

TRAVIS AIR FORCE BASE  
ENVIRONMENTAL RESTORATION PROGRAM

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**ANNUAL REPORT  
ON THE STATUS OF  
LAND USE CONTROLS  
ON RESTORATION SITES  
IN 2019**

FINAL



Air Force Civil Engineer Center  
Western Region Installation Support Section  
Travis Air Force Base, California

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FEBRUARY 2020

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**Final**

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# List of Acronyms and Abbreviations

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|               |   |
|---------------|---|
| <b>AFB</b>    | Air Force Base  |
| <b>AFCEC</b>  | Air Force Civil Engineer Center                                 |
| <b>ANSI</b>   | American National Standards Institute                           |
| <b>BGP</b>    | Base General Plan   |
| <b>CAMU</b>   | Corrective Action Management Unit                               |
| <b>CEMIRT</b> | Civil Engineer Maintenance, Inspection and Repair Team          |
| <b>CERCLA</b> | Comprehensive Response, Compensation, and Liability Act of 1980 |
| <b>COC</b>    | chemical of concern   |
| <b>COEC</b>   | chemical of ecological concern                                  |
| <b>DCA</b>    | dichloroethane  |
| <b>DCB</b>    | dichlorobenzene   |
| <b>DCE</b>    | dichloroethene  |
| <b>ECC</b>    | Environmental Chemical Corporation                              |
| <b>EPA</b>    | U.S. Environmental Protection Agency                            |
| <b>ERP</b>    | Environmental Restoration Program                               |
| <b>GET</b>    | groundwater extraction and treatment                            |
| <b>GMU</b>    | Grazing Management Unit   |
| <b>GRISR</b>  | Groundwater Remedial Implementation Status Report               |
| <b>IDP</b>    | Installation Development Plan                                   |
| <b>ISS</b>    | Installation Support Section                                    |
| <b>LUC</b>    | land use control  |
| <b>LUCIP</b>  | Land Use Control Implementation Plan                            |
| <b>MCL</b>    | maximum contaminant level                                       |
| <b>MILCON</b> | Military Construction   |
| <b>MNA</b>    | monitored natural attenuation                                   |
| <b>NEWIOU</b> | North/East/West Industrial Operable Unit                        |
| <b>NOU</b>    | North Operable Unit   |
| <b>OSHA</b>   | Occupational Safety and Health Administration                   |
| <b>OWS</b>    | oil/water separator   |
| <b>PAH</b>    | polycyclic aromatic hydrocarbon                                 |
| <b>PCB</b>    | polychlorinated biphenyl  |
| <b>POCO</b>   | petroleum only contamination                                    |
| <b>POL</b>    | petroleum, oil, lubricant                                       |
| <b>ppb</b>    | parts per billion   |
| <b>RA</b>     | remedial action   |
| <b>RD</b>     | remedial design   |
| <b>RI</b>     | remedial investigation  |
| <b>ROD</b>    | Record of Decision  |
| <b>RPM</b>    | Restoration Program Manager                                     |
| <b>SFPP</b>   | Santa Fe Pacific Pipeline                                       |
| <b>SSA</b>    | solvent spill area  |
| <b>TCE</b>    | trichloroethene   |
| <b>TPH</b>    | total petroleum hydrocarbon                                     |
| <b>WABOU</b>  | West/Annexes/Basewide Operable Unit                             |



# 1.0 Introduction

---

This Annual Report on the Status of Land Use Controls (LUCs) on Restoration Sites describes the status of environmental restrictions on the use of property on Travis Air Force Base (Travis AFB) in 2019. The property use restrictions are based on the presence of residual chemicals of concern (COCs) in the soil or groundwater that could pose a potential risk to human health or the environment if human or ecological receptors were to come into contact with these COCs. The LUC implementation has been conducted under the Travis AFB Environmental Restoration Program (ERP). Parcels of property in the ERP are referred to as ERP sites.

The primary purpose of LUCs is to prevent the uncontrolled movement of, or exposure of human or ecological receptors to, COCs that are present in either soil or groundwater or both media. In risk assessment terms, LUCs block the pathway between the COC and all potential receptors in order to prevent adverse health impacts.

LUCs can either be the only remedy that is assigned to an ERP site, or they can be a part of a more active remedy that is designed to achieve a level of remediation that would preclude the need for environmental restrictions. For a soil example, LUCs would remain in place until a soil remedy (such as excavation and landfill disposal) attained a cleanup level that no longer posed a potential risk to all receptors. For a groundwater example, LUCs would remain in place as long as the groundwater treatment technology (examples are groundwater extraction and treatment, or reductive dechlorination via emulsified vegetable oil injection) is in operation.

For sites with more than one medium of concern, LUCs are assigned to each medium and are treated as separate remedies. For example, Site SD033 received separate remedies for soil (Alternative 17 – LUCs), sediment (Alternative 18 – Excavation with Alternative 17 – LUCs as a contingency remedy), surface water (Alternative 10 – No Action), and groundwater (Monitored Natural Attenuation [MNA] with LUCs as an integral part of the remedy). When Travis AFB conducted a sediment cleanup action at Site SD033 in 2009 and achieved residential cleanup levels, LUCs were no longer needed for the sediment at this site. However, the LUCs assigned to the other media of concern remained in place. Appendix B provides the documentation of the medium-specific remedial actions that led to the attainment of cleanup levels and the removal of LUCs from ERP sites.

A secondary purpose of LUCs is to maintain the integrity of remedial and monitoring systems, such as monitoring wells and extraction wells. For example, LUCs ensure that soil excavation associated with base construction or repair projects does not damage monitoring/extraction/injection wells or piezometers that are a part of a groundwater remedy.

Finally, under specific state policy, LUCs can be applied to a closed site when low petroleum concentrations are still present. The state policy allows for site closure when residual petroleum contamination poses a low threat to human health. Section 2.3 (Petroleum Only Contaminated [POCO] Sites) describes this form of closure in more detail.

The 2019 annual LUC inspection consisted of a formal inspection of the Travis AFB LUCs at five (5) soil sites, 16 on-base groundwater sites, and three (3) off-base groundwater sites. The five (5) soil sites are listed as SS015, SS016, SD037, LF044, and LF007 (including the

Corrective Action Management Unit [CAMU]). The 16 on-base groundwater sites are listed as FT004, LF006, LF007 (subareas B and D), LF008, SS015, SS016, ST027B, ST028, SS029, SD031, ST032, SD033, SD034, SD036, SD037, and DP039. The three (3) off-base groundwater sites are listed as FT005, LF007 (subarea C), and SS030. This report serves as the official record of the results of this inspection.

This LUC inspection was conducted on 21 and 22 January 2020. Mr. Glenn Anderson and Mr. Gene Clare from the Air Force Civil Engineer Center (AFCEC) Installation Support Section (ISS) office on Travis AFB participated in the inspection. Mr. Lorenzo Lujan from CH2M/Jacobs and Mr. Angel Santiago from AFCEC/CZOW provided support for the inspection. Other participants included Ms. Luann Tetirick and Ms. Emily Rosa from the Travis AFB Environmental Flight, Ms. Venette Zambrano from the Travis AFB Real Property Office, and Ms. Leslie Pena and Lt. Emily Worthy from the Travis AFB Engineering Flight.

The inspection team visited most of the LUC sites on 21 January 2020 when all base personnel were available. The first day gave the AFCEC ISS members the opportunity to brief new base personnel on the LUC concept, to familiarize them with the Land Use Control Implementation Plan (LUCIP), and to introduce them to the LUC sites. However, the inspection team postponed the remaining site visits to the following day to avoid hazardous walking and driving conditions from a rain event.

One on-base groundwater site that was removed from the 2019 LUC inspection list is Site SD043 (Facility 916). The results of groundwater closure monitoring had demonstrated that the closure requirements for this site in the Groundwater ROD (Travis AFB, 2014) had been attained, so groundwater LUCs are no longer required for this site. The *Site SD043 Site Closure Report* (CH2M, 2019f) describes the site closure for Site SD043.

Three soil sites that were removed from the 2019 LUC inspection list are Sites SD033, SD043 and SS046. The *Amendment to the North, East, West Industrial Operable Unit (NEWIOU) Soil, Sediment and Surface Water Record of Decision (ROD)* (Travis AFB, 2019) changed the Site SD033 soil remedy from LUCs to No Further Action. Also, the two soil remedial actions at Sites SD043 and SS046 achieved the residential cleanup standards that were promulgated in the *Amendment to the West/Annexes/Basewide Operable Unit (WABOU) Soil ROD* (Travis AFB, 2018), so soil LUCs are no longer required for these sites. The *Site SD043 Remedial Action Completion Report (RACR)* (CH2M HILL, 2019b) describes the soil remedial action at Site SD043. The *Site SS046 RACR and Well Decommissioning Work Plan* (CH2M HILL, 2019c) describes the soil remedial action at Site SS046, and the *Site SS046 Well Decommissioning and Site Closeout Technical Memorandum* (CH2M HILL, 2020) describes the site closure for Site SS046.

The following list provides a brief summary of the organization and content of the 2019 LUC Status Report:

- [Section 1.0](#) – Introduction. Provides descriptions of the purpose and content of this annual report.

- [Section 2.0](#) – Regulatory Framework. Describes the documentation that mandate LUC requirements for Travis AFB.
- [Section 3.0](#) – Performance Measures. Describes the performance measures for LUCs. Subsections describe how these measures have been met.
- [Section 4.0](#) – Fire Training Area #3 (FT004). Describes the environmental conditions at Fire Training Area #3 and the status of groundwater LUCs at that site.
- [Section 5.0](#) – Fire Training Area #4 (FT005). Describes the environmental conditions at Fire Training Area #4 and the status of groundwater LUCs at that site.
- [Section 6.0](#) – Landfill #1 (LF006). Describes the environmental conditions at Landfill #1 and the status of groundwater LUCs at that site.
- [Section 7.0](#) – Landfill #2 (LF007). Describes the environmental conditions at Landfill #2 and the status of the soil and groundwater LUCs at that site as well as that of the Travis AFB Corrective Action Management Unit (CAMU).
- [Section 8.0](#) – Landfill #3 (LF008). Describes the environmental conditions at Landfill #3 and the status of groundwater LUCs at that site.
- [Section 9.0](#) – Solvent Spill Area (SS015). Describes the environmental conditions at the Solvent Spill Area and Facilities 550 and 552 and the status of soil and groundwater LUCs at that site.
- [Section 10.0](#) – Oil Spill Area (SS016). Describes the environmental conditions at the Oil Spill Area, Facilities 11, 13, 14, 20, 42, 1941, 139, and 144 and sections of the Storm Sewer Right-of-Way and the status of soil and groundwater LUCs at that site.
- [Section 11.0](#) – Facilities 1918, 1919, and 1754 (ST027B). Describes the environmental conditions at Facilities 1918, 1919, and 1754 and the status of groundwater LUCs at that site.
- [Section 12.0](#) – Monitoring Well (MW) 329 Area (SS029). Describes the environmental conditions at the MW 329 area and the status of groundwater LUCs at that site.
- [Section 13.0](#) – MW 269 Area (SS030). Describes the environmental conditions at the MW 269 area and the status of groundwater LUCs at that site.
- [Section 14.0](#) – Facility 1205 (SD031). Describes the environmental conditions at Facility 1205 and the status of groundwater LUCs at that site.
- [Section 15.0](#) – Storm Sewer System B, Facilities 810 and 1917, and South Gate Area (SD033). Describes the environmental conditions at Storm Sewer System B, Facilities 810 and 1917, and the South Gate Area and the status of soil and groundwater LUCs at that site.

- [Section 16.0](#) – Facility 811 (SD034). Describes the environmental conditions at Facility 811 and the status of groundwater LUCs at that site.
- [Section 17.0](#) – Facilities 872/873/876 (SD036). Describes the environmental conditions at Facilities 872/873/876 and the status of groundwater LUCs at that site.
- [Section 18.0](#) – Sanitary Sewer System; Facilities 837, 838, 919, 977, and 981; Area G Ramp; and the Ragsdale/V Area (SD037). Describes the environmental conditions at the Sanitary Sewer System; Facilities 837, 838, 919, 977, and 981; Area G Ramp; and the Ragsdale/V Area and the status of soil and groundwater LUCs at that site.
- [Section 19.0](#) – Building 755 (DP039). Describes the environmental conditions at Building 755 and the status of groundwater LUCs at that site.
- [Section 20.0](#) – Landfill X (LF044). Describes the environmental conditions at Landfill X and the status of soil LUCs at that site.
- [Section 21.0](#) – Non-CERCLA Petroleum Sites that have achieved Response Complete Status. Describes the environmental conditions at the Buildings 363 and 1201 (ST028) and MW 246 Area (ST032) sites and the status of their soil and groundwater LUCs.
- [Section 22.0](#) – Conclusion and Summary of Findings. Summarizes the seventeenth year of managing soil LUCs in the WABOU, the thirteenth year of managing soil LUCs in the NEWIOU, and the sixth year of managing groundwater LUCs in the NEWIOU and WABOU.
- [Section 23.0](#) – Works Cited. Lists the documents used to develop this annual report.

#### Appendices

- [Appendix A](#) – Photographs. Shows photographs of sites with LUCs.
- [Appendix B](#) – Documentation of Remedial Actions that Resulted in Land Use Control Removal. Summarizes the cleanup actions that resulted in the removal of previously assigned LUCs.
- [Appendix C](#) – Site Checklists from the 2019 Annual LUC Inspection (with field notes)

## 2.0 Regulatory Framework

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In 1983, the Air Force initiated the Installation Restoration Program (IRP) to investigate the nature and extent of hazardous substance releases into the environment. Based on an EPA evaluation of IRP data, Travis AFB was placed on the National Priorities List on 21 November 1989. On 27 September 1990, the Air Force, the EPA, the California Department of Toxic Substances Control, and the San Francisco Bay Regional Water Quality Control Board signed a Federal Facility Agreement that established the framework and schedule for environmental cleanup at Travis AFB.

The investigation and cleanup of hazardous substance releases are governed by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). CERCLA establishes the methodology for selecting the most appropriate cleanup strategies or technologies. Before hazardous substance cleanup can start, the best available cleanup actions are selected and described in a legally-binding ROD. This selection is based on an evaluation of potential cleanup options against nine (9) CERCLA criteria.

The following subsections identify the RODs that selected LUCs for specific restoration sites and summarize the purposes of the LUCs at these sites. They also identify the ROD Amendments that changed the LUC remedy for some sites to another remedy.

### 2.1 Soil LUCs

The *Soil ROD for the West/Annexes/Basewide Operable Unit (WABOU)* (Travis AFB, 2002a) and the *North/East/West Industrial Operable Unit (NEWIOU) Soil, Sediment and Surface Water (SSSW) ROD* (URS, 2006) are the legal documents that describe the selected remedies for twenty-eight soil and sediment Environmental Restoration Program (ERP) sites on Travis Air Force Base (AFB). In addition, the *Amendment to the WABOU Soil ROD* (Travis AFB, 2018) changed the original remedies for three soil sites (Sites DP039, SD043, and SS046), and the *Amendment to the NEWIOU Soil, Sediment, and Surface Water ROD* (Travis AFB, 2019) changed the original remedies for two soil sites (Sites SD033 and SS016).

Alternative S2 (Land Use and Access Restrictions) is the selected remedial or contingent remedial alternative for nine of ten WABOU soil sites. Alternative 17 (Land Use Controls) is the selected remedial or contingent remedial alternative for ten of the eighteen NEWIOU soil and sediment sites. Both remedial alternatives provide the administrative and physical measures needed to restrict future land use, prevent unauthorized soil disturbance and removal activities, and/or ensure the effectiveness of the remedies at these nineteen LUC sites.

The remedial action objective of Alternative S2 and Alternative 17 is to restrict residential development and unauthorized disturbance and relocation of soil. While the descriptions of Alternatives S2 and 17 differ slightly in the respective RODs, their objectives are identical.

For Site LF044, Alternative S2 is the only selected soil remedy. For five active WABOU sites (LF008, RW013, SS041, SD042, and SD045), the *WABOU Soil ROD* (Travis AFB, 2002a) selected an active remedy and Alternative S2 as an institutional control. The active remedy is



required to reduce COC concentrations to industrial cleanup levels so that the sites are safe for base workers. Alternative S2 serves to restrict residential activity at those sites. Section 5.4 (Land Use Controls) of the *WABOU Soil ROD* (Travis AFB, 2002a) describes these requirements in more detail. In addition, the *Amendment to the WABOU Soil ROD* (Travis AFB, 2018) changed the DP039 soil remedy from Alternative S2 – Land Use Controls to Alternative S1 – No Action and the soil remedies for Sites SD043 and SS046 from Alternative S2 – Land Use Controls to Alternative S5 – Excavation/Off-base Disposal. The WABOU Soil ROD Amendment promulgated residential soil cleanup levels that are necessary to achieve site closure.

Similarly, for three NEWIOU soil sites (SS015, ST032, and SD037 Area 6), Alternative 17 is the only selected soil remedy. Alternative 16 (No Action) is the soil remedy for SD037 Areas 1 through 5. For the remaining NEWIOU sites (SD001 [sediment only], FT003, FT004, FT005, LF007, and SD033 [sediment]), the *NEWIOU SSSW ROD* (URS, 2006) selected an active remedy and Alternative 17 as an institutional control. Because the active remedy is required to reduce COC concentrations to industrial cleanup levels, Alternative 17 serves to restrict activity at those sites to industrial uses only. Section 5.4 (Land Use Controls [LUC]) of the *NEWIOU SSSW ROD* (URS, 2006) describes these requirements in more detail. In addition, the *Amendment to the NEWIOU SSSW ROD* (Travis AFB, 2019) changed the Site SD033 (soil) remedy from Alternative 17 – Land Use Controls to Alternative 16 – No Further Action and the Site SS016 remedy from Alternative 17 – Land Use Controls to Alternative 18 – Excavation. The NEWIOU SSSW ROD Amendment also promulgated residential soil cleanup levels that are necessary to achieve site closure.

One active remedy (Alternative S6 for WABOU soil sites and Alternative 18 for NEWIOU soil sites) consists of excavation and placement of contaminated soil in a Corrective Action Management Unit (CAMU). Alternative #18 also allows soil to be sent to an off-base landfill.

A CAMU is a designated on-base area that is designed to receive and consolidate contaminated soil. The location of the Travis AFB CAMU is within the boundaries of Site LF007. The CAMU received contaminated soil from other soil sites during the 2003 and 2007 soil remedial actions. See Sections 7.1 and 7.2 for additional information regarding the CAMU.

## **2.2 Groundwater LUCs**

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) supersedes the *Groundwater Interim ROD for the WABOU* (CH2M HILL, 1999) and the *Groundwater Interim ROD for the NEWIOU* (URS, 1997) and describes the selected remedies for nineteen groundwater ERP sites on Travis AFB.

Unlike the soil RODs, the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) does not have a separate LUC alternative. Rather, LUCs are built into every active groundwater remedy to prevent the exposure of base personnel and contractors to contaminated groundwater or any associated vapors and to maintain the integrity of remedial and monitoring systems, such as extraction and monitoring wells. Figure 1 shows the boundaries of the land use controls associated with the Travis AFB groundwater sites.

Groundwater LUCs are an integral part of the achievement of Remedial Action Objectives (RAOs) that are described in the *Travis AFB Groundwater ROD* (CH2M HILL, 2014). The first RAO for all groundwater sites pertains to the restriction of human exposure (ingestion and direct dermal contact) to COCs and the reduction of COC concentrations to restore designated beneficial uses. LUCs are established to enforce the restriction of human exposure to COCs while the selected groundwater remedy works to reduce COC concentrations. For each groundwater site in this report, the achievement of the portion of the first RAO that applies to human exposure restriction is stated.

Travis AFB obtains its drinking water from two sources: a water treatment facility that is owned and operated by the City of Vallejo and a group of deep groundwater production wells at the Cypress Lakes Golf Course. As a result, the base does not use its groundwater for either domestic or industrial use. It does use treated groundwater to recharge the Duck Pond, an on-base recreational area.

For the on-base sites, a records review revealed no drinking water wells have been constructed. The on-base controls are procedural in nature and are based primarily on the administrative and worker safety tasks that base personnel and contractors must complete to obtain permission to excavate soil as part of a construction or repair project. All on-base plumes are located in industrial areas, and the footprint of most of them is covered by other, more stringent controls that are associated with aircraft/military operations. For example, the footprint of the LF008 plume is covered by quality distance safety arcs that prevent unauthorized activities near munitions storage facilities, and the footprint of the SS016 plume lies under aircraft runways and parking ramps and is covered by Federal Aviation Administration restrictions. There are no physical controls associated with these groundwater restrictions that can be inspected, so the weekly review by ISS staff of excavation permits, work requests and environmental impact analyses is an effective means to ensure groundwater restrictions are enforced. Section 4.1.3.4 (Land Use Controls at Groundwater Sites) of the *Fourth Five-Year Review Report* (Tetra Tech, 2019) describes the implementation of groundwater land use controls.

For the three groundwater sites with off-base components (FT005, LF007C, and SS030), the base purchased four easements that allow the base to carry out environmental investigations and restoration activities on private property. Each easement contains enforceable restrictions that prevents the landowner from interfering or bridging the exercise of the government's rights under the easements and prevents the landowner from engaging in water development or soil disturbing activities that could interfere with cleanup activities. The Air Force views any residential development and any well drilling on the properties covered by the four easements as interference with the government's easements.

If an easement expires before the solvent concentrations in groundwater are reduced to the point where they no longer pose an unacceptable risk to human health, then the base will negotiate a subsequent easement with the property owner. At the time of the 2019 LUC inspection, the LF007C easement had expired, and the Travis AFB Real Property office was negotiating a new easement with a new property owner. The Air Force monitors and will continue to monitor for inconsistent usage by the landowners. To date, there has been no interference by the landowners through inconsistent usage. Thus, the easement serves as an important tool for the implementation and enforcement of off-base LUCs on privately owned property.

The off-base groundwater plumes at Sites FT005, LF007C, and SS030 are enclosed entirely by the respective easements. Rather than assigning LUC boundaries to the plumes based on changing contaminant isoconcentration lines, the base considers the off-base LUC boundary for each site to be the entire footprint that is covered by the easement. Once cleanup levels for all COCs are achieved over the entire off-base portions of the plumes, the Air Force and the regulatory agencies will review the site conditions and determine whether the restrictions contained in the easements continue to be necessary to support site remediation.

For groundwater sites with solvent contamination, LUCs are established to prevent a potential exposure to indoor air vapor. The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) placed restrictions for residential and industrial land uses above solvent plumes; these restrictions can only be removed when the concentrations of volatile COCs that could potentially emanate from groundwater to indoor air do not pose an unacceptable risk to human health. Table 2.8-2 of this ROD lists the groundwater concentrations that require vapor intrusion LUCs under both industrial and residential exposure scenarios. By enforcing these restrictions, Travis AFB complies with the RAO as described in the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) that pertains to the restriction of COC inhalation that migrates from the subslab of a building into indoor air. For each groundwater site in this report that is assigned this RAO, the achievement of this COC inhalation restriction RAO is stated.

