

**PRELIMINARY ASSESSMENT OF PER- AND  
POLYFLUOROALKYL SUBSTANCES AT  
U.S. DISCIPLINARY BARRACKS LOMPOC, CALIFORNIA**

*Prepared for:*



**U.S. ARMY**

**ODCS, G-9, ISE BRAC**

**United States  
Penitentiary  
Lompoc**



**Final  
October 2023**

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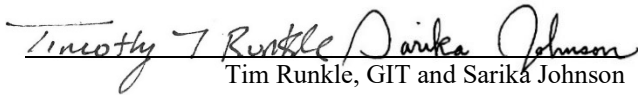
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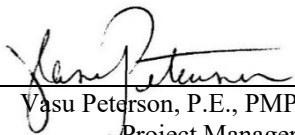
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# TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>ES-1</b>
<b>1. INTRODUCTION .....</b>	<b>1-1</b>
1.1 PFAS BACKGROUND INFORMATION .....	1-1
1.2 PURPOSE AND OBJECTIVES .....	1-2
1.3 PFAS REGULATORY OVERVIEW AND SCREENING CRITERIA .....	1-2
1.4 PA METHODOLOGY .....	1-3
1.5 REPORT ORGANIZATION .....	1-4
<b>2. SITE BACKGROUND .....</b>	<b>2-1</b>
2.1 SITE LOCATION .....	2-1
2.2 SITE OPERATIONAL HISTORY .....	2-1
2.3 DEMOGRAPHICS, PROPERTY TRANSFER, AND LAND USE .....	2-1
2.4 TOPOGRAPHY .....	2-2
2.5 GEOLOGY .....	2-2
2.6 HYDROGEOLOGY .....	2-2
2.7 SURFACE WATER HYDROLOGY .....	2-3
2.8 WATER USAGE .....	2-3
2.9 ECOLOGICAL PROFILE .....	2-3
2.10 CLIMATE .....	2-4
<b>3. PA ANALYSIS .....</b>	<b>3-1</b>
3.1 RECORDS REVIEW .....	3-1
3.2 AERIAL PHOTOGRAPHIC ANALYSIS .....	3-2
3.3 PA SITE VISIT .....	3-3
3.4 SUMMARY OF INTERVIEWS .....	3-3
<b>4. SUMMARY OF PA DATA .....</b>	<b>4-1</b>
4.1 PREVIOUS PFAS INVESTIGATIONS .....	4-1
4.2 EVALUATED SITES .....	4-1
4.2.1 AFFF Use, Storage, and Disposal .....	4-1
4.2.2 Metal Plating Operations .....	4-2
4.2.3 Wastewater Treatment Plants .....	4-2
4.2.4 Landfills and Disposal Areas .....	4-2
4.2.5 Other Potential Sources of PFAS .....	4-2
4.3 POTENTIAL OFF-POST AND POST TRANSFER PFAS SOURCES .....	4-4
<b>5. SUMMARY OF PA RESULTS .....</b>	<b>5-1</b>
5.1 AREAS NOT RETAINED AS AOPIs .....	5-1
5.2 AOPIs .....	5-3
5.3 DATA LIMITATIONS .....	5-4
<b>6. CONCLUSIONS .....</b>	<b>6-1</b>
<b>7. REFERENCES .....</b>	<b>7-1</b>

## **LIST OF APPENDICES**

- Appendix A. Final Lompoc Kickoff Meeting Minutes
- Appendix B. Sources/Documents Reviewed During PA
- Appendix C. Aerial Photographs
- Appendix D. Site Visit Photographs
- Appendix E. Interview Notes
- Appendix F. EDR Report

## **LIST OF TABLES**

Table 1-1. Screening Levels from the 2023 OSD Memorandum.....	1-3
Table 3-1. Summary of Relevant Records Reviewed .....	3-1
Table 3-2. Interviews Conducted for PA .....	3-3
Table 5-1. Summary of Areas Not Retained as AOPIs at USDB Lompoc .....	5-1

## **LIST OF FIGURES**

- Figure 1-1. Installation Location
- Figure 2-1. Site Features
- Figure 2-2. Parcel Transfer Map
- Figure 2-3. Potable Wells Within a 4-Mile Radius
- Figure 4-1. Evaluated Sites
- Figure 4-2. Potential PFAS Sources Within a 5-Mile Radius

## LIST OF ACRONYMS AND ABBREVIATIONS

AFFF	Aqueous Film-Forming Foam
amsl	Above Mean Sea Level
AOPI	Area of Potential Interest
Army	U.S. Army
bgs	Below Ground Surface
BOP	Bureau of Prisons
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DERP	Defense Environmental Restoration Program
DoD	U.S. Department of Defense
ECOS	Environmental Conservation Online System
EDR	Environmental Data Resources, Inc.
FBP	Federal Bureau of Prisons
FCC	Federal Correctional Complex
FCI	Federal Corrections Institute
FPI	Federal Prison Industries
GAC	Group Activities Center
HFPO-DA	Hexafluoropropylene Oxide Dimer Acid (aka GenX)
HQ	Hazard Quotient
IPaC	Information for Planning and Consultation
LHA	Lifetime Health Advisory
MGD	Million Gallons per Day
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NWI	National Wetlands Inventory
OSD	Office of the Secretary of Defense
OTIE	Oneida Total Integrated Enterprises
P.E.	Professional Engineer
P.G.	Professional Geologist
PA	Preliminary Assessment
PFAS	Per- and Polyfluoroalkyl Substances
PFBA	Perfluorobutanoic Acid
PFBS	Perfluorobutane Sulfonate
PFHpA	Perfluoroheptanoic Acid
PFHxA	Perfluorohexanoic Acid
PFHxS	Perfluorohexane Sulfonate
PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
PMP	Project Management Professional
PX	Post Exchange
QA	Quality Assurance
RCRA	Resource Conservation and Recovery Act
REM	Registered Environmental Manager
RfD	Reference Dose
RI	Remedial Investigation
RSL	Regional Screening Level

## LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

SDWA	Safe Drinking Water Act
SFB	Space Force Base
SI	Site Inspection
STP	Sewage Treatment Plant
T&E	Threatened and Endangered
U.S.C.	United States Code
UCMR3	Third Unregulated Contaminant Monitoring Rule
UCMR5	Fifth Unregulated Contaminant Monitoring Rule
URS	URS Consultants, Inc.
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
USDB	U.S. Disciplinary Barracks
USDOJ	U.S. Department of Justice
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USP	U.S. Penitentiary
UST	Underground Storage Tank
WTRTF	Western Test Range Transmitter Facility
WWTP	Wastewater Treatment Plant

## EXECUTIVE SUMMARY

The objective of a Preliminary Assessment (PA) is to identify areas of potential interest (AOPIs) based on whether use, storage, or disposal of potential per- and polyfluoroalkyl substances (PFAS)-containing materials, including aqueous film-forming foam (AFFF), occurred in accordance with the 2018 U.S. Army (Army) *Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances* (U.S. Army 2018). A PA for PFAS-containing materials with a focus on perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), perfluorobutanoic acid (PFBA), perfluorobutane sulfonate (PFBS), perfluorononanoic acid (PFNA), perfluorohexanoic acid (PFHxA) perfluorohexane sulfonate (PFHxS), and hexafluoropropylene oxide dimer acid (HFPO-DA) and its ammonium salt (“GenX” chemicals) was completed for the Base Realignment and Closure (BRAC) property at the former U.S. Disciplinary Barracks (USDB) Lompoc, to assess potential PFAS release areas and exposure pathways. The entire USDB Lompoc facility was selected for closure by the 1995 BRAC Commission and the entire property has been transferred; approximately 442 acres have been transferred to the U.S. Air Force (USAF) for construction of the Western Test Range Transmitter Facility (WTRTF) and approximately 2,433 acres have been transferred to the Department of Justice for use by the Bureau of Prisons (BOP). The property was leased to the BOP prior to transfer; there has been no Army presence on the property since 1959. The completion of this PA included the execution of the following tasks:

- Conducted a kickoff meeting with the BRAC Office and the U.S. Army Corps of Engineers (USACE) on May 3, 2023, to present all parties’ preliminary knowledge of USDB Lompoc and provide information to guide the PA and site visit.
- Reviewed available records (e.g., aerial photography, historical maps, technical reports, previous studies, investigations) from online sources (i.e., Internet-based searches); environmental investigations and/or regulatory programs (e.g., the Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA]); and internal Army documents from the Administrative Record. In addition, an Environmental Data Resources, Inc. (EDR) Report for USDB Lompoc and any listed sites within and up to a 2-mile search distance was conducted.
- Conducted a 1-day site visit on May 31, 2023, to identify potential sources of PFAS.
- Interviewed individuals with historical and present-day knowledge of operations on the BRAC property.
- Evaluated potential PFAS source areas.

In conducting the PA of the BRAC property at USDB Lompoc, 18 areas were identified and reviewed as potential PFAS sources (e.g., fire station, vehicle maintenance facility, wash rack, landfills/disposal areas, hazardous storage areas). After the site research was conducted for this PA, the PA process does not indicate that PFAS-containing materials were used, stored, and/or disposed of at any of the potential PFAS source areas. The findings of this PA do not warrant further evaluation of USDB Lompoc in a PFAS Site Inspection (SI).



# 1. INTRODUCTION

The U.S. Army (Army) conducted this Preliminary Assessment (PA) to investigate the potential presence of per- and polyfluoroalkyl substances (PFAS) at the former U.S. Disciplinary Barracks (USDB) Lompoc in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 United States Code [U.S.C.] §9601 et seq.); the Defense Environmental Restoration Program (DERP, 10 U.S.C. §2701 et seq.); the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 40 Code of Federal Regulations [CFR] Part 300); and guidance documents developed by the U.S. Environmental Protection Agency (USEPA) and the Department of the Army. USDB Lompoc is not on the National Priorities List, and the Army is responsible for compliance with CERCLA in accordance with Executive Order 12580, as amended.

The purpose of this PFAS PA is to identify locations that are areas of potential interest (AOPIs) on USDB Lompoc based on the use, storage, and/or disposal of potential PFAS-containing materials, in accordance with the 2018 Army *Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances* (U.S. Army 2018). The PA was conducted in general accordance with 40 CFR §300.420(b) and the USEPA *Guidance for Performing Preliminary Assessments Under CERCLA* (USEPA 1991) and the Army *Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances* (U.S. Army 2018). This report presents findings from research conducted to assess past use of materials containing PFAS and identify areas where these materials were stored, handled, used, or disposed of at USDB Lompoc.

The entire USDB Lompoc facility was selected for closure by the 1995 BRAC Commission, and the entire property has been transferred; approximately 442 acres have been transferred to the U.S. Air Force (USAF) for construction of the Western Test Range Transmitter Facility (WTRTF), and approximately 2,433 acres have been transferred to the Department of Justice for use by the Bureau of Prisons (BOP). The property was leased to the BOP prior to transfer; there has been no Army presence on the property since 1959. The entire USDB Lompoc property was evaluated and will be herein referred to as USDB Lompoc. USDB Lompoc is in Lompoc, California, as shown in Figure 1-1.

## 1.1 PFAS BACKGROUND INFORMATION

PFAS are a group of synthetic compounds that have been manufactured and used extensively worldwide since the 1950s for a variety of purposes. PFAS are stable, man-made fluorinated organic chemicals that repel oil, grease, and water. Common industrial uses of PFAS include paints, varnishes, sealants, hydraulic fluid, surfactants, and firefighting foams. PFAS include both per- and polyfluorinated compounds. Perfluorinated compounds, such as perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), perfluorobutanoic acid (PFBA), perfluorobutanesulfonic acid (PFBS), perfluorononanoic acid (PFNA), perfluorohexanoic acid (PFHxA), perfluorohexane sulfonate (PFHxS), and hexafluoropropylene oxide dimer acid (HFPO-DA or Gen X), are a subset of PFAS with completely fluorinated carbon chains, while polyfluorinated compounds have at least one carbon chain atom that is not fully fluorinated. These eight PFAS together, and for the purposes of this PA, are referred to in this report as “Target PFAS.”

