



Draft

**Environmental Assessment
For Demolition of Space Launch Complex-2
At
Vandenberg Space Force Base, California**

Space Launch Delta 30, Installation Management Flight (30 CES/CEI)
1028 Iceland Avenue
Vandenberg Space Force Base, CA 93437

9 April 2022

This page intentionally left blank.

FINDING OF NO SIGNIFICANT IMPACT

Demolition of Space Launch Complex-2 at Vandenberg Space Force Base, California

Pursuant to provisions of the National Environmental Policy Act (NEPA), 42 United States Code (USC) 4321 to 4270d, implementing Council on Environmental Quality (CEQ) Regulations, 40 Code of Federal Regulations (CFR) 1500-1508, and 32 CFR Part 989, Environmental Impact Analysis Process, Space Launch Delta 30 of the United States Space Force (USSF) assessed the potential environmental consequences associated with demolition of facilities at Space Launch Complex-2 (SLC-2) on North Vandenberg Space Force Base (SFB), formerly Vandenberg Air Force Base (AFB) in Santa Barbara County, California.

Demolition of these structures is needed to eliminate older, inefficient buildings that are no longer in use or have substantial maintenance requirements. There are no current plans for future use of SLC-2, and a number of the existing facilities at SLC-2 would require long term or substantial maintenance and upkeep to prevent the structures from falling into disuse and becoming a long-term safety hazard. Demolition of these structures will reduce long term maintenance costs for unneeded facilities and to prevent the creation of potential safety issues at the site.

The Environmental Assessment (EA), incorporated by reference into this finding, analyzes the potential environmental consequences of activities associated with demolition of structures at SLC-2 and provides environmental protection measures to avoid or reduce adverse environmental impacts. The EA considers all potential impacts of the Proposed Action and the No-Action Alternative.

PROPOSED ACTION

The Proposed Action includes demolition of 32 facilities at SLC-2, as well as supporting facilities and infrastructure such as roadways, driveways, pads, and above ground utilities adjacent to the facilities being demolished. The Launch Water Reclamation System located adjacent to and between the SLC-2 Pump-House (1625) and Water-Tank (1627) is a trailer and will be removed from the site. Building 1670 is not contiguous with SLC-2 but will also be demolished under the Proposed Action. Security fencing will be removed as necessary within the project footprint. The launch pad itself and associated infrastructure including the flame ducts will remain abandoned in place. The National Aeronautics and Space Agency will be responsible for removing all of their equipment from SLC-2. The project area is approximately 64.4 acres; however, demolition activities will be contained to the facilities and structures removed to the extent practicable. Utilities will be capped and left in place at grade.

Following grading and site work, the site will be revegetated to the extent practicable, including use of hydro-seeding with a seed mixture pre-approved by the 30th Civil Engineer Squadron, Installation Management Flight, Environmental Element. Weeds will be controlled for at least 1 year post-construction to achieve at least the same amount or more of pre-construction native plant cover. Follow-up monitoring for invasive species will be conducted and managed in accordance with the Base Invasive Plant Species Management Plan.

There are currently no finalized plans for any future re-use of the SLC-2 site; however, due to the location and prior site use, re-use of the site for future space launch missions is possible. Any future re-use would be subject to follow-on NEPA planning and all other applicable regulatory requirements.

NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the Proposed Action would not occur and all facilities would be left in place. Further condition degradation would be expected, and greater safety and health concerns may arise due to the site falling into disuse.

SUMMARY OF FINDINGS

The USSF concludes that by implementing environmental protection measures (EA Section 2.4), no significant adverse effects will result to the following resources as a result of the Proposed Action: air quality, greenhouse gases, biological resources, cultural resources, geology and earth resources, land use and coastal zone resources, public health and safety, and water resources. In addition, the EA concludes that the Proposed Action will not affect transportation, noise, recreation, visual resources, socioeconomics, environmental justice, or public services and utilities. Vandenberg SFB will comply with the conditions stipulated in SHPO's concurrence letter dated June 30, 2021 and the Memorandum of Agreement signed in September 2021. These conditions include the following:

- 1) Coordinate with the regional Historic American Building Survey/Historic American Engineering Record/Historic American Landscape Survey coordinator at the National Park Service Interior Regions 8, 9, 10, and 12 Regional Office (NPS) regarding the level of and procedures for completing Historic American Engineering Record (HAER) documentation for SLC-2 and the District, and notify the SHPO of the NPS HAER requirements.
- 2) Conduct fieldwork and archival work, and prepare a HAER document. This includes photographing existing drawings and the historic properties.
- 3) Produce a calendar and pamphlet that describes SLC-2 and surrounding Historic District and summarizes its historical significance in a narrative and photographs.
- 4) Distribute and post the final HAER document, calendar, and pamphlet.
- 5) Conduct annual reporting and coordinate meetings with the SHPO to discuss annual activities.

All above conditions will be conducted per the stated terms in the Memorandum of Agreement, including the specified schedule for completion.

PREFERRED ALTERNATIVE

The Proposed Action Alternative is the Preferred Alternative because it is the only alternative that fulfills the purpose and need for the Proposed Action.

FINDING OF NO SIGNIFICANT IMPACT

Based on my review of the facts and analyses contained in the attached EA, conducted under the provisions of NEPA, CEQ Regulations, and 32 CFR Part 989, I conclude that the Proposed Action Alternative will not have a significant environmental impact at Vandenberg SFB. Accordingly, an Environmental Impact Statement is not required. The signing of this Finding of No Significant Impact completes the environmental impact analysis process.

ROBERT A. LONG, Colonel, USSF
Commander

Date

Attachment: FINAL ENVIRONMENTAL ASSESSMENT (2022)

Table of Contents

Chapter 1.	Purpose and Need for the Proposed Action	1-1
1.1	Purpose of the Proposed Action	1-1
1.2	Need for the Proposed Action.....	1-1
1.2.1	Project Location	1-1
1.3	Legal Requirements	1-3
1.4	Interagency and Intergovernmental Coordination and Consultation.....	1-4
1.5	Objectives of the Environmental Assessment.....	1-4
Chapter 2.	Proposed Action and Alternatives.....	2-1
2.1	Selection Standards for Alternatives.....	1
2.2	Alternative 1 – Full Demolition	1
2.3	No-Action Alternative	2-7
2.4	Environmental Protection Measures	2-7
2.4.1	Air Quality	2-7
2.4.2	Biological Resources	2-9
2.4.3	Cultural Resources	2-10
2.4.4	Public Health and Safety	2-10
2.4.5	Water Resources	2-11
2.5	Other Alternatives Considered.....	2-11
2.5.1	Mothballing	2-11
2.5.2	Rehabilitation/Upgrade	2-12
2.5.3	Partial Demolition.....	2-12
2.5.4	McKinney Act Uses.....	2-12
Chapter 3.	Affected Environment.....	3-1
3.1	Air Quality	3-1
3.1.1	Regional Setting	3-3
3.1.2	Greenhouse Gas Emissions	3-3
3.1.3	Applicable Regulations and Standards.....	3-4
3.2	Biological Resources	3-5
3.2.1	Methodology	3-6
3.2.2	Vegetation Types.....	3-6
3.2.3	Wildlife Species	3-6
3.2.4	Special Status Species.....	3-8
3.2.5	Waters of the U.S. and Wetlands	3-11
3.3	Cultural Resources	3-11
3.3.1	Area of Potential Effects	3-12
3.3.2	Cultural Setting	3-12
3.3.3	Cultural Resources within the Project Area	3-12
3.4	Geology and Earth Resources.....	3-15
3.4.1	Soils.....	3-15
3.4.2	Faulting, Seismicity, and Geologic Hazard.....	3-15
3.5	Land Use and Coastal Zone Resources	3-17
3.5.1	Coastal Zone Management	3-17
3.6	Public Health and Safety.....	3-17
3.6.1	Hazardous Materials Management.....	3-18
3.6.2	Hazardous Waste Management	3-18
3.6.3	Installation Restoration Program	3-21
3.6.4	Unexploded Ordnance.....	3-22
3.7	Water Resources	3-24

	3.7.1	Surface Water.....	3-25
	3.7.2	Groundwater.....	3-25
Chapter 4.		Environmental Consequences.....	4-1
4.1		Air Quality.....	4-1
	4.1.1	Alternative 1: Full Demolition.....	4-1
	4.1.2	No-Action Alternative.....	4-3
4.2		Biological Resources.....	4-3
	4.2.1	Alternative 1: Full Demolition.....	4-3
	4.2.2	No-Action Alternative.....	4-5
4.3		Cultural Resources.....	4-5
	4.3.1	Alternative 1: Full Demolition.....	4-5
	4.3.2	No-Action Alternative.....	4-6
4.4		Geology and Earth Resources.....	4-7
	4.4.1	Alternative 1: Full Demolition.....	4-7
	4.4.2	No-Action Alternative.....	4-7
4.5		Land Use and Coastal Zone Resources.....	4-7
	4.5.1	Alternative 1: Full Demolition.....	4-7
	4.5.2	No-Action Alternative.....	4-8
4.6		Public Health and Safety.....	4-8
	4.6.1	Alternative 1: Full Demolition.....	4-8
	4.6.2	No-Action Alternative.....	4-11
4.7		Water Resources.....	4-11
	4.7.1	Alternative 1: Full Demolition.....	4-11
	4.7.2	No-Action Alternative.....	4-12
Chapter 5.		List of Agencies, Organizations, and Persons Contacted.....	5-1
Chapter 6.		List of Preparers.....	6-1
Chapter 7.		References.....	7-1

Appendices

Appendix A	Public Review and Comment Process
Appendix B	Regulatory Correspondence
	B-1 National Historic Preservation Act and Tribal Consultation
	B-2 Coastal Zone Management Act Consultation
Appendix C	Plant and Wildlife Species Observed in the Project Area
Appendix D	Air Quality Emissions Calculations
	D-1 Air Conformity Applicability Model Results
	D-2 Supplementary Air Quality Analysis Results

List of Tables

Table 2-1. Buildings to be Demolished Under a Full Demolition Alternative	2-2
Table 3.1-1. National and California Ambient Air Quality Standards	3-2
Table 3.1-2. Santa Barbara County Air Quality Attainment Status	3-3
Table 3.2-1. Special Status Plant and Wildlife Species with Potential to Occur Within the Project Area	3-8
Table 3.3-1. Facilities at SLC-2 Targeted for Demolition and NRHP Eligibility Status.....	3-13
Table 4.1-1. Proposed Emissions (Tons/Year) – Alternative 1	4-3
Table 4.3-1. Facilities at SLC-2 Targeted for Demolition and Effect Determination	4-6
Table C-1. Wildlife Species Observed within the Project Area	3
Table C-2. Plant Species Observed within the Project Area.....	4

List of Figures

Figure 1-1. Regional Map	1-2
Figure 2-1. Alternative 1 - Full Demolition.....	2-3
Figure 2-2. Hauling Routes for Demolition Debris	2-6
Figure 3-1. Vegetation Communities within Biological Survey Area	3-7
Figure 3-2. Potential Habitat within Biological Survey Area.....	3-10
Figure 3-3. Cultural Resources with the Project Area	3-14
Figure 3-4. Soils within the Project Area.....	3-16
Figure 3-5. IRP and UXO Sites within Project Area.....	3-23
Figure 3-6. Water Resources Near Project Area	3-26

List of Acronyms and Abbreviations

Acronym	Definition
30 CES	30th Civil Engineer Squadron
30 CES/CEI	30th Civil Engineer Squadron, Installation Management Flight
30 CES/CEIEA	30th Civil Engineer Squadron, Installation Management Flight, Conservation Management
30 CES/CEIEC	30th Civil Engineer Squadron, Installation Management Flight, Environmental Compliance
30 CES/CEIE	30th Civil Engineer Squadron, Installation Management Flight, Environmental Element
30 CES/CEO	30th Civil Engineer Squadron, Civil Engineering Operations
ACM	Asbestos containing materials
AFB	Air Force Base
AFI	Air Force Instruction
AFMAN	Air Force Manual
AOC	Area of Concern
AOI	Area of Interest
APE	Area of Potential Effect
BMP	Best Management Practices
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
CAP	Collection Accumulation Point
CARB	California Air Resource Board
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH ₄	methane
CO	carbon monoxide
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CRPR	California Rare Plant Ranking
CSC	California Species of Concern
CWA	Clean Water Act
CZMA	Coastal Zone Management Act

Acronym	Definition
DPM	diesel particulate matter
EA	Environmental Assessment
EBS	Environmental Baseline Survey
EIS	Environmental Impact Statement
EO	Executive Order
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FR	Federal Register
GHG	greenhouse gas
GIS	Geographic Information System
GWP	global warming potential
IRP	Installation Restoration Program
LBP	lead based paint
LUC	land use control
MBTA	Migratory Bird Treaty Act
mg/L	Milligrams per liter
mg/kg	Milligrams per kilogram
µg/m ³	Micrograms per cubic meter
MOA	Memorandum of Agreement
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Agency
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NO _x	nitrogen oxides
NO ₂	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
N ₂ O	nitrous oxide
O ₃	ozone
OHP	Office of Historic Preservation
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
PM _{2.5}	particulate matter less than 2.5 microns in diameter
PM ₁₀	particulate matter less than 10 microns in diameter
ppm	parts per million

Acronym	Definition
ROD/RAP	Record of Decision/Remedial Action Plan
RWQCB	Regional Water Quality Control Board
SAP	satellite accumulation point
SBCAPCD	Santa Barbara County Air Pollution Control District
SCCAB	South Central Coast Air Basin
SFB	Space Force Base
SHPO	State Historic Preservation Officer
SLC	Space Launch Complex
SLD 30/SEW	Space Launch Delta 30 Weapons Office
SWP	Space Wing Plan
TAC	Toxic air contaminant
TCE	trichloroethylene
TPY	tons per year
USACE	United States Army Corps of Engineers
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USSF	United States Space Force
UXO	unexploded ordnance
VOC	volatile organic compound

Chapter 1. Purpose and Need for the Proposed Action

This Environmental Assessment (EA) evaluates the potential environmental impacts associated with demolition of facilities at Space Launch Complex-2 (SLC-2) on North Vandenberg Space Force Base (SFB), formerly Vandenberg Air Force Base (AFB) in Santa Barbara County, California. The National Aeronautics and Space Agency (NASA) historically utilized SLC-2 for space launch operations of its Delta II rocket but has ceased operations at the site due to changing mission and technological advancements in space launch technology. Space Launch Delta 30 of the United States Space Force (USSF), in cooperation with NASA, proposes to demolish up to 32 facilities and support infrastructure (roadways, driveways, pads, aboveground utilities) at the site that have no planned future use. The launch pad itself and some associated infrastructure including the flame ducts would remain abandoned in place. Following demolition portions of the site would be restored to natural conditions to the extent practicable. The National Environmental Policy Act (NEPA); Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508) updated July 16, 2020; and the Air Force's supplemental NEPA regulations (32 CFR Part 989) require lead agencies to evaluate the potential impacts of federal actions on the surrounding environment. Please note, the USSF is the lead agency for this Proposed Action but is currently operating under Air Force policy, guidance, and plans until USSF-specific policies, guidance, or plans are promulgated.

There are currently no finalized plans for any future re-use of the SLC-2 site; however, due to the location and prior site use, re-use of the site for future space launch missions is possible. Any future re-use would be subject to follow-on NEPA planning and all other applicable regulatory requirements.

1.1 Purpose of the Proposed Action

The purpose of the Proposed Action is to demolish excess or obsolete facilities and infrastructure at SLC-2 that are no longer in use or required for space launch operations or have substantial long-term maintenance requirements.

1.2 Need for the Proposed Action

The Proposed Action is needed to eliminate older, inefficient buildings that are no longer in use or have substantial maintenance requirements. There are no current plans for future use of the buildings under consideration at SLC-2, and a number of the existing facilities at SLC-2 would require long term or substantial maintenance and upkeep to prevent the structures from falling into disuse and becoming a long-term safety hazard. The Proposed Action would reduce long term maintenance costs for unneeded facilities and to prevent the creation of potential safety issues at the site. Demolition of older, inefficient buildings and infrastructure would be in accordance with Air Force policies including, but not limited to, Air Force Instruction (AFI) 32-9004 (*Disposal of Real Property*) and AFI 1021 (*Planning and Programming Military Construction Projects*).

1.2.1 Project Location

Vandenberg SFB is located on the south central coast of California; approximately 55 miles northwest of Santa Barbara (Figure 1-1). Vandenberg SFB covers approximately 99,572 acres in western Santa Barbara County. The Santa Ynez River and State Route 246 divide Vandenberg SFB into two distinct areas: North Vandenberg SFB and South Vandenberg SFB. SLC-2 is located on North Vandenberg SFB south of Tangair Road near the intersection with Alto Road, northwest of the runway.

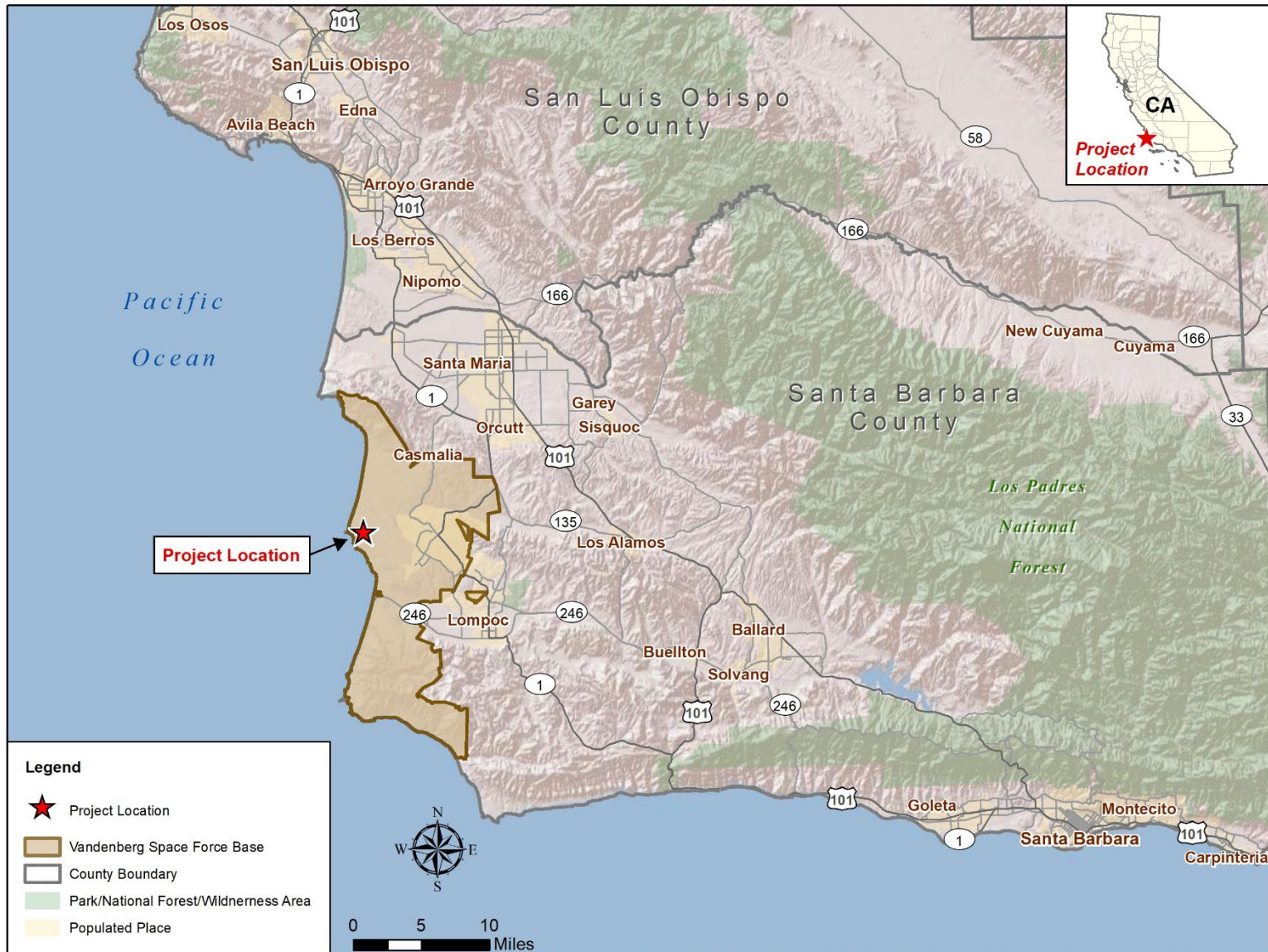


Figure 1-1. Regional Map

1.3 Legal Requirements

A required component of preparing this EA is a thorough identification of all environmental laws, regulations, and

directives that would apply to the Proposed Action. The USSF determined that the following laws and regulations must be reviewed for their relevance to the Proposed Action:

Federal Laws and Regulations
<i>American Indian Religious Freedom Act of 1978 (42 United States Code [U.S.C.] 1996)</i>
<i>Archaeological and Historic Preservation Act of 1974 (16 U.S.C. 469a et seq.)</i>
<i>Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-mm), Supplemental Regulations of 1984</i>
<i>Clean Air Act (CAA) of 1970 (42 U.S.C. 7401 et seq.) and CAA Amendments of 1990</i>
<i>Clean Water Act (CWA) of 1977 as amended (33 U.S.C. 1251 et seq.)</i>
<i>Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601-9675)</i>
<i>Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. 1451-1464)</i>
<i>Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.)</i>
<i>Migratory Bird Treaty Act (MBTA) of 1918 as amended (16 U.S.C. 703-712)</i>
<i>National Environmental Policy Act (NEPA) of 1969 as amended (42 U.S.C. 4321-4347)</i>
<i>National Historic Preservation Act (NHPA) of 1966 as amended (16 U.S.C. 470 et seq.)</i>
<i>Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001-3013)</i>
<i>Noise Control Act of 1972 (42 U.S.C. 4901 et seq.)</i>
<i>Occupational Safety and Health Act of 1970 (29 U.S.C. 659-678)</i>
<i>Pollution Prevention Act of 1990 (42 U.S.C. 13101-13109)</i>
<i>Resource Conservation and Recovery Act (RCRA) of 1976 (42 U.S.C. 6901 et seq.)</i>
<i>Superfund Amendments and Reauthorization Act (42 U.S.C. 9601-9675)</i>
<i>Title II of the Toxic Substances Control Act of 1976 (15 U.S.C. 2601 et seq.)</i>
Air Force and Space Wing Regulations
<i>Facility Asbestos Management (AFI 32-1052)</i>
<i>The Environmental Restoration Program (AFI 32-053)</i>
<i>Air Quality Compliance Program (AFI 32-7040)</i>
<i>Water Quality Compliance (AFI 32-7041)</i>
<i>Solid and Hazardous Waste (AFI 32-7042)</i>
<i>Hazardous Waste Management Guide (Air Force Pamphlet 32-7043)</i>
<i>Water and Fuel Systems (Air Force Manual [AFMAN 32]-1067)</i>
<i>Environmental Impact Analysis Process (AFI 32-7061)</i>
<i>Air Force Base Comprehensive Planning (AFI 32-7062)</i>
<i>Environmental Conservation (AFMAN 32-7003)</i>
<i>Pollution Prevention Program (AFI 32-7080)</i>
<i>Environmental Compliance and Pollution Prevention, AFMAN 32-7002</i>
<i>Conservation, Management, and Enforcement (30th Space Wing Instruction [SWI] 32-701)</i>
<i>Facility Closure/Turn-In Procedures (30 SWI 32-901)</i>
<i>Lead-Based Paint Management Plan (30th Space Wing Plan [SWP] 32-1002)</i>
<i>Asbestos Management Plan (30 SWI 32-1052A)</i>
<i>Asbestos Operating Plan (30 SWI 32-1052B)</i>
<i>Water Quality Management Plan (30 SWP 32-1067)</i>
<i>Spill Prevention, Control, and Countermeasures Plan (30 SWP 32-7044)</i>
<i>Wastewater Management Plan (30 SWP 32-7041A)</i>
<i>Stormwater Management Plan (30 SWP 32-7041B)</i>
<i>Solid Waste Management Plan (30 SWP 32-7042)</i>
<i>Hazardous Waste Management Plan (30 SWP 32-7043A)</i>
<i>Recoverable and Waste Petroleum Management Plan (30 SWP 32-7043E)</i>
<i>Pollution Prevention Plan (30 SWP 32-7080)</i>

State Laws and Regulations
California Coastal Act of 1976
California Clean Air Act of 1988
Porter-Cologne Water Quality Control Act
California Integrated Waste Management Act of 1989, California Assembly Bill 939

1.4 Interagency and Intergovernmental Coordination and Consultation

The Proposed Action is a federal undertaking also subject to compliance with Section 106 of the National Historic Preservation Act (NHPA). As the Proposed Action has the potential to affect historic properties, Vandenberg SFB initiated consultation with the State Historic Preservation Officer (SHPO) under 36 CFR Part 800. Vandenberg SFB determined that the Proposed Action would have an adverse effect to historic properties within the project area. The SHPO concurred with Vandenberg SFB's determination in a letter dated June 30, 2021. Vandenberg SFB would comply with all conditions stipulated in SHPO's concurrence letter and the Memorandum of Agreement (MOA) signed September 30, 2021 (refer to Appendix B-1 for details) to avoid and mitigate adverse effects. Vandenberg SFB would be responsible for the funding, implementation, monitoring, and reporting requirements as concurred upon by the SHPO.

The USSF is required to consult with federally recognized Native American tribes that have an affiliation with Vandenberg SFB's property. The USSF, therefore, consulted with the Santa Ynez Band of Chumash Indians. Vandenberg SFB sent a letter to the SYBCI informing them of the Proposed Action on March 9, 2021 (refer to Appendix B-1 for details). No written or verbal comments from the tribe were received (see Sections 3.3 and 4.3 of this EA for additional information on cultural resources).

Where federal projects occur within the coastal zone (i.e., coastal waters, to include

lands lying in coastal waters and submerged there under and adjacent shore lands) as defined in Section 304(1) of the Coastal Zone Management Act (CZMA) and as described in a state's federally approved Coastal Management Program, or where such projects may affect coastal uses or resources, they are subject to federal consistency review. The USSF submitted a Negative Determination letter to the California Coastal Commission (CCC) on January 31, 2022 indicating that demolition of the SLC-2 facilities would not affect the coastal zone. The USSF concluded the Proposed Action does not require a consistency determination. The CCC concurred with Vandenberg SFB's determination in a letter dated April 5 2022 (refer to Appendix B-2 for details). Refer to Sections 3.5 and 4.5 of this EA for additional information on coastal zone consistency.

There are no known or potential occurrence of federally recognized threatened and endangered species within the project area; therefore, formal consultation with the United States Fish and Wildlife Service (USFWS) under section 7 of the Endangered Species Act (ESA) is not required. Consultation with National Marine Fisheries Service is also not required as the Proposed Action would not affect marine species or associated habitat.

1.5 Objectives of the Environmental Assessment

Consistent with 32 CFR Part 989 and CEQ regulations (40 CFR 1500-1508) revised July 16, 2020, the scope of analysis presented in this EA is defined by the potential range of environmental impacts resulting from implementing the Proposed

Action and Alternatives, including the No-Action Alternative.

This EA identifies, describes, and evaluates the affected environment and environmental consequences of the Proposed Action and identifies measures to prevent or minimize environmental impacts.

The resources analyzed in this EA include the following: air quality; biological resources; cultural resources; geology and earth resources; land use and coastal zone resources; public health and safety; and water resources.

The following resources were considered but eliminated from detailed analysis in this EA since potential impacts would be non-existent or considered negligible:

Transportation. Temporary impacts could occur during demolition from construction vehicle traffic and/or temporary road closures or delays required from construction vehicle access and hauling of demolition debris. These impacts would be short term and temporary and are not anticipated to result in prolonged delays or degrade transportation infrastructure. Demolition debris hauling would be restricted to designated, pre-approved transportation routes as described in Chapter 2 of this EA. Removal of roadways under the Proposed Action would not affect the surrounding transportation network. No new long-term vehicle trips would occur under the Proposed Action.

Noise. There are no sensitive noise receptors located near the project area, and no long-term changes to noise levels are anticipated from the Proposed Action. Noise generated during demolition would occur over the short term while demolition activities took place. Noise impacts to protected species are considered in the Biological Resources section (see Section 4.2, Biological Resources).

