently provide the remaining 10 percent of the Base water supply. These production wells draw water from a deep aquifer that is not hydrogeologically connected to the shallow aquifer beneath Travis AFB and are managed by the Travis AFB Base Civil Engineering group. The production wells are located approximately 3 miles north of Travis AFB. Travis AFB is currently evaluating alternate sources of potable water because of relatively high supplier costs (City of Vallejo treatment facility) and the cost of infrastructure improvements needed to address future treatment requirements. In the future, it is possible that the Base water will be entirely supplied by the deep production wells (greater than 1,000 feet below ground surface [bgs]) located at the Cypress Lakes Golf Course Annex and that service from the City of Vallejo will be discontinued (Roy F. Weston, Inc. [Weston], 2011). Because of the 3-mile distance between the main Base and the Annex and the greater-than-1,000-foot depth of the production wells, increased pumping from the Cypress Lakes wells will have no significant hydraulic impact on the on-base contaminated groundwater zone.

Travis AFB currently enforces land use restrictions for groundwater and soil vapor. At each restoration site, Travis AFB currently restricts land use to industrial purposes only, prohibits water supply well construction on-base and consumption of contaminated groundwater, and restricts soil excavation and other subsurface work where a worker might encounter contaminated groundwater or vapors. These restrictions are described in the Base General Plan and managed through administrative requirements. For off-base portions of three (3) solvent plumes, Travis AFB has purchased access and environmental response easements from the landowners that contain legal restrictions preventing the landowners from engaging in water development or soil disturbing activities that could interfere with cleanup activities. Additionally, a Solano County Ordinance requires a permit to construct a well, and the permitting process ensures Travis AFB would be notified of applications for wells in the easement areas. No water supply wells would be allowed at Travis AFB without prior approval from the AF and appropriate regulatory agencies. Travis AFB has also instituted a vapor intrusion mitigation policy that restricts new residential/industrial construction at portions of sites unless vapor barriers and passive ventilation systems are installed.

No current risks are posed to industrial workers from exposure to volatiles in indoor air (i.e., VOCs migrating from groundwater underlying the sites into indoor air) because either (1) groundwater VOC concentrations, soil gas VOC concentrations, subslab VOC

concentrations, and/or indoor air VOC concentrations are below risk-based screening levels or (2) no occupied building is located within 100 feet of the VOC plume exceeding risk-based groundwater screening levels (CH2M HILL, 2010, 2013a). Potential future vapor intrusion risks are posed from exposure to VOCs (TCE, PCE, vinyl chloride, and benzene) migrating from groundwater into indoor air if, in the future, buildings are constructed overlying VOC groundwater plumes at some of the groundwater sites. For an industrial scenario, potential future vapor intrusion risk is posed by VOCs in groundwater at Sites FT004, SS015, SS016, SS029, and DP039. For a hypothetical residential scenario, potential future vapor intrusion risk is posed by VOCs in groundwater at Site FT004, Subarea LF007C, and Sites SS015, SS016, SS029, SS030, SD033, SS035, SD036, SD037, and DP039.

### 1.4 Description of Selected Remedies

In October 1995, the AF, with concurrence from the EPA, the California DTSC, and California Environmental Protection Agency – State Water Resources Control Board (State Water Board), organized the environmental restoration sites at Travis AFB into two (2) OUs, the NEWIOU and the WABOU. The groundwater contamination at the sites within both of these OUs is described below:

- **NEWIOU** groundwater with chlorinated VOCs, primarily TCE, 1,2-DCE, 1,1-DCE, 1,2-DCA, vinyl chloride, TPH-G, TPH-D, and related compounds originating from Sites FT004, FT005, LF006, LF007, SS015, SS016, ST027B, SS029, SS030, SD031, SD033, SD034, SS035, SD036, and SD037. Site LF007 is divided into three (3) subareas (LF007B, LF007C, and LF007D) to address different COCs.
- **WABOU** groundwater with chlorinated VOCs (primarily TCE and related compounds) at Sites DP039 and SD043 and organochlorine pesticides (primarily alpha-chlordane) originating from Sites LF008 and SS041.

Ongoing groundwater monitoring continues to detect chlorinated VOCs and organochlorine pesticides in the groundwater at concentrations above the lowest of either the state or federal primary maximum MCLs. TPH-G and TPH-D also continue to be detected in the groundwater (CH2M HILL, 2012a).