USDB Lompoc was evaluated for all potential use, storage, and/or disposal of PFAS-containing materials. A variety of PFAS-containing materials are used in relation to current and historical Army operations. However, the use, storage, and/or disposal of aqueous film-forming foam (AFFF) is the most common potential source of PFAS at U.S. Department of Defense (DoD) facilities. As such, this section is organized to summarize the AFFF-related sources first, and all remaining potential PFAS-containing materials in the subsequent paragraph. AFFF is used as a firefighting agent to suppress petroleum hydrocarbon fires and vapors. Firefighting foams like AFFF were developed in the 1960s (ITRC 2020a), but AFFF did not see widespread DoD use until the early 1970s. Older fire training facilities often were unlined and not constructed to prevent infiltration of firefighting foams and combustion products leaching into the



subsurface. Large quantities of AFFF may have been released into the environment as a result of fire training exercises, fire responses, fire suppression system activations, and tank and pipeline leaks/spills.

Other potential PFAS sources considered include installation storage warehouses, some pesticide use, automobile maintenance shops, photographic processing facilities, laundry/waterproofing facilities, car washes, stormwater or sanitary sewer components, and biosolid application areas.

Many PFAS are highly soluble in water and have low volatility due to their ionic nature. The specific gravity/relative density for PFOS and PFOA is 1.8 (ITRC 2020b). Long-chain perfluorinated compounds have low vapor pressure and are expected to persist in aquatic environments. These compounds do not readily degrade by most natural processes. They are thermally, chemically, and biologically stable, and are resistant to biodegradation, atmospheric photooxidation, direct photolysis, and hydrolysis. The structure of these compounds increases their resistance to degradation; the carbon-fluorine bond is one of the strongest in nature, and the fluorine atoms shield the carbon backbone.

When PFAS are released to the environment, they can readily migrate into soil, groundwater, surface water, and sediment. Once in the environment, the compounds are persistent and may continue to migrate through airborne transport, surface water, groundwater, and/or biologic uptake. The amount of PFAS entering the environment depends on the type and amount of the PFAS material that may have been released, where and when it was used, the type of soil, and other factors. If private or public wells are located nearby, they potentially could be affected by PFAS. Similarly, surface water features may be impacted and may convey PFAS to downgradient receptors.

Of the thousands of PFAS, some are considered precursor compounds (typically polyfluoroalkyl substances). Precursor compounds can abiotically or biotically transform into PFOS and PFOA. PFOS and PFOA are referred to as terminal PFAS, meaning no further degradation products will form from them (ITRC 2020c).

## **1.2 PURPOSE AND OBJECTIVES**

The purpose of a PA under the NCP is to 1) eliminate from further consideration those sites that pose no threat to public health or the environment; 2) determine if there is any potential need for removal action; 3) set priorities for Site Inspections (SIs); and 4) gather existing data to facilitate evaluation for the release pursuant to the Hazard Ranking System, if warranted (40 CFR §300.420(b)(1)).

The primary objective of the PA is to identify locations at USDB Lompoc where PFAS-containing materials were used, stored, or disposed of, resulting in a potential release of PFAS to the environment, and conduct an initial assessment of possible migration pathways of potential contamination.

## **1.3 PFAS REGULATORY OVERVIEW AND SCREENING CRITERIA**

In May 2016, USEPA issued lifetime health advisories (LHAs) for PFOA and PFOS under the Safe Drinking Water Act (SDWA). To provide Americans, including the most sensitive populations, with a margin of protection from a lifetime of exposure to PFOS and PFOA in drinking water, USEPA established an HA level for PFOS and PFOA (individually or combined) of 70 ng/L (USEPA 2016).

In October 2019, the Office of the Secretary of Defense (OSD) issued guidance on investigating PFOS, PFOA, and PFBS at DoD restoration sites. The OSD guidance provided risk screening levels for PFOS, PFOA, and PFBS in groundwater, tap water, and soil, based on the USEPA regional screening level (RSL) calculator for residential and industrial reuse and using the oral reference dose of 2E-05 mg/kg-day. These screening levels are used during an SI to determine if further investigation in a Remedial Investigation (RI) is warranted.

In April 2021, USEPA issued an updated toxicity assessment for PFBS. USEPA developed chronic (0.0003 mg/kg-day) and subchronic (0.001 mg/kg-day) oral reference doses (RfDs) for PFBS as part of USEPA's toxicity assessment. The RSL for PFBS was previously calculated using the RfD of 0.02 mg/kg day. New toxicity values resulted in revisions to the RSLs for PFBS in May 2021 (USEPA 2021).

In September 2021, OSD issued a revision to *Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program* (DoD 2021). The revised memorandum accounts for the updated PFBS screening levels attributable to USEPA’s reassessment of PFBS toxicity in 2021. Based on USEPA’s research, the RSLs for PFOS and PFOA are calculated using an RfD of 2E-05 mg/kg-day. The RSL for PFBS is calculated using an RfD of 3E-04 mg/kg-day. When multiple PFAS are encountered at a site, a 0.1 factor is applied to the screening level when it is based on noncarcinogenic endpoints.

In May 2022, based on continued evaluation of Target PFAS by the Agency for Toxic Substances and Disease Registry and the USEPA Office of Water, USEPA provided new screening levels for PFOA, PFOS, PFNA, PFHxS, and HFPO-DA.

In July 2022, OSD issued a policy memorandum adopting these new screening levels to be used during the SI phase to determine whether further investigation in an RI is warranted. This revised guidance was in effect as of July 2022 and was applicable to investigating PFOS, PFOA, PFBS, PFNA, PFHxS, and HFPO-DA at DoD restoration sites, including Base Realignment and Closure (BRAC) sites (DoD 2022). In August 2023, OSD issued a memorandum to account for the May 2023 USEPA regional screening levels (RSLs) for PFBA and PFHxA in addition to the RSLs for the other six PFAS (DoD 2023). The screening levels for Target PFAS are listed in Table 1-1. Currently, no legally enforceable Federal standards exist for PFAS in groundwater, surface water, soil, or sediment.

**Table 1-1. Screening Levels from the 2023 OSD Memorandum**

<b>Chemical</b>	<b>Residential Tap Water HQ = 0.1 (ng/L or ppt)</b>	<b>Residential Soil HQ = 0.1 (µg/kg or ppb)</b>
HFPO-DA (GenX)	6	23
PFBA	1,800	7,800
PFBS	600	1,900
PFHxA	990	3,200
PFHxS	39	130
PFNA	5.9	19
PFOA	6	19
PFOS	4	13

Note: The Residential Tap Water Screening Levels are used to evaluate groundwater and surface water data. The Residential Soil Screening Levels are used to evaluate soil and sediment data.

The Army’s strategy is to continue to assess and investigate potential releases and implement necessary response actions in accordance with CERCLA to ensure that no human health-based exposures are above the CERCLA risk-based values in drinking water. Therefore, sites where human exposure to contaminated drinking water exists will be addressed first and as quickly as possible to eliminate the exposure. The sites then will be subsequently prioritized and sequenced to conduct the investigations and response actions necessary to characterize and, if necessary, remediate the source of PFAS contamination (U.S. Army 2018).

#### **1.4 PA METHODOLOGY**

The PA for USDB Lompoc included a site visit, aerial photographic analysis, records review, and interviews that were conducted in accordance with the methods detailed in the Programmatic PA Work Plan (Leidos 2021). The Programmatic PA Work Plan outlines the approach and methodology for conducting the PFAS PA. As detailed in the Work Plan, the PA activities focused on ascertaining and documenting the following information regarding PFAS history and use, storage, or disposal at USDB Lompoc:

- On-post fire training activities
- Use of PFAS-based AFFF in fire suppression systems or other systems
- AFFF stored, used, and/or disposed of at buildings and crash sites (fire suppression/response)

- Activities or use of materials that are likely to contain PFAS, such as metal plating operations
- Wastewater treatment plants (WWTPs) and landfills that may have received PFAS-containing materials
- Studies conducted to assess environmental impacts at the facility
- Potential PFAS use at parcels post transfer
- Potential off-post sources that may impact USDB Lompoc.

The data gathered during PA activities are summarized in Section 3.

## 1.5 REPORT ORGANIZATION

The contents of this PA Report are summarized below:

- **Section 2. Site Background**—This section presents site-specific information related to operational history and discusses the environmental setting. Demographics, land use, topography, geology, hydrogeology, hydrology, groundwater, potable wells, ecological receptors, and climate are described.
- **Section 3. PA Analysis**—This section provides observations and results from the PA site visit, aerial photographic analysis, records review, and interviews.
- **Section 4. Summary of PA Data**—This section provides an overview of the data collected during the PA for the different potential PFAS sources.
- **Sections 5. Summary of PA Results**—This section synthesizes the data gathered from the PA activities and determines whether each area evaluated during the PA is an AOPI or was not retained as an AOPI.
- **Section 6. Conclusions**—This section presents conclusions of the PA.
- **Section 7. References**—This section lists the references that were used in the preparation of this report.
- **Appendices**—Appendices A through F include data from field activities or related assessments:
  - Appendix A. Final Lompoc Kickoff Meeting Minutes
  - Appendix B. Sources/Documents Reviewed During PA
  - Appendix C. Aerial Photographs
  - Appendix D. Site Visit Photographs
  - Appendix E. Interview Notes
  - Appendix F. Environmental Data Resources, Inc. (EDR) Report.

## **2. SITE BACKGROUND**

### **2.1 SITE LOCATION**

USDB Lompoc is a former Army military detention center that consisted of approximately 2,875 acres and is located at 3901 Klein Boulevard. USDB Lompoc is in Lompoc Valley, approximately 1.5 miles northwest of Lompoc in Santa Barbara County, California. Rolling hills surround the valley on the north, south, and east. The valley is open to the west toward the Pacific Ocean and its coastline. The Santa Ynez River, along the southern boundary of the installation property, runs from east to west through the valley. Figure 2-1 depicts the USDB Lompoc site features (U.S. Army 2019, U.S. Army 2020, Woodward-Clyde 1997).

### **2.2 SITE OPERATIONAL HISTORY**

Prior to being used for military purposes, the USDB Lompoc property and surrounding area had been used for cattle grazing since the early 1900s. In 1941, the War Department purchased approximately 90,000 acres of property for the establishment of Camp Cooke, a tank training base. Camp Cooke was redesignated as Vandenberg Air Force Base on October 4, 1958, and renamed Vandenberg Space Force Base (SFB) in 2021 (USACE 2012, USSF 2023, Woodward-Clyde 1997).

From 1946 to 1959, the Army operated a military detention center at USDB Lompoc. In July 1959, USDB and the surrounding land were permitted to the BOP. In November 1968, the permit was amended, and a portion of the property was permitted to the USAF for construction of the WTRTF (Woodward-Clyde 1997). The property remained under Army ownership until USDB Lompoc was selected for closure by the 1995 BRAC Commission, and the property was transferred in 2002; however, there was no Army presence on the property after 1959.

### **2.3 DEMOGRAPHICS, PROPERTY TRANSFER, AND LAND USE**

USDB Lompoc is located within Santa Barbara County. The population of Santa Barbara County in 2020 was 446,475 persons with a population density of 164 persons per square mile according to U.S. Census survey data (U.S. Census Bureau 2023). Most of the area surrounding USDB Lompoc is agricultural, undeveloped, or light industrial. (U.S. Army 2019). Vandenberg SFB is on adjacent property to the west. Vandenberg SFB is headquarters to the 30<sup>th</sup> Space Wing, with primary missions to launch and track polar-orbiting satellites, test and evaluate the intercontinental ballistic missile systems, and operate the WTRTF.

USDB Lompoc was selected for closure by the 1995 BRAC Commission, and the property was transferred as two separate parcels. USDB Lompoc transferred property, and the property recipients are shown in Figure 2-2. Property transfers were initiated in 2002. Approximately 442 acres were transferred to USAF for use by Vandenberg SFB and construction of the WTRTF. The remaining property, encompassing approximately 2,433 acres, was transferred in August 2003 to the Department of Justice for use by the BOP; although the transfer of property to the BOP occurred in 2003, the BOP had been leasing the property since 1959.