The *Vapor Intrusion Assessment Report* (CH2M HILL, 2010b) described a phased approach that was used to evaluate the potential vapor intrusion risk associated with solvent plumes beneath current office buildings. The assessment compared available groundwater data against screening levels, collected and analyzed subslab soil vapor and indoor air samples to establish site-specific risk-based concentrations, and identified buildings where there was a potential human health risk associated with the vapor intrusion pathway. A subsequent *Vapor Intrusion Assessment Update Technical Memorandum* (CH2M HILL, 2013) updated the original vapor intrusion assessment, based on revised risk-based concentrations and developed residential and industrial groundwater-to-indoor air LUC boundaries to support the *Travis AFB Groundwater ROD* (CH2M HILL, 2014).

Groundwater LUCs do not prevent the construction of new office buildings above solvent plumes. However, to ensure that the occupants of new buildings are not exposed to contaminated vapor from the solvent plumes, the new construction projects include the installation of a passive ventilation system beneath the office spaces that blocks the pathway between the occupants and the potentially contaminated subsurface soil gas. The requirement to incorporate a passive ventilation system into the building design is identified during the siting of the new building as part of the administrative controls. Figure 2 shows the boundaries of the land use controls associated with industrial groundwater-to-indoor air values that exceed acceptable risk levels, and Figure 3 shows the boundaries of the land use controls associated with residential groundwater-to-indoor air values that exceed acceptable risk levels.

The surface completions of monitoring, extraction and injection wells vary, depending on local industrial activities or property use. For example, flush mounts would be used in a parking lot, and stovepipe completions are often used in open fields that are subject to winter flooding. There are nearly 1,000 wells on Travis AFB, and almost all of these wells are closely inspected either during routine field maintenance, during the two (2) semiannual groundwater level measurement

and sample collection events, or when extraction system repairs are needed. During the annual LUC inspection, the overall site is viewed to ensure that the environmental restrictions that are described in three RODs are enforced. However, well maintenance is not a primary aspect of LUC enforcement, and detailed descriptions of well material observations (e.g., a missing bolt or lock) are not provided in this report. This annual report does describe any significant signs of infrastructure degradation that resulted from improper activities; if no significant degradation was observed, the lack of degradation is not mentioned in the text.

Currently, Travis AFB is conducting six CERCLA groundwater demonstration projects. Three (3) projects at Sites FT004, FT005, and SD031 are attempting to horizontally distribute emulsified vegetable oil (EVO) in a low permeability clay-rich saturated zone. One (1) project at Site SD034 is attempting to use subgrade biogeochemical reactor technology to accelerate the cleanup of hydrocarbon contamination. Another project at Site LF006 is evaluating the use of Lactoil (a blend of lactate and emulsified vegetable oil) to improve the cleanup of chlorinated solvents in a fine-grained soil environment. The final project at Sites ST027B and SD036 is evaluating the use of a bioaugmentation culture to improve the performance of EVO injection remedies. If successful, the lessons learned from these projects could be used to optimize future remedies at other chlorinated solvent and petroleum hydrocarbon sites. The infrastructure that supports these projects is new and in excellent material condition, and the administrative processes and procedures that are used to manage LUCs at groundwater sites will also protect the material integrity of this infrastructure. However, because this infrastructure does not directly support a remedy, these demonstration projects will not be mentioned in this annual LUC report.

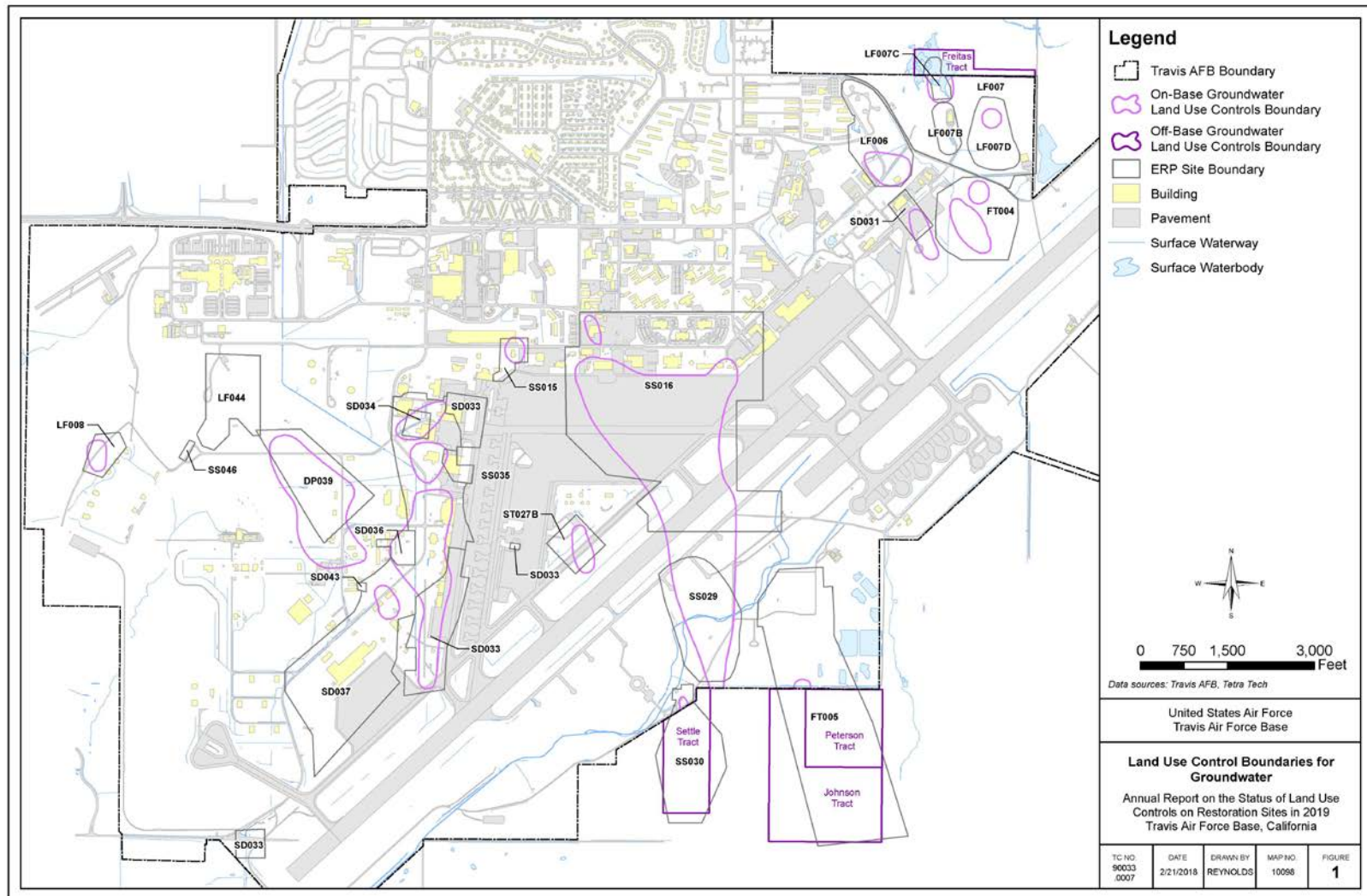
### **2.3 Petroleum Only Contaminated (POCO) Sites**

The Travis AFB ERP also addresses several sites with petroleum contamination only. Petroleum cleanup is not authorized under CERCLA, so the base established a Petroleum Only Contamination (POCO) program, which addresses locations with fuels and other petroleum COCs. POCO sites receive regulatory oversight from the San Francisco Bay Regional Water Quality Control Board.

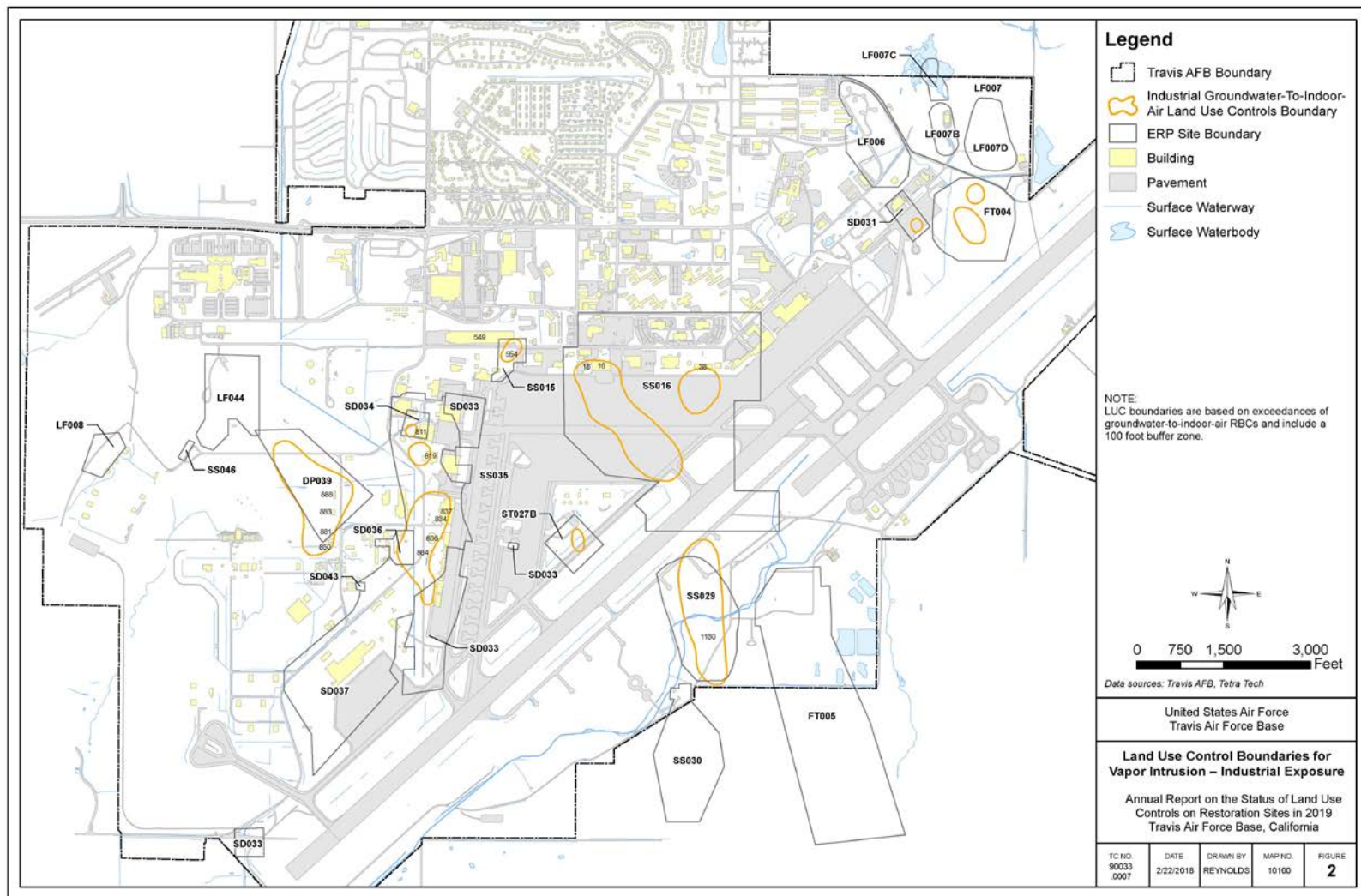
Active petroleum sites are not mentioned in this report, because they are not a part of a CERCLA ROD, but they do receive similar institutional controls as CERCLA sites. The controls are designed to prevent inadvertent exposure of petroleum contamination in soil and groundwater to base personnel and contractors during construction activities that involve soil excavation.

Two POCO sites (Sites ST028 and ST032) have been closed under the State Water Resources Control Board's *Low-Threat Underground Storage Tank Case Closure Policy* (State Water Board, 2012). However, there is still residual total petroleum hydrocarbons as diesel in Site ST028 groundwater, residual polycyclic aromatic hydrocarbons in Site ST028 soil, and residual benzene in Site ST032 groundwater. Section 24 describes the controls that are in place because of this soil and groundwater contamination.



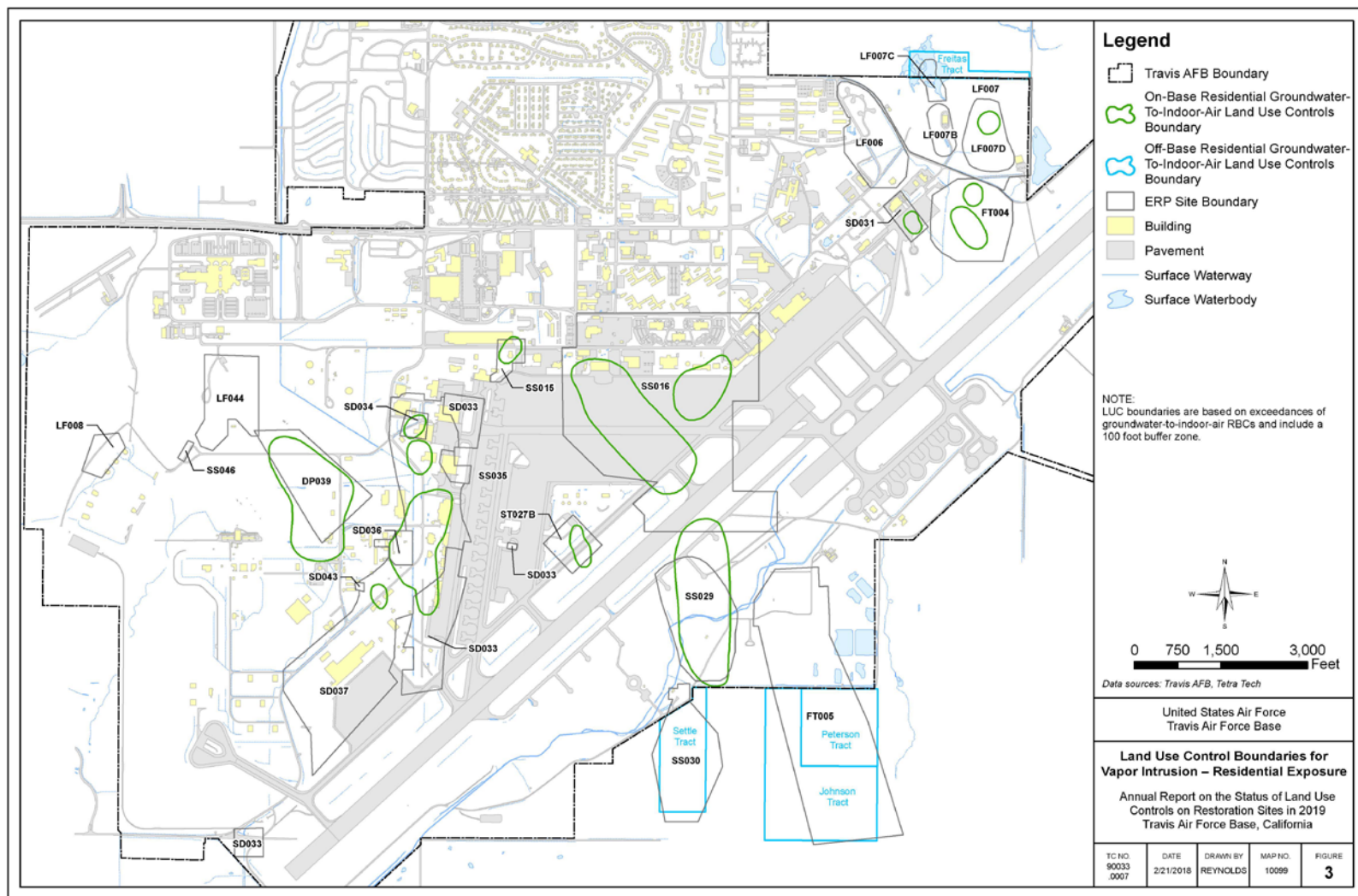














## 3.0 Performance Measures

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Sections 5.4 (Land Use Controls) of both the *WABOU Soil ROD* (Travis AFB, 2002a) and the *NEWIOU SSSW ROD* (URS, 2006) as well as Section 2.12.2.8 (Land Use Controls) of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) address the Air Force requirements and responsibilities for implementing, monitoring, maintaining, and enforcing LUCs. The following subsections explain how these requirements and responsibilities (performance measures) have been met.

### 3.1 Base General Plan Revisions

The first performance measure pertains to the Base General Plan (BGP). The BGP is a long-range planning document that provides a framework for selecting the locations of future facilities needed to carry out the base mission. Each ROD required Travis AFB to incorporate within the *Travis AFB General Plan* (Travis AFB, 2002b) all specific LUCs at each site, the reasons for the controls, and site-specific details to adequately describe them to base personnel. Once a soil remedial action is complete, the base updates the site-specific restrictions in the BGP, if needed.

Section 3.1 of the *Travis Air Force Base Annual Report on the Status of Land Use Controls on Restoration Sites in 2013* (Travis AFB, 2014) provides a history of the maintenance and challenges associated with the BGP. It also stated that congressionally-mandated Department of Defense budget cuts prevented the Air Force from maintaining a web-based version of the Travis AFB BGP. Soon after the web-based BGP was shut down, AFCEC issued a contract to Jacobs Engineering Group to develop an Installation Development Plan (IDP) to support the long-term planning function at Travis AFB and other AF installations. Similar in structure and content to the original BGP, the IDP summarizes the AF Comprehensive Planning Process and applies geospatial and written data (text, maps, tables, figures, photographs, etc.) to allocate resources through project programming, promote airfield safety, and enhance the general health and welfare of the natural and built environment.

The *Travis AFB IDP* (Travis AFB, 2016) is the result of a comprehensive planning process that describes the installation's past, present and future physical state and guides future facility programming decisions. It aligns with the Air Force installation planning goals for mission capability, sustainability, readiness, and modernization.

The IDP serves as a replacement of the BGP and has a section that summarizes the Travis ERP and the need for soil, groundwater and soil gas LUCs. However, it does not contain sufficient LUC information to be a useful enforcement and management tool. To provide base project planners with the latest detailed LUC data to support future projects, the AFCEC ISS at Travis AFB published a Land Use Control Implementation Plan (LUCIP).

The LUCIP is an internal Air Force tool that documents the established LUCs for restoration and petroleum only sites on Travis AFB, and defines the roles and responsibilities of base and AFCEC personnel for carrying out LUC management, enforcement, and tracking. It also provides LUC information to base personnel involved in facility management and project planning as well as site checklists and guidance to assist personnel in conducting annual LUC

inspections. The *Travis AFB LUCIP* (CH2M HILL, 2019d) provides a framework for consistent and effective LUC implementation, management, and compliance tracking.

The *Travis AFB LUCIP* (CH2M HILL, 2019d) is meant to be a living document that meets current site-specific LUC requirements and will be updated on a routine basis to keep up with changes to LUC requirements or Air Force policy. Currently, the Travis restoration ISS is responsible for ROD compliance, but eventually, future LUC inspections will be carried out by base personnel with appropriate assistance from the Travis ISS to support the transition.

The 2019 LUC inspection team used the checklists during their inspection. Appendix C contains the completed checklists as well as field notes generated from the inspection.

### **3.2 Regulatory Agency Notification**

The second performance measure involves the notification of the regulatory agencies of any base proposals for a major land use change at a site inconsistent with LUC objectives or the selected remedy, any anticipated action that may disrupt the effectiveness of the LUCs, any action that might alter or negate the need for LUCs, or any anticipated transfer of the property subject to the LUCs.

For the soil and groundwater sites that are addressed in this report, there were no land use change proposals or activities in 2019 that were inconsistent with, disruptive of, or negated the need for LUCs. Also, no property transfers took place in the vicinity of these sites.

Section 5.4 of the *NEWIOU SSSW ROD* (URS, 2006) and Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) specify a period up to 10 days after discovery for regulatory agency notification of LUC changes or breaches as described above. They also describe the notification of how the Air Force has addressed or will address the breach. Since Travis AFB made no notifications in 2019, the LUC inspection did not evaluate notification timeliness.

### **3.3 Existing Administrative Control Maintenance**

The third performance measure requires the maintenance of existing administrative controls (e.g., through the review of excavation permits) while LUCs are in place. Although there are no material changes to the administrative procedures for tracking land use on-base, Travis AFB implemented a new facility management system that transition from paper forms to a web-based system.

TRIRIGA is the Air Force's designated system for processing all facility alterations and repair, and is mandated to meet Financial Improvement and Audit Readiness (FIAR) compliance as prescribed by Office of the Secretary of Defense policy. This tool enables base civil engineers to focus resources to more effectively maintain and repair real property assets.

One significant system change is the replacement of the Civil Engineer Work Request (AF Form 332) with a TRIRIGA service request. The service request starts the proposal evaluation process and provides the information needed by reviewers to compare the proposed

building site with the environmental constraints before approval. TRIRIGA also uses the service request to initiate an initial environmental analysis that often leads to the submission of a Request for Environmental Impact Analysis (AF Form 813). This allows the Civil Engineer Squadron to verify that environmental issues pertaining to the proposed project are properly considered and addressed. One administrative procedure that has not changed is the excavation permit (60 AMW Form 55) which is still submitted and approved in paper format.

During the 2019 LUC inspection, the reviewers noted that all LUCs at the soil and groundwater sites that are addressed in this report were intact. There were no indications of improper land use or soil disturbance in any of the controlled areas. Based on the site inspections and weekly attendance in project coordination meetings throughout 2019, the reviewers concluded that the existing administrative measures are properly maintaining the LUCs.

### **3.4 Periodic Monitoring**

Periodic monitoring is the final requirement as described in three Travis AFB RODs. Officially, Travis AFB is required to conduct annual inspections of its controlled areas and to take prompt action to restore, repair, or correct any LUC deficiencies or failures identified. Also, the RODs provide the flexibility to select a different monitoring schedule as long as all parties agree with it and if the change reasonably reflects the potential risk presented by the site.

The AFCEC ISS at Travis AFB has two restoration project managers and one environmental contractor who routinely visit environmental restoration and military construction projects. As a result, site visits take place on at least a quarterly (and often more frequent) basis, with few exceptions. However, these site visits are not considered to be official LUC inspections as described in Section 4.1 (IC assurance monitoring) of *Institutional Controls: A Guide to Preparing Institutional Control Implementation and Assurance Plans at Contaminated Sites*, EPA/540/R-09/002, dated December 2012. Past annual LUC reports listed any specific activities or incidents that resulted in more frequent site visits, based on an EPA recommendation to state the total average number of episodic visits by contractors and base representatives to each site during the course of the annual reporting period (EPA email, James Chang, 12 February 2009). To avoid confusion, only the results of the annual LUC inspection will be reported. In the event that a potential LUC deficiency is identified, it is investigated promptly. During this reporting period, there were no LUC deficiencies that required restoration, repair or correction.