For more than a decade, Travis AFB has implemented and successfully operated IRAs for groundwater, which were selected in the final NEWIOU Groundwater IROD (Travis AFB, 1998) and the final WABOU Groundwater IROD (Travis AFB, 1999). This ROD consolidates the previous NEWIOU and WABOU groundwater IRODs into a single decision document for groundwater at Travis AFB that supersedes the previous IRODs. In this ROD, an EPA-designated "Basewide Groundwater Operable Unit" (EPA-designated OU 6) is used to address the consolidation of groundwater contamination within both the NEWIOU (EPA-designated OU 1) and WABOU (EPA-designated OU 3).

Remedial alternatives for groundwater were developed and evaluated through the *Basewide Groundwater Focused Feasibility Study* (FFS) (CH2M HILL, 2011a). The overall cleanup strategy for Travis AFB groundwater is to transition from the current interim actions to final remedies and includes incorporation of successfully performing components of the existing interim actions into the final remedies, optimization of the interim actions, incorporation of

successful treatment demonstrations, actions based on the results of supporting studies, and incorporation of green and sustainable remediation (GSR) processes. Based on the results of the FFS, the AF selected the seven (7) remedial alternatives provided in the list below to address COCs at the 19 groundwater sites:

- Alternative 1 No Further Action: No further action is selected for groundwater underlying Site SS041. No further actions, including no land use control (LUC) provisions, will occur to remediate or manage COCs in groundwater. Cleanup levels for heptachlor epoxide were achieved by the interim action, which consisted of successful long-term operation of a GET system. The Site SS041 GET system has already been shut down, and the single extraction well was decommissioned in January 2004 (URS Group, Inc., 2004).
- Alternative 2 MNA: MNA is selected for COCs in groundwater at Sites FT004, LF006, LF007 Subareas LF007B and LF007D, LF008, ST027B, SD031, SD033, SS035, and SD043. At sites with existing IRA GET systems (Sites FT004, LF008, SD031, SD033, SS035, and SD043), operation of the GET systems will be discontinued. Groundwater will be remediated by natural physical, chemical, and biological processes. MNA was successfully demonstrated by long-term interim MNA assessments, positive results of contaminant rebound studies, and positive results of an aerobic chlorinated cometabolism enzyme study (CH2M HILL, 2010b, 2012b, 2012c).
- Alternative 3 GET: GET is selected for COCs in groundwater at Site FT005, Subarea LF007C, and Sites SS029 and SS030. It consists of continued extraction and ex situ treatment of COCs in groundwater with liquid-phase granular activated carbon (LGAC) and hydraulic containment of plumes using the previously installed GET systems. At Subarea LF007C, solar-powered groundwater extraction pumps will be used to provide a GSR component.
- Alternative 4 Bioreactor and GET: Treatment of the portion of the plume with the highest concentrations of residual contamination with a bioreactor and with GET for the remainder of the downgradient plume (distal portion) are selected for COCs in groundwater at Site SS016, as described below:
  - **Bioreactor:** Treatment of the Oil Spill Area (OSA) portion of the Site SS016 plume with the highest concentrations of residual contamination using an in situ organic mulch bioreactor. The bioreactor will facilitate enhanced reductive dechlorination (ERD) to anaerobically degrade chlorinated VOCs. An existing horizontal extraction well and solar-powered extraction pump will circulate groundwater through the bioreactor.
  - **GET:** Groundwater within the remainder of the plume will be extracted and treated ex situ with LGAC using the previously installed GET system.
- Alternative 5 Emulsified Vegetable Oil (EVO) and Enhanced Attenuation (EA): In situ treatment of the portion of the plume with the highest concentrations of residual contamination with EVO and EA within the remainder of the plume is selected for COCs in groundwater at Sites SS015, SD036, and SD037, as described below:
  - EVO: An edible oil substrate (i.e., EVO) will be injected into the higher concentration portions of the plume to facilitate ERD treatment processes to anaerobically degrade chlorinated VOCs.