The BOP property is currently known as the Federal Correctional Complex (FCC) and includes the 40-acre U.S. Penitentiary (USP) Lompoc, a medium security prison; the 42-acre Lompoc Federal Corrections Institute (FCI), an adjacent minimum security satellite camp and associated Residential Drug Abuse Treatment Program; the sewage treatment plant (STP) area; and a Federal Prison Industries (FPI) business for dairy and farm operations. The USP includes three UNICOR FPI operations, including a sign factory, cable factory, and machine shop. The FCI includes one UNICOR FPI operation, a furniture factory (U.S. Army 2019, U.S. Army 2020, Woodward-Clyde 1997).

Land use restrictions are in place and prohibit the use of groundwater from the aquifer underneath USDB Lompoc and restrict future use of several sites, including the Wood Dump Site, Farm Fuel Site, and Former Army Landfill (Arcadis 2009, U.S. Army 2019).

## **2.4 TOPOGRAPHY**

Ground surface elevations across USDB Lompoc range from 60 feet above mean sea level (amsl) on the Lompoc Plain to 130 feet amsl in the Upland Area. The topography generally slopes in a southerly direction (U.S. Army 2019).

## **2.5 GEOLOGY**

USDB Lompoc is located on a river terrace approximately 40 to 60 feet above the floodplain and between the northern margin of the Transverse Ranges geomorphic province and the southern margin of the Coast Ranges geomorphic province. The Santa Ynez Mountains south of the facility are within the Transverse Ranges geomorphic province.

Lithologic units in the Lompoc area are divided into two general categories: 1) consolidated rocks, which underlie the Santa Ynez River groundwater basin and crop out in the surrounding hills; and 2) unconsolidated deposits, which comprise the aquifers in the Santa Ynez River groundwater basin. The consolidated rocks include the Foxen, Sisquoc, and Monterey Formations (Tertiary age). Except for the fractured zones, the consolidated rocks are relatively impermeable and are not an important source of groundwater.

The unconsolidated deposits have been divided by previous investigators into eight subcategories. In upward succession, the unconsolidated lithologic units include the Cebada and Graciosa Members of the Careaga Sand of Pliocene age; the Paso Robles Formation of Pliocene to Pleistocene age; the Orcutt Sand of Pleistocene age; the terrace deposits of Pleistocene age; the lower and upper members of the alluvium of Holocene age; and the river-channel deposits of Holocene age. The thickness of these unconsolidated deposits is as great as 900 feet beneath the Lompoc Plain and greater than 1,500 feet in the trough created by a series of synclinal folds beneath the Lompoc Upland (U.S. Army 2019).

## **2.6 HYDROGEOLOGY**

Depth to the perched groundwater varies widely and is dictated largely by surface topography and depth to bedrock. In areas of higher surface elevation, depths to groundwater approach 250 feet. At lower elevations, groundwater occurs very near or at the ground surface. The upper portions of the bedrock are considered unsaturated, with the regional water table much deeper within the bedrock formations (CH2M Hill 2015).

The shallow perched groundwater system is naturally recharged via infiltration of precipitation and surface water. Deeper, regional groundwater within bedrock units is likely recharged in surrounding areas of higher elevation where bedrock units are outcropping. These different recharge mechanisms contribute to the vertical separation of the shallow perched groundwater from the deeper regional groundwater; therefore, the shallow groundwater is not in communication with the deeper groundwater (CH2M Hill 2015).

In some places, the shallow perched groundwater is in direct communication with ponds or creeks; in these places, where the perched groundwater is contaminated, so are the surface waters. Shallow groundwater also surfaces as natural springs in the faces of ravines or coastal cliffs. Hydraulic gradients of the shallow, perched groundwater vary widely, being influenced largely by the configuration of the bedrock surface. Estimated values range from less than 0.01 to 0.1 foot per foot. Interpreted hydraulic conductivity values derived from aquifer tests range from less than 1 to 150 feet per day (CH2M Hill 2015).

## 2.7 SURFACE WATER HYDROLOGY

USDB Lompoc is located within the north-central portion of the Lompoc subarea of the Santa Ynez River basin. The Lompoc subarea occupies a coastal valley that is bordered on the north by San Antonio Valley, the east by Santa Rita Valley, the south by the Santa Ynez Mountains, and the west by the Pacific Ocean. The Santa Ynez River, the major river in the area, bisects the nearly flat, alluvium-floored valley and forms the southern border of USDB Lompoc. The Santa Ynez River receives most of the drainage from USDB Lompoc. In addition, an intermittent stream flowing toward the southwest across USDB Lompoc intersects the Santa Ynez River near the western border of the site. North of the Santa Ynez River is the Burton Mesa. This mesa is a low-lying plateau with an elevation of approximately 400 feet. Burton Mesa is drained by steep canyons that lead north to San Antonio Creek, south to the Santa Ynez River, and west to the Pacific Ocean (U.S. Army 2019).

## 2.8 WATER USAGE

Drinking water is supplied to USDB Lompoc through a service agreement with Vandenberg SFB. The primary source of drinking water at Vandenberg SFB comes from surface water from Northern California through the State Water Project Pipeline. If supplemental drinking water is needed, additional water is extracted from four water supply wells located in the outlying areas in the eastern portions of Vandenberg SFB. The four water supply wells are screened between 162 and 390 feet below ground surface (bgs). As described in Section 2.6, different recharge mechanisms contribute to the vertical separation of the shallow perched groundwater from the deeper regional groundwater, and thus, the shallow groundwater is not in communication with the deeper groundwater. Therefore, the groundwater exposure pathway from drinking water is incomplete for Vandenberg SFB and USDB Lompoc. The shallow perched groundwater is not used for drinking water (CH2M Hill 2015). Based on a search of the California Natural Resources Agency, public water, domestic water, and irrigation wells were identified within a 4-mile radius of USDB Lompoc, as depicted on Figure 2-3.

## 2.9 ECOLOGICAL PROFILE

USDB Lompoc is located on approximately 2,875 acres. Most of the property has been either developed for correctional use or is used for agricultural purposes. The central portion of USDB Lompoc is intensively developed (U.S. Army 2019). Vandenberg SFB operates a transmitter facility on a portion of the property.

Level areas within the eastern section of the property are used as cropland, while those areas with sloping terrain are dominated by scrub vegetation, including chaparral and small willows. Along the floodplain areas of Santa Ynez River, located along the southern boundary of the property, the area is dominated by arroyo willows, which form a riverside thicket along with other fast-growing shrubs and vines. In the central sections of USDB Lompoc, areas not used for foraging or agriculture are dominated by several varieties of annual grasses and forbs, scattered oak trees and sagebrush, with small willows located along the edges (USDOJ 2003).

National Wetlands Inventory (NWI) mapping identified freshwater forested and emergent wetlands along the Santa Ynez River. Several freshwater emergent wetlands and small freshwater ponds were identified in the central/eastern portion of USDB Lompoc. A larger freshwater emergent wetland drains into former wastewater lagoons on the northwestern portion of the property. A small, intermittent freshwater stream runs along the eastern margin of the property into the San Ynez River (NWI 2023) (Figure 2-1). An intermittent stream near the western border of the facility intersects the Santa Ynez River (U.S. Army 2019). Several vernal pools that are inundated during the rainy season (winter) are present throughout USDB Lompoc, and a large marsh/seep is present along the north central boundary (USDOJ 2003).

Common wildlife species observed at USDB Lompoc include species such as the American crow (*Corvus brachyrhynchos*), bushtit (*Psalitriparus minimus*), Brewer's blackbird (*Euphagus cyanocephalus*), western meadowlark (*Sturnella neglecta*), western scrub jay (*Aphelocoma coerulescens*), California tiger

salamander (*Ambystoma californiense*), black-tailed jackrabbit (*Lepus californicus*), and American badger (*Taxidea taxus*) (USDOJ 2003).

The U.S. Fish and Wildlife Service (USFWS) Environmental Conservation Online System (ECOS) Information for Planning and Consultation (IPaC) tool identified 15 federally listed threatened and endangered (T&E) species potentially occurring on or near USDB Lompoc (USFWS 2023). The listed species consist of four endangered birds, three threatened birds, one threatened amphibian, one endangered fish, one threatened crustacean, and five endangered plant species. T&E species include species such as the California condor (*Gymnogyps californianus*), southwestern willow flycatcher (*Empidonax traillii extimus*), California red-legged frog (*Rana draytonii*), tidewater goby (*Eucyclogobius newberryi*), vernal pool fairy shrimp (*Branchinecta lynchi*), and Lompoc yerba santa (*Eriodictyon capitatum*) (USFWS, 2023). A candidate species, the monarch butterfly (*Danaus plexippus*), is also identified by IPaC as potentially occurring at USDB Lompoc (USFWS 2023). The potential for these T&E species to occur does not mean the species are present at USDB Lompoc. The Lompoc yerba santa (*E. capitatum*) and monarch butterflies (*D. plexippus*) are known to occur at USDB Lompoc (FPB 2003). An additional eight federally listed T&E species identified as potentially occurring are known to occur at adjacent Vandenberg SFB. These species include the California red-legged frog (*R. draytonii*), southwestern willow flycatcher (*E. traillii extimus*), western snowy plover (*Charadrius nivosus nivosus*), California least tern (*Sterna antillarum browni*), tidewater goby (*E. newberryi*), vernal pool fairy shrimp (*B. lynchi*), and Gambel's watercress (*Rorippa gambellii*) (CH2M Hill 2015).

Portions (the northwestern corner and along the northern boundary) of USDB Lompoc overlap with critical habitat for the Vandenberg monkeyflower (*Diplacus vandenbergensis*) (USFWS 2023). The monkeyflower grows in sandy areas at low elevations near the coast in the Burton Mesa region, which lies between the Purisima Hills and the Santa Ynez River and includes USDB Lompoc. The critical habitat is composed of remaining native maritime chaparral vegetation. Although the monkeyflower is not known to be present at USDB Lompoc, the flower is present at Burton Mesa Ecological Reserve, which borders USDB Lompoc to the northeast and Vandenberg SFB, which borders USDB Lompoc to the west and north (CBD 2015).

Twenty-two migratory birds of particular concern are identified by the IPaC tool as potentially occurring on USDB Lompoc. These birds include species such as the Allen's hummingbird (*Selasphorus sasin*), Belding's savanna sparrow (*Passerculus sandwichensis beldingi*), golden eagle (*Aquila chrysaetos*), long-eared owl (*Asio otus*), and Nuttall's woodpecker (*Picoides nuttallii*) (USFWS 2023).

## 2.10 CLIMATE

In Lompoc, the summers are short, comfortable, dry, and mostly clear. The winters are cold, wet, windy, and partly cloudy. Over the course of the year, the temperature typically varies from 40 to 72°F and is rarely below 32°F or above 82°F. Most of the Santa Barbara County's rivers, creeks, and streams remain dry during the summer. A wet day is one with at least 0.04 inches of precipitation, with the wetter season running from mid-November to early April. Average annual rainfall is approximately 15 inches. Humidity in this area is consistently low throughout the year. The windier months in Lompoc last from mid-March to late June with an average windspeed of 10.5 miles per hour (U.S. Army 2019, Weather Spark 2023).



### 3. PA ANALYSIS

The primary components of the PA are records reviews, analysis of aerial photographs, a site visit, and interviews. The following sections summarize the methods used and activities conducted during the USDB Lompoc PA. The reference to “on-post” refers to property that has been owned by the Army. Any references to “off-post” refers to areas that have never been owned by the Army.

#### 3.1 RECORDS REVIEW

Prior to the records review, site visit, and interviews, a kickoff meeting was held between BRAC Environmental Program, the U.S. Army Corps of Engineers (USACE), and Leidos on May 3, 2023. The purpose of the kickoff meeting was to present all parties’ preliminary knowledge of USDB Lompoc and provide information to guide the PFAS PA and site visit. The final kickoff meeting minutes are presented in Appendix A.

The PA team conducted preliminary research prior to the site visit to determine if any of the following activities were conducted, which may indicate whether there was use, storage, or disposal of PFAS-containing materials during operations at USDB Lompoc:

- On-post fire training
- Use of PFAS-based AFFF in fire suppression systems or other systems
- AFFF used, stored, or disposed of at buildings and emergency response sites
- Activities or materials used that are likely to include PFAS-containing materials
- Studies conducted to assess the environmental impacts of PFAS-containing materials
- Review of potential off-post sources.