Recreation. Access to Vandenberg SFB is controlled by the USSF; access to the project area is not open to the public for

outdoor recreation. Therefore, adverse impacts on recreation would not occur

Visual Resources. Demolition of SLC-2 would be consistent with the general military setting of Vandenberg SFB and may improve existing visual quality of the project area and surrounding areas, as it would return the site to a more natural landscape. In addition, proposed activities would occur in an area that is accessible only to military and authorized personnel. Therefore, adverse impacts on visual resources would not occur. Impacts from demolition of historic properties relative to historic landscapes or viewsheds are considered in Section 4.3, Cultural Resources.

Socioeconomics. Demolition activities would be slightly favorable in terms of job creation, tax base, and overall economic stimulus. The Proposed Action is not anticipated to affect local capacities for temporary housing or demands for public services or change long term to baseline socioeconomic conditions of the region (i.e., Lompoc and Santa Maria Valleys).

Environmental Justice. Pursuant to Executive Order (EO) 12898, *Environmental Justice*, potential effects of the Proposed Action on minority and low-income communities were considered. Because the Proposed Action would occur within Vandenberg SFB boundaries, minority and/or low-income populations within the region of influence (i.e., Lompoc and Santa Maria Valleys) would not be affected.

Public Services and Utilities. There would be no new personnel stationed at Vandenberg SFB or new facilities constructed as a result of the Proposed Action. Consequently, the Proposed Action would not result in a need for increases in public services or utilities. Utilities within the project area would be capped and left in place. Pre-demolition coordination would occur between the USSF and utility providers to ensure demolition activities and removal of utilities under the Proposed Action do not interrupt other active nearby utility usage.

This page intentionally left blank.

Chapter 2. Proposed Action and Alternatives

This chapter discusses the selection criteria for alternatives and describes the Proposed Action and Alternatives, including the No-Action Alternative, selected by the USSF to be evaluated in this EA.

2.1 Selection Standards for Alternatives

CEQ NEPA Implementing Regulations direct for federal agencies to “evaluate reasonable alternatives to the Proposed Action” (40 CFR 1502.14[a]). A range of reasonable alternatives in this EA was identified by evaluating their ability to meet the purpose and need of the Proposed Action and their ability to meet the following screening standards.

Criterion 1: Buildings and infrastructure identified as candidates for demolition at SLC-2 would have one or more of the following characteristics:

- Remove buildings that pose a threat to human health and safety, or the environment.
- Deteriorated beyond the point of economical repair.
- Require more than normal maintenance and its disposal would not create a deficiency.
- Building design is obsolete and the building cannot be reasonably altered or economically used.
- Building design is obsolete and would require repair or alteration to serve a useful function.
- Area is suitable for conversion to semi-improved or unimproved conditions.

Criterion 2: Be removed in a manner that complies with applicable and relevant environmental laws and regulations, including the solid waste laws and regulations related to the management of demolition debris.

Criterion 3: Comply with the 2011 General Plan and Integrated Natural Resources Management Plan.

Various alternatives were evaluated as part of the planning process. Options for mothballing, renovation, and McKinney Act uses were considered but eliminated as described in Section 2.5, Other Alternatives Considered because they did not meet the Purpose and Need for the Proposed Action. The No-Action Alternative also does not meet the Purpose and Need of the Proposed Action, but rather provides a measure of the baseline conditions against which the impacts of the Proposed Action can be compared. As a result, there are two alternatives that represent the reasonable alternatives carried forward for detailed analysis.

2.2 Alternative 1 – Full Demolition

Alternative 1 includes demolition of 32 facilities at SLC-2. Buildings proposed for demolition are listed in Table 2-1. See Figure 2-1 for a depiction of buildings proposed for demolition and project area.

This alternative would also remove some supporting facilities and infrastructure such as roadways, driveways, pads, and above ground utilities adjacent to the facilities being demolished. The Launch Water Reclamation System located adjacent to and between the SLC-2 Pump-House (1625) and Water-Tank (1627) is a trailer and would be removed from the site. Building 1670 is not contiguous with SLC-2 but would also be demolished under Alternative 1. Security fencing (1674) would be removed as necessary within the project footprint. The launch pad itself and associated infrastructure including the flame ducts would remain abandoned in place.

Table 2-1. Buildings to be Demolished Under a Full Demolition Alternative

Building Number	Building Name
01615	Horizontal Processing Facility
01616	Theodolite Building
01618	Technical Support Building
01619	Shipping & Receiving Warehouse
01620	Welding Shop and Clean Room
01621	Support Building
01622	Launch Control Blockhouse
01623	West Pad Fixed Umbilical Tower
01624	Vehicle Maintenance Facility
01625	Pump House
01626	Traffic House
01627	Water Tank
01628	Delta II Launch Operations Building
01629	Technical Support Building
01631	Clamshell Storage Building
01634	Traffic House
01640	Revetment Wall
01662	Nitrogen Storage
01670	Solid Motor Building
01674	Security Fence
01685	Proof-load Facility
01686	Hydro Lab
01687	Paint Booth
01689	Hazardous Materials Storage
01690	Hazardous Materials Storage
01692	Air Conditioning Building
01693	Electrical Equipment Building
01695	Generator Bldg A
01696	Generator Bldg B
-	At-grade cable tray to East Pad
-	LOX tank revetment (concrete blast wall)
-	RP-1 fuel tank revetment
-	Launch Water Reclamation System

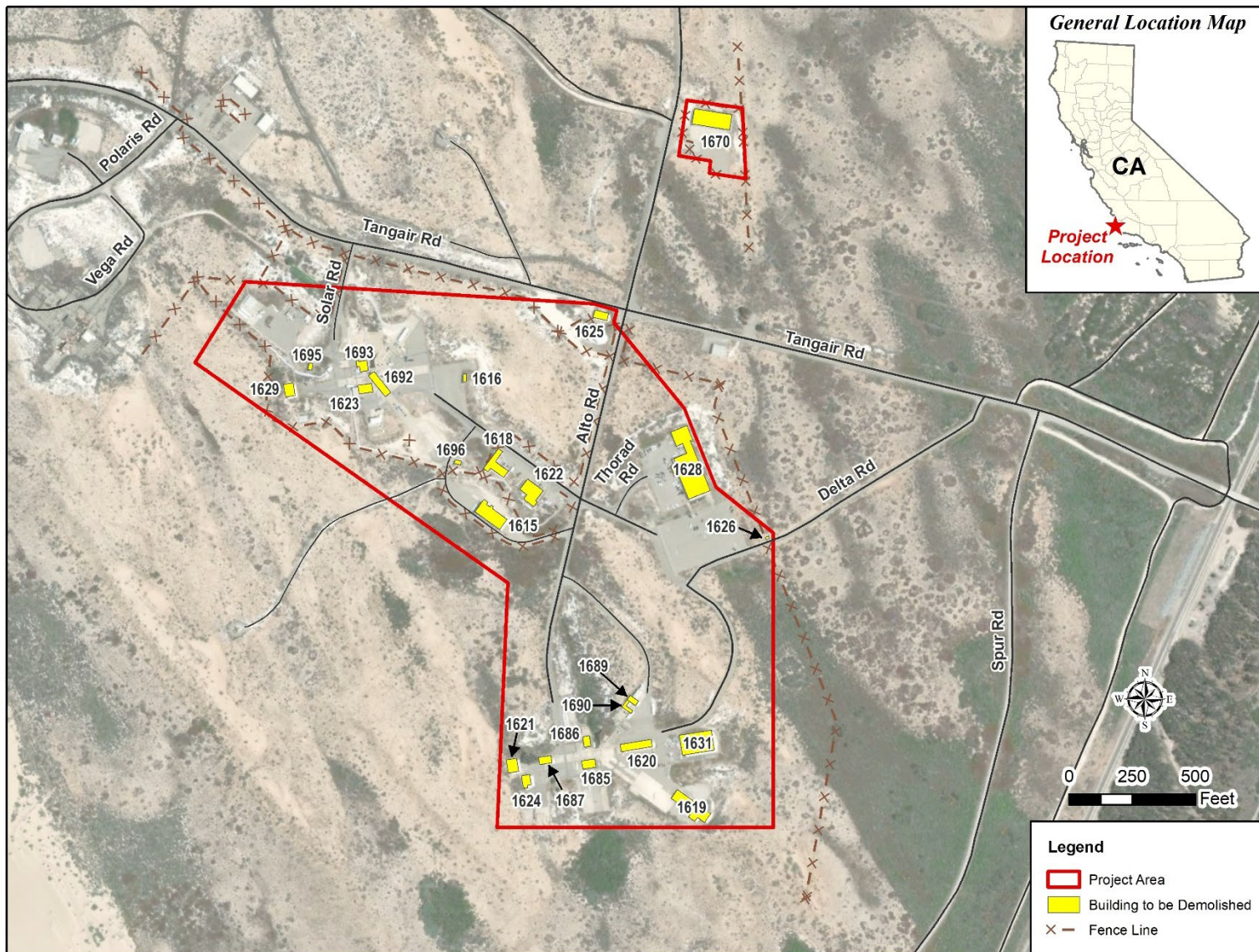


Figure 2-1. Alternative 1 - Full Demolition

NASA would be responsible for removing all of their equipment from SLC-2. The project area shown in Figure 2-1 (to include demolition of Building 1670) is approximately 64.4 acres; however, demolition activities would be contained to the facilities and structures removed to the extent practicable. Utilities would be capped and left in place at grade.

Demolition. Building demolition would generally occur in two steps: above ground and sub-surface demolition. Above-ground demolition would involve the removal of structural elements above the foundation (i.e., to grade level). Sub-surface demolition would involve excavating foundations and breaking/removing asphalt and concrete pavement.

Roofs would be removed prior to demolishing the walls and foundations. For roofs that are wood over a steel framework, the wood and the framework would be removed by cutting them into manageable sections. Following roof removal, above-grade concrete and steel portions of the buildings would be demolished. Concrete would be removed by cutting or breaking the walls into manageable sizes for recycling or disposal.

Additional methods that may be used for bringing structures down to ground level could include:

- Felling – weaken selected structural members and use cables to cause a directed controlled collapse of the building. The preferred demolition process of buildings using this method would be the selective cutting and weakening of designated structural members to induce structural failure when tension is placed on guide wires.
- Systematic Disassembly – use of cranes and other devices to lower components or subassemblies to the ground.

- Cutting – by means of mechanical shears or saws, or by electrical or flame torches

Some crushing of vegetation may occur surrounding the immediate area of demolition. Excavation of up to four and a half feet deep may be required to remove foundation/footers during demolition of some facilities. Some pavements and utility pads would be demolished, requiring excavation and removal down to two feet. The ground under the removed facilities and pavements would be graded and returned to level with surrounding undisturbed land. The use of fill material from existing Vandenberg SFB borrow pits would be utilized to fill the excavated pavements and facility foundations, as required.

Construction equipment to be used may include excavator, back-hoe, grader, skip loader, water truck, and dump truck equipment. Demolition activities would last approximately four months. Approximately eight personnel would be working within the project area during demolition activities.

Staging. Laydown and staging of equipment or demolition debris may also be required but would be located within the project area shown in Figure 2-1 on existing parking lots, roads, or within areas of invasive plant species (e.g., iceplant) pre-identified by qualified Vandenberg SFB natural resources management personnel and outside of known cultural resources. Staging areas would be used for the temporary storage of equipment or demolition debris until transported to an appropriate offsite disposal facility.

Access. Vehicle trips associated with demolition would include delivery trucks for heavy equipment, worker vehicles, and trucks to haul useable, recyclable, and waste materials from the demolition site. A delivery truck is expected to be required for each item of non-road heavy equipment. Worker vehicles would commute to the site daily. Removal of equipment and waste would involve a number of trucks based on

the weight or bulk of the material being removed. Removal of demolition waste materials and transportation to offsite landfills in Santa Maria and Lompoc would be accomplished generally along pre-established transportation routes to the extent practicable as shown in Figure 2-2. Vehicle and equipment trips and Base access would also generally occur along these routes.

Restoration. Following grading and site work, the site would be revegetated to the extent practicable, including use of hydro-seeding with a seed mixture pre-approved by the 30th Civil Engineer Squadron, Installation Management Flight, Environmental Element (30 CES/CEIE). Weeds would be controlled for at least 1 year postconstruction to achieve at least the same amount or more of pre-construction native plant cover. Follow-up monitoring for invasive species would be conducted and managed in accordance with the Base Invasive Plant Species Management Plan.

Waste Management. The demolition contractor would be responsible for solid waste management and disposal off Base at landfills with appropriate capacity and in accordance with all federal, state, and local regulations. It is anticipated that off Base landfills in Lompoc or Santa Maria would be utilized for offsite waste disposal, pending approvals.

Potentially hazardous wastes generated during demolition may include:

- Asbestos containing materials (ACM) and lead based paint (LBP). Most of the facilities at SLC-2 were built between 1959 and 1979. Given the age of these facilities, it is likely that asbestos and lead abatement would be required during demolition.
- Granular activated carbon canisters and resin bed canisters from the Launch Water Reclamation System. Sampling of these components may be required for presence of metals or volatile organic compounds

(VOCs), and disposal method would be dependent on analytical results.

- Miscellaneous universal waste including fluorescent lighting ballasts and lamps.
- It is unknown if polychlorinated biphenyls (PCBs) are present within the project area; however, due to the age of the site, it is possible PCBs could be present. A pre-demolition survey would be conducted to identify hot areas, and remediation would occur as needed according to USSF standard protocols.

Refer to Sections 3.6 and 4.6 of this EA for further consideration of waste management under the Proposed Action.

As needed, pre-demolition surveys would be conducted to identify project hazards, to include confirmation of presence or absence of ACM and LBP in each facility.

Hazardous materials would be abated, as required, prior to initiation of demolition activities. This would involve the use of licensed contractors to remove LBP and ACM from the facilities prior to the commencement of demolition to ensure that demolition debris does not contain unsafe levels of hazardous materials. Demolition including LBP and ACM would be coordinated through the Base Asbestos Program Manager and Santa Barbara County Air Pollution Control District (SBCAPCD).

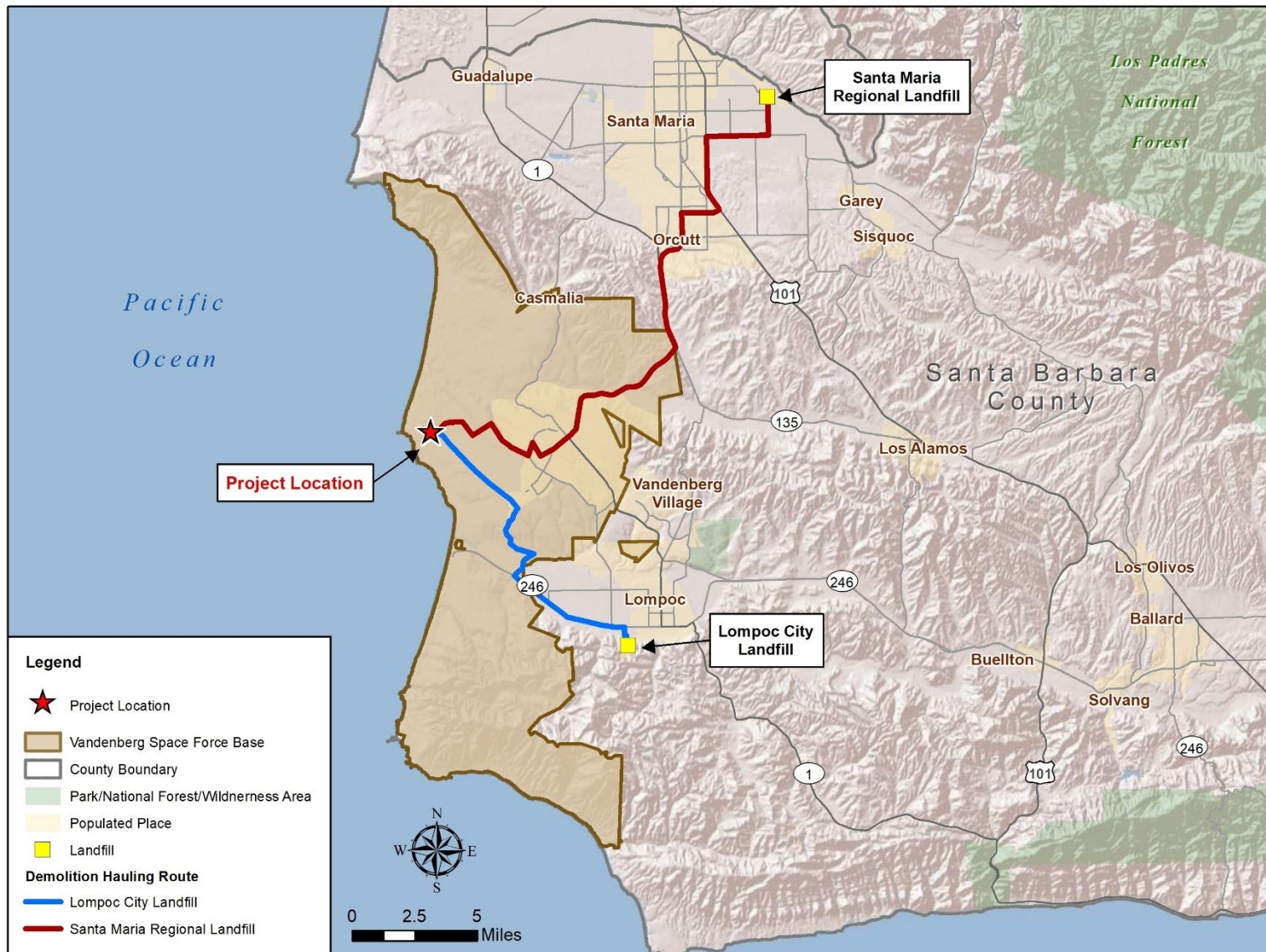


Figure 2-2. Hauling Routes for Demolition Debris

All hazardous waste encountered or generated during demolition activities would be stored, transported, and disposed of in accordance with federal, state, and local regulations and in coordination with the 30th Civil Engineer Squadron, Installation Management Flight, Environmental Compliance (30 CES/CEIEC) Hazardous Waste Program Manager. Hazardous waste would be transported to the Consolidated Collection Accumulation Point (CAP) at Building 3300 on Base. Manifests would be signed by designated Vandenberg SFB staff prior to transporting the waste to a permitted offsite disposal facility.

In order to meet the goals of Assembly Bill 341, the 30th Civil Engineer Squadron, Installation Management Flight (30 CES/CEI) would implement, as applicable, a minimum of 75 percent diversion rate by weight overall for demolition materials generated by the Proposed Action. Inert materials are highly recyclable with proper preplanning for segregation and on-site management. Steel, non-chemically treated wood, concrete, waste soil, and asphalt, generated as a result of the demolition actions, would be expected to have a diversion rate higher than 50 percent. Typically, such materials are 100 percent divertible with proper separation planning and practices. Regulatory compliant disposal would be considered the last option for management of demolition debris.

2.3 No-Action Alternative

Under the No-Action Alternative, the Proposed Action would not occur and all facilities would be left in place. Further condition degradation would be expected, and greater safety and health concerns may arise due to the site falling into disuse. Therefore, the No-Action Alternative is not considered a reasonable alternative because it does not meet the purpose and need of the Proposed Action; however, it provides a measure of the baseline conditions against which the impacts of the Proposed Action can be compared. In this

EA, the No-Action Alternative is represented by the baseline conditions described in Chapter 3, Affected Environment.

2.4 Environmental Protection Measures

The following environmental protection measures are considered part of the Proposed Action. Measures would be included in all future contracting documents related to project completion. The USSF maintains and follows a comprehensive list of steps employed to avoid and/or minimize environmental impacts as well as monitor and report all protection measures (General Requirements, Section 01 57 20 Environmental Protection).

2.4.1 Air Quality

- Prior to proposed demolition, portable equipment meeting the criteria defined in the statewide Portable Equipment Registration Program would be registered in the program or would have a valid SBCAPCD Permit to Operate.
- Equipment usage and fuel consumption would be documented and reported to 30 CES/CEI to facilitate tracking emissions for inclusion in the Base Air Emissions Inventory.
- Idling of heavy-duty diesel trucks during loading and unloading activities would be limited to five minutes, with auxiliary power units used whenever practicable.

The following control measures would be implemented to decrease diesel emissions. Diesel engines operated in California are required to meet California Air Resource Board (CARB) established standards, which may be more stringent than federal mandates:

- Engine size in equipment used for the project would be minimized.

- The use of equipment would be managed to minimize the number of pieces of equipment operating simultaneously and total operation time for the project.
- Engines would be maintained in tune per manufacturer or operator specification.
- If applicable, CARB-certified diesel catalytic converters, diesel oxidation catalysts, and diesel particulate filters would be installed.
- When applicable, equipment powered by diesel engines would be retrofitted to meet the Air Toxics Control Measures for Off-Road Vehicles.
- Diesel construction equipment meeting the CARB Tier 4 emission standards for off-road heavy-duty diesel engines would be used to the maximum extent feasible.
- If appropriate, diesel powered equipment would be replaced by electric equipment.
- Only CARB diesel would be used during the Proposed Action.

The following dust control measures found in SBCAPCD Rule 345, *Control of Fugitive Dust from Construction and Demolition Activities*, would be implemented to further decrease fugitive dust emissions from ground disturbing activities:

- Dust would be controlled by watering. Water would be applied at least twice daily to dirt roads, graded areas, and dirt stockpiles to prevent excessive dust at the staging areas. Watering frequency would be increased whenever the wind speed exceeds 15 miles per hour. Watering would not be done when rain events or soil moisture obviate the need for it. Chlorinated water would not be allowed to run into any waterway.

- Vehicles speeds would be minimized on exposed earth.
- Ground disturbance would be limited to the smallest practical area and to the least amount of time.
- Best Management Practices (BMPs) to reduce dust emissions would be implemented.
- Soil stockpiled for more than two days would be covered, kept moist, or treated with soil binders to prevent dust generation.
- No materials or soil would be loaded onto trucks for transport unless at least one of the following dust prevention techniques is utilized:
 - Properly secured tarps or cargo covering that covers the entire surface area of the load or a container-type enclosure is used.
 - Maintain a minimum of 6 inches of freeboard below the rim of the truck bed where the load touches the sides of the cargo area and ensure that peak loads do not extend above any part of the upper edge of the cargo area.
 - Water the bulk material to minimize the loss of material to wind or spillage.
 - Implement other effective dust prevention control measures approved in writing by the Control Officer.
- Visible roadway dust as a result of active operations, spillage from transport trucks, track-out/carry-out, and/or erosion would be controlled by implementing any of the following measures: track-out grates of gravel beds at each egress point; wheel washing at each egress point during muddy conditions; soil binders; chemical soil stabilizers; geotextiles; mulching; or seeding.

- Visible roadway dust would be removed at the end of each workday when bulk material removal ceases.
- During structure demolition, sufficient quantities of water would be applied to the structure during active removal and the debris reduction process to prevent the generation of visible dust plumes. Unless Vandenberg SFB certifies in writing to the SBCAPCD Control Officer prior to demolition that safety concerns require otherwise, the structure would be demolished inward toward the building pad, and the roof and walls would be laid down so that they fall inward and not away from the building.
- Any handling, removal, or disposal of ACM associated with the Proposed Action would comply with SBCAPCD Rule 1001, *National Emission Standards for Hazardous Air Pollutants*, Subpart M, National Emission Standard for Asbestos.

Given the requirements of EO 14057, *Efficient Operations*, and the increasing concerns that greenhouse gases (GHGs) contribute to global climate change, the 30 CES/CEI would take into consideration and encourage measures that promote efficiency and conservation through education, programs, and incentives to increase efficiency and conserve energy in projects on Vandenberg SFB.

2.4.2 Biological Resources

Vegetation Communities

- A Revegetation and Monitoring Plan would be prepared for and approved by the 30 CES/CEIE. The plan, to be approved at least 6 months prior to completed demolition activities would include success criteria for the revegetation effort.
- To comply with EO 13112 (*Invasive Species*), the National Invasive Species Act, the Federal Noxious

Weed Act, and the Noxious Plant Control Act, native vegetation that is disturbed or removed would be replaced with local natives from Vandenberg SFB's approved planting list following project activities. Native species seeds or cuttings would be collected in the vicinity of the disturbed area and used for revegetation when feasible. Weeds would be controlled for a minimum of one year post-construction to achieve at least the same amount or more of pre-construction native plant cover. Annual reports with plant list and cover would be provided, and a site inspection would be coordinated with the 30th Civil Engineer Squadron, Installation Management Flight, Conservation Management (30 CES/CEIEA) for approval. Approval would be dependent upon amount of native plant cover achieved.

- Follow-up monitoring would be conducted to determine success of the revegetation effort or if invasive species are colonizing the disturbed area. Subsequent management would be required if success criteria are not met. If invasive weed species are detected, they would be managed in accordance with the Base Invasive Plant Species Management Plan.
- Prior to site activities, required briefing and inspection of weed seeds on equipment vehicles (dozers, mowers etc.) would be coordinated with 30 CES/CEIEA.
- Prior to site transport, any skid plates would be removed and cleaned. Equipment would be cleaned of weed seeds daily, to include wheels, undercarriages, and bumpers.
- Prior to leaving the project area, for vehicles that have caked-on dirt or mud, vehicles would be cleaned with

hand tools such as bristle brushes and brooms at a designated exit area. Vehicles may subsequently be washed at the Army & Air Force Exchange Service car wash or approved wash area.

- For vehicles with dry dusted dirt on vehicles (and no caked-on dirt or mud), prior to leaving a site at a designated exit area, equipment vehicles would be thoroughly brushed; vehicles may alternatively be air blasted on site.

Other Species of Management Concern

- Any tree/vegetation trimming or removal would be avoided during the general nesting bird season. If trimming or removal of trees/vegetation must occur during the general nesting bird season, activities would be preceded by nesting bird clearance surveys. If nests are discovered, trimming and/or removal activities would be deferred if necessary, and/or a protective buffer (or no work zone) around the nest would be delineated by a Qualified Biologist. Nests successfully fledging or being deemed no longer active would be determined by a Qualified Biologist.
- Tree removal or trimming would be minimized at significant monarch butterfly roosts and avoided during the overwintering period, as applicable.

Wetlands and Waters of the U.S.

- Disturbances to wetland or riparian habitats would be avoided. Base biologists would be consulted as part of the planning process for any potential impacts to wetlands.

2.4.3 Cultural Resources

- Vandenberg SFB would comply with the conditions stipulated in SHPO's concurrence letter dated June 30,

2021 and the MOA signed on September 30, 2021 (refer to Appendix B-1 for details).

- If previously undocumented cultural resources are discovered during demolition activities, procedures established in the 36 CFR 800.13 and the Base Integrated Cultural Resources Management Plan would be followed.

2.4.4 Public Health and Safety

- Proper disposal of hazardous waste would be accomplished through identification, characterization, sampling, and analysis of wastes generated.
- All hazardous materials would be properly identified and used in accordance with manufacturer's specifications to avoid accidental exposure to or release of hazardous materials required to operate and maintain construction equipment.
- All equipment would be properly maintained and free of leaks during demolition activities. All necessary equipment maintenance and repairs would be performed in pre-designated controlled, paved areas to minimize risks from accidental spillage or release. Prior to demolition, a Spill Prevention and Response Plan would be submitted to 30 CES/CEI for approval.
- Hazardous materials would be procured through or approved by the Vandenberg Hazardous Materials Pharmacy (HazMart). Monthly usage of hazardous materials would be reported to the HazMart to meet legal reporting requirements.
- The USSF and all demolition contractors would comply with Air Force Occupational Safety and Health or federal Occupational Safety and Health Administration (OSHA) standards requirements

during demolition activities, per AFI 91-202.

- A Health and Safety Plan would be developed and implemented. In addition, the USSF would coordinate with the Space Launch Delta 30 Weapons Office (SLD 30/SEW) prior to implementing the Proposed Action to ensure no adverse effects would occur from unexploded ordnance (UXO) issues.
- Awareness training would be incorporated into the worker health and safety protocol to minimize potential adverse impacts from UXO, biological hazards (e.g., snakes and poison oak) and physical hazards (e.g., rocky and unstable terrain).
- All ground disturbing activities in proximity to any hazardous release sites would be monitored to minimize the risks of exposure to soil or groundwater contaminants.

2.4.5 Water Resources

- BMPs would be implemented to prevent soil, chemicals or other pollutants from entering into the storm water system, natural surface water drainages or groundwater. BMPs would include erosion and sediment controls, tracking controls, vehicle and equipment fueling and maintenance, spill prevention and control, solid waste management, liquid waste management, concrete waste management, stockpile management and septic waste management as applicable. BMPs would be effectively implemented and maintained as described in a current California Stormwater BMP Manual (California Stormwater Quality Association or similar).
- Trash would be contained and regularly disposed of. Any trash that escapes from containers shall be collected daily.