- EA: Naturally occurring physical, chemical, and biological processes will remediate COCs in downgradient groundwater, which will be enhanced by the reduced influx of contaminants from the treated higher concentration portions of the plume.
- Alternative 6 Bioreactor, Phytoremediation, EVO Permeable Reactive Barrier (PRB), and EA: Remediation of the portion of the plume with highest concentrations of residual contamination with a treatment train of three (3) in situ bioremediation processes (bioreactor, phytoremediation, EVO PRB) and EA within the remainder of the plume is selected for COCs in groundwater at Site DP039, as described below. This alternative also discontinues the operation of the interim dual-phase extraction system.
  - **Bioreactor:** An in situ organic mulch bioreactor will facilitate ERD to anaerobically degrade chlorinated VOCs. An existing extraction well and solar-powered groundwater extraction pump will circulate groundwater through the bioreactor.
  - Phytoremediation: A grove of engineer-planted eucalyptus trees will continue to facilitate removal and treatment of contaminant mass in the upgradient portion of the plume.
  - **EVO PRB:** A PRB of injected EVO across the leading edge of the plume will treat the portion of the plume with high contaminant concentrations.
  - EA: Naturally occurring physical, chemical, and biological processes will remediate low concentrations of COCs in downgradient groundwater, which will be enhanced by the reduced influx of contaminants from the upgradient treatment areas.
- Alternative 7 Passive Skimming and EA: Continued passive skimming and EA of the plume is selected for COCs in groundwater at Site SD034, as described further below:
  - Passive Skimming: Stoddard solvent, containing dissolved COCs, floating on the groundwater table will be physically removed using previously installed passive skimmers.
  - **EA:** Naturally occurring physical, chemical, and biological processes will complete the remediation of COCs in groundwater.

The specific components of each site's selected management strategy are summarized in Table 1.4-1.

For each of the listed remedies, except Alternative 1 – No Further Action, operation and maintenance (O&M) groundwater monitoring will be conducted during the period of long-term operation (LTO) to assess if the remedy is performing as intended. The O&M monitoring will be conducted until groundwater cleanup levels have been achieved. After the O&M data indicate that groundwater cleanup levels have been achieved, then long-term monitoring (LTM) will be conducted for an additional 2 years to verify that the concentrations of contaminants have been permanently reduced to cleanup levels or below.

Summary of Site Groundwater Management Strategies Groundwater Record of Decision, Travis Air Force Base, California

Site	Remedial Alternative	Main Remedy Components	Management Strategy
FT004	2 – MNA	Groundwater monitoring wells	Utilize the natural physical, chemical, and biological processes that were successfully demonstrated during the period of interim remediation to remediate the entirety of the plume and achieve cleanup levels. Incorporate existing monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume. Enforce vapor intrusion LUCs until the concentrations of VOCs emanating from groundwater to indoor air do not pose an unacceptable risk to human health.
FT005 3 – GET	Groundwater extraction wells, performance monitoring wells, centralized groundwater treatment using LGAC, discharge of treated	Continue GET system operations that were successfully demonstrated during the period of interim remediation to remediate the entirety of the plume and achieve cleanup levels. Use off-base EPA-approved vendor treatment of contaminant-laden LGAC to satisfy the statutory preference for treatment.	
		groundwater to stormwater drainage system	Incorporate existing extraction and monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume.
LF006	2 – MNA	Groundwater monitoring wells	Utilize the natural physical, chemical, and biological processes that were successfully demonstrated during the period of interim remediation to remediate the entirety of the plume and achieve cleanup levels. Incorporate existing monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume.
LF007B	2 – MNA	Groundwater monitoring wells	Groundwater contaminants within the administrative boundaries of Subarea LF007B do not currently exceed groundwater cleanup levels. Utilize the natural physical, chemical, and biological processes that were successfully demonstrated during the period of interim remediation to maintain concentrations below cleanup levels. Incorporate existing monitoring wells to the maximum extent practicable.
LF007C	3 – GET	Groundwater extraction wells, performance monitoring wells, centralized groundwater treatment using LGAC, discharge of treated groundwater to stormwater drainage system	Optimize existing GET system operations to remediate the entirety of the plume and achieve cleanup levels. Incorporate existing extraction wells, monitoring wells, and LGAC treatment facility to the maximum extent practicable. Use off-base EPA-approved vendor treatment of contaminant-laden LGAC to satisfy the statutory preference for treatment. Utilize solar-powered pumps and beneficial reuse of treated groundwater to provide aspects of GSR.
			Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume. Enforce vapor intrusion LUCs until the concentrations of VOCs emanating from groundwater to indoor air do not pose an unacceptable risk to human health. Vapor intrusion LUCs are only applicable in the off-base portion of the Subarea LF007C groundwater plume, where the highest concentrations of groundwater contamination at the site are currently detected.