The records review included a combination of Internet-based searches and reviews of aerial photography, historical maps, technical reports, previous studies, and investigations available online. In addition, an EDR search of state and Federal environmental databases for USDB Lompoc and any listed sites within a 1-mile search distance was conducted (EDR 2023).

As part of the records review, a search of the California Water Board Geotracker website (<https://geotracker.waterboards.ca.gov>) was conducted and digital copies of cleanup action reports, regulatory correspondence, environmental data, maps, and other documents were obtained. The records review also evaluated available environmental investigations conducted under CERCLA and Resource Conservation and Recovery Act (RCRA) regulatory programs. Additional records, including local newspaper articles, were discovered during a visit to the Lompoc Library. Table 3-1 lists the documents reviewed that are relevant to the evaluation of AOPIs in this PA. A complete list of documents reviewed is included in Appendix B.

**Table 3-1. Summary of Relevant Records Reviewed**

<b>Document Title</b>	<b>Author</b>	<b>Date</b>	<b>Relevance</b>
<i>USATHAMA Waste Site Report for USDB Lompoc</i>	USATHAMA	December 11, 1990	Information on waste disposal
<i>CERCLA Federal Facility Preliminary Assessment for Lompoc Federal Correctional Institute</i>	URS	September 30, 1993	Facility background
<i>Archives Search Report for Ordnance and Explosives Chemical Warfare Materials Findings, Branch USDB, Lompoc, California</i>	USACE	October 1996	Installation history, property transfers, aerial photograph analysis

**Table 3-1. Summary of Relevant Records Reviewed (Continued)**

<b>Document Title</b>	<b>Author</b>	<b>Date</b>	<b>Relevance</b>
<i>Environmental Baseline Survey, Branch USDB, California</i>	Woodward-Clyde	March 5, 1997	Installation history, buildings, site background, aerial photographs
<i>Environmental Impact Statement, Proposed Federal Correction Facility, Lompoc, California</i>	USDOJ; FBP; The Louis Berger Group, Inc	October 2003	Environmental site background
<i>Facility-Wide Summary of Actions, Former USDB, Lompoc, California</i>	Arcadis	November 6, 2009	Facility background
<i>Preliminary Assessment Report for Perfluorinated Compounds at Vandenberg Air Force Base</i>	CH2M Hill	November 2015	Preliminary Assessment for PFAS at Vandenburg SFB
<i>Site Inspection of Aqueous Film Forming Foam (AFFF) Release Area Environmental Programs Worldwide, Vandenberg Air Force Base, Santa Barbara County, California</i>	OTIE	March 2019	Site Investigation for PFAS at Vandenburg SFB
<i>Record of Decision, Former Site Activities Summary, Former USDB, Lompoc, California</i>	U.S. Army	July 2019	Environmental site background
<i>Legacy BRAC: U.S. Disciplinary Barracks, Lompoc, California</i>	U.S. Army	October 1, 2020	Property transfers

Information gathered during the records reviews helped identify data gaps and enabled elimination of several areas based on their historical use. Data gaps associated with facility operations and the use, storage, or disposal of PFAS-containing materials contributed to a conservative approach for identifying AOPIs. However, areas with little potential to result in a PFAS release (i.e., residential buildings and administrative areas) were eliminated from further evaluation early in the PA process.

Areas identified to have potentially used, stored or disposed of, or had recorded the potential for a release of PFAS-containing materials, including AFFF, were further evaluated.

### **3.2 AERIAL PHOTOGRAPHIC ANALYSIS**

The PA included review of 14 historical aerial photographs provided by EDR spanning from 1928 through 2020; these aerial photographs are included in Appendix C. Ten aerial photographs from 1981 to 2020 available from [historicaerials.com](http://historicaerials.com) also were reviewed. In addition, a previous aerial photograph analysis (including aerial photographs dated 1943, 1952, 1961, and 1994) was conducted and reviewed during this PA (USACE 1996). The aerial photographs were analyzed to identify potential activities or developments that may suggest the potential use, storage, or disposal of PFAS-containing materials, including AFFF (e.g., evidence of fire training activities, such as fire pits or burn scars). Analysis of the historical aerial photographs did not identify evidence of fire training activities at USDB Lompoc. The aerial photographic analysis is summarized as follows (EDR 2023, USACE 1996, Woodward-Clyde 1997):

- **1943** – The aerial photograph shows the condition of the property prior to becoming USDB Lompoc. The area was part of Camp Cooke, and there is evidence of use as a training and bivouac area. Vehicular tracks and trails are visible throughout the property. An area of surface scarring in the northeastern portion of the property appears as four bare ground circles connected by lines of bare ground (likely related to training activities).
- **1952** – USDB Lompoc buildings have been constructed. The Small Arms Range is visible with a small building at the site. The Former Army Landfill is in use and is depicted as a heavily graded area in the eastern portion of the property.

- **1961** – Continued development on the property is visible. A mound is present near the Former Army Landfill. Capehart Housing has been constructed in the area north of the Former Army Landfill. The circular ground scars in the northeastern portion of the property are no longer visible.
- **1967 and 1968** – Disposal activity is visible at the Wood Dump Site. No further activity is being conducted at the Former Army Landfill, and no change in the mound was observed on the 1961 aerial photograph.
- **1975 and 1976** – Increased development on the property is visible, especially in the northern portion, including the Fire Station and Fire Truck Garage. Two rectangular depressions at the Wood Dump Site and a depression that has both a graded surface and accumulations of solid waste are visible.
- **1978** – Vehicles are visible in the northern portion of the Wood Dump Site. The southern cell appears to be filled. Multi-toned accumulations of solid waste are present at the depression with a graded surface.
- **1981** – The ground surface of the depression appears light-tonal at the Wood Dump Site. Vehicles and increased activity are visible in the vicinity of the Wash Rack.
- **1994** – Increased activity in the vicinity of the Hazardous Waste Storage Area, and decreased activity in the vicinity of the Former Army Wash Rack are visible. Approximately six buildings have been removed from the FCI.
- **2005** – Newly constructed buildings and concrete sidewalks within the FCI are visible. A recreational field is evident within the USP. Subsequent aerial photographs do not show significant changes since 2005.

### 3.3 PA SITE VISIT

Prior to the site visit, the PA team corresponded with the Army BRAC Environmental Coordinator and BOP personnel to coordinate the site visit date, gain access to the facility, and identify potential interviewees. The USDB Lompoc site visit was conducted on May 31, 2023. The PA site visit included a site walk and visual inspection of all readily accessible areas at USDB Lompoc to identify potential sources of PFAS. The PA team visited the Lompoc Library to conduct a local records search and the Lompoc Fire Department to interview local fire department personnel on historical fires and fire response procedures. Appendix D contains photographs from the PA site visit.

### 3.4 SUMMARY OF INTERVIEWS

A PFAS PA questionnaire for gathering information related to PFAS usage at USDB Lompoc from key personnel was developed and provided to the Army BRAC Environmental Coordinator prior to the site visit, but no response was received. No former Army personnel with direct knowledge of historical operations at USDB Lompoc were identified during the PA (there was no Army presence on the property since 1959). However, in-person interviews were conducted with BOP and Lompoc Fire Department personnel. None of the individuals interviewed were aware of any use, storage, or disposal of PFAS-containing materials, including AFFF, at USDB Lompoc. Completed interview forms with notes from in-person interviews are included in Appendix E. Table 3-2 summarizes the interviews conducted and the pertinent information provided.

**Table 3-2. Interviews Conducted for PA**

Title	Date	Information Provided
BOP Employee	In-person interview on May 31, 2023	A BOP employee of approximately 19 years provided the following information: <ul style="list-style-type: none"> <li>• The Former Fire Station is now being used as the Transportation Building for administrative purposes.</li> <li>• The Fire Station has not been in use since the early 2000s.</li> </ul>

**Table 3-2. Interviews Conducted for PA (Continued)**

Title	Date	Information Provided
Former BOP Employee	Telephone interview on May 31, 2023	<p>A former BOP employee (since 1990s) provided the following information:</p> <ul style="list-style-type: none"> <li>• The Fire Station was constructed for the BOP.</li> <li>• The former BOP employee was not aware of AFFF use or storage at the Fire Station.</li> </ul>
Battalion Chief – Lompoc Fire Department	In-person interview on May 31, 2023	<p>The Battalion Chief has been employed at the Lompoc Fire Department for approximately 28 years. He provided the following information:</p> <ul style="list-style-type: none"> <li>• When he joined the Lompoc Fire Department in 1994, USDB Lompoc had their own fire brigade.</li> <li>• In the early 2000s, the Lompoc Fire Department started providing fire protection for USDB Lompoc.</li> <li>• The Lompoc Fire Department carries Class A and Class B foam on the fire engines. Class A foam is used to extinguish brush fires.</li> <li>• The Battalion Chief was not aware of any structural fires on BOP property. Based on BOP operations, fires that occur on the property are unlikely to require the use of AFFF.</li> </ul>

## 4. SUMMARY OF PA DATA

### 4.1 PREVIOUS PFAS INVESTIGATIONS

In 2012, USEPA published the Third Unregulated Contaminant Monitoring Rule (UCMR3), which required nationwide public water systems (i.e., waterworks) to sample for a list of 30 unregulated contaminants, including 6 chemicals of concern relevant to this PA (i.e., PFOS, PFOA, PFBS, PFNA, perfluoroheptanoic acid [PFHpA], and perfluorohexane sulfonate [PFHxS]). As part of the USEPA UCMR3 sampling, the city of Lompoc Treatment Plant and the Frick Springs Treatment Plant were sampled and analyzed for the six PFAS defined by the UCMR3 in 2013. PFAS were not detected in the city of Lompoc water samples above the minimum reporting limit (USEPA 2022). USEPA published the Fifth Unregulated Contaminant Monitoring Rule (UCMR5) in 2021, which expanded the list to 29 PFAS for additional sampling between 2023 and 2025. The UCMR5 sampling includes more sensitive analytical limits for PFAS detection. As part of the UCMR5 sampling, water will be sampled by the city of Lompoc between 2023 and 2025 (USEPA 2023). The city of Lompoc has no current (UCMR5) publicly available PFAS sampling data.

No site-specific PFAS investigations have been conducted at USDB Lompoc prior to this PA.

### 4.2 EVALUATED SITES

During the PA records reviews, interviews, aerial photographic analysis, and site reconnaissance, the PA team investigated available documentation and physical evidence for areas having a potential historical PFAS release. The sites evaluated include a fire station and fire truck garage; landfill and disposal areas; a WWTP; and a vehicle maintenance shop, which used car washes and engine lubricants, as shown in Figure 4-1 and described in the following sections.

#### 4.2.1 AFFF Use, Storage, and Disposal

The PA included searching for evidence of current or historical AFFF use, storage, or disposal at USDB Lompoc. Documentation specifying the use of AFFF at USDB Lompoc during Army ownership and operation was not identified during the records review, aerial photographic analysis, or interviews. The PA did not identify any known current AFFF use or storage. The areas evaluated for potential historical AFFF usage and/or storage at USDB Lompoc include a former Fire Station and Fire Truck Garage (shown in Figure 4-1).

A former Fire Station and an adjacent Fire Truck Garage were constructed for BOP operations; precise dates of operation are unknown. The Fire Station building, wood frame with metal siding, and the Fire Truck Garage, carport style structure with metal roof and metal poles, do not appear on aerial photography until 1971. Based on the records review, the on-post fire department had responsibility for fire protection of the entire BOP complex and apparatus consisted of three engines. The fire department was staffed by a combination of BOP staff and inmates (USDOJ 2003). According to the 1997 environmental baseline survey, only pesticides and a 5-gallon diesel can were stored at the Fire Station (Woodward-Clyde 1997).