### **3.5 Other Monitoring Requirements**

In addition to the LUC requirements described above for all sites, the RODs require the following measures at some sites.

#### **3.5.1 Signs**

Specific sites will have appropriate signs on display to warn site visitors of potential hazards associated with surface soil contamination, conforming to ANSI Z 53.1 and Unified Facilities Criteria 3-120-01 (Air Force Sign Standard).

In 2003, Travis AFB placed signs at all WABOU sites with LUCs. In 2006, the base placed signs at SS016 and the soil portion of SD033. Sites SS015 and SD037 did not receive signage because of incompatibilities with safe vehicle or aircraft operations. To ensure that base personnel can contact an environmental restoration representative when needed, the phone numbers and other contact information on the signs are checked during the annual inspections. The 2019 LUC inspection noted that the all signs display the same cell phone number that is forwarded to the Travis ISS office (290-8458). This ensures a consistent response to any phone inquiries and provides the flexibility of forwarding incoming calls to an assigned base representative. However, when the team tried to call the phone number, the call was immediately transferred to an automated voice messaging system. The Travis ISS reported the problem to the appropriate base personnel and received a new cellular phone with the same assigned phone number; this corrected the problem. Appendix A (Photographs) presents photographs taken during the 2019 LUC inspection that show examples of the signs that have been posted at LUC sites.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) does not have a signage requirement mainly because of the expectation that the boundaries and COC concentrations in plumes will fluctuate during the life of remedial actions. Signage is only effective when the COC boundaries are stationary.

### 3.5.2 Use of Clean Soil

At sites where the selected remedy involves soil excavation, Travis AFB is required to backfill the excavation voids with clean soil. This removes the potential for exposure to surface soil COCs. If there is any residual contamination at depth, the excavation permit process is used to ensure that future industrial activities or construction projects either do not disturb the contaminated subsurface soil or that the base takes appropriate mitigation measures.

### 3.5.3 Landfill X

The *WABOU Soil ROD* (Travis AFB, 2002a) requires Travis AFB to install a fence around the Landfill X area, build protective berms to prevent the transport of soil contamination via surface water flow during rain events into nearby vernal pools, and comply with applicable OSHA regulations, including relevant worker notification, training, and protective measures.

In 2003, Travis AFB completed the installation of a fence and berm at Landfill X. The *Remedial Action Report for the Soil Remedial Actions at Site LF044* (ECC, 2003a) describes in detail this soil action.

### 3.5.4 Report Submittal

In accordance with the three RODs, Travis AFB is required to submit in a timely manner to the EPA, the California Department of Toxic Substances Control, and the San Francisco Regional Water Quality Control Board an annual monitoring report on the status of LUCs; including the operation, maintenance, and monitoring thereof; and how any LUC deficiencies or inconsistent uses have been addressed. The source of the analytical data that is presented in this report is the *2018 Annual Groundwater Remediation Implementation Status Report* (GRISR) (CH2M HILL, 2019e).

An electronic copy of this report is accessible through the environmental restoration portion of the Travis AFB public website (<http://www.travis.af.mil/About-Us/Environment/Document-Library/>) as well as the AFCEC Administrative Record website (<http://afcec.publicadmin-record.us.af.mil/search.aspx>). Although this report is not subject to approval and/or revision by EPA and the State of California regulatory agencies, Travis AFB will voluntarily consider any suggestions from the regulatory agencies and the public to improve the format and/or content of future reports.





## 4.0 Fire Training Area #3 (FT004)

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FT004 is in the northeastern part of Travis AFB and consists of the former Fire Training Area #3, an unoccupied 30-acre open field that was used to train fire fighters from about 1953 to 1962. Waste fuels, oils, and solvents were burned on open ground, contaminating the groundwater with chlorinated solvents, mainly trichloroethene (TCE).

### 4.1 Environmental Conditions

The list of chlorinated COCs for FT004 groundwater include TCE, cis-1,2-dichloroethene (DCE), 1,2-dichloroethane (DCA), chloroform, bromodichloromethane, 1,1-DCE, vinyl chloride, and 1,4-dichlorobenzene (DCB). The indicator COC for FT004 is TCE. The maximum TCE concentration in the groundwater at FT004 is 640 parts per billion (ppb) at monitoring well MW2330x04; this well supports an ongoing demonstration project. The federal and State of California drinking water standard for TCE is 5 ppb. Appendix D of the *Summary of Remedial Investigation Data and Risk Management Decisions for Human Health at NEWIOU Sites* (URS, 2004) presents a more detailed description of the human health risk assessment for FT004.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 2 (Monitored Natural Attenuation [MNA]) to address the residual dissolved solvent contamination. The interim Groundwater Extraction and Treatment (GET) system at FT004 is not a part of the selected remedy, so it is shut down. The progress that MNA has made in reducing COC mass and concentrations is reported in annual Groundwater Remediation Implementation Status Reports (GRISRs).

### 4.2 Status of FT004 Groundwater Land Use Controls

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at FT004 also poses a potential indoor air vapor intrusion risk to industrial workers, so the LUCs also restrict residential and industrial land uses that could result in a vapor intrusion hazard (e.g., office construction) until concentrations of solvents in groundwater are reduced to the point where they no longer pose an unacceptable risk to human health.

The 2019 inspection of the groundwater LUCs at FT004 found that administrative controls are adequate to enforce the environmental restrictions. There is no evidence of any activities that could expose base personnel to contaminated groundwater, and no new non-environmental construction has taken place at the site. Most of the monitoring wells have stovepipe completions and are protected by bollards. The LUC inspection identified no evidence of damage or excessive wear that could adversely impact the use of these wells. Photograph 1 in Appendix A of this report shows the controlled area at FT004.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for FT004.



## 5.0 Fire Training Area #4 (FT005)

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FT005 is in the southeastern part of Travis AFB and consists of the former Fire Training Area #4, an unoccupied 30-acre open field that was used to train fire fighters from about 1962 to 1987. From 1962 to the early 1970's, waste fuels, oils, and solvents were burned on open ground. From the early 1970's to when Fire Training Area #4 was closed, only waste fuels were burned. These activities contaminated the groundwater with chlorinated solvents, mainly 1,2- DCA.

### 5.1 Environmental Conditions

The list of chlorinated COCs for FT005 groundwater include TCE, 1,2-DCA, cis-1,2-DCE, chloroform, and bromodichloromethane. The indicator COC is 1,2-DCA. The maximum 1,2-DCA concentration in the groundwater at FT005 is 6.1 ppb at newly installed EW2784x05. The federal and State of California drinking water standard for 1,2-DCA is 0.5 ppb. Appendix E of the *Summary of Remedial Investigation Data and Risk Management Decisions for Human Health at NEWIOU Sites* (URS, 2004) presents a more detailed description of the human health risk assessment for FT005.

FT005 is one of three restoration sites with a solvent plume that extends beyond the base boundary. To allow the base to carry out environmental investigations and restoration activities on private property, the base purchased an easement that covers the lateral extent of the 1,2-DCA plume. The easement restricts the activities of the property owner that could potentially interfere with the selected groundwater remedy for FT005. If the easement expires before the solvent concentrations in groundwater are reduced to the point where they no longer pose an unacceptable risk to human health, then the base will negotiate a subsequent easement with the property owner. This easement expires and may need to be renewed in 2026.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 3 (GET) to address the residual dissolved solvent contamination. The progress that GET has made in reducing COC mass and concentrations is reported in annual GRISRs.

### 5.2 Status of FT005 Groundwater Land Use Controls

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. Because the COC concentrations at FT005 do not exceed the groundwater concentrations that would require VI LUCs (please see Table 2.8-2 of the *Travis AFB Groundwater ROD* [CH2M HILL, 2014]), the groundwater does not pose a potential vapor intrusion risk to industrial workers or hypothetical future residents.

The 2019 inspection of the groundwater LUCs at FT005 found that administrative controls are adequate to enforce the environmental restrictions. There is no evidence of any activities that could expose base personnel or the off-base property owner to contaminated groundwater, and no new construction has taken place at the site. The GET system is actively treating groundwater, and all monitoring and extraction wells were inspected during field maintenance by contractor personnel prior to the LUC inspection. The LUC inspection identified no evidence of

damage or excessive wear that could adversely impact the use of these wells. However, the inspection team noted that the access road along the base boundary that contains several wells was closed due to excessive rutting. Because of the wet road conditions, the base will wait until the dry season to start on road repairs. In addition, to reduce the threat of bird strikes on aircraft, the base is cutting down the trees in the vicinity of FT005. This fieldwork does not adversely affect any ERP activities. Photograph 2 in Appendix A of this report shows the on-base portion of FT005.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and has achieved the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for FT005.

## 6.0 Landfill 1 (LF006)

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LF006 is a former waste disposal landfill in the northeastern portion of Travis AFB that was operated from about 1943 through 1950. The waste contained chlorinated solvents, mainly TCE, and petroleum fuel hydrocarbons that contaminated the local groundwater.

### 6.1 Environmental Conditions

The list of chlorinated COCs for LF006 groundwater includes TCE and 1,1-DCE. The indicator COC is TCE. The maximum concentration of TCE in groundwater is 6.2 ppb at MW1729x06. The federal and State of California drinking water standard for TCE is 5 ppb. The maximum concentration of 1,1-DCE in groundwater is 14 ppb at IW2794x06. The federal and State of California drinking water standard for 1,1-DCE is 6 ppb.

Petroleum fuel hydrocarbons were detected significantly above the ESL (100 ppb) during 2017 sampling events. However, in 2018, TPH-D was found in MW1743x06 (150 J- ppb), and TPH-G was found in MW259x06 (16 ppb). This demonstrates that the 2017 results were not consistent with historical data and were anomalous.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 2 (Monitored Natural Attenuation) to address the residual dissolved solvent contamination. The progress that MNA has made in reducing COC mass and concentrations is reported in annual GRISRs.

### 6.2 Status of LF006 Groundwater Land Use Controls

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at LF006 does not pose a potential indoor air vapor intrusion risk to industrial workers or hypothetical future residents.

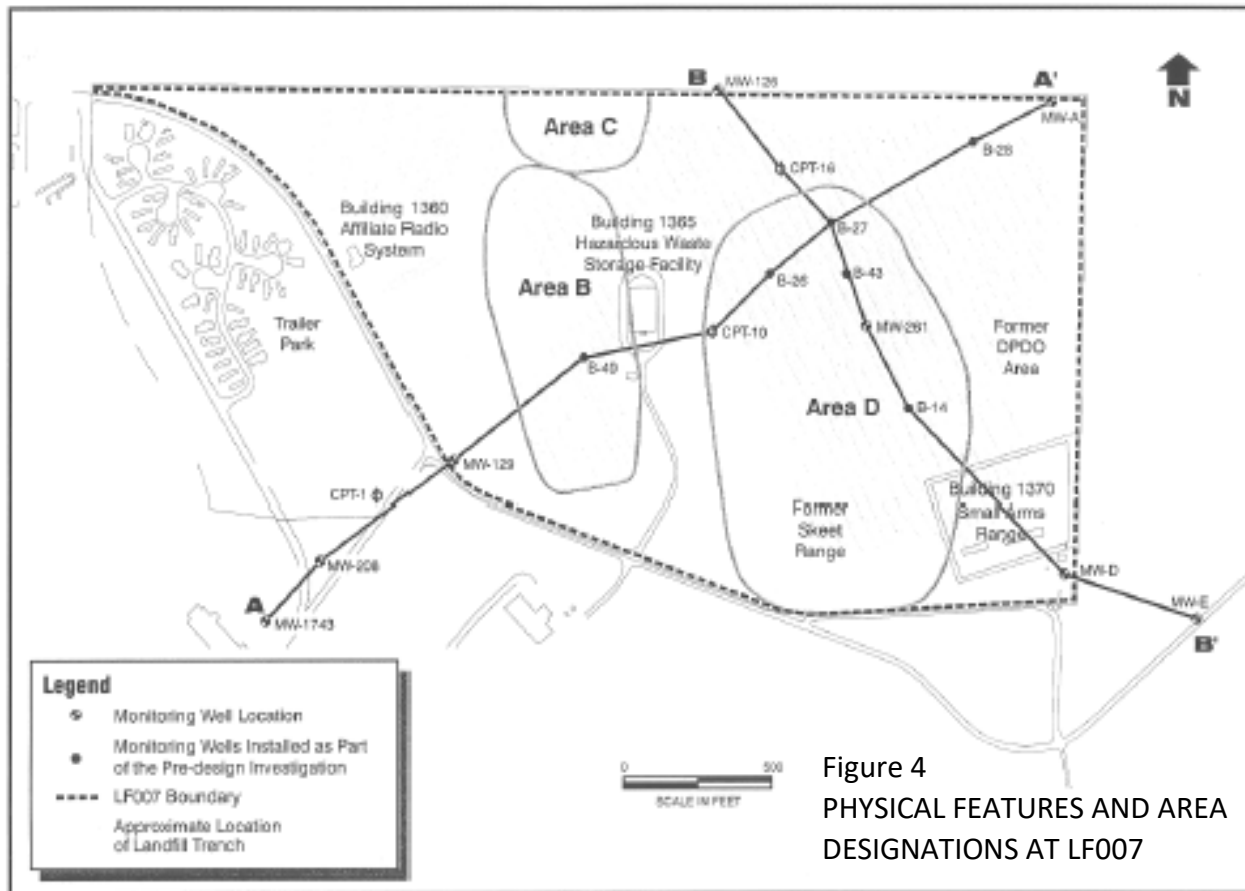
The 2019 inspection of the groundwater LUCs at LF006 found that administrative controls are adequate to enforce the environmental restrictions. There is no evidence of any activities that could expose base personnel to contaminated groundwater, and no new construction (other than the infrastructure associated with the new technology demonstration project mentioned in Section 2.2) has taken place at the site. The monitoring wells that support the remedy have stovepipe completions and are protected by bollards. The LUC inspection identified no evidence of damage or excessive wear that could adversely impact the use of these wells. Photograph 3 in Appendix A of this report shows the controlled area at LF006.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and has achieved the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for LF006.



## 7.0 Landfill 2 (LF007)

LF007 is a closed municipal landfill in the northeast corner of the base that was active from the 1950s to 1974. It is a NEWIOU restoration site that was selected in the *WABOU Soil ROD* (Travis AFB, 2002a) as the location for the construction of the Corrective Action Management Unit (CAMU). There are also active operations at LF007 conducted at Buildings 1360 (Military Affiliated Radio Station), 1365 (Permitted Treatment, Storage and Disposal Facility), and 1370 (Small Arms Range).



### 7.1 Environmental Conditions

During the North Operable Unit (NOU) Remedial Investigation (RI), the human health risk assessment identified seven (7) subareas for investigation. This annual LUC report focuses on Areas B, C, and D for groundwater and the CAMU. Figure 4 shows the primary features at LF007 and the three subareas.

LF007 Area B (LF007B) covers north-south trending disposal trenches northwest of Building 1365. The NOU RI identified several groundwater COCs (benzene; 1,4-DCB; chlorobenzene, etc.), but none of these COCs have been detected after years of monitoring under the Groundwater Sampling and Analysis Program. Therefore, the groundwater COC concentrations are below cleanup levels, and LF007B has no plume dimensions. The *Travis AFB*



*Groundwater ROD* (CH2M HILL, 2014) selected Alternative 2 (Monitored Natural Attenuation) to address the residual dissolved solvent contamination. The progress that MNA has made in reducing COC mass and concentrations is reported in annual GRISRs.

LF007 Area C (LF007C) is located near the northern NOU boundary in a low, swampy area and contains a solvent plume that extends beyond the base boundary. The chlorinated COCs for LF007C groundwater include TCE, vinyl chloride, 1,1-DCE, 1,2-DCA, and 1,2-dichloropropane. The indicator COC for LF007C is TCE. The maximum concentration of TCE in the groundwater at LF007C is 17 ppb at MW2007x07. The federal and State of California drinking water standard for TCE is 5 ppb. To allow the base to carry out environmental investigations and restoration activities on private property, the base purchased an easement that covers the lateral extent of the TCE plume. The easement restricted the activities of the property owner that could potentially interfere with the selected groundwater remedy for LF007C. If an easement expires before the solvent concentrations in groundwater are reduced to the point where they no longer pose an unacceptable risk to human health, then the base will negotiate a subsequent easement with the property owner. At the time of the LUC inspection, the LF007 easement was expired, and the AFCEC Real Property Office was working with the Travis ISS and the property owner to renew this easement. The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 3 (GET) to address the residual dissolved solvent contamination. The progress that GET has made in reducing COC mass and concentrations is reported in annual GRISRs.

LF007 Area D (LF007D) is located east of Building 1365 and has a groundwater plume that is limited to one small area in the vicinity of MW261x07. The groundwater COCs for this subarea are benzene, vinyl chloride, 1,4-dichlorobenzene, 1,1-dichloroethene, chlorobenzene, 2,3,7,8-TCDD (equivalent), and Arochlors 1242 and 1248. The concentrations of benzene (2.8 ppb at MW261x07) and 1,4-dichlorobenzene (18 J ppb at MW261x07) still exceed their cleanup levels of 1 ppb and 5 ppb, respectively. The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 2 (Monitored Natural Attenuation) to address the residual dissolved solvent contamination. The progress that MNA has made in reducing COC mass and concentrations is reported in annual GRISRs.

Alternative #17 (Land Use Controls) is the selected remedial action in the *NEWIOU SSSW ROD* (URS, 2006) for the CAMU cover, CAMU associated features, the Landfill cover and associated buried wastes. The CAMU was built in three phases. Phase 1 consisted of landfill maintenance and the placement of large quantities of clean soil into subsidence trenches that formed in the original soil cap. The soil also served as a foundation for the CAMU. Phase 2 involved the placement of contaminated soil from WABOU soil sites into the CAMU and the construction of an evapotranspiration cap over the consolidated soil. Travis AFB completed the fieldwork for Phases 1 and 2 in November 2003. Phase 3 involved the placement of contaminated soil from NEWIOU and WABOU sites into the CAMU and the completion of the CAMU cap. The base completed the fieldwork for Phase 3 in December 2007.

The *Remedial Investigation Report for the North Operable Unit* (Radian, 1995) contains a detailed description of the LF007 environmental conditions. The *Design Report and Post-Construction Maintenance Plan for the LF007 Soil Remedial Action* (CH2M HILL, 2002) contains a detailed description of the CAMU design. The *Project Summary Report for the LF007 Soil Remedial Action Phase 1, Landfill Cap, Corrective Action Management Unit Subgrade, Wetlands Mitigation*

(Shaw E&I, 2003) contains the description of the fieldwork that supports the closure of this landfill. The *Project Summary Report for the Site LF007 Phase 2 Soil Remedial Action* (Shaw E&I, 2004a) describes the placement of contaminated soil from WABOU soil sites and the construction of the CAMU protective cap as well as other designed features. The *Summary of Remedial Investigation Data and Risk Management Decisions for Human Health at NEWIOU Soil Sites* (URS, 2004) and the *North/East/West Industrial Operable Unit Ecological Technical Memorandum* (URS, 2005) also describe environmental conditions at LF007.

## **7.2 Status of LF007 Soil Land Use Controls**

Section 4.2 of the *WABOU Soil ROD* (Travis AFB, 2002a) describes the CAMU and its part of the selected remedies for WABOU soil sites. Section 5.3.6 of the *NEWIOU SSSW ROD* (URS, 2006) states that Alternative #17 (Land Use Controls) is the selected soil remedial action for LF007 Areas B through D.

The Travis AFB *LUCIP* (CH2M HILL, 2019d) describes the presence of the CAMU cover, CAMU associated features, Landfill 2, and their land use controls. Travis AFB also does not allow unauthorized soil disturbance and relocation activities at LF007 and has placed a gate and sign at the entrance to the landfill area to ensure that its integrity and function remain intact.

Currently, the CAMU is in an Operation and Maintenance phase. Now that all CAMU phases are complete, the base prepared the CAMU for the eventual transition to a Long-Term Management phase by building a 6-foot high security rectangular fence with triple-strand barbed wire at the top around it. The fence was positioned to provide sufficient room for heavy equipment to move around the CAMU, and two custom-designed gates were placed at both ends to allow easy access for future field work. Twelve LUC signs with contact phone number are attached to the fence (four on the long sides and two on the short sides). Figure 5 shows the fence around the CAMU and the location of two gates that allow access to the CAMU.

The 2019 inspection of the soil LUCs at LF007 found that the current administrative and physical controls are adequate to enforce the restrictions. There is no evidence that the contaminated soil at LF007 has been disturbed or that the active operations at Buildings 1360, 1365 and 1370 are compromising the LUCs in place on the portions of LF007 discussed above. The CAMU fence and gates are in excellent material condition. Photograph 4 in Appendix A of this report shows the LF007 entrance gate adjacent to the warning sign. Photograph 5 shows the southwest CAMU gate with one of the 12 warning signs that is attached to the fence.

## **7.3 Status of LF007 Groundwater Land Use Controls**

The following subsections describe the LUCs associated with the three groundwater subareas. Figure 6 shows the three subareas that are assigned land use restrictions.

### **7.3.1 Status of LF007B Groundwater Land Use Controls**

There are no groundwater COCs at LF007B that exceed their cleanup standards, but LUCs are still in place to ensure that groundwater is not used for potable purposes. Travis AFB will

eventually request from the regulatory agencies the removal of the LF007B groundwater LUCs in a future decision document.

### 7.3.2 Status of LF007C Groundwater Land Use Controls

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. However, the groundwater contamination at LF007C has dropped below levels that would require vapor intrusion LUCs and mitigation measures identified in the groundwater ROD.