Summary of Site Groundwater Management Strategies Groundwater Record of Decision, Travis Air Force Base, California

Site	Remedial Alternative	Main Remedy Components	Management Strategy
LF007D	2 – MNA	Groundwater monitoring wells	Utilize the natural physical, chemical, and biological processes that were successfully demonstrated during the period of interim remediation to remediate the plume and achieve cleanup levels. Incorporate existing monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume.
LF008	2 – MNA	Groundwater monitoring wells	Utilize the natural physical, chemical, and biological processes that were successfully demonstrated during the period of interim remediation to remediate the plume and achieve cleanup levels. Incorporate existing monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume.
SS015	5 – EVO and EA	EVO injection wells within highest concentration portion of plume, performance monitoring wells	Expand the use of successfully demonstrated ERD treatment via EVO injection to treat residual DNAPL principal threat waste and the highest concentration portion of the plume. Use the in situ ERD treatment to satisfy the statutory preference for treatment and to provide an aspect of GSR.
			Incorporate existing injection wells and monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume. Enforce vapor intrusion LUCs until the concentrations of VOCs emanating from groundwater to indoor air do not pose an unacceptable risk to human health.
SS016	4 – Bioreactor and GET	In situ organic mulch bioreactor, groundwater extraction wells, performance monitoring wells, centralized groundwater treatment using LGAC, discharge of treated groundwater to stormwater drainage system	Continue use of successfully demonstrated ERD treatment via a bioreactor to treat residual DNAPL principal threat waste and the highest concentration portion of plume. Continue using a part of the successfully demonstrated GET system within higher concentration portions of the plume. Use the in situ ERD treatment process to satisfy the statutory preference for treatment and to provide an aspect of GSR. Also, use off-base EPA-approved vendor treatment of contaminant-laden LGAC to satisfy the statutory preference for treatment.
			Incorporate existing extraction wells and monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume. Enforce vapor intrusion LUCs until the concentrations of VOCs emanating from groundwater to indoor air do not pose an unacceptable risk to human health.
ST027B	2 – MNA	Groundwater monitoring wells	Continue to utilize the natural physical, chemical, and biological processes that were successfully demonstrated during the period of interim remediation to remediate the plume and achieve cleanup levels. Incorporate existing monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume.

Summary of Site Groundwater Management Strategies Groundwater Record of Decision, Travis Air Force Base, California

Site	Remedial Alternative	Main Remedy Components	Management Strategy
SS029 :	3 – GET	Groundwater extraction wells, performance monitoring wells, centralized groundwater treatment using LGAC, discharge of treated groundwater to stormwater drainage system	Continue GET system operations that were successfully demonstrated during the period of interim remediation to remediate the plume and achieve cleanup levels. Use off-base EPA-approved vendor treatment of contaminant-laden LGAC to satisfy the statutory preference for treatment.
			Incorporate existing extraction wells, monitoring wells, and LGAC treatment facility to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume. Enforce vapor intrusion LUCs until the concentrations of VOCs emanating from groundwater to indoor air do not pose an unacceptable risk to human health.
SS030 3 – GET	3 – GET	Groundwater extraction wells, performance monitoring wells, centralized groundwater treatment using LGAC, discharge	Continue GET system operations that were successfully demonstrated during the period of interim remediation to remediate the plume and achieve cleanup levels. Use off-base EPA-approved vendor treatment of contaminant-laden LGAC to satisfy the statutory preference for treatment.
		of treated groundwater to stormwater drainage system	Incorporate existing extraction wells, monitoring wells, and LGAC treatment facility to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume. Enforce vapor intrusion LUCs until the concentrations of VOCs emanating from groundwater to indoor air do not pose an unacceptable risk to human health. Vapor intrusion LUCs are only applicable in the off-base portion of the Site SS030 groundwater plume, where the highest concentrations of groundwater contamination at the site are currently detected.
SD031	2 – MNA	Groundwater monitoring wells	Utilize the natural physical, chemical, and biological processes that were successfully demonstrated during the period of interim remediation to remediate the entirety of the plume and achieve cleanup levels. Incorporate existing monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume.
SD033*	2 – MNA	Groundwater monitoring wells	Continue to utilize the natural physical, chemical, and biological processes that were successfully demonstrated during the period of interim remediation to remediate the entirety of the plume and achieve cleanup levels. Incorporate existing monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the WIOU plume, including Site SD033. Enforce vapor intrusion LUCs until the concentrations of VOCs emanating from groundwater to indoor air do not pose an unacceptable risk to human health.