During the PA site visit, the Fire Station and Fire Truck Garage structures were observed; the Fire Station had been converted to administrative offices and the Fire Truck Garage structure was still standing. Based on the records review and Lompoc Fire Department interview, no structure fires and only brush fires are known to have occurred on the property. The Lompoc Fire Department Battalion Chief indicated that Class A foam (which does not contain PFAS) is used to extinguish brush fires. Based on BOP operations (no fuel or aviation assets), fires that occur on the property are unlikely to require the use of AFFF.

No fire training activities are conducted at USDB Lompoc. The former BOP fire department was trained in the past through training sessions held with the city of Lompoc, Santa Barbara County, Vandenberg SFB, and other local agencies (Woodward-Clyde 1997).

#### 4.2.2 Metal Plating Operations

No current or historical metal plating operations were identified at USDB Lompoc.

#### 4.2.3 Wastewater Treatment Plants

The installation operates an STP that serves the entire complex. The location of the STP is depicted in Figure 4-1. It was designed in 1943 as a trickling filter plant with a capacity of 0.23 million gallons per day (MGD). The effluent was stored in a holding pond, disinfected, and discharged to the Santa Lucia Creek (under a National Pollutant Discharge Elimination System permit). The plant was upgraded in 1977 with the addition of two aeration tanks and two final clarifiers for additional treatment capacity. An irrigation storage pond was constructed to hold treated effluent. Further upgrades included abandonment of the trickling filter by conversion to a detention basin, conversion of aeration-basin clarifiers to aerobic digestion, and the addition of two ponds (Woodward-Clyde 1997).

The current capacity of the STP is 1.2 MGD (CCRWQCB 2021). The treatment facility consists of a bar screen, a primary clarifier, two mechanically aerated primary ponds in parallel, a polishing pond, and two storage ponds for the reclaimed wastewater. There are no chemical treatments of the wastewater, as it is reclaimed and used for crop irrigation. Sludge is disposed of in Santa Lucia Canyon or Sewer Canyon (Woodward-Clyde 1997).

#### 4.2.4 Landfills and Disposal Areas

The Army constructed and used a 2-acre sanitary landfill from the early 1940s until 1959 (shown in Figure 4-1). The site has a 5- to 7-foot berm to the north, gentle slopes to the south, and surface undulations indicative of filled-in trenches. Material at the Former Army Landfill was reportedly buried at a depth of less than 7.5 feet bgs. It is not known what types of materials were disposed of in the landfill; however, during preliminary site inspections, metallics, glass, ceramic, and partially incinerated wood materials were observed in the landfill. The Former Army Landfill is fenced in, and a soil cover has been placed over the landfill (CCRWQCB 2020).

The Wood Dump Site, encompassing approximately 6 acres, was created by infilling an existing southwest-flowing 60- to 70-foot-deep drainage (shown in Figure 4-1). Based on aerial photography, disposal at the Wood Dump Site occurred between 1967 and 1978. Material disposed of included mainly inert wastes, such as wood, bricks, and concrete, and some organic matter like grasses. A soil cover has been placed over the Wood Dump Site (Arcadis 2006, CCRWQCB 2020, U.S. Army 2019).

A percolation well was discovered during an inspection of the cable factory in July 1982 (shown in Figure 4-1); waste materials generated at the factory were being disposed of in the well. The percolation well is described as a buried, perforated 55-gallon drum. Waste paints, paint thinners, commercial ammonia, and lubricating oils were reportedly disposed of at the site. The disposal of materials occurred from an unknown date until the use of the percolation well was discontinued in 1982 (URS 1993, Woodward-Clyde 1997).

#### 4.2.5 Other Potential Sources of PFAS

In addition to AFFF-related PFAS sources, other potential sources of PFAS may be associated with the use of some types of pesticides, car washes, engine lubricants, paint shops, laundry or waterproofing facilities, and photographic processing facilities. The potential non-AFFF PFAS sources at USDB Lompoc are described below and noted in Figure 4-1:

- **WTRTF** – USAF constructed Building 1280 in 1967 for use as part of a military worldwide communications system. A backup generator and a 290-gallon diesel tank are within the facility. The facility also houses 155 lead-acid batteries used for temporary power while the backup generator comes on-line (BCT 2000). No known PFAS-containing materials are used, stored, or disposed of at

this facility. In addition, this USAF parcel is included within the boundary of Vandenberg SFB and was not identified as a potential release area during the Vandenberg PFAS PA (CH2M Hill 2015).

- **Wash Racks** – The Farm Complex Wash Rack consisted of a concrete pad measuring approximately 12 by 30 feet. It was used as a wash rack for approximately 23 years (exact dates are unknown). No oil/water separator was in place. A subgrade concrete vault at the southwestern corner of the concrete pad served as a mud/sand trap. A 4-inch pipe drained the wash water approximately 80 feet west of the complex where it discharged to an adjacent field. A second former Army wash rack was located adjacent to the vehicle maintenance facility, north of the USP. It was an approximately 950-ft<sup>2</sup>, 4-inch-thick concrete wash rack pad that was used for cleaning Army and BOP vehicles. The precise operational period is unknown, but it was likely used by the Army in the 1940s and 1950s and by the BOP until the 1990s. Two grease racks were in the same area and also were used for servicing Army and BOP vehicles (Arcadis 2009, U.S. Army 2019, Woodward-Clyde 1997). Although a list of products used for the wash racks is not available, it is understood that common products used in vehicle washing may have contained minor amounts of PFAS-containing materials and would not be considered a significant source of PFAS contamination. As a result, the potential PFAS impacts were determined to be unlikely.
- **Vehicle Maintenance Shop** – A former vehicle maintenance shop was located adjacent to the wash rack, north of the USP, and small quantities of paint, oil, waste oil, waste solvent, antifreeze, engine starting fluid, lacquer thinner, and glue were used and stored at the shop. No floor drains were located inside the building (USATHAMA 1990). The precise operational period of this facility is unknown, but it was likely used by the Army in the 1940s and 1950s and by the BOP until the 1990s. No known PFAS-containing materials were used at this facility.
- **Hazardous Waste Storage Area** – The Hazardous Waste Storage Area was constructed in the early 1980s for BOP operations. The storage area consisted of three bays each measuring approximately 1,000 ft<sup>2</sup>; one bay was for hazardous wastes stored in 55-gallon drums, one bay was for storage of empty drums, and one bay was for storage of chemical products. The bays consisted of curbed concrete floors with fencing around the perimeter. Wastes were generated from Facility Manufacturing Area and included 1,1,1-trichloroethane, toluene, methylene chloride, xylenes, acetone, methyl ethyl ketone, and various other solvents and thinners. The drums containing hazardous waste were stored in this area for less than 90 days prior to being transported off-post for disposal (URS 1993, USATHAMA 1990, Woodward-Clyde 1997). No known PFAS-containing materials were stored in this area; any releases of PFAS-containing material, if present, would be contained by the concrete floors and would not be released to the ground. This area was no longer being used for hazardous waste storage during the time of the PA site visit.
- **Pesticide Storage Locker** – Pesticides in containers up to 5 gallons were stored in a metal locker within the USP for use during Army operations. Pesticides were stored in a room with a concrete floor, no floor drain, and no curb at the door (USATHAMA 1990). Although a complete list of pesticides that were stored, used, or disposed of at USDB Lompoc is not available, the use of fluorinated pesticides was infrequent until about the mid-2000s (Alexandrino et al. 2022). Given the time frame of Army operations at USDB Lompoc, the likelihood of PFAS impacts due to pesticide use, storage, or disposal is assumed to be low.
- **Farm Fuel Site** – The Fuel Farm Site was used for the storage and repair of farm vehicles and equipment. Three fuel underground storage tanks (USTs) and one waste oil UST were reportedly installed in the 1950s and removed in 1990 (Arcadis 2009, Woodward-Clyde 1997). No fire suppression system is known to be associated with the Farm Fuel Site, and no known PFAS-containing materials were stored at this location.
- **Former Post Exchange (PX) Service Station** – The Former PX Service Station consisted of a crescent-shaped driveway, a single dispensing island, and a small pump house with a 10,000-gallon



gasoline UST located behind the house. It was reportedly active from the 1940s until 1959 to provide gasoline to military personnel (Arcadis 2009). No fire suppression system is known to be associated with the Former PX Service Station, and no known PFAS-containing materials were stored at this location.

- **Former Incinerator** – The Former Incinerator resembled a cage with an 8-foot high by 20- to 30-foot-wide door. It was used by the Army for disposal and burning of general rubbish and trash until the early 1970s (Woodward-Clyde 1997). No known PFAS-containing materials were disposed of or burned.
- **Facility Manufacturing Areas** – The facility manufacturing areas within the USP includes a cable factory, sign factory, and machine shop. In addition, a furniture factory is within the FCI. Lubricants, paints, thinners, solvents, stains, strippers, and sealers were used in these areas. The facility manufacturing areas have been in operation since the 1960s. No known PFAS-containing materials are used at these facilities.
- **Laundry Facilities** – A laundry facility at the USP was constructed in 1946. The exact location and dates of operation of this laundry facility is unknown. A laundry facility at the FCI was associated with the Group Activities Center (GAC) and operated from 1947 to 1953. The exact location of the GAC laundry facility is unknown. The laundry facilities were in use for Army operations and given the time frame of Army operations at USDB Lompoc, the likelihood of PFAS impacts due to laundry operations is assumed to be low.

During the document research and site visit, no additional potential PFAS-containing material use, storage, or disposal were identified.

#### 4.3 POTENTIAL OFF-POST AND POST TRANSFER PFAS SOURCES

Based on information gathered during interviews and the site visit, no known PFAS releases have occurred post transfer on USDB Lompoc property. The search to identify potential off-post PFAS sources (i.e., not related to operations at USDB Lompoc), although not exhaustive, included review of significant potential contributors (i.e., airports, fire stations, solid waste landfills, WWTPs, and car washes). In addition, EDR conducted a search of state and Federal environmental databases for the USDB Lompoc property and any adjacent properties (EDR 2023). Potential off-post PFAS sources within a 5-mile radius of USDB Lompoc are shown in Figure 4-2. Two fire stations, an airport, and a WWTP are within 1 mile of USDB Lompoc. An additional airport, three fire stations, six car washes, and one landfill were identified within 5 miles of USDB Lompoc. PFAS-containing materials may be used at the airports and car washes and may have been disposed of at the WWTP and at the solid waste landfill. Based on an interview, Class A and Class B foam are known to be stored by the Lompoc Fire Department; Class A foam is routinely used in response to brush fires.

Five potential AFFF release areas were identified at the adjacent Vandenberg SFB during a 2015 PFAS PA (CH2M Hill 2015) and 2018 PFAS SI (OTIE 2019). USDB Lompoc is east of Vandenberg SFB (upgradient) and would not be impacted by these potential AFFF release areas.

## 5. SUMMARY OF PA RESULTS

The areas evaluated for potential PFAS use, storage, and/or disposal at USDB Lompoc were further refined during the PA process and categorized either as an AOPI or not retained. All areas evaluated are areas not retained as AOPIs and are discussed in Section 5.1.

### 5.1 AREAS NOT RETAINED AS AOPIs

Based on analysis of information obtained during this PA, the areas described below were not retained as AOPIs. These areas were previously identified as potential PFAS sources (e.g., car washes, automobile maintenance, paint shops, photographic processing, pesticide use or storage, WWTPs, landfills) at USDB Lompoc. However, PA research does not indicate that PFAS-containing materials were used, stored, or disposed of at these areas. A brief site history and the rationale for eliminating the areas as AOPIs are presented in Table 5-1.

