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

9 May 2024

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: Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) National Reconnaissance Office (NRO) Satellite Vehicle Processing Facility, Vandenberg Space Force Base, California.

1. In accordance with the National Environmental Policy Act (NEPA) of 1969, the Council of Environmental Quality regulations, and the Department of the Air Force (DAF) NEPA regulations, Space Launch Delta 30 (SLD 30) prepared a Draft EA and Draft FONSI evaluating potential environmental impacts associated with constructing and operating the proposed Wester Processing Facility (WPF) and associated utility and power circuit corridors on Vandenberg Space Force Base (SFB), California.

2. The purpose of the Proposed Action is to consolidate, increase the capacity, and improve the capabilities of satellite vehicle processing facilities at Vandenberg SFB, in support of the NRO's launch forecast. The Draft EA and FONSI/FONPA concludes that there will be no significant environmental impacts resulting from the Proposed Action.

3. This Draft EA and FONSI are available at the Lompoc Public Library, Santa Maria Public Library, Santa Barbara Public Library, and the Vandenberg SFB Library and electronically at: https://www.vandenberg.spaceforce.mil/About-Us/Environmental/EAS/. The public comment period for this Draft EA and FONSI will be from May 22, 2024 through June 20, 2024. During this time, comments may be sent to Space Launch Delta 30, Installation Management Flight Environmental Assets Section, Building 11146, 1028 Iceland Ave, Vandenberg SFB, California 93437, Attention: Kathleen Loetzerich; e-mailed to kathleen.loetzerich.1@spaceforce.mil; or faxed to (805) 606-6137. If you have any questions, please contact Kathleen Loetzerich at (805) 605-0392.

5/10/2024

X Beatrice L Kephart

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Signed by: KEPHART.BEATRICE.LINDA.1166122291

BEATRICE L. KEPHART
Chief, Installation Management Flight

Environmental Assessment

National Reconnaissance Office
Satellite Vehicle Processing Facility

Vandenberg Space Force Base, California

May 2024

Space Launch Delta 30
1028 Iceland Avenue, Bldg 11146
Vandenberg Space Force Base, California 93437

PRIVACY ADVISORY

This Environmental Assessment (EA) is provided for public comment in accordance with the National Environmental Policy Act (NEPA), the President's Council on Environmental Quality NEPA Regulations (40 Code of Federal Regulations [C.F.R.] Parts 1500-1508) and 32 C.F.R. Part 989, Environmental Impact Analysis Process (EIAP).

The EIAP provides an opportunity for public input on the Department of the Air Force (DAF) decision making, allows the public to offer input on alternative ways for the DAF to accomplish what it is proposing, and solicits comments on the DAF's analysis of environmental effects.

Public commenting allows the DAF to make better, informed decisions. Letters or other written or oral comments provided may be published in the EA. As required by law, comments provided will be addressed in the EA and made available to the public. Providing personal information is voluntary. Any personal information provided will be used only to identify your desire to make a statement during the public comment portion of any public meetings or hearings or to fulfill requests for copies of the EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the EA; however, only the name of the individuals making comments and specific comments are disclosed. Personal home addresses and phone numbers will not be published in the EA.

Compliance with Section 508 of the Rehabilitation Act

To the extent possible, this document is compliant with Section 508 of the Rehabilitation Act. This allows assistive technology to be used to obtain the available information from the document. Due to the nature of graphics, figures, tables, and images occurring in the document, accessibility is limited to a descriptive title for each item.

Compliance with Revised CEQ Regulations

This EA has been verified to be compliant with the 75-page limit, not including appendices, required by 40 C.F.R. Part 1501.5(f). As defined in 40 C.F.R. Part 1508.1(v), a "page" means 500 words and does not include maps, diagrams, graphs, tables, and other means of graphically displaying quantitative or geospatial information.

DEPARTEMENT OF AIR FORCE
DRAFT FINDING OF NO SIGNIFICANT IMPACT

National Reconnaissance Office Satellite Vehicle Processing Facility, Vandenberg Space Force Base, California

This DRAFT Finding of Significant Impact (FONSI) herby incorporates by reference and attaches hereto the *Draft Environmental Assessment (EA), National Reconnaissance Office Satellite Vehicle Processing Facility, Vandenberg Space Force Base, California*. The EA considered all potential environmental impacts of the proposed Preferred Alternative and the No Action Alternative. In addition, management protectives measures were identified in order to avoid, prevent, or minimize environmental impacts.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The Proposed Action's Preferred Alternative at Site 5NC, Campus Near Tow Road would involve constructing and operating a new satellite vehicle (SV) processing facility, referred to as the WPF, and all associated infrastructure at VSFB. This facility would be powered by two new power circuits connecting to substations on VSFB.

The purpose of the Proposed Action would be to consolidate, increase the capacity, and improve the capabilities of SV processing facilities at VSFB. These improvements would support launch requirements for the NRO's 20-year launch forecast and offer operational flexibility by allowing different NRO programs the ability to conduct their SV processing activities simultaneously. Current SV processing facilities at VSFB lack sufficient capability and capacity to support near future satellite processing requirements.

ALTERNATIVES CONSIDERED

The Council on Environmental Quality's (CEQ's) regulation requires assessing reasonable alternatives (40 Code of Federal Regulations [C.F.R.] Part 1502.14). The NRO considered nine reasonable alternatives, but dismissed all but six of them because they did not meet the selection criteria. Three alternative sites are further evaluated within the EA, with one being the Preferred Alternative. The two remaining sites are Site 1NC, Campus West of Building 3000 and Site 9NC, Campus South of Building 2500.

Under the No Action Alternative, which is required to be assessed under CEQ regulation 40 C.F.R Part 1502.14(c), the WPF and associated infrastructure would not be constructed. The SV processing would be limited to existing facilities and would not meet NRO launch and mission schedules. The demand for NRO SV processing at VSFB would not be met with existing facilities without impacting NRO launch schedules for assets critical to national intelligence and warfighting operations. The No Action Alternative would not meet the Proposed Action's purpose and need; however, it was analyzed in the EA to serve as a baseline against which impacts could be evaluated.

SUMMARY OF THE ANTICIPATED ENVIRONMENTAL IMPACTS

The attached Draft EA summarizes the affected environment and environmental consequences of the Proposed Action and the No Action Alternative and identifies measures to prevent or minimize

environmental impacts. Resource areas analyzed in the EA include air quality, climate, noise, biological resources, cultural resources, geology and earth resources, water resources, aesthetics and coastal zone resources, transportation, socioeconomics, human health and safety, hazardous materials and waste management, solid waste management, utilities, and land use. The EA concludes that by implementing environmental protection measures (EPMs) as described, environmental impacts of the Proposed Action would be less than significant for all resources analyzed. In addition, no significant adverse cumulative impacts would result from the Proposed Action or No Action Alternative when considered with past, present, or reasonably foreseeable future projects at VSFB.

PUBLIC REVIEW AND COMMENT

The Draft EA and Draft FONSI were made available for public review and comment for 30 days following the Notice of Availability (NOA) publication in the *Santa Maria Times* and *Lompoc Record* newspapers. The DAF also distributed the Draft EA and Draft FONSI per the current VSFB NEPA Distribution List, including the State Clearinghouse. Appendix D contains copies of the Notice of Availability for Public review, proof of publication, proof of library deliveries, the VSFB NEPA distribution list, public comments, and the DAF's responses.

FINDINGS AND CONCLUSION

Based on my review of the facts and analyses contained in the attached EA, as conducted per NEPA, 42 United States Code 4321 et seq., implementing CEQ Regulations, 40 C.F.R Parts 1500-1508, and 32 C.F.R 989, Environmental Impact Analysis Process, I find that implementing the Proposed Action (Preferred Alternative), with incorporation of required EPMs, will not have any significant environmental impact, either by itself or cumulatively with other projects at VSFB. Therefore, further analysis with an Environmental Impact Statement is not required and a FONSI is appropriate. I decided this after considering all submitted information, including reviewing public and agency comments submitted during the 30-day public comment period, and considering a full range of reasonable (40 C.F.R. Part 1502.14 concerns "reasonable" alternatives, which is not the same as "practical" alternatives) alternatives to meet project requirements that are within the Department of the Air Force's legal authority.

_____

PAUL G. FILCEK, Col, USAF Date
Director, Space Force Mission Sustainment
(Engineering, Logistics, & Force Protection)

Attachment: *Draft Environmental Assessment (2024) Western Processing Facility, Vandenberg Space Force Base, California.*

EXECUTIVE SUMMARY

This Environmental Assessment (EA) evaluates the potential environmental impacts associated with constructing and operating the proposed Western Processing Facility (WPF) and associated utility and power circuit corridors on Vandenberg Space Force Base (VSFB) in Santa Barbara County (SBC), California. The proposed WPF is a satellite vehicle (SV) processing facility that provides a location to conduct necessary operations to prepare a satellite for launch. The National Reconnaissance Office (NRO) Office of Space Launch (OSL) is the proponent for developing and operating the proposed WPF.

This EA was prepared per the National Environmental Policy Act (NEPA), 42 U.S. Code Section 4321 et seq., the Council on Environmental Quality's (CEQ) NEPA Implementing Regulations, 40 Code of Federal Regulations (C.F.R.) Parts 1500–1508, and the United States Department of the Air Force's (DAF's) Environmental Impact Analysis Process (EIAP) (32 C.F.R. Part 989). The NRO OSL represents the Department of Defense (DoD) as the lead agency.

Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to consolidate, increase the capacity, and improve the capabilities of SV processing facilities at VSFB. These improvements would support launch requirements for the NRO's 20-year launch forecast and offer operational flexibility by allowing different NRO programs the ability to conduct their SV processing activities simultaneously.

The project is needed because the NRO/OSL have determined that current SV processing facilities at VSFB lack sufficient capability and capacity to support requirements for future satellite processing. The NRO/OSL conducted a Launch Enterprise Integration & Acquisition Enterprise OSL Support Special Study to assess the NRO's ability to process satellites forecasted for launch to address a 20-year forecast of NRO SV processing needs for both the eastern and western ranges. The study found that existing facilities are dated and not adequately equipped for future operations. The demand for NRO SV processing at VSFB cannot be met with existing facilities without impacting launch schedules for assets critical to national intelligence and warfighting operations.

In addition, the NRO's Eastern Processing Facility in Cape Canaveral, Florida, alone cannot meet future launch schedules and has limitations for launching polar and near-polar orbit satellites due to launch trajectory requirements. VSFB meets these launch trajectory requirements. Numerous manifest scenarios necessitate adding up to four new 5-meter processing bays to the VSFB baseline capabilities and could be needed as early as January 2025.

Proposed Action

The Proposed Action for the WPF includes constructing the WPF building, an associated concrete building pad, a parking lot, an access road, a stormwater management system, utility connections, and two power circuit corridors connecting to substations on-Base.

The building footprint would measure approximately 340 feet by 480 feet. The WPF building would consist of a combination of highbay and lowbay areas with a maximum height of 150 feet. The WPF building would be located on a concrete pad measuring approximately 665 feet by 825 feet. An attached, L-shaped asphalt parking lot would measure approximately 420 feet by 345 feet. A perimeter security fence would be offset 50 feet surrounding the concrete pad and parking area. An additional 30 feet of clear zone would surround the outer perimeter of the security fence. Stormwater measures would be located to capture surface water runoff from the facility.

Utilities, including natural gas, sanitary sewer, and power would be routed into the facility from the eastern side of the building and pad. Utility connections would be made at Building 3000 and other nearby locations. An existing water line would be relocated around the proposed WPF to the south; water would be routed into the facility on the western side of the building. The utility installations and the water line relocation would require trenching approximately four feet deep, and each trench would be approximately one to two feet wide. The proposed access road would connect the facility to Tow Road, allowing personnel and payloads to enter and exit the facility area. The proposed access road would be approximately 40 feet wide and approximately 1,300 feet long.

The WPF construction project would be staged from temporary laydown areas within the proposed facility area footprint, located west of Building 3000. The total anticipated area of disturbance for WPF construction would be approximately 75 acres.

Two power circuits would also be constructed, running to the proposed WPF from Substations B and C to the northeast and southeast, respectively. Both power circuit corridors were designed to minimize environmental impacts.

The Circuit B5 Corridor would originate at Substation B on New Mexico Avenue near 11th Street and follow a route southwest through the cantonment area to the pad the proposed WPF would be constructed on. The Circuit B5 Corridor would measure approximately 12,700 feet long. The entire length would be constructed underground, using a trench approximately four feet deep and two feet wide. The construction area width would be 25 feet wide. This would produce a construction area of approximately 7.3 acres. The area to be trenched for power line installation would be approximately 0.6 acres. Road crossings would be installed using open trench or horizontal bore techniques. The bores would require entry and exit bore pits on both sides of each road crossing. The bore pits would measure approximately 10 feet by 15 feet and 5 feet deep.

The Circuit C3 Corridor would originate at Substation C, near Terra Road and 13th Street, and follow a route northwest to the proposed WPF pad. The Circuit C3 Corridor would measure approximately 18,500 feet in length and be installed above ground on concrete poles, except at road crossings. Concrete pole spacing would be approximately 100-200 feet, on average. A long span of approximately 1,000 feet would be installed immediately west of Substation C, where the line would cross perpendicular to an unnamed ephemeral tributary of the Santa Ynez River. Installing the concrete poles would require drilling holes approximately eight feet deep, and the holes would be backfilled immediately upon pole installation. For tangent poles, native excavated soil will be used for backfilling. For dead-end and guyed poles, backfill will be imported sandy gravel. The poles would be approximately 40 to 50 feet tall. The construction area width would be 25 feet wide. This would produce a construction area of approximately 10.6 acres. Construction phase staging and laydown areas would occur at the WPF building site and at Substation C.

No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. SV processing would be limited to existing facilities and would not meet NRO launch and mission schedules. The demand for NRO SV processing at VSFB cannot be met with existing facilities without impacting NRO launch schedules for assets critical to national intelligence and warfighting operations. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and Alternatives can be evaluated.

Resource Areas Evaluated

The EA describes the affected environment and environmental consequences of the Proposed Action and the No Action alternative and identifies measures to prevent or minimize their environmental impacts. Resource areas analyzed in this EA include air quality, climate, noise, biological resources, cultural resources, geology and earth resources, water resources, aesthetics and coastal zone resources, transportation, socioeconomics, human health and safety, hazardous materials and hazardous waste management, solid waste management, utilities, and land use.

Summary of Environmental Impacts

Impacts of the Proposed Action, with implementing environmental protection measures (EPMs) listed in this EA, would be less than significant for all resources analyzed. For a detailed description and analysis, refer to Chapter 4, Environmental Consequences. Implementing the Proposed Action or the No Action Alternative would not result in significant adverse impacts to any resource area.