Site	Remedial Alternative	Main Remedy Components	Management Strategy
SD034*	7 – Passive Skimming and EA	Free product removal skimmers, free product extraction wells, performance monitoring wells	Continue passive skimming operations for removal of localized Stoddard solvent (containing dissolved COCs) floating on the groundwater table. For the remainder of the plume, utilize the natural physical, chemical, and biological processes that were successfully demonstrated during the period of interim remediation to achieve cleanup levels. Incorporate existing monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the WIOU plume, including Site SD034.
SS035*	2 – MNA	Groundwater monitoring wells, including existing wells installed during the period of interim remediation	Groundwater contaminants within the administrative boundaries of Site SS035 do not currently exceed groundwater cleanup levels. However, Site SS035 is a component site of the commingled WIOU VOC plume and thus shares the WIOU plume management strategy with the other WIOU component sites. Continue to utilize the natural physical, chemical, and biological processes that were successfully demonstrated during the period of interim remediation to remediate the entirety of the plume and achieve cleanup levels. Incorporate existing monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the WIOU plume, including Site SS035. Enforce vapor intrusion LUCs until the concentrations of VOCs emanating from groundwater to indoor air do not pose an unacceptable risk to human health.
SD036*	5 – EVO and EA	Area pattern of EVO injection wells within highest concentration portion of plume, performance monitoring wells	Expand the use of successfully demonstrated ERD treatment via EVO injection to treat residual DNAPL principal threat waste and the highest concentration portion of the plume. Use the in situ ERD treatment to satisfy the statutory preference for treatment and to provide an aspect of GSR.
			Incorporate existing injection wells and monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume. Enforce vapor intrusion LUCs until the concentrations of VOCs emanating from groundwater to indoor air do not pose an unacceptable risk to human health.
SD037*	5 – EVO and EA	Area pattern of EVO injection wells within highest concentration portion of plume, performance monitoring wells	Expand the use of successfully demonstrated ERD treatment via EVO injection to treat residual DNAPL principal threat waste and the highest concentration portion of the plume. Use the in situ ERD treatment to satisfy the statutory preference for treatment and to provide an aspect of GSR.
			Incorporate existing injection wells and monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume. Enforce vapor intrusion LUCs until the concentrations of VOCs emanating from groundwater to indoor air do not pose an unacceptable risk to human health.

 TABLE 1.4-1

 Summary of Site Groundwater Management Strategies

Summary of Site Groundwater Management Strategies Groundwater Record of Decision, Travis Air Force Base, California