- Permanent sediment and erosion control materials would be biodegradable and may not contain any plastic. All temporary sediment and erosion control materials shall be removed upon site stabilization.
- Exposed soils remaining after demolition would be permanently stabilized to prevent erosion.
- Any disconnection of water or sewer systems and any connection to fire hydrants or other water sources connect to the water distribution would be coordinated with American Water and 30th Civil Engineer Squadron, Civil Engineering Operations Utilities.
- Hazardous materials would be stored in approved containers and drums and placed in proper containment facilities covered prior to rain events.
- Fueling would be conducted in a designated location with appropriate spill prevention and control.
- Portable toilets would have secondary containment and secured to the ground to prevent falling.

2.5 Other Alternatives Considered

As part of the USSF's decision-making process, three alternatives were considered but not carried forward for detailed analysis as they were determined infeasible since they did not meet the purpose and need of the Proposed Action, as described below.

2.5.1 Mothballing

An alternative was considered that included maintaining (mothballing) the existing facilities on site while conducting periodic maintenance to ensure the facilities do not fall into disrepair. This alternative would not meet the purpose of and need for the Proposed Action to demolish obsolete and excess facilities and infrastructure and avoid

long-term maintenance costs. Therefore, this alternative was eliminated from further analysis.

2.5.2 Rehabilitation/Upgrade

An alternative was considered that included rehabilitating or upgrading the proposed demolition site. There is no currently identified user that would utilize the site if rehabilitated, therefore, specific requirements related to upgrades are unknown. Furthermore, this alternative would not meet the purpose of and need for the Proposed Action to demolish obsolete and excess facilities and infrastructure. Therefore, this alternative was eliminated from further analysis.

2.5.3 Partial Demolition

An alternative was considered that considered partial demolition of some, but not all of the buildings within the project footprint. This alternative would not meet

the purpose and need for the Proposed Action to demolish obsolete and excess facilities and infrastructure. Therefore, this alternative was eliminated from further analysis.

2.5.4 McKinney Act Uses

Title V of the McKinney Act imposes requirements on federal agencies to identify and make available surplus federal property, such as buildings and land, for use by states, local governments, and nonprofit agencies to assist homeless people.

An alternative was considered that included use of the candidate sites, where feasible, for uses designated under the McKinney Act. However, Vandenberg SFB is a secured, restricted access Base. Use of excess facilities within Vandenberg SFB by non-military personnel could have the potential to conflict with or compromise the Base mission. Therefore, this alternative was eliminated from further analysis.

Chapter 3. Affected Environment

This chapter describes the existing environment near and within the project area for the Proposed Action Alternatives and No-Action Alternative. The area considered for most resources was confined to the immediate project area. For some environmental resources, a wider regional area was used, as appropriate.

Per the July 16, 2020 revised CEQ regulations, *“effects or impacts means changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives.... Effects do not include those effects that the agency has no ability to prevent due to its limited statutory authority or would occur regardless of the proposed action.”* In alignment with the revised CEQ guidance, this EA does not include a discussion of cumulative impacts; rather, where appropriate, the affected environment discussion considers *“environmental trends or planned actions in the area(s) that are reasonably foreseeable. Consistent with current agency practice, this also may include non-Federal planned activities that are reasonably foreseeable.”*

3.1 Air Quality

Air quality refers to the atmospheric concentration of a specific compound (i.e., amount of pollutants in a specified volume of air) that occurs in a particular geographic location. Air quality levels at a particular location are determined by the interaction of

emissions (e.g., type and amount of pollutant emitted into the atmosphere), meteorology (e.g., weather patterns affecting pollutant dispersion), and chemistry (e.g., chemical reactions that transform emissions into other substances). Air quality is defined by pollutant concentrations that are often expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

One aspect of significance is a pollutant's concentration in comparison to a national and/or state ambient air quality standard. These standards represent the maximum allowable atmospheric concentrations that may occur and still protect public health and welfare with a reasonable margin of safety. The national standards for seven major pollutants of concern (i.e., criteria pollutants), established by the United States Environmental Protection Agency (USEPA), are termed the National Ambient Air Quality Standards (NAAQS). Areas that violate a NAAQS are designated as nonattainment areas.

California standards, established by CARB, are termed the California Ambient Air Quality Standards (CAAQS). CAAQS are at least as restrictive as the NAAQS and include pollutants for which national standards do not exist. In addition to the national criteria pollutants, California has identified four other pollutants for ambient air quality standards.

Areas within California with ambient air pollutant concentrations that are higher than a state standard are designated as nonattainment areas for that pollutant. Table 3.1-1 summarizes the national and state ambient air quality pollutant standards.

Table 3.1-1. National and California Ambient Air Quality Standards

Pollutant	Averaging Period	NAAQS ^a Primary Standard ^{b,c}	NAAQS ^a Secondary Standard ^{b,d}	CAAQS
Ozone, O ₃ (ppm)	1 hour	--	--	0.09
	8 hours	0.070	0.070	0.070
Carbon Monoxide, CO (ppm)	1 hour	35	--	20
	8 hours	9	--	9
Nitrogen Dioxide, NO ₂ (ppm)	1 hour	0.10	--	0.18
	Annual	0.053	0.053	0.03
Sulfur Dioxide, SO ₂ (ppm) ^e	1 hour	0.075	--	0.25
	3 hours	-	0.5	-
	24 hours	0.14	--	0.04
Respirable Particulate Matter (PM ₁₀) (µg/m ³)	24 hours	150	150	50
	Annual	--	--	20
Fine Particulate Matter (PM _{2.5}) (µg/m ³)	24 hours	35	35	--
	Annual	12	15	12
Lead, Pb (µg/m ³) ^f	Rolling 3-month average	0.15	0.15	--
	30-day average	--	--	1.5
Vinyl Chloride (ppm) ^f	24 hours	--	--	0.01
Sulfates (µg/m ³)	24 hours	--	--	25
Hydrogen Sulfide, H ₂ S (ppm)	1 hour	--	--	0.03
Visibility Reducing Particles	8 hours	--	--	-- ^e

Source: CARB 2016

Notes:

- Standards other than the 1-hour ozone, 24-hour PM₁₀, 24-hour PM_{2.5}, and those based on annual averages are not to be exceeded more than once a year. The 8-hour ozone national standard has replaced the 1-hour ozone national standard.
- Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.
- Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after that states implementation plan is approved by the USEPA.
- Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
- In 1989, the CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.
- The CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants

-- No standard.

Toxic air contaminants (TACs) include air pollutants that can cause serious illnesses or increased mortality, even in low concentrations. TACs are compounds that generally have no established ambient standards but are known or suspected to cause short-term (acute) and/or long-term

(chronic non-carcinogenic or carcinogenic) adverse health effects. The CARB designates diesel particulate matter (DPM) from the combustion of diesel fuel as a TAC.

The main pollutants of concern considered in this air quality analysis include VOCs,

ozone (O₃), carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter less than 10 microns in diameter (PM₁₀), and particulate matter less than 2.5 microns in diameter (PM_{2.5}).

Although VOCs or NO_x (other than nitrogen dioxide [NO₂]) have no established ambient standards, they are important as precursors to O₃ and PM_{2.5} formation.

3.1.1 Regional Setting

The climate of the project area is Mediterranean, characterized by warm, dry summers and mild, relatively damp winters. The major influence of the regional climate is the Pacific Ocean and the Eastern Pacific High, a strong persistent atmospheric high-pressure system. Over 90 percent of the total annual precipitation in the project area occurs from polar storm systems that frequent the area during the months of November through April. The average annual precipitation is approximately 15 inches (NOAA 2016).

Due to the proximity of the project area to the coastline, marine air from the Pacific Ocean has a strong moderating effect on air temperatures at Vandenberg SFB. The high and low temperatures during the summer months average in the low 70s (degrees

Fahrenheit) and low 50s, respectively. The high and low temperatures during the winter months average in the mid-60s and low 40s.

Vandenberg SFB is located within Santa Barbara County, which is within the South Central Coast Air Basin (SCCAB). The SCCAB is composed of the counties of San Luis Obispo, Santa Barbara, and Ventura. The SBCAPCD is responsible for regulating stationary sources of air emissions in Santa Barbara County.

The CARB and SBCAPCD operate a network of ambient air monitoring stations in Santa Barbara County. The purpose of the monitoring stations is to measure ambient concentrations of air pollutants and determine whether air quality meets the CAAQS and the NAAQS. The nearest air monitoring station to the project area (the South H Street station in Lompoc) measures all criteria pollutants and began monitoring PM_{2.5} in 2007. Presently, Santa Barbara County is in unclassified/attainment of all NAAQS for all criteria pollutants. Additionally, Santa Barbara County is unclassified or in attainment of all CAAQS except that for O₃ and PM₁₀ (CARB 2019). Table 3.1-2 summarizes the county's attainment status.

Table 3.1-2. Santa Barbara County Air Quality Attainment Status

O ₃		CO		NO ₂		SO ₂		PM _{2.5}		PM ₁₀		Pb	
State	National	State	National	State	National	State	National	State	National	State	National	State	National
N	U/A	A	U/A	A	U/A	A	U	U	U/A	N	U	A	U/A

Sources: USEPA 2020 and CARB 2019.

Notes:

A=Attainment; N=Nonattainment; U/A=Unclassified/Attainment; U=Unclassified.

3.1.2 Greenhouse Gas Emissions

GHGs are gases that trap heat in the atmosphere. These emissions occur from natural processes and human activities. The accumulation of GHGs in the atmosphere influences the long-term range of average atmospheric temperatures. Scientific

evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

Recent observed changes due to global warming include shrinking glaciers, thawing permafrost, a lengthened growing season, and shifts in plant and animal ranges (IPCC 2014, USGCRP 2018, California's Fourth Climate Change Assessment 2018). Predictions of long-term environmental impacts due to global warming include sea level rise, changing weather patterns with increases in the severity of storms and droughts, changes to local and regional ecosystems including the potential loss of species, and a significant reduction in winter snowpack. In California, global warming effects are predicted to include exacerbation of air quality problems, a reduction in municipal water supply from the Sierra snowpack, a rise in sea level that would displace coastal businesses and residences, damage to marine and terrestrial ecosystems, and an increase in the incidence of infectious diseases, asthma, and other human health problems (California's Fourth Climate Change Assessment 2018).

The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride. Each GHG is assigned a global warming potential (GWP), which equates to the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to CO₂, which has a value of one. For example, CH₄ has a GWP of 21, which means that it has a global warming effect 21 times greater than CO₂ on an equal-mass basis. Total GHG emissions from a source are often reported as a CO₂ equivalent (CO₂e). The CO₂e is calculated by multiplying the emission of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs.

3.1.3 Applicable Regulations and Standards

Sources of air emissions in the SCCAB are regulated by the USEPA, CARB, and SBCAPCD. In addition, regional and local jurisdictions play a role in air quality management.

Federal Regulations

Clean Air Act

The Clean Air Act (CAA) of 1963 and subsequent amendments specify regulations for control of the nation's air quality. The USEPA is responsible for implementing most aspects of the CAA. Basic elements of the act include the NAAQS for criteria air pollutants, hazardous air pollutant standards, attainment plans, motor vehicle emission standards, stationary source emission standards and permits, and enforcement provisions. The CAA regulates emissions of criteria pollutants and air toxics to protect human health and welfare.

The CAA delegates the enforcement of the national standards to the states. In California, the CARB is designated as the responsible agency for all air quality regulations with implementation and enforcement of stationary source regulations delegated to the regional Air Districts.

The CAA establishes air quality planning processes and requires areas in nonattainment of a NAAQS to develop a State Implementation Plan that details how the state will attain the standard within mandated time frames. The requirements and compliance dates for attainment are based on the severity of the nonattainment classification of the area.

Executive Order 12088

EO 12088, *Federal Compliance with Pollution Control Standards*, requires federal agencies to comply with applicable pollution control standards. The EO requires

agencies to ensure that all necessary actions are taken to ensure the prevention, control, and abatement of environmental pollution with respect to federal activities and facilities. EO 12088 also requires federal agencies to cooperate with USEPA, state, and local regulatory agencies.

Executive Order 13432

EO 13432, *Cooperation Among Agencies in Protecting the Environment with Respect to Greenhouse Gas Emissions from Motor Vehicles, Nonroad Vehicles, and Nonroad Engines*, ensures the coordination between federal agencies to protect the environment with respect to GHGs emissions from vehicles, engines, and motor vehicle fuels. This EO requires the integration of environmental management into federal operations, policies, planning, and management.

Executive Order 14008

EO 14008, *Tackling the Climate Crisis at Home and Abroad*, sets forth numerous policies to address climate change and establishes the issue as a priority for all agencies. Notably, this EO directs agencies to incorporate climate change considerations into their operations, including procurement policies.

Executive Order 14057

EO 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*, tasks the federal government with leading “by example to achieve a carbon pollution-free electricity sector by 2035 and net-zero emissions economy-wide by 2050.” To that end, the head of each agency is required to meet a series of goals, including achieving a 65 percent reduction in scope 1 and scope 2 GHG emissions (i.e., those released from sources that are owned or controlled by a federal agency [scope 1] or those resulting from the generation of electricity, heat, or steam purchased by a federal agency [scope 2]) by 2030, as compared to a 2008 baseline.

State Regulations

In California, the CARB is designated as the responsible agency for all air quality regulations.

California Clean Air Act

The California CAA of 1988 and its amendments outlines a program to attain the CAAQS for O₃, NO₂, sulfur dioxide (SO₂), and CO by the earliest practical date. Since the CAAQS are more stringent than the NAAQS, attainment of the CAAQS will require more emission reductions than what will be required to show attainment of the NAAQS.

Similar to the federal system, the state requirements and compliance dates are based on the severity of the ambient air quality standard nonattainment within a region.

Local Regulations

The SBCAPCD regulates stationary sources of air pollution and establishes emission limitations and control requirements for various sources, based upon their source type and magnitude of emissions. For example, SBCAPCD Rule 345, *Control of Fugitive Dust from Construction and Demolition Activities*, establishes limitations on the generation of fugitive dust emissions from construction and demolition sites. The SBCAPCD also implements a permit program for new or modified stationary sources of air pollutants.

3.2 Biological Resources

Federal agencies are required by NEPA and section 7 of the ESA of 1973, as amended (16 United States Code [USC] §§ 1531 to 1544), to seek to conserve and to assess the effect of any project on federally listed threatened and endangered species. Under section 7, consultation with the USFWS and/or the National Oceanic and Atmospheric Administration, National Marine Fisheries Service is required for federal projects if such actions could directly or indirectly adversely affect listed species

or destroy or adversely modify designated critical habitat. In addition, when evaluating project impacts, the USSF considers state listed species when practicable when such protection does not directly conflict with the military mission.

Vandenberg SFB is located in a transitional ecological region that lies at the northern and southern distributional limits of many species and contains diverse biological resources of considerable importance. Vandenberg SFB provides habitat for many federal and state listed threatened, endangered, and special concern plant and animal species.

3.2.1 Methodology

Potential occurrence of plant and wildlife species, including special status species, was determined based on a project-specific field survey conducted in the project vicinity, past documentation of special status species within the project vicinity, suitable habitat preferences, and known occurrence based on literature searches and other existing documentation. Sources used to determine potential occurrence include published literature, regulatory research documents, and Geographic Information System (GIS) maps of natural resources present at Vandenberg SFB. Special status species survey and location GIS maps were superimposed over the project area and intersecting occupied habitat was documented and/or reviewed.

As part of the project field survey, a 400-foot buffer from the project area was surveyed, to account for potential noise impacts to species. As such, the overall biological survey area is approximately 180 acres.

3.2.2 Vegetation Types

The entire project area has been developed or previously disturbed. Of the approximately 180-acre biological survey area, approximately 13 percent has been developed. Previously disturbed habitats include Central Coast riparian scrub (1 percent), central coastal scrub (30 percent),

and central dune scrub (25 percent); the remaining 31 percent is simply classified as disturbed habitat, defined as an area no longer recognizable as a native or naturalized vegetation association and nearly exclusively composed of non-native species (Artemis 2020).

The two introduced species that dominate the disturbed habitat of SLC-2 are veldt grass (*Ehrharta calycina*) and hottentot-fig (*Carpobrotus edulis*). Common native plant species within the disturbed central coastal scrub habitat of the project area include mock heather (*Ericameria ericoides*), yellow bush lupine (*Lupinus arboreus* var. *eximius*), coyote bush (*Baccharis pilularis*), and poison oak (*Toxicodendron diversilobum*), with some remnants of black sage (*Salvia mellifera*) and California sagebrush (*Artemisia californica*). Herbaceous perennials such as California croton (*Croton californicus*), California aster (*Lessingia filaginifolia*), and green everlasting (*Gnaphalium californicum*) are also common. Common native species of SLC-2's disturbed Central Coast riparian scrub habitat include the dominant or co-dominant red willow (*Salix laevigata*) and coyote bush, as well as arroyo willow (*Salix lasiolepis*), California coffeeberry (*Rhamnus californica*), California blackberry (*Rubus ursinus*), and poison oak. Figure 3-1 depicts the vegetation communities documented within the biological survey area. Appendix C includes all plant species observed during a September 2020 survey of the project area.

3.2.3 Wildlife Species

The vegetation types present within the project area provide habitat for many wildlife species. Appendix C lists those species observed within the project area during a survey conducted in September 2020.

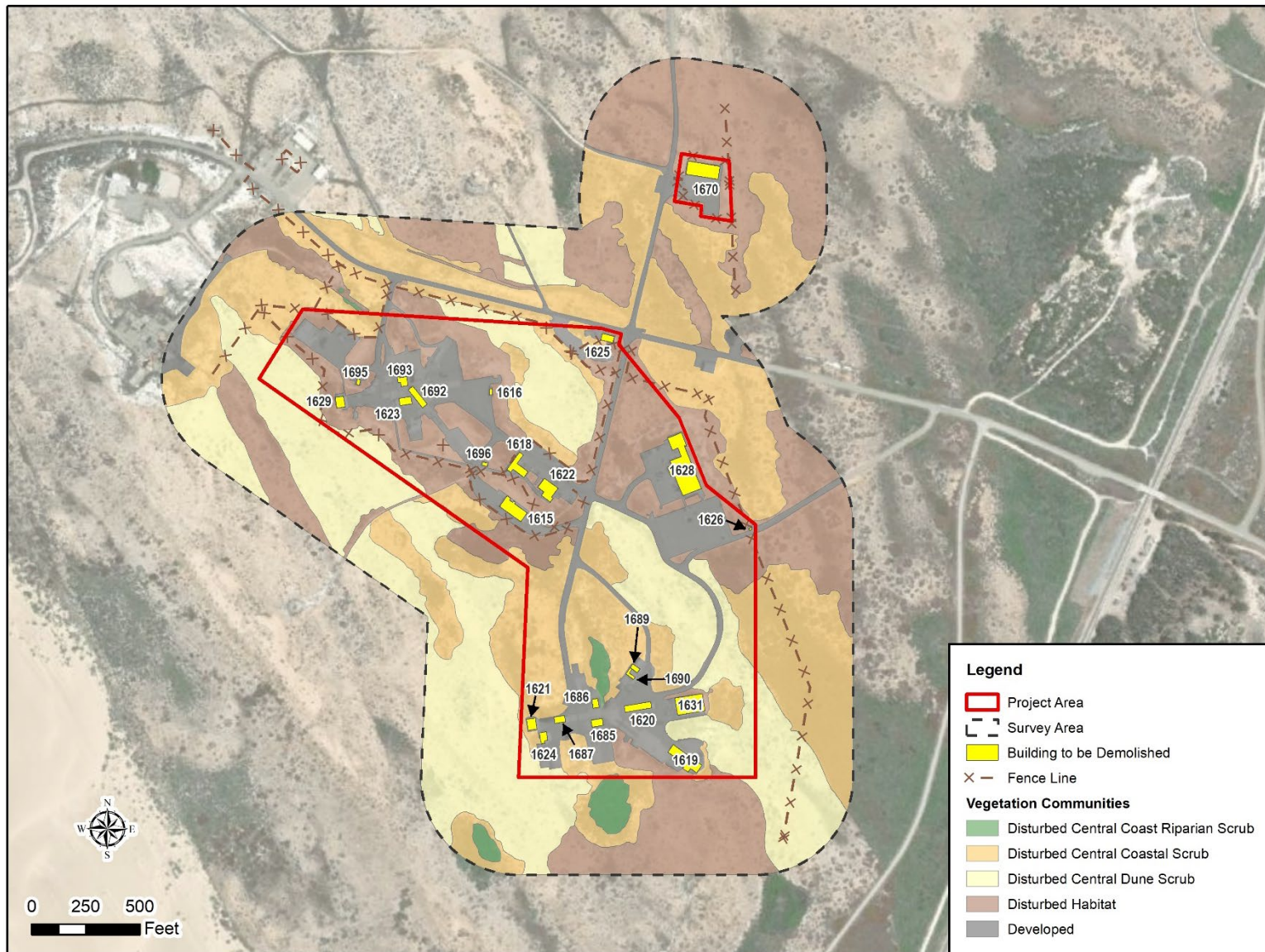


Figure 3-1. Vegetation Communities within Biological Survey Area

3.2.4 Special Status Species

Special status species refers to those animals identified as federally threatened or endangered under the ESA, a California Species of Concern (CSC), those plants that maintain a California Rare Plant Ranking (CRPR), or other designations. State agencies are directed to pay additional attention to CSC species to limit the potential of future listing under the state endangered species act. Some or all CRPR species, depending on substatus, meet the definitions of the state endangered species act, with the highest ranking species eligible for listing.

As part of this analysis, the USFWS Information for Planning and Conservation system Official Species List under section 7(c) of the ESA (USFWS 2021a), California Natural Diversity Database (CNDDDB 2021a, 2021b), Vandenberg SFB subject matter experts, and other sources were consulted to determine which species may have a potential to occur within the project area. Those species with a potential to occur within or near the project area are discussed in Table 3.2-1. Figure 3-2 depicts potential habitat for sensitive federally listed species with the potential to occur in the vicinity of the project area.

Table 3.2-1. Special Status Plant and Wildlife Species with Potential to Occur Within the Project Area

Common Name	Status		Habitat	Potential to Occur in Project area
	USFWS	CDFW		
Amphibians				
California red-legged frog	FT	CSC	Perennial ponds and streams	Unlikely. California red-legged frogs have the potential to occur in nearly all permanent streams and ponds on Vandenberg SFB (Christopher 2004). No suitable breeding habitat has been identified within the project area; one human-made catchment basin encompassing approximately 0.07-acre and located immediately outside of the project boundary supports potential habitat for foraging, refuge, and dispersal. The project area is within 1 mile of known sites, but outside the approximately 690-foot maximum breeding disposal distance observed in Vandenberg SFB-specific studies (Artemis 2020). There have been no identified occurrences of California red-legged frogs within approximately two miles of the project area, including during the project-specific survey (Artemis 2020).
Birds				
California Condor	FE	FP	Coastal ranges and rugged canyons at elevation and open terrain for foraging.	Unlikely. Potentially suitable habitat present; however, this species is not currently present on Vandenberg SFB and there were no documented occurrences within the project area during the project-specific survey (Artemis 2020). Since the USFWS listed the California condor (<i>Gymnogyps californianus</i>) in 1967, there has been only one known condor occurrence on or near Vandenberg SFB. Though condors are not currently present on Vandenberg SFB, this instance indicates that condors could potentially utilize Vandenberg SFB in the future for some portion of their life history as their population continues to rebound. Vandenberg SFB, to include the project area, does have suitable foraging, roosting, and potentially limited nesting habitat that condors could utilize if they were present.
American peregrine falcon	-	FP	In California, breeds in areas ranging from cliffs to tall	Possible. The peregrine falcon can be found in a wide range of habitats; in California breeding habitats include cliffs and man-made structures in urban environments such as tall buildings or bridges. In such areas, eggs are not laid in a nest, but instead in small indentations. The breeding season generally begins in late

Common Name	Status		Habitat	Potential to Occur in Project area
	USFWS	CDFW		
			buildings or bridges	February and ends in June. Prey species include smaller birds and small reptiles, mammals, and occasionally bats (CDFW 2021a). CNDDDB records indicate the project area is within the range of American peregrine falcon, and it is possible this species may hunt or forage within or near the project area.
California Least Tern	FE	FP	Generally beaches free of vegetation with foraging in near-shore ocean and open waters, such as estuaries and lagoons. Typically present on Vandenberg SFB from April to mid-August.	Unlikely. No identified populations or suitable habitat within the proposed project demolition footprint (Artemis 2020); closest population is associated with Purisima Point, approximately 0.3 mile (1,584 feet) from the closest project boundary.
Western Snowy Plover	FT	CSC	Unvegetated to moderately vegetated beaches above high tide line and similar habitats.	Unlikely. No identified populations or suitable habitat within the proposed project demolition footprint (Artemis 2020); closest population is associated with Purisima Point, approximately 0.3 mile (1,584 feet) from the closest project boundary.
Insects				
EI Segundo Blue Butterfly	FE	-	Strongly associated with host plant seacliff buckwheat	Unlikely. No documented occurrences within the project area during the project-specific survey (Artemis 2020). Seacliff buckwheat, which is potentially suitable habitat for the federally endangered EI Segundo blue butterfly (<i>Euphilotes battoides allyni</i>) was found within the survey area; however, results from Dupuis et al. 2020 found that newly discovered populations are not <i>Euphilotes battoides allyni</i> and are more closely related to geographically proximate populations of the <i>E. battoides</i> group using a different habitat/host combination. Based on genetic evaluation and in coordination with the USFWS, <i>Euphilotes</i> butterflies known to occur on Vandenberg SFB are not <i>Euphilotes battoides allyni</i> and, therefore, no longer share its federal listing (USFWS, 2020; Dupuis, Geib, Osborne, & Rubinoff, 2020). However, the USFWS and Vandenberg SFB agreed to continue conservation efforts for the species with an intent by Vandenberg SFB to preclude a need for listing the Vandenberg <i>Euphilotes</i> in the future.
Plants				
Beach layia	FE	SE	Coastal sand dunes	Unlikely. A habitat suitability survey for beach layia was conducted within the biological survey area as part of the project (Artemis 2020). Although two habitat types that would support Beach layia were observed within the SLC-2 survey area (central dune scrub-disturbed and central coastal scrub-disturbed), there were no documented occurrences of this species, and based on known occupied areas and prior surveys, this species is not known to occur within the project area. Beach layia is currently being considered for reclassification from Endangered to Threatened, or perhaps delisted entirely (USFWS 2021b).