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ACRONYMS AND ABBREVIATIONS

°F	*degrees Fahrenheit*
µg/m³	*micrograms per cubic meter*
30 CES	*30th Civil Engineer Squadron*
30 CES/CEIE	*30th Civil Engineer Squadron Installation Management Flight Environmental Section*
30 CES/CEIEA	*30th Civil Engineer Squadron Installation Management Flight Environmental Assets*
30 CES/CEIEC	*30th Civil Engineer Squadron Installation Management Flight Environmental Compliance*
30 SW	*30th Space Wing*
ACAM	*Air Conformity Applicability Model*
ACS	*American Community Survey*
ADT	*average daily traffic*
AFI	*Air Force Instruction*
AFMAN	*Air Force Manual*
AOC	*area of concern*
AOI	*area of interest*
APZ	*Accident Potential Zone*
ASA	*archaeological study area*
AST	*Above-ground storage tank*
BA	*Biological Assessment*
BCC	*Federal Bird of Conservation Concern*
BGEPA	*Bald and Golden Eagle Protection Act*
BMP	*best management practice*
BO	*Biological Opinion*
C.F.R.	*Code of Federal Regulations*
CA	*California*
CAA	*Clean Air Act*
CAAA	*Clean Air Act Amendments*
CAAQS	*California Ambient Air Quality Standards*
CalEEMod	*California Emissions Estimator Model*
CalRecycle	*Department of Resources Recycling and Recovery*
CAP	*collection accumulation point*
CARB	*California Air Resources Board*
CCA	*California Coastal Act*
CCC	*California Coastal Commission*
CCR	*California Code of Regulations*
CCWA	*Central Coast Water Authority*
CDFW	*California Department of Fish and Wildlife*
CEQ	*Council on Environmental Quality*
CES	*Civil Engineer Squadron*
CEQA	*California Environmental Quality Act*
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act*
CH_4	*Methane*
CNDDB	*California Natural Diversity Database*
CO	*carbon monoxide*
CO_2	*carbon dioxide*
CO_2e	*carbon dioxide equivalent*
COA	*Course of Action*
CRLF	*California red-legged frog*

CSC	*California Species of Special Concern*
CWA	*Clean Water Act*
CZMA	*Coastal Zone Management Act*
DAF	*Department of the Air Force*
DAFI	*Department of the Air Force Instruction*
dB	*Decibel*
dBA	*A-weighted decibel*
DoD	*Department of Defense*
EA	*Environmental Assessment*
EBS	*Environmental Baseline Survey*
EIAP	*Environmental Impact Analysis Process*
EO	*Executive Order*
EOS	*Enterprise Office of Space Launch Support*
EPM	*environmental protection measure*
ESA	*Endangered Species Act of 1973*
ESBB	*El Segundo blue butterfly*
FE	*Federal Endangered Species*
FLIGHT	*Facility Level Information on Greenhouse Gases Tool*
FONSI	*Finding of No Significant Impact*
FR	*Federal Register*
FT	*Federal Threatened Species*
GCR	*General Conformity Rule*
GHG	*greenhouse gases*
GHGRP	*Greenhouse Gas Reporting Program*
GIS	*Geographic Information System*
GPS	*Global positioning system*
GWP	*global warming potentials*
HAP	*hazardous air pollutants*
HAZMART	*30 SW Hazardous Materials*
HFC	*hydrofluorocarbons*
Hz	*Hertz*
IAW	*in accordance with*
IEMP	*Installation Emergency Management Plan*
IpaC	*Information for Planning and Conservation*
IRP	*Installation Restoration Program*
kV	*Kilovolt*
LCZ	*Lateral Clear Zones*
LEIA	*Launch Enterprise Integration & Acquisition*
LEIA-EOS	*Launch Enterprise Integration & Acquisition, Enterprise Office of Launch Support*
Leq	*equivalent sound level*
Leq(h)	*hourly equivalent continuous sound level*
LOS	*Level of Service*
LYS	*Lompoc Yerba Santa*
MBTA	*Migratory Bird Treaty Act*
MDA	*Missile Defense Agency*
MSRS	*ManTech SRS Technologies, Inc.*
MT	*metric ton*
N_2O	*nitrous oxide*
NA	*Not Available*
NAAQS	*National Ambient Air Quality Standards*
NAVD88	*North American Vertical Datum of 1988*

NEPA	*National Environmental Policy Act*
NH_3	*ammonia*
NMFS	*National Marine Fisheries Service*
NO_2	*nitrogen dioxide*
NO_x	*nitrogen oxides*
NOA	*Notice of Availability*
NPDES	*National Pollutant Discharge Elimination System*
NRCS	*Natural Resources Conservation Service*
NRHP	*National Register of Historic Places*
NRO	*National Reconnaissance Office*
NRO/OSL	*National Reconnaissance Office/Office of Space Launch*
O_3	*Ozone*
OSHA	*Occupational Safety and Health Administration*
OSL	*Office of Space Launch*
P2	*Pollution Prevention*
Pb	*Lead*
PCB	*Polychlorinated Biphenyls*
PFC	*perfluorocarbons*
PM_{10}	*Particulate matter 10 microns in diameter*
$PM_{2.5}$	*Particulate matter 2.5 microns in diameter*
ppb	*parts per billion*
ppm	*parts per million*
QD	*quantity-distance*
RCRA	*Resource Conservation and Recovery Act*
ROI	*region of influence*
RWQCB	*Regional Water Quality Control Board*
SBC	*Santa Barbara County*
SBCAPCD	*Santa Barbara County Air Pollution Control District*
SBCPWD	*Santa Barbara County Public Works Department*
SCCAB	*South Central Coast Air Basin*
SE	*State Endangered Species*
SEL	*Sound Exposure Level*
SF_6	*sulfur hexafluoride*
SFB	*Space Force Base*
SHPO	*State Historic Preservation Officer*
SIP	*State Implementation Plan*
SLC	*Space Launch Complex*
SLD 30	*Space Launch Delta 30*
SO_2	*sulfur dioxide*
SO_x	*sulfur oxides*
SPCC	*Spill Prevention, Control, and Countermeasure*
SR	*State Route*
SSC	*State Candidate Species*
SV	*Satellite Vehicle*
SW	*State Water*
SWPPP	*Stormwater Pollution Prevention Plan*
SWRCB	*State Water Resources Control Board*
SYBCI	*Santa Ynez Band of the Chumash Indians*
TSDF	*treatment, storage, and disposal facility*
UR	*Under Review for Federal Listing*
U.S.	*United States (of America)*

U.S.C.	*U.S. Code*
USACE	*U.S. Army Corps of Engineers*
USAF	*U.S. Air Force*
USDOT	*U.S. Department of Transportation*
USEPA	*U.S. Environmental Protection Agency*
USFWS	*U.S. Fish and Wildlife Service*
USGAO	*U.S. Government Accountability Office*
USGS	*U.S. Geological Survey*
USSF	*U.S. Space Force*
UST	*Underground storage tank*
VAFB	*Vandenberg Air Force Base*
VOC	*Volatile organic compound*
VSFB	*Vandenberg Space Force Base*
VPFS	*vernal pool fairy shrimp*
WOS	*Waters of the State*
WOTUS	*Waters of the U.S.*
WPA	*Waste fuel and oxidizer Propellant Area*
WPF	*Western Processing Facility*
WRCC	*Western Regional Climate Center*

1. PURPOSE AND NEED

1.1. Introduction

The National Reconnaissance Office (NRO) develops and operates the nation's overhead reconnaissance systems. The NRO is funded through the National Intelligence Program and the Military Intelligence Program consistent with the priorities and processes established by the Director on National Intelligence and the Under Secretary of Defense for Intelligence. The Office of Space Launch (OSL), an organization within the NRO, is responsible for all aspects of satellite processing to include launch integration, mission assurance, operations, transportation, and mission safety. NRO-launched satellites provide reconnaissance capabilities that are essential to U.S. national security and U.S. warfighter missions.

The United States Space Force (USSF) Space Launch Delta 30 (SLD 30) at Vandenberg Space Force Base (VSFB) is the organization responsible for Department of Defense (DoD) space and missile launch activities on the U.S. Western Range. Vandenberg Space Force Base's (SFB) missions include launching satellites destined for polar or near-polar orbit, and test-launching ballistic missiles. The SLD 30 supports Western Range launch activities for the USSF, NRO, Missile Defense Agency, other DoD organizations, National Aeronautics and Space Administration, foreign nations, and various private industry contractors.

Vandenberg SFB was formerly an Air Force Base referred to as Vandenberg Air Force Base (VAFB). Additionally, SLD 30 was previously known as 30th Space Wing (30 SW) prior to the change of branch reorganization. Documents, plans, guidelines, and coordination that were completed before the transition from VAFB to VSFB and 30 SW to SLD 30 are referenced throughout this document and may use the previous nomenclature, if prepared or executed before the change and new terminology.

A satellite vehicle (SV) processing facility provides a location to conduct specialized operations necessary to prepare a satellite for launch. These operations must take place in a secure and exceptionally clean space.

An extensive study performed by NRO/OSL determined that the current SV processing facilities at VSFB, California (CA) lack sufficient capability and capacity to support future launch requirements. Therefore, NRO/OSL proposes to develop and operate a new SV processing facility on VSFB, including associated infrastructure necessary to operate the new SV facility. The NRO refers to this proposed facility as the Western Processing Facility (WPF). Constructing of the proposed project would commence in the year 2025, beginning with the electrical circuits.

The Department of the Air Force (DAF) is the lead agency utilizing their Environmental Impact Analysis Process (EIAP) for the project's compliance with the National Environmental Policy Act (NEPA). The NRO is the proponent for developing and operating the proposed WPF. The NRO is a tenant agency on VSFB and as such is subject to particular DAF statutes and regulations.

The NRO prepared this Environmental Assessment (EA) in coordination with the 30th Civil Engineer Squadron (30 CES), Installation Management Flight, Environmental Section (30 CES/CEIE) located at VSFB. This EA assesses the potential environmental impacts from constructing and operating the proposed WPF. This EA was prepared under NEPA, as amended

[42 U.S. Code (U.S.C.) 4321 et seq.]; the President's Council on Environmental Quality (CEQ) regulations [40 Code of Federal Regulations (C.F.R.) Parts 1500-1508], and DAF EIAP regulations (32 C.F.R. Part 989). The 1978/1986 version of the CEQ's NEPA regulations are used for this EA because the Proposed Action was drafted before the September 14, 2020, effective date of the CEQ NEPA streamlined version of the regulation.

1.2. Purpose of the Proposed Action

The purpose of the Proposed Action is to increase the capacity and improve the capability of SV processing facilities at VSFB, California. These improvements would support launch requirements for the NRO's 20-year launch forecast and offer operational flexibility by allowing different NRO programs the ability to conduct their SV processing activities simultaneously.

1.3. Need for the Proposed Action

The NRO/OSL conducted a Launch Enterprise Integration & Acquisition (LEIA) Enterprise Office of Space Launch Support (EOS) Special Study regarding spacecraft processing infrastructure across the OSL enterprise to assess the NRO's ability to process satellites forecasted for launch. The specific task to the LEIA-EOS Study Team was to conduct an Evaluation of Alternatives to inform OSL decision makers of the best Courses of Action (COAs) to address a 20-year forecast of NRO SV processing needs for both the eastern and western ranges. The extensive study performed by NRO/OSL determined that the current SV processing facilities at VSFB lack sufficient capability and capacity to support near future satellite processing requirements.

The LEIA-EOS Study Team updated a November 2016 NRO 20-year launch forecast with information from interviews with NRO senior leadership in March 2017. The Director of OSL approved this updated 20-year forecast as the Baseline Forecast (at the time of this EA's publication, the updates made in March 2017 to the 2016 NRO 20-year launch forecast are still valid). The LEIA-EOS Study Team then generated multiple variations, including moving launches between the USSF's Eastern Range and Western Range, to evaluate both coasts' ability to accommodate various launch manifest scenarios.

The LEIA-EOS Study Team evaluated COAs involving both Eastern and Western Ranges SV processing facilities. For the Eastern Range, the capability studies were limited to the NRO Eastern Processing Facility at Cape Canaveral Space Force Station, which is the only east coast facility currently used and envisioned for future NRO SV processing. For the Western Range, the status quo COA included the following existing facilities at VSFB: the Astrotech Processing Facility, the Integrated Processing Facility, and the Payload Processing Facility.

There are several facility adequacy concerns relative to future SV processing needs:

- The Astrotech Processing Facility has no airlock or radio frequency shielding. These are essential for NRO's anticipated procedures for future SV processing.
- The Integrated Processing Facility is old and for contractual reasons may not be available for future use. Facility layout and features limit logistical processing.
- The Payload Processing Facility is sized to handle 4-meter fairings only. A fairing is a nose cone and enclosure that protects a payload from pressure and heating due to atmospheric friction during launch. Metric units are the standard for payload faring

dimensions. Launch service providers plan to eliminate their current 4-meter payload fairing options and offer 5-meter fairings only, making the Payload Processing Facility obsolete.

The LEIA-EOS Study Team performed separate cost, effectiveness, and risk evaluations of each COA under several scenarios, revealing:

- The demand for NRO SV processing at VSFB cannot be met with existing facilities without impacting launch schedules for NRO assets critical to national intelligence and warfighting operations.
- The Eastern Processing Facility has limitations for launching polar and near-polar orbit satellites due to launch trajectory requirements.
- The Eastern Processing Facility alone cannot meet future NRO launch schedules.
- Numerous manifest scenarios necessitate adding up to four new 5-meter processing bays to the VSFB baseline capabilities.
- The need for a new SV processing facility could be as early as January 2024, depending on final launch range assignment for numerous NRO missions.

The Director of OSL presented the study findings to NRO senior leadership and they decided to proceed with plans to design a facility with up to four new 5-meter SV processing bays at VSFB.

In addition to the LEIA-EOS study outcomes, a USSF Sand Chart and Table for the Western Range Launch Activity (USSF, 2023) predicts an increase in launch activity up to the year 2033. The NRO Mission Manifest for fiscal years 2024 through 2029 also indicate an increase in missions compared to the LEIA-EOS study. These results contribute further to the facility adequacy concerns relative to future SV processing needs concluded in the LEIA-EOS study.

1.4. Project Location

Vandenberg SFB is located on the south-central coast of California, approximately halfway between San Diego and San Francisco, and approximately 55 miles northwest of the City of Santa Barbara. The Base covers more than 99,000 acres in western SBC (30th Space Wing, 2010), adjacent to the City of Lompoc and south of the City of Santa Maria (**Appendix A, Figure 1.1**). It occurs in a transitional ecological region that includes the northern and southern distributional limits for many plant and animal species.

The Santa Ynez River and State Route (SR) 246 divide VSFB into two distinct parts: North Base and South Base. The proposed Project Area, hereafter referred to as the Action Area, is located entirely on North Base and consists of the following components, which are described in further detail in **Chapter 2, Description of the Proposed Action and Alternatives**: the proposed WPF site; nearby areas through which water, waste water, natural gas, communications, and access road infrastructure would be developed; and power line corridors where new electricity distribution circuits from VSFB Substations B and C would be built.

Figure 1.2 (**Appendix A**) shows the proposed Action Area, including the proposed WPF site, nearby areas for utilities and access road infrastructure and power line corridors. The proposed site for the WPF is located approximately five miles southwest of the VSFB Main Gate, west of California Boulevard and north of 35th Street. The power line from Substation C would run

overland west from the substation, then southwest to Terra Road, north along Terra Road/New Mexico Avenue, west on Beach Boulevard, north along California Boulevard, west to a dirt road, and north to the proposed WPF site. The power line from Substation B would run entirely underground, running northwest from Substation B along 11th Street, southwest on Nevada Avenue, northwest on 15th Street, southwest on Arizona Avenue, northwest on 29th Street and north on Tangair Road before turning to the west under Tow Road and connecting to the proposed WPF site.

1.5. Scope of the Environmental Assessment

This EA identifies, describes, and evaluates the potential environmental impacts that could result from the Proposed Action, reasonable alternatives to the Proposed Action, and the No Action Alternative, as well as potential cumulative impacts from other past, present, and reasonably foreseeable actions on VSFB. The EA describes, in terms of a regional overview or a site-specific description, the affected environment and environmental consequences of the Proposed Action. The EA also identifies environmental permits relevant to the Proposed Action. The EA identifies EPMs to avoid, prevent, or minimize environmental impacts.

The scope of this EA is limited to the proposed WPF and associated infrastructure necessary for operating the proposed WPF. The potential environmental impacts of launch activities and booster return activities were previously analyzed in other EAs, which all reached Findings of No Significant Impacts, and one supplemental Environmental Impact Statement which reached a Record of Decision:

- *Supplemental Environmental Impact Statement for the Evolved Expendable Launch Vehicle Program* (USAF, 2000);
- *Supplemental EA to the U.S. Air Force February 1995 Environmental Assessment for the California Spaceport* (Federal Aviation Administration, 2011);
- *EA for Falcon 9 and Falcon 9 Heavy Launch Vehicle Programs from Space Launch Complex (SLC)-4E on VAFB* (USAF, 2011); and
- *EA for Boost-Back and Landing of the Falcon 9 First Stage at SLC-4 West* (USAF, 2016a).

Chapter 2 of this EA describes the Proposed Action, alternatives considered, and the No Action Alternative. Only one feasible alternative, the Proposed Action, was identified during evaluating various sites for constructing and operating the proposed WPF. **Chapter 3** provides an overview of the existing environmental conditions by resource area. **Chapter 4** analyzes the potential consequences of implementing the Proposed Action and the No Action Alternative.