Site	Remedial Alternative	Main Remedy Components	Management Strategy
DP039	6 – Bioreactor, Phytoremediation, EVO PRB, and EA	In situ organic mulch bioreactor, area of planted trees, linear array of EVO injection wells within high concentration portion of plume performance monitoring wells	Continue use of successfully demonstrated ERD treatment via a bioreactor to treat residual DNAPL principal threat waste and the highest concentration portion of plume. Continue using successfully demonstrated biological treatment via an existing area of planted trees to remediate a portion of the high concentration shallow plume. Continue using successfully demonstrated ERD treatment via an EVO PRB within a high concentration portion of the plume. Continue utilizing the natural physical, chemical, and biological processes that were successfully demonstrated during the period of interim remediation to remediate the remainder of the plume and achieve cleanup levels. Use the in situ treatment processes of the bioreactor (solar-powered pump), phytoremediation, and EVO PRB to satisfy the statutory preference for treatment and to provide aspects of GSR.
			Incorporate existing injection wells and monitoring wells to the maximum extent practicable. Incorporate the existing bioreactor, area of phytoremediation, EVO PRB, and monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the plume. Enforce vapor intrusion LUCs until the concentrations of VOCs emanating from groundwater to indoor air do not pose an unacceptable risk to human health.
SS041	1 – NFA	None	Take no further action, including no LUC provisions. Cleanup levels were achieved during the period of interim remediation, and the site is in No Further Remedial Action Plan status (Travis AFB, 2005a).
SD043*	2 – MNA	Groundwater monitoring wells, including existing wells installed during the period of interim remediation	Groundwater contaminants within the administrative boundaries of Site SD043 do not currently exceed groundwater cleanup levels. However, Site SD043 is a component site of the commingled WIOU VOC plume and thus, with the exception of vapor intrusion management, shares the WIOU plume management strategy with the other WIOU component sites. Utilize the natural physical, chemical, and biological processes that were successfully demonstrated during the period of interim remediation to remediate the entirety of the plume and achieve cleanup levels. Incorporate existing monitoring wells to the maximum extent practicable. Enforce LUCs for groundwater until cleanup levels are achieved for the entirety of the WIOU plume, including Site SD043. This site plume was evaluated for vapor intrusion risk separately from the rest of the WIOU, and vapor intrusion LUCs are not required at this site

\* Component site of WIOU collection of site plumes.

Notes:

DNAPL = dense nonaqueous phase liquid WIOU = West Industrial Operable Unit After the final remedy for each site is selected in the ROD, the requirements for remedial action implementation will be developed during the Remedial Design (RD) phase of the CERCLA process. The RDs will describe the detailed designs and technical specifications required to implement the selected remedy at each site. The RDs will also describe the performance monitoring requirements for each remedy, including the objectives and rationale of monitoring, the locations and screened intervals of monitoring wells, the frequency of monitoring, the COCs and analytical methods, and the quality assurance/quality control (QA/QC) requirements. The existing network of monitoring wells at each site will be incorporated into the monitoring network to the extent that is necessary and practicable. The RD will also specify the technical requirements for any new monitoring wells that may be necessary to achieve the performance monitoring objectives. Potential new monitoring wells, or other remedy components, will be installed in accordance with work plans approved by the regulatory agencies.

Groundwater sample collection will be conducted under the GRIP and in accordance with applicable EPA guidance documents, including the *Performance Monitoring of MNA Remedies for VOCs in Groundwater* (EPA, 2004a). Existing Travis AFB documents, groundwater data, and assessments of IRA performance will also be used in the development of the sampling requirements documented in the annual Groundwater Remediation Implementation Status Reports (GRISRs). Laboratory analyses of samples will be conducted in accordance with the *Analytical Quality Assurance Project Plan for Remedial Design/Remedial Action, Long-term Maintenance, and Long-term Operation Programs, Revision 2* (RD/RA QAPP) (CH2M HILL, 2009a). Monitoring results will be provided in annual GRISRs.

As remediation of the contaminant plumes progresses under each site remedy, it is expected that the distribution of groundwater contamination will change over time. The monitoring networks will evolve appropriately for those future conditions. As the plumes change in shape and concentration, some monitoring wells may no longer be necessary and/or new wells may be required to adequately monitor the progress of remediation. It is also possible that the frequency of monitoring may increase or decrease under future conditions or that the required list of analytes may increase or decrease. Corrective actions to remedies resulting from deficiencies identified in five-year reviews may also trigger changes to the monitoring schemes. Potential changes to the performance monitoring will be specified in the annual GRISRs and implemented under the GRIP.

After cleanup levels for all COCs have been attained for the entirety of each site plume, then an additional 2 years of semiannual sampling will be conducted to verify that cleanup has been achieved.