Notes:

FE = Federal Endangered Species; FT = Federal Threatened Species

SE = California Endangered Species; CSC = California Species of Concern; FP = fully protected

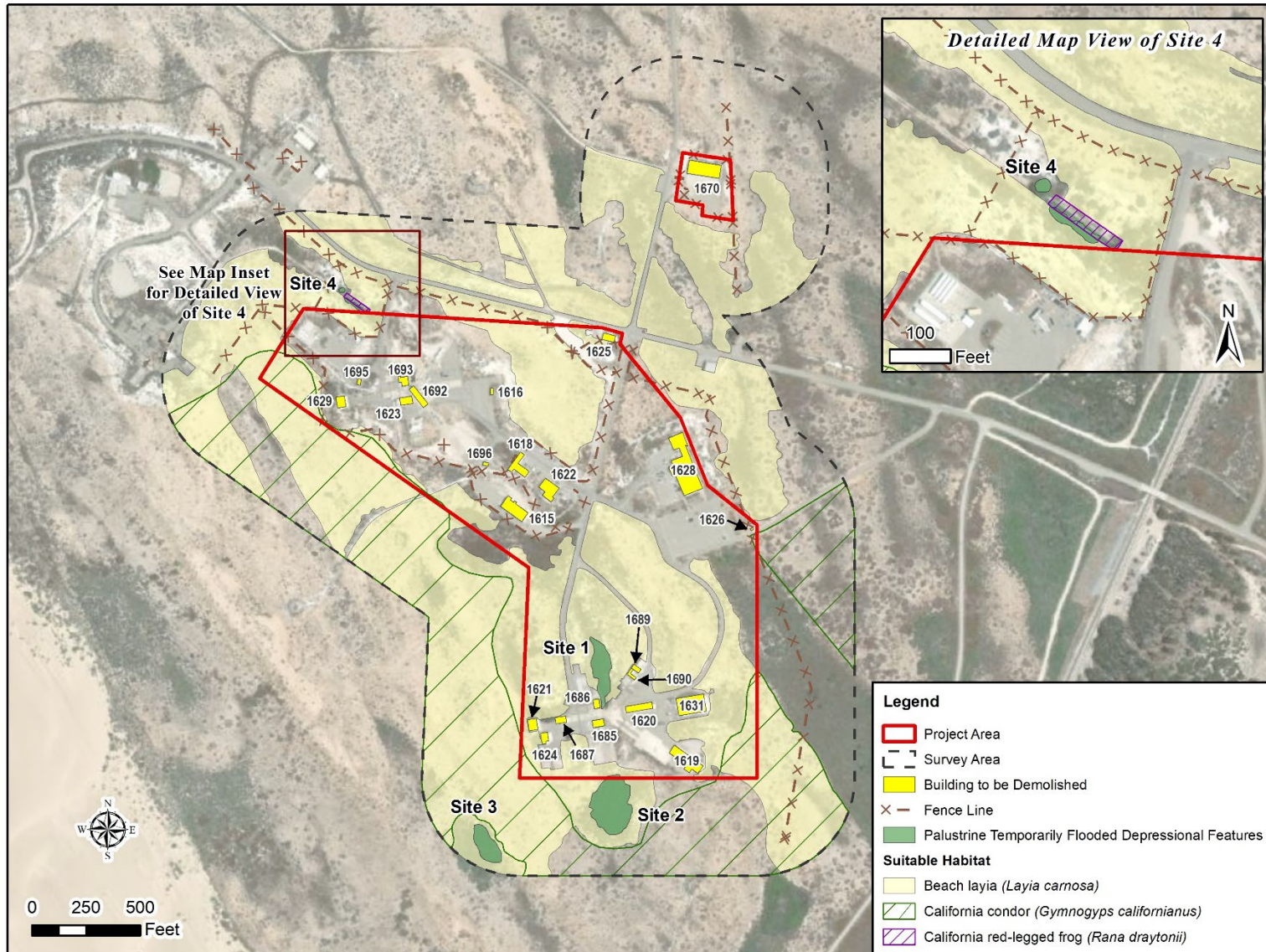


Figure 3-2. Potential Habitat within Biological Survey Area

Other Species of Management Concern

Other species of management concern include nesting avian species protected under the MBTA or bat species protected by the California Department of Fish and Wildlife (CDFW). Appendix C lists the avian species observed within the project area in September 2020.

Although no specific habitat for bat species was identified within the project area, bat species that may inhabit Vandenberg SFB include (but are not limited to) western mastiff bat (*Eumops perotis*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), silver-haired bat (*Lasioncycteris noctivagans*), western red bat (*Lasirurs blossevillii*), hoary bat (*Lasiurus cinereus*), and Yuma myotis (*Myotis yumanensis*) (CDFW 2021b).

Birds and bats have the potential to inhabit abandoned structures; however, structures within the project area are generally well sealed and there are no records of nesting birds or bats within the structures proposed for demolition.

3.2.5 Waters of the U.S. and Wetlands

Waters of the U.S. encompass the jurisdictional limits of the authority of the USACE and include perennial and intermittent streams and their tributaries that have defined bed and banks, have an ordinary high-water mark, or are below the high tide line. The ordinary high-water mark is a line on the shore established by the fluctuations of ordinary water flows, while the high tide line is equivalent to the highest predicted high tide for the calendar year. In addition to these waters, Waters of the U.S. also include adjacent jurisdictional wetlands, defined in the 2020 Navigable Waters Protection Rule: "waters of the United States" are wetlands with a direct surface connection to a nonwetland Waters of the U.S.

EO 11990, *Protection of Wetlands*, requires federal agencies to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Federal agencies must avoid undertaking or providing assistance for construction located in wetlands unless there is no practicable alternative to such construction and the Proposed Action includes all feasible measures to minimize harm to wetlands that may result from such use.

Potential for wetlands within the project area was considered using a combination of aerial photography, USFWS National Wetland Inventory databases, understanding of the project area, as well as the biological survey that assessed vegetation communities, including wetland indicator species, within the project area.

Palustrine temporarily flooded depressional features were identified as shown in Figure 3-2 based on observance of Central coast riparian scrub (disturbed). These areas may have been established from prior excavation or site grading activities, and are not connected to a larger riparian drainage but are classified as part of this community due to dominance of willows and likely an associated high-water table. Sites 1 and 4 are associated with man-made structures including a cement catchment basin and a concrete lined channel. Sites 2 and 3 are associated with low lying areas likely associated with a high-water table. All locations are highly disturbed. As such, no jurisdictional wetlands are known to occur within the project area.

3.3 Cultural Resources

Cultural resources are districts, buildings, sites, structures, areas of traditional use, or objects with historical, architectural, archeological, cultural, or of scientific importance. They include archeological resources (both prehistoric and historic), historic architectural resources (physical properties, structures, or built items), and traditional cultural properties (properties

used by living communities of people over generations for religious, spiritual, ancestral, or traditional reasons).

The NHPA establishes national policy for protecting significant cultural resources that are defined as “historic properties.” The term “historic property” refers to any “prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the NRHP” (36 CFR Part 800.16).

3.3.1 Area of Potential Effects

The Area of Potential Effects (APE) of an undertaking is defined at 36 CFR 800.16(d) as “the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist.” The APE for the Proposed Action is defined as all of SLC-2. The SLC-2 east pad and blockhouse are contributing elements of the Thor Launch Complexes Historic District. As such, the APE also encompasses the entire Historic District, including SLC-1 and SLC-10. However, SLC-1 and SLC-10 are not part of the Area of Direct Impacts (Smallwood and Loetzerich 2021).

3.3.2 Cultural Setting

SLC-2 was one of three Thor launch complexes constructed near Purisima Point in 1957 to 1958 to support important military missions, such as the CORONA/Discoverer program. NASA took over SLC-2 in 1966 and made major modifications to the west pad and launch control blockhouse over the next few years to launch the larger, more powerful Delta series of rockets. The east pad, which supported the CORONA/Discoverer program, was left intact and the buildings were maintained as storage and maintenance shops. The SLC-2 East pad facilities and the original main mass of the blockhouse were previously determined to be eligible for the National Register of Historic Places (NRHP) during consultation with the SHPO at the California Office of

Historic Preservation (OHP) (Smallwood and Loetzerich 2021).

3.3.3 Cultural Resources within the Project Area

Archaeology

The entire APE is previously disturbed. As such, encountering intact archeological deposits during proposed demolition activities would be unlikely. The most proximate identified archaeological site exists approximately 180 feet south of the nearest proposed building demolition. (Smallwood and Loetzerich 2021).

Historic Structures

This section is based on a Vandenberg SFB study of historic properties and the assessment of potential effects resulting from the proposed project (Smallwood and Loetzerich 2021) as well as related correspondence with the California OHP in compliance with Section 106 of the NHPA. The study of historic properties included background research to identify all recorded cultural resources within the APE and a field investigation conducted on December 3, 2019 to supplement the previously conducted, intensive cultural resource surveys of the APE to determine if identified resources are significant (i.e., eligible for listing in the NRHP).

Three launch complexes (now known as SLC-1, SLC-2, and SLC-10), built between 1957 and 1958, comprise the Thor Launch Complexes Historic District. SLC-2 originally supported the U.S. Air Force and British Royal Air Force Thor Intermediate Range Ballistic Missile training program, then went on to launch Thor rockets carrying Discoverer/CORONA satellites. The SLC-2 east pad and blockhouse meet Criteria A (event) and C (design/construction) and are eligible for inclusion on the NRHP “for direct association with important historic events within the context of the U.S.-Soviet nuclear arms race of the Cold War and the U.S. military’s cold war space program” (Smallwood and Loetzerich 2021). The west pad was heavily modified after NASA took

over the site in 1966; this portion of SLC-2 is now non-contributing toward NRHP eligibility and not eligible for individual listing (Smallwood and Loetzerich 2021).

Of the facilities identified for demolition under the Proposed Action, 12 have been

previously recognized as NRHP-contributing elements of SLC-2 (see Table 3.3-1 and Figure 3-3). Vandenberg SFB has submitted these determinations to the California OHP for review and concurrence; the SHPO provided concurrence on June 30, 2021 (see Appendix B-1).

Table 3.3-1. Facilities at SLC-2 Targeted for Demolition and NRHP Eligibility Status

Facility #	Description	NRHP Eligibility
1615	Horizontal Processing Facility	Not individually eligible; non-contributing element
1616	Theodolite Building	Not individually eligible; non-contributing element
1618	Technical Support Building	NRHP-eligible contributor to SLC-2
1619	Shipping & Receiving Warehouse	Not individually eligible; non-contributing element
1620	Welding Shop and Clean Room	NRHP-eligible contributor to SLC-2
1621	Support Building	NRHP-eligible contributor to SLC-2
1622	Launch Control Blockhouse	NRHP-eligible contributor to SLC-2
1623	West Pad Fixed Umbilical Tower	Not individually eligible; non-contributing element
1624	Vehicle Maintenance Facility	Not individually eligible; non-contributing element
1625	Pump House	NRHP-eligible contributor to SLC-2
1626	Traffic House	Not individually eligible; non-contributing element
1627	Water Tank	NRHP-eligible contributor to SLC-2
1628	Delta II Launch Operations Building	Not individually eligible; non-contributing element
1629	Technical Support Building	Not individually eligible; non-contributing element
1631	Clamshell Storage Building	Not individually eligible; non-contributing element
1634	Traffic House	Not individually eligible; non-contributing element
1640	Revetment Wall	Not individually eligible; non-contributing element
1662	Nitrogen Storage	Not individually eligible; non-contributing element
1670	Solid Motor Building	Not individually eligible; non-contributing element
1674	Security Fence	Not individually eligible; non-contributing element
1685	Proof-load Facility	NRHP-eligible contributor to SLC-2
1686	Hydro Lab	NRHP-eligible contributor to SLC-2
1687	Paint Booth	NRHP-eligible contributor to SLC-2
1689	Hazardous Materials Storage	Not individually eligible; non-contributing element
1690	Hazardous Materials Storage	Not individually eligible; non-contributing element
1692	Air Conditioning Building	Not individually eligible; non-contributing element
1693	Electrical Equipment Building	Not individually eligible; non-contributing element
1695	Generator Bldg A	Not individually eligible; non-contributing element
1696	Generator Bldg B	Not individually eligible; non-contributing element
-	At-grade cable tray to East Pad	NRHP-eligible contributor to SLC-2
-	LOX tank revetment (concrete blast wall)	NRHP-eligible contributor to SLC-2
-	RP-1 fuel tank revetment	NRHP-eligible contributor to SLC-2

Source: Smallwood and Loetzerich 2021

Note: the Launch Water Reclamation System is a trailer and would be removed from the site.

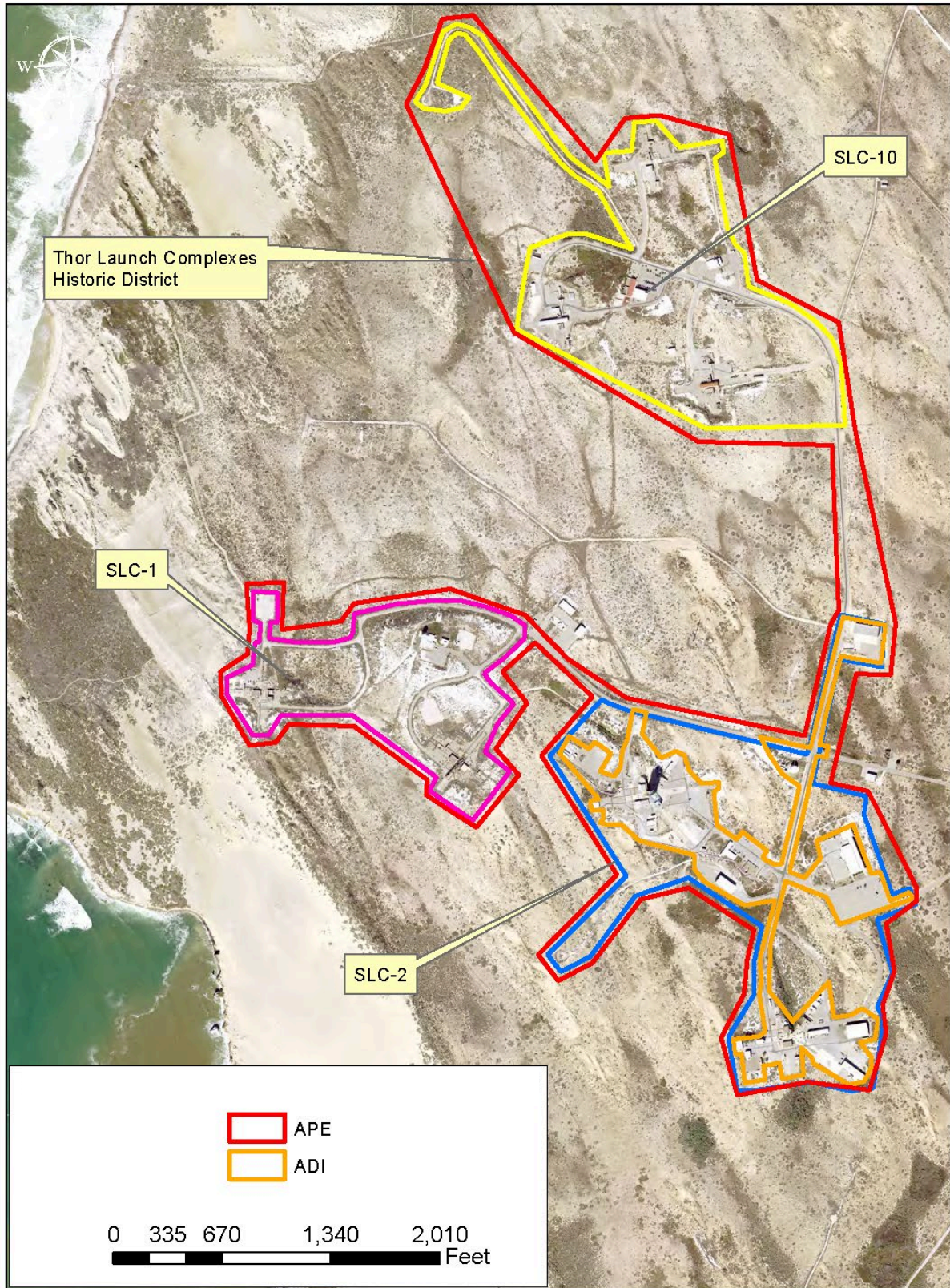


Figure 3-3. Cultural Resources with the Project Area

3.4 Geology and Earth Resources

Vandenberg SFB is situated along the coastline in the Santa Maria basin. Vandenberg SFB is a geologically complex area that includes the transition zone between the Southern Coast Range (on the northeast) and Western Transverse Range (on the south) geomorphic provinces.

Extensive geological activity in the Vandenberg SFB region has created four structural regions: the Santa Ynez Range; the Lompoc lowland; the Los Alamos syncline; and the San Rafael Mountain uplift. Vandenberg SFB is characterized by generally northwest trending ridges and valleys. Major geologic features within Vandenberg SFB include the Santa Ynez Mountains, Casmalia Hills, Purisima Hills, Santa Ynez Valley Dune Complex, Sudden Flats, beaches, and rocky headlands. The Santa Ynez River and San Antonio Creek are the two major drainages that traverse Vandenberg SFB.

3.4.1 Soils

Vandenberg SFB is characterized by coastal sand dunes and alluvium (i.e., sediment deposited by flowing water). Vandenberg SFB is underlain predominately by marine sedimentary rocks (e.g., shales and limestone) of Late Mesozoic period (140 to 70 million years before the present) and Cenozoic period (70 million years to the present). Basement rocks underlying Vandenberg SFB is the Franciscan Formation, which consists of a series of sedimentary and volcanic rocks (Dibblee 1950).

The majority of SLC-2 is underlain by dune land, consisting of loose-wind-deposited sand. Dune elevations range from 10 to 300 feet. In general, dunes may be stabilized by sagebrush and grass; other, unstabilized areas may actively shift and move. Approximately 1.5 acres of the project area is underlain by Tangair sand with a 0 to 2 percent slope. Neither soil type is classified as prime farmland (USDA 1972). Refer to

Figure 3-4 for a depiction of soils in the project area.

3.4.2 Faulting, Seismicity, and Geologic Hazard

The California Geological Survey (CGS), formerly known as the California Division of Mines and Geology, classifies faults as either active or potentially active, according to the Alquist-Priolo Special Studies Zone Act of 1972. A fault that has exhibited surface displacement within the Holocene Epoch (the last 11,000 years) is defined as active by the CGS. A fault that has exhibited surface displacement during the Pleistocene Epoch (which began about 1.6 million years ago and ended about 11,000 years ago) is defined as potentially active. Pre-Pleistocene faults are considered inactive. The CGS has established Alquist-Priolo Special Study Zones around faults identified by the State Geologist as being active. The Alquist-Priolo Special Studies Zone Act limits development along the surface trace of active faults to reduce the potential for structural damage and/or injury due to fault rupture. The CGS also suggests that active faults, located within a 60-mile radius of a project area, be evaluated with respect to regional seismicity (CGS 2010, 2018).

Santa Barbara County is a seismically active region with a major earthquake occurring in the region about every 15 to 20 years (USAF 1987; Alterman et al. 1994).

One potentially active fault, the Lions Head fault, traverses north and north-west of the project area. This fault is capable of causing ground surface rupture or seismically induced ground shaking; however, the potential for surface fault rupture is low and the likelihood of those events occurring during demolition of SLC-2 is very low. The active Lions Head-Los Alamos-Baseline fault zone that traverses approximately 7 miles north of the project area and the Casmalia fault zone approximately 9 miles north of the project would more likely cause ground motion or produce secondary effects (USGS 2020).

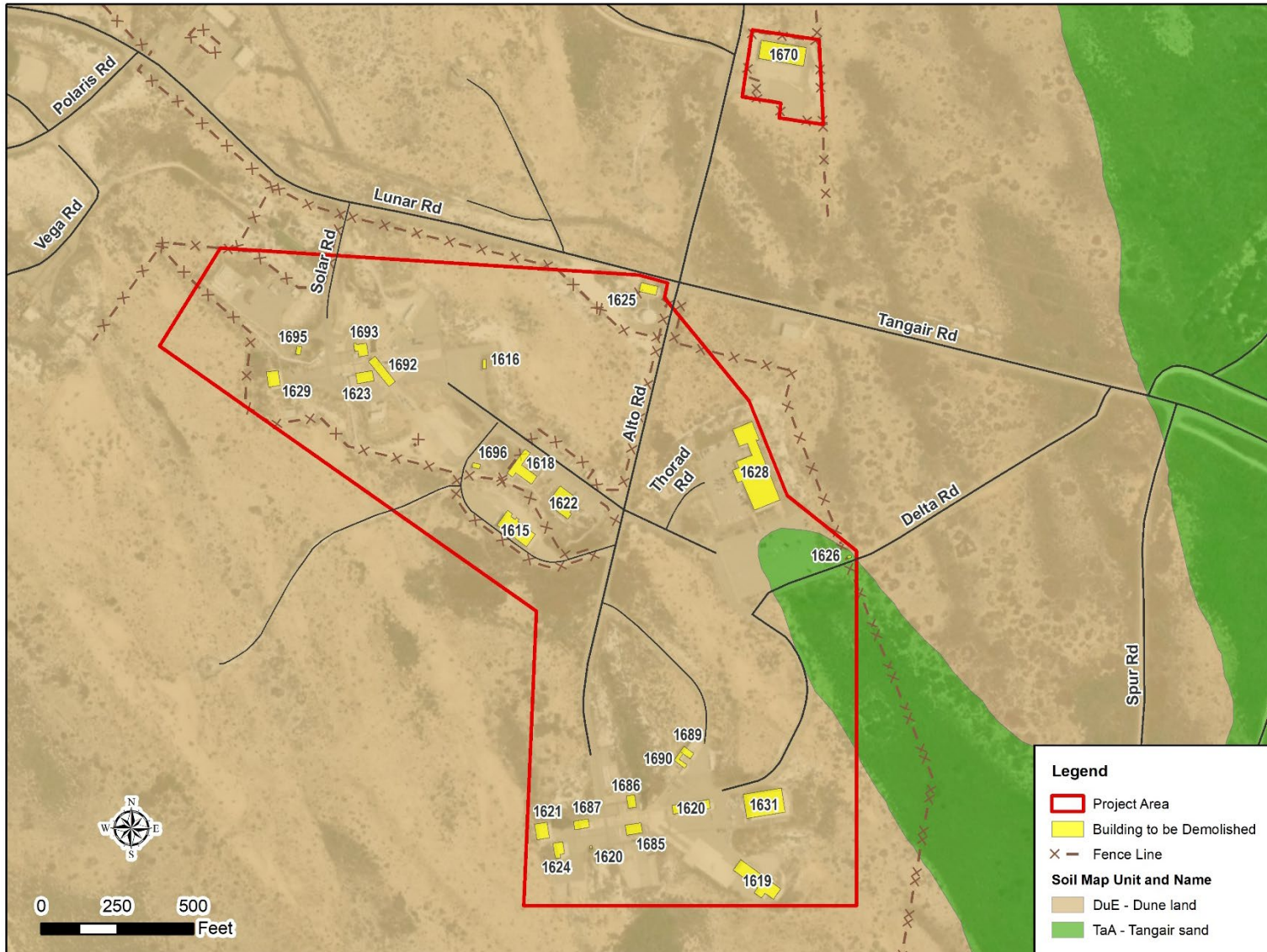


Figure 3-4. Soils within the Project Area

The primary geologic hazard within the project area is strong seismically induced ground shaking. There are no known areas within the project area where liquefaction has occurred. The areas most prone to liquefaction on Vandenberg SFB are near San Antonio Creek and the Santa Ynez River. The potential for liquefaction on Vandenberg SFB, despite these areas, is considered low (USAF 1987).

3.5 Land Use and Coastal Zone Resources

Vandenberg SFB is located on approximately 99,572 acres along the coastline in Santa Barbara County (refer to Figure 1-1). Although the project area is located within Santa Barbara County, the local government does not have any jurisdictional authority over federal land use on Vandenberg SFB because it is a federal military facility. General land uses at Vandenberg SFB include administrative Air Education and Training Command (space and missile training area), agriculture/grazing, airfield, community (commercial and service), housing, industrial, launch operations, medical, open space, outdoor recreation, and water/coastal (Vandenberg AFB 2011).

The SLC-2 project area is located within North Vandenberg SFB, south of Tangair Road near the intersection with Alto Road, northwest of the runway. SLC-10 is located approximately 1,500 feet to the north. SLC-1 is approximately 450 feet west of the project boundary. The surrounding area is predominately undeveloped with the exception of roadways and utility infrastructure. The Pacific Ocean is located approximately 0.4 mile to the west.

3.5.1 Coastal Zone Management

In 1972, Congress passed the CZMA to “preserve, protect, develop, and where possible, to restore or enhance, the resources of the nation’s coastal zone for this and succeeding generations” and to “encourage and assist the states to exercise

effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone” [16 U.S.C. 1452, Section 303(1) and (2)].

The Proposed Action is subject to a federal Coastal Zone Consistency Review because it would involve activities within the coastal zone of California. On Vandenberg SFB, the coastal zone extends inland from approximately 0.75 miles at the northern boundary to 4.5 miles at the southern boundary. California has a federally approved Coastal Management Program, which includes the California Coastal Act.

The USSF submitted a Negative Determination letter to the CCC on January 31, 2022 indicating that demolition of SLC-2 would not affect natural, cultural, or water resources, or otherwise affect coastal resources. Since the Proposed Action would not affect the coastal zone, the USSF concluded the action does not require a consistency determination. The CCC concurred with Vandenberg SFB’s determination in a letter dated April 5, 2022 (refer to Appendix B-2 for details).

3.6 Public Health and Safety

A hazardous material or waste is a substance that due to its quantity, concentration, or chemical/physical characteristics, may present substantial risk to public health and welfare, workers, or the environment. Hazardous materials and wastes are those substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act (42 USC 9601-9675), Toxic Substances Control Act (15 USC 2601- 2671), the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (42 USC 6901-6992), and as defined in state laws and regulations.

Federal and state OSHA regulations govern protection of personnel in the workplace. All deconstruction and demolition activities, facility operation, and maintenance on Vandenberg SFB are subject to Air Force Occupational Safety and Health or federal OSHA regulations, per AFI 91-202.

Vandenberg SFB is a secure, federal military installation. Access to Vandenberg SFB, including the project area, is controlled by the USSF and restricted to military personnel and authorized contractors and visitors.

3.6.1 Hazardous Materials Management

Approximately 5,000 hazardous materials are used at Vandenberg SFB to support mission activities. To ensure compliance with applicable regulations for the transport, handling, storage, use, and disposal of hazardous materials, all USSF personnel and contractors that handle hazardous materials are required to comply with California Business Plan requirements and/or Emergency Planning and Community Right-to-Know Act (EPCRA) Tier II/Toxic Release Chemical Inventory Reports. In addition, management of hazardous materials used on Vandenberg SFB follows procedures stipulated in AFMAN 32-7002, *Environmental Compliance and Pollution Prevention*, and the Base Hazardous Materials Management Plan. Vandenberg SFB's HazMart maintains inventories of hazardous materials purchased by the USSF and its contractors. Before releasing hazardous materials to the user, HazMart staff ensures a copy of the Safety Data Sheet is available and verifies that the material is suitable for use on Vandenberg SFB. By providing handling and use information, Vandenberg SFB controls the potential misuse of hazardous materials, maintains an accounting of the types of hazardous materials used on Base, and prepares usage and emissions reports as required by federal, state and local regulations. In addition to agency policies, Vandenberg SFB is subject to all federal,

state, and local hazardous materials regulations, including inspection by federal, state, and local regulatory agencies.

No hazardous materials may be brought on Vandenberg SFB without prior coordination, approval, and a tracking barcode issued by HazMart. All contractors must apply for a HazMart shop code and enroll in the Enterprise Environmental, Safety, and Occupational Health Information Management System hazardous materials authorization and tracking system.

Additionally, Vandenberg SFB has established health and safety requirements, including industrial hygiene and ground safety, to minimize potential risk to the general public and personnel. Industrial hygiene is the joint responsibility of SLD 30/SEW and the 30th Medical Operations Squadron, Bioenvironmental Engineering Element. Responsibilities include monitoring of exposure to workplace chemicals and physical hazards, hearing and respiratory protection, medical monitoring of workers subject to chemical exposures, and oversight of all hazardous or potentially hazardous operations. Ground safety is the responsibility of the Space Delta Safety Office and includes protection from hazardous situations, including physical hazards (i.e., holes and ditches, uneven terrain, sharp or protruding objects, unstable ground) and biological hazards (e.g., vegetation [poison oak and stinging nettle], animals [insects, spiders, and snakes], and disease vectors [ticks and rodents]).

Hazardous materials potentially used during demolition activities include petroleum, oil, and lubricants (POLs) in equipment and vehicles.

3.6.2 Hazardous Waste Management

Hazardous waste management at Vandenberg SFB complies with the Resource Conservation and Recovery Act Subtitle C (40 CFR Part 240-299) and with California Hazardous Waste Control Laws

as administered by the California Environmental Protection Agency (CalEPA), Department of Toxic Substances Control, under Title 22, and Division 4.5 of the California Code of Regulations (CCR). These regulations require that hazardous wastes be handled, stored, transported, disposed of, or recycled according to defined procedures. The Base Hazardous Waste Management Plan outlines hazardous waste management procedures.

A Generator Identification Number is used to account for hazardous wastes generated on Vandenberg SFB. Because of the amount of hazardous waste generated per month, Vandenberg SFB is classified as a large quantity, fully regulated generator, and is required to comply with all federal, state, and local laws regulating the generation, storage, transportation, and disposal of hazardous waste. Vandenberg SFB uses a “cradle to grave” waste management approach. Generally, hazardous waste follows the 90-day accumulation rules as permitted by regulation or is stored up to 270 days at authorized satellite accumulation points (SAPs). SAPs are located at the point of generation, and wastes may be stored until 55 gallons of hazardous waste or 1 quart of extremely or acutely hazardous waste is accumulated. When the SAP limit is reached, the waste is transferred in a properly labeled Department of Transportation approved container from its point of origin to the Consolidated CAP at Building 3300. All CAP and SAP managers require training prior to commencement of work. All hazardous waste is removed from Vandenberg SFB under a hazardous waste manifest and shipped offsite for final disposal.