**Table 5-1. Summary of Areas Not Retained as AOPIs at USDB Lompoc**

Area Description	Dates of Operation	Relevant Site History	Rationale
Former Fire Station	1971 to 2006	The Former Fire Station was constructed for the BOP to provide fire protection for the entire complex, and apparatus consisted of three engines. The building is still in place but is now used for administrative purposes.	The Fire Station was constructed for BOP operations. AFFF use or storage at the Former Fire Station is not suspected because based on BOP operations, fires that occur on the property are unlikely to require the use of AFFF. In addition, this was outside the Army's usage time frame.
Fire Truck Garage	1971 to 2006	The Fire Truck Garage was used for parking for three fire trucks. The structure is still in place but is no longer being used for parking of fire trucks.	The Fire Station was constructed for BOP operations. AFFF use or storage on fire engines is not suspected because based on BOP operations, fires that occur on the property are unlikely to require the use of AFFF. In addition, this was outside the Army's usage time frame.
STP	1943 to present	The STP is active and serves the entire complex. It consists of a bar screen, a primary clarifier, two mechanically aerated primary ponds in parallel, a polishing pond, and two storage ponds for the reclaimed wastewater.	No evidence that the STP received PFAS-impacted wastewater.
Former Army Landfill	1940s to 1959	It is not known what types of materials were disposed of at the Former Army Landfill; however, during preliminary site inspections, metallics, glass, ceramic, and partially incinerated wood materials were observed.	Time frame is before common use of PFAS. In addition, there was no evidence that PFAS-containing materials were used, stored, or disposed of at AOPIs that would have contributed to the use of this area.
Wood Dump Site	1967 to 1978	The Wood Dump Site is a landfill formerly used for disposal of wood, bricks, and concrete.	No evidence that PFAS-containing materials were disposed of at the Wood Dump Site.

**Table 5-1. Summary of Areas Not Retained as AOPIs at USDB Lompoc (Continued)**

<b>Area Description</b>	<b>Dates of Operation</b>	<b>Relevant Site History</b>	<b>Rationale</b>
Percolation Well	Until 1982	The percolation well was a buried, perforated 55-gallon drum that was used for disposal of waste materials from the facility manufacturing area.	No evidence that PFAS-containing materials were disposed of.
WTRTF	1967 to present	The WTRTF is located on the parcel transferred to USAF. A backup generator and a 290-gallon diesel tank are within the Building 1280 WTRTF facility. The facility also houses lead-acid batteries used for temporary power. A 1,330-gallon UST was removed from the site in 1993.	No evidence that PFAS-containing materials were used, stored, or disposed of.
Former U.S. Army Wash Rack	1940s to 1990s	A former concrete wash rack pad was used for cleaning Army and BOP vehicles. Two grease racks were in the same area and also were used for servicing Army and BOP vehicles.	No evidence that PFAS-containing materials were used, stored, or disposed of. Although a list of products used for the wash racks is not available, it is understood that common products used in vehicle washing may have contained minor amounts of PFAS-containing materials and would not be considered a significant source of PFAS contamination.
Wash Rack at the Farm Complex	Unknown	A concrete pad was used as a wash rack at the Farm Complex for approximately 23 years (exact dates unknown) for washing mud off farm equipment.	No evidence that PFAS-containing materials were used, stored, or disposed of. Common products used in vehicle washing may have contained minor amounts of PFAS-containing material and would not be considered a significant source of PFAS contamination.
Vehicle Maintenance Shop	1940s to 1990s	A former vehicle maintenance facility was used to service Army and BOP vehicles. Small quantities of paint, oil, waste oil, waste solvent, antifreeze, engine starting fluid, lacquer thinner, and glue were used and stored. No floor drains were inside the building.	No evidence that PFAS-containing materials were used, stored, or disposed of.
Hazardous Waste Storage Area	Early 1980s to 2006	Hazardous waste was stored in 55-gallon drums in an outdoor fenced and curbed area. Hazardous wastes included 1,1,1-trichloroethane, toluene, methylene chloride, xylenes, acetone, methyl ethyl ketone, and various other solvents and thinners.	No evidence that PFAS-containing materials were used, stored, or disposed of.

**Table 5-1. Summary of Areas Not Retained as AOPIs at USDB Lompoc (Continued)**

Area Description	Dates of Operation	Relevant Site History	Rationale
Pesticide Storage Locker	1940s to 1950s	Pesticides in containers up to 5 gallons were stored in a metal locker within the USP for use during Army operations. Pesticides were stored in a room with a concrete floor, no floor drain, and no curb at the door. The exact location and dates of operation are unknown.	Based on the period of Army operations at USDB Lompoc, the dates of pesticide use at the facility pre-date the use of fluorinated pesticides.
Farm Fuel Site	1950s to 1990	Farm vehicles and equipment were stored and repaired at the Farm Fuel Site. Four USTs were reportedly installed in the 1950s and removed in 1990.	No evidence that PFAS-containing materials were used, stored, or disposed of. No evidence of an AFFF fire suppression system.
Former PX Service Station	1940s to 1959	The Former PX Service Station consisted of a crescent-shaped driveway, single dispensing island, and small pump house with a 10,000-gallon gasoline UST behind the house. It was reportedly active from the 1940s until 1959 to provide gasoline to military personnel.	Time frame is before common use of PFAS.
Former Incinerator	Until the early 1970s	The Former Incinerator resembled a cage with an 8-foot-high by 20- to 30-foot-wide door. It was used for disposal and burning of general rubbish and trash.	No evidence that PFAS-containing materials were used, stored, or disposed of at AOPIs that would have contributed to the use of this area.
Facility Manufacturing Area	1960s to present	The facility manufacturing areas within the USP includes a cable factory, sign factory, and machine shop. In addition, a furniture factory is within the FCI. Lubricants, paints, thinners, solvents, stains, strippers, and sealers are stored and used in these areas.	No evidence that PFAS-containing materials were used, stored, or disposed of.
Laundry Facility at the USP	1946 to 1950s	A laundry facility at the USP was constructed in 1946. The exact location and dates of operation of this laundry facility are unknown.	Time frame is before common use of PFAS.
Laundry Facility at the FCI	1947 to 1953	A laundry facility at the FCI (exact location unknown) operated from 1947 to 1953.	Time frame is before common use of PFAS.

## 5.2 AOPIs

Based on analysis of information obtained during document research, personnel interviews, and site reconnaissance, no areas at USDB Lompoc were categorized as AOPIs.

### 5.3 DATA LIMITATIONS

The data limitations relevant to the development of this PA for PFAS at USDB Lompoc are discussed below.

A comprehensive well survey was not completed as a part of this PA; therefore, the information reviewed regarding off-post wells is limited. The EDR well search report (Appendix F) and online databases (CNRA 2023) were referenced when identifying potential off-post drinking water receptors.

The searches for ecological receptors and off-post PFAS sources were limited to easily identifiable and readily available information. An online database was referenced when identifying the ecological profile for this site (USFWS 2023).

Records reviewed during the PA process were limited in information regarding PFAS-containing materials, including AFFF use; procurement records of AFFF and documentation of AFFF used during emergency responses or firefighter training activities were not available. Although spill reports, waste and chemical inventories, historical drawings, blueprints, and as-built drawings may have been available, many were not pertinent to the time period of Army ownership at USDB Lompoc. Generally, interviews are crucial to understanding past practices and identifying the potential for use, storage, or disposal of PFAS-containing materials because records are often not available. Interviews providing anecdotal accounts of AFFF use (and therefore likely PFAS release) were limited at USDB Lompoc due to the length of time that the Installation has been closed under BRAC.

Conclusions and recommendations presented in this report are based on available information, professional judgment, and industry best practices. Exact dates of operation are unknown. Some facilities were eliminated because they were established after 1959 when the property was leased to the BOP and the Army was no longer occupying the property. Multiple sites were eliminated based on the lack of evidence of PFAS-containing chemical use or storage. PFAS-containing chemicals possibly were used at a variety of sites (e.g., manufacturing facilities, wash racks, vehicle maintenance shops) or at chemical storage facilities, which were not identified as AOPIs based on lack of evidence and historical information.

## 6. CONCLUSIONS

This PA was conducted in accordance with DoD, Army, and USEPA guidance documents. Programmatically, the Army has focused its PFAS PA efforts on identifying locations where a potential for a release of PFAS exists (i.e., those locations where PFAS-containing materials were used, stored, or disposed of). Locations on Army installations with the greatest likelihood of releases of PFAS were evaluated as part of this PA, including landfills and disposal areas, vehicle wash areas, hazardous material storage areas, and fuel farms. However, other potential sources of PFAS at the installation were considered and have been documented in this PA. A combination of document review, Internet searches, interviews with fire department personnel, and an installation site visit were used to identify specific areas of suspected PFAS use and releases at USDB Lompoc.

The entire USDB Lompoc property was assessed; 18 preliminary areas were identified and evaluated for potential use, storage, and/or disposal of PFAS-containing materials; and these areas were further refined during the PA process. In accordance with the established process for the PA and based on historical activities at the installation, none of the preliminary areas have been identified as AOPIs.

Given the findings of this PA, further evaluation in a PFAS SI is not warranted at USDB Lompoc.