Land use restrictions are required as part of this response action and will be achieved through imposition of LUCs that restrict access or use of groundwater, including development of main-base water wells, restrict soil excavation and other subsurface work where a worker might encounter contaminated groundwater or vapors, and include the groundwater underlying off-base easements purchased by the AF from private landowners. These easements contain legal restrictions preventing the landowners from engaging in water development or soil disturbing activities that could interfere with cleanup activities. No water supply wells will be allowed at Travis AFB without prior approval from the AF and appropriate regulatory agencies until concentrations of contaminants remaining in groundwater are at such levels to allow for designated beneficial uses of groundwater (domestic, municipal, agricultural, and industrial supply) as well as unlimited use and unrestricted exposure (i.e., MCLs). Land use restrictions for vapor intrusion are also required as part of this response action and will be achieved through imposition of LUCs that restrict residential and commercial/industrial exposures to VOCs migrating from groundwater into indoor air and incorporate Travis AFB's current indoor air vapor intrusion mitigation policy that restricts new residential/industrial construction at portions of these sites unless vapor barriers and passive ventilation systems are installed. Residential and commercial/ industrial land uses at Sites FT004, SS015, SS016, SS029, and DP039 and residential land uses at Site FT004, Subarea LF007C, and Sites SS015, SS016, SS029, SS030, SD033, SS035, SD036, SD037, and DP039 will not be allowed without prior approval from the AF and appropriate regulatory agencies until concentrations of volatile COCs in groundwater posing a potential indoor air risk are at such levels that VOCs emanating from groundwater to indoor air do not pose unacceptable risk to human health. Travis AFB will enforce LUCs for vapor intrusion until the residual contaminant concentrations in groundwater, as referenced in Table 2.8-2, are protective of the vapor intrusion pathway.

Principal threat wastes are defined by CERCLA as hazardous or highly toxic source materials that (1) result in ongoing contamination to surrounding media, (2) generally cannot be reliably contained, or (3) present an unacceptable risk to human health or the environment should exposure occur. For Sites SS015, SS016, SD036, SD037, and DP039, portions of the plumes contain high contaminant concentrations and residual DNAPL is likely present. At Sites SS015, SD036, and SD037, the principal threat wastes and portion of the plume with the highest concentration of contaminants will be addressed by in situ ERD treatment via injection of EVO. At Site SS016, the principal threat wastes and portion of the plume with the highest concentration of contaminants will be addressed by ERD treatment using an in situ bioreactor in combination with a GET system. At Site DP039, the principal threat wastes and portions of the plume with the highest concentrations of contaminants will be addressed by the combination of ERD treatment using an in situ bioreactor, biological treatment using an area of phytoremediation, and further ERD treatment using an EVO PRB. For Site SD034, Stoddard solvent, a light nonaqueous phase liquid (LNAPL), is floating on the groundwater table and contains dissolved COCs that pose an ongoing source of contamination to the underlying groundwater. The Stoddard solvent will be physically removed by passive skimming to address the principal threat. The remaining concentrations of COCs in groundwater at Sites FT004, FT005, and LF006; Subareas LF007B, LF007C, and LF007D; and Sites LF008, ST027B, SS029, SS030, SD031, SD033, SS035, SS041, and SD043 do not constitute principal threat wastes as defined by CERCLA.

### 1.5 Statutory Determinations

The selected remedies for the ERP sites at Travis AFB are protective of human health and the environment, comply with promulgated requirements that are applicable or relevant and appropriate to the remedial actions, and are cost effective.

The selected remedies represent the maximum extent to which permanent solutions can be used in a practicable manner. They provide the best balance of trade-offs in terms of balancing criteria while also considering the bias against offsite treatment and disposal and considering EPA, state, and community acceptance.

The NCP establishes the expectation that treatment will be used to address the principal threats posed by a site whenever practicable (40 *Code of Federal Regulations* [CFR] 300.430[a] [1] [iii] [A]). The selected remedies for Site FT005, Subarea LF007C, and Sites SS029, SS030, SS015, SS016, SS036, SD037, and DP039 satisfy the statutory preference for treatment as a principal element of the remedy through ex situ treatment of extracted groundwater for the entirety of the Site FT005, Subarea LF007C, Site SS029, and Site SS030 plumes; and in situ treatment of the portions of the plumes with highest concentrations of residual contamination with a bioreactor (at Site SS016); with EVO injection (at Sites SS015, SD036, and SD037); or with a bioreactor, phytoremediation, and EVO PRB (at Site DP039). At Site SD034, the statutory preference for treatment is satisfied through the physical removal of free-phase Stoddard solvent, containing dissolved COCs, using passive skimming and ex situ treatment or recycling of the recovered free product.