Asbestos-Containing Materials

The USEPA and OSHA define ACM as any material or product that contains greater than one percent asbestos. The Cal OSHA defines asbestos containing construction material as any manufactured construction material that contains more than 0.1 percent asbestos (CCR Title 8, Section 1529, Article

4). AFI 32-1052, *Facilities Asbestos Management*, establishes requirements and assigns responsibilities to incorporate facility asbestos management principles and practices into all USSF asbestos programs. The AFI ensures compliance with the National Emission Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR 61.140) and the OSHA Asbestos Construction Standards (29 CFR 1926.58). The Base Asbestos Management and Operating Plan (32—1052) is Vandenberg SFB’s primary document for implementing the objectives of facility asbestos management and ensuring the Base complies with applicable federal, state, and local regulations. Procedures for asbestos management are outlined in the Base Asbestos Management and Operating Plan (Vandenberg AFB 2014)).

Notification of scheduled renovation or demolition work on Vandenberg SFB must be made to the SBCAPCD no later than 10 working days prior to the start of the project even if there is no asbestos present in the facility. A copy of the notification must be sent to and approved by the 30 CES/CEIE Asbestos Program Manager before submitting to the SBCAPCD. All projects must be approved by 30 CES/CEIE prior to the start of work. Conditions for project approval include requirements for training, building surveys, and project management (Vandenberg AFB 2014). Persons contracted to perform asbestos abatement, building surveys, and project management must be certified in accordance with Section 341.15, Article 2.6, Chapter 3.2, of Title 8 CCR.

All demolition projects must incorporate an asbestos survey into the design process. Demolition work cannot occur without a facility survey. Surveys must be conducted by a state certified asbestos consultant or an asbestos site surveillance technician. Sampling and surveys are conducted in accordance with 40 CFR Part 763. Detailed demolition contract requirements would include building-specific asbestos abatement specifications; completion of an

up-to-date asbestos survey for each specific facility, including maps, drawings, or sketches indicating the exact location of the ACM; and a requirement to obtain demolition permits. Contract provisions would also include the requirement to notify the SBCAPCD and all other regulatory agencies of any revisions in the project design. The 30 CES/CEIE Asbestos Program Officer is contacted to schedule pre-abatement and post-abatement inspections (Vandenberg AFB 2014).

Lead-Based Paint Management

The USEPA and CalEPA test for and regulate wastes exhibiting the characteristic of toxicity in different manners. Both agencies test metal-bearing wastes for toxicity based on the potential for leaching of metals. The USEPA uses the Toxicity Characteristic Leaching Procedure and sets the Threshold Limit Value, also named Maximum Concentration of Contaminant for the Toxicity Characteristic, for lead leachate at 5.0 milligrams per liter (mg/L). CalEPA regulates wastes for toxicity using the Waste Extraction Test to determine the amount of extractable substance in a waste. Appendix II of Title 22 of the CCR, Division 4.5, Chapter 11, describes how and when the Waste Extraction Test procedures are used. For lead and lead compounds, the Total Threshold Limit Concentration is 1,000 milligrams per kilogram (mg/kg) and the Soluble Threshold Limit Concentration is 5.0 mg/L. Based upon the determination of metals toxicity, the California Health and Safety Code Section 25141.5(b)(3) may allow wastes which are hazardous only due to exceeding applicable Total Threshold Limit Concentrations for inorganic constituents to be disposed of in a Class I, II, or III nonhazardous waste disposal unit provided certain conditions are met.

Many of the buildings on Vandenberg SFB constructed before 1978, and especially those constructed before 1960, contain LBP. Most of the facilities at SLC-2 were built between 1959 and 1979. Given the age of these facilities, it is likely that LBP is

present in the structures under consideration. The Base Lead Based Paint Management Plan (30 SWP 32-1002) provides specific direction in LBP management. The Lead Based Paint Management Plan contains strategies to identify, evaluate, and eliminate lead, pursuant to LBP standards; protect facility occupants and workers from LBP hazards; and properly dispose of lead-containing waste. Demolition projects on Vandenberg SFB include LBP surveys and sampling, as required. These surveys include risk assessment to define the source and extent of lead exposure hazards, and review of data from LBP testing and bulk or x-ray fluorescence testing for non-priority buildings.

Polychlorinated Biphenyls and Dioxins

PCBs are occasionally found in oils, coatings, transformers, older fluorescent lighting ballasts, and electrical devices or appliances with PCB capacitors. PCB production in the United States ceased in 1997. PCBs are regulated under the Toxic Substances Control Act (40 CFR 761; Title 22 of the CCR) and the USEPA PCB Final Ruling (50 Federal Register [FR] 29172 [July 17, 1985]). Dioxins, like PCBs, belong to a family of toxic chemicals that share similar chemical structure and a common mechanism of toxic action. This family includes seven of the polychlorinated dibenzo dioxins, ten of the polychlorinated dibenzo furans, and twelve of the PCBs. Polychlorinated dibenzo dioxins and polychlorinated dibenzo furans are not commercial chemicals but are trace level unintentional byproducts of most forms of combustion (USEPA, Persistent Bioaccumulative and Toxic Chemical Program). During the demolition of buildings, dioxins are likely to be encountered in areas where PCBs may have been used, where structures may have been involved in fires, or where deposition of soot may have occurred as the result of combustion.

3.6.3 Installation Restoration Program

The federal Installation Restoration Program (IRP) was implemented at Department of Defense facilities to identify, characterize, and restore hazardous substance release sites. There are currently 136 IRP sites throughout Vandenberg SFB grouped into six Operable Units based on similarity of their characteristics.

IRP sites at Vandenberg SFB are remediated through the Federal Facilities Site Remediation Agreement, a working agreement between the Air Force, the Central Coast Regional Water Quality Control Board (RWQCB), and the Department of Toxic Substances Control. In addition to IRP sites, there are identified Areas of Concern (AOCs), where potential hazardous material releases are suspected; and Areas of Interest (AOIs), defined as areas with the potential for use and/or presence of a hazardous substance. Various contaminants could be present at these sites including trichloroethylene (TCE) and other VOCs, PCBs, total petroleum hydrocarbons, asbestos, and other hazardous contaminants.

There are two open IRP sites, three closed AOIs, and one closed AOC located within the project area. The open IRP sites are associated with the east and west launch pads of SLC-2 (see Figure 3-5). The IRP Site SD025 (the Site 25 Cluster) has been investigated for the release of chlorinated solvents, metals, and PCBs from past launch practices and equipment maintenance at the launch pad.

In 2014, a Final Record of Decision/Remedial Action Plan (ROD/RAP) was approved by the California Department of Toxic Substances Control and the Central Coast Regional Water Quality Control Board. The ROD/RAP identified the removal of the sandblast grit pile and adjacent soil containing lead at concentrations greater than the lowest-

observed-adverse-effect level as the Soil Preferred Alternative. This remedy was completed as an Interim Remedial Action in 2011 and based on the ecological risk evaluation performed following the soil removal, a No Further Action determination was made regarding SD025 soils (Shaw 2013).

The Final ROD/RAP also identified shallow groundwater as the remaining primary media of concern at SD025, with TCE, cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride as the remaining Constituents of Concern at SD025. A Final Remedial Design/Remedial Action Workplan was completed in 2017 that recommended in situ bioremediation with recirculation and Dynamic Groundwater Recirculation as the proposed remedies, along with monitored attenuation and land use controls (LUCs) (Arcadis 2017). Buildings 1621, 1624, 1629, and 1631 are located within 100 feet of groundwater monitoring wells where TCE from IRP Site 25C has been detected. These buildings may therefore be at risk for vapor intrusion of VOCs.

A Phase I Environmental Baseline Survey (EBS) was completed for SLC-2 in May 2019; a follow-up Phase II investigation was completed in August 2020 for portions of SLC-2 near Buildings 1670, 1686, and the former Aerozine 50 Fuel Pump and Tank Unit (near Building 1629). The purpose of the Phase II EBS was to conduct presence/absence of recognized environmental conditions identified in the Phase I EBS near these structures. The Phase II concluded that:

- At the Aerozine 50 Fuel Pump and Tank Unit, there was no presence of hydrazine, monomethylhydrazine, unsymmetrical dimethyl hydrazine, or n-nitrosodimethylamine, and no further investigation was warranted.
- At Building 1670, the presence of perchlorate was confirmed but at concentration that was significantly

below that which would require a remedial response.

- At Building 1686, the presence of diesel range and motor oil range total petroleum hydrocarbons, VOCs, and metals (except for arsenic) at levels below their respective Environmental Screening Levels or USEPA Regional Screening Level for industrial construction worker exposure in shallow soil.

Both the Aerozine 50 Fuel Pump Tank and Building 1686 are within SD025 (IRP Site 25 Cluster) that is subject to LUCs limiting SLC-2 to industrial use only (Shaw 2013).

3.6.4 Unexploded Ordnance

Several areas on Vandenberg SFB were historically used as training ranges and have the potential to contain UXO. There are no UXO Closure Areas identified within the project area. The nearest subsurface clearance area to SLC-2 is located approximately 60 feet west of Building 1670. The Military Munitions Response Program has identified sites near SLC-2 that have not been designated as cleared; however, no demolition activities are planned for these areas (see Figure 3-5).

The *Final Feasibility Study Report for North Base Munitions Response Sites, Vandenberg AFB, Lompoc, California* was completed in December 2018 to analyze three alternatives for remedial action for North Vandenberg SFB munitions response sites (Weston 2018). The alternatives included the following: 1) No Action; 2) LUCs; and 3) Subsurface Removal to Detection Depth. Alternative 1 was determined to not be protective of public safety. Alternative 3 was determined to be of excessive cost to implement across the Military Munitions Response Program sites but necessary where the lead hotspot was detected to the north of the Subject Property. LUCs was therefore selected as the remedy of choice with removal of the lead hotspot. Vandenberg SFB has

implemented the recommended LUCs as an interim remedy while preparing the required public notifications under the Comprehensive Environmental Response, Compensation, and Liability Act, as well as the Proposed Plan and Record of Decision documents establishing LUCs as the final remedy.

The potential for buried UXO has been investigated for Munitions Response Area MU809. LUCs were established for the risk for buried UXO at MU809. If future intrusive or construction activities are required, the proposed LUCs require anomaly avoidance or construction support be used to ensure the safety of contractors and Vandenberg Space Force personnel.

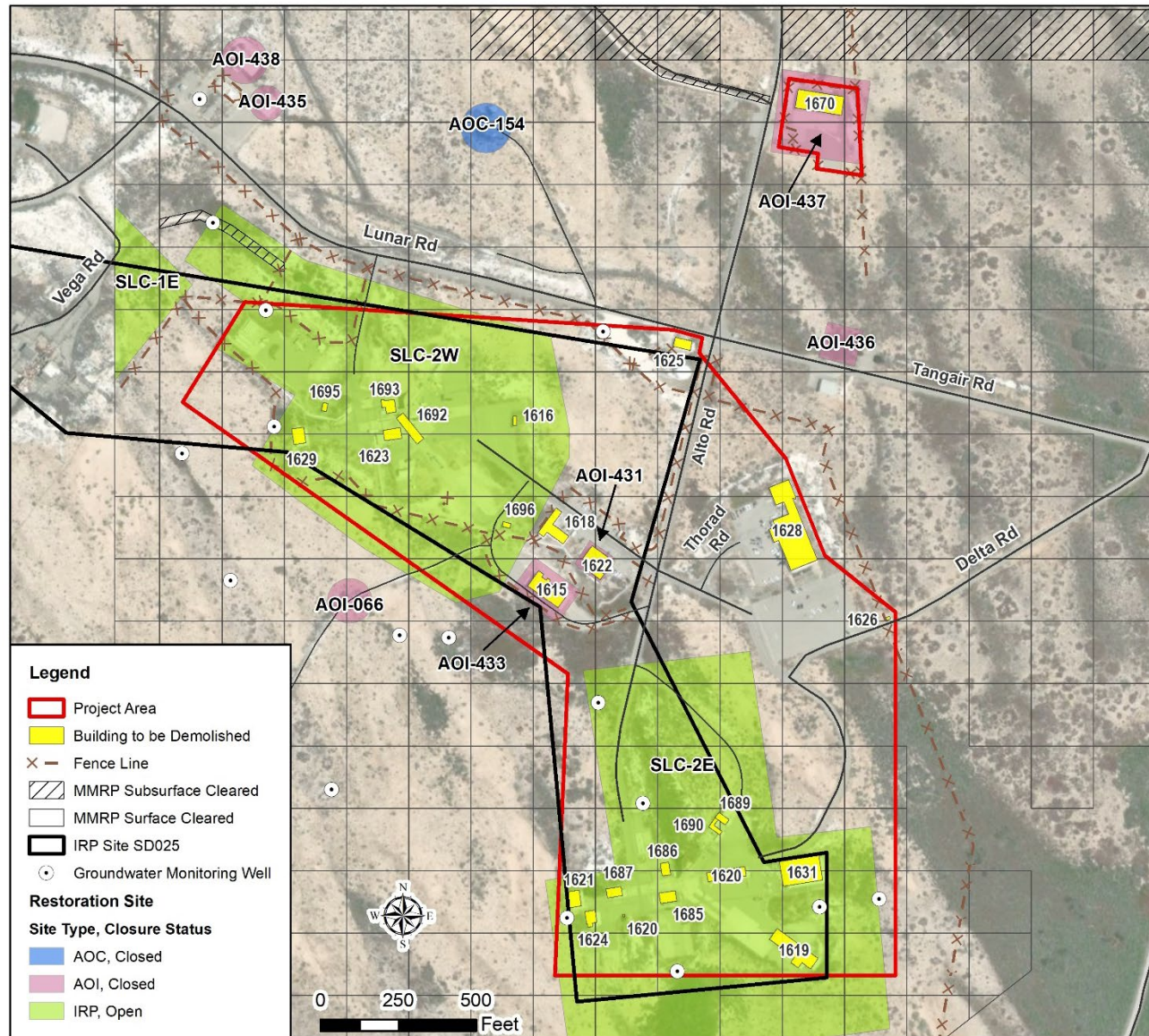


Figure 3-5. IRP and UXO Sites within Project Area

3.7 Water Resources

The federal Clean Water Act (CWA) provides for the restoration and maintenance of the physical, chemical, and biological integrity of the nation's waters. The CWA and implementing USEPA regulations provide the authority and framework for state law and regulations. The Porter-Cologne Water Quality Act (California Water Code) is the State law for water quality protection in California. It provides a framework for establishing beneficial uses of water resources and the development of local water quality objectives to protect these beneficial uses. The Central Coast Water Quality Control Plan (Basin Plan) assigns beneficial uses to water bodies and provides local water quality objectives to protect these beneficial uses.

Section 303(d) of the federal CWA requires states to identify surface water bodies that are polluted (i.e., water quality limited segments). These surface water bodies do not meet water quality standards even after discharges of wastes from point sources have been treated by the minimum required levels of pollution control technology. On Vandenberg SFB, the Shuman Creek and Casmalia Canyon Creek are both included on the CWA Section 303(d) List of Water Quality for sedimentation/siltation. The Santa Ynez River, located south of the project area, is also included on the 303(d) list as impaired due to chloride, decreased dissolved oxygen, E. coli, fecal coliform, nitrate, sedimentation/siltation, sodium, water temperature, total dissolved solids, toxicity, and pH (USEPA 2017).

The CWA mandates the National Pollutant Discharge Elimination System (NPDES) Program, which requires a permit for the discharge of any pollutant to Waters of the U.S. from point and non-point sources. Non-point sources include stormwater runoff from industrial, municipal, and construction sites.

EO 11988, *Floodplain Management*, requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities" for federal actions. EO, 13690, *Establishing a Federal Flood Risk Management Standard and Process for Further Soliciting and Considering Stakeholder Input*, updated the definition of floodplains to include the 500-year floodplain.

In California, the State Water Resources Control Board and the Central Coast RWQCB administer the NPDES Program for municipalities and construction activities through General Permits. The Central Coast RWQCB is the state agency responsible for the Vandenberg SFB area.

The NPDES Municipal General Permit prohibits discharges of material other than stormwater to Waters of the U.S. and requires implementation of BMPs to reduce pollutants in stormwater to the maximum extent practicable.

The NPDES Construction General Permit regulates construction sites of one or more acre and regulates the discharge of pollutants in stormwater to Waters of the U.S.

On Vandenberg SFB, the 30 CES Water Resources Section reviews all requests for discharges of wastewater to grade (Discharge to Grade Program) to protect groundwater quality and comply with state water quality regulations. Wastewater that contains contaminants above certain levels may not be discharged to grade.

3.7.1 Surface Water

The majority of freshwater resources in the Vandenberg SFB region include six streams comprising two major and four minor drainages. The major drainages are San Antonio Creek and the Santa Ynez River.

The minor drainages of Vandenberg SFB include Shuman Creek, Bear Creek, Cañada Honda Creek, and Jalama Creek (Vandenberg AFB 2011).

Monthly stream flow on Vandenberg SFB generally corresponds to trends in precipitation, although minor increases in precipitation are not always reflected in the flows. Generally, peak rainfall occurs between November and April. Average annual precipitation is approximately 15 inches per year (NOAA 2016).

San Antonio Creek, an intermittent stream, serves as the primary drainage in the vicinity of the project area. San Antonio Creek is located approximately 2.1 miles north of the project area. The project area is 0.4 mile east and upgradient of the Pacific Ocean. Figure 3-6 depicts water resources in the vicinity of the project area.

A project-specific biological survey was conducted for the Proposed Action during September 2020 to identify the habitat types and wildlife and plant species within the project area. Palustrine temporarily flooded depressional features were identified as described in Section 3.2, Biological Resources.

Floodplains

SLC-2 is not located within a Federal Emergency Management Agency (FEMA) designated 100-year or 500-year floodplain. The project area is located with Zone D, which is defined as an area of possible but undetermined flood hazard.

3.7.2 Groundwater

SLC-2 is located just north of the Lompoc Plain basin of the Santa Ynez River Valley Aquifer. Groundwater is present in unconsolidated alluvial and terrace deposits, including the Orcutt Sand, which underlies much of the project area. Over the last 40 years, dissolved solids in this basin have generally ranged between 1,000 and 1,500 milligrams per liter (Santa Barbara County Public Works Department 2009).

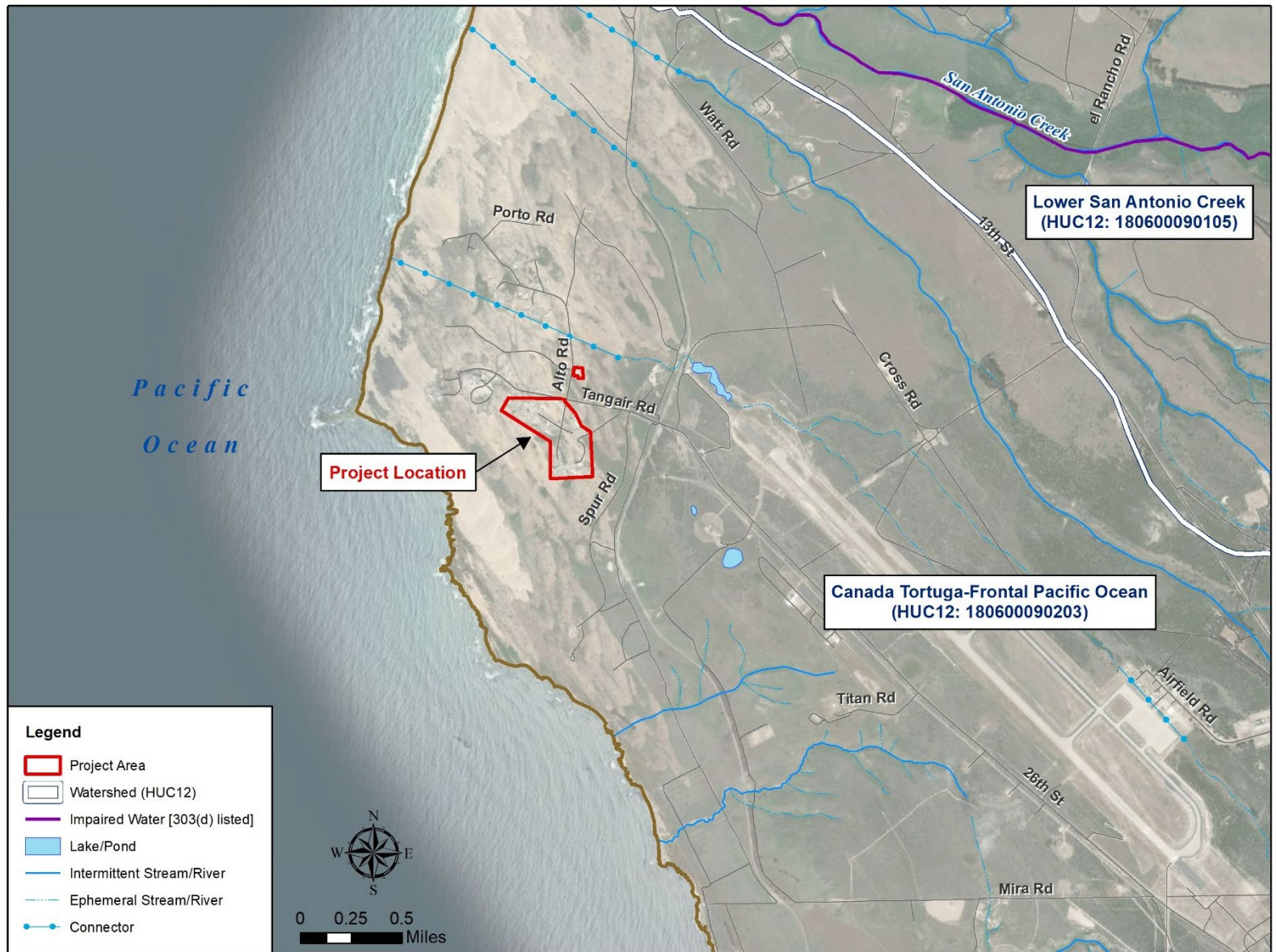


Figure 3-6. Water Resources Near Project Area

Chapter 4. Environmental Consequences

The following analysis of environmental consequences is based on the potential effects from the Proposed Action Alternatives. A discussion of factors to be considered in determining if impacts are significant, for purposes of NEPA, are provided in each subsection, but the decision to prepare an Environmental Impact Statement (EIS) is based on the impacts of the action as a whole considering context and intensity of the potential impacts.

4.1 Air Quality

Factors considered in determining if implementing an alternative would have adverse impacts on air quality include the extent or degree to which implementation of an alternative would:

- Expose people to localized (as opposed to regional) air pollutant concentrations that potentially violate federal or state ambient air quality standards;
- Cause a net increase in a pollutant or pollutant precursor emission that exceeds relevant emission significance thresholds in accordance with Air Force policy (refer to Table 4.1-1 and Appendix D-1);
- Conflict with adopted air quality management plan policies or programs; or
- Generate significant quantities of GHG emissions that would have an adverse effect on the environment. To determine significance for GHG emissions, this analysis uses a threshold of 11,000 TPY, which is derived from the 10,000 metric tons per year reporting threshold for facilities, as defined in CCR Section 95101.

Criteria to determine the significance of air quality impacts are based on federal, state, and local air pollution standards and regulations. The SBCAPCD has not established criteria for assessing the significance of air quality impacts for NEPA purposes. However, since Santa Barbara County violates the state standard for PM₁₀, dust mitigation measures are required for all discretionary construction activities regardless of the significance of the fugitive dust impacts based on the policies in the 1979 Air Quality Attainment Plan.

Construction activities also must comply with the requirements of SBCAPCD Rule 345, *Control of Fugitive Dust from Construction and Demolition Activities*. Under Rule 345, construction, demolition, and/or earthmoving activities are prohibited from causing discharge of visible dust outside the property line and must utilize standard BMPs to minimize dust from truck hauling, track-out/carry-out from active construction sites, and demolition activities. If structures proposed for demolition contain any ACM, removal of these materials also must comply with SBCAPCD Rule 1001, Subpart M. These requirements are identified as project environmental protection measures in Section 2.4.1, Environmental Protection Measures – Air Quality.

4.1.1 Alternative 1: Full Demolition

Air quality impacts from activities due to the proposed demolition activities would occur from (1) combustive emissions due to the use of fossil fuel-powered equipment, material transport trucks, and worker commute vehicles, and (2) fugitive dust emissions (PM₁₀/ PM_{2.5}) due to the demolition of structures, grading of soil, and the operation of equipment and trucks on exposed soil and roadways. Air emissions estimates were developed using the Air Force's Air Conformity Applicability Model (ACAM) (USAF 2020).

Appendix D-1 includes data and assumptions used to calculate proposed construction emissions.

Table 4.1-1 summarizes the emissions estimated for demolition of buildings and infrastructure under Alternative 1. These data show that proposed emissions would not exceed the significance threshold for any criteria pollutant. As a result, emissions from proposed demolition activities would not produce adverse air quality impacts.

Proposed demolition equipment would emit TACs that could potentially impact public health. The main source of TACs would occur in the form of particulates from the combustion of diesel fuel (DPM). Due to the mobile and intermittent operation of proposed diesel-powered construction, there would be minimal ambient impacts of TACs in a localized area. Section 2.4.1, Environmental Protection Measures – Air Quality, identifies measures that would be implemented to minimize project diesel emissions.

A supplementary analysis was conducted using activity data and emissions factors from other published sources, to verify ACAM results. Demolition activity data associated with Alternative 1 (e.g., equipment usage, demolition schedule) were used to estimate proposed combustive and fugitive dust emissions. Factors needed to derive construction source emission rates were obtained from Compilation of Air Pollutant Emission Factors, AP-42, Volume I (USEPA 1995), the OFFROAD2011 Model for off-road construction equipment (Breeze Software 2017), the EMFAC2017 Model for on-road vehicles (CARB 2018), and the USEPA

Emissions Factors for Greenhouse Gas Inventories (USEPA 2021). The results from this supplementary modeling effort were similar to ACAM results and further demonstrate demolition activities from Alternative 1 would not exceed significance thresholds for any criteria pollutant. See Appendix D-2 for these results.

Greenhouse Gases and Global Climate Change

Emissions of GHGs are considered to have a potential cumulative impact on global climate. Currently, there are no formally adopted or published NEPA thresholds for GHG emissions. Additionally, there are no adopted federal plans, policies, regulations, or laws mandating reductions in the GHG emissions from sources proposed by Alternative 1. The climate change research community has yet to develop tools specifically intended to evaluate or to quantify end-point impacts attributable to the emissions of GHGs from a single source.

As shown in Table 4.1-1, Alternative 1 would generate temporary emissions from construction equipment during demolition and site restoration activities, which would incrementally increase emissions of CO₂ and other GHGs. Scientists are in general agreement that the Earth's climate is gradually changing, and this change is due in part to emissions of CO₂ and other GHGs from manmade sources. The anticipated magnitude of global climate change is such that an adverse cumulative impact on global climate exists.

Table 4.1-1. Proposed Emissions (Tons/Year) – Alternative 1

	VOC	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}	Pb	CO _{2e}
Total Emissions	0.21	1.40	1.45	0.004	6.10	0.06	0.00	375.7
Significance threshold	250	250	250	250	250	250	25	11,000
Exceeds threshold?	No	No	No	No	No	No	No	No

4.1.2 No-Action Alternative

Under the No-Action Alternative, no sites or infrastructure would be demolished at SLC-2. Therefore, no impacts to air quality would occur as a result of emissions associated with project activities.

4.2 Biological Resources

Impacts to biological resources would occur if special status species (i.e., endangered, threatened, rare, or candidate) or their habitats, as designated by federal and state agencies, would be directly or indirectly affected by project-related activities. In addition, impacts to biological resources are considered adverse if substantial loss, reduction, degradation, disturbance, or fragmentation would occur to native species or their habitats. Potential effects can be short-term (e.g., noise and dust during demolition) or long-term impacts, including the permanent loss of vegetation and, consequently, loss of the capacity of habitats to support wildlife populations.

4.2.1 Alternative 1: Full Demolition

Vegetation

All of the plant communities affected by demolition under Alternative 1 have been developed or previously disturbed. Non-native species dominate over 30 percent of the project area (areas classified as “disturbed habitat”) (Artemis 2020). Of the 64.4-acre project area, approximately 19.2 acres are developed; demolition and associated activities would occur primarily on existing developed areas. Minor temporary impacts could occur throughout the remainder of the project area (i.e., up to 45.2 acres of disturbed vegetation communities; see Section 3.2, Biological

Resources for a description of these communities) from as-needed access by construction equipment or staging of equipment or materials; however, these activities would be avoided to the extent practicable in vegetated areas as described in Chapter 2. No project-related activities would occur in the temporarily flooded depressional features (approximately 0.4 acres of the project area), and therefore no direct impacts to associated plant communities or habitats are expected. Due to the overall disturbed nature of the project area, negligible adverse impacts on vegetation would be anticipated during demolition activities conducted under Alternative 1.