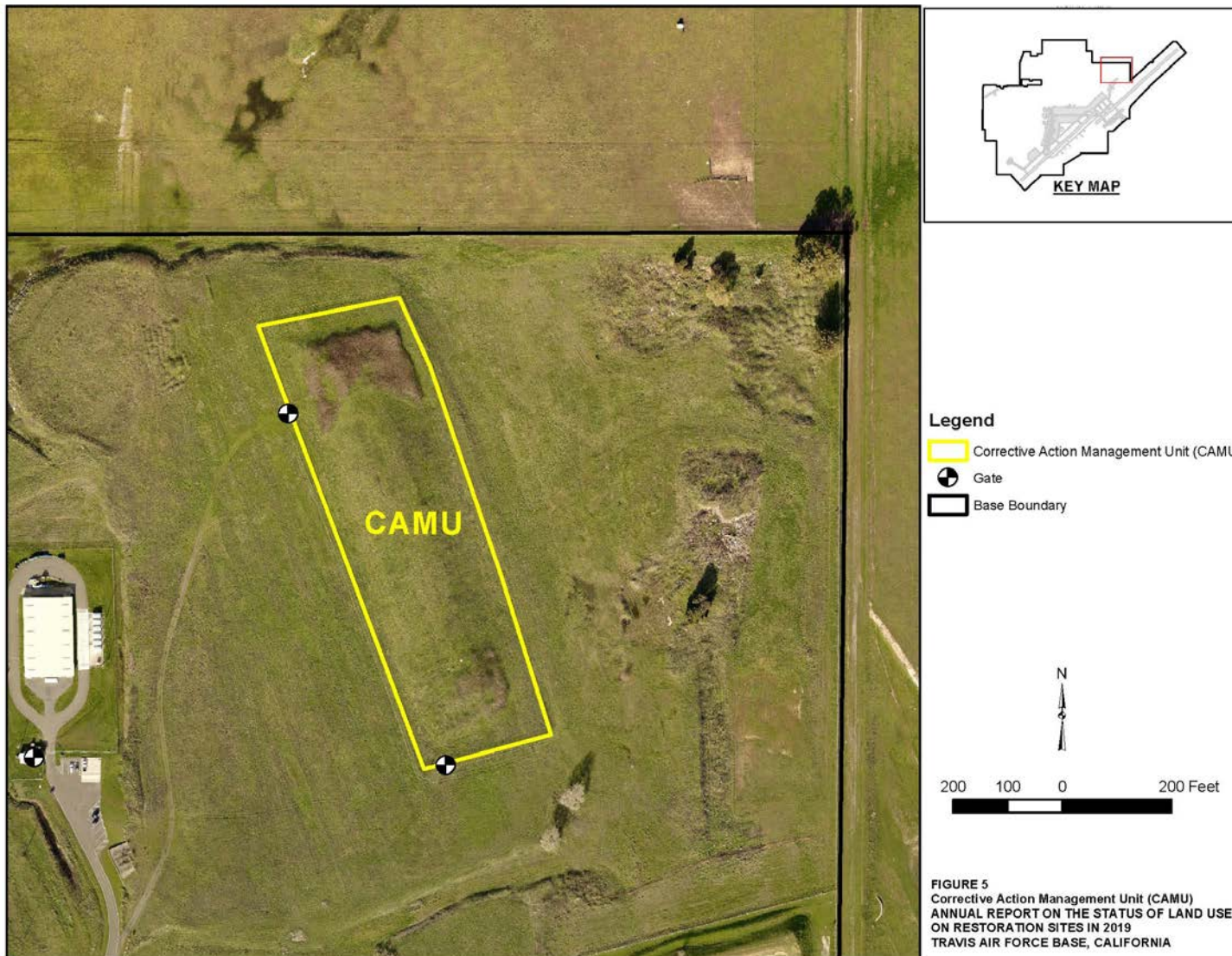
The 2019 inspection of the groundwater LUCs at LF007C found that administrative controls as described in Section 2.2 (Groundwater LUCs) are adequate to enforce the environmental restrictions on-base, and no off-base activities have impeded base efforts to clean up contaminated groundwater, even though a new easement is not yet in place. There is no evidence of any activities that could expose base personnel to contaminated groundwater, and no new construction has taken place that could create a potential vapor intrusion risk. The GET system is shut down during the wet winter season, and wells cannot be accessed because of the presence of the large vernal pool that covers both on-base and off-base infrastructure. All extraction and monitoring wells are inspected by contractor personnel when the GET system is restarted at the beginning of the summer dry season. Except for the wells that lie in the roadway along the perimeter fence, all wells in the field have stovepipe completions and are protected by bollards. The LUC inspection identified no evidence of damage or excessive wear that could adversely impact the use of these wells. Photograph 6 shows the LF007C extraction wells and the monitoring well network within the off-base LF007C footprint.

### 7.3.3 Status of LF007D Groundwater Land Use Controls

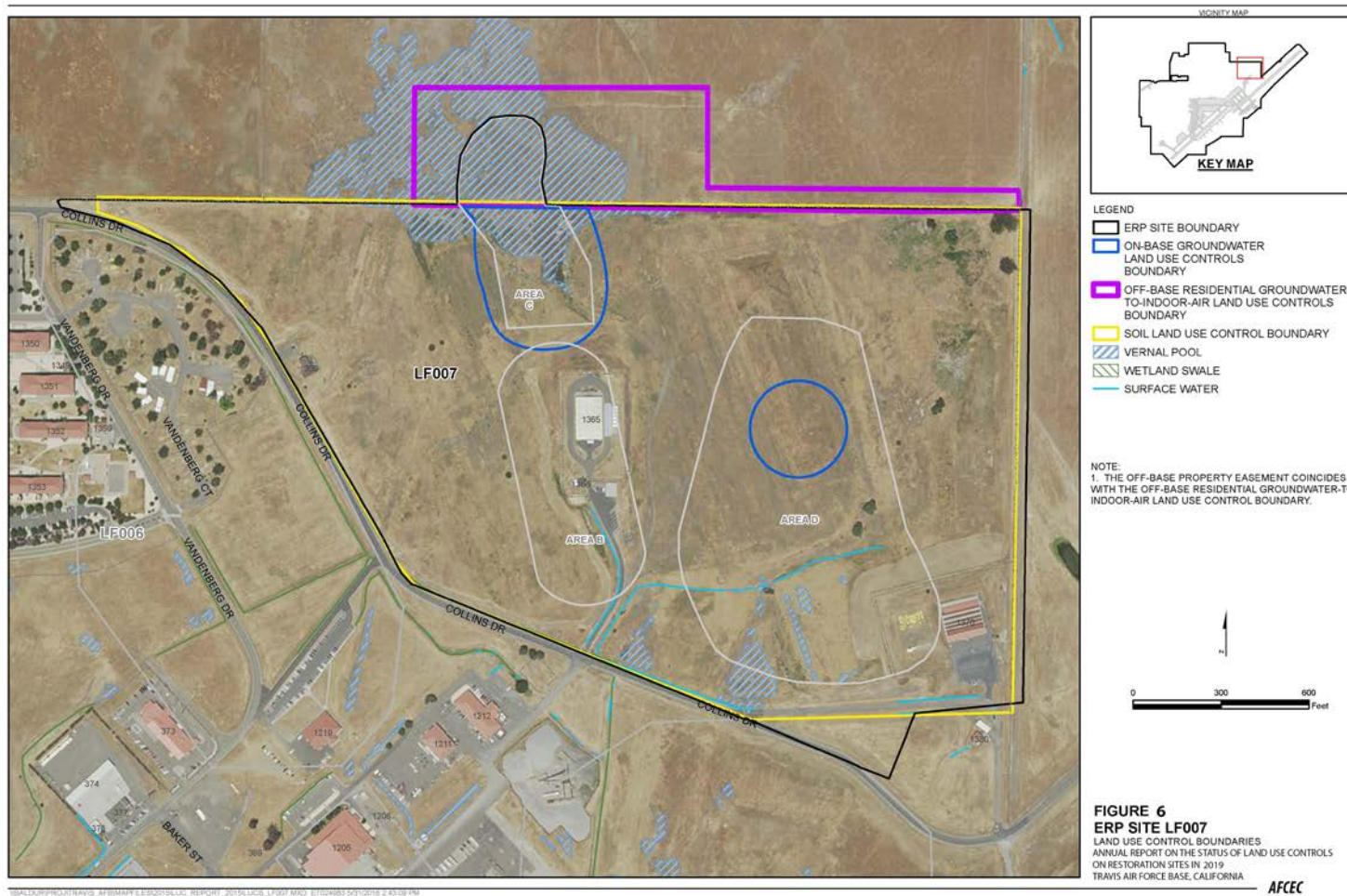
Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at LF007D does not pose a potential indoor air vapor intrusion risk to hypothetical future residents.

The 2019 inspection of the groundwater LUCs at LF007D found that administrative controls are adequate to enforce the environmental restrictions. There is no evidence of any activities that could expose base personnel to contaminated groundwater.

Based on the results of this inspection and the 2018 analytical results, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and has achieved the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for LF007 subareas B, C, and D.







## 8.0 Landfill 3 (LF008)

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LF008 was an inactive historical landfill consisting of a series of small, unlined trenches used to dispose of old pesticide containers. This disposal resulted in groundwater contamination with organochlorine pesticides, primarily alpha-chlordane.

### 8.1 Environmental Conditions

The list of chlorinated COCs for LF008 groundwater includes aldrin, alpha-chlordane, heptachlor, and heptachlor epoxide. The indicator COC is alpha-chlordane. The maximum concentration of alpha-chlordane in groundwater is 0.28 ppb at EW721x08. The federal and State of California drinking water standard for alpha-chlordane is 0.1 ppb. Also, heptachlor epoxide was detected above its cleanup level (0.01 ppb) at several wells; the highest detection came from EW720x08 at 0.069 ppb.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 2 (Monitored Natural Attenuation) to address the residual pesticide contamination. The primary mechanism for attenuation at Site LF008 is likely sorption of the pesticides to the soil. The site sediments have a high clay content, which increases sorption and reduces permeability. Most comparisons of filtered and non-filtered groundwater samples indicate that lower concentrations were in the filtered samples; the 2018 results from EW721x08 is an exception. These results indicate that the contamination is not dissolved in groundwater but rather is adsorbed to the fine soil particles suspended in the groundwater. The *June 2009 6-Month Rebound Study Completion at Site LF008* (CH2M HILL, 2010a) describes the study that supports this conclusion.

The interim GET system at LF008 is not a part of the selected remedy, because it had limited effectiveness at removing the residual organochlorine pesticide contamination, so it is shut down. The pesticide concentrations have decreased in the absence of active pumping. The progress that MNA has made in reducing COC mass and concentrations is reported in annual GRISRs.

### 8.2 Status of LF008 Groundwater Land Use Controls

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at LF008 does not pose a potential vapor intrusion risk to industrial workers or hypothetical future residents.

The 2019 inspection of the groundwater LUCs at LF008 found that administrative controls are adequate to enforce the environmental restrictions. There is no evidence of any activities that could expose base personnel to contaminated groundwater, and no new construction has taken place at the site. All monitoring and extraction wells have stovepipe completions that are protected by bollards and are in good material condition. The LUC inspection identified no evidence of damage or excessive wear that could adversely impact the use of these wells. Photograph 7 shows a northern monitoring well at LF008.

LF008 is located inside a separately fenced field that lies within the explosive safety clear zone of a nearby conventional weapons storage facility. This field is accessible through a locked gate which is in good material condition, and the explosive safety clear zone has access restrictions that are more stringent than environmental restrictions. Special permission is required to enter the explosive safety clear zone for any activities, including inspections and sample collection. For this reason, additional administrative controls are not required to enforce the environmental land use restrictions.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and has achieved the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for LF008.

## 9.0 Solvent Spill Area and Facilities 550 and 552 (SS015)

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SS015 is in the central part of the NEWIOU and consists of the Solvent Spill Area (SSA) and the former Facilities 550 and 552. The SSA covers approximately 1.4 acres east of Facility 550, in an area previously used for stripping paint from aircraft and where solvent spills were reported to have occurred. The site was an open grassy plot adjacent to an asphalt driveway and Facility 552.

Facility 552 consisted of a fenced, bermed, concrete pad constructed in 1964 and used as a temporary hazardous waste collection point. Stored wastes included paint, chromic acid, and solvents generated during aircraft maintenance operations at Facility 550. Facility 550 contained a corrosion control facility that treated and painted aircraft parts and support equipment. A metals-processing shop in Facility 550 used cadmium-based plating solutions.

In 2004, Facilities 550 and 552 were demolished to build a petroleum, oil, and lubricants (POL) facility under a military construction (MILCON) project. The facility consists of an office building (new Facility 552), a fuel truck maintenance building (Facility 554), and a large, concrete truck parking area.

### 9.1 Environmental Conditions

Surface soil within the footprint of the former metals-plating shop in Facility 550 contains cadmium residue. The list of chlorinated COCs for SS015 groundwater includes TCE, cis-1,2-DCE, vinyl chloride, 1,2-DCA, and PCE. The indicator COC is TCE. The maximum concentration of TCE in the groundwater at SS015 is 110 J- ppb at MW2124x15. The federal and State of California drinking water standards for TCE is 5 ppb. Appendix H of the *Summary of Remedial Investigation Data and Risk Management Decisions for Human Health at NEWIOU Sites* (URS, 2004) presents a more detailed description of the human health risk assessment for this site.

Currently, the cadmium-contaminated soil is covered by concrete from the truck parking area, which is divided into individual parking stalls and entrance/exit lanes. A high security fence surrounds the POL facility, and warning signs associated with fuel handling activities are attached to the fence. The footprint of the environmentally-controlled area is small in relation to the large footprint of the fuel truck parking area, so it is impractical and somewhat unsafe from an operations perspective to place environmental warning signs in the vicinity of the contaminated soil.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 5 (Emulsified Vegetable Oil [EVO] and Enhanced Attenuation [EA]) to address the residual dissolved solvent contamination. The progress that EVO and EA have made in reducing COC mass and concentrations is reported in annual GRISRs.

Figure 7 shows the locations of the soil and groundwater land use restrictions that are assigned to Site SS015.



## 9.2 Status of SS015 Soil Land Use Controls

Section 5.3.8 of the *NEWIOU SSSW ROD* (URS, 2006) states that Alternative #17 (Land Use Controls) is the selected remedial action for this site, because cadmium concentrations in the soil exceed levels that allow for unlimited use and unrestricted exposure. The Air Force is to restrict residential development and unauthorized disturbance and relocation of soil at this site.

The *Travis AFB LUCIP* (CH2M HILL, 2019d) describes the presence of cadmium in the surface soil and the associated land use restrictions, particularly on the unauthorized disturbance and use of the soil beneath the concrete at this site. The *Site SS015 Soil Sampling Results Technical Memorandum* (CH2M, 2019a) describes the result of soil sample analysis that was used to identify the location of the cadmium-contaminated soil beneath several inches of concrete at this site.

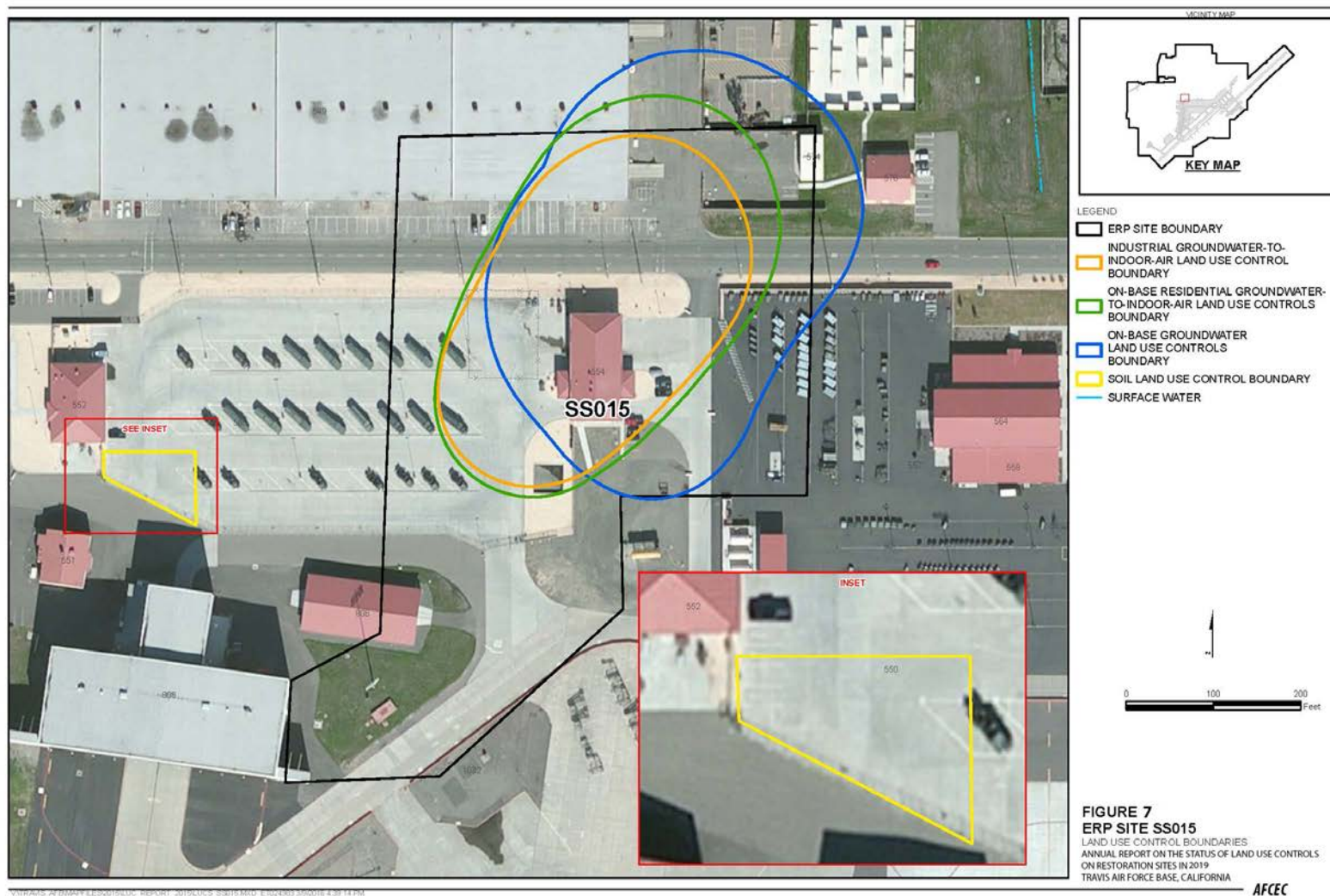
The 2019 inspection of the soil LUCs at SS015 found that administrative controls and existing physical infrastructure are adequate to enforce the environmental restrictions. In addition, the inspectors noted a potential for additional physical barriers (i.e., fences) and signage to adversely impact vehicle operations. There is no evidence that the cadmium-impacted soil beneath the concrete parking area has been disturbed, other than the soil sampling that took place in 2017. Photograph 8 in Appendix A of this report shows the controlled area for soil at SS015.

## 9.3 Status of SS015 Groundwater Land Use Controls

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at SS015 also poses a potential indoor air vapor intrusion risk to industrial workers, so the LUCs also restrict residential and industrial land uses until concentrations of solvents in groundwater are reduced to the point where they no longer pose an unacceptable potential risk to human health.

The 2018 inspection of the groundwater LUCs at SS015 found that administrative controls are adequate to enforce the environmental restrictions. There is no evidence of any activities that could expose base personnel to contaminated groundwater, and no new construction has taken place at the site. All injection and monitoring wells associated with the SS015 groundwater remedy are flush mounts and are in good material condition. The LUC inspection identified no evidence of damage or excessive wear that could adversely impact the use of these wells.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for SS015.





## **10.0 Oil Spill Area, Facilities 11, 13/14, 20, 42/1941, 139/144, and Selected Sections of the Storm Sewer Right-of-Way (SS016)**

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SS016 consists of a 7-acre parcel in the central part of the NEWIOU and consists of the Oil Spill Area (OSA); Facilities 11, 13/14, 20, 42/1941, and 139/144; and portions of the Storm Sewer Right-of-Way. The facilities within the site support flight line service equipment repair, aircraft engine repair, fuel storage, aircraft wash racks, and vehicle maintenance.

The OSA originally encompassed an area where waste oil from cleaning and degreasing operations at Facility 18 had reportedly been spilled or disposed of on a grassy field. The area is now entirely paved and covered with buildings. Facility 139 is a vehicle maintenance shop, and facility 144 is a vehicle body shop. Facilities 13 and 14 were used for paint stripping and parts cleaning, using TCE and a dilute phosphoric acid solution; the facilities were demolished in 1988. Please note that a new unrelated Facility 14 currently serves as an aircraft hangar. Facility 11 was a vehicle maintenance shop, and facilities 42/1941 included a wash rack, oil-water separator, and four 250-gallon above-ground storage tanks. Facilities 11, 42 and 1941 have since been torn down. Facility 20 was the aircraft control tower; it was torn down and replaced by a new tower designated as Facility 10.

### **10.1 Environmental Conditions**

Surface soil in a grassy field west of facility 18 contains polycyclic aromatic hydrocarbon (PAH) residue. A small portion of PAH-contaminated soil is covered by concrete and a brick walkway. The list of chlorinated COCs for SS016 groundwater includes TCE, cis-1,2-DCE, vinyl chloride, benzene, chloroform, 1,4-DCB, bromodichloromethane, 1,2-DCA, 1,1-DCE, and PCE. The indicator COC is TCE. The maximum TCE concentration in the groundwater at SS016 is 62,000 J- ppb at MW2412x16. The federal and State of California drinking water standard for TCE is 5 ppb. Appendix I of the *Summary of Remedial Investigation Data and Risk Management Decisions for Human Health at NEWIOU Sites* (URS, 2004) presents a more detailed description of the human health risk assessment for this site.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 4 (Bioreactor and GET) to address the residual dissolved solvent contamination. The progress that the bioreactor and GET have made in reducing COC mass and concentrations is reported in annual GRISRs.

Figure 8 shows the groundwater LUCs for Site SS016, and the inset in this figure shows the soil LUCs.

### **10.2 Status of SS016 Soil Land Use Controls**

Section 5.3.9 of the *NEWIOU SSSW ROD* (URS, 2006) states that Alternative #17 (Land Use Controls) is the selected remedial action for this site, because PAH concentrations in the soil exceed levels that allow for unrestricted use and unlimited exposure. The Air Force is to restrict residential development and unauthorized disturbance and relocation of soil at this site.

The *Travis AFB LUCIP* (CH2M HILL, 2019d) describes the presence of PAH in the surface soil and the associated land use restrictions, particularly on the unauthorized disturbance and use of soil at this site.

Prior to the 2019 LUC inspection, the base began a soil remedial action to remove the PAH-contaminated soil from SS016 as described in the *Amendment to the NEWIOU Soil, Sediment, and Surface Water ROD* (Travis AFB, 2019). The soil remedial action is in progress, so the soil LUCs are still in place. However, the SS016 LUC warning sign had been taken down (a few weeks before the start of the field work, inclement weather blew down the tree on which the warning sign was attached), and the LUCs will be removed when the soil remedial action is complete and regulatory approval has been received. Photograph 9 in Appendix A of this report shows the controlled area at SS016 after the soil remedial action had started.

### **10.3 Status of SS016 Groundwater Land Use Controls**

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at SS016 also poses a potentially significant indoor air vapor intrusion risk to industrial workers.