Although the selected remedies for Site SS041 (Alternative 1 – No Further Action); Site FT004, Site LF006, Site LF007 – Subareas LF007B and LF007D, and Sites LF008, ST027B, SD031, SD033, SS035, and SD043 (Alternative 2 – MNA) do not strictly satisfy the statutory preference for treatment, the immediate need for further active remediation at these sites is not warranted for the following reasons:

- Site SS041
  - COCs in groundwater were remediated as a part of an interim action (GET system consisting of ex situ treatment of extracted groundwater with ultraviolet oxidation and carbon adsorption) performed from 1999 to 2005, and cleanup levels were achieved by the interim action.
- Sites FT004 and LF006, Site LF007 Subareas LF007B and LF007D, and Sites LF008, ST027B, SD031, SD033, SS035, and SD043
  - MNA was successfully demonstrated by long-term interim MNA assessments (CH2M HILL, 2010b), results of contaminant rebound studies (CH2M HILL, 2012d), and results of an aerobic chlorinated cometabolism enzyme study (CH2M HILL, 2012b).
  - MNA assessment data demonstrated that concentrations of COCs in groundwater have significantly declined at Sites FT004, LF006, and SD031. Natural attenuation processes at Subarea LF007B appear to have reduced COC concentrations to less than cleanup levels. However, in accordance with regulatory agencies' requirements, at least 2 additional years of monitoring will be conducted at Subarea LF007B to confirm that cleanup levels have been achieved. At Subarea LF007D, the concentrations of COCs remained stable over approximately a decade of MNA assessment, but the plume is small (limited to the vicinity of one [1] well) and is not migrating (CH2M HILL, 2010b).
  - In 2010, the GET systems at Sites FT004, LF008, SD031, SD033, SS035, and SD043 were shut down as part of a contaminant rebound study, and concentrations of COCs have not increased (CH2M HILL, 2012d). The concentrations of groundwater COCs at Sites SS035 and SD043 are already below MCLs (CH2M HILL, 2010c, 2012a).
  - There is no evidence from the existing monitoring network that COCs in groundwater are migrating beyond current site boundaries (CH2M HILL, 2010b).

Because these remedies will result in hazardous substances, pollutants, or contaminants remaining onsite above levels that allow for designated beneficial uses of groundwater (domestic, municipal, agricultural, and industrial supply) as well as unlimited use and unrestricted exposure (concentrations of some VOCs pose a potential indoor air risk based on industrial and hypothetical residential land use exposure scenarios), a statutory review will be conducted within 5 years after initiation of the remedial actions selected in this ROD to ensure that the remedies are protective of human health and the environment. The next five-year review will be conducted in 2018.

### 1.6 Data Certification Checklist

The following information is included in the Decision Summary section of this ROD (Section 2):

- List of COCs and their respective concentrations (see Sections 2.4 and 2.5.7)
- Baseline risk represented by the COCs (see Section 2.7)
- Cleanup levels established for COCs and the basis for these levels (see Section 2.8, Table 2.8-1)
- Principal threat wastes (see Section 2.11)
- Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater (see Section 2.6)
- Potential land and groundwater use that will be available at the sites as a result of the selected remedies (see Section 2.9.3)
- Estimated capital costs, annual O&M, and total present value costs, discount rate, and the number of years over which the cost estimates for the remedies are projected (see Section 2.12.9.1)
- Key factors that led to selecting the remedies (see Section 2.13.4)

Additional information can be found in the Administrative Record file for Travis AFB, which is located in the Vacaville Cultural Center Library at 1020 Ulatis Drive in Vacaville, California.

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### 1.7 Authorizing Signatures

This signature sheet documents that the U.S. Air Force and U.S. Environmental Protection Agency, Region 9 have co-selected and California Department of Toxic Substances Control and California Regional Water Quality Control Board, San Francisco Bay Region concur with the remedies selected in this Record of Decision for groundwater at Travis Air Force Base, Fairfield, California. The U.S. Air Force and U.S. Environmental Protection Agency, Region 9 have jointly evaluated and selected the remedies for groundwater.

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BRUCE H. WOLFE Executive Officer California Regional Water Quality Control Board San Francisco Bay Region

CHARLES RIDENOUR, P.E. Supervising Hazardous Substances Engineer II Sacramento Office Brownfields and Environmental Restoration Program California Department of Toxic Substances Control

28 Feb 2014 Date

9 June 2014 Date

June 12, 2014 Date

Jerne 18, 2014 Date