Wildlife Species

Impacts to the developed, disturbed, and generally low-quality habitats existing within the project area should not measurably reduce regional populations of common wildlife species. No natural riparian or wetland habitat would be lost. Consequently, no direct adverse impacts to common terrestrial wildlife would occur.

Temporary impacts to wildlife species may occur within adjacent wildlife habitat due to an increase in dust, noise, and other demolition-related disturbances for the duration of the activity. Temporary disturbances due to noise and human presence could disrupt foraging and roosting activities or cause common bird and wildlife species to avoid the work area during demolition activity.

Noise and human presence would be limited to daytime hours for the extent of the activity, and the specific area disturbed would change as demolition progresses. In addition, the proposed temporary

disturbances are similar to the military industrial activity that routinely occurs at Vandenberg SFB. Wildlife species in the project area have adapted to some level of ongoing human activity and would continue to use the adjacent areas in the intervals between disturbances. Therefore, temporary, incidental disturbances during demolition would not result in adverse impacts to wildlife species.

Special Status Species

Potential effects under Alternative 1 on federally and state protected species are discussed below.

Potential impacts to the California red-legged frogs were assessed and dismissed as there is no suitable breeding habitat within the project area, and there have been no known occurrences of the species within approximately two miles of the project area, including during the project-specific survey (Artemis 2020).

Potential impacts to California condor were assessed and dismissed as this species is not currently known to occur on Vandenberg SFB, and there were no documented occurrences within the project area during the project-specific survey (Artemis 2020).

Potential impacts to Western snowy plover (*Charadrius nivosus*) and California least tern (*Sternula antillarum browni*) were assessed and dismissed as there were no identified populations or suitable habitat within the proposed project demolition footprint (Artemis 2020); and after it was determined that noise was highly unlikely to impact the nearest habitat located approximately 0.3 mile (1,584 feet) from the closest project boundary.

Potential impacts to the El Segundo blue butterfly were assessed and dismissed as there was no documented occurrences within the project area during the project-specific survey (Artemis 2020). The *Euphilotes* butterflies known to occur on Vandenberg SFB are not the federally endangered *Euphilotes battoides allyni*;

therefore, impacts to seaciff buckwheat in the project area would not result in impacts to suitable habitat for this species.

Potential impacts to Beach layia were assessed and dismissed as there were no occurrences of this species identified within the project area during the project-specific survey (Artemis 2020) and the project area is highly disturbed.

As such, there are no known or potential occurrence of federally recognized threatened or endangered species within the project area. Therefore, there would be no effect to federally protected species under Alternative 1.

American Peregrine Falcon

Species records indicate the project area is within the range of the American peregrine falcon, and it is possible the species may forage within or near the project area.

Temporary impacts from noise may occur, similar to as described above for wildlife species, but would not result in adverse impacts. Impacts to nesting species would be avoided through environmental protection measures described in Section 2.4.2, Environmental Protection Measures – Biological Resources to avoid disturbance or removal of bird nests during the nesting season.

Other Species of Management Concern

Demolition activities could result in temporary noise impacts to bird or bat species similar to described above for wildlife species. Implementation of the environmental protection measures described in Section 2.4.2, Environmental Protection Measures – Biological Resources would ensure that impacts to migratory bird or protected bat species located within the project area would be minimized.

Waters of the U.S. and Wetlands

Impacts to jurisdictional Waters of the U.S. and wetlands are considered adverse if the Proposed Action results in a net loss of

wetland area or habitat value, either through direct or indirect impacts to wetland vegetation, loss of habitat for wildlife, degradation of water quality, or alternations in hydrological function.

Demolition activity would not impact any wetland or riparian areas as shown on Figure 3-1. Building 1686 and Building 1690 are located approximately 8 and 71 feet, respectively, from the Site 1 area which contains palustrine temporarily flooded depressional features. However, these features are not known to be jurisdictional wetlands; therefore, no impacts to aquatic, riparian, and wetland areas would occur.

4.2.2 No-Action Alternative

Under the No-Action Alternative, no sites or infrastructure would be demolished at SLC-2. Therefore, no impacts to biological resources would occur.

4.3 Cultural Resources

The Proposed Action is subject to compliance with all relevant authorities governing cultural resources, including Section 106 of the NHPA and AFMAN 32-7003. Compliance with Section 106 of the NHPA also satisfies federal agencies responsibilities for considering potential project related effects to cultural resources under NEPA. Section 106 of the NHPA requires federal agencies to consider the effects of proposed federal undertakings on cultural resources that are listed in or eligible for listing in the NRHP (i.e., historic properties). Part of Section 106 compliance requires the federal agency to determine if the undertaking would have no effect to

historic properties, no adverse effect to historic properties, or an adverse effect to historic properties. The Section 106 implementing regulations (36 CFR Part 800) prescribe the process for making these determinations.

4.3.1 Alternative 1: Full Demolition

Of the 32 facilities in the APE to be demolished under Alternative 1, Vandenberg SFB has determined that 12 are NRHP-eligible. The demolition of structures that contribute to the significance of SLC-2 and the Thor Launch Complexes Historic District would “directly alter the characteristics that qualify these two historic properties for inclusion in the NRHP” (Smallwood and Loetzerich 2021). Vandenberg SFB has determined that implementation of Alternative 1 would result in an Adverse Effect to identified historic properties. The SHPO concurred with this effect determination on June 30, 2021 and signed a MOA on September 30, 2021. Adherence to the terms of this MOA would mitigate the adverse effects to these properties. Refer to Appendix B-1 for a copy of the MOA to include associated terms. See Table 4.3-1 for the Effect Determination for each facility considered under Alternative 1.

While 12 of the buildings at SLC-2 identified for demolition have been identified as NRHP-eligible, Vandenberg SFB has determined the remaining structures do not have the significant characteristics that qualify them as “historic properties” and are ineligible for listing in the NRHP. Thus, Alternative 1 would not have significant consequences to these buildings.

Table 4.3-1. Facilities at SLC-2 Targeted for Demolition and Effect Determination

Facility #	Description	NRHP Eligibility	Effect Determination
1615	Horizontal Processing Facility	Not individually eligible; non-contributing element	No effect
1616	Theodolite Building	Not individually eligible; non-contributing element	No effect
1618	Technical Support Building	NRHP-eligible contributor to SLC-2	Adverse effect
1619	Shipping & Receiving Warehouse	Not individually eligible; non-contributing element	No effect
1620	Welding Shop and Clean Room	NRHP-eligible contributor to SLC-2	Adverse effect
1621	Support Building	NRHP-eligible contributor to SLC-2	Adverse effect
1622	Launch Control Blockhouse	NRHP-eligible contributor to SLC-2	Adverse effect
1623	West Pad Fixed Umbilical Tower	Not individually eligible; non-contributing element	No effect
1624	Vehicle Maintenance Facility	Not individually eligible; non-contributing element	No effect
1625	Pump House	NRHP-eligible contributor to SLC-2	Adverse effect
1626	Traffic House	Not individually eligible; non-contributing element	No effect
1627	Water Tank	NRHP-eligible contributor to SLC-2	Adverse effect
1628	Delta II Launch Operations Building	Not individually eligible; non-contributing element	No effect
1629	Technical Support Building	Not individually eligible; non-contributing element	No effect
1631	Clamshell Storage Building	Not individually eligible; non-contributing element	No effect
1634	Traffic House	Not individually eligible; non-contributing element	No effect
1640	Revetment Wall	Not individually eligible; non-contributing element	No effect
1662	Nitrogen Storage	Not individually eligible; non-contributing element	No effect
1670	Solid Motor Building	Not individually eligible; non-contributing element	No effect
1674	Security Fence	Not individually eligible; non-contributing element	No effect
1685	Proof-load Facility	NRHP-eligible contributor to SLC-2	Adverse effect
1686	Hydro Lab	NRHP-eligible contributor to SLC-2	Adverse effect
1687	Paint Booth	NRHP-eligible contributor to SLC-2	Adverse effect
1689	Hazardous Materials Storage	Not individually eligible; non-contributing element	No effect
1690	Hazardous Materials Storage	Not individually eligible; non-contributing element	No effect
1692	Air Conditioning Building	Not individually eligible; non-contributing element	No effect
1693	Electrical Equipment Building	Not individually eligible; non-contributing element	No effect
1695	Generator Bldg A	Not individually eligible; non-contributing element	No effect
1696	Generator Bldg B	Not individually eligible; non-contributing element	No effect
-	At-grade cable tray to East Pad	NRHP-eligible contributor to SLC-2	Adverse effect
-	LOX tank revetment (concrete blast wall)	NRHP-eligible contributor to SLC-2	Adverse effect
-	RP-1 fuel tank revetment	NRHP-eligible contributor to SLC-2	Adverse effect

Source: Smallwood and Loetzerich 2021

4.3.2 No-Action Alternative

Under the No-Action Alternative, no sites or infrastructure would be demolished at SLC-2. However, reduced maintenance of these facilities due to lack of use could eventually

jeopardize NRHP-eligible structures if they were to fall into disrepair.

4.4 Geology and Earth Resources

Factors considered in determining if an alternative would have adverse impacts on geology and earth resources include the extent or degree to which implementation of an alternative would:

- Result in substantial soil erosion or the loss of topsoil; or
- Expose people or structures to potential substantial adverse effects, involving rupture of a known earthquake fault, strong seismic ground shaking, and/or liquefaction.

4.4.1 Alternative 1: Full Demolition

Soils and Erosion

Demolition of facilities and infrastructure would result in removal of vegetation and associated soil disturbance; thus, temporarily exacerbating the potential for erosion-induced sedimentation of San Antonio Creek. The project area is approximately 64.4 acres; however, demolition activities would be contained to the facilities and structures removed to the extent practicable and to avoid sensitive areas or habitat, so the overall amount of soils disturbance would likely be lower than 64.4 acres. Measures implemented to avoid and/or minimize surface erosion are discussed in Section 2.4.5, Environmental Protection Measures – Water Resources. As a result, significant impacts resulting from erosion would not occur.

Seismicity

Because of the seismic nature of the region, active faults located both in the vicinity of the project area and regionally could result in strong seismically induced ground shaking. The potential for surface fault rupture and liquefaction on Vandenberg SFB would be minimal due to natural conditions in the area.

The project only includes demolition of structures; therefore, no increase in risk to personnel or the public resulting from

geologic hazards should occur. As a result, adverse impacts associated with seismically induced ground shaking should not occur.

4.4.2 No-Action Alternative

Under the No-Action Alternative, no sites or infrastructure would be demolished at SLC-2; therefore, no impacts on geology and earth resources would occur.

4.5 Land Use and Coastal Zone Resources

Factors considered in determining if an alternative would have adverse impacts on land use and coastal zone resources include the extent or degree to which implementation of an alternative would:

- Result in land uses within the project area that are incompatible with, or would have a substantial adverse impact on, the existing character of adjacent land uses; or
- Conflict with substantive requirements of land use plans or policies.

4.5.1 Alternative 1: Full Demolition

Land Use

As stated in Section 3.5, Land Use and Coastal Zone Resources, the project area consists of various facilities and infrastructure that previously supported operations of SLC-2. The surrounding area includes roadways, utility infrastructure, and buildings and support infrastructure associated with SLC-1 and SLC-10 (i.e., the other components of the Thor Launch Complex National Historic District, to which SLC-2 contributes), as well as undeveloped land and the Pacific Ocean approximately 0.4 miles to the west. Alternative 1 would demolish up to 32 facilities at SLC-2 and would not introduce any new land uses that would be incompatible with the Base's 2011 General Plan land use designation for this area.

After demolition, the project area would be returned to its pre-development state to the extent possible and revegetated with native plants, when feasible. The removal of structures and facilities would likely result in beneficial impacts since many of the structures are in a state of disrepair.

Coastal Zone Management

The USSF has analyzed the effects of Alternative 1 by evaluating reasonably foreseeable direct and indirect effects on coastal uses and resources and has determined there would be no effects to coastal uses or resources. Implementation of Alternative 1 activities would be consistent with the existing land uses in the project area and would not substantially differ from existing military and industrial activities in the project vicinity.

Notification of this determination was filed with the CCC on January 31, 2022. The CCC concurred with Vandenberg SFB's determination in a letter dated April 5, 2022 (refer to Appendix B-2 for details).

4.5.2 No-Action Alternative

Under the No-Action Alternative, no sites or infrastructure would be demolished at SLC-2; therefore, no impacts on land use and coastal zone resources would occur.

4.6 Public Health and Safety

Potential impacts associated with public health and safety are evaluated using federal, state, and local regulatory requirements, contract specifications, and Base operating constraints, as outlined in Section 3.6, Public Health and Safety. Hazardous materials management requirements are stipulated in federal and state EPA and OSHA regulations, contract specifications, and the Base Hazardous Material Management Plan.

Non-compliance with applicable regulatory requirements, human exposure to hazardous materials and wastes (including ACM, LBP, PCBs, or dioxins), or

environmental release above permitted limits would be considered adverse impacts.

4.6.1 Alternative 1: Full Demolition

Hazardous Materials and Waste

Compliance with all applicable federal, state, and local rules and regulations would govern all activities associated with the Proposed Action, which would minimize the potential for adverse effects. Specifically, hazardous materials and waste would be regulated by the procedures outlined the Base Hazardous Materials Management Plan and the Base Hazardous Waste Management Plan, and applicable Base policies.

Alternative 1 would require the use of commonly used hazardous materials to accomplish demolition activities. As described in Section 3.6.1, all hazardous materials used at Vandenberg SFB must first be coordinated with and approved by HazMart staff and must also comply with Vandenberg SFB health and safety requirements. Because Alternative 1 would be limited to only four months and cover a relatively small area on Base, there would not be a significant increase in the amounts of hazardous materials present on Vandenberg SFB. Thus, no significant adverse impacts are anticipated.

Potential adverse effects at demolition sites could result from accidental releases of POLs from vehicle and equipment leaks, and from hazardous wastes generated by abatement actions. All hazardous wastes would be properly managed and disposed of in accordance with applicable federal, state, and local hazardous waste regulations, and the Base Hazardous Waste Management Plan. Prior to project implementation, the demolition contractor would prepare a hazardous materials Spill Prevention and Response Plan and obtain concurrence from 30 CES/CEI. All hazardous wastes would be managed either during release response and clean-up, or during abatement removal actions.

Demolition debris would be disposed of in compliance with federal and state EPA and OSHA regulations, the Base Hazardous Waste Management Plan, and applicable hazardous waste regulations and Base policies. Therefore, impacts to hazardous materials and waste management would not be adverse.

Asbestos Abatement Management

In addition to the regulations described above for hazardous materials and waste management, the evaluation of potential impacts associated with the presence of ACM also includes disposal requirements, particularly as applied to the disposal of non-friable asbestos. The Base Asbestos Management Plan and local SBCAPCD rules, as applicable to NESHAPs for asbestos, would also be criteria for assessing asbestos survey, abatement, management, and disposal actions.

All ACM would be abated prior to demolition, in accordance with applicable regulations and policies, and the project Asbestos Work Plan to be prepared. Personal protective clothing and equipment are necessary to protect workers against asbestos hazards that may be encountered at abatement sites. Friable asbestos waste generated by the demolition would be disposed of following Vandenberg SFB hazardous waste management procedures, wherein the demolition contractor obtains the appropriate container or portable disposal unit and provides 30 CES/CEIE 48-hour notice to approve the manifest to a certified landfill. Friable asbestos that has been sampled, analyzed, and characterized as hazardous waste would have paperwork processed through the Consolidated CAP and disposed of by a Vandenberg SFB approved contractor. Non-friable asbestos would be disposed off Base in a construction and demolition (C&D) landfill. Implementing these measures would minimize adverse effects resulting from ACM.

Lead-Based Paint Management

The regulations and rules described above for hazardous materials and waste management, the Base Lead Based Paint Management Plan (30 SWP 32-1002), and applicable SBCAPCD rules would be criteria for assessing LBP survey abatement, management, and disposal actions.

The demolition contractor would sample all buildings proposed for demolition for lead content, as applicable. Personnel performing demolition activities would be trained to recognize hazards and protect themselves and others from lead exposure. LBP abatement would be accomplished prior to structural demolition. Proper segregation of demolition debris would be used to avoid unnecessary contamination due to LBP. Wastes that are hazardous due to metals (lead) toxicity would be processed following Base Hazardous Waste Management Plan procedures for eventual offsite disposal. Wastes that may contain LBP, have been analyzed, and are determined to be nonhazardous may be disposed of in an approved C&D landfill. Implementing these measures would minimize adverse effects resulting from LBP-containing materials.

Polychlorinated Biphenyls and Dioxins

The regulations described above for hazardous materials and waste management are used to evaluate potential impacts as a result of PCB and dioxin containing materials. These regulations, rules, and Vandenberg SFB plans would also be criteria for assessing PCB and dioxin survey, abatement, management, and disposal actions.

Each building proposed for demolition would be surveyed for PCBs in oils, coatings, and electrical devices. Devices or wastes containing PCBs would be managed in accordance with the Base Hazardous Waste Management Plan and federal, state, and local environmental regulations. Should any transformer be removed, the removal

action would be coordinated with the 30 CES Utilities Electrical Shop to account for removal and to verify PCB presence or content in the removed transformer. Implementing these measures would minimize adverse effects resulting from PCB- and dioxin-containing materials.

Installation Restoration Sites

As described in Section 3.6.3, there are two open IRP sites, three closed AOIs, and one closed AOC located within the project area. As various contaminants could be present at these sites, there is a potential that contaminants would be encountered during ground-disturbing activities. Consequently, all ground-disturbing activities in proximity of hazardous release sites would be monitored to minimize the risks of exposure to soil or groundwater contaminants (refer to Section 2.4.4, Environmental Protection Measures – Public Health and Safety).

If contamination is discovered during demolition activities, the U.S. Air Force Civil Engineering Center/CZOW Edwards ISS, Environmental Restoration Office would be contacted immediately for necessary remedial requirements. In addition, Alternative 1 would comply with all federal regulations governing IRP activities, including the procedures stipulated in the Federal Facilities Site Remediation Agreement. As Alternative 1 would comply with federal regulations that would minimize human exposure to contaminants, no adverse impacts on public health and safety would occur.

Unexploded Ordnance

There are no UXO Closure Areas identified within the project area. However, it is agency policy that all construction is coordinated through SLD 30/SEW to determine what level of UXO support is needed. Additionally, the USSF would provide specialized training to the demolition contractor to assist with recognizing potential UXO (refer to Section 2.4.4, Environmental Protection Measures – Public Health and Safety). Any UXO

identified would be removed by authorized personnel.

For any intrusive activities in the MU809 (trenching, digging, heavy equipment operations, etc.), LUCs would require two qualified technicians to provide anomaly avoidance support so as to ensure the safety of contractors and Vandenberg Space Force personnel.

Federal Health and Safety Requirements

All applicable OSHA requirements and agency regulations would be specified in construction contracts and implemented with standard BMPs associated with the Proposed Action. As discussed in Section 2.4.4, Environmental Protection Measures – Public Health and Safety, a health and safety plan would be implemented and a formally trained individual would be the safety officer and the main point of contact for all job site safety issues. Impacts from potential health risks to construction personnel and the public would not be significant because work would be done by an experienced, licensed contractor and the work would follow an approved health and safety plan. Therefore, adverse impacts associated with environmental health risks would not occur.

Biological hazards, including vegetation (i.e., poison oak and stinging nettle), animals (i.e., insects, spiders, and snakes), disease vectors (i.e., ticks and rodents), and physical hazards (i.e., holes and ditches, uneven terrain, sharp or protruding objects, unstable ground) exist within the project area, and have the potential to adversely impact the health and safety construction personnel. Adherence to federal OSHA regulations would minimize the exposure of workers to these hazards. In addition, awareness training would be incorporated into health and safety protocol (refer to Section 2.4.4, Environmental Protection Measures – Public Health and Safety).

4.6.2 No-Action Alternative

Under the No-Action Alternative, no buildings would be demolished or abandoned as described in Chapter 2 of this EA. If these buildings are not adequately maintained, their structural conditions could continue to deteriorate and possibly suffer various degrees of structural failure, up to and including total collapse. If the buildings, or debris from deteriorating buildings, were not appropriately managed, adverse health and safety impacts could result.

Abandoned, deteriorating buildings have the potential to attract vectors or result in conditions that could pose a risk to human health and the environment. For example, people entering or approaching abandoned facilities could be injured if structural failure were to occur; and environmental damage could occur if hazardous materials such as mercury and phosphorus from broken fluorescent light tubes were released during structural deterioration.

4.7 Water Resources

Adverse impacts to water resources would occur if the Proposed Action caused substantial flooding or erosion; reduced surface water quality to creeks, rivers, streams, lakes, or the ocean; or reduced surface or groundwater quality or quantity.

4.7.1 Alternative 1: Full Demolition

Alternative 1 would not create any structures that would affect the volumes or patterns of surface flows or increase potential for flooding within the surrounding drainage areas. Instead, the proposed removal of structures at SLC-2 would likely improve surface flow and reduce the potential for flooding. No surface water features are located directly within the project area. Refer to Section 4.2, Biological Resources for a discussion of potential impacts to wetlands and riparian areas.

As described in Section 4.2, Biological Resources, and Section 2.4.2, Environmental Protection Measures –

Biological Resources, any potential Waters of the U.S. would be avoided. Accordingly, a CWA Section 401 Water Quality Certification from the Central Coast RWQCB, CWA Section 404 Permit from the USACE, or NPDES Construction General Permit would not be required for Alternative 1 because no direct impacts to water bodies or wetlands would occur.

Implementation of the environmental protection measures described in Section 2.4.5, Environmental Protection Measures – Water Resources would ensure that impacts to water resources are minimized or avoided.

Erosion

Above-ground demolition, sub-surface demolition, and subsequent grade restoration activities would result in temporary soil disturbance, thus increasing the potential for short-term erosion-induced siltation of adjacent palustrine temporary flooded depressional areas. As stated in Section 2.2, and Section 2.4.5, Environmental Protection Measures – Water Resources, the demolition contractor would implement erosion control BMPs that would prevent or minimize dispersion of soils to surface waters during and after demolition. Therefore, no significant erosion-related impacts to water resources would occur.

Water Quality

Surface water quality impacts, although unlikely, could potentially occur as a result of inadvertent dispersion of contaminants during demolition activities. No project activities would occur within any water body and the amount of demolition-generated contaminants (such as an oil leak from a vehicle) would likely be minimal; therefore, any accidental spills would remain localized and small. The contractor would follow a Spill Prevention and Response Plan, have spill kits, and clean-up spills immediately. All hazardous wastes would be properly managed and disposed of in accordance with applicable federal, state, and local hazardous waste regulations, including the Base Hazardous Waste Management Plan.

Proper management of materials and wastes during the abatement phase for ACMs, PCBs, and LBP (as described in Section 4.6, Public Health and Safety) would reduce or eliminate the potential for contaminated runoff. However, material may need to be temporarily stored while transportation is being arranged for its final disposal. The processes of demolition and segregation of materials have the greatest potential for exposing pollutants within the project area. These actions would pose the greatest threat to water resources during the rainy season. As stated in Section 2.4.5, Environmental Protection Measures – Water Resources, BMPs would be implemented to properly manage materials while on-site, especially during the rainy season. Deconstruction and demolition activities would be contained within each facility and all materials slated for recycle or reuse would be stored for transport within the project area as shown in Figure 2-1 and described in Section 2.2 of this EA.

As a result of these proposed measures, no significant impacts on water quality would occur.

Floodplains and Flooding

SLC-2 is not located within a FEMA designated 100-year or 500-year floodplain. Therefore, no impacts to floodplains would occur.

Groundwater

The greatest threat to groundwater is contamination from hazardous material or waste releases that could infiltrate an aquifer. The wells near Barka Slough, which is along San Antonio Creek, are greater than one mile from any facilities proposed for demolition; therefore, there is no potential for hazardous substances at demolition sites to impact these wells. Implementing pollution prevention practices would further reduce the potential for adverse impacts to groundwater resources. As a result, no significant groundwater quality impacts would occur in association with the Alternative 1.

Water demand for Alternative 1 would be limited to dust control during subsurface excavating and grade restoration. This demand would be inconsequential with respect to overall water use on Vandenberg SFB. As a result, no significant groundwater quantity impacts would occur in association with Alternative 1.

4.7.2 No-Action Alternative

Under the No-Action Alternative, no sites or infrastructure would be demolished at SLC-2; therefore, no impacts on water resources would occur.

Chapter 5. List of Agencies, Organizations, and Persons Contacted

California Coastal Commission – Energy, Ocean Resources, and Federal Consistency Division, San Francisco, CA

California Department of Fish & Wildlife, South Coast Region, Sacramento, CA

California Office of Historic Preservation, Sacramento, CA

California Trout, Ventura CA

Central Coast Regional Water Quality Control Board, San Luis Obispo, CA

Central Coast Regional Water Quality Control Board, Ambient Monitoring Program, San Luis Obispo, CA

Channel Islands National Marine Sanctuary, Santa Barbara, CA

City of Lompoc, Economic & Community Development, Lompoc, CA

Environmental Defense Center, Santa Barbara, CA

La Purisma Audubon Society, Vandenberg Village, CA

Lompoc Public Library, Lompoc, CA

National Marine Fisheries Service, Southwest Regional Office, Long Beach, CA

National Park Service, Channel Islands National Park, Ventura, CA

Office of the Governor, Office of Planning and Research, Sacramento, CA

Santa Barbara County Air Pollution Control District, Santa Barbara, CA

Santa Barbara County Board of Supervisors, Planning and Development, Santa Barbara, CA

Santa Barbara Museum of Natural History, Santa Barbara, CA

Santa Barbara Public Library, Santa Barbara, CA

Santa Maria Public Library, Santa Maria, CA

Santa Ynez Band of Chumash Indians Elders Council, Santa Ynez, CA

Sierra Club, Los Padres Chapter, Santa Barbara, CA

U.S. Army Corps of Engineers, Vandenberg AFB, CA

U.S. Coast Guard, Santa Barbara, CA

U.S. Department of Transportation, Federal Aviation Administration, Washington D.C.

U.S. Environmental Protection Agency, Region 9, Environmental Review Branch, San Francisco, CA

U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, Ventura, CA

This page intentionally left blank.

Chapter 6. List of Preparers

Paul DiPaolo, PMP (PHE)
M.S. Environmental Planning and Management
Years of Experience: 11
Responsible for: Contractor Project Manager

Greg Jackson (PHE)
B.S. Environmental Earth Science
Years of Experience: 7
Responsible for: Geology and Earth Resources

Erin Kouvousis (PHE)
M.S. Ecology
B.S. Conservation
Years of Experience: 10
Responsible for: Biological Resources, Water Resources, Public Health and Safety

Robert Naumann (PHE)
M.S. Environmental Science and Policy
B.S. Resource, Ecology and Management
Years of Experience: 22
Responsible for: Cultural Resources

Samir Qadir (PHE)
M.S. Environmental Policy
B.S. Electronics and Telecommunications Engineering
Years of Experience: 15
Responsible for: Air Quality

Deborah Shinkle (PHE)
B.A. Environmental Studies
GIS Certificate
Years of Experience: 17
Responsible for: GIS

This page intentionally left blank.