1.6. Interagency and Intergovernmental Coordination and Consultation

In accordance with (IAW) 32 C.F.R. 989.14(l), SLD 30 shall involve other federal agencies, state, Tribal, and local governments, and the public in preparing this EA. In meeting this requirement, as well as the requirements of Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, SLD 30 notified and consulted with relevant federal and state agencies on the Proposed Action and alternatives to identify potential environmental issues and regulatory requirements associated with project implementation. Coordination was completed with the U.S. Army Corps of Engineers (USACE), the U.S. Fish and Wildlife Service (USFWS), the California Coastal Commission (CCC), the California State Historic Preservation Officer (SHPO), and the Santa Ynez

Band of the Chumash Indians (SYBCI), a federally recognized tribe of Chumash, an indigenous people of California in Santa Ynez, CA. Coordination details and records are provided in **Appendix C** and **Appendix D**, respectively.

1.7. Public Notification and Review

Pursuant to 40 C.F.R. 1506.6, opportunities for public involvement and availability of environmental documents must be made to inform those persons and agencies who may be interested or affected by the Proposed Action. The Draft EA and Finding of No Significant Impact (FONSI) will be made available for public review and comment for 30 days, following the publication of the Notice of Availability (NOA) in the following newspapers: *Santa Maria Times* and *Lompoc Record*. A digital copy of the Draft EA and Draft FONSI will be available on the VSFB Public webpage at: https://www.vandenberg.spaceforce.mil/About-Us/Environmental/EAS/ during this same time period. A physical copy of the Draft EA and Draft FONSI will be available at the following locations:

- Santa Maria Public Library, 421 South McClelland Street, Santa Maria, CA 93454
- Lompoc Public Library, 501 East North Avenue, Lompoc, CA 93436
- VSFB Library, 100 Community Loop, Building 10343A

Electronic copies of the NOA will also be sent to the agencies consulted for interagency and intergovernmental coordination as described in **Appendix C.** The NOA, proofs of publication, proof of library deliveries, public comments, and SLD 30 responses will be included in **Appendix D** in the Final EA.

1.8. Applicable Federal and State Regulations

Many statutes, regulations, and EOs apply to the Proposed Action and were considered during the planning and conceptual design of the Proposed Action and preparing this EA. See **Appendix A, Exhibit 1.1** for all applicable regulations.

2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The NRO proposes to develop and operate a new SV processing facility on VSFB referred to as the proposed WPF. The proposed WPF would incorporate the following components:

- Spacecraft processing building (i.e., the proposed WPF itself): The footprint of the proposed WPF building would be approximately 147,085 square feet. To accommodate SV processing high bays, its maximum height would be approximately 150 feet.
- The proposed WPF would encompass areas supporting processing, testing, propellant loading, and encapsulation of SVs/payloads, along with support space, cleanrooms, and support areas to be structured as follows:
    - Up to four processing/encapsulation bays that provide Class 100,000 clean and explosive safe satellite processing space. These bays would support SV launch processing, including post-ship inspections and test, mechanical launch preparations, electrical launch processing tests, propellant loading, ordnance installs and checkouts, preparation, encapsulation, and required launch pad electrical test and launch countdown activities.

    - Each processing/encapsulation bay would be supported with control room space, a conference room, a user's room, a break room, a trailer/logistics support room, a garment change room, and support space for oxidizer and fuel conditioning.
    - Airlocks/transfer aisles would provide Class 100,000 clean and explosive safe processing spaces to support equipment arrivals and departures from the facility, as well as transfers internal to the facility (e.g., moving between processing bays to support payload fairing installation [i.e., encapsulation]).
    - The remaining space would be allocated to security and access control, rest rooms, and facility support functions (e.g., communication rooms).
    - The proposed facility would be classified as a hazardous processing facility where compounds such as hydrazine and nitrogen tetroxide would be present in large quantities during propellant loading operations.
- Chain-link security fence surrounding the building: Much of the area within the fence would be a paved asphalt or concrete pad to accommodate the proposed WPF support buildings and maneuvering transporter vehicles.
- Utility Plant: The utility plant is the central source of mechanical and electrical systems distribution for the proposed WPF. The utility plant would house the systems for central chilled water and heating hot water, plant chillers, boilers and pumps, the Motor Control Center, and switchgear. The utility plant would be incorporated within the footprint of the proposed WPF.
- Emergency generators for use during electrical power outages. The generators would also be run briefly to perform monthly maintenance.
- Fuel Oil Tanks: Fuel oil tanks would include two, 10,000-gallon tanks for boiler diesel back-up fuel and to feed the generator and fire pump engine day tanks. Each generator and the fire pump would have small day-tanks for fuel storage. Aboveground storage tanks (ASTs) and containers 55 gallons or greater are regulated by the DAF, federal, and state agencies and shall be added to the Spill Prevention, Control, and Countermeasure (SPCC) Plan. All tanks shall be double-walled or constructed with secondary containment of 110 percent of the total capacity. Antisiphon valves would be installed on the piping between tanks and generators.
- Gas Storage Area: The Gas Storage Area would provide the primary distribution of high-pressure supplies of inert gases (gaseous nitrogen and gaseous helium) and breathing air in certified pressure vessels and throughout the facility. There would be an area external to the proposed fenced WPF for mobile trailers to support gas systems recharge.
- Waste Fuel and Oxidizer Propellant Area: The Waste Fuel and Oxidizer Propellant Area's primary purpose is to support collecting and safely disposing propellant waste gases and fluids. There would be a separate waste fuel and oxidizer propellant area for fuels and one for oxidizers. There would also be an area for propellant underground and aboveground emergency contingency collection vessels, for unplanned or emergency releases. These vessels would be used only for interim collection of unplanned or emergency releases, which would then be expeditiously transported to approved off-site Treatment, Storage, and Disposal Facilities (TSDF).
- A paved parking area adjacent to, but outside the security fence.
- Asphalt access roads.
- External light fixtures, including security lighting for the pad, roadways, and parking area.

To operate the proposed WPF, utilities would need to be made available including water, wastewater, natural gas, communications, and electricity. Satellite vehicle processing operations require very high levels of electricity supply and reliability.

2.1. Selection Criteria

A range of reasonable alternatives for siting the proposed WPF were evaluated according to their ability to meet the project purpose and need, and with respect to the following screening criteria:

- Site Accessibility: This criterion addressed a site's suitability in terms of SV transit time to/from mission processing areas, road availability, road condition/suitability, and proximity to other NRO facilities at VSFB.
- Site Utilities: This criterion considered capacity, reliability, and proximity of essential utilities at a site. Multiple alignments were identified for access roads to the proposed WPF and extension of water, wastewater, natural gas, and communications utilities.
- Cost: Lower cost was preferable.
- Environmental Impacts: This criterion assessed each site's biological and cultural resources that may be negatively impacted by constructing and operating the proposed WPF. It also considered how certain environmental resources, including legacy soil contamination, could negatively impact construction cost and schedule.
- Safety: This criterion addressed safety impacts to a given site, to include overflight from launches occurring at VSFB, explosive arcs emanating from fueling, munitions storage areas, and unexploded ordnance. The safety criterion also considered: Impact Limit Line, Flight Hazard Area, Blast Danger Area, Inhabited Building Distance, Public Transportation Distance, and Interline Distance.
- Security: This criterion assessed a site's ability to provide physical security from outside threats, both physical and electromagnetic.
- Power: The NRO commissioned a power study to evaluate power supply options and potential routes for electrical circuits to reach the proposed WPF sites.

2.2. Site Selection Process

The NRO worked with 30 CES Comprehensive Planning & Program Development to identify a total of nine potential sites for the proposed WPF (**Appendix A, Figure 2.1**). The NRO then consulted internally with SLD 30 subject matter experts to gather information for each site relevant to each selection criterion.

Each of the nine sites was evaluated based on the selection criteria to identify a preferred site for the proposed WPF (Booz Allen Hamilton, 2018). Six were eliminated (**Appendix A, Exhibit 2.1**) and three were retained for further evaluation.

2.2.1. Sites Retained for further Evaluation

The three sites retained for further evaluation were: Site 1NC (Campus West of Building 3000); Site 9NC (Campus South of Building 2500); and Site 5NC (Campus Near Tow Road). All were in North VSFB near existing NRO facilities such as Buildings 3000 and 2500, as well as Substations B and C, identified by the power study as suitable for the proposed WPF needs.

Therefore, they were referred to as "campus" sites. The site known as 5NC (Campus Near Tow Road), was ultimately selected as the preferred site for the proposed WPF.

2.2.1.1. Site 1NC, Campus West of Building 3000

This site had multiple threatened and endangered species concerns. A very large vernal pool complex, potentially inhabited by federally threatened vernal pool fairy shrimp (VPFS; *Branchinecta lynchi*), is present in the middle of the site and would be entirely disturbed by the proposed WPF development. A rare stand of federally endangered Lompoc yerba santa (LYS; *Eriodictyon capitatum*) is located near the southeast corner of the site. Although the stand was not included within the site area, development of this site might still impact the stand. Therefore, this site could be challenging to comply with the Endangered Species Act of 1973 (ESA). This site also raised concerns with the SLD 30 Weapons Safety program.

2.2.1.2. Site 9NC, Campus South of Building 2500

This site is very close to Buildings 2500 and 2510. Upon detailed consideration, it became apparent that it would be very difficult and costly to build the proposed WPF on this site in a way that would be safe for operations in those buildings given quantity-distance (QD) arc requirements and the quantities of explosive materials that would be present at times within the proposed WPF. Proposing the WPF be constructed on this site might ultimately be rejected by USSF or DoD explosives site planning programs or the SLD 30 Commander. In addition, known suitable habitat for the federally threatened VPFS is present on this site. Therefore, this site could be problematic to comply with the ESA.

2.2.1.3. Site 5NC, Campus Near Tow Road (Preferred Alternative)

The site is immediately west/northwest of Building 3000, a secured facility utilized for various NRO activities. This site has no known environmental concerns that would increase cost or cause project delay. Concerns regarding munitions supply and the USSF explosives site planning program would be addressed during site layout.

2.3. Power Alternatives

Satellite vehicle processing operations require very high levels of electricity supply reliability. Interruptions to power can place valuable national security assets at risk. The NRO would require the proposed WPF to have electricity supplied from two separate electrical circuits.

The NRO commissioned a power study to evaluate power supply options and potential routes for electrical circuits to reach the proposed WPF. The study evaluated the following: available spare electrical capacity within multiple existing VSFB substations; the physical distance from a substation to the proposed WPF; likely costs given capacity and distance considerations; and security considerations. It also considered the potential cost of constructing an entirely new substation (Power Engineers, 2018).

The power study commissioned by the NRO eliminated multiple VSFB substations (A, D, E, F, K, and N) from further consideration due to capacity, distance, or security (outside the Base fence) concerns. A new substation was eliminated from further consideration due to high costs associated with constructing a new substation, installing a new approximately 6.1-mile 70-kilovolt (kV)

circuit/loop to tie into existing electricity supply, and future maintenance of the new substation and 6.1-mile circuit/loop (Power Engineers, 2018).

The VSFB Substations B and C have adequate electrical capacity to serve the proposed WPF's needs via a new 12-kV dedicated circuits. Each is sourced from separate 70-kV upstream circuits/loops which provides increased supply reliability. The new circuits from each substation would be physically isolated from each other (Power Engineers, 2018).

The power study also considered multiple potential routes for new dedicated electrical circuits from Substations B and C. The potential routes were evaluated based on (Power Engineers, 2018):

- Presence of other utility infrastructure within a potential power line corridor that could complicate design and construction.
- Preference to avoid any new overhead power line crossing over/under any other existing overhead power line. Safety standards require crossing circuits to be de-energized when working on the other circuit(s).
- Avoiding wetlands and vernal pools where practical.
- Cost considerations such as number and length of underground segments required.

For Substation C, only one route (Circuit C3) from the substation to just south of 35th Street was deemed feasible because of the SLD 30 (former 30 SW) requirement that new power lines be accessible at each pole via a bucket truck. This typically requires that the power line be adjacent to a road that a bucket truck can utilize (Power Engineers, 2018). The alignment proposed in the 2018 power study was modified to avoid and minimize impacts to protected species and their habitats.

Options for routing a power line from Substation B to the proposed WPF site included running the line along California Boulevard, Nevada Avenue, New Mexico Avenue, or Arizona Avenue, with short runs along connecting streets. California Boulevard has the greatest amount of existing underground utilities (electric, water, sewer and natural gas) along the roadway compared to other options. Nevada Avenue has existing underground electrical distribution for a significant amount of its length. As a result, those two alignments were eliminated from further consideration as a possible routing path (Power Engineers, 2018). The New Mexico Avenue route was not selected due to conflicts with existing infrastructure, Waters of the U.S. (WOTUS), and vernal pool habitats. Therefore, the Arizona Avenue route (Circuit B5) was chosen for the Proposed Action due to the limited existing infrastructure and the ability to avoid environmental conflicts.

2.4. Project Description

The proposed WPF project layout is illustrated in **Appendix A, Figure 2.2**. The Proposed Action is composed of the proposed WPF Building, concrete building pad, security fence, access road, parking lot, and drainage and stormwater facilities; utility extensions; and power supply circuits from Substations B and C.

2.4.1. WPF Building Site

The proposed WPF concrete building pad would be approximately 665 feet by 825 feet, encompassing 12.5 acres. A security fence surrounding the pad would be located 50 feet beyond the edge of the concrete; a clear zone would extend an additional 30 feet past the fence. An accompanying access road would connect the proposed WPF to Tow Road. The proposed access

road would be 40 feet wide and approximately 1,300 feet long. An attached L-shaped asphalt parking lot, measuring approximately 420 feet by 345 feet, would be located on the southwest corner of the facility. Drainage swales and infiltration basins would be located around the perimeter of the facility. The total area to be disturbed by constructing the proposed WPF would not exceed 75 acres (**Appendix A, Figure 2.3**).

2.4.2. Utility Extensions

2.4.2.1. Communication Line

Two communication lines would run from Building 3000 to the proposed WPF. The communication lines would start from the southern side of Building 3000, run south and then west around vernal pools and cross the existing unpaved road that runs west from Building 3000. The communication lines would then turn north, following the existing unpaved road and Circuit C3 Corridor, before heading west to connect with the proposed WPF. The communication lines would lie approximately 20 feet to 25 feet from one another and other surrounding utilities. The northern line would be approximately 3,400 feet in length and the southern line would be approximately 3,700 feet in length.

A third communications line would run from an existing manhole north of 33rd Street on the west side of California Boulevard. This line would run west then north along the southern and western side of the proposed gas line. It would then run west on the southern side of the rerouted water line and northwest to an existing manhole to connect to existing communications infrastructure. The line would run 50 feet away from any other proposed utilities. This line would be approximately 3,650 feet.

2.4.2.2. Sanitary Sewer Main

The sanitary sewer main would begin north of Building 3000 along Tangair Road at an existing lift station. The pipe would run underground to the northwest under Tow Road. It would then run directly south toward Building 3000 and then west towards the proposed WPF, entering on the north side of the facility.

2.4.2.3. Rerouted Water

An existing water line is buried along the dirt road that runs east-west through the proposed WPF site. This line would need to be rerouted around the southern perimeter of the proposed WPF, parking lot, and drainage swales. The water line would continue north past the existing unpaved road and connect on the west side of the proposed WPF and reconnect to the existing water line.

2.4.2.4. Gas Line

A gas line would tap into the existing gas that runs along California Boulevard between 32nd Street and 33rd Street. It would follow on the southern and western side of the proposed communication lines that run to the proposed WPF pad from Building 3000. The gas line would be approximately 2,845 feet in length.

2.4.3. Power Circuit B5

Circuit B5 would originate at Substation B on New Mexico Avenue. To avoid conflicts with the airfield, this power line would be installed entirely underground. From Substation B, the route would head northwest along the west side of 11th Street until it reached Nevada Avenue. The line would then follow Nevada Avenue to 15th Street and head north to Arizona Avenue. The power line would run along and directly under Arizona Avenue to avoid effects to natural resources until it reaches 29th Street. The power line would then turn northwest along 29th Street and under California Boulevard. It would run along Tangair Road to the north, deviate west, then trend south towards Building 3000 to avoid potential vernal pool habitats. The corridor would then head west along the proposed access road to the proposed WPF pad (**Appendix A, Figure 2.4**).