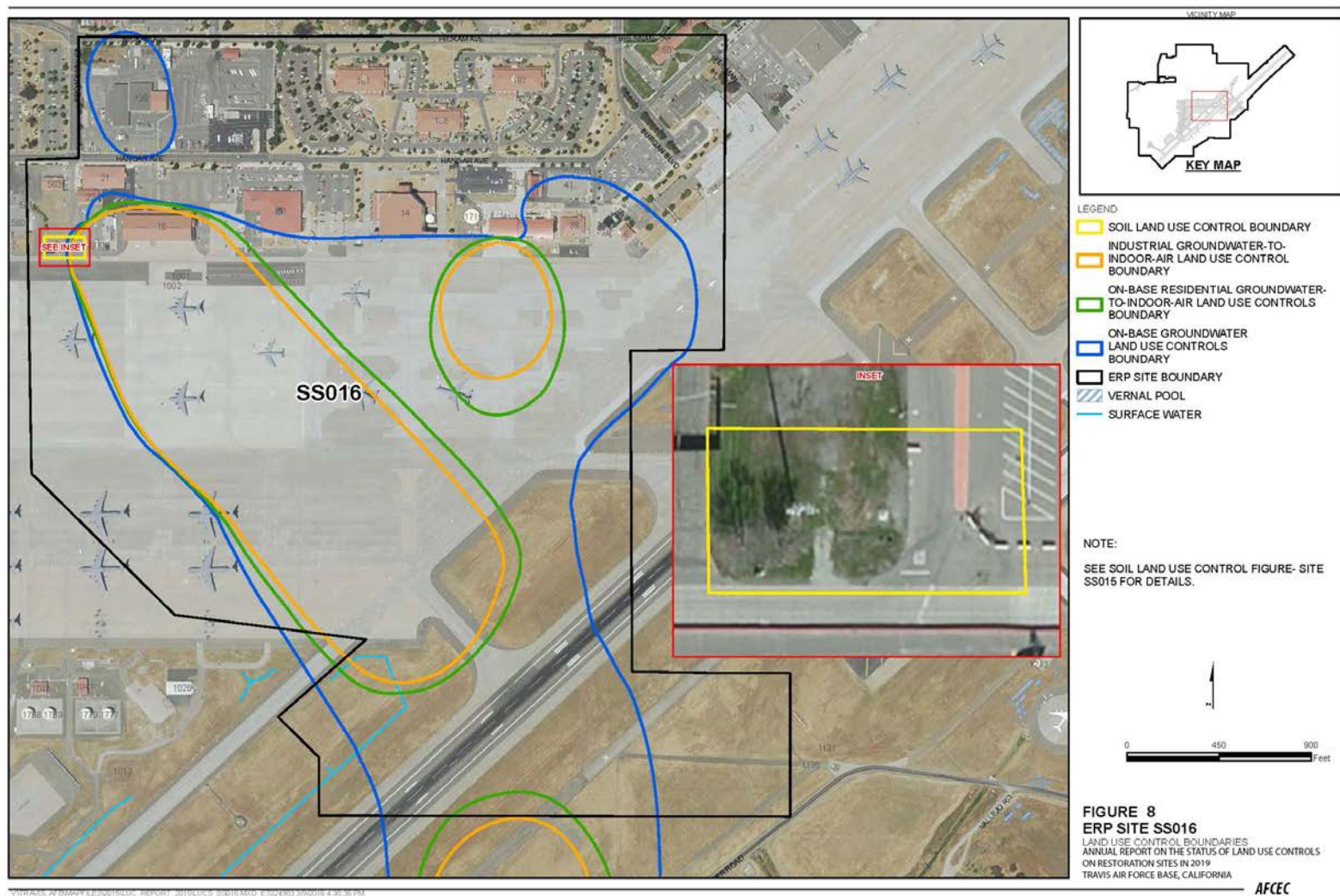
Building 18 (located just north of the SS016 Bioreactor) is the only existing office facility on Travis AFB that is restricted in its use (for storage purposes only), based on the potential vapor intrusion risk that is posed by solvent COCs associated with Site SS016. So, the LUCs also restrict residential and industrial land uses until concentrations of solvents in groundwater are reduced to the point where they no longer pose an unacceptable risk to human health.

The 2019 inspection of the groundwater LUCs at SS016 found that administrative controls are adequate to enforce the groundwater and vapor intrusion restrictions. Most of the solvent plume is located beneath the aircraft flight line, which receives a high level of security. All monitoring and extraction wells are flush mounted and are considered to be in good material condition, based on observations by the field team that collects groundwater samples and water level measurement during two Groundwater Remediation Implementation Program (GRIP) sampling events. Building 18 continues to be used for storage purposes, all doors that access the office area were locked, and the inspection team observed no office activity within the building during the inspection. There is no evidence of any activities that could expose base personnel to contaminated groundwater or vapor, and no new construction has taken place at the site.

Two warning signs have been placed on the two office doors of Building 18. Photograph 10 in Appendix A of this report shows the SS016 bioreactor, and Photograph 11 shows the warning sign on the east side of Building 18.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for SS016.







## 11.0 Facilities 1918, 1919, and 1754 (ST027B)

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ST027B is located in a restricted access area in the central part of the NEWIOU. It is bound by aircraft taxiways and parking ramps and consisted of buildings formerly used for fuel storage and aircraft engine testing. All three facilities were torn down as part of a fuel hydrant construction project. Industrial activities at these facilities contaminated groundwater with petroleum hydrocarbons and TCE. The portion of the plume with petroleum contamination is referred to as ST027A and is managed under a separate program. The portion of the plume with TCE contamination is referred to as ST027B.

### 11.1 Environmental Conditions

The list of chlorinated COCs for ST027B groundwater includes TCE, vinyl chloride, cis-1,2-DCE, benzene, and toluene. The indicator COC is TCE. The maximum TCE concentration at ST027B is 150 ppb at MW791x27. The federal and State of California drinking water standard for TCE is 5 ppb. The *Site ST027 – Area B Human Health Risk Assessment* (CH2M HILL, 2011b) presents a more detailed description of the human health risk assessment for this site.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 2 (Monitored Natural Attenuation) to address the residual dissolved solvent contamination. The progress that MNA has made in reducing COC mass and concentrations is reported in annual GRISRs.

### 11.2 Status of ST027B Groundwater Land Use Controls

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at ST027B poses a potential vapor intrusion risk to industrial workers or hypothetical future residents.

The 2019 inspection of the groundwater LUCs at ST027B found that administrative controls are adequate to enforce the environmental restrictions. There is no evidence of any activities that could expose base personnel to contaminated groundwater, and no new construction has taken place at the site. The ST027B wells have both stovepipe and flush mounted completions and are located in the center of the high security portion of the base. The LUC inspection identified no evidence of damage or excessive wear that could adversely impact the use of these wells. Photograph 12 in Appendix A of this report shows the controlled area at ST027B.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for ST027B.





## 12.0 Monitoring Well (MW) 329 Area (SS029)

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SS029 is located in the southern portion of the NEWIOU. Site SS029 is an open field south of Taxiway R and includes an ordnance disposal range. Union Creek traverses the middle of the site and flows from northeast to southwest.

### 12.1 Environmental Conditions

Groundwater contamination at Site SS029 has been defined primarily as a TCE and cis-1,2-DCE plume that lies within the boundaries of Travis AFB. The origin of groundwater VOC contamination at Site SS029 is unknown. The indicator COC is TCE. The maximum concentration of TCE in groundwater is 300 ppb at PZ01Sx29. The federal and State of California drinking water standard for TCE is 5 ppb. Groundwater monitoring suggests that the SS016 and SS029 plumes have merged, so the SS016 groundwater remedy focuses on COC mass removal, while the SS029 groundwater remedy prevents the COC mass that flowed beneath the flight line from migrating past the base boundary. Appendix K of the *Summary of Remedial Investigation Data and Risk Management Decisions for Human Health at NEWIOU Sites* (URS, 2004) presents a more detailed description of the human health risk assessment for this site.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 3 (GET) to address the solvent contamination. The progress that GET has made in reducing COC mass and concentrations is reported in annual GRISRs.

### 12.2 Status of SS029 Groundwater Land Use Controls

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at SS029 also poses a potential vapor intrusion risk to industrial workers. So, the LUCs also restrict residential and industrial land uses until concentrations of solvents in groundwater are reduced to the point where they no longer pose an unacceptable risk to human health.

The 2019 inspection of the groundwater LUCs at SS029 found that administrative controls are adequate to enforce the groundwater and vapor intrusion restrictions. There is no evidence of any activities that could expose base personnel to contaminated groundwater or vapor, and no new construction has taken place at the site. Half of the SS029 wells in the field have stovepipe completions that are protected by bollards. The wells are in good to excellent material condition. The LUC inspection identified no evidence of damage or excessive wear that could adversely impact the use of these wells. Photograph 13 in Appendix A of this report shows one of the monitoring wells within the controlled area at SS029.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for SS029.



## 13.0 MW 269 Area (SS030)

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SS030 is in the southern part of the NEWIOU and consists of a solvent plume from unknown historical activities on undeveloped land near the southern base boundary. The COC plume extends onto off-base private property that is used for animal grazing.

### 13.1 Environmental Conditions

The list of chlorinated COCs for SS030 groundwater includes TCE, chloroform, bromodichloromethane, and 1,2-DCA. The indicator COC is TCE. The maximum concentration of TCE in groundwater is 8 ppb at MW05x30. The federal and State of California drinking water standard for TCE is 5 ppb. Appendix L of the *Summary of Remedial Investigation Data and Risk Management Decisions for Human Health at NEWIOU Sites* (URS, 2004) presents a more detailed description of the human health risk assessment for this site.

A portion of the SS030 plume has migrated off-base and is located beneath private property. To allow the base to carry out environmental investigations and restoration activities on private property, the base purchased an easement that covers the lateral extent of the TCE plume. The easement restricts the activities of the property owner that could potentially interfere with the selected groundwater remedy for SS030. If the easement expires before the solvent concentrations in groundwater are reduced to the point where they no longer pose an unacceptable risk to human health, then the base will negotiate a subsequent easement with the property owner. This easement expires and may have to be renewed in 2030.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 3 (GET) to address the residual dissolved solvent contamination. The progress that GET has made in reducing COC mass and concentrations is reported in annual GRISRs.

### 13.2 Status of SS030 Groundwater Land Use Controls

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at SS030 does not pose a potential vapor intrusion risk to industrial workers or hypothetical future residents.

The 2019 inspection of the groundwater LUCs at SS030 found that administrative controls are adequate to enforce the groundwater restrictions. There is no evidence of any activities that could expose base personnel to contaminated groundwater, and no new construction has taken place at the site. The off-base SS030 wells are flush mounted to prevent a safety risk to personnel and grazing animals; they are in good material condition. Photograph 14 in Appendix A of this report shows the off-base portion of the controlled area at SS030 that is under an easement.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and has achieved the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for SS030.



## 14.0 Facility 1205 (SD031)

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SD031 is a concrete and asphalt industrial area that is used by the Civil Engineer Maintenance Inspection and Repair Team (CEMIRT). Site SD031 covers approximately 5.5 acres and encompasses Facility 1205 in the northeastern part of the EIOU. Facility 1205 was constructed in 1957, and operations included the maintenance and repair of diesel-powered generators. A wash rack, just south of the facility, is still used to clean diesel engine parts; it discharges to an OWS.

### 14.1 Environmental Conditions

The list of chlorinated COCs for SD031 groundwater includes TCE, benzene, 1,1-DCE, cis-1,2-DCE, carbon tetrachloride, chloroform, 1,2-DCA, and vinyl chloride. The indicator COC is 1,1-DCE. The maximum concentration of 1,1-DCE in groundwater is 200 ppb at MW572x31. The federal and State of California drinking water standard for 1,1-DCE is 6 ppb. The *East Industrial Operable Unit Remedial Investigation Report* (Roy F. Weston, 1995) presents a more detailed description of the human health risk assessment for this site.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 2 (Monitored Natural Attenuation) to address the residual dissolved solvent contamination. The progress that MNA has made in reducing COC mass and concentrations is reported in annual GRISRs.

### 14.2 Status of SD031 Groundwater Land Use Controls

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at SD031 does pose a potential vapor intrusion risk to industrial workers and hypothetical future residents, so the LUCs also restrict residential and industrial land uses until concentrations of solvents in groundwater are reduced to the point where they no longer pose an unacceptable risk to human health.

The 2019 inspection of the groundwater LUCs at SD031 found that administrative controls are adequate to enforce the environmental restrictions. There is no evidence of any activities that could expose base personnel to contaminated groundwater, and no new construction has taken place at the site. Depending on their locations, the SD031 wells have both stovepipe and flush mounted completions. The LUC inspection identified no evidence of damage or excessive wear that could adversely impact the use of these wells. Photograph 15 in Appendix A of this report shows a monitoring well at SD031.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for SD031.



## 15.0 Storm Sewer System B (West Branch of Union Creek), Facilities 810 and 1917, and South Gate Area (SD033)

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SD033 is in the western part of the NEWIOU and consists of the West Branch of Union Creek, parts of Storm Sewer System B, Facilities 810 and 1917, the area around the South Gate, and Outfall II. Storm Sewer System B collects runoff from within the west side of the aircraft industrial area. This runoff enters Union Creek at Outfall II. Facility 810 is used to refurbish aircraft, and facility 1917 had sumps and an oil/water separator that were removed when facility 1917 was torn down.

### 15.1 Environmental Conditions

Surface soil on the east and west side of facility 810 contained cadmium and benzo(a)pyrene residue. The contaminated soil was covered by asphalt. Appendix N of the *Summary of Remedial Investigation Data and Risk Management Decisions for Human Health at NEWIOU Sites* (URS, 2004) presents a more detailed description of the human health risk assessment for this site.

In 2016, the decommissioning of oil/water separator OW057 took place. OW057 is located on the west side of facility 810, near the SD033 soil LUC area. The OW057 decommissioning was conducted in accordance with the *Petroleum Only Contamination Oil Water Separator Corrective Action Plan* (CH2M HILL, 2016) and resulted in the excavation and proper disposal of contaminated soil at SD033. The *Data Gap Results Technical Memorandum for Soil Sites SD033, SD043, and SS046* (CH2M HILL, 2018a) described the results of confirmation soil sample collection and analysis for SD033 and demonstrated that the residual COC concentrations no longer exceeded their residential cleanup levels.

The list of chlorinated COCs for SD033 groundwater includes TCE, 1,1-DCE, 1,2-DCA, and cis-1,2-DCE. The indicator COC is TCE. The maximum TCE concentration in the groundwater at SD033 is 13 J- ppb at EW501x33. The federal and State of California drinking water standard for TCE is 5 ppb.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 2 (Monitored Natural Attenuation) to address the residual dissolved solvent contamination. The interim GET system in the West Industrial Operable Unit is not a part of the selected remedy, so it is shut down. The progress that MNA has made in reducing COC mass and concentrations is reported in annual GRISRs.

### 15.2 Status of SD033 Soil Land Use Controls

The 2016 decommissioning of OW057 required the excavation and disposal of petroleum-contaminated soil, and the footprint of the excavation extended onto the footprint of cadmium- and benzo(a)pyrene-contaminated soil associated with SD033. Confirmation sampling verified that the petroleum, cadmium and benzo(a)pyrene contamination from OW057 and SD033 had



been removed. The Final *Petroleum Only Contamination (POCO) Evaluation/Closure Report for Defense Environmental Restoration Account (DERA)-funded Oil/Water Separators OW040, OW047, OW048, OW049, OW050, OW052, OW055, OW056, and OW057* (CH2M HILL, 2018c) describes the cleanup activities associated with the decommissioning of OW057.

Because the soil contamination that mandated the need for LUCs at SD033 is no longer present, LUCs at this site are no longer needed. The *Amendment to the North, East, West Industrial Operable Unit (NEWIOU) Soil, Sediment, and Surface Water ROD* (Travis AFB, 2019) describes the change in the selected remedy from soil LUCs to No Further Action. Soil LUCs have been removed from this site.

### **15.3 Status of SD033 Groundwater Land Use Controls**

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at SD033 does not pose a potential vapor intrusion risk to hypothetical future residents.

The 2019 inspection of the groundwater LUCs at SD033 found that administrative controls are adequate to enforce the groundwater restrictions. There is no evidence of any activities that could expose base personnel to contaminated groundwater, and no new construction has taken place at the site. The SD033 wells are flush mounted because of the considerable amount of vehicle activity in the area. The LUC inspection identified no evidence of damage or excessive wear that could adversely impact the use of these wells.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and has achieved the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for SD033.

## 16.0 Facility 811 (SD034)

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SD034 is located in the western part of the NEWIOU and consists of an aircraft wash rack facility with an oil/water separator (OWS) and an overflow pond. Leaks from the OWS resulted in a layer of Stoddard Solvent, containing dissolved solvents, floating on the groundwater table. The leaking OWS was replaced in 1994. The use of Stoddard Solvent to wash aircraft in Facility 811 was discontinued in September 2014.

### 16.1 Environmental Conditions

Stoddard Solvent by itself does not pose a potential risk to human health and the environment, so the potential risk is derived from the chlorinated solvents within the Stoddard Solvent layer. MWSSBx34 had the only measureable product thickness (0.04 foot) of Stoddard Solvent. The list of chlorinated COCs for SD034 groundwater includes TCE, vinyl chloride, 1,1-DCE, benzene, cis-1,2-DCE, and PCE. The maximum concentration of TCE in groundwater is 57 ppb at EW2450x34. The federal and State of California drinking water standard for TCE is 5 ppb. Appendix O of the *Summary of Remedial Investigation Data and Risk Management Decisions for Human Health at NEWIOU Sites* (URS, 2004) presents a more detailed description of the human health risk assessment for this site.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 7 (Passive Skimming and EA) to address the residual solvent contamination. The progress that Passive Skimming and EA have made in reducing COC mass and concentrations is reported in annual GRISRs.

### 16.2 Status of SD034 Groundwater Land Use Controls

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at SD034 does pose a potential vapor intrusion risk to industrial workers and hypothetical future residents, so the LUCs also restrict residential and industrial land uses until concentrations of solvents in groundwater are reduced to the point where they no longer pose an unacceptable risk to human health.

The 2019 inspection of the groundwater LUCs at SD034 found that administrative controls are adequate to enforce the environmental restrictions. There is no evidence of any activities that could expose base personnel to contaminated groundwater, and no new construction (other than the construction of the infrastructure associated with the technology demonstration) has taken place at the site. The inspection team noted that there is construction activity inside of Facility 811. Representatives of the Travis ISS and CH2M HILL have participated in coordination meetings and site visits with the construction contractor and base personnel in 2019 to ensure that the hangar renovation work does not adversely affect existing ERP wells and technology demonstration infrastructure.

The SD034 wells are flush mounted because of the considerable amount of vehicle activity in the area. The LUC inspection identified no evidence of damage or excessive wear that could

adversely impact the use of these wells. Photograph 16 in Appendix A of this report shows the controlled area at SD034.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for SD034.

## 17.0 Facilities 872/873/876 (SD036)

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SD036 is located in the western part of the NEWIOU and consists of a number of multiple-use shops, including a wash rack and OWS.

### 17.1 Environmental Conditions

The list of chlorinated COCs for SD036 groundwater includes vinyl chloride, TCE, 1,1-DCE, cis-1,2- DCE, 1,2-DCA, benzene, bromodichloromethane, and PCE. The indicator COC is TCE. The maximum TCE concentration in the groundwater at SD036 is 3,300 ppb at MW2032x36. The federal and State of California drinking water standard for TCE is 5 ppb. Appendix Q of the *Summary of Remedial Investigation Data and Risk Management Decisions for Human Health at NEWIOU Sites* (URS, 2004) presents a more detailed description of the human health risk assessment for this site.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 5 (EVO and EA) to address the residual dissolved solvent contamination. The progress that EVO and EA have made in reducing COC mass and concentrations is reported in annual GRISRs.

### 17.2 Status of SD036 Groundwater Land Use Controls

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at SD036 also poses a potential vapor intrusion risk to industrial workers, so, LUCs also restrict residential and industrial land uses until solvent concentrations in groundwater are reduced to the point where they no longer pose an unacceptable risk to human health.

The 2019 inspection of the groundwater LUCs at SD036 found that administrative controls are adequate to enforce the groundwater and vapor intrusion restrictions. There is no evidence of any activities that could expose base personnel to contaminated groundwater or vapor, and no new construction has taken place at the site. The SD036 injection and monitoring wells are flush mounted because of the considerable amount of maintenance vehicle activity in the area. The LUC inspection identified a few monitoring wells that require some maintenance to ensure their continued usability in a heavily trafficked area, but there was no evidence of damage or excessive wear. Photograph 17 in Appendix A of this report shows the controlled area at SD036.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for SD036.



## 18.0 Sanitary Sewer System; Facilities 837/838, 919, 977, and 981; Area G Ramp; and Ragsdale/V Area (SD037)

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SD037 is in the western part of the NEWIOU and consists of Facilities 837, 838, 919, 977, and 981; the Area G Ramp; and the Ragsdale/V Street. Facility 838 has since been torn down. It also includes approximately 22,000 feet of sanitary sewer piping, an oil/water separator, sumps, wash racks, and a fuel-hydrant system. The sanitary sewer system conveys domestic and industrial wastewater from facilities within the NEWIOU to the Fairfield-Suisun publicly owned treatment facility. Facility 919 is used to maintain heavy equipment, facility 977 is an air freight terminal, and facility 981 has a hazardous waste satellite accumulation point. Past industrial activities include wastewater management, aircraft maintenance, heavy equipment maintenance, air cargo handling, vehicle washing, fuel transport, and waste accumulation.

The WIOU RI divided SD037 into the following six (6) areas:

- Area 1 – Designated by a surface soil sample collected for the sanitary sewer investigation
- Areas 2 and 3 – Locations between the sanitary sewer system and the jet fuel pipeline
- Area 4 – Facility 919 along with an OWS and hazardous waste accumulation point
- Area 5 – Facility 981 along with an OWS and hazardous waste accumulation point
- Area 6 – Facility 977

### 18.1 Environmental Conditions

Section 8.9 of the *Remedial Investigation Report for the WIOU* (Radian, 1996) identified two subsurface locations within Facility 977 with total petroleum hydrocarbons-extractable (TPH-E) residue in the soil. Sample location W0977H01 contained TPH-E at a concentration of 189 mg/kg, and sample location W0977H02 contained TPH-E at a concentration of 3,580 mg/kg. Both samples were collected at 1 foot below ground surface, and the TPH-E originated from hydraulic fluid leaks beneath hydraulic rams that are used to operate cargo loading ramps.

Appendix R of the *Summary of Remedial Investigation Data and Risk Management Decisions for Human Health at NEWIOU Sites* (URS, 2004) identified two contaminated surface soil locations. Sample location W0977U01 to the east of facility 977 contained benzo(a)pyrene (0.658 mg/kg) and benzo(b)fluoranthene (3.02 mg/kg), and sample location W0977U02 to the southwest of facility 977 contained benzo(a)pyrene (0.484 mg/kg) and lead (809 mg/kg). Both controlled areas are covered in asphalt and lie in busy areas where aircraft receive and deliver palletized cargo from loading vehicles.