Chapter 7. References

- Arcadis. 2017. Final Remedial Design/Remedial Action Work Plan – SD025, Performance-Based Remediation at Vandenberg Air Force Base, California. May 10, 2017.
- Artemis (Artemis Environmental Services, Inc.). 2020. *Vandenberg Air Force Base Space Launch Complex-2 Habitat Suitability*. Vandenberg Air Force Base, CA. Alterman, I.B., R.B. McMullen, L.S. Cluff, and D.B. Slemmons (eds). 1994. *Seismotectonics of Central California Coast Ranges*. Geological Society of America Special Paper 292.
- BREEZE software. 2017. California emissions estimator model (CalEEMod) user's guide. BREEZE Software, A Division of Trinity Consultants, in collaboration with South Coast Air Quality Management District and the California Air Districts. Website: http://www.aqmd.gov/docs/default-source/caleemod/01_user-39-s-guide2016-3-2_15november2017.pdf?sfvrsn=4. Accessed January 7, 2021.
- California's Fourth Climate Change Assessment. 2018. Statewide Summary Report. Coordinating Lead Authors: Louise Bedsworth, Dan Cayan, and Guido Franco. August 2018. Website: https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf. Accessed July 12, 2021.
- CARB (California Air Resources Board). 2019. *Maps of State and Federal Area Designations*. Last Updated August 2019. Website: <https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations>. Accessed January 7, 2021.
- CARB. 2018. EMFAC2017 Volume I – User's Guide. v1.0.2. March 1, 2018. Website: <https://ww3.arb.ca.gov/msei/downloads/emfac2017-volume-i-users-guide.pdf>. Accessed July 12, 2021.
- CARB. 2016. *Ambient Air Quality Standards*. May 4, 2016. Website: <https://ww2.arb.ca.gov/sites/default/files/2020-07/aaqs2.pdf>. Accessed January 7, 2021.
- CDFW (California Department of Fish and Wildlife). 2021a. Peregrine Falcons in California. Accessed August 6, 2021 at <https://wildlife.ca.gov/Conservation/Birds/Peregrine-Falcon>
- CDFW. 2021b. California Department of Fish and Wildlife (CDFW). 2021. California Natural Diversity Database BIOS QuickView Tool. Species occurrences within the Surf, Casmalia, Orcutt, and Lompoc Quadrangles. Biogeographic Data Branch. Sacramento, CA.
- CGS (California Geological Survey). 2018. Earthquake Fault Zones. A Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California. Special Publication 42. Revised 2018. Sacramento, CA.
- CGS. 2010. Fault Activity Map of California.
- Christopher, S.V. 2004. Distribution and abundance of California red-legged frogs on Vandenberg Air Force Base: Responses to El Nino and Drought Conditions. Prepared for: CES/CE Natural Resources, Vandenberg Air Force Base.
- CNDDDB (California Natural Diversity Database). 2021a. CNDDDB GIS Data. Updated August 1, 2021. Accessed August 6, 2021 at https://apps.wildlife.ca.gov/cnddb-subscriptions/downloads/gis_com.zip
- CNDDDB. 2021b. Special Animals List. July 2021. Accessed August 6, 2021 at <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline>

- Dibblee, T.W. 1950. Geology of Southwestern Santa Barbara County, California: Point Arguello, Lompoc, Point Conception, Los Olivos, and Gaviota Quadrangles. California Division of Mines Bulletin 150. California Department of Natural Resources, San Francisco.
- Dupuis, J. R., Geib, S. M., Osborne, K. H., & Rubinoff, D. (2020, February 17). Genomics confirms surprising ecological divergence. *Biodiversity and Conservation*.
- IPCC (Intergovernmental Panel on Climate Change). 2014. Climate Change 2014 Impacts, Adaptation, and Vulnerability. Working Group II Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press. Website: <https://www.ipcc.ch/report/ar5/wg2/>. Accessed January 7, 2021.
- NOAA (National Oceanic and Atmospheric Administration). 2016. Period of Record Monthly Climate Summary – Lompoc, California (045064). Period of Record: 1950 to 2006. Website: <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?calomp+sca>.
- Santa Barbara County Public Works Department. 2009. 2008 Santa Barbara County Groundwater Report. December 1, 2009. Accessed December 22, 2020 at <http://www.countyofsb.org/uploadedFiles/pwd/Content/Water/WaterAgency/2008%20groundwater%20report%20FINAL.pdf>
- Shaw (Shaw Environmental, Inc.). 2013. Final Record of Decision (ROD) / Remedial Action Plan (RAP). Installation Restoration Program (IRP) Site 25 Cluster (25C). Vandenberg Air Force Base, California. December 23, 2013.
- Smallwood, Josh and Roscoe Loetzerich. 2021. Identification of Historic Properties and Assessment of Effects. Demolition of Buildings at Space Launch Complex-2. Vandenberg Air Force Base, Santa Barbara County, California. (813-18-048). April 2021.
- USAF (United States Air Force). 2020. ACAM: U.S. Air Force Air Conformity Applicability Model – Quick Start Guide. May 2020. Accessed March 25, 2022 at <https://aqhelp.com/acam.html>.
- USAF. 1987. Mineral resource management plan: Potential exploration, development, and production of oil and gas resources, Vandenberg Air Force Base.
- United States Department of Agriculture (USDA) Soil Conservation Science. 1972. Soil Survey of Northern Santa Barbara Area, California. In cooperation with University of California Agricultural Experiment Station. Website: https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/california/CA672/0/ca_Northern_S_B.pdf.
- USEPA (United States Environmental Protection Agency). 2021. Emission Factors for Greenhouse Gas Inventories. Website: https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf. Accessed July 20, 2021.
- USEPA. 2020. Nonattainment Areas for Criteria Pollutants (Green Book). Website: <https://www.epa.gov/green-book>. Data current as of December 31, 2020. Accessed January 7, 2021.
- USEPA. 2017. Final California 2014 and 2016 Integrated Report (303(d) List/305(b) Report) Supporting Information. October 3, 2017. Website: https://www.waterboards.ca.gov/water_issues/programs/tmdl/2014_16state_ir_reports/table_of_contents.shtml. Accessed January 7, 2021.
- USEPA. 1995. AP-42: Compilation of Air Emissions Factors. Website: <https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors>. Accessed July 12, 2021.

- USFWS (United States Fish and Wildlife Service). 2021a. *List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project*. U.S. Fish and Wildlife Service. Retrieved June 2021, from <https://ecos.fws.gov/ipac/>.
- USFWS. 2021b. Endangered and Threatened Wildlife and Plants; Reclassification of *Layia carnosa* (Beach Layia) from Endangered to Threatened Species Status With Section 4(d) Rule. *Federal Register*. Vol. 86, No. 69. April 13, 2021. Accessed October 6, 2021 at <https://www.govinfo.gov/content/pkg/FR-2021-04-13/pdf/2021-07608.pdf#page=1>
- USFWS. 2020. Change in Status of the Euphilotes Butterflies on Vandenberg Air Force Base, Santa Barbara, County, CA. U.S. Fish and Wildlife Service. March 9.
- USGS (United States Geological Survey). 2020. Quaternary Fault and Fold Database of the US. Accessed on September 23, 2020 at https://www.usgs.gov/natural-hazards/earthquake-hazards/faults?qt-science_support_page_related_con=4#qt-science_support_page_related_con
- USGCRP (United States Global Change Research Program). 2018. Fourth National Climate Assessment. Website: https://nca2018.globalchange.gov/downloads/NCA4_2018_FullReport.pdf. Accessed January 7, 2021.
- Vandenberg Air Force Base (AFB). 2014. Environmental Program Guide. Asbestos Management and Operating Guide. October 2014.
- Vandenberg AFB. 2011. Final Programmatic Environmental Assessment for the 2011-2015 Integrated Natural Resources Management Plan for Vandenberg Air Force Base, California. Website: <https://apps.dtic.mil/sti/pdfs/ADA550681.pdf>. Accessed July 12, 2021.
- Weston (Weston Solutions, Inc.). 2018. Final Feasibility Study Report. North Base Munitions Response Sites (MU803, MU803A, MU804, MU805, MU805A, MU805B, MU805C, MU805D, MU805E, MU809, SR808, SR808A, SR811A, TM807, TM817, TM817A, TM817C, TM817D, TM817E, TM817F, TM817G, TM817L). Vandenberg Air Force Base, Lompoc, California. December 2018.

This page intentionally left blank.

Appendix A
Public Review and Comment Process

This page intentionally left blank.



**DEPARTMENT OF THE AIR FORCE
UNITED STATES SPACE FORCE
SPACE LAUNCH DELTA 30**

07 Apr 22

MEMORANDUM FOR ALL INTERESTED GOVERNMENT AGENCIES, PUBLIC OFFICIALS,
ORGANIZATIONS, AND INDIVIDUAL PARTIES

FROM: 30 CES/CEI
1028 Iceland Avenue
Vandenberg SFB CA 93437-6010

SUBJECT: Final Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for Demolition of Space Launch Complex-2, Vandenberg Space Force Base, California.

1. Attached as public and agency notification, to comply with the National Environmental Policy Act of 1969, and the President's Council on Environmental Quality's implementing regulations, is the Final Draft EA and FONSI for Demolition of Space Launch Complex (SLC)-2, Vandenberg Space Force Base, California.
2. This Final Draft EA is available at: the Lompoc, Santa Maria, and Santa Barbara Public Libraries, and the VSFB Library. The Proposed Action consists of demolition of up to 32 facilities and supporting infrastructure (roadways, driveways, pads, aboveground utilities) at the site that have no planned future use. The launch pad itself and some associated infrastructure including the flame ducts would remain abandoned in place. Following demolition portions of the site would be restored to natural conditions to the extent practicable. Resources analyzed in the attached Final Draft EA include air quality, biological resources, cultural resources, geology and earth resources, land use and coastal zone resources, public health and safety, and water resources. This Final Draft EA concludes that there will be no significant environmental impacts resulting from the Proposed Action.
3. The public comment period for this Final Draft EA/FONSI will be from 09 April 2022 through 08 May 2022. Comments may be sent to Space Launch Delta 30, Installation Management Flight Environmental Assets, 1028 Iceland Avenue, Building 11146, Vandenberg Space Force Base, California 93437, attention of Ms. Tracy Curry, emailed to tracy.curry-bumpass@spaceforce.mil, or faxed to (805) 606-6137. If you have any questions, please contact Ms. Tracy Curry at (805) 606-2044.

SAMANTHA O. KAISERSATT
Chief, Environmental Conservation

Attachment:
Final Draft EA and FONSI for Demolition of Space Launch Complex-2, Vandenberg Space Force Base, California.

**FINAL DRAFT ENVIRONMENTAL ASSESSMENT AND
FINDING OF NO SIGNIFICANT IMPACT
DEMOLITION OF SPACE LAUNCH COMPLEX-2 AT
VANDENBERG SPACE FORCE BASE, CALIFORNIA**

The US Space Force has prepared a Final Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) that evaluates the potential environmental impacts of demolition of facilities at Space Launch Complex (SLC)-2, located on Vandenberg Air Space Base (VSFB) in Santa Barbara County, California. The Proposed Action consists of demolition of up to 32 facilities and supporting infrastructure (roadways, driveways, pads, aboveground utilities) at the site that have no planned future use. The launch pad itself and some associated infrastructure including the flame ducts would remain abandoned in place. Following demolition portions of the site would be restored to natural conditions to the extent practicable. Resources analyzed in this Final Draft EA include air quality, biological resources, cultural resources, geology and earth resources, land use and coastal zone resources, public health and safety, and water resources.

The Final Draft EA concludes that there will be no significant environmental impacts resulting from the Proposed Action. The Final Draft EA/FONSI is available at: <https://www.vandenberg.spaceforce.mil/> and in person at the Lompoc Public Library, Santa Maria Public Library, Santa Barbara Central Library, and the VSFB Library. The public comment period for this Final Draft EA/FONSI will be from 9 April 2022 through 8 May 2022. Comments may be sent to Ms. Tracy Curry, 30 CES/CEI, 1028 Iceland Avenue, Vandenberg SFB, CA 93437-6010, emailed to tracy.curry-bumpass@spaceforce.mil. If you have any questions, please contact Ms. Tracy Curry at (805) 606-2044.

Distribution Instructions: Please distribute NEPA documents, including the corresponding notice of availability (NOA), to the following points of contact (POCs) as indicated below. Send NOA only when indicated. Distribute hard copies to the libraries via personal delivery and obtain signed receipt. Please inform VSFB of any "return to sender" issues with any of the listed POCs or change of preference for document type or delivery. Finally, please inform VSFB of any POC that would like to be removed from this list.

Federal

NOAA – Channel Islands National Marine Sanctuary
Attn: Chris Mobley
113 Harbor Way, Suite 150
Santa Barbara, CA 93109
NOA Only

NOAA - National Marine Fisheries Service
Southwest Regional Office
Attn: For Distribution
501 West Ocean Blvd
Long Beach, CA 90802-4213
NOA Only

National Park Service
Channel Islands National Park
Attn: Superintendent
1901 Spinnaker Drive
Ventura, CA 93001
NOA Only

U.S. Army Corps of Engineers
Attn: David A. Jorgenson, P.E.
1318 New Mexico Avenue, Building 9360
Vandenberg AFB, CA 93437
Email: David.A.Jorgenson@usace.army.mil
Electronic Copy

U.S. Coast Guard
Attn: For Distribution
111 Harbor Way
Santa Barbara, CA 93109
NOA Only

U.S. Department of Transportation
Federal Aviation Administration (FAA)
Attn: Planning and Environmental Division
800 Independence Avenue
Washington, DC 20591
NOA Only

U.S. Environmental Protection Agency, Region 9
Environmental Review Branch
Attn: Karen Vitulano
Tribal, Intergovernmental and Policy Division
75 Hawthorne St. TIP-2
San Francisco, CA 94105
Email: Vitulano.Karen@epa.gov
NOA Only

U.S. Fish and Wildlife Service
Ventura Fish and Wildlife Office
Attn: Stephen P. Henry
2493 Portola Road, Suite B
Ventura, CA 93003-7726
Email: steve_henry@fws.gov
Electronic Copy

State

California Coastal Commission - Energy, Ocean Resources and Federal Consistency Division
Attn: Cassidy Teufel
455 Market Street, Suite 228
San Francisco, CA 94105-2219
Email: cassiday.teufel@coastal.ca.gov
Electronic Copy

Central Coast Regional Water Quality Control Board
Attn: Sheila Soderberg
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401-7906
Email: Sheila.soderberg@waterboards.ca.gov
Electronic Copy

Central Coast Regional Water Quality Control Board
Attn: Mark Cassady
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401-7906
Email: Mark.Cassady@Waterboards.ca.gov
Electronic Copy

Central Coast Regional Water Quality Control Board - Central Coast Ambient Monitoring Program (CCAMP)
Attn: Mary Hamilton
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401
Email: Mary.Hamilton@waterboards.ca.gov
NOA Only

California Department of Fish & Wildlife
South Coast Region
Attn: Kelly Schmoker-Stanphill
E-mail: Kelly.Schmoker@wildlife.ca.gov

Electronic copy

California Environmental Protection Agency
Attn: For Distribution
1001 I Street
P.O. Box 2815
Sacramento, CA 95812-2815
NOA Only

California Office of Historic Preservation
Attn: Julianne Polanco
State Historic Preservation Officer
1725 23rd Street, Suite 100
Sacramento, CA 95816
Email: carol.roland-nawi@parks.ca.gov
Hardcopy

Office of the Governor
Office of Planning and Research
Attn: State Clearinghouse
1400 10th Street
Sacramento CA 95814
Electronic Copy

Santa Barbara County Air Pollution Control
District
Attn: Molly Pearson
260 N. San Antonio Road, Suite A
Santa Barbara, CA 93110-1315
Email: pearsonm@sbcapcd.org
Electronic Copy

Tribes

Santa Ynez Band of Chumash Indians
Elders Council
Attn: Sam Cohen & Freddie Romero
P.O. Box 517
Santa Ynez, CA 93460
Emails: FRomero@santaynezchumash.org
SCohen@santaynezchumash.org
Electronic Copy

Local

Santa Barbara County Board of Supervisors
C/O: Santa Barbara County Planning &
Development
Attn: David Villalobos
123 E. Anapamu Street
Santa Barbara, CA 93101
Email: dvillalo@co.santa-barbara.ca.us
Electronic Copy

Santa Barbara County Planning & Development
Attn: David Lackie
123 East Anapamu Street
Santa Barbara CA 93101-2058
Email: dlackie@countyofsb.org
Electronic Copy

City of Lompoc
Economic & Community Development
Attn: Brian Halvorson or Cherridah Weigel
100 Civic Center Plaza
Lompoc CA 93436
Email: b_halvorson@ci.lompoc.ca.us
c_weigel@ci.lompoc.ca.us

Hardcopy

Libraries

Santa Barbara Public Library
40 East Anapamu Street
Santa Barbara, CA 93101-2000
Hardcopy

Lompoc Public Library
501 East North Avenue
Lompoc, CA 93436
Hardcopy

Santa Maria Public Library
421 S. McClelland Street
Santa Maria, CA 93454
Hardcopy

Requesting Entities

California Native Plant Society
Channel Islands Chapter
Attn: David Magney
P.O. Box 6
Ojai, CA 93024-006
Email: president@cnpsci.org
Electronic Copy

California Trout
Attn: Russell Marlow
21 S. California Street #305
Ventura, CA 93001
NOA Only

Environmental Defense Center
Attn: Brian Trautwein
906 Garden Street
Santa Barbara, CA 93101
Email:
BTrautwein@EnvironmentalDefenseCenter.org
Electronic Copy

La Purisima Audubon Society
Attn: Tamarah Taaffe
4036 Muirfield Place
Vandenberg Village, CA
93436-1307
Email: bima55@msn.com
Hardcopy

Santa Barbara Museum of Natural History

Attn: Luke J. Swetland

2559 Puesta del Sol

Santa Barbara, CA 93105

Email: lswetland@sbnature2.org

Electronic Copy

Sierra Club

Los Padres Chapter

Attn: Gerry Ching

P O Box 31241

Santa Barbara, CA 93130-1241

Email: gching@cox.net

Electronic Copy

This page intentionally left blank.

Appendix B
Regulatory Correspondence

This page intentionally left blank.

Appendix B-1
National Historic Preservation Act and Tribal Consultation

This page intentionally left blank.



DEPARTMENT OF THE AIR FORCE
UNITED STATES SPACE FORCE
30TH SPACE WING

Christopher Ryan
30 CES/CEIEA
1028 Iceland Avenue
Vandenberg AFB, CA 93437-6010

March 9, 2021

Mr. Sam Cohen
Santa Ynez Band of Chumash Indians
P.O. Box 517
Santa Ynez, CA 93460

Dear Sam

The 30th Space Wing (30 SW) of the United States Space Force (USSF), Vandenberg Air Force Base (AFB), California, in cooperation with the National Aeronautics and Space Administration (NASA), proposes to demolish all facilities at Space Launch Complex-2 (SLC-2) on North VAFB, in Santa Barbara County, California. The proposed Demolition of Space Launch Complex-2 project would entail removal of all existing equipment and demolition of 23 numbered facilities and some of the foundations. Roadways and the massive concrete launch pads and flame ducts would remain.

30 SW determined that the proposed Demolition of Space Launch Complex-2 is an undertaking subject to compliance with Section 106 [codified at 54 USC 306108] of the National Historic Preservation Act of 1966, as amended [54 USC 300101 et seq.: Historic Preservation]. 30 SW will comply with Section 106 using the implementing regulations [Title 36 Code of Federal Regulations (CFR) Part 800] and is hereby initiating consultation with the Santa Ynez Band Of Chumash Indians..

30 SW carried out a reasonable and good-faith cultural resources investigation that fulfills federal agency responsibilities pursuant to 36 CFR §800.4(a)-(d) and 36 CFR §800.5(a)-(d). Details of the investigation are provided in the attachment. 30 SW identified the Area of Direct Impacts and then identified the Area of Potential Effects (APE).

Two historic properties are within the Area of Direct Impacts: Space Launch Complex-2 and the Thor Launch Complexes Historic District. Delineating the APE to include the historic district adds two additional historic properties to the inventory: Space Launch Complex-1 and Space Launch Complex-10, which is a National Historic Landmark. However, no activities are proposed within the boundaries of those two launch complexes.

One previously-unevaluated prehistoric archaeological site also is within the Area of Direct Impacts—CA-SBA-2348—which is assumed eligible for the National Register of Historic Places (NRHP) for the purposes of this project only. CA-SBA-2348 would not be adversely affected

during execution of the proposed undertaking due to installation of temporary exclusionary fencing between the site boundary and adjacent ground-disturbing project activities.

In summary, 30 SW reached a Section 106 finding of *adverse effect to historic properties* for this undertaking due to demolition activities at Space Launch Complex-2. 30 SW recognizes that the Tribe may have additional concerns. 30 SW is seeking comments or concerns you may have about cultural resources with regard to the proposed undertaking. I would be happy to escort you and any other Tribal members to the project area in the near future if you are interested. I can be reached at (805) 605-0748 or via email at Christopher.ryan.7@us.af.mil. Thank you for your assistance with this undertaking.

Sincerely

Christopher Ryan

CHRISTOPHER RYAN
30 SW Tribal Liaison Officer

Attachment:

Identification of Historic Properties and Finding of Adverse Effect, Demolition of Space Launch Complex-2, Vandenberg Air Force Base, California



**DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION**

Armando Quintero, Director

Julianne Polanco, State Historic Preservation Officer

1725 23rd Street, Suite 100, Sacramento, CA 95816-7100

Telephone: (916) 445-7000 FAX: (916) 445-7053

calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

June 30, 2021

Reply in Reference to: USAF_2021_0310_001

Lt. Col. Charles G. Hansen
Commander, 30th Civil Engineer Squadron
1172 Iceland Avenue
Vandenberg AFB, CA 93437-6011

VIA ELECTRONIC MAIL

Re: Section 106 Consultation for Demolition of Space Launch Complex-2, Thor Launch Complexes Historic District, Vandenberg Air Force Base, Santa Barbara County

Dear Lt. Col. Hansen:

The United States Air Force (USAF) is continuing consultation with the State Historic Preservation Officer (SHPO) regarding its effort to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. 306108), as amended, and its implementing regulation found at 36 CFR Part 800.

Having received the SHPO's comments regarding its proposal to modify and demolish elements of Vandenberg's Space Launch Complex-2 (SLC-2), the USAF provided a revised undertaking description (received on April 28, 2021). As described in its supporting documentation, the USAF intend to demolish all facilities and associated equipment at SLC-2 with the exception of the flame duct and launch pad.

SLC-1, SLC-2 and SLC-10 constitute the Thor Launch Complexes Historic District. 12 contributors consisting of three non-numbered SLC-2 facilities identified as the At-grade cable tray to East Pad, LOX tank revetment and RP-1 fuel tank revetment and nine of the 31 numbered SLC-2 facilities are scheduled for demolition.

The USAF are requesting concurrence with its revised delineation of the undertaking's area of potential effects and a finding of adverse effect. Upon review of the information provided the SHPO offers the following comments:

- 1) The SHPO does not object to the USAF's area of potential effects definition as the entirety of the Thor Launch Complexes Historic District (SLC-1, SLC-2, and SLC10).

- 2) Please confirm the status of consultation with the Santa Ynez Band of Chumash Indians and provide any comments received to date.
- 3) The SHPO concurs that the undertaking will adversely affect Space Launch Complex-2 and therefore the Thor Launch Complexes Historic District.
- 4) Please provide a draft memorandum of agreement in Microsoft Word format for review.

Should you have questions, please notify Ed Carroll, Historian II, at (916) 445-7006 or Ed.Carroll@parks.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Julianne Polanco', with a long horizontal stroke extending to the right.

Julianne Polanco
State Historic Preservation Officer

CC:
Kate Kerr, Advisory Council on Historic Preservation

**MEMORANDUM OF AGREEMENT
BETWEEN
SPACE LAUNCH DELTA 30 OF THE UNITED STATES SPACE FORCE,
VANDENBERG SPACE FORCE BASE AND THE CALIFORNIA STATE HISTORIC
PRESERVATION OFFICER
REGARDING THE DEMOLITION OF SPACE LAUNCH COMPLEX-2,
SANTA BARBARA COUNTY, CALIFORNIA**

WHEREAS, Space Launch Delta 30 (SLD 30) of the United States Space Force, Vandenberg Space Force Base, in conjunction with the National Aeronautics and Space Administration, intends to demolish all 31 numbered facilities and associated features at Space Launch Complex-2 (SLC-2) (Appendix A) in Santa Barbara County, California (Undertaking) and;

WHEREAS, SLD 30, in consultation with the State Historic Preservation Officer (SHPO), determined the Thor Launch Complexes Historic District (District) consisting of contributing elements SLC-1, SLC-2 and SLC-10, a National Historic Landmark, is eligible for listing in the National Register of Historic Places (NRHP) at the national level under NRHP criteria A and C with a period of significance of 1958–1980; and

WHEREAS, SLD 30, in consultation with the SHPO determined that SLC-1, SLC-2, and SLC-10 are individually eligible for listing in the NRHP at the national level under NRHP criteria A and C within the historic context of the Cold War, with a period of significance of 1959–1968 (SLC-1), 1958–1965 (SLC-2), and 1958–1980 (SLC-10); and

WHEREAS, SLC-1, SLC-2, SLC-10 and the District are historic properties as defined in 36 CFR Part 800, the regulations implementing Section 106 of the National Historic Preservation Act (NHPA) of 1966 (54 U.S.C. § 306108), as amended; and

WHEREAS, SLD 30 determined that upon the Undertaking’s completion the Thor Launch Complexes Historic District and SLC-2 will no longer retain sufficient integrity to meet NRHP eligibility requirements and that the Undertaking will adversely affect SLC-2 and the District; and SLD 30 consulted with the SHPO pursuant to 36 CFR Part 800, the regulations implementing Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108); and

WHEREAS, SLD 30 determined that upon the Undertaking’s completion SLC-1 and SLC-10 will retain sufficient integrity to meet NRHP eligibility requirements as individually eligible historic properties with which the SHPO concurred; and

WHEREAS, SLD 30 consulted with the Santa Ynez Band of Chumash Indians (Tribe) pursuant to 36 CFR Part 800.3 on the Undertaking’s adverse effect on historic properties and did not received any comments from the Tribe; and

WHEREAS, SLD 30 notified the Advisory Council on Historic Preservation (ACHP) of the adverse effect finding pursuant to 36 CFR § 800.6(a)(1) and the ACHP elected not to participate; and

NOW, THEREFORE, SLD 30 and the SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take the Undertaking's effect on historic properties into account.

STIPULATIONS

SLD 30 shall ensure the following measures are implemented:

I. AREA OF POTENTIAL EFFECTS

- A.** The APE for the Undertaking is depicted in Attachment A. The APE encompasses the entirety of SLC-2 and entails demolition of 31 numbered facilities, as well as some of the associated foundations, pavement, utilities, and equipment (see Appendix A).
- B.** If SLD 30 determines that APE modifications are required subsequent to the execution of this MOA, SLD 30 will consult with the SHPO to facilitate mutual agreement on the subject revisions.

II. HISTORIC PROPERTIES RECORDATION

Within 24 months of this MOA's execution SLD 30 shall, pursuant to Section 110 of the NHPA, submit to the SHPO updated California Department of Parks and Recreation 523 recording forms reflecting the loss of SLC-2 as a historic property and to update the status of SLC-1 and SLC-10.

III. MITIGATION MEASURES

- A.** Prior to the commencement of the undertaking, the USAF shall contact the regional Historic American Building Survey/Historic American Engineering Record/Historic American Landscape Survey coordinator at the National Park Service Interior Regions 8, 9, 10, and 12 Regional Office (NPS) to request that NPS stipulate the level of and procedures for completing the Historic American Engineering Record (HAER) documentation for SLC-2 and the District. SLD 30 shall notify the SHPO of the NPS HAER requirements.
- B.** SLD 30 shall photograph existing drawings and the historic properties using 4-inch by 5-inch negatives. Negatives shall be stored in archival quality sleeves. Prints shall be incorporated into the HAER and mounted on archival quality paper and stored in archival quality sleeves.
- C.** Copies of the final HAER document will be distributed by SLD 30 to the SHPO, the National Park Service, and to the Central Coastal Information Center (CCIC) of the California Historical Resources Information System housed at the University of California, Santa Barbara (UCSB). Additionally, SLD 30 shall post a pdf of the HAER to the Vandenberg SFB Environmental webpage.