Circuit B5 would measure approximately 12,700 feet in length. The entire length would be constructed underground, directly under existing asphalt or concrete in several locations, using a trench approximately four feet deep and two feet wide. The construction area width would be approximately 25 feet wide. This would produce a construction area of approximately 7.3 acres. The area to be trenched for power line installation would be approximately 0.6 acres. Much of the route would be located directly adjacent to the roads noted above with approximately 1,250 feet located within the paved portion of Arizona Avenue.

Road crossings would be installed using open trench or horizontal bore techniques. The bores would require entry and exit bore pits on both sides of each road crossing. The bore pits would measure approximately 10 feet by 15 feet, and 5 feet deep. The road bores would be completed in approximately two days each. The bore pits would be surrounded with lighting and barricades to avoid people or animals falls. Proper erosion and sediment control measures would be implemented IAW the National Pollutant Discharge Elimination System (NPDES) permit requirements. Circuit B5 would be installed in 2025.

2.4.4. Power Circuit C3

Circuit C3 would originate at Substation C which is located approximately 2,000 feet north of the 13th Street and Terra Road intersection. This power line would be installed above ground on concrete poles except at road crossings. The route would follow along the existing power line right-of-way for most of its alignment. This route would head west from Substation C to New Mexico Avenue. It would follow New Mexico Avenue north and then turn west along Beach Boulevard to the intersection of 35th Street and California Boulevard. It would head north along California Avenue and then head west to the unpaved road on the west side of Building 3000. It would proceed north along the unpaved road to the proposed WPF access road, then turn west, following the proposed access road to the proposed WPF (**Appendix A, Figure 2.5**).

Circuit C3 would measure approximately 18,500 feet in length. Concrete pole spacing would be approximately 100 feet to 200 feet, on average. A long span of approximately 800 feet would be installed immediately west of Substation C, where the line would cross perpendicular to an unnamed ephemeral stream that qualifies as Waters of the State (WOS) and WOTUS. The proposed span would be constructed similarly to the existing electric line span over this valley. Construction equipment access would not be required within this span. Installing the concrete poles would require drilling holes approximately 6 feet deep, and the holes would be backfilled immediately upon pole installation. For tangent poles, native excavated soil will be used for

backfilling. For dead-end and guyed poles, backfill will be imported sandy gravel. The construction area width would be approximately 25 feet wide. This would produce a construction area of approximately 10.6 acres. Circuit C3 would be installed in 2025.

2.4.5. Project Equipment Needs

Exhibit 2.2 (**Appendix A**) presents estimates of equipment use that would occur during construction of the Proposed Action. The exact type of equipment that would be used may vary slightly from the projections below, depending on construction contractor capabilities. However, these estimates provide a basis for analyzing related issue areas such as air quality, noise, and traffic.

2.4.6. Staging Areas

To construct the proposed WPF, its associated site improvements, and road, water, sewer, natural gas, and communications utility extensions under the Proposed Action, material and equipment staging would occur within the disturbed area of the proposed WPF site and in the northeastern portion of the Building 3000 parking lot. To construct the new power circuits, the project staging area would be at Substation C for the power line from that substation, while staging for the power line from Substation B would occur only on paved or unpaved parking lots or closed roads along or near the proposed power line route.

2.4.7. Environmental Protection Measures

Implementing the EPMs as listed in **Appendix A, Exhibit 2.3** would avoid or minimize potential adverse effects to various environmental resources when implementing the Proposed Action. Mandatory EPMs (denoted by "shall", "will," or "would") are part of the project design and would be implemented as part of the Proposed Action to avoid, minimize, reduce, or compensate for the anticipated potential environmental impacts. Discretionary measures (denoted by "may" or "could") may or may not be implemented to further reduce environmental impacts. Implementing these measures would be overseen by qualified NRO or VSFB personnel or contractor staff.

2.5. No Action Alternative

Under the No Action Alternative, the proposed WPF and its associated utility extensions, and power lines would not be constructed. Existing SV processing facilities at VSFB would continue to be used. Due to the considerations described in Section 1.3, the ability of the NRO to process satellites for launch would be impaired. Key national intelligence asset launch missions may be delayed or cancelled, which may impact U.S. national security and safety.

3. AFFECTED ENVIRONMENT

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

The resources identified for analysis in this EA include air quality, climate, noise, biological resources, cultural resources, geology and earth resources, water resources, aesthetics and coastal

zone resources, transportation, socioeconomics, human health and safety, hazardous materials and waste management, solid waste management, and utilities.

The following resources were considered but not analyzed in this EA: Environmental Justice and children's environmental health and safety. Pursuant to EO 12898, *Environmental Justice*, the potential effects of the Proposed Action on minority and low-income communities were considered. Because the Proposed Action would occur within an unpopulated area of VSFB, the project would neither affect nor disproportionately affect low-income or minority populations. Pursuant to EO 13045, *Protection of Children from Environmental Health Risks and Safety Features*, disproportionate environmental health and safety risks to children were considered. The Proposed Action would occur within an unpopulated area of the VSFB and is not near schools, daycare facilities, playgrounds, or other places where children are concentrated. Therefore, the Proposed Action would not pose a threat to children's environmental health and safety.

3.1. Air Quality

3.1.1. Regional Setting

The VSFB is within SBC and under the jurisdiction of the SBC Air Pollution Control District (SBCAPCD). The SBCAPCD is the agency responsible for administering federal and California air quality laws, regulations, and policies in SBC, which is within the South Central Coast Air Basin (SCCAB). The SCCAB includes San Luis Obispo, Santa Barbara, and Ventura Counties.

The SCCAB, and all Southern California, lies in a semi-permanent high-pressure zone of the Eastern Pacific Region. The coastal land is characterized by sparse rainfall, most of which occurs in the winter season and hot, dry summers, tempered by cooling sea breezes. In SBC, the months of heaviest precipitation are November through April, averaging 14.67 inches annually. The mean temperature in the VSFB area, as reported by monitors in the City of Lompoc (monitor number 045064), is 58.3 degrees Fahrenheit (°F) and the mean maximum and mean minimum temperatures are 69.6°F and 47.0°F, respectively (Western Regional Climate Center [WRCC], 2018).

Santa Barbra County is classified as an attainment/unclassified area for the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants (USEPA, 2018b). In December 2015, the U.S. Environmental Protection Agency (USEPA) revised the Ozone (O_3) standard from 0.075 parts per million (ppm) to 0.070 ppm (USEPA, 2018c); however, this change did not affect the attainment status of SBC. Santa Barbara County is considered a nonattainment area for the California Ambient Air Quality Standards (CAAQS) for Particulate Matter 10 microns in diameter (PM_{10}) and was designated as nonattainment for the CAAQS for O_3 as of October 2022. Santa Barbara County is classified as an attainment/unclassified area for the CAAQS for all other criteria pollutants (SBCAPCD, 2018a).

The California Air Resources Board (CARB) and SBCAPCD operate a network of ambient air monitoring stations throughout SBC. These monitoring stations measure ambient concentrations of the pollutants and determine if the ambient air quality meets the CAAQS and NAAQS. The nearest active ambient monitoring station to the proposed Action Area is the Lompoc South H

Street monitoring station, which measures all criteria pollutants. Data shown in **Table 3.1** were measured at the Lompoc South H Street monitoring station.

The CAAQS for 24-hour PM_{10} was exceeded 32 times in 2020, two times in 2021, and 11 times in 2022 and is classified as nonattainment for the CAAQS. The NAAQS for 24-hour PM_{10} was not exceeded from 2020 to 2022. The NAAQS for 24-hour Particulate Matter 2.5 microns in diameter ($PM_{2.5}$) was exceeded 12 times in 2020; however, the standard is based on the 3-year average of the annual 98th percentile concentrations and the region remains unclassified/attainment. The data from the monitoring station indicate that air quality is in attainment of all other state and federal standards (**Table 3.1**) (CARB, 2022b).

Table 3.1 – Background Ambient Air Quality at VSFB

Pollutant	Averaging Time	2020	2021	2022	CAAQS	NAAQS
O_3	8-hour	0.030	0.035	0.055	0.070	0.070
	1-hour	0.038	0.040	0.067	0.09	-
PM_{10}	Annual Arithmetic Mean	NA	NA	NA	20 µg/m^3	-
	24-hour	110.8 µg/m^3	76.1 µg/m^3	34.8 µg/m3	50 µg/m^3	150 µg/m^3
$PM_{2.5}$	Annual Arithmetic Mean	NA µg/m^3	NA	NA	12 µg/m^3	12.0 µg/m^3
	24-hour	85.7 µg/m^3	18.5 µg/m^3	20.8 µg/m^3	-	35 µg/m^3
	Annual Arithmetic mean	NA	NA	NA	0.030 µg/m^3	0.053 µg/m^3
NO_2	1-hour	0.028	0.011	0.024	0.18	0.100
	24-hour	0.018	0.027	0.011	0.030	0.053
CO	1-hour	2.500	1.900	0.900	20	35
	24-hour	0.613	0.735	0.632	-	-
SO_2	1-hour	0.026	0.002	0.002	0.25	0.075
	24-hour	0.003	0.001	0.001	0.04	-
Pb (Lead)	Rolling 3-month average	NA	NA	NA	-	0.15 µg/m^3
	30-day average	NA	NA	NA	1.5 µg/m^3	-

Source: CARB, 2022. Data after 2021 may be preliminary.
Notes: Concentrations are in ppm unless otherwise indicated.
CO = Carbon Monoxide, NO_2 = Nitrogen Dioxide, $PM_{2.5}$ = Particulate Matter less than 2.5 microns, PM_{10} = Particulate Matter less than 10 microns, ppm = parts per millions, µg/m^3 = micrograms per cubic meter. NA = not available from current website data.

3.1.2. Region of Influence

Identifying the region of influence (ROI) for air quality requires knowledge of the type of pollutant, emission rates of the pollutant source, proximity to other emission sources, and local and regional meteorology. The ROI for the Proposed Action is located within the SCCAB.

3.2. Climate

3.2.1. Regional Setting

Changes in global climate patterns have recently been associated with global warming, an average increase in the temperature of the atmosphere near the earth's surface, attributed to accumulation of greenhouse gas (GHG) emissions in the atmosphere. Climate change refers to the long-term shifts in temperature and weather patterns, and in current times is attributed to the effect global production practices have on the environment. Greenhouse gases trap heat in the atmosphere, subsequently heating the earth's surface. The increased accumulation of GHG emissions in the atmosphere has been linked to global warming, which is an average increase in the atmospheric temperature near the earth's surface. While some GHGs are the result of natural processes, others are created and emitted into the atmosphere through human production activities, such as fossil fuel combustion. Common GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFC), and perfluorocarbons (PFCs). Typical GHGs that result from human activity are CO_2, CH_4, and N_2O, with CO_2 being the most common. Carbon dioxide emissions are often from the burning of fossil fuels (natural gas, coal, oil, solid waste, wood products, certain chemical reactions, vehicle use, boilers, aircrafts, marine vessels, and rocket launches). Carbon dioxide is sequestered from the atmosphere when absorbed by plants.

The USEPA is the federal agency responsible for regulating GHG initiatives. Greenhouse gases are quantified as carbon dioxide equivalent (CO_2e) to measure and compare the global warming potential of each GHG compound. The 40 C.F.R. Part 98 codifies the USEPA's Greenhouse Gas Reporting Program (GHGRP), which requires mandatory GHG emissions reporting for certain operations that emit more than 25,000 metric tons of CO_2e per year from all sources covered under the program (USEPA 2023b).

3.2.2. Region of Influence

The climate ROI for the Proposed Action is VSFB. The GHGRP accounts for annual reporting per facility, and the Proposed Action operations would contribute to the overall GHG emissions at VSFB. The ROI is situated within the broader climate setting of California emission rates and USEPA regulations.

3.2.3. Climate Change in the United States and California

The USEPA has reported average temperatures since 1901. From 1901 to the late 1970s, the average surface temperature across the U.S. contiguous 48 states increased at an average rate of +0.17 °F per decade. The rate of average temperature has increased to +0.32 to +0.55 °F per decade since 1979 (USEPA, 2022b). According to the CARB GHG reporting, in 2020 California emitted 369.2 million metric tons of CO_2e (CARB 2022), compared to the U.S. emissions of 5,981.3 million metric tons of CO_2e (USEPA 2023a). California faces climate change impacts that include but are not limited to loss of snow; rise in sea level; increase in extreme heat days per

year; increase in days with high O_3 in the atmosphere; more significant forest fires; more drought years; increased erosion on the coastlines; sea water intrusion into deltas and levee systems; and increased pest infestation.

3.2.4. Climate Resources

Current GHG emissions associated with VSFB include those produced by launches and typical operations of stationary fuel combustion sources, such as boilers and stationary engines, employee vehicular commute, and employee use of energy sources. The affected environment for climate incudes the GHG emissions associated with proposed uses of the WPF and its appurtenances, including processing and testing, storage, and support areas.

3.3. Noise

Noise is part of the human environment and therefore is generally considered under NEPA. The Noise Control Act (42 U.S.C. 4901 et seq.) limits noise exposure to individuals and communities.

3.3.1. Noise Sensitive Receptors

Noise sensitive areas are those areas where noise can interfere with normal activities associated with the area's designated use. Noise sensitive areas on and near VSFB include residential areas, camping areas, hospitals, schools, and libraries. These areas are in the cantonment area of VSFB, which extends from roughly 0.7 to 3 miles east of the proposed WPF site. The portion of the cantonment area closest to the proposed Action Area is characterized by open space, industrial use, Air Education Training and Command, and Launch Operations, which are not considered to be noise sensitive areas. A single noise sensitive area would be near the proposed Circuit B5 construction activities. Specifically, the VSFB family campground is located approximately 1,000 feet from the proposed Circuit B5. All other noise sensitive areas at VSFB are located at considerable distance from Circuit B5.

Sensitive receptors in the nearby City of Lompoc include residential areas, hospitals, schools, parks, and libraries. Vandenberg Village, a primarily residential area located on SR 1 just outside the eastern boundary of VSFB, also has sensitive receptors.

3.3.2. Existing Noise Sources

Existing noise levels on VSFB are low due to the large areas of undeveloped landscape and sparse noise sources. Background noise levels are primarily driven by wind noise; however, louder noise levels near VSFB result from vehicular transportation, industrial facility operations, construction activities, and railroad operations. Periodic mission and mission support activities (e.g., rocket launches and aircraft operations) create sporadic noise events. In general, ambient hourly equivalent continuous sound level (Leq[h]) measurements on VSFB range from approximately 35 to 60 decibel (dB) (USAF, 2014). Noise levels in the adjacent City of Lompoc are primarily driven by nearby transportation route noise and regional aircraft activities. However, rocket launches on VSFB are clearly perceptible in the City of Lompoc.

3.4. Biological Resources

3.4.1. Region of Influence

The existing biological setting includes the regional setting of VSFB, the specific proposed Action Area, and past and present disturbances in and near the proposed Action Area. Biological resources on VSFB are abundant and diverse compared to other areas of California because VSFB is within an ecological transition zone where the northern and southern ranges of many species overlap, and because most of the land within the Base boundaries has remained undeveloped. The ROI considered in this EA for biological resources encompasses the proposed Action Area and surrounding habitats (**Appendix A, Figure 1.2**).

The proposed WPF would be located on the southwestern edge of the cantonment area, approximately 1.7 miles inland from the Pacific Ocean, within a currently undeveloped area consisting of Burton Mesa chaparral. The proposed WPF would be supported by various utilities that would be extended from existing infrastructure within the cantonment area, including a new power line that would be installed at Substation B and extend west through the cantonment area (**Appendix A, Figure 2.4**). The existing habitats and vegetation in these areas is predominately non-native grasses and trees with patches of central coastal scrub and ephemeral pools. A second power line would be installed to service the proposed WPF at Substation C. This power line would run along the northern terrace of the Santa Ynez River basin and then up the southern slope of the Burton Mesa to the proposed WPF site (**Appendix A, Figure 2.5**). The route from Substation C would predominantly pass through central coastal scrub and Burton Mesa chaparral.

3.4.2. General Vegetation Resources

Vandenberg SFB is within the USEPA's Santa Maria/Santa Ynez Valley Region IV ecoregion (U.S. Geological Survey [USGS], 2016). There are 18 vegetation types found within the proposed Action Area. **Table 3.2** below lists the vegetation and estimated amount of each vegetation type within the proposed Action Area IAW acceptable field methodologies at the time of preparation. These types are further described in **Appendix A, Exhibit 3.1**.