The list of chlorinated COCs for SD037 groundwater includes 1,1-DCE, 1,2-DCA, benzene, bromodichloromethane, carbon tetrachloride, PCE, TCE, vinyl chloride, and cis-1,2-DCE. The indicator COC is TCE. The maximum concentration of TCE in groundwater is 1,000 ppb at MW2121x37. The federal and State of California drinking water standard for TCE is 5 ppb.

Appendix R of the *Summary of Remedial Investigation Data and Risk Management Decisions for Human Health at NEWIOU Sites* (URS, 2004) presents a more detailed description of the human health risk assessment for this site.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 5 (EVO and EA) to address the residual dissolved solvent contamination. The progress that EVO and EA have made in reducing COC mass and concentrations is reported in annual GRISRs.

Figure 9 shows the groundwater LUCs for Site SD037, and the inset in this figure shows the area where soil LUCs can be found.

## **18.2 Status of SD037 Soil Land Use Controls**

Section 5.3.18 of the *NEWIOU SSSW ROD* (URS, 2006) states that Alternative #17 (Land Use Controls) is the selected remedial action for Area 6; because PAH, lead, and TPH-E concentrations in the soil exceed levels that allow for unrestricted use and unlimited exposure. The Air Force is to restrict residential development and unauthorized disturbance and relocation of soil at this site. Alternative 16 (No Action) is the selected remedy for Areas 1 through 5.

The *Travis AFB LUCIP* (CH2M HILL, 2019d) describes the presence of PAH, lead, and TPH in the surface soil and the land use restriction, particularly on the unauthorized disturbance and use of soil at this site.

The 2019 inspection of the soil LUCs at SD037 found that administrative controls are adequate to enforce the restriction, so physical barriers (i.e., fences) are not needed. The contaminated soil cannot be seen, since it is covered with asphalt or located beneath hydraulic rams. There is no evidence that the PAH-, lead-, and TPH-impacted soil has been disturbed.

Due to the nature of operations at the air freight terminal, it is not practical or safe to post warning signs to notify base personnel of the presence of contaminated soil beneath the asphalt or the hydraulic rams. Specifically, vehicles that are designed to transport large cargo pallets to and from both military and commercial aircraft require an open area free of physical hazards.

The two small controlled areas outside of Facility 977 lie in the middle of these open work areas, and there are no existing posts or structures that could be used to post signs that point out their location. Because of the high tempo of mission-critical operations associated with the air freight terminal, any obstructions would pose significant risk to both personnel and equipment.

Photograph 18 in Appendix A of this report shows the view of the interior of Facility 977 where the hydraulic rams are located, and photograph 19 shows the controlled area on the southwest side of Facility 977.

## **18.3 Status of SD037 Groundwater Land Use Controls**

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at SD037 also poses a potential vapor intrusion risk to industrial workers, so LUCs also restrict residential

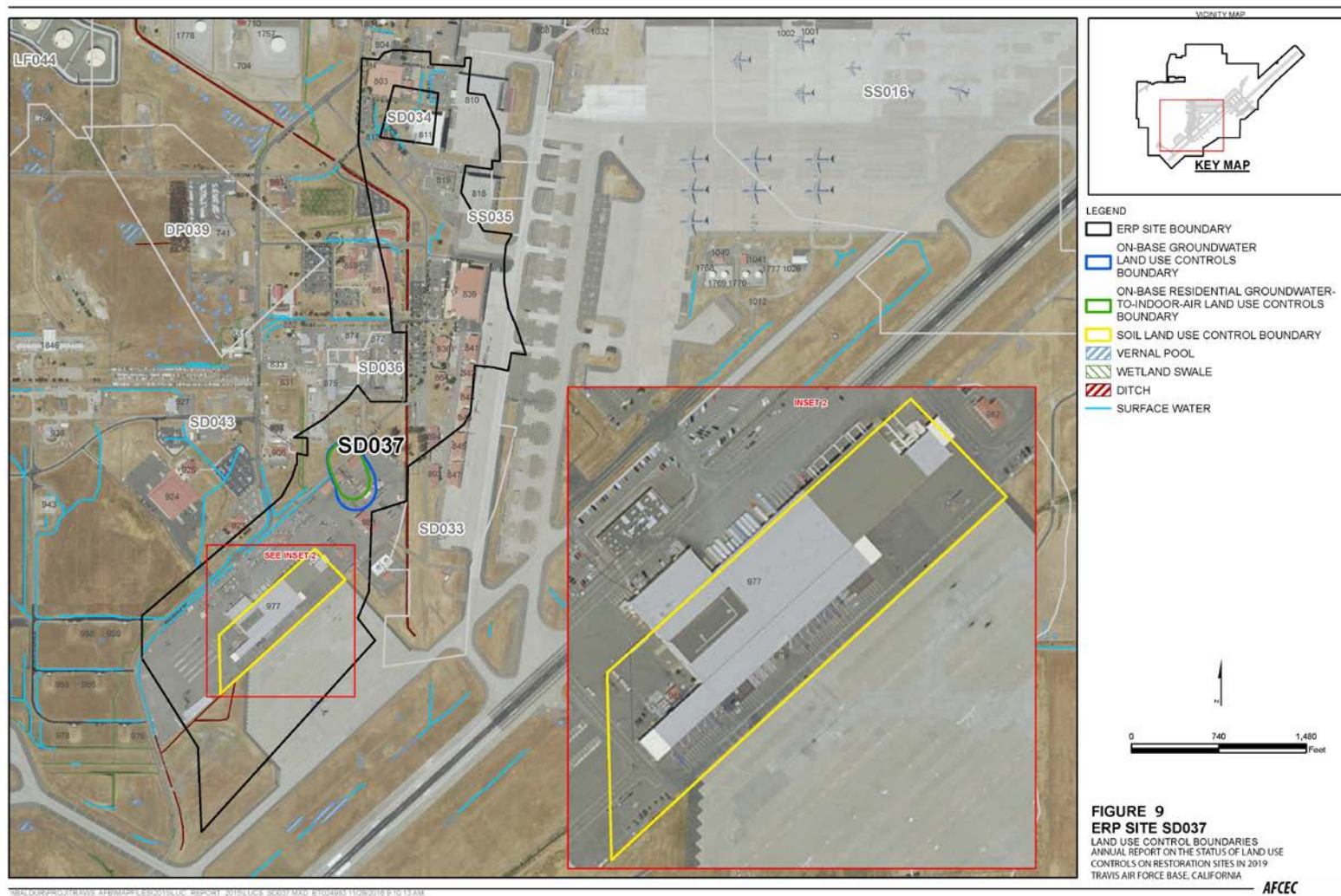
and industrial land uses until concentrations of solvents in groundwater are reduced to the point where they no longer pose an unacceptable risk to human health.

The 2019 inspection of the groundwater LUCs at SD037 found that administrative controls are adequate to enforce the groundwater and vapor intrusion restrictions. There is no evidence of any activities that could expose base personnel to contaminated groundwater or vapor, and no new construction has taken place at the site. The SD037 injection and monitoring wells are flush mounted to conform to facility appearance standards and to avoid safety hazards in vehicle parking areas. The LUC inspection identified no evidence of damage or excessive wear that could adversely impact the use of these wells. Photograph 20 in Appendix A of this report shows the groundwater controlled area at SD037.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for SD037.









## 19.0 Building 755 (DP039)

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Building 755 was the Travis AFB Battery and Electric Shop. The site consists of Building 755 and a former battery acid neutralization sump. Past operations have included the recharging and dismantling of lead-acid and nickel-cadmium batteries. Before 1978, lead-acid solutions were discharged into a sink inside Building 755. The pipeline from the sink led to a rock-filled sump approximately 65 feet northwest of the building. This practice was discontinued in 1978 when the pipeline was dismantled and reconnected to the sanitary sewer system. The sump was removed in 1993. Building 755 was vacated and demolished in 2009.

### 19.1 Environmental Conditions

Lead residue was the COC associated with the surface soil around the edges of the former sump area. Since the lead-acid solution entered the former sump through a subsurface pipe, the presence of lead in the surface soil was attributed to the deposition of small amounts of lead-contaminated subsurface soil during the 1993 sump removal action.

In 2008, the base constructed a sustainable in situ bioreactor over the footprint of the former sump. Funded by the Technology Transfer Office at the Air Force Center for Engineering and the Environment, the DP039 bioreactor is designed to clean up residual solvent contamination associated with the former sump. Travis AFB obtained regulatory approval to authorize the construction of the bioreactor as a demonstration project. Data from this project supported the selection of final groundwater remedies in the *Travis AFB Groundwater ROD* (CH2M HILL, 2014). Also, the base shut down the existing Dual-Phase Extraction system to return the subsurface to steady-state conditions. The final *Sustainable Bioreactor Demonstration Work Plan Site DP039* (CH2M HILL, 2009a) describes the bioreactor technology and its construction details.

As part of the bioreactor construction, the remedial action contractor excavated a 20- by 20- by 20-foot void, centered in the middle of the former sump. The bioreactor footprint completely covers the lead-contaminated surface soil area. When the excavation began, the lead-contaminated soil was removed first, placed in a large bin, and sent by truck to an appropriate landfill. Soil sample collection and analysis was used to characterize the waste and to determine the amount of residual lead remaining in the soil at DP039. The *Final Site DP039 Lead-Contaminated Soil Excavation Technical Memorandum* (CH2M HILL, 2015) presents the details of the disposal of the contaminated soil during the bioreactor construction. The *Amendment to the WABOU Soil ROD* (Travis AFB, 2018) documented the Air Force and regulatory approval to remove the soil restrictions from the site.

The list of chlorinated COCs for DP039 groundwater includes 1,1-DCE, 1,2-DCA, 1,1,1-TCA, 1,1,2-TCA, bromodichloromethane, methylene chloride, PCE, and TCE. The indicator COC is TCE. The maximum concentration of TCE in groundwater is 1,200 J- ppb at EW2383x39. The federal and State of California drinking water standard for TCE is 5 ppb.

The *Travis AFB Groundwater ROD* (CH2M HILL, 2014) selected Alternative 6 (Bioreactor, Phytoremediation, EVO Permeable Reactive Barrier, and EA) to address the residual dissolved

solvent contamination. The progress that EVO and EA have made in reducing COC mass and concentrations is reported in annual GRISRs.

## **19.2 Status of DP039 Groundwater Land Use Controls**

Section 2.12.2.8 of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014) states that LUCs are required to ensure that groundwater is not used for potable purposes until it is remediated to MCLs that allow for unlimited use and unrestricted exposure. The groundwater contamination at DP039 also poses a potential vapor intrusion risk to industrial workers, so LUCs also restrict residential and industrial land uses until concentrations of solvents in groundwater are reduced to the point where they no longer pose an unacceptable risk to human health.

The 2019 inspection of the groundwater LUCs at DP039 found that administrative controls are adequate to enforce the groundwater and vapor intrusion restrictions. There is no evidence of any activities that could expose base personnel to contaminated groundwater or vapor, and no new construction has taken place at the site. The DP039 wells and piezometers have either stovepipe or flush mounted completion, depending on the surface where the wells have been installed. The LUC inspection identified no evidence of damage or excessive wear that could adversely affect the use of these wells. Photograph 21 in Appendix A of this report shows the surface of the bioreactor at DP039. The warning sign that notifies site visitors of the presence of LUCs can be seen in the background. Photograph 22 shows the sign in front of the controlled area (phytoremediation), and Photograph 23 shows a portion of the DP039 biobarrier.

Based on the results of this inspection, Travis AFB is in compliance with the first groundwater ROD RAO (Restrict human exposure to COCs) and the second groundwater ROD RAO (Restrict inhalation of COCs to indoor air) for DP039.

## 20.0 Landfill X (LF044)

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Landfill X is not a landfill at all. It received this name, because the past activities at this site had not been completely identified at the start of the WABOU Remedial Investigation. It comprises approximately 25 acres and is located within Grazing Management Unit (GMU)-2, a 126-acre parcel of land that had been used to graze horses. The soil COCs are attributed to the asphalt and other construction debris that had been stockpiled onsite.

### 20.1 Environmental Conditions

COCs detected in surface soils include benzo(a)anthracene, benzo(a)pyrene, and dibenz(a,h)anthracene. These COCs are also chemicals of ecological concern (COECs) together with benzo(k)fluoranthene, fluoranthene, and pyrene. COCs detected in subsurface soils include benzo(a)anthracene, benzo(a)pyrene, and dibenz(a,h)anthracene, benzo(k)fluoranthene. These COCs are also subsurface COECs together with anthracene, acenaphthene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene, bis(2-ethylhexyl)phthalate, cadmium, lead, and silver. Sections 4.8.7 and 4.8.8 of the WABOU RI report present a detailed description of the human health and ecological risk assessments for Landfill X, respectively.

In the spring of 2010, Kinder Morgan for SFPP, LP (under a ground lease with Travis AFB and an agreement with the Defense Energy Support Center) made the preparations to construct a new above-ground storage tank (AST) fuel facility within the footprint of the LF044 controlled area. The placement of the fuel facility in the LF044 area was based on its proximity to an existing AST facility on base, as well as to an off-base fuel pipeline. The placement also avoided the destruction of vernal pools and other sensitive habitats at the alternative construction locations.

Prior to the start of the tank construction, earth-moving equipment removed vegetation, 90 cubic yards of construction debris, and 7,140 cubic yards of contaminated soil from the construction area. Most of the concrete debris was taken to Concrush, a construction material recycling company in Fairfield, CA. The vegetation, weathered asphalt, contaminated soil and other miscellaneous debris were sent to the Hay Road Landfill in Vacaville, CA. When this phase of the project was complete, the construction area had been scraped to the point where only native soil was exposed. Earth-moving operations continued to ensure that the foundations for the ASTs were level and met specified geotechnical standards and soil compaction requirements. Clean soil was then brought onto the construction site to build the secondary containment walls for the AST enclosures.

Tank construction was complete by the summer of 2012. After the AST facility construction was complete, the base reassessed the footprint of the environmentally controlled area. For the new tank facility, the restrictions associated with fuel operations are more stringent than the previous environmental restrictions and are under contractor management. For example, tank facility visitation is significantly limited and requires prior coordination. The *Report on the Environmental Impact of the SFPP Fuel Tank Project on the Land Use Controls at Site LF044* (AFCEC and AMEC, 2014) is a joint data report from the base and the construction contractor that describes the excavation and disposal of contaminated soil and construction materials from

the construction area. The joint report reduces the footprint of the LF044 controlled area to the area outside of the new tank facility. Two small northern portions of 0.30 acre and 0.20 acre in size, and the larger southern portion is 18.41 acres in size remained (AFCEC and AMEC, 2014).

Past visits to LF044 had identified multiple piles of surface debris that could pose a potential safety hazard to base personnel and contractors who work in the southern portion of the LF044 controlled area. Between 5 October 2015 and 8 October 2015, Cape Environmental Management, Inc., under subcontract to CH2M HILL, conducted surface improvements at LF044 to remove this potential hazard. Surface improvements consisted of the collection and offsite disposal of surface debris, including chunks of asphalt and concrete, tires, old barbed-wire fencing, and metal debris. To prepare for this work, wetland features were identified and delineated as described in the Biological Opinion issued by the U.S. Fish and Wildlife Service (Sacramento Fish and Wildlife Office) on July 21, 2015.

Using an excavator and a loader, a total of 55.02 tons of surface debris was loaded into roll-off dumpsters and transported offsite for disposal at the Potrero Hills Landfill, located in Solano County. Areas where debris was removed were regraded using onsite topsoil and seeded with a Travis AFB-approved seed mix. The seed was not watered because of the potential presence of endangered/threatened California Tiger Salamanders (CTS), although no CTS were observed during the course of site work.

The excavation of contaminated soil and construction debris from the northern portion of the site during the Kinder Morgan tank construction project also removed the potential source of contaminated sediment that could have migrated into nearby vernal pools. As a result, the berm no longer serves its original purpose, which was to prevent the flow of contaminated sediment into nearby vernal pools. To determine whether the thin strip of land between the berm and the fuel facility containment structure on the northeast side of LF044 contained contaminated sediment, dry sediment samples were collected during the 2017 summer construction season. The analytical results of the sediment sampling demonstrated that the dry sediment contaminant concentrations were below residential standards and LUCs are not required at the two small LF044 parcels. The *Site LF044 Sediment Sampling Technical Memorandum* (CH2M HILL, 2018d) describes the collection and laboratory analysis of sediment samples from the northern portion of the LF044 controlled area.

Based on the results of the 2017 sediment investigation, there is no change to the selected remedy for the soil contamination at Site LF044. However, the footprint of the controlled area no longer includes the two small northern parcels of property that are north of the Kinder Morgan UST facility. Future LUC inspection teams will not look at physical infrastructure associated with the two parcels (the northern fence, north gate, signage, and berm).

## **20.2 Status of LF044 Soil Land Use Controls**

Section 5.3.6 of the *WABOU Soil ROD* (Travis AFB, 2002a) states that Alternative S2 (Land Use and Access Restrictions) is the selected remedial action for this site. The selected remedy requires the installation of a fence around the contaminated area and the training/stockpile. The Air Force is to restrict residential development and unauthorized disturbance and relocation of soil at this

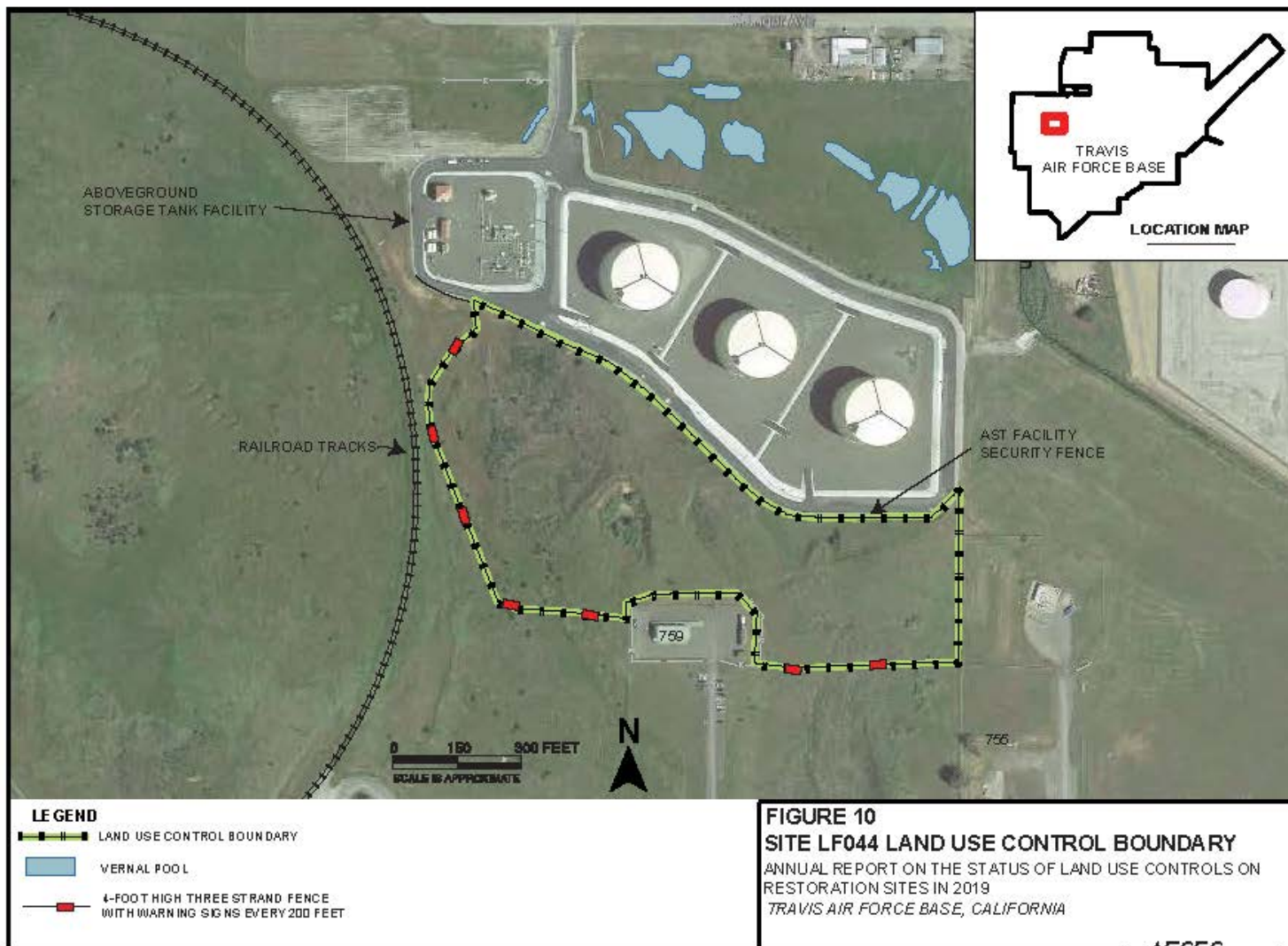
site. The objective of this remedial action is to apply land use controls to prevent the site from being used for residential purposes.

The Travis AFB *LUCIP* (CH2M HILL, 2019d) describes the presence of the soil COCs and the land use restrictions, particularly on the unauthorized disturbance and use of soil at this site. Figure 10 shows the tank facility and the remaining portion of LF044 that are under LUCs. The *Remedial Action Report for Soil Remedial Actions at Site LF044* (ECC, 2003a) provides a detailed description of the construction of the physical controls at LF044.

The 2019 inspection noted no evidence to suggest that the property is being used for other than industrial purposes. Photograph 24 shows the gate and warning sign on the south side of LF044.









## 21.0 Non-CERCLA Petroleum Sites

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Along with ERP sites with CERCLA contaminants, Travis AFB also has petroleum-only contamination (POCO) sites that receive regulatory oversight from the RWQCB. POCO sites are not addressed in the *Travis AFB Groundwater ROD* (CH2M HILL, 2014), but the base still applies environmental restrictions to them to ensure that the pathways between the contaminants and potential receptors are blocked.

Several POCO sites have been closed under the State Water Resources Control Board Low-Threat Underground Storage Tank Case Closure Policy (State Water Board, 2012). However, because residual petroleum contamination remains in the subsurface, specific conditions and requirements are applied to these sites to ensure the protection of human health.

### 21.1 Facility 363 and 365 (ST028)

Site ST028 contains a total of 18 USTs, located near Sutter Road in the northeastern part of Travis AFB. The site originally encompassed Facility 363 on the western side of Sutter Road and was later expanded to include Facility 365 on the east side of Sutter Road. Both facilities have since been torn down.

Facility 363 was constructed in 1948 and consisted of eleven (11) steel USTs, five (5) stored gasoline, three (3) stored diesel fuel, two (2) stored JP-4, and one (1) was used to store used oil. All but one (1) of the USTs were removed in 1986. The last UST was removed in 1995. During removal, all USTs were reported to be in good condition.