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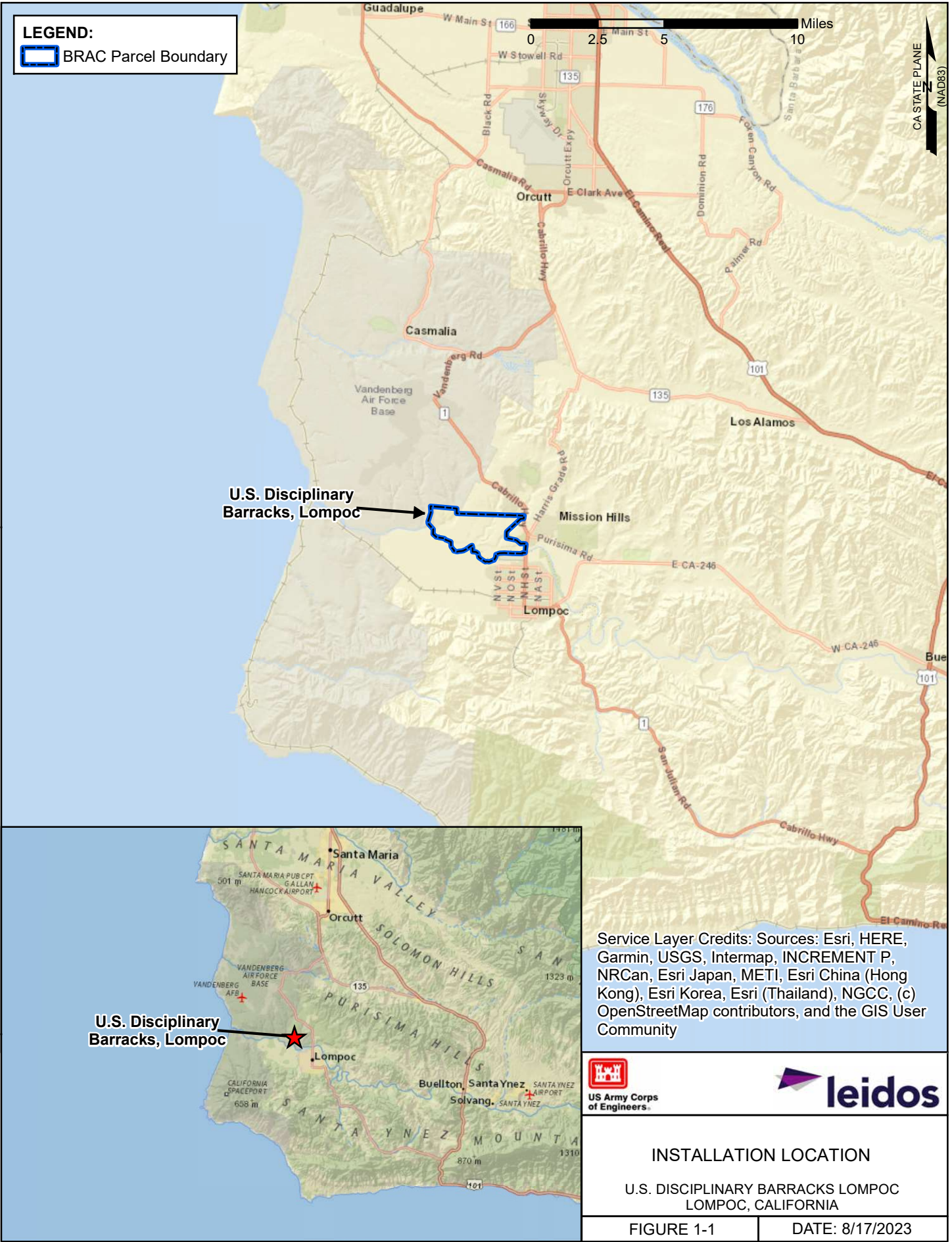
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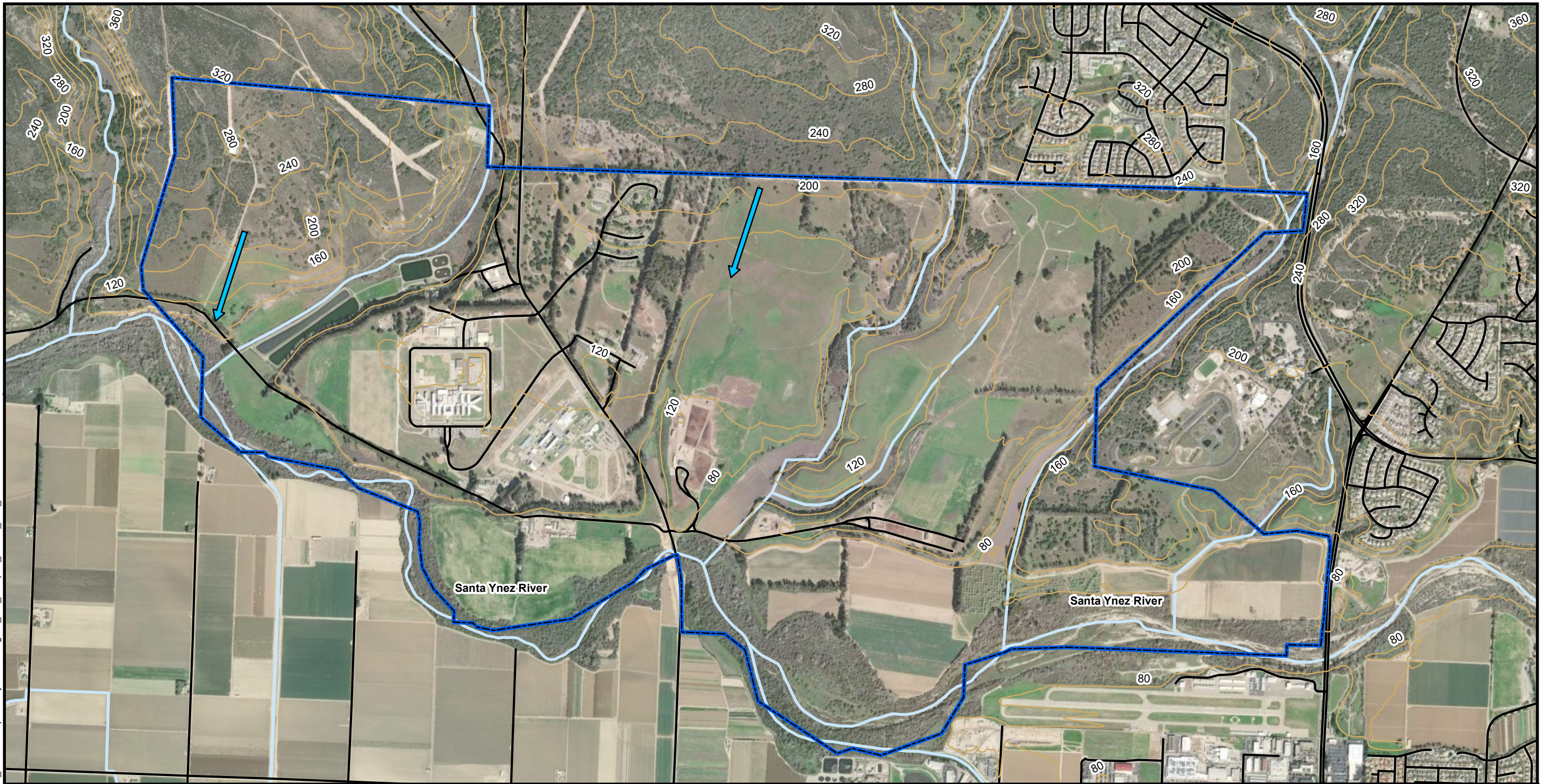
## **FIGURES**

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C:\Data\Civil\_Transfer\GIS\BRAC\_PFA\SLompoc\Projects\PA\Figure\_2-1\_Lompoc\_USDB\_Site\_Features.mxd

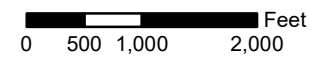


**LEGEND:**

-  BRAC Parcel Boundary
-  Road
-  Creek/Stream
-  Elevation Contour (40 ft)
-  Inferred Groundwater Flow Direction

**NOTES:**

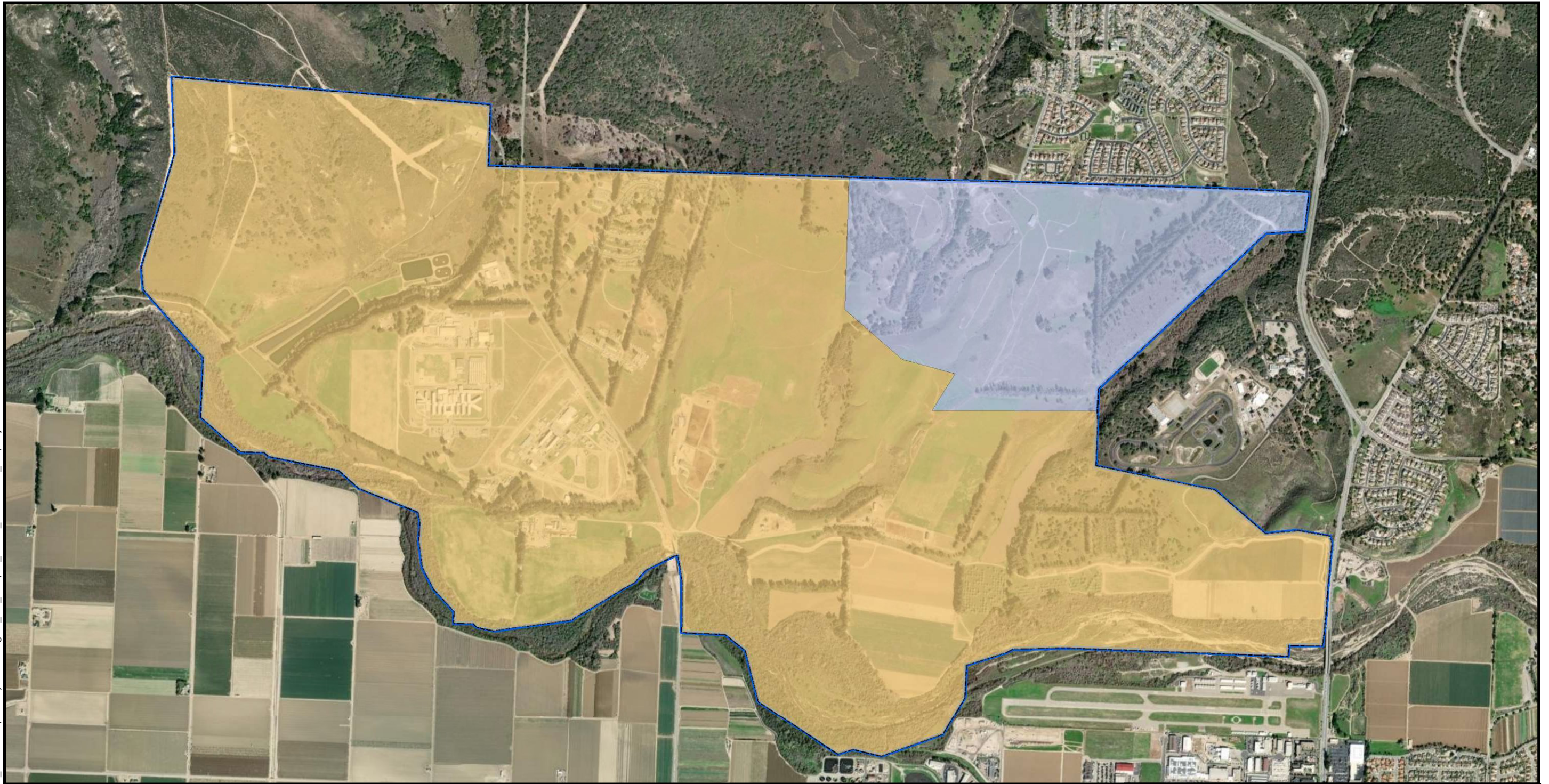
1. Background Source: ESRI World Imagery (Vivid/Maxar, 11/2021).
2. USGS National Hydrography Dataset (NHD) (Streams, Waterbody, Elevation Contours, Roads).
3. Groundwater flow direction (URS, 1993).






 	
<b>SITE FEATURES</b> U.S. DISCIPLINARY BARRACKS LOMPOC LOMPOC, CALIFORNIA	
FIGURE 2-1	DATE: 8/17/2023



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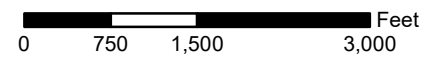


**LEGEND:**

-  BRAC Parcel Boundary
-  U.S. Department of Justice Bureau of Prisons
-  U.S. Air Force

**NOTES:**

1. Background Source: ESRI World Imagery (Vivid/Maxar, 11/2021).
2. Transferred Property Parcels (U.S. Army, 2019).



CALIFORNIA STATE PLANE  
(NAD83)



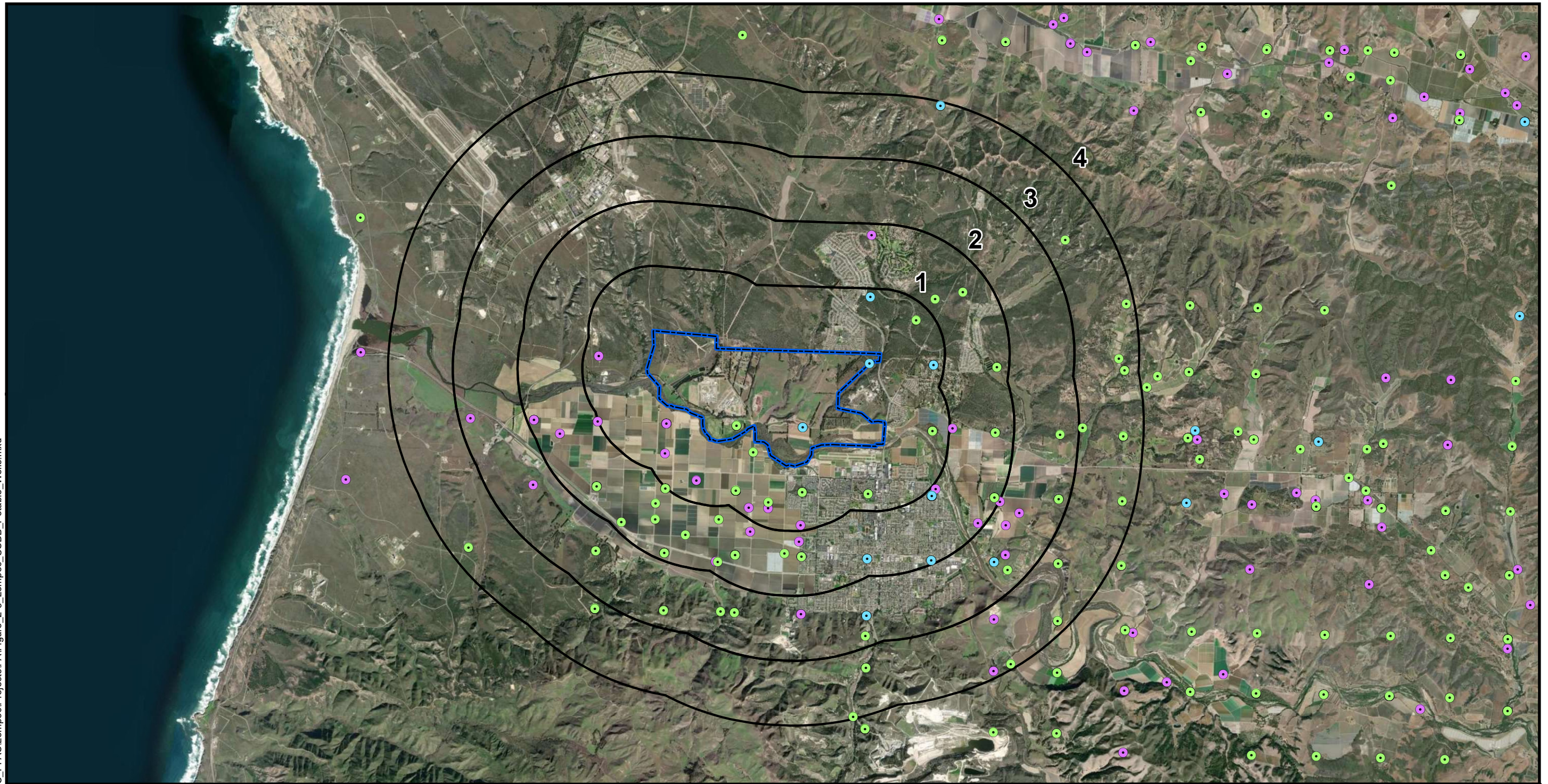
**PARCEL TRANSFER MAP**  
U.S. DISCIPLINARY BARRACKS LOMPOC  
LOMPOC, CALIFORNIA

FIGURE 2-2

DATE: 8/17/2023

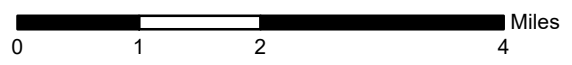


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- LEGEND:**
- BRAC Parcel Boundary
  - Distance Ring
  - Public Water Well
  - Domestic Water Well
  - Irrigation Well

**NOTES:**  
 1. Background Source: ESRI World Imagery (Vivid/Maxar, 11/2021).  
 2. Well Data Source: California Natural Resources Agency; Unclassified wells not shown.