Table 3.2 – Vegetation Type by Site and Power Circuits (acres)

Primary Vegetation	Vegetation Coverage in Acres[1]			
	Proposed WPF Site	Circuit B5	Circuit C3	Total
Acacia		0.11		0.11
Central Coastal Scrub			4.12	4.12
Central Coastal Scrub – Maritime Chaparral			2.97	2.97
Central Coastal Scrub / Herb		2.03	4.26	6.29
Depression / Seasonally Inundated Pool	0.09		0.02	0.11
Developed	0.78	2.70	0.76	4.24
Disturbed / Cleared	1.07	0.51	0.06	1.64
Iceplant			0.05	0.05
Iceplant – Herb		1.04	1.46	2.50

Maritime Chaparral	56.99	1.42	4.72	63.13
Maritime Chaparral / Herb	12.97	0.88	2.21	16.06
Native and Non-Native Herb		0.70	0.54	1.24
Non-Native Grasses and Forbs	0.02	4.35	0.45	4.82
Non-Native Tree	0.57	2.98	2.79	6.34
Pampas Grass		0.05		0.05
Road		0.31	0.45	0.76
Ruderal		0.22	0.07	0.29
Veldt Grass		0.87	0.16	1.03
Total	72.49	18.17	25.09	115.75

Source: ManTech, 2018 and Manual of California Vegetation

[1]Note: The vegetation total in Table 3.2 is 115.75 acres. This total does not account for 7.65 acres of Developed, Disturbed/Cleared, Road, and/or Ruderal areas that were not included in the ManTech SRS Technologies, Inc (MSRS) study. The Action Area is 123.4 acres in total.

3.4.3. Special Status Vegetation Species

Reviewing the California Natural Diversity Database (CNDDB), Information for Planning and Conservation (IpaC), and VSFB natural resources Geographic Information System (GIS) data identified several federally listed plant species that had the potential to occur within or near the proposed Action Area. Many of these species were removed from consideration due to lack of suitable habitat within the proposed Action Area, including beach layia (*Layia carnosa*), marsh sandwort (*Arenaria paludicola*), Gambel's watercress (*Nasturtium gambelii*), La Graciosa thistle (*Cirsium loncholepis*), and salt marsh bird's beak (*Cordylanthus maritimus* spp. *maritimus*).

Although the CNDDB lists a record for Gaviota tarplant (*Deinandra increscens* spp. *villosa*) from 2002 near the proposed Action Area, in 2006 a genetic study was conducted to clarify the taxonomic status of Gaviota tarplant on VSFB (Baldwin, 2009). The results of this study showed that Gaviota tarplant occurrences were limited to the Gaviota type locality, the Point Conception area, Sudden Peak (adjacent to the VSFB boundary), and Lion's Head on VSFB (Baldwin, 2009). As a result, the locality listed from 2002 in CNDDB is no longer taxonomically accurate. In addition, field surveys conducted by MSRS in 2018 did not identify any Gaviota tarplant within the proposed Action Area. Therefore, Gaviota tarplant was not further analyzed for this assessment.

Since Vandenberg monkeyflower (*Diplacus vandenbergensis*) localities were known to occur near the proposed Action Area, MSRS surveyed the site for this species and suitable habitat during the site surveys in 2018. No individuals of this species or suitable habitat were found within the proposed Action Area. Therefore, Vandenberg monkeyflower was not further analyzed for this assessment.

The only federally listed species determined to potentially occur within the proposed Action Area and carried forward for analysis of potential impacts was the LYS.

3.4.3.1.Lompoc Yerba Santa (LYS, Federally Endangered)

Status

Lompoc yerba santa was listed as federally endangered under the ESA on 20 March 2000 (65 Federal Register [FR] 14888) and as a state rare species by the California Fish and Game Commission in September of 1979 (California Code of Regulations [CCR], Title 14, Section 670.2). Critical Habitat for this species was designated on 7 November 2002 (67 FR 67967). The SLD 30 (former 30 SW) was excluded from this designation under section 4(b)(2) of the ESA, due to impacts on national security. No recovery plan has been drafted for this species.

Occurrence within the Proposed Action Area

Base-wide, LYS stands have been found in upper La Salle Canyon, Santa Lucia Canyon, Pine Canyon, Lake Canyon, and on the Burton Mesa along the north side of 35th Street on VSFB. The 35th Street stand is located on the northwest corner of 35th Street and California Boulevard, about 1,700 feet south of and slightly upslope from the parking lot of the proposed WPF and approximately 200 feet west of Circuit B5 (**Appendix A, Figure 3.1**). This 3.1-acre stand has declined in recent years from a total of 1,017 ramets[1] in 2006 to only 733 ramets in 2015, presumably due to the prolonged period of drought that VSFB has experienced over the past six years. No other occurrences of LYS were observed during the 2018 field surveys (ManTech, 2018).

3.4.4. General Wildlife Resources

Vandenberg SFB is comprised of diverse vegetation types and communities that provide valuable habitat for an array of wildlife species. **Table 3.3** lists the amphibian, reptile, and mammal species observed during the 2018 field surveys (MSRS, 2018).

Table 3.3 – Wildlife Species Observed within the Proposed Action Area

Common name	Scientific name	Status
Amphibians		
Baja California chorus frog	*Pseudacris hypochondriaca*	Native
Reptiles		
Western fence lizard	*Sceloporus occidentalis*	Native
Mammals		
Botta's pocket gopher	*Thomomys bottae*	Native
California ground squirrel	*Spermophilus beecheyi*	Native
California vole	*Microtus californicus*	Native
Coyote	*Canis latrans*	Native

[1] In botany, an independent member of a clone (Merriam-Webster Dictionary, 2018).

Other common mammals that are expected within the proposed Action Area include mule deer (*Odocoileus hemionus*), raccoon (*Procyon lotor*), bobcat (*Felis rufus*), brush rabbit (*Sylvilagus bachmani*), desert cottontail (*Sylvilagus audubonii*), long-tailed weasel (*Mustela frenata*), and various species of mice (*Peromyscus* ssp.). Common reptiles that may be expected within the proposed Action Area include the southern alligator lizard (*Elgaria multicarinata*), side-blotched lizard (*Uta stansburiana*), western skink (*Eumeces skiltonianus*), gopher snake (*Pituophis catenifer*), and Pacific rattlesnake (*Crotalus oreganus helleri*) (USAF, 2016a). Additional amphibians that may be found include western toads (*Anaxyrus boreas*), the Monterey ensatina (*Ensatina eschscholtzii eschscholtzii*), and arboreal salamanders (*Aneides lugubris*).

3.4.5. Special Status Wildlife Species

Table 3.4 lists species that have special status under federal and state law that are known to occur or have the potential to occur within the proposed Action Area and nearby. Potential occurrence was determined based on past documentation, the results of the surveys conducted in 2018 and 2019, IPaC and CNDDB search results, and museum records from the University of California, Santa Barbara. For most animal species, potential occurrence was determined based on the suitability of habitat within the proposed Action Area for each species. Several species were excluded from potential occurrence because they either do not occur at the site when project activities would occur, they do not breed within the proposed Action Area and their special status affords them protection during their breeding period, or they do not occur in a manner (rookeries or nesting colonies) that affords them special status protection.

Golden eagles ([*Aquila chrysaetos*], Federal Bird Species of Conservation Concern, California Fully Protected Species) and bald eagles ([*Haliaeetus leucocephalus*], Federal Bird Species of Conservation Concern, California Endangered Species, California Fully Protected Species) are also protected under the Bald and Golden Eagle Protection Act (BGEPA, 16 U.S.C. 668-668d) and the Migratory Bird Treaty Act (MBTA) (16 U.S.C 703–712). Both species are occasionally seen throughout VSFB and may forage in open scrub, grassland, and estuarine habitats (USAF, 2016a). However, these are expected to be occasional rare sightings and these species are not anticipated to be affected by project activities.

The former 30 SW conducted Section 7 consultation with USFWS in which a Biological Assessment (BA) was prepared to consider the effects the Proposed Action may have on species of concern in the Proposed Action area and their appropriate buffer areas. At the time, the El Segundo Blue Butterfly (ESBB), a listed species per the ESA, was understood to be present at VSFB, and was thus considered in the BA and Biological Opinion (BO) issued by USFWS. Its host plant, the seacliff buckwheat (Erigonum parvifolium), is present at VSFB and documented in the BA. However, USFWS issued a memo dated March 9, 2020, stating that "a recent genome-wide sequencing project "unambiguously" determined that the species of butterfly found on [VSFB] and assumed to be the Federally endangered [ESBB] is in fact NOT the ESBB and therefore is not afforded protection as a federally listed species" (Appendix D). Therefore, information and mitigation measures regarding the ESBB and the seacliff buckwheat were removed from this EA but remain within the BA and BO. The 30 CES has confirmed that no other changes have occurred to the Proposed Action area or species of concern in the time that has lapsed since the BO was issued. The document remains current.

Table 3.4 – Federal and State Special Status Terrestrial Species with Potential to Occur within the Proposed Action Area

Species	Status		Potential Occurrence within the Proposed Action Area
	USFWS	CDFW	
Invertebrates			
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	-	Unlikely
Monarch butterfly (*Danaus plexippus*)	UR	-	Present
Amphibians			
Western spadefoot toad (*Spea hammondii*)	UR	CSC	Potential
California red-legged frog (*Rana draytonii*)	FT	CSC	Potential
Reptiles			
Blainville's horned lizard (*Phrynosoma blainvillii*)	-	CSC	Likely
Silvery legless lizard (*Anniella pulchra pulchra*)	-	CSC	Potential
Mammals			
American badger (*Taxidea taxus*)	-	CSC	Potential
Birds			
Allen's Hummingbird (*Selasphorus sasin*)	BCC	-	Present
Bald Eagle (*Haliaeetus leucocephalus*)	BGEPA	Fully Protected	Unlikely
Bell's Sage Sparrow (*Artemisiospiza belli belli*)	BCC	-	Likely
Burrowing Owl (*Athene cunicularia*)	BCC	CSC	Potential
Costa's hummingbird (*Calypte costae*)	BCC	-	Potential
Golden Eagle (*Aquila chrysaetos*)	BCC	Fully Protected	Unlikely
Lawrence's Goldfinch (*Spinus lawrencei*)	BCC	-	Likely
Loggerhead shrike (*Lanius ludovicianus*)	BCC	CSC	Potential
Nuttall's Woodpecker (*Picoides nuttallii*)	BCC	-	Likely
Oak titmouse (*Baeolophus inornatus*)	BCC	-	Likely
Peregrine Falcon (*Falco peregrinus anatum*)	BCC	Fully Protected	Unlikely
Rufous Hummingbird (*Selasphorus rufus*)	BCC	-	Likely
Song Sparrow (*Melospiza melodia*)	BCC	-	Present
Spotted Towhee (*Pipilo maculatus clementae*)	BCC	SSC	Present
Wrentit (*Chamaea fasciata*)	BCC	-	Present

Notes: BGEPA = Bald and Golden Eagle Protection Act; FE = Federal Endangered Species; FT = Federal Threatened Species; UR = Under Review for Federal Listing; SE = State Endangered Species; CSC = California Species of Special Concern; SSC = State Candidate Species; BCC = Federal Bird of Conservation Concern; CDFW = California Department of Fish and Wildlife.

3.4.5.1. Migratory Birds

In addition to special status bird species listed in **Table 3.4**, most bird species are protected under the MBTA. **Table 3.5** lists the bird species observed during the 2018 field surveys in the proposed Action Area and their status under the MBTA (MSRS, 2018).

Table 3.5 – Bird Species Observed within the Proposed Action Area

Common Name	Scientific Name	Status	Protected under the MBTA
Allen's hummingbird	*Selasphorus sasin*	Native	Yes
American crow	*Corvus brachyrhynchos*	Native	Yes
American kestrel	*Falco sparverius*	Native	Yes
Anna's hummingbird	*Calypte anna*	Native	Yes
Black-headed grosbeak	*Pheucticus melanocephalus*	Native	Yes
Black phoebe	*Sayornis nigricans*	Native	Yes
Bushtit	*Psaltriparus minimus*	Native	Yes
California quail	*Callipepla californica*	Native	No
California towhee	*Melozone crissalis*	Native	Yes
California thrasher	*Toxostoma redivivum*	Native	Yes
Cooper's hawk	*Accipiter cooperii*	Native	Yes
Greater roadrunner	*Geococcyx californianus*	Native	Yes
House finch	*Carpodacus mexicanus*	Native	Yes
House wren	*Troglodytes aedon*	Native	Yes
Mourning dove	*Zenaida macroura*	Native	Yes
Purple finch	*Carpodacus purpureus*	Native	Yes
Red-tailed hawk	*Buteo jamaicensis*	Native	No
Song sparrow	*Melospiza melodia*	Native	Yes
Spotted towhee	*Pipilo maculatus*	Native	Yes
Tree swallow	*Tachycineta bicolor*	Native	Yes
Turkey vulture	*Cathartes aura*	Native	Yes
Western bluebird	*Sialia Mexicana*	Native	Yes
White-crowned sparrow	*Zonotrichia leucophrys*	Native	Yes
Wrentit	*Chamaea fasciata*	Native	Yes

Other birds protected under the MBTA and potentially occurring within the proposed Action Area include the red-shouldered hawk (*Buteo lineatus*), northern flicker (*Colaptes auratus*), Brewer's blackbird (*Euphagus cyanocephalus*), cliff swallow (*Hirundo pyrrhonata*), barn swallow (*H. rustica*), white-throated swift (*Aeronautes saxatalis*), and common yellowthroat (*Geothlypis trichas sinuosa*).

3.4.5.2. Federally Listed and Candidate Species

Monarch Butterfly

Status

In August of 2014, the Center for Biological Diversity and several other entities petitioned the USFWS to list the monarch butterfly as federally endangered (Center for Biological Diversity, 2014). The USFWS decided the federal status of monarchs in December 2020 (USFWS, 2019). After a thorough review of the best available scientific and commercial information, USFWS found that listing the monarch butterfly as threatened or endangered is warranted but precluded by higher priority actions (USFWS, 2020). The monarch butterfly is a candidate species and not listed or proposed for listing under the ESA.

Occurrence within the Proposed Action Area

During VSFB-wide monarch butterfly surveys in 2016, monarch butterfly roosting areas were documented in two eucalyptus groves near the proposed Action Area, one located southwest of the proposed WPF site, and another found north of California Boulevard (**Appendix A, Figure 3.2**) (Center for Environmental Management of Military Lands, 2017). No monarch butterflies were observed during the site surveys in 2018; however, most individuals of this species leave central California by late February to mid-March so they would not have been present during the time of the surveys in late March 2018.

Vernal Pool Fairy Shrimp (VPFS, Federally Threatened Species)

Status

Vernal pool fairy shrimp were listed as federally threatened by the USFWS on 19 September 1994 (59 FR 48136-48153). Critical Habitat for the species was finalized 10 February 2006 (71 FR 7118-7316). However, VPFS had not been documented on VSFB at this point and so the Base was not considered in the designation of Critical Habitat.

Occurrence within the Proposed Action Area

During the 2018 surveys, a series of possible vernal pools were found within the northeastern and southeastern portions of the proposed WPF site near Building 3000 (**Appendix A, Figure 3.3**). MSRS surveyed these for VPFS in 2019 and mostly found them to be unsuitable for VPFS occupancy (MSRS, unpubl. Data). Both potential and occupied VPFS habitats were previously documented within the potential Circuit B5, however all known localities are planned to be completely avoided. No potential VPFS habitat occurs within the potential Circuit C3 south of the intersection of New Mexico Avenue and 35th Street. A negative determination for VPFS occurrence cannot be obtained without a lengthy protocol during the appropriate time of year and during suitable rainfall years (USFWS, 2015b). Therefore, in cases where pools have not been evaluated or surveyed sufficiently, occurrence is typically assumed if there is suitable habitat present. As a result, the Proposed Action was designed to avoid potential and occupied VPFS habitat. This includes installing the proposed Circuit B5 under existing pavement in several areas.