Seven (7) USTs were located at Facility 365. One (1) UST stored JP-4 and water and was removed in 1995. Six (6) USTs stored JP-4 and were removed in 1996. During removal, no holes or cracks were observed in any of these USTs

The *Remedial Action Report, POCO Sites ST027 and ST028* (POCO Sites ST027 and ST028 RA Report) (CH2M HILL, 2008) established monitored natural attenuation (MNA) as the final remedy for Site ST028 and identified the following groundwater contaminants: methyl tert-butyl ether, benzene, toluene, ethylbenzene, xylenes, total petroleum hydrocarbons (TPH) as gasoline, and TPH as diesel.

A *No Further Action for Site ST028* letter (RWQCB, 2017) confirmed that site investigations and corrective actions are complete and no further action is required for Site ST028. However, the letter requested the application of the following conditions/requirements because of the presence of residual petroleum contamination in the subsurface:

#### 21.1.1 No Shallow Groundwater Use

Shallow groundwater beneath the site cannot be used for drinking water or irrigation due to the potential risk from residual petroleum contamination.

#### 21.1.2 Notify Regional Water Board if Groundwater Use Changes

The Air Force must notify the Regional Water Board in writing of any proposed changes in future groundwater use at the site. Formal Regional Water Board concurrence may be required.

## **21.2 Main Runway/Taxiway Area at Taxiway G (ST032)**

Site ST032 is located within the active main runway/taxiway area of Travis AFB, directly east of and adjacent to the eastern boundary of Site SS016. Site ST032 covers approximately 22 acres and comprises two (2) grassy, open areas surrounded by runway and taxiway pavement. The EIOU RI identified two (2) separate contaminant plumes. Plume A was characterized by a mixture of fuel hydrocarbon and TCE contamination. Plume B, located in the southern part of Site ST032 near well MW246x32, was characterized primarily by fuel hydrocarbon contamination, which included the presence of light non-aqueous phase liquid (LNAPL). It had been a part of previous inspections and had been discussed in previous annual LUC reports. There are no documented contaminant releases within Site ST032. However, a buried jet fuel supply line and Storm Sewer System III pass beneath the site and intersect the water table.

In April 2009, ST032 was transferred to the POCO program. The final *Recommendation to Transfer ERP Site ST032 to the POCO Program Technical Memorandum* (CH2M HILL, 2009b) provides the rationale for this transfer to the POCO program.

The *Remedial Action Report POCO Sites SS014 and ST032* (CH2M HILL, 2011a) identified the final remedy for Site ST032 as MNA. The revised final *Site ST032 POCO Completion Report* (CH2M HILL, 2017) demonstrated that Site ST032 met the criteria of the RWQCB low-threat closure policy. However, since residual benzene levels are above the risk levels for industrial land use, and to ensure that future construction workers are protected, contaminant levels of benzene will need to be monitored during all field activities when ground disturbance is performed at Site ST032 for health and safety purposes. Either an industrial hygienist or a representative of Bioenvironmental Engineering (BEE) will be required to oversee the health and safety monitoring throughout the duration of ground disturbing activities. Additionally, any intrusive activity should be performed in accordance with the HAZWOPER standard (29 CFR Part 1910.120). Any wastes generated with the intrusive work need to comply with 40 CFR Parts 260 through 268.

## **21.3 Status of ST028 and ST032 Land Use Controls**

The 2019 inspection of the LUCs at Sites ST028 and ST032 found that administrative controls are adequate to enforce the restrictions, so additional physical barriers are not needed. There is no evidence of activities that would have resulted in contaminant exposure. Photograph 25 of Appendix A of this report shows the footprint of the ST028 controlled area, and Photograph 26 of Appendix A of this report shows the footprint of the ST032 controlled area. The inspection team noted that there is no infrastructure to observe during LUC inspections, since all monitoring wells have been either decommissioned or transferred to another site.

## 22.0 Conclusion and Summary of Findings

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On 21 and 22 January 2020, representatives from the AFCEC ISS, 60<sup>th</sup> Civil Engineer Squadron, and CH2M HILL conducted a formal inspection of the LUCs at five (5) soil sites, sixteen (16) on-base groundwater sites, and three (3) off-base groundwater sites associated with the Travis AFB ERP. The five soil sites are designated as LF007 (including the CAMU), SS015, SS016, SD037, and LF044. The sixteen on-base groundwater sites are designated as FT004, LF006, LF007 (subareas B and D), LF008, SS015, SS016, ST027B, ST028, SS029, SD031, ST032, SD033, SD034, SD036, SD037, and DP039. The three off-base groundwater sites are designated as FT005, LF007C, and SS030. This inspection complies with Section 5.4 (Land Use Controls) of the *WABOU Soil ROD* (Travis AFB, 2002a), Section 5.4 (Land Use Controls [LUC]) of the *NEWIOU SSSW ROD* (URS, 2006), and Section 2.12.2.8 (Land Use Controls) of the *Travis AFB Groundwater ROD* (CH2M HILL, 2014).

Most of the 60<sup>th</sup> Civil Engineer Squadron representative are relatively new to Travis AFB. The AFCEC ISS used the 2019 annual inspection to introduce new base personnel to LUC requirements and the Land Use Control Implementation Plan (LUCIP) that describes the responsibilities of base personnel in LUC management. The inspection team used LUC checklists from the LUCIP to support the inspection.

The inspection team found the LUCs at the five soil sites and the sixteen on-base groundwater sites to be in place and effective at restricting land use to industrial purposes only, preventing the construction of office space above solvent plumes without appropriate measures to address potential vapor intrusion, and/or protecting groundwater treatment infrastructure associated with selected remedies from damage. There is no evidence that any unauthorized land uses or unauthorized soil disturbances in the controlled areas took place in 2019. In addition, a records review revealed no construction of on-base drinking water wells. There are no physical controls associated with these groundwater restrictions that can be inspected. The three (3) off-base properties that cover three (3) off-base groundwater sites were also inspected to verify that no residential development or well drilling activities other than ERP activities had taken place.

The inspectors made the following observations:

- The inspectors did not identify any sites where the addition of physical barriers could improve LUC management. They noted that all signs are in place and have the same phone number.
- The controlled footprint of LF044 lies south of the Kinder Morgan aboveground storage tank (AST) facility. The final *Report on the Environmental Impact of the SFPP Fuel Tank Project on the Land Use Controls at Site LF044* (AFCEC and AMEC, 2014) describes the environmental activities that took place during tank construction and the impact of the new facility on the LF044 LUC footprint. The *Site LF044 Sediment Sampling Technical Memorandum* (CH2M HILL, 2018d) describes the collection and laboratory analysis of sediment samples that demonstrated that the two former northern LF044 parcels do not require land use controls.

- Soil LUCs at DP039 are no longer necessary, since the lead-contaminated surface soil that required the placement of soil land use controls at site DP039 had been completely excavated as part of an unrelated groundwater cleanup demonstration project (bioreactor). They are also redundant; the groundwater LUCs associated with the bioreactor cover a footprint that exceeds the footprint of the soil LUC area. The *Amendment to the West/Annexes/Basewide Operable Unit (WABOU) Soil Record of Decision* (Travis AFB, 2018) changed the soil remedy for DP039 from Alternative S2 (Land Use and Access Restrictions) to Alternative S1 (No Further Action).
- Building 18 is the only building on Travis AFB that cannot be used as an office because of the potential vapor intrusion risk associated with the SS016 solvent plume. The building is locked and not occupied. The internal controls that are described in the groundwater ROD prevent the use of the building as an office until contaminant concentrations drop to a point when the VI risk is acceptable, and the two LUC signs that have been attached to the two (2) main Building 18 entry doors identify the presence of LUCs. The inspection team will continue to inspect Building 18 until it is torn down to support the construction of a new KC-46 three-bay hangar (currently scheduled for 2020).
- There is no infrastructure to inspect at two (2) former POCO sites that were added to the LUC inspection list in 2018. Sites ST028 and ST032 were closed under the State Water Resources Control Board Low-Threat Underground Storage Tank Case Closure Policy (State Water Board, 2012). However, because there are still residual contaminants at both locations, the Water Board assigned reporting requirements to them to prevent contaminant exposure.
- At the time of the LUC inspection, the base was conducting a soil remedial action at Site SS016. The results of this action will be documented in an appropriate report and will be used to determine whether soil LUCs are still needed at this location.

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## **Appendix A**

### **Photographs**

The following photographs were taken at the time of the annual LUC inspection on 21 and 22 January 2020. The purpose of the photographs is to give the reader a better understanding of site conditions and to identify any changes to site appearances over time by comparing these photographs to those in previous annual LUC reports. Please note that these photographs were taken on a high-security military installation. Although the base inspectors had a current photography pass and had notified the appropriate offices of the inspection activities, it is prohibited to take photographs of high-security areas, especially when aircraft are present. As a result, some photographs lack a lot of detail and focus on small portions of the base where restoration infrastructure is present.

The approximate direction the photographer was facing when each photograph was taken is shown in brackets.





Photograph 1: Monitoring Well in Controlled Area (Groundwater) at FT004 [SE]



Photograph 2: On-base Controlled Area (Groundwater) at FT005 [ESE]





Photograph 3: Controlled Area (Groundwater) at LF006 [ESE]



Photograph 4: LF007 Entrance Gate with Warning Sign [NE]



Photograph 5: Southwest CAMU Gate with Warning Sign [NE]



Photograph 6: Off-Base LF007C View from the CAMU [NW]





Photograph 7: Northern Monitoring Well at LF008 [SW]



Photograph 8: Controlled Area at SS015. Arrow Shows a Soil Sample Collection Point [NE]





Photograph 9: Controlled Area at SS016 After Soil Remedial Action [W]



Photograph 10: SS016 Bioreactor [NW]



Photograph 11: SS016 Building 18 Warning Sign [S]



Photograph 12: Controlled Area (Groundwater) at ST027B [SE]





Photograph 13: View of SS029 Monitoring Well [NE]



Photograph 14: View of SS030 Easement [S]





Photograph 15: Monitoring Well in Controlled Area (Groundwater) at SD031 [NE]



Photograph 16: Controlled Area (Groundwater) at SD034 [NE]



Photograph 17: Controlled Area (Groundwater) at SD036 [NW]



Photograph 18: View of SD037 Hydraulic Ram Infrastructure [NW]





Photograph 19: Controlled Area on Southwest Side of SD037 [SE]



Photograph 20: Monitoring Well in Controlled Area (Groundwater) at SD037 [E]





Photograph 21: Controlled Area at DP039 (Bioreactor) [SW]



Photograph 22: Controlled Area at DP039 (Phytoremediation) [S]





Photograph 23: Controlled Area at DP039 (Biobarrier) [W]



Photograph 24: Gate and Warning Sign on South Side of LF044 [N]



Photograph 25: Former ST028 Location [N]



Photograph 26: Former ST032 Location [S]



## **Appendix B**

### **Documentation of Remedial Actions that Resulted in Land Use Control Removal**



## Documentation of Remedial Actions that Resulted in Land Use Control Removal

Land Use Controls (LUCs) are applied to a restoration site with COCs that are present in an environmental medium of concern at concentrations that pose a potential human health or ecological risk and do not allow for unrestricted use and unlimited exposure. LUCs can either be a selected standalone remedy or a contingency remedy in conjunction with an active remedy that has the potential to reach residential cleanup levels. When residential cleanup levels are achieved, the restoration site has no restrictions to its present or future use, and there is no limit to the amount of time that a person can occupy that site. If an active remedy reduces COC levels to those that allow for unrestricted use and unlimited exposure, then there is no need for LUCs and the selected contingency LUC remedy is not applied to the site. The Remedial Action Report documents the attainment of cleanup levels for all chemicals of concern (COCs) and the justification for not applying LUCs for that particular environmental medium of concern.

Each ROD states that the LUC alternative requirements will be removed from a site in the event that the cleanup achieves levels for all COCs that allow for unlimited use and unrestricted exposure. This appendix provides a list of restoration sites that had received environmental restrictions based on the presence of COCs, the medium in which the COCs were present, the remedial action(s) that attained residential cleanup levels for the particular medium, and the remedial action report that documents the attainment of residential cleanup levels and the removal of LUCs for the particular medium.

As the Travis AFB Environmental Restoration Program completes cleanup actions that achieve residential cleanup levels and removes LUCs for a particular medium, those cleaned sites are removed from the main body of this report and placed in this appendix. Future annual LUC reports will update this appendix, which will help future project managers to track the status of LUCs on Travis AFB and eventually support the partial or complete delisting of Travis AFB from the National Priorities List.

Tables 1 through 3 list the sediment, soil and groundwater sites that completed cleanup actions that achieved residential cleanup levels and had their LUCs removed. Table 4 lists the restoration sites that were transferred into the Petroleum Only Contamination (POCO) program; these sites receive regulatory oversight from the San Francisco Bay Regional Water Quality Control Board.

| <b>Table 1: Travis AFB Restoration Sites with Previous Sediment Contamination</b> |  |  |                     |   |
|---|--|--|---------------------|---|
| <b>Site</b>   | <b>Primary Chemicals of Concern</b>  | <b>Cleanup Action</b>                    | <b>Cleanup Year</b> | <b>Documentation</b>                                      |
| SD001 – Storm Sewer Systems A and C, Union Creek                                  | Benzo(a)pyrene   | Alternative 18 (Excavation) <sup>a</sup> | 2009                | Sites SD001 and SD033 Remedial Action Report (ITSI, 2010) |
| SD033 – Storm Sewer System B (includes West Branch of Union Creek)                | Benzo(a)anthracene<br>Benzo(a)pyrene<br>Benzo(b)fluoranthene<br>Dibenz(a,h)anthracene<br>Cadmium | Alternative 18 (Excavation) <sup>a</sup> | 2009                | Sites SD001 and SD033 Remedial Action Report (ITSI, 2010) |

<sup>a</sup> Selected in North, East, West Industrial Operable Unit Soil, Sediment, and Surface Water Record of Decision.

<sup>b</sup> Selected in West/Annexes/Basewide Operable Unit Soil Record of Decision.



## Documentation of Remedial Actions that Resulted in Land Use Control Removal

| <b>Table 2: Travis AFB Restoration Sites with Previous Soil Contamination</b> |  |  |                     |  |
|---|--|--|---------------------|--|
| <b>Site</b>   | <b>Primary Chemicals of Concern</b>                                    | <b>Cleanup Action</b>  | <b>Cleanup Year</b> | <b>Documentation</b>   |
| FT003 – Fire Training Area #2   | Benzo(a)anthracene<br>Benzo(a)pyrene<br>2,3,7,8-TCDD                   | Alternative 18 (Excavation) <sup>a</sup>   | 2007                | North, East, and West Industrial Operable Unit and West/Annexes/ Basewide Operable Unit Soil Remedial Action for Sites SD045, FT003, FT004, FT005, Union Creek SD001 and SD033, and LF007 Area E Report (Shaw E&I, 2008) |
| FT004 – Fire Training Area #3   | Lead<br>2,3,7,8-TCDD   | Alternative 18 (Excavation) <sup>a</sup>   | 2007                | North, East, and West Industrial Operable Unit and West/Annexes/ Basewide Operable Unit Soil Remedial Action for Sites SD045, FT003, FT004, FT005, Union Creek SD001 and SD033, and LF007 Area E Report (Shaw E&I, 2008) |
| FT005 – Fire Training Area #4   | Benzo(a)anthracene<br>Benzo(a)pyrene<br>Benzo(b)fluoranthene           | Alternative 18 (Excavation) <sup>a</sup>   | 2012                | FT005 Remedial Action Report (ITSI Gilbane, 2012)  |
| LF007E – Landfill #2 Area E and Sample Location E19                           | Polychlorinated biphenyl (PCB)-1260                                    | Alternative 18 (Excavation) <sup>a,c</sup>   | 2007                | North, East, and West Industrial Operable Unit and West/Annexes/ Basewide Operable Unit Soil Remedial Action for Sites SD045, FT003, FT004, FT005, Union Creek SD001 and SD033, and LF007 Area E Report (Shaw E&I, 2008) |
| LF008 – Landfill #3   | Alpha-chlordane<br>Gamma-chlordane<br>Heptachlor<br>Heptachlor epoxide | Alternative S5 (Excavation/Off-base Disposal) <sup>b</sup>                         | 2003                | Remedial Action Report for Soil Remedial Action at Site LF008 (Shaw Environmental and Infrastructure [E&I], 2004b)   |
| RW013 – Radioactive Burial Site #2/ Dry Waste Landfill                        | Uranium-234<br>Uranium-235   | Alternative S5 (Excavation/Off-base Disposal) <sup>b</sup>                         | 2002                | Remedial Action Report for Soil Remedial Actions at Site RW013 (Environmental Chemical Corporation [ECC], 2003b)   |
| DP039 – Base Battery and Electric Shop  | Lead   | Soil Excavation in conjunction with groundwater demonstration project (bioreactor) | 2008                | Site DP039 Lead-Contaminated Soil Excavation Tech Memo (CH2M HILL, 2015)<br><br>Amendment to the WABOU Soil ROD (Travis AFB, 2018a)  |
| SS041 – Building 905  | Alpha-chlordane<br>Gamma-chlordane<br>Heptachlor epoxide               | Alternative S6 (Excavation/On-base Consolidation) <sup>b</sup>                     | 2003                | Remedial Action Report for Soil Remedial Actions at Site SS041 (ECC, 2003c)  |

## Documentation of Remedial Actions that Resulted in Land Use Control Removal

| <b>Table 2: Travis AFB Restoration Sites with Previous Soil Contamination</b> |  |  |                     |  |
|---|--|--|---------------------|--|
| <b>Site</b>   | <b>Primary Chemicals of Concern</b>  | <b>Cleanup Action</b>  | <b>Cleanup Year</b> | <b>Documentation</b>   |
|   | Toxaphene  |  |                     |  |
| SD042 – Buildings 929/931/940   | Benzo(a)pyrene<br>Dibenz(a,h)anthracene<br>Benzo(b)fluoranthene<br>Cadmium<br>Chromium | Alternative S6 (Excavation/On-base Consolidation) <sup>b</sup> | 2003                | Remedial Action Report for Soil Remedial Action at Site SD042 (Shaw E&I, 2003)   |
| SD043 – Building 916  | Polychlorinated Biphenyl   | Alternative S5 (Excavation/Off-base Disposal) <sup>d</sup>     | 2019                | Site SD043 Remedial Action Completion Report (CH2M HILL, 2019b)  |
| SD045 – Former Small Arms Range   | Lead<br>Antimony<br>Copper   | Alternative S6 (Excavation/On-base Consolidation) <sup>b</sup> | 2007                | North, East, and West Industrial Operable Unit and West/Annexes/ Basewide Operable Unit Soil Remedial Action for Sites SD045, FT003, FT004, FT005, Union Creek SD001 and SD033, and LF007 Area E Report (Shaw E&I, 2008) |
| SS046 – Railhead Munitions Storage Area                                       | Polycyclic Aromatic Hydrocarbons   | Alternative S5 (Excavation/Off-base Disposal) <sup>d</sup>     | 2019                | Site SS046 Remedial Action Completion Report and Well Decommissioning Work Plan (CH2M HILL, 2019c)   |

<sup>a</sup> Selected in North, East, West Industrial Operable Unit Soil, Sediment, and Surface Water Record of Decision.

<sup>b</sup> Selected in West/Annexes/Basewide Operable Unit Soil Record of Decision.

<sup>c</sup> Alternative 17 (Land Use Controls) is the selected remedy for the remaining LF007 subareas.

<sup>d</sup> Selected in Amendment to the West/Annexes/Basewide Operable Unit Soil Record of Decision

| <b>Table 3: Travis AFB Restoration Sites with Previous Groundwater Contamination</b> |   |                                      |                            |   |
|--|---|--------------------------------------|----------------------------|---|
| <b>Site</b>  | <b>Primary Chemicals of Concern</b>         | <b>Cleanup Action</b>                | <b>Year of LUC Removal</b> | <b>Documentation</b>  |
| SS035 – Facilities 818 and 819   | TCE and Total petroleum hydrocarbons-Diesel | Monitored Natural Attenuation        | 2018                       | Site SS035 Site Closure Report (CH2M HILL, 2018)            |
| SS041 – Building 905   | Heptachlor epoxide                          | Groundwater Extraction and Treatment | 2014                       | Travis AFB Groundwater Record of Decision (CH2M HILL, 2014) |
| SD043 – Building 916   | TCE   | Monitored Natural Attenuation        | 2019                       | Site SD043 Site Closure Report (CH2M HILL, 2019f)           |



## Documentation of Remedial Actions that Resulted in Land Use Control Removal

| <b>Table 4: Travis AFB Restoration Site Transfers into POCO Program</b> |   |                      |   |
|---|---|----------------------|---|
| <b>Site</b>   | <b>Primary Chemicals of Concern</b>             | <b>Transfer Year</b> | <b>Documentation</b>  |
| ST032   | Total petroleum hydrocarbons – gasoline (TPH-G) | 2009                 | Technical Memorandum: Recommendation to Transfer ERP Site ST032 to the POCO Program (CH2M HILL, 2009) |

## **Appendix C**

### **Site Checklists from the 2019 Annual LUC Inspection (with field notes)**

## ERP SITE DP039

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCEC & CH2M/JacobsCompany or Organization: " "Date of Inspection: Jan 21 2020

Access Site DP039 by driving along Ellis Drive, Dixon Avenue, and W Street, stopping at several locations, and walking out to well locations and the eucalyptus tree grove. Access the bioreactor, the extraction and monitoring wells, and the eucalyptus tree grove within the northernmost section of Site DP039 by proceeding west on Ellis Drive from the intersection of Dixon Avenue and Ellis Drive.

| Inspection Item   | Yes/No/NA* | Summary of Inspection |
|---|------------|-----------------------|
| Is there construction occurring at the site?  | No         |                       |
| Is there evidence of excavation or soil disturbance?<br>(Look for soil piles, soil depressions, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)                   | No         |                       |
| Are the onsite monitoring wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.) | yes        |                       |
| Are the bollards still in place and protecting the monitoring wells, if applicable?   | yes        |                       |
| Is there a warning sign posted on the site?   | yes        |                       |
| Is the site warning sign legible and is the information correct?  | yes        |                       |
| Is there a sign posted on the eucalyptus tree grove, located across the street from the bioreactor, regarding groundwater cleanup?  | yes        |                       |
| Is the eucalyptus tree grove sign legible and is the information correct?   | yes        |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)  | No         |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

I certify that the conditions of Site DP039 on the inspection date were as reported above.