- D. SLD 30 shall further resolve adverse effects to the historic properties at SLC-2 and the District through production of a calendar and pamphlet that describes SLC-2 and the District and summarizes its historical significance in a narrative and photographs. The calendar and pamphlet will be produced concurrently with the HAER document. An electronic copy shall be submitted to the SHPO. Printed copies will be distributed Base-wide (Museum, History Office, Civil Engineer Squadron), and to Lompoc Valley Historical Museum. SLD 30 shall post a pdf of the calendar and pamphlet to the Vandenberg SFB Environmental webpage.
- E. The target schedule for completing draft reviews to completion is included with this MOA as Appendix B.
- F. SLD 30 will not authorize the execution of any Undertaking activity that may affect [36 CFR§ 800.16(i)] historic properties in the Undertaking's APE until the requirements set forth in sections B and C of this stipulation have been met.
- G. Within 12 months after SLD 30 determines all required fieldwork and archival work is complete, SLD 30 will submit the draft HAER document for SLC-2 and the District to the NPS for review and comment (see Review Schedule, Appendix B). All work shall be in accordance with NPS guidelines. SLD 30 will request the NPS to provide written comments within 30 days following receipt of the draft HAER document. SLD 30 will notify the SHPO upon submittal of the HAER document to the NPS, once the NPS has commented, and once the NPS has accepted the HAER document. After the HAER document has been accepted by the NPS, SLD 30 shall issue and distribute the final form in accordance with stipulation III.C.
- H. Within 12 months after SLD 30 determines all required fieldwork and archival work is complete, SLD 30 will submit the draft calendar and pamphlet for SLC-2 and the District to the SHPO, for review and comment (see Review Schedule, Appendix B). The SHPO will be afforded 30 days following receipt of the calendar and pamphlet to submit any written comments to SLD 30. Failure of the SHPO to respond within this time frame shall not preclude SLD 30 from authorizing revisions to the draft calendar and pamphlet as SLD 30 may deem appropriate. SLD 30 will provide the SHPO with written documentation indicating whether and how the draft calendar and pamphlet will be modified in accordance with any SHPO comments. Unless the SHPO objects to this documentation in writing to SLD 30 within 30 days following receipt, SLD 30 may modify the draft calendar and pamphlet as SLD 30 may deem appropriate. Thereafter, SLD 30 may issue the calendar and pamphlet in final form and distribute them in accordance with stipulation III.D.
- I. All mitigation measures shall be completed prior to this MOA's expiration.

IV. REPORTING REQUIREMENTS

- A. SLD 30 shall prepare an Annual Report documenting actions carried out pursuant to this MOA and submit it to the SHPO. The reporting period shall commence one year from the date of execution. The Annual Report shall address issues and describe actions and

accomplishments over the past year, any issues that are affecting or may affect the ability of the SLD 30 to continue to meet the terms of this MOA, any disputes and objections received, and how they were resolved.

- B. SLD 30 shall coordinate a meeting with the SHPO to be scheduled within ninety (90) days of distribution of the Annual Report, or another mutually agreed upon date, to discuss activities carried out pursuant to this Agreement during the preceding year and activities scheduled for the upcoming year. This meeting, should it be deemed unnecessary, may be cancelled by mutual consent of the Signatories.

V. ADMINISTRATIVE PROVISIONS

A. STANDARDS AND QUALIFICATIONS

1. Pursuant to Section 112(a)(1)(A) of the NHPA [54 USC § 306131(a)(1)(A)] and 36 CFR§ 800.2(a)(1), SLD 30 will ensure that all work carried out in accordance with this agreement will be done by or under the direct supervision of appropriate historic preservation professionals who meet the *Secretary of the Interior's Professional Qualifications Standards*.
2. SLD 30 will ensure that contractors retained for services also meet these professional qualifications standards.
3. SLD 30 shall ensure that the adverse effects of the Undertaking on the historic properties at SLC-2 and the District are resolved in part in accordance with the *Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation* (68 FR 43159-43162).
4. If SLD 30 determines that the Undertaking must be modified it will consult with the SHPO to determine the effect of such modifications. If the modifications result in additional adverse effects to historic properties, additional mitigations to resolve adverse effects shall be determined in consultation with the SHPO and included under stipulation II and appended to this MOA pursuant to stipulation V.C.

B. DISPUTE RESOLUTION

1. Should the SHPO object at any time to the manner in which the terms of this MOA are implemented, to any action carried out or proposed with respect to implementation of the MOA (other than the Undertaking itself), or to any documentation prepared in accordance with and subject to the terms of this MOA, SLD 30 shall consult with the SHPO to resolve the objection. If SLD 30 determines that such objection cannot be resolved, SLD 30 shall:
 - a. Forward all documentation relevant to the dispute, including SLD 30's proposed resolution, to the ACHP. The ACHP shall provide SLD 30 and the SHPO with its advice on the resolution of the objection within 30 days of receiving adequate documentation. Prior to reaching a final decision on the dispute, SLD 30 shall

prepare a written response that takes into account any timely advice or comments regarding the dispute from the SHPO and provide the SHPO with a copy of this written response. SLD 30 will then proceed according to its final decision.

- b. If the ACHP does not provide its advice regarding the dispute within the 30-day time period, SLD 30 may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, SLD 30 shall prepare a written response that takes into account any timely comments regarding the dispute from the SHPO and provide the SHPO with a copy of such written response.
2. SLD 30's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.
3. Should any member of the public raise a timely and substantive objection pertaining to the manner in which the terms of the MOA are carried out, at any time during its implementation, SLD 30 shall take the objection into account by consulting with the objector to resolve this objection. When SLD 30 responds to an objection, it shall notify the consulting parties of the objection and in the manner in which it was resolved. SLD 30 may request the assistance of a consulting party to resolve an objection.

C. AMENDMENTS

This MOA may be amended when agreed to in writing by both Signatories. The amendment will be effective on the date a copy signed by the Signatories is filed with the ACHP.

D. DISCOVERIES AND UNANTICIPATED EFFECTS

In the event that a previously unidentified resource is encountered during this undertaking, or if an unanticipated effect to a known historic property results from the undertaking, SLD 30 will halt activities in the vicinity of the resource. SLD 30 shall comply with 36 CFR 800.13(b) by notifying the SHPO and invite comment from signatories to the MOA. SLD 30's notifications shall include a description of unanticipated effects, an eligibility recommendation or a proposed schedule for assessing eligibility, and if appropriate, a process to resolve potential adverse effects.

E. TERMINATION

1. If either signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatory to attempt to develop an amendment per Stipulation V(C), above. If within 30 days (or another time period agreed to by all Signatories) an amendment cannot be reached, either signatory may terminate the MOA upon written notification to the other signatory.

2. Once the MOA is terminated, and prior to work continuing on the undertaking, SLD 30 must request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. SLD 30 shall notify the SHPO as to the course of action it will pursue.

F. DURATION

1. This MOA will expire if its terms are not carried out within five (5) years from the date of its execution. Prior to such time, SLD 30 may consult with the SHPO to reconsider the terms and duration of the MOA and amend it in accordance with Stipulation V(C), above.
2. If SLD 30 determines the terms of the MOA have been fulfilled, it shall notify the SHPO in writing. Upon written concurrence from the SHPO that the terms of the MOA have been fulfilled, this MOA will be considered expired.

G. EFFECTIVE DATE

This MOA will take effect on the date that it has been executed by SLD 30 and the SHPO.

EXECUTION of this MOA by SLD 30 and the SHPO and implementation of its terms evidence that SLD 30 has taken into account the effect of the undertaking on historic properties and afforded the ACHP an opportunity to comment.

**MEMORANDUM OF AGREEMENT
BETWEEN
SPACE LAUNCH DELTA 30 OF THE UNITED STATES SPACE FORCE,
VANDENBERG SPACE FORCE BASE AND THE CALIFORNIA STATE HISTORIC
PRESERVATION OFFICER
REGARDING THE DEMOLITION OF SPACE LAUNCH COMPLEX-2,
SANTA BARBARA COUNTY, CALIFORNIA**

SIGNATORY:

Space Launch Delta 30 of the United States Space Force, Vandenberg Space Force Base

By: **HANSEN.CHARLES** Digitally signed by
S.G.1162353914 HANSEN.CHARLES.G.116235391
Date: 2021.09.29 11:43:58 -07'00' Date: 29 Sep 21
CHARLES G. HANSEN, Lt Col, USAF
Commander, 30th Civil Engineer Squadron

**MEMORANDUM OF AGREEMENT
BETWEEN
SPACE LAUNCH DELTA 30 OF THE UNITED STATES SPACE FORCE,
VANDENBERG SPACE FORCE BASE AND THE CALIFORNIA STATE HISTORIC
PRESERVATION OFFICER
REGARDING THE DEMOLITION OF SPACE LAUNCH COMPLEX-2,
SANTA BARBARA COUNTY, CALIFORNIA**

SIGNATORY:

California State Historic Preservation Officer



By:

Julianne Polanco
State Historic Preservation Officer

Date 9/30/21

ATTACHMENT A
APE Map




Thor Launch Complexes
Historic District

SLC-1

SLC-2

SLC-10

AREA OF POTENTIAL EFFECTS

 APE

0 335 670 1,340 2,010
Feet

APPENDIX A: FACILITIES TO BE DEMOLISHED

31 Numbered Facilities and Associated Structures at SLC-2 Targeted for Demolition and Their NRHP Eligibility Status		
Facility #	Description	NRHP Eligibility
1615	Horizontal Processing Facility	Not individually eligible; non-contributing element
1616	Theodolite Building	Not individually eligible; non-contributing element
1618	Technical Support Building	NRHP-eligible contributor to SLC-2
1619	Shipping & Receiving Warehouse	Not individually eligible; non-contributing element
1620	Welding Shop and Clean Room (Historic Thor Shelter)	NRHP-eligible contributor to SLC-2
1621	Support Building (Historic East Pad Technical Support Building)	NRHP-eligible contributor to SLC-2
1622	Launch Control (Historic Blockhouse)	NRHP-eligible contributor to SLC-2
1623	West Pad Fixed Umbilical Tower (FUT)	Not individually eligible; non-contributing element
1624	Vehicle Maintenance Facility	Not individually eligible; non-contributing element
1625	Pump house	NRHP-eligible contributor to SLC-2
1626	Traffic House	Not individually eligible; non-contributing element
1627	Water tank	NRHP-eligible contributor to SLC-2
1628	Delta II Launch Operations Building	Not individually eligible; non-contributing element
1629	Technical Support Building	Not individually eligible; non-contributing element
1631	Clamshell Storage Building	Not individually eligible; non-contributing element
1632	Machine shop building	Not individually eligible; non-contributing element
1633	Bore sight tower	Not individually eligible; non-contributing element
1634	Traffic house	Not individually eligible; non-contributing element
1640	Revetment wall	Not individually eligible; non-contributing element
1662	GN2/LN2 fuel tank farm	Not individually eligible; non-contributing element
1670	Solid motor building	Not individually eligible; non-

		contributing element
1674	Security fence	Not individually eligible; non-contributing element
1685	Proof-load Facility (Historic East Pad Electrical Equipment Building [EEB, formerly 1620A])	NRHP-eligible contributor to SLC-2
1686	Hydro Lab (Historic East Pad Air Conditioning Equipment Building [ACEB, formerly 1620B])	NRHP-eligible contributor to SLC-2
1687	Paint Booth (Historic Agena Shelter [formerly 1620D])	NRHP-eligible contributor to SLC-2
1689	Hazardous Material Storage	Not individually eligible; non-contributing element
1690	Hazardous Material Storage	Not individually eligible; non-contributing element
1692	Air Conditioning Equipment Building	Not individually eligible; non-contributing element
1693	Electrical Equipment Building	Not individually eligible; non-contributing element
1695	Generator building A	Not individually eligible; non-contributing element
1696	Generator building B	Not individually eligible; non-contributing element
-	At-grade cable tray to East Pad	NRHP-eligible contributor to SLC-2
-	LOX tank revetment (concrete blast wall)	NRHP-eligible contributor to SLC-2
-	RP-1 fuel tank revetment	NRHP-eligible contributor to SLC-2

**APPENDIX B:
REVIEW SCHEDULE
SECTION 106 MOA MITIGATION MEASURES**

PROPOSED REVIEW SCHEDULE

REVIEWER	TIMELINE					
	9 months after MOA execution	10 months	12 months	13 months	14 months	16 months
SLD 30	SLD 30 receives draft HAER document, calendar, and pamphlet from contractor for review.	SLD 30 conducts reviews draft HAER document, calendar, and pamphlet and returns to contractor to make edits.	SLD 30 receives HAER document and submits to NPS. SLD 30 notifies SHPO of HAER submittal. SLD 30 submits calendar and pamphlet to SHPO.	SLD 30 notifies SHPO of NPS comments on HAER document.	SLD 30 addresses comments received from SHPO and revises calendar and pamphlet accordingly. SLD 30 addresses comments received from NPS and revises HAER document accordingly.	Final HAER document is submitted to the SHPO and CCIC for filing. Final calendar and pamphlet are submitted to the SHPO and distributed Base-wide (Museum, History Office, Civil Engineer Squadron) and to Lompoc Valley Historical Museum. SLD 30 will post a pdf of the HAER, calendar, and pamphlet to the Vandenberg SFB Environmental webpage.
SHPO	-	-	SLD 30 notifies SHPO of HAER submittal to NPS. SLD 30 submits calendar and pamphlet to SHPO.	SHPO conducts review of calendar and pamphlet and provides comments to SLD 30.	-	SHPO accepts final HAER document, calendar, and pamphlet for file.
NPS	-	-	SLD 30 submits HAER document to NPS.	NPS reviews HAER document and provides comment to SLD 30.	-	Final HAER document is accepted by NPS.

This page intentionally left blank.

Appendix B-2
Coastal Zone Management Act Consultation

This page intentionally left blank.

CALIFORNIA COASTAL COMMISSION

455 MARKET STREET, SUITE 300
SAN FRANCISCO, CA 94105
FAX (415) 904-5400
TDD (415) 597-5885



April 5, 2022

Beatrice Kephart
Chief, Installation Management Flight
Department of the Air Force
30 CES/CEI
1028 Iceland Avenue
Vandenberg SFB CA 93437-6010

Re: Negative Determination No. ND-0010-22: Space Launch Complex 2 Building
Demolition, Vandenberg Space Force Base, Santa Barbara County

Dear Beatrice Kephart:

We have received your letter dated January 31, 2022, in which you have determined that the above-referenced proposal to demolish buildings within 50 acres of Space Launch Complex 2 and restore the project area to natural conditions would have no adverse effect on coastal resources for the reasons identified in Negative Determination No. ND-0010-22. The Coastal Commission staff agrees that the proposed project will not adversely affect coastal zone resources. We therefore **concur** with your negative determination made pursuant to 15 CFR Section 930.35 of the NOAA implementing regulations.

Please contact Alexis Barrera at alexis.barrera@coastal.ca.gov if you have any questions regarding this matter.

Sincerely,

A handwritten signature in cursive script, appearing to read "Cassidy Teufel".

CASSIDY TEUFEL
Federal Consistency Coordinator
(for)

JOHN AINSWORTH
Executive Director

This page intentionally left blank.

Appendix C
Plant and Wildlife Species Observed in Project Area

This page intentionally left blank.

Table C-1. Wildlife Species Observed within the Project Area

Order	Common Name	Scientific Name	Common Name	Scientific Name
Insects	Honeybee	<i>Apis</i> sp.	Behr's metalmark	<i>Apodemia virgulti</i> .
	Acmon blue	<i>Plebejus acmon</i>	Swallowtail	<i>Papilio</i> sp.
	Gulf fritillary	<i>Agraulis vanillae</i>	Dragonfly	Unidentified
Amphibians	Baja California treefrog	<i>Pseudacris hypochondriaca</i>		
Reptiles	Western fence lizard	<i>Sceloporus occidentalis</i>	Side-blotched lizard	<i>Uta stansburiana</i>
Birds	Red-tailed hawk	<i>Buteo jamaicensis</i>	California towhee	<i>Melospiza crissalis</i>
	Northern harrier	<i>Circus hudsonius</i>	Spotted towhee	<i>Pipilo maculatus</i>
	Turkey vulture	<i>Cathartes aura</i>	White-crowned sparrow	<i>Zonotrichia leucophrys</i>
	Costa's hummingbird	<i>Calypte costae</i>	Blue-gray gnatcatcher	<i>Poliophtila caerulea</i>
	American kestrel	<i>Falco sparverius</i>	European starling	<i>Sturnus vulgaris</i>
	California quail	<i>Callipepla californica</i>	Wrentit	<i>Chamaea fasciata</i>
	Bushtit	<i>Psaltriparus minimus</i>	Bewick's wren	<i>Thryomanes bewickii</i>
	California scrub-jay	<i>Aphelocoma californica</i>	House wren	<i>Troglodytes aedon</i>
	Lesser goldfinch	<i>Spinus psaltria</i>	Pacific slope flycatcher	<i>Empidonax difficilis</i>
	House finch	<i>Haemorhous mexicanus</i>	Black Phoebe	<i>Sayornis nigricans</i>
	Cliff swallow	<i>Petrochelidon pyrrhonota</i>	Say's Pheobe	<i>Sayornis saya</i>
	Northern mockingbird	<i>Mimus polyglottos</i>	Kingbird	<i>Tyrannus</i> sp.
	California thrasher	<i>Toxostoma redivivum</i>	Great blue heron	<i>Ardea herodias</i>
	Common yellowthroat	<i>Geothlypis trichas</i>	Northern flicker	<i>Colaptes auratus</i>
	Song sparrow	<i>Melospiza melodia</i>		
Mammals	Mule deer	<i>Odocoileus hemionus</i>	Black-tailed jackrabbit	<i>Lepus californicus</i>
	Coyote	<i>Canis latrans</i>	Woodrat	<i>Neotoma</i> sp.
	Common gray fox	<i>Urocyon cinereoargenteus</i>	California ground squirrel	<i>Otospermophilus beecheyi</i>

Source: Artemis 2020

Table C-2. Plant Species Observed within the Project Area

Family	Scientific Name	Common Name	Habitat	Status
Aizoaceae	<i>Carpobrotus edulis</i>	hottentot-fig	DH, CCS-d, CDS-d, CCRS-d	Non-native
Aizoaceae	<i>Conicosia pugioniformis</i>	narrow-leafed iceplant	DH, CCS-d, CDS-d, CCRS-d	Non-native
Anacardiaceae	<i>Toxicodendron diversilobum</i>	poison oak	CCS-d, CCRS-d	Native
Apiaceae	<i>Foeniculum vulgare</i>	fennel	CCS-d, CCRS-d	Non-native
Asteraceae	<i>Artemisia californica</i>	California sagebrush	DH, CCS-d, CDS-d	Native
Asteraceae	<i>Baccharis pilularis</i>	coyote brush	DEV, CCS-d, CDS-d	Native
Asteraceae	<i>Centaurea melitensis</i>	toçalote	DEV, CCCS-d	Non-native
Asteraceae	<i>Corethrogyne filaginifolia</i> var. <i>incana</i>	San Diego sand aster	CCS-d	Native; CRPR 1B.1
Asteraceae	<i>Ericameria ericoides</i>	mock heather	DH, CCS-d, CDS-d, CCRS-d	Native
Asteraceae	<i>Deinandra increscens</i>	grassland tarweed	DH, CCS-d, CDS-d	Native
Asteraceae	<i>Heterotheca grandiflora</i>	telegraph weed	DEV	Native
Asteraceae	<i>Pseudognaphalium californicum</i>	California everlasting	CCS-d	Native
Asteraceae	<i>Senecio blochmaniae</i>	Blochman's ragwort	DH, CCS-d, CDS-d	Native
Asteraceae	<i>Stephanomeria</i> sp.	wreath-plant sp.	DH, CCS-d, CDS-d	Native
Brassicaceae	<i>Brassica</i> sp.	mustard	DH, DEV	Non-native
Crassulaceae	<i>Dudleya caespitosa</i>	coast dudleya	DH, CCS-d, CDS-d	Native
Euphorbiaceae	<i>Croton californicus</i>	California croton	CDS-d	Native
Fabaceae	<i>Acmispon glaber</i>	deerweed	DH, CCS-d, CDS-d	Native
Fabaceae	<i>Astragalus</i> sp.	milk-vetch	DH, CCS-d, CDS-d	Native
Fabaceae	<i>Lupinus arboreus</i> var. <i>eximius</i>	San Mateo tree lupine	DH, CCS-d, CDS-d, CCRS-d	Native; CRPR 3.2
Geraniaceae	<i>Erodium cicutarium</i>	redstem filaree	DH	Non-native
Lamiaceae	<i>Monardella undulata</i> ssp. <i>crispa</i>	crisp monardella	CDS-d	Native; CRPR 1B.2
Lamiaceae	<i>Monardella undulata</i> ssp. <i>undulata</i>	San Luis Obispo monardella	CDS-d	Native; CRPR 1B.2
Lamiaceae	<i>Salvia leucophylla</i>	purple sage	CCS-d	Native
Lamiaceae	<i>Salvia mellifera</i>	black sage	CCS-d	Native
Onagraceae	<i>Camissoniopsis cheiranthifolia</i>	beach evening-primrose	DEV	Native
Orobanchaceae	<i>Castilleja</i> sp.	paint brush	CCS-d	Native
Papaveraceae	<i>Eschscholzia californica</i>	California poppy	CDS-d	Native

Source: California Native Plant Society. 2020b

CCRS-d = Central Coast Riparian Scrub – disturbed, CCS-d = Central Coastal Scrub – disturbed, CDS-d = Central Dune Scrub – disturbed, DEV = Developed, DH = Disturbed Habitat; CRPR = California Rare Plant Rank

Appendix D
Air Quality Emissions Calculations

This page intentionally left blank.

Appendix D-1
Air Conformity Applicability Model Results

This page intentionally left blank.

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF AIR ANALYSIS (ROAA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: VANDENBERG SFB
State: California
County(s): Santa Barbara
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Demolition of Space Launch Complex-2 at Vandenberg Space Force Base, California

c. Project Number/s (if applicable):

d. Projected Action Start Date: 9 / 2022

e. Action Description:

Alternative 1 includes demolition of 32 facilities at SLC-2. This alternative would also remove some supporting facilities and infrastructure such as roadways, driveways, pads, and above ground utilities adjacent to the facilities being demolished. The Launch Water Reclamation System located adjacent to and between the SLC-2 Pump-House (1625) and Water-Tank (1627) is a trailer and would be removed. Building 1670 is not contiguous with SLC-2 but would also be demolished under Alternative 1. The launch pad itself and associated infrastructure including the flame ducts would remain abandoned in place. Security fencing (1674) would be removed as necessary within the project footprint.

f. Point of Contact:

Name: Samir Aslam Qadir
Title: Environmental Scientist
Organization: Potomc-Hudson Engineering, Inc.
Email: samir.qadir@phe.com
Phone Number: (301) 907-9078 x3020

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

applicable
 not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF AIR ANALYSIS (ROAA)

occurring in areas that are “Near Nonattainment” (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action’s net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

2022

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.210	250	No
NOx	1.448	250	No
CO	1.404	250	No
SOx	0.004	250	No
PM 10	6.097	250	No
PM 2.5	0.058	250	No
Pb	0.000	25	No
NH3	0.002	250	No
CO2e	375.7		

2023 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	100	No
NOx	0.000	100	No
CO	0.000	250	No
SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	0.0		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.



Samir Aslam Qadir, Environmental Scientist

4/7/2022

DATE

Appendix D-2
Supplementary Air Quality Analysis Results

This page intentionally left blank.

Table D-2.1. Construction Equipment List

Equipment	Number (ea)	Days	Hours/day	Total Hours
Concrete/industrial saws	1	120	8	960
Excavators	1	120	8	960
Rubber tired dozers	1	120	8	960
Tractors/loaders/backhoes	0	120	0	0

Note: Equipment assumed to be operational 8 hours per day, every day, for the full 120-day demolition period.

Table D-2.2. Construction Equipment Emissions Factors (lbs/HP-hr)

Equipment	Default HP	CO	NOx	SO2	PM10	PM2.5	VOC
Concrete/industrial saws	81	3.62	4.432	0.006	0.333	0.333	0.62
Excavators	158	3.15771	4.08095	0.005	0.201	0.185	0.358
Rubber tired dozers	247	2.72943	7.99508	0.005	0.395	0.364	0.736
Tractors/loaders/backhoes	97	3.81146	5.14235	0.005	0.396	0.364	0.538

Note: Equipment HP rating and emissions factors based on data found in CALEEMOD, Appendix D (BREEZE Software 2017)

Table D-2.3. Construction Equipment Emissions (tpy)

Equipment	CO	NOx	SO2	PM10	PM2.5	VOC
Concrete/industrial saws	0.31	0.38	0.00	0.03	0.03	0.05
Excavators	0.53	0.69	0.00	0.03	0.03	0.06
Rubber tired dozers	0.72	2.11	0.00	0.10	0.10	0.19
Tractors/loaders/backhoes	0.00	0.00	0.00	0.00	0.00	0.00
Tons of pollutant	1.56	3.18	0.00	0.17	0.16	0.31

Table D-2.4. Vehicle Trip Information

Vehicle Type	Daily Trips	Total Trips	Roundtrip Distance (mi)	Vehicle-miles (mi)
Worker vehicles	8	960	50	48000
Waste trucks	--	271	50	13529

1. Waste trucks assumed to be heavy trucks, diesel single-unit short haul.
2. Worker vehicles assumed to be 50% gasoline passenger cars and 50% gasoline light trucks.
3. Number of waste truck trips based on 6,400 tons of C&D debris, assuming 1.19 tons per cubic yard and 40 cubic yards per truck.

Table D-2.5. Vehicle Emission Factors (grams/mile)

Vehicle Type	CO	NOx	SO2	PM10	PM2.5
Passenger Cars	2.8656	0.1205	0.0055	0.0336	0.019
Light trucks	5.0191	0.3129	0.0073	0.0531	0.0319
Heavy trucks, diesel single-unit short haul	1.0359	1.0189	0.0077	0.1069	0.0543

Table D-2.6. Vehicle Emissions (tpy)

Vehicle Type	CO	NOx	SO2	PM10	PM2.5
Passenger Cars	0.0764	0.0032	0.0001	0.0009	0.0005
Light trucks	0.1338	0.0083	0.0002	0.0014	0.0009
Heavy trucks, diesel single-unit short haul	0.0156	0.0153	0.0001	0.0016	0.0008

Table D-2.7. Total Criteria Pollutant Emissions (tpy)

Source	CO	NOx	SO2	PM10	PM2.5	VOC
Construction Equipment	1.56	3.18	0.00	0.17	0.16	0.31
Worker vehicles + waste trucks	0.23	0.03	0.00	0.00	0.00	0.00
Fugitive dust				6.98	1.05	
Total	1.79	3.20	0.00	7.15	1.20	0.31

1. Fugitive dust emissions based on AP-42 Emissions Factor for total suspended particles (TSP) of 1.2 tons/acre/month, assuming 45% of TSP is PM10 and 15% is PM2.5.
2. Estimated total disturbed area of 25.84 acres, considering a 100-foot disturbed buffer around each building, and assuming a 2-week disturbance duration at each location.

Table D-2.8. Construction Equipment Fuel Consumption

Equipment	Fuel	Hours	Horsepower	Load Factor	Fuel Consumed (gal)
Concrete/industrial saws	Diesel	960	81	0.738	2869
Excavators	Diesel	960	158	0.38	2882
Rubber tired dozers	Diesel	960	247	0.4	4742
Tractors/loaders/backhoes	Diesel	0	97	0.37	0

Note: Assuming 0.05 gallons of fuel consumption per horsepower-hour

Table D-2.9. Construction Equipment GHG Emissions Factors

Fuel	CO2 (kg/gal fuel)	CH4 (g/gal)	N2O (g/gal)
Diesel	10.21	0.57	0.26

Table D-2.10. Construction Equipment GHG Emissions (metric tons per year)

Fuel Consumed (gal)	CO2	CH4	N2O	CO2-eq
10494	107.1	0.0060	0.0027	108.10

Note: Assuming a global warming potential of 25 for CH4 and 298 for N2O

Table D-2.11. Vehicle GHG Emissions Factors

Vehicle	CO2 (kg/gal fuel)	CH4 (g/mile)	N2O (g/mile)
Passenger cars, gasoline	8.78	0.0173	0.0036
Passenger trucks, gasoline	8.78	0.0163	0.0066
Heavy trucks, diesel single-unit short haul	10.21	0.0333	0.0134

Note: Emissions factors from USEPA 2021

Table D-2.12. Vehicle GHG Emissions (metric tons per year)

Vehicle	Vehicle-miles traveled	Fuel economy (mpg)	Gal fuel	CO2	CH4	N2O	CO2-eq
Passenger cars, gasoline	24000	24	1000	9	0.0004152	0.0000864	8.8
Passenger trucks, gasoline	24000	17.4	1379	12	0.0003912	0.0001584	12.2
Heavy trucks, diesel single-unit short haul	13529	7.4	1828	19	0.000450529	0.000181294	18.7
TOTAL							39.7

Note: Fuel economy data from US Department of Energy Alternative Fuels Data Center (AFDC)

Table D-2.13. Total GHG Emissions (metric tons per year)

Source	CO2	CH4	N2O	CO2-eq	CO2-eq (tpy)
Construction equipment	107.14	0.01	0.00	108.10	118.91
Worker vehicles and waste trucks	39.56	0.00	0.00	39.72	43.69
TOTAL	146.70	0.01	0.00	147.82	162.60