California Red-legged Frog (Federally Threatened Species)

Status

The California red-legged frog (CRLF; *Rana draytonii*) was listed as federally threatened by the USFWS on 23 May 1996 (61 Federal Register [FR] 25813-25833). In 2002, the USFWS issued a Recovery Plan to stabilize and restore CRLF populations (USFWS, 2002). Critical Habitat was finalized on 17 March 2010 (75 FR 12816-12959); however, it does not include VSFB, since it was excluded under section 4(b)(2) of the ESA, for reasons including impacts on national security.

Occurrence within the Proposed Action Area

A search of existing records yielded nearby CRLF localities (**Appendix A, Figure 3.4**). In 2006, CRLF tadpoles were observed in an ephemeral pool approximately 0.40-mile southwest of the proposed WPF site (Collins, 2006). In 2001, an adult CRLF was observed in a "semi-permanent" pool 0.46-mile west of the proposed WPF site (Christopher, 2002). Several CRLF localities are near both Circuits B5 and C3, including records at the former Waterfowl Management Ponds 0.21-mile southwest of Circuit C3 and a record from an ephemeral pool approximately 0.38-mile southwest of Substation B (Christopher, 2002). No CRLF were observed during the site surveys in 2018 or during VPFS surveys conducted by MSRS in 2019, although CRLF-specific surveys were not conducted. Ephemeral pools within the proposed Action Area may, however, constitute suitable habitat within good rain years.

Western Spadefoot Toad

Status

In July of 2012, the Center for Biological Diversity petitioned the USFWS to list 53 amphibian and reptile species, including the western spadefoot toad (*Spea hammondii*) (Center for Biological Diversity, 2012). In July 2015, the USFWS issued a 90-day finding on western spadefoot toad, indicating substantial scientific or commercial information that the petitioned action may be warranted (50 C.F.R. Part 17). The status of this species is currently still under review by the USFWS.

Occurrence within the Proposed Action Area

Western spadefoot toads occur across VSFB in areas near ephemeral pools. Prior studies and museum records have documented western spadefoot toads in and near vernal pools throughout the cantonment area from 1995 to 2014, including the proposed Action Area (**Appendix A, Figure 3.5**) (Christopher, 1996; MSRS, 2015; University of California, Santa Barbara, Cheadle Center for Biodiversity and Ecological Restoration Specimen #: 28332, 28437, 28439, 29076). Western spadefoot toads were not observed during the site surveys in 2018 nor the VPFS surveys in 2019.

3.5. Cultural Resources

3.5.1. Regulatory Setting

The NEPA requires Federal agencies to consider potential project effects to affected environments, including cultural resources. Section 106 of the National Historic Preservation Act also requires federal agencies to assess potential project related effects to historic properties that are listed in or

eligible for listing in the National Register of Historic Places (NRHP), and under this regulation, SLD 30 must consult with the SHPO and other parties for projects that could affect a historic property. The SLD 30 Integrated Cultural Resources Management Plan (VSFB, 2023) provides additional direction and policy specific to properties owned and managed by SLD 30.

Per the implementing regulations for Section 106 (36 C.F.R. Part 800), SLD 30 identified the appropriate consulting parties as the SHPO and the Santa Ynez Band of Chumash Indians. Under the regulations, consulting parties possess a status equal to the federal agency regarding identifying and considering effects to historic properties.

3.5.2. Region of Influence

The cultural resources ROI is the proposed Action Area where ground-disturbing activities would take place due to implementing the Proposed Action. This includes the proposed WPF site, nearby utility extension areas, and power circuits from Substations B and C. The ROI is situated within a broader cultural setting.

3.5.3. Known Nearby Cultural Resources

An archaeological site records and literature search was completed in early 2018 at the 30th Civil Engineer Squadron Installation Management Flight Environmental Assets (30 CES/CEIEA) at VSFB. Site records, reports, and site condition assessments were reviewed to identify previous archaeological studies and resources recorded within a 1,000-foot buffer extending from the archaeological study area (ASA). The ASA included three WPF candidate sites including the Preferred Site and Alternatives 1NC and 9NC, multiple potential utility extension areas, and multiple potential power line corridors from Substations B and C, which were under consideration at the time of the cultural resources survey. The ASA was larger than the ROI as the ROI is narrowed down to just the area selected for the Proposed Action. The power line corridors included 130 feet on each side of the centerline of the road or existing utility line that the routes would follow. Data sources examined included the Base Comprehensive Plan GIS, U.S. Geological Survey topographic maps, and reports from previous archaeological investigations. See **Appendix B, B.4 Cultural Resources** for further details. The VSFB staff verified in 2023 that this data is considered up-to-date.

Reviewing VSFB GIS layers and archaeological literature revealed that a total of 17 known cultural resource sites (CA-SBA-689, -778, -915, -1142, -1147, -1761, -1909, -2876, -2879, -3406, -3409, -2410, -3550H, -3575H, -3580, -3582, and -3583) and 14 isolated artifacts (VAFB-ISO-119, -124, -125, -188, -234, -354, -381, -473, -475, -783, -951, -952, -953, and -957) are present within the ASA and the associated buffer. Three archaeological sites are completely or partially within the ASA itself. In addition, 10 isolated artifacts are within the ASA (Applied Earthworks, 2018).

The ROI is a subset of the ASA. The ROI reflects only the areas near the Proposed Action (i.e., the entirety of the proposed WPF site and associated utility extensions, plus the power line corridors from Substations B and C). The ROI does not include some project alternatives that under considered during the archaeological survey.

Table 3.6 – Summary of Archaeological Resources within the ROI

Site No.	Date Recorded/ Updated	Recorder(s)	Description	Site Type
CA-SBA-3575H	1999/2017	Palmer/ Smallwood	A discontinuous series of masonry ditches constructed in the former Camp Cooke cantonment area during World War II	Structure
CA-SBA-3581	2000	Hodges et al.	A low-density surface scatter of lithic debris and one marine shell fragment	Lithic scatter
VAFB-ISO-119	1989	Bergin	One small piece of abalone shell and one halved cobble of Monterey chert	NA*
VAFB-ISO-124	1984	Greenwood and Foster	One chert secondary flake	NA
VAFB-ISO-125	1984	Greenwood and Foster	One chert secondary flake	
VAFB-ISO-188	1986	Woodman	Large Monterey chert cobble chopper and one unmodified steatite fragment	NA
VAFB-ISO-381	1979	Bamforth and Arnold	Monterey chert flake	NA
VAFB-ISO-473	2000	Hodges et al.	Distal biface fragment made of reddish-brown chert	NA
VAFB-ISO-957	2008	Lebow and Peterson	Historic pit feature related to CA-SBA-3575H	NA

Source: Applied Earthworks, 2018
*Isolated artifact

Palmer (1999) identified CA-SBA-3575H and it is composed of a series of discontinuous irrigation ditches associated with the former Camp Cooke cantonment area (Palmer, 1999). CA-SBA-3581 was recorded following the Azalea and Halloween wildfires (Hodges, et al., 2000) and consists of low-density lithic scatters.

3.5.4. Status of Cultural Resources in the Action Area

Field investigations were conducted at all the isolated artifact areas and one of the cultural sites (Applied Earthworks, 2018). Since the ASA had previously been surveyed for cultural resources, field investigation efforts focused on subsurface surveys at the location of each of the isolated artifacts to determine if they were the only visible manifestations of an archaeological site. Subsurface investigations were completed to define the boundaries and evaluate the NRHP eligibility of CA-SBA-3581 because it is within the area of the proposed WPF site (Applied Earthworks, 2018). Testing was not necessary at CA-SBA-3575H because it is an architectural feature and had previously been determined to be ineligible for the NRHP (Smallwood, 2017).

Testing at CA-SBA-3581 did not identify intact site deposits. Very few archaeological remains were recovered—only two pieces of lithic debitage (the byproduct flakes and ships from stone tool production). No artifacts were observed on the surface. Archaeological material density is extremely low, and the assemblage lacks diversity. Consequently, the assemblage lacks analytical value and is insufficient to address any research topics, including those related to lithic technology. Since chronological data were not recovered, any other data would lack a temporal framework. In

addition, disturbed soils throughout CA-SBA-3581 indicate that the site lacks integrity. Consequently, given the lack of data potential and the lack of integrity, CA-SBA-3581 was recommended as not eligible for the NRHP (Applied Earthworks, 2018). Results of coordination with the SHPO are provided in Section 4.5 of this EA. The VSFB staff verified in 2023 that this data is considered up-to-date.

The isolated artifacts were tested and inspected due to their location within or near the proposed project components. No archaeological materials were found associated with any of the isolated artifacts. Therefore, none of the isolated artifacts within the ASA have the potential to be a larger archaeological resource, and isolated artifacts are not eligible for the NRHP (Applied Earthworks, 2018).

3.6. Geology and Earth Resources

3.6.1. Topography

Vandenberg SFB lies along the Southern California coastline within the Santa Maria Basin, a 288-square mile valley that underlies coastal California in northern Santa Barbara and San Luis Obispo Counties. The sites under consideration for the Proposed Action lie 1.5 to 2.0 miles inland of the Pacific Ocean. The proposed Action Area is on Burton Mesa, a series of flat-topped hills that are sporadically intersected with steep-sloped river and intermittent stream valleys. Across the proposed Action Area, the average land surface elevation generally ranges between approximately 355 and 370 feet above sea level. Lower naturally occurring elevations (roughly 325 to 355 feet above sea level) occur in the northern portions of the proposed site near the Cañada Tortuga ravine (USGS, 2018).

3.6.2. Bedrock and Surface Geology

The Franciscan Formation is the primary basement bedrock unit that underlies SBC and VSFB. The Franciscan Formation dates to the Jurassic Period (199.6 to 145.5 million years ago), and is composed of sedimentary (e.g., sandstone, shale, and chert) and igneous (e.g., basalt) rocks that are periodically intruded with pockets of the mineral serpentine. The thickness of the Franciscan Formation is unknown (Dibblee, 1950). A geotechnical study for VSFB Building 2510, about 0.5-mile southeast of the middle of the proposed WPF site, indicates that shale bedrock was encountered at 9.5 to 11.0 feet below grade (Earth Systems Resources, 1992). A geotechnical study of the proposed WPF site revealed an approximate depth to bedrock of 25 feet in the middle of the proposed WPF site (Boring B-8) (CTE South, 2018). The surface geology in the proposed Action Area is composed of Quaternary Older Alluvium Deposits. This layer dates to the Pleistocene Epoch (2.6 million years ago to 11,700 years ago) and is characterized by older alluvium, lake, playa, and terrace deposits (California Department of Conservation, 2010a). Miocene marine sedimentary rocks also cross the Circuit C3 area.

3.6.3. Geologic Hazards

The principal geologic hazard in southern California is ground shaking related to earthquakes. Earthquakes are common in southern California, owing largely to the presence of many geologic faults. Southern California is among the most seismically active areas in the U.S. On average, the region annually experiences roughly 10,000 earthquakes, yet only 15 to 20 of these earthquakes

exceed Magnitude 4.0 on the Richter Scale (USGS, 2017a).[2] Vandenberg SFB is in a zone that is at relatively low risk of experiencing significant earthquake shaking and damage (Branum, et al., 2008). Two Magnitude 7.1 earthquakes – one with its epicenter near Santa Cruz Island (1812) and another with its epicenter 10 miles offshore of Pismo Beach (1927) – likely affected the proposed Action Area (CTE South, 2018). No fault lines cross within the proposed Action Area, although there are several active fault zones that pass within 10 miles, including the Honda, Santa Ynez, and Lompoc Terrace Faults to the south and the Lions Head and Casmalia Faults to the north (**Appendix A, Figure 3.6**) (California Department of Conservation, 2010b). Because there are no active faults on VSFB, there is minimal potential for seismic rupture (CTE South, 2018).

Other geologic hazards pose low to moderate risks to the proposed Action Area as described below (USAF, 2014; CTE South, 2018):

- Liquefaction risk is moderate due to the sands, silty sands, and clayey sands that underlie the proposed Action Area (these soil types are susceptible to liquefaction when coupled with high water levels). However, these risks are mitigated by the fact that strong seismic shaking is not likely to occur in the proposed Action Area.
- Expansive soils have been found under portions of the proposed Action Area and mitigation could be required if significant amounts were encountered during construction. Because of their isolated distribution, risks from expansive soils are minimal in the proposed Action Area.
- Minimal potential for landslides exists due to the generally flat terrain at VSFB.
- Minimal potential for tsunamis to impact VSFB exists due to its location on the Burton Mesa, several hundred feet above sea level.

3.6.4. Soils

Soils throughout VSFB are characterized by coastal sand dunes and alluvium (Dibblee, 1950), and are common to terrace landforms (Natural Resources Conservation Service [NRCS], 2018a).

Perched water[3] and/or excessively wet soils are common throughout VSFB; given these nearby conditions, geotechnical investigations would be conducted prior to construction activities to determine local subsurface conditions in the proposed Action Area. Perched groundwater was observed in 2017 during a nearby geotechnical investigation for Building 2510. Perched groundwater was encountered above the clay and clayey sand layers above the bedrock and attributed to the relatively wet winter season prior to the onset of construction activities at the Building 2510 site (CTE South, 2017).

3.6.4.1. Soils within Proposed WPF Site

Within the proposed WPF site, 84.1 percent of the landscape is underlain by Tangair sands (0 to 2 and 2 to 9 percent slopes), which originated as marine deposits (**Appendix A, Figure 3.7**). These

[2] Richter Scale: "The Richter magnitude scale was developed in 1935 by Charles F. Richter of the California Institute of Technology as a mathematical device to compare the size of earthquakes. The magnitude of an earthquake is determined from the logarithm of the amplitude of waves recorded by seismographs." (USGS, 2017b).

[3] "A perched water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone." (NRCS, 2018b).

soils are predominantly found in the southern, central, and northeastern-most portions of the proposed Action Area associated with the WPF site. Tangair sands are composed of sand and gravelly-sand and are generally characterized by their somewhat poor drainage. However, flooding and ponding are not common on these soil types (NRCS, 2018a).

Other soil types present within the proposed WPF site include the Marina Sand unit (2 to 9 percent slopes), Narlon Sand unit (0 to 5 percent slopes), and sedimentary rock land. Marina sands originated as aeolian deposits and are found in the northern portions of the proposed Action Area. Marina sands are composed of sand and are characterized by their moderately high to high permeability rate and somewhat excessive drainage. Narlon sands originated as clayey marine sediments and are found in the northern sections of the proposed WPF site. Narlon sands are composed of sand, loamy sand, clay, and weathered bedrock, and are characterized by their very low to moderately low permeability rate and moderate drainage. Sedimentary rock land includes residual materials from sandstone and shale units and is characterized by steep slopes (30 to 90 percent) and high runoff rates (NRCS, 2018a).

3.6.4.2. Soils within Power Circuit B5

The following soils are encountered along Circuit B5: Marina Sand unit (2 to 9 percent slopes); Narlon Sand unit (0 to 5 percent slopes); Narlon Loamy Sand (0 to 2 percent slopes); and Tangair Sand (0 to 2 percent slopes) (NRCS, 2018a).

3.6.4.3. Soils within Power Circuit C3

The following soils are encountered along Circuit C3: Corralitos sand (2 to 15 percent slopes); Marina Sand unit (2 to 9 percent slopes); Marina Sand unit (9 to 30 percent slopes); Narlon Sand unit (0 to 5 percent slopes); Narlon Loamy Sand (0 to 2 percent slopes); sedimentary rock land; terrace escarpments; and Tangair Sand (0 to 2 percent slopes). Corralitos sands, originated as alluvial deposits, are composed of sand and are characterized by their moderately high to high permeability rate and somewhat excessive drainage (NRCS, 2018a).

3.7. Water Resources

Water resources and wetlands include surface water and groundwater and their physical, chemical, and biological characteristics. Surface water includes lakes, rivers, streams, and wetlands, while groundwater refers to water below the surface. Under Section 404 of the Clean Water Act (CWA), wetlands are defined as areas that are "inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 C.F.R. Part 328.3). The CWA also defines vernal pools as seasonal wetlands "associated with topographic depression, soils with poor drainage, mild, wet winters and hot, dry summers" (40 C.F.R. Part 232.2).