Signature: Date: 1-21-2020

## ERP SITE SD037

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCEC / CH2M / JacobsCompany or Organization: " " "Date of Inspection: Jan 21 2020

There are two (2) inspection areas associated with Site SD037. (1) Drive to Building 837 and inspect wells and J pipes in front of that building as well as wells in the parking lot across Ragsdale Street. There are no special access requirements for this. (2) Drive to the Aerial Port Building 977 and inspect the south and west sides of this building for any alterations to the asphalt surface. This will require an airfield driver's license.

| Inspection Item  | Yes/No/NA* | Summary of Inspection |
|--|------------|-----------------------|
| Is there construction occurring at the site?   | <u>No</u>  |                       |
| Is there evidence of excavation or soil disturbance (especially in the asphalt areas and beneath the hydraulically operated equipment)?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.) | <u>No</u>  |                       |
| Are the onsite monitoring wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.)  | <u>yes</u> |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)   | <u>No</u>  |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

I certify that the conditions of Site SD037 on the inspection date were as reported above.

Signature: Date: 1/21/2020

## ERP SITE SD036

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFC EC & CH2M/JacobsCompany or Organization: " "Date of Inspection: Jan 21 2020

Access to Site SD036 is via V Street to Building 872. Obtain permission from the Building 872 NCOIC/Supervisor prior to entering the work yard. Privately owned vehicles are not authorized in the work yard.

| Inspection Item   | Yes/No/NA* | Summary of Inspection |
|---|------------|-----------------------|
| Is there construction occurring at the site?  | No         |                       |
| Is there evidence of excavation or soil disturbance?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)   | No         |                       |
| Are the onsite monitoring and injection wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.) | yes        |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)  | No         |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

I certify that the conditions of Site SD036 on the inspection date were as reported above.

Signature: [Signature]Date: 1-21-2020

## ERP SITE SD034

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCEC & CH2M/JacobsCompany or Organization: " "Date of Inspection: Jan 21 2020

Access to Site SD034 is gained by driving to the northwest corner of Building 811 via Dixon Road to Ragsdale Road to the corner of Ellis Drive and First Street.

| Inspection Item   | Yes/No/NA*     | Summary of Inspection           |
|---|----------------|---------------------------------|
| Is there construction occurring at the site?  | <del>yes</del> | Inside Hanger 811               |
| Is there evidence of excavation or soil disturbance?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)                                     | <del>yes</del> | Inside footprint of Hanger 811. |
| Are the onsite monitoring wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.) | yes            |                                 |
| Are the onsite in-ground pumping units in good condition?   | yes            |                                 |
| Is the shed that houses the bottles of O <sub>2</sub> in good condition?  | yes            |                                 |
| Is the shed secured and marked?   | yes            |                                 |
| Are the power panels in good condition?   | yes            |                                 |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)  | No             |                                 |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: Restoration of Hanger 811. Soil disturbance on inside of building

\*NA = not applicable

I certify that the conditions of Site SD034 on the inspection date were as reported above.

Signature: [Signature]Date: 1-21-2020



**POCO SITE ST032**

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCER & CH2M/Jacobs

Company or Organization: \_\_\_\_\_

Date of Inspection: 1-21-2020

There are no wells or surface infrastructure to inspect at Site ST032, because all wells have been decommissioned. The inspector needs to verify that there has been no activity within the site footprint. The best vantage point to observe this area is along Inner Perimeter Road at Dayton Road (at the Control Tower) and looking due south from that location.

| Inspection Item   | Yes/No/NA* | Summary of Inspection |
|---|------------|-----------------------|
| Is there construction occurring at the site?  | <u>No</u>  |                       |
| Is there evidence of excavation or soil disturbance?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.) | <u>No</u>  |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)                            | <u>Na</u>  |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

*I certify that the conditions of POCO Site ST032 on the inspection date were as reported above.*Signature: Date: 1-21-2020

**ERP SITE SD033**

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCEC + CH2M / JacobsCompany or Organization: " "Date of Inspection: 1-21-2020

Access to Site SD033 is gained by driving along Dixon Road to Building 810 and inspecting wells around the building, then following Ragsdale Street to its southern extent and observing several wells along the road.

| Inspection Item   | Yes/No/NA* | Summary of Inspection |
|---|------------|-----------------------|
| Is there construction occurring at the site?  | No         |                       |
| Is there evidence of excavation or soil disturbance at the site?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)                         | No         |                       |
| Are the onsite monitoring wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.) | yes        |                       |
| Are there warning signs posted on both sides of Building 810?   | yes        |                       |
| Are the warning signs legible and is the information correct?   | yes        |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)  | No         |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

*I certify that the conditions of Site SD033 on the inspection date were as reported above.*Signature: [Signature]Date: 1-21-2020



## ERP SITE LF044

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCEC AGEISSCompany or Organization: "Date of Inspection: 1/22/2020

Access to Site LF044 needs to be coordinated through the Base Munitions Shop, Building 759. The area to be inspected is immediately behind this building, and the inspection can only be performed by walking into and around the area. The inspector should walk the fence line.

| Inspection Item   | Yes/No/NA* | Summary of Inspection |
|---|------------|-----------------------|
| Is there construction occurring at the site?  | NO         |                       |
| Is there evidence of excavation or soil disturbance?<br>(Look for soil piles, soil depressions, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)                                 | NO         |                       |
| Any defects in or damage to the gate east of Building 759 or fence located around the south side of the tank facility?<br>(Look for holes in the fence, missing or broken parts, easy entry at the gate.) | NO         |                       |
| Are there warning signs posted approximately every 200 feet along the fence line?   | YES        |                       |
| Are the warning signs legible?  | YES        |                       |
| Is the information on the warning signs correct?  | YES        |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)  | NO         |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: Plaque # on sign 290 8458 NO RESPONSE TODAY.

\*NA = not applicable

I certify that the conditions of Site LF044 on the inspection date were as reported above.

Signature: [Signature]Date: 1/22/2020

[Signature]

1/22/20

## ERP SITE LF008

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: ACCEC & AGEISSCompany or Organization: " "Date of Inspection: 1/22/2020

Access to Site LF008 requires coordination through the Base Munitions office, Building 759. Visitors will need to obtain badges for access, which are returned after the site visit. Access requires prior notification; one (1) or two (2) days prior to arrival for inspection may suffice. It is not critical to physically enter the fenced area to carry out the LUC inspection. Representative monitoring wells can be viewed through the fence. There are also monitoring wells north of the fenced area that can be physically inspected.

| Inspection Item   | Yes/No/NA* | Summary of Inspection |
|---|------------|-----------------------|
| Is there construction occurring at the site?  | NO         |                       |
| Is there evidence of excavation or soil disturbance?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)                                     | NO         |                       |
| Are the onsite monitoring wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.) | YES        |                       |
| Are the bollards still in place and protecting the monitoring wells<br>(if applicable, since flush-mounted wells have no bollards)?   | YES        |                       |
| Any defects in or damage to the fence located around the controlled area?<br>(Look for holes in the fence, missing or broken parts, easy entry at the gate.)                                | NO         |                       |
| Is the warning sign on Ellis Drive legible?   | YES        |                       |
| Is the information on the warning sign correct?   | YES        |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)  | NO         |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

I certify that the conditions of Site LF008 on the inspection date were as reported above.

Signature: [Signature]Date: 1/22/2020

## ERP SITE FT005

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: ARCEL & AGEISSCompany or Organization: " "Date of Inspection: 1/22/2020

The best access to this site is to park at the South Base Boundary Groundwater Treatment Plant and observe south outside the fence to the private property (see Figure 3-2). The inspector may also drive along the road out to the radar tower (when dry) to inspect the on-base portion. If it is necessary to access the site outside the Base, contact the landowner to coordinate a time for property access.

| Inspection Item   | Yes/No/NA* | Summary of Inspection   |
|---|------------|---|
| Is there construction occurring at the site?  | <u>NO</u>  |   |
| Is there construction occurring offsite in the easement area?   | <u>NO</u>  |   |
| Is there evidence of excavation or soil disturbance at the site?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)                         | <u>YES</u> | <u>ACCESS ROAD TO RADAR TOWER CLOSED DUE TO EXCESSIVE RUTTING FROM TRAFFIC. TREES WERE CUT DOWN</u> |
| Is there evidence of excavation or soil disturbance in the easement area?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)                | <u>NO</u>  |   |
| Are the onsite monitoring wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.) | <u>YES</u> |   |
| Are the bollards still in place and protecting the monitoring wells<br>(if applicable, since flush-mounted wells have no bollards)?   | <u>YES</u> |   |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)  | <u>NO</u>  |   |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: WORKING WITH BASE HORIZONTAL STOP FOR REPAIR OF ROAD IN DRY SEASON & INSPECTION OF MONITORING WELLS  
TREES WERE CUT DOWN & MORE TREES WILL BE CUT DOWN FOR 2020.

\*NA = not applicable

I certify that the conditions of Site FT005 on the inspection date were as reported above.

Signature: [Signature]Date: 1/22/20201/22/20



## ERP SITE LF007

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: ARREC & ADERSCompany or Organization: " "Date of Inspection: 1/22/2020

## Inspector should walk the fence line around the CAMU

The three (3) Site LF007 subareas are generally accessed by parking south of the CAMU fence and walking to the other subareas or visually inspecting them from atop the CAMU (see Figure 3-4). Access into the CAMU is through two (2) gates with the 3210 keyed Master brand lock. Special precautions should be taken when accessing the site during the wet season – make sure the area can be accessed by vehicle without damaging the access route, which is a clay-rich pathway. If access to the Subarea LF007C off-base area is needed, the inspector should contact the landowner to coordinate a time for property access.

| Inspection Item  | Yes/No/NA* | Summary of Inspection |
|--|------------|-----------------------|
| Is there construction occurring at the site?   | NO         |                       |
| Is there construction occurring offsite (Subarea LF007C) in the easement area located offsite?   | NO         |                       |
| Is there evidence of excavation or soil disturbance at the site?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)  | NO         |                       |
| Is there evidence of excavation or soil disturbance in the easement area located offsite (Subarea LF007C)?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, gullying or rutting, etc.) | NO         |                       |
| Are the onsite monitoring wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.)  | YES        |                       |
| Are the bollards still in place and protecting the monitoring wells (if applicable, since flush-mounted wells have no bollards)?   | YES        |                       |
| Is the solar-powered extraction system at Subarea LF007C intact and in good condition?<br>(Are the solar panels intact, equipment is properly standing, etc.?)   | YES        |                       |
| Any defects in or damage to the gate or fence located around the CAMU?<br>(Look for holes in the fence, missing or broken parts, easy entry at the gate.)  | NO         |                       |
| Are there 12 warning signs posted on the fence around the CAMU?  | YES        |                       |
| Are the warning signs legible?   | YES        |                       |
| Is the information on the warning signs correct?   | YES        |                       |
| Any defects in or damage to the entrance gate to the CAMU?   | NO         |                       |
| Is there a large warning sign posted at the entrance gate to the CAMU?   | YES        |                       |
| Is the warning sign at the entrance gate legible?  | YES        |                       |
| Is the information on the warning sign at the entrance gate correct?   | YES        |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)   | NO         |                       |

ERP SITE LF007

Land Use Controls (LUCs) Inspection Checklist

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) NO.

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

I certify that the conditions of Site LF007 on the inspection date were as reported above.

Signature: 

Date: 1/22/2020



1/22/20

## ERP SITE SD031

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCEC & CH2M/Jacobs

Company or Organization: \_\_\_\_\_

Date of Inspection: Jan 21 2020

The best access to Site SD031 is to park on the southwest apron of the CEMIRT equipment lot (Building 1205) and either walk out into or visually inspect the large field to the south in addition to the many wells within the paved area itself.

| Inspection Item  | Yes/No/NA* | Summary of Inspection |
|--|------------|-----------------------|
| Is there construction occurring at the site?   | No         |                       |
| Is there evidence of excavation or soil disturbance?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)  | No         |                       |
| Are the onsite monitoring, extraction, and injection wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.) | yes        |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)   | No         |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

I certify that the conditions of Site SD031 on the inspection date were as reported above.

Signature: [Signature]Date: 1-21-2020

## ERP SITE SS030

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCEC & CH2M / JacobsCompany or Organization: " " "Date of Inspection: Jan. 21 2020

The best access to Site SS030 is to drive to the south side of the Base along Perimeter Road, park at the South Base Boundary Groundwater Treatment Plant, and observe south outside the fence to the private property (see Figure 3-11). If it is necessary to access the site outside the Base, contact the landowner to coordinate a time for property access.

| Inspection Item  | Yes/No/NA* | Summary of Inspection |
|--|------------|-----------------------|
| Is there construction occurring at the site?   | No         |                       |
| Is there construction occurring offsite in the easement area?  | No         |                       |
| Is there evidence of excavation or soil disturbance at the site?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)  | No         |                       |
| Is there evidence of excavation or soil disturbance in the easement area?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)                               | No         |                       |
| Are the onsite monitoring and extraction wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.) | yes        |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)   | No         |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

I certify that the conditions of Site SS030 on the inspection date were as reported above.

Signature: [Signature]Date: 1-21-2020

## ERP SITE SS029

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCEC + CH2M / JacobsCompany or Organization: " " "Date of Inspection: Jan. 21 2020

Access to Site SS029 is gained by driving to the south side of the Base along Perimeter Road. The site is viewable from the road (see Figure 3-10). Access into the EOD Range requires prior coordination with 60 CES/EOD.

| Inspection Item   | Yes/No/NA* | Summary of Inspection |
|---|------------|-----------------------|
| Is there construction occurring at the site?  | No         |                       |
| Is there evidence of excavation or soil disturbance?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)                                     | No         |                       |
| Are the onsite monitoring wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.) | yes        |                       |
| Are the bollards still in place and protecting the monitoring wells, if applicable?   | yes        |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)  | No         |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

I certify that the conditions of Site SS029 on the inspection date were as reported above.

Signature: Langdon - Jy2Date: 1-21-2020



**POCO SITE ST028**

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCEC & CH2M/Jacobs

Company or Organization: \_\_\_\_\_

Date of Inspection: Jan 21 2020

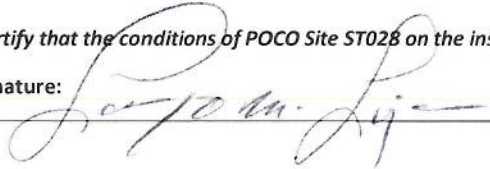
There are no wells or surface infrastructure to inspect at this site, because all wells have been decommissioned. The inspector needs to verify that there has been no activity within the site footprint. The best vantage point to observe this area is along Inner Perimeter Road at Bidwell Street and looking due east.

| Inspection Item   | Yes/No/NA* | Summary of Inspection |
|---|------------|-----------------------|
| Is there construction occurring at the site?  | No         |                       |
| Is there evidence of excavation or soil disturbance?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.) | No         |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)                            | No         |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

*I certify that the conditions of POCO Site ST028 on the inspection date were as reported above.*Signature: Date: 1-21-2020

## ERP SITE ST027B

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCEC + CH2M/Jacobs

Company or Organization: \_\_\_\_\_

Date of Inspection: Jan. 21 2020

Access to the well locations in the Airfield Mass Parking area requires one (1) of the following: (1) an escort from Base Operations, (2) an airfield driver's license with a restricted area badge, or (3) accompany a sampling crew on their routine sample event. Several wells are located immediately adjacent to the Restricted Area boundary (red line) next to Taxiway November. The inspector should be familiar with rules about the red line. This site cannot be visually inspected from Inner Perimeter Road.

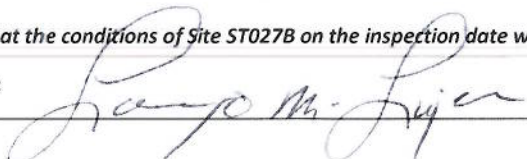
| Inspection Item   | Yes/No/NA*          | Summary of Inspection |
|---|---------------------|-----------------------|
| Is there construction occurring at the site?  | No                  |                       |
| Is there evidence of excavation or soil disturbance?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)   | No                  |                       |
| Are the onsite monitoring and injection wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.) | yes                 |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)  | No<br><del>NA</del> |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

I certify that the conditions of Site ST027B on the inspection date were as reported above.

Signature: Date: 1-21-2020

## ERP SITE SS016

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCEC + CH2M/JacobsCompany or Organization: " "Date of Inspection: Jan 21 2020

Access to Building 18 is along Hangar Avenue. Keys to the building can be obtained from the Base Dormitory office located on Collins Drive, Building 1346. Access to the well locations in the Airfield Parking area requires one (1) of the following: (1) an escort from Base Operations, (2) an airfield driver's license with a restricted area badge, or (3) accompany a sampling crew on their routine sample event. The inspection of the Site SS016 bioreactor and the area that contains monitoring wells may be performed visually along Inner Perimeter Road within the site.

| Inspection Item   | Yes/No/NA* | Summary of Inspection            |
|---|------------|----------------------------------|
| Is there construction occurring at the site?  | No         |                                  |
| Is there evidence of excavation or soil disturbance at the site?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)                         | yes        | Approved Remediation in Progress |
| Are the onsite monitoring wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.) | yes        |                                  |
| Is there a warning sign posted on a tree at the south end of the site (located west of Building 18 (Figure 3-7 Inset)?  | No         | Tree Removed                     |
| Is the warning sign on the tree legible?  | No         | Tree Removed                     |
| Building 18 is a "storage only" building. Are all doors accessing the office area locked?   | yes        |                                  |
| Are there warning signs located on two (2) doors of Building 18?  | yes        |                                  |
| Are the warning signs on the doors of Building 18 legible and is the information correct?   | yes        |                                  |
| Was there any office activity observed in Building 18?  | No         |                                  |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)  | No         |                                  |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: Soil Removal in progress

\*NA = not applicable

I certify that the conditions of Site SS016 on the inspection date were as reported above.

Signature: [Signature]Date: 1-21-2020

## ERP SITE SS015

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCEC + CH2M / JacobsCompany or Organization: " " "Date of Inspection: Jan 21 2020

Access to Site SS015 is along Hangar Avenue or Inner Perimeter Road to Building 552/554. To drive along Inner Perimeter Road, a Flightline Driver's License will be required. Access inside the fenced area requires coordination through Base Fuels Management at Building 552. Inspectors do not need to enter the fenced area to conduct the annual LUC inspection, unless there are trucks or equipment that obstruct a clear view of the soil LUC area or the flush-mounted monitoring wells. Soil boring patches that identify the location of the contaminated soil can easily be seen from outside the fence.

| Inspection Item   | Yes/No/NA* | Summary of Inspection |
|---|------------|-----------------------|
| Is there construction occurring at the site?  | No         |                       |
| Is there any evidence of soil disturbance beneath the concrete at the site?   | No         |                       |
| Is there evidence of excavation or soil disturbance at other locations around the site?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)  | No         |                       |
| Are the onsite monitoring wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.) | yes        |                       |
| Any defects in or damage to the fence located around the concrete parking area?<br>(Look for holes in the fence, missing or broken parts, easy entry at the gate.)                          | No         |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)  | No         |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

I certify that the conditions of Site SS015 on the inspection date were as reported above.

Signature: George M. LujanDate: 1-21-2020



## ERP SITE LF006

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCEC + CH2M/JacobsCompany or Organization: " "Date of Inspection: Jan 21 2020

Site LF006 sits between Vandenberg Drive and Collins Drive. The site is best accessed by driving through Vandenberg Court (former RV camping area), which is currently fenced off as a temporary laydown yard. Site LF006 is also located in the large field south of Vandenberg Court and may be inspected from either Collins Drive or Vandenberg Drive (see Figure 3-3).

| Inspection Item   | Yes/No/NA* | Summary of Inspection |
|---|------------|-----------------------|
| Is there construction occurring at the site?  | NO         |                       |
| Is there evidence of excavation or soil disturbance?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)                                     | NO         |                       |
| Are the onsite monitoring wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.) | yes        |                       |
| Are the bollards still in place and protecting the monitoring wells<br>(if applicable, since flush-mounted wells have no bollards)?   | yes        |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)  | No         |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

I certify that the conditions of Site LF006 on the inspection date were as reported above.

Signature: [Signature]Date: 1-21-2020

## ERP SITE FT004

## Land Use Controls (LUCs) Inspection Checklist

Inspected by: AFCEC & CH2M / JacobsCompany or Organization: " " "Date of Inspection: Jan 21 2020

The best access to this site is to park on the southeast apron of the Civil Engineer Maintenance Inspection and Repair Team (CEMIRT) equipment lot (Building 1205) and either walk out into or visually inspect the large field to the south (see Figure 3-1).

| Inspection Item   | Yes/No/NA* | Summary of Inspection |
|---|------------|-----------------------|
| Is there construction occurring at the site?  | No         |                       |
| Is there evidence of excavation or soil disturbance?<br>(Look for soil piles, equipment, boundary markers, distressed vegetation, vehicle tracks, etc.)                                     | No         |                       |
| Are the onsite monitoring wells in good condition?<br>(Look for damage or excessive wear to the wellhead box. Can you access the well? Are there any pieces/parts missing? Please explain.) | yes        |                       |
| Are the bollards still in place and protecting the monitoring wells<br>(if applicable, since flush-mounted wells have no bollards)?   | yes        |                       |
| Is there evidence of activities or operations that do not conform with approved land use?<br>(No residential use permitted.)  | No         |                       |

Is there any condition observed during this site inspection not covered above that needs attention? (Yes/No) \_\_\_\_\_

If yes, please explain: \_\_\_\_\_

\*NA = not applicable

I certify that the conditions of Site FT004 on the inspection date were as reported above.

Signature: [Signature]Date: 1/21/2020

20<sup>19</sup>~~20~~ Annual LUC Inspections  
Task: Annual Inspections of LUC Sites  
Weather: Cloudy, Rain Showers

Jun 21 2020

Personnel: E Anderson

08:00 Meet at Bldg. 570  
08:25 Arrive at LFO06. No Disturbances, No Change  
08:35 Arrive at FT005. No Disturbances, No Change  
08:45 Arrive at SD031. No Disturbances, No Change  
08:53 Arrive at ST028. No Disturbances, No Change  
09:00 Arrive at SD032. No Disturbances, No Change  
09:10 Arrive at SS016. SS016 excavation removal began Dec 2019.  
Tree with LUC sign removed. LUC sign noted on Bldg. 18.  
09:18 Arrive at SS015. No Disturbances, No Change  
09:25 Arrive at SS033. Site Closed.  
09:30 Arrive at SD034. No Disturbances, No Change.  
09:35 Arrive at SD037. No Disturbances, No Change.  
09:40 Arrive at SD036. All well lids in place and secure. No Disturbances  
No Change.  
09:55 Arrive at DP039. No Disturbances, No Change.  
10:27 Arrive at ST027. No Disturbances, No Change  
10:35 Arrive at ST027. No Disturbances, No Change  
10:56 Arrive at SS029. No Disturbances, No Change  
11:10 Arrive at SS030. No Disturbances, No Change  
11:30 Complete Inspections for the day. Will Complete inspections  
at a later date due to rain forecast for later today  
12:00 Return to office.

Sites ~~Complete~~ Not Complete Today

*[Signature]*  
1/21/2020

SS046  
LFO44  
SD043  
LF008  
LF007  
FT005