CALIFORNIA STATE PLANE  
(NAD83)

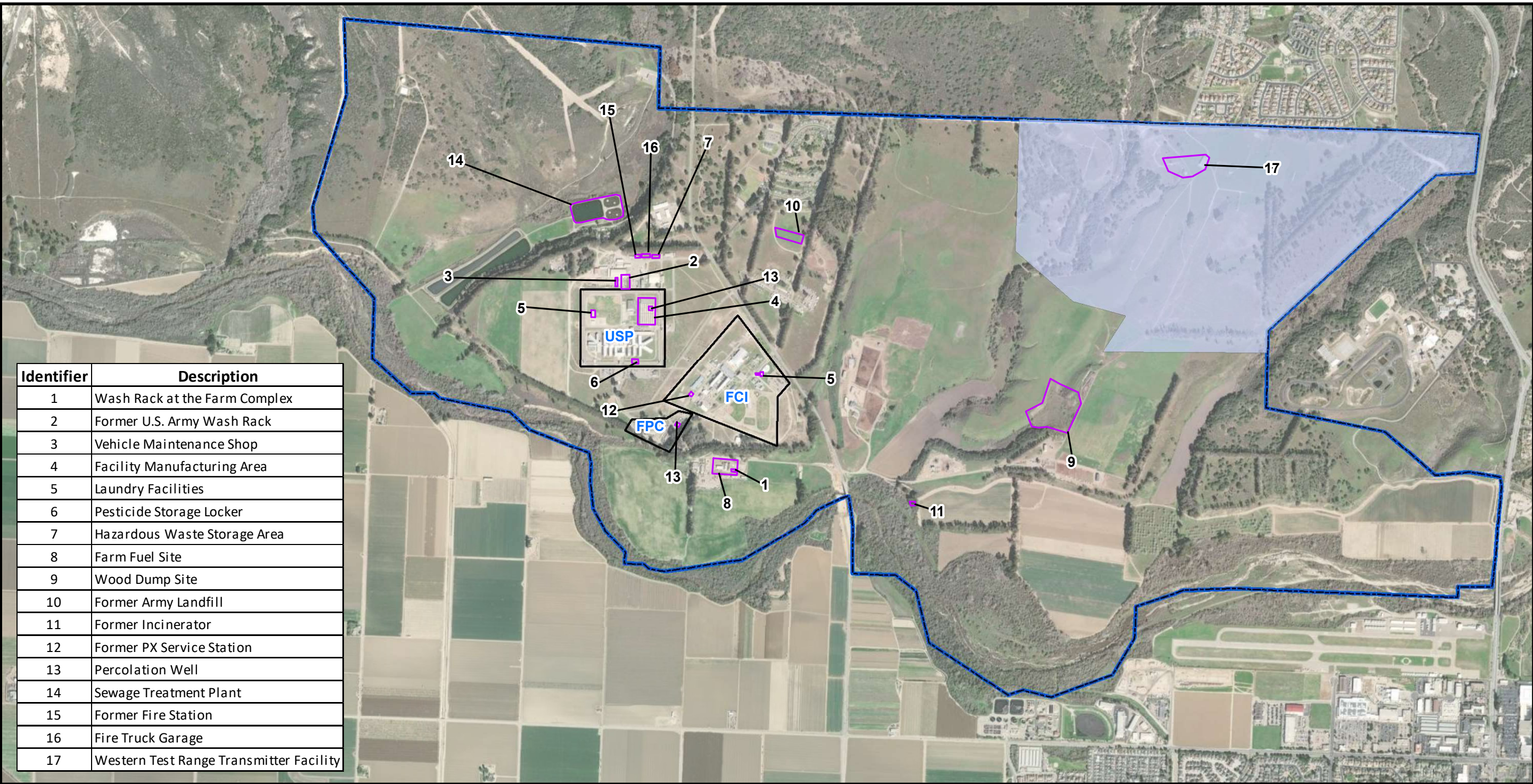


**POTABLE WELLS WITHIN A 4-MILE RADIUS  
 U.S. DISCIPLINARY BARRACKS LOMPOC  
 LOMPOC, CALIFORNIA**

FIGURE 2-3      DATE: 8/17/2023



C:\Data\Civil\_Transfer\GIS\BRAC\_PFA\BAC\Projects\PA\Figure\_4-1\_Lompoc\_USDB\_Evaluated\_Sites.mxd

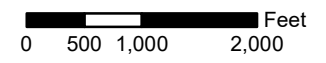


Identifier	Description
1	Wash Rack at the Farm Complex
2	Former U.S. Army Wash Rack
3	Vehicle Maintenance Shop
4	Facility Manufacturing Area
5	Laundry Facilities
6	Pesticide Storage Locker
7	Hazardous Waste Storage Area
8	Farm Fuel Site
9	Wood Dump Site
10	Former Army Landfill
11	Former Incinerator
12	Former PX Service Station
13	Percolation Well
14	Sewage Treatment Plant
15	Former Fire Station
16	Fire Truck Garage
17	Western Test Range Transmitter Facility

**LEGEND:**

	BRAC Parcel Boundary
	Bureau of Prison Complex
	U.S. Air Force Parcel
	Evaluated Site

- NOTES:**
1. Background Source: ESRI World Imagery (Vivid/Maxar, 11/2021).
  2. USGS National Hydrography Dataset (NHD) (Streams, Waterbody, Elevation Contours, Roads).
  3. Bureau of Prison Complex (Arcadis, 2006).
  4. U.S. Air Force Property Parcel (U.S. Army, 2019).
  5. Approximate locations used for identifier numbers 5, 6, 11, 12, and 13.



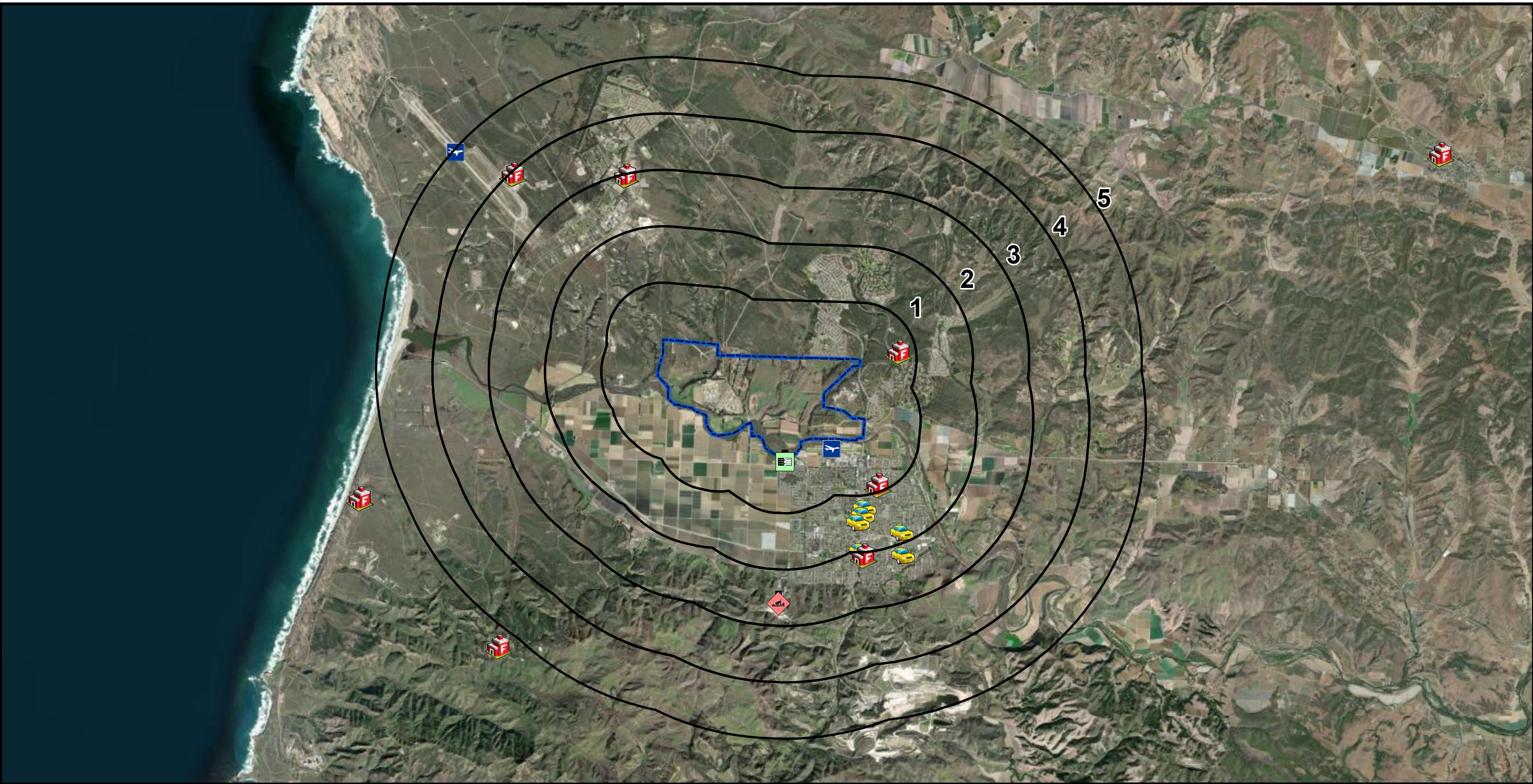
CASCADE PLANE  
(NAD83)










<b>EVALUATED SITES</b> U.S. DISCIPLINARY BARRACKS LOMPOC LOMPOC, CALIFORNIA	
FIGURE 4-1	DATE: 9/14/2023



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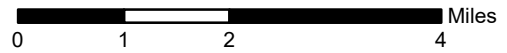


**LEGEND:**

-  BRAC Parcel Boundary
-  Distance Ring
-  Fire Station
-  Airport
-  Waste Water Treatment Plant
-  Car Wash
-  Solid Waste Landfill



**NOTES:**

1. Background Source: ESRI World Imagery (Vivid/Maxar, 11/2021).
2. California State GeoPortal (WWTP, Solid Waste Landfills, Airports).
3. Santa Barbara MAPS (Firestations).
4. Car wash facilities (Google 2023).



CA STATE PLANE  
 (NAD83)



 US Army Corps of Engineers	
<b>POTENTIAL PFAS SOURCES          WITHIN A 5-MILE RADIUS          U.S. DISCIPLINARY BARRACKS LOMPOC          LOMPOC, CALIFORNIA</b>	
<b>FIGURE 4-2</b>	<b>DATE: 8/17/2023</b>