3.7.1. Regulatory Setting

In California, the State Water Resources Control Board (SWRCB) and the Regional Water quality Control Board (RWQCB) administer the CWA and state water regulations. The CWA mandates that point source discharges to WOTUS, including discharges to surface waters or to the ocean, are subject to the NPDES permit program. In California, there are NPDES General Permits for

municipal, industrial and construction site discharges. The Central Coast RWQCB is the local agency responsible for the VSFB area. See **Appendix B, B.6 Water Resources** for further details. The CWA Section 401 Water Quality Certification from the Central Coast RWQCB is not required under the Proposed Action because no direct impacts to water bodies or wetlands would occur. Further, the CWA Section 404 Permit from the USACE is not required under the Proposed Action because no direct impacts to water bodies or wetlands would occur.

3.7.2. Region of Influence

Vandenberg SFB encompasses portions of two major and four minor drainage basins. San Antonio Creek and the Santa Ynez River represent the major basins, while Shuman Creek, Bear Creek, Cañada Honda, and Jalama Creek comprise the minor basins on VSFB. The Pacific Ocean and the lower Santa Ynez River Lagoon are within the vicinity of the proposed Action Area. In addition, a drainage, Cañada Tortuga, to the north of the proposed Action Area drains to the Pacific Ocean. The proposed Action Area is in both the Santa Ynez River and Cañada Tortuga drainages (**Appendix A, Figure 3.8**).

3.7.3. Surface Water and Floodplains

The Santa Ynez River watershed consists of mostly undeveloped riparian, scrublands, rangelands, and agricultural fields. Flow in the Santa Ynez River is seasonal because of generally very little precipitation from June to November. Higher discharges generally occur during the rainy season, from November to May. The long-term average precipitation is 14.49 inches per water year (SBCFCD, 2019). The portion of the Santa Ynez River that flows through VSFB is typically hydrated throughout the dry season due to the discharge of treated effluent from the Lompoc Regional Wastewater Treatment Plant, which discharges a maximum of 3.5 million gallons per day to the river about eight miles upstream from Pacific Ocean.

Section 303(d) of the federal CWA requires states to identify surface water bodies that are polluted (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. The project is located within the Santa Ynez River watershed, which is included in the 303(d) list of impaired water bodies for several pollutants. Refer to the 2010 California Integrated Report (2010) for a current list of water quality impairments and their sources. Cañada Tortuga was not assessed in this report.

Executive Order 11988, *Floodplain Management*, requires federal agencies to reduce the risk of flood loss, minimize the impact of flood on human safety, and to restore and preserve the natural and beneficial values served by floodplains and requires an evaluation of alternatives prior to proceeding with federal actions that may affect floodplains. The Proposed Action is not subject to EO 11988 requirements because it is not within the 100-year floodplain nor the 500-year floodplain.

The DOD reported in January 2019 that critical installations are at risk of not having sufficient water available to meet their mission needs, otherwise known as water scarcity. The U.S. Government Accountability Office (USGAO) was provisioned to review DOD's identified or potential effects of water scarcity and make recommendations on their results (USGAO, 2019).

Vandenberg SFB was a subject of USGAO's report, and therefore the Proposed Action may be affected by water scarcity.

3.7.4. Groundwater

The proposed Action Area is most proximate to the Lompoc groundwater basin. The Lompoc groundwater basin consists of the Lompoc Plain, Lompoc Terrace, and Lompoc Uplands sub-basins. The proposed Action Area is located on the northern margin of the Lompoc Plain sub-basin, which surrounds the westernmost portion of the Santa Ynez River. The Lompoc Plain sub-basin is bordered on the north by the Purisima Hills, on the east by the Santa Rita Hills, on the south by the Lompoc Hills, and on the west by the Pacific Ocean (Santa Barbara County Public Works Department [SBCPWD], 2012). The Lompoc Terrace and Lompoc Uplands sub-basins are not within the proposed Action Area.

Groundwater quality in the Lompoc Plain sub-basin generally decreases from east to west as the basin nears the Pacific Ocean. For example, areas of recharge in some portions of the eastern Lompoc Plain sub-basin adjacent to the Santa Ynez River contain total dissolved solids concentrations greater than 1,000 milligrams per liter. In the western Lompoc Plain sub-basin, total dissolved solids concentrations are as high as 4,500 milligrams per liter near the coast. In addition, water quality in the Lompoc Plain sub-basin varies between the shallow and middle zones of the aquifer with poorer water quality in the shallow zone (SBCPWD, 2012).

Subsurface investigations at the proposed WPF Site were completed in February and March 2019. During these investigations, groundwater was not encountered in the boreholes while drilling. However, several piezometers were installed, and readings of the groundwater were performed. These piezometers have been installed in the upper 8.5 to 10 feet below ground surface. Readings at these locations were collected on a weekly basis starting the last week of March 2019 through April 2019. The readings indicate that groundwater is present anywhere between 1 to 5 feet depth at these locations. This indicates that groundwater is likely perched, which likely varies seasonally and annually. Often, clayey lenses or other confining layers can produce perched groundwater especially after periods of high rainfall. Perched groundwater can be erratically positioned, and it may be difficult estimating its location and extents.

Based on a review of available groundwater well data from the U.S. Geological Service Groundwater Watch map for SBC, historical groundwater levels range from approximately elevation 240 to 270 feet (North American Vertical Datum of 1988 [NAVD88]) or about 90 to 130 feet below current grades within a few miles of the site.

3.7.5. Jurisdictional Waters and Wetlands

A delineation of potential jurisdictional waters and wetlands was completed within the proposed Action Area in 2019 (MSRS, 2019). Only one site, an unnamed tributary of the Santa Ynez River, which is crossed by the Circuit C3 Corridor, was determined to qualify as WOTUS and WOS (**Appendix A, Figure 3.8**). The barely-defined channel of the ephemeral drainage terminates approximately 230 feet downstream of the proposed Action Area, when the ephemeral surface flow appears to dissipate into subsurface flow. An agricultural field occupies the remaining distance to the Santa Ynez River, approximately 2,360 feet. The portion of the channel overlapping the proposed Action Area is within 4,000 feet of a known WOTUS with which it has

hydrologic connectivity, thereby qualifying it as WOTUS. This channel also qualified as WOS because it is WOTUS, and because of the evidence of a defined channel that demonstrates the presence of surface flow. The stream channel was delineated by mapping the bounds of the low-flow channel. It was predominantly unvegetated with a rocky gravelly bottom. It likely receives some annual flow during extended rain events but was dry at the time of the surveys in February 2019.

The unnamed tributary found to be a non-wetland WOTUS encompasses 0.04 acre and crosses the Circuit C3 Corridor (**Table 3.7**). This tributary is visible on aerial imagery as a broken and variable-width break in the vegetation and shows faint evidence of a bed and bank (**Appendix A, Figure 3.8**). Because the feature was visible on aerial imagery, it was mapped remotely and verified on the ground.

Table 3.7 – Waters of the US and Waters of the State within the Proposed Action Area

Type	Acres
Waters of the US	
Non-wetland WOTUS*	0.04
Waters of the State	
Stream Channel*	0.04
Total Jurisdictional Resources	0.04

* The same feature qualified as both WOTUS and WOS

A series of ephemeral pools in the WPF site did not qualify as WOTUS or WOS. Although the pools are within 4,000 feet (1,219 m) of Cañada Tortuga, a WOTUS, there was no evidence of connectivity between the pool complex and the drainage. No surface flow between the pools and the drainage was observed during multiple field visits during a heavy rain period in March 2019, and no evidence of past flow such as a bed and bank or water marks was observed. In addition, a dirt road crosses just below the lowest pool in the complex. No evidence of flow crossing the road was visible. Furthermore, no pool qualified as a wetland as none met all three parameters, although some did show wetland hydrology and/or supported hydrophytic vegetation.

3.8. Aesthetics and Coastal Zone Resources

3.8.1. Aesthetics

Visual resources are natural and man-made features that give an environment its aesthetic qualities. An impact analysis on visual resources considers visual sensitivity, which is the degree of public interest in a visual resource and concern over adverse changes in the quality of the resource.

Vandenberg SFB spans 35 miles along California's south-central coastline and is located between the Pacific Ocean to the west, the Casmalia Hills to the north, and the Santa Ynez Mountains and Sudden Flats to the south. The proposed Action Area lies 1.5 to 2.0 miles inland of the Pacific Ocean.

The northern portion of VSFB is characterized by large dunes, rolling hills and valleys, and the Burton Mesa. Existing military infrastructure throughout VSFB includes space and missile launch complexes near the coast, and multiple radar towers, telemetry stations, and utility infrastructure. The urbanized cantonment area and airfield represent the developed core of the Base. Open space

accounts for a large portion of the land use outside this core. The open space of VSFB constitutes one of the largest areas of undeveloped land along the entire California coast and provides various scenic views from within the Base and into the Base from the outside.

Existing NRO facilities are adjacent to the proposed WPF site, including Buildings 2500, 2510, 2520, and 3000. The NRO plans to consolidate other buildings to this general vicinity in the foreseeable future. The existing viewshed at the proposed WPF site includes multiple NRO buildings, Air National Guard buildings, facilities along Talo Road and Tonto Road, airfield operations infrastructure, and the 35th Street water tower.

Passenger railroad traffic along a rail line that lies inland from the coast provides the closest views of the Base to the public. About six passenger trains and eight freight trains pass through VSFB daily (VAFB, 2006). Views into some portions of the Base are also possible from SR 246 (West Ocean Avenue) in the Santa Ynez River valley and from SR 1, which runs through the eastern portion of North Base.

Views of the coastline are generally not available from inland locations due to access limitations and intervening topography, and most of VSFB is not visible from public vantage points. The marine traffic off the western border of VSFB consists primarily of fishing vessels and occasional pleasure boats. Visibility from the ocean is limited.

The proposed WPF site is visible to individuals traveling on surrounding roadways within VSFB such as Tangair Road and 13th Street. However, as views of the proposed WPF site are restricted to military personnel and the proposed WPF site is a component of the industrial Base complex, the importance of the onsite visual resources is low.

3.8.2. Coastal Zone Resources

The California Coastal Act (CCA) defines the coastal zone as the water extending seaward to the outer limits of the state's jurisdiction; land extending inland approximately 1,000 yards from the mean high tide line; or land in significant coastal estuarine, habitat, and recreational areas, extending inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less. Portions of VSFB are visible from the coastal zone. Although federal installations such as VSFB are not regulated by coastal zone designations, a visual analysis of coastal zone impacts was performed in 2019. The SLD 30 determined that the Proposed Action will not affect the coastal zone and therefore qualifies for a negative determination as further discussed in **Section 4.8.2** and **Appendix D**.

3.9. Transportation

Transportation addresses transportation systems' conditions and use affecting or affected by the Proposed Action. This includes VSFB and regional roadways and the VSFB airfield. A commercial railroad runs through VSFB, but it would not be used to construct or operate the Proposed Action.

Roadway conditions at VSFB were evaluated based on capacity and traffic volume. The capacity reflects the ability of the road network to meet the demand of the roadway, and depends on the roadway width, number of lanes, intersection control, and other physical factors. The ability of a roadway to accommodate diverse volumes of traffic is conveyed by Level of Service (LOS). The

LOS range from A to F, with each level defined by a range of traffic volume to roadway capacity. LOS A represents the best operating conditions, while LOS F represents the worst operating conditions (**Table 3.8**).

Table 3.8 – Level of Service Scale

LOS	Traffic Condition
A	Traffic flows at or above the posted speed limit and all motorists have complete mobility between lanes.
B	Traffic slightly more congested than LOS A, but speed remains the same. Some restrictions to maneuverability may occur, as motorists may drive side-by-side, limiting lane changes.
C	More congestion than LOS B. Ability to pass or changes lanes not always assured. Common goal for most urban and rural highways. Roads are close to capacity and posted speed limit is maintained.
D	Speeds are somewhat reduced, and motorists are restricted by other cars and trucks. Equivalent to a functional urban highway during commuting hours. Common goal for urban streets during peak hours.
E	Flow becomes irregular and speed varies rapidly without reaching posted limits. Consistent with a road at or approaching its designated capacity.
F	Lowest measure of efficiency. Flow is forced, with all vehicles restricted by those in front. This represents a road in constant traffic jam.

Source: USAF, 2014

On VSFB, roads are categorized as highways, primary, local (secondary roads), and patrol. Primary roads serve large volumes of traffic, are divided, and provide limited access to adjacent land uses. They act as the main circulation routes into and through the cantonment areas and connect to local streets. Local streets provide for traffic movement between primary roads and access roads and provide access to community facilities, parking lots, and housing and service areas. They make up most of the road network in the cantonment area and have frequent traffic stops and low speeds. Patrol roads are remote roads that may be unpaved and are used for security patrol and monitoring of infrastructure. All primary roads on VSFB operate at a LOS between A and C. Local (secondary) roads operate at a LOS between A and B. Informal traffic studies indicate VSFB gates operate at LOS A to C range (USAF, 2016a).

3.9.1. Regional Road Access

Vandenberg SFB is located about five miles north of the City of Lompoc. The primary regional access route to VSFB is U.S. Highway 101, which is a coastal four-lane divided highway connecting northern California to southern California. The connections to U.S. Highway 101 from VSFB are SR 1, SR 135, and SR 246 (**Appendix A, Figure 3.9**).

The SR 1, a major north-south highway, traverses VSFB and provides access to the City of Santa Maria to the northeast, the City of Lompoc to the east, and the City of Santa Barbara further to the southeast. SR 1 serves the VSFB Main Gate and Visitor Center at the intersection with California Boulevard, the major road into the VSFB cantonment area.

The SR 135 and SR 246 are mostly two-lane undivided highways with four-lane rural expressway portions. The SR 135 is the more northerly of the two roads and provides access to SR 1 from U.S Highway 101 to the east and from the Santa Maria / Orcutt area to the north. The SR 246 is

accessible from the south via SR 1 and U.S. Highway 101. The SR 246 continues west from Lompoc and serves the South Base Gate, the primary access for South VSFB. Further west, at the terminus of SR 246, is the Coast Gate, which is normally closed, but is occasionally opened for oversized shipments to South VSFB.

3.9.2. Local Road Access

From SR 1, the proposed Action Area can be accessed via the main VSFB gate at the intersection of SR 1 and California Boulevard. California Boulevard is not continuous as it approaches the proposed WPF site. Vehicles would use Arizona Avenue, Nevada Avenue, or New Mexico Avenue and turn northwest on 29th Street/Tangair Road toward the proposed WPF site. The proposed WPF site can also be reached from the Solvang Gate located just north of SR 246. Vehicles would proceed north on 13th Street and then turn west on Terra Road, follow that road to its intersection with 35th Street, go west on 35th Street, then turn north on California Boulevard, and then turn northwest onto Tangair Road toward the proposed WPF site.

Construction vehicles entering VSFB are required to use the Lompoc Gate located on Santa Lucia Canyon Road. From this gate, vehicles would proceed north on Santa Lucia Canyon Road, then northwest on Washington Avenue, then southwest on New Mexico Avenue, Nevada Avenue or Arizona Avenue, and then turn northwest on 29th Street/Tangair Road toward the proposed WPF site or other components of the Proposed Action.

The WPF personnel would access the site via California Boulevard, Tangair Road, Tow Road, to proposed WPF access road.

3.9.3. VSFB Airfield

The VSFB airfield could be utilized as one option to bring SVs to VSFB. Vandenberg SFB has a long runway (15,000 feet) that was built to accommodate Space Shuttle landings (30 SW, 2010). Near the south end of the runway, the wide taxiway known as the Tow Road heads due south and extends as far as Building 3000. The SVs potentially arriving at the airfield would be transported to the proposed WPF via the Tow Road and the proposed WPF access road that departs westward from the Tow Road.

3.10. Socioeconomics

3.10.1. Regulatory Setting

The regulatory framework for addressing socioeconomics is based on the NEPA requirement for federal agencies to use a systematic and interdisciplinary approach that integrates natural and social sciences in planning and decision making that could impact the human environment (42 U.S.C. Part 4332(2)(A)). The CEQ regulations implementing NEPA state that the "[h]uman environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment" (40 C.F.R. Part 1508.14). The regulations also state that, "[e]ffects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative" (40 C.F.R. Part 1508.8).

3.10.2. Existing Conditions

Vandenberg SFB is in SBC, California. Incorporated cities in the county are Santa Barbara, Santa Maria, Lompoc, Goleta, Carpinteria, Guadalupe, Solvang, and Buellton. Lompoc is the closest incorporated city to VSFB. There are many additional communities and rural populations in unincorporated portions of SBC.

The population of SBC, Lompoc, and Vandenberg Village (a primarily residential area located on SR 1 just east of VSFB) increased from the year 2000 to the year 2020 (**Table 3.9**). The population at VSFB decreased by 2,592 people during the same period. The VSFB population, which includes families of military personnel, is affected by changes in military missions over time.

Table 3.9 – Total Population by Year, 2000–2020

Area	2000	2010	2020
Santa Barbara County	399,347	423,895	448,229
Lompoc	41,103	42,434	44,444
VSFB	6,151	3,338	3,559
Vandenberg Village	5,802	6,497	7,308

Sources: U.S. Census Bureau, 2017; 2018a; 2018b; 2020

Vandenberg SFB is the second largest employer in SBC with about 6,100 full-time equivalent employees (County of Santa Barbara, 2017). The unemployment rate in the county decreased from 4.6 percent in 2017 to 3.6 percent in 2019, before increasing to a high of 8.2 percent in 2020, due in part to the COVID-19 Pandemic, and then decreasing to a low of 3.5 percent in 2022 (**Table 3.10**).

Table 3.10 – Santa Barbara County Unemployment Rate by Year, 2017–2022

Area	2017	2018	2019	2020	2021	2022
Santa Barbara County	4.6%	4.0%	3.6%	8.1%	5.8%	3.5%

Source: U.S. Bureau of Labor Statistics, 2023

The latest data from the U.S. Census Bureau includes the 2021 American Community Survey (ACS) 5-Year estimates. Unemployment rates between 2017 and 2021 averaged higher in Lompoc (8.95 percent) compared to Vandenberg Village (4.9 percent). Unemployment rates for VSFB were not available (U.S. Census Bureau, 2023).

3.11. Human Health and Safety

Hazards associated with some past and present mission activities and operations on VSFB can constrain locations where projects can be sited to ensure the health and safety of workers. The proposed WPF site is not located within known hazard zones (**Appendix A, Figure 3.10**). Toxic hazard zones are areas established downwind of launch site operations to protect workers from exposure to toxic vapors emitted during the transfer or loading of liquid propellants or maintenance of launch systems. These zones can extend 20,000 or more feet from a launch site.

- Missile/Space Launch Vehicle Flight Hazard Zones and Explosive Safety Zones are established under the flight path of missile or space launch vehicle launches to protect personnel from debris fall-out under the launch trajectory. Explosive safety zones are

established from 75 feet to 5,000 feet around launch sites and buildings where rocket propellants are stored to protect personnel from potential explosive hazards. Both hazard zones must be evacuated before any launch.

- Radiofrequency Radiation Hazard Areas are established around transmitters on VSFB that can present radiation hazards to people and potentially detonate electro explosive devices. The hazard area size varies, depending on the transmitter power and antenna reception. Airfield Clear Zones, Lateral Clear Zones (LCZs), and Accident Potential Zones (APZs) are established around the VSFB airfield runway and contain restrictions on certain land uses. Clear zones and LCZs are areas where the accident potential is so high that land use restrictions prohibit reasonable use of the land. Clear zones occur at both ends of the runway, and LCZs extend 1,000 feet from both sides of the centerline along the length of the runway. The ground surface within the LCZ must be graded to certain requirements and kept clear of fixed or mobile objects, except for necessary navigational aids and meteorological equipment. There are two APZs, APZs I and II, which are less critical than clear zones but still possess significant potential for accidents. Acceptable uses within APZ I areas include industrial or manufacturing, communication and utilities transportation, wholesale trade, open space, recreation, and agriculture, but not uses that concentrate people in small areas. Acceptable uses within APZ II areas include low business services and commercial retail trade uses of low intensity or scale of operation, but not high-density operations. Circuit B5 crosses the APZ I area at the south end of the airfield.
- Air Installation Compatible Use Zones are areas where certain land uses are restricted due to the combination of the potential for accidents and noise and the need for clearance of obstacles.
- Unexploded ordnance Closure Areas are areas on VSFB that were used as ordnance training ranges and potentially contain unexploded ordnance. On 27 September 2010, all areas known or suspected to contain unexploded ordnance on VSFB were closed to non-mission/recreational activities. Any proposed work in these areas must be coordinated with the Weapons Safety and Explosive Ordnance Disposal offices. Depending on the area, escorts may or may not be required.

3.12. Hazardous Materials and Waste Management

3.12.1. Regulatory Setting

Hazardous materials and wastes are those substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9675), the Toxic Substances Control Act (15 U.S.C. 2601-2671), the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (RCRA) (42 U.S.C. 6901-6992), and Title 22 of the CCR. These laws and regulations address substances that when released, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health or welfare, or to the environment. Hazardous waste management at VSFB complies with the RCRA, Subtitle C (40 C.F.R. Part 240- 299), and with California Hazardous Waste Control Laws as administered by the California Environmental Protection Agency Department of Toxic Substances Control, under CCR Title 22, Division 4.5.

3.12.2. Hazardous Materials Management

Hazardous materials potentially used during constructing the proposed WPF would include gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, ethylene glycol, and welding materials/supplies (e.g., pressurized gasses). During operation, various hazardous materials would be used in large quantities. The proposed WPF would be classified as a hazardous processing facility where compounds, such as hydrazine and nitrogen tetroxide, would be present during propellent loading operations.

Hazardous material use on VSFB is regulated by the AFMAN 32-7002 *Environmental Compliance and Pollution Prevention, Chapter 3 Hazardous Material Management*, which establishes procedures and standards that govern hazardous materials management on DAF installations. Hazardous materials spills emergency response procedures are established in VSFB's Installation Emergency Management Plan (IEMP) 10-2 (USSF, 2021).

Numerous types of hazardous materials are used to support SLD 30's various missions and general maintenance operations. These materials range from common building paints to industrial solvents and hazardous fuels. Hazardous materials management, excluding hazardous fuels, is everyone's or every organization's responsibility.

Under SLD 30's Hazardous Materials Management Plan, SLD 30 requires that all hazardous materials be obtained through the VSFB 30 SW Hazardous Materials (HAZMART), a Base service that centrally manages procuring hazardous materials. Specifically, the HAZMART approves hazardous materials use only after it reviews a commodity's composition and how it will be used to ensure compliance with environmental, safety, and occupational health regulations and policies. Before releasing hazardous materials to the user, HAZMART staff ensure a copy of the Safety Data Sheet is available for Emergency Planning and Community Right-to-Know Act Tier II reporting and verifies that the material is suitable for use on VSFB. By providing handling and use information, SLD 30 controls potential hazardous material misuse, accounts for the types of hazardous materials used on VSFB, and prepares usage and emissions reports required by federal, state, and local laws and regulations.

3.12.3. Hazardous Waste Management

Hazardous waste regulations require that hazardous wastes be handled, stored, transported, disposed of, or recycled according to defined procedures. The SLD 30 Hazardous Waste Management Plan 32-7043-A outlines the procedures to be followed for hazardous waste management on VSFB. The Plan's purpose is to provide a comprehensive reference detailing the policies and procedures to be implemented on VSFB to ensure hazardous waste is handled and managed responsively to mission requirements, protects personnel safety, protects the environment, cost effective, and complies with applicable law and regulations. Accordingly, the Plan references federal, state, and local laws and regulations, and USAF and USSF directives that establish definitive compliance requirements (VSFB, 2022).

3.12.4. Installation Restoration Program

The Installation Restoration Program (IRP) was implemented in 1984 in response to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to identify, characterize, and restore hazardous substance release sites on DoD property.

Investigation and remediation under the IRP are accomplished with technical oversight by the Department of Toxic Substances Control and the Central Coast Regional Water Quality Control Board.

In 1993, VSFB (VAFB at the time) initiated a base-wide preliminary assessment and site investigation under the IRP. The assessment identified 136 IRP sites of known or probably hazardous chemical releases, 168 areas of concern (AOCs) where hazardous chemicals were used or stored, and 666 areas of interest (AOIs) where hazardous chemicals were likely to have been used or stored. In 2012, all AOIs and AOCs remaining to be investigated were validated as IRP sites. Compliance Program AOCs and additional sites from the base-wide underground storage tank (UST) program were also validated as IRP sites at the time. There are currently 556 IRP sites in the database of record throughout VSFB, with 46 sites remaining under investigation or in active remediation. Other sites have been closed or are subject to land use controls. Various contaminants could be present at these sites including trichloroethylene, polychlorinated biphenyls (PCBs), volatile organic compounds, total petroleum hydrocarbons, asbestos, and other hazardous contaminants.

Air Force Civil Engineer Center staff for the proposed Action Area did not identify any IRP site, AOI, or AOC issue.

3.12.5. Hazardous Materials and Waste Transport

The U.S. Department of Transportation (USDOT) regulates transporting hazardous materials and waste. Anyone transporting hazardous materials or waste must obtain a USEPA transporter identification number. The USEPA incorporated USDOT statutes (49 U.S.C.) into its regulatory scheme and has added other requirements, such as record keeping and spill cleanup. Hazardous materials and waste transporters at VSFB are regulated by the above laws, as are USDOT certified transporters. The DAF follows the California Department of Transportation requirements for traveling with hazardous materials on SR 1, which runs through part of the eastern edge of VSFB, and SR 246, which physically divides VSFB into North and South VSFB.

3.12.6. Environmental Baseline Survey

An Environmental Baseline Survey (EBS) was performed in March and April 2019 IAW Air Force Instruction (AFI) 32-7020, Environmental Restoration Program (Gannett Fleming, 2019b).

The proposed WPF site is categorized as an EBS Property Categorization Category 1, indicating that this is an area where no release or disposal of a hazardous or petroleum substance has occurred (including no migration of these substances from adjacent areas).

Circuit B5 is categorized as an EBS Property Categorization Category 3, indicating that area MY251 has benzene concentrations in soil vapor that exceed the industrial screening level of 420 $\mu g/m^3$ at depth intervals measured at 5 feet, 15 feet, and 20 feet below the ground surface along 11th Street, north of New Mexico Avenue. This occurrence is isolated and meets the code description where a release, disposal and/or migration of a hazardous substance has occurred, but at concentrations that do not require removal or remedial response.

Circuit C3 is categorized as an EBS Property Categorization Category 1, indicating that this is an area where no release or disposal of a hazardous or petroleum substance has occurred (including

no migration of these substances from adjacent areas).

If a real property transaction takes place, a Recertification of the EBS will need to be performed IAW AFI 32-7020 since it has been more than 180 days since initial EBS completion.

3.13. Solid Waste Management

The California Department of Resources Recycling and Recovery (CalRecycle) oversees solid waste facilities operation throughout the State of California. Solid waste regulated by CalRecycle includes beverage containers, construction/demolition, compostable materials, electronic waste or E-waste, household hazardous waste, organics, used oil, universal waste, and waste tires (CalRecycle, 2018).

3.13.1. Regulatory Setting

The AFMAN 32-7002 *Environmental Compliance and Pollution Prevention,* Chapter 6 *Integrated Solid Waste Management*, specifies solid waste management requirements, which requires installations to strive to divert as much solid waste as economically feasible and to minimize the use of environmentally damaging materials. If using such materials cannot be avoided, the spent material or waste is reused or recycled whenever feasible. Spent material or waste that cannot be reused or recycled is discarded in an environmentally safe manner, consistent with all applicable laws and requirements, including RCRA. The Integrated Solid Waste Management Plan for VSFB requires source segregation of recyclable materials to the greatest extent possible (USSF, 2022). Executive Order 14057 requires federal agencies to implement waste reduction and recycling measures.

The Pollution Prevention Act of 1990 focused the national approach to environmental protection toward pollution prevention (P2). Implementing the USAF Environmental Management System carries P2 a step further toward mission sustainability principles. The SLD 30 implements the Environmental Management System and its associated P2 program elements by following the P2 hierarchy:

- Reduce (source reduction to prevent the creation of wastes);
- Reuse (keep item or material for its intended purpose);
- Recycle (use item or material for some other beneficial purpose); and
- Dispose (in an environmentally compliant manner, only as a last resort).

3.13.2. Existing Conditions

Solid waste is disposed of at various locations (e.g., garbage cans, dumpsters, and centralized garbage/recycling bins) throughout VSFB. As of 2010, the average quantity of solid waste generated at VSFB was 186.5 tons per operating day; 40.1 tons per day of solid waste were buried in the now closed VSFB landfill, and 146.4 tons were diverted offsite (USAF, 2018b).

Wastes are transported off VSFB to two alternative disposal sites, the Tajiguas Sanitary Landfill operated by SBC Public Works Department (roughly 49 miles away) and the Santa Maria Regional Landfill (roughly 21 miles away). The sites are operated under state minimum standards for Class III disposal facilities as established by the SWRCB and CalRecycle. Solid waste management is regulated under various laws and regulations designed to reduce and properly dispose of solid

waste generated from activities related to Base mission requirements, housing, personnel, and construction.

3.14. Utilities

Existing utilities on VSFB include electrical, natural gas, communications, potable water supply, stormwater, and wastewater systems. While these utilities are available near the proposed WPF site, modifications and connections are required to provide final routing of these utilities to the proposed site.

3.14.1. Electricity

The SLD 30's electrical distribution system uses multiple voltages and substations to distribute power. Vandenberg SFB is served by two 70-kV overhead circuits from Pacific Gas and Electric. These circuits route through a 70-kV switching station to two major systems which consist of a north loop and a south loop. The north loop serves Substations B, D, E, and F and the south loop services Substations C, N, and K. Substation A is served directly from the 70-kV switching station and is not part of the north or south loops. Substations B and C would likely serve the proposed and alternative WPF sites due to proximity and adequate spare electrical loading capacity availability (Power Engineers, 2018). Under the Proposed Action, new dedicated power circuits from both substations would be installed to supply power to the proposed WPF.

There are two power generation sources that supplement power at VSFB. The South Vandenberg Power Plant is a natural gas power plant near the southern edge of the VSFB with 12.47-kV connections to Substations K and N. There is also a photovoltaic solar plant that provides power to the Base (Power Engineers, 2018).

3.14.2. Natural Gas

The Southern California Gas Company supplies natural gas (VAFB, 2015). The 30 CES manages natural gas distribution on VSFB. Under the Proposed Action, the proposed WPF would be supplied with natural gas via a connection to an existing two-inch gas line that runs along California Boulevard.

3.14.3. Communications

Vandenberg SFB's communications system consists of telephone, radio, and microwave systems transmitted with copper wire, optical fiber, and coaxial type cables, as well as microwave, satellite, and other antennas (VAFB, 2015). Secured and unsecured communications line and hubs are present at or near NRO-occupied Buildings 3000, 2510, and 2500. Under the Proposed Action, the proposed WPF would be supplied with communications connections to existing infrastructure from these or other locations.

3.14.4. Potable Water Supply

Vandenberg SFB's potable water supply was historically obtained solely from groundwater sources. Since October 1997, SLD 30 has purchased potable water from the Central Coast Water Authority (CCWA). During non-drought periods, this is the principal source of VSFB's water supply. The CCWA obtains State Water (SW) Project water via the Coastal Branch of the

California Aqueduct, which does not draw from local aquifers (American Water, 2018). The maximum annual SW Project allotment to VSFB is 6,050 acre-feet per year, equal to 1.97 billion gallons per year or 5.4 million gallons per day, although it is extremely rare when a full allotment is available from the SW Project. The VSFB's 5-year average daily demand for potable water from 2017 through 2021 was approximately 2.32 million gallons per day (equal to 1,611 gallons per minute), which can be satisfied when a full SW Project allotment is not available.

According to the 30 SW (prior to transitioning to SLD 30) 2010 General Plan the maximum daily demand for potable water is 5,600 gallons per minute, which cannot be met by the SW Project allotment rate. However, during times of peak demand and/or when SW Project water is not available, four groundwater wells located in the San Antonio Groundwater Basin can augment the SW supply. These four wells have an approximate capacity of 3,800 gallons per minute (VAFB, 2015).

American Water, a private water utility company, owns and manages the water distribution system at VSFB. Existing water capacity is sufficient to support fire suppression requirements at the proposed WPF site. However, to provide the necessary flows and pressures for fire suppression fire pumps would be required (Gannett Fleming, et al., 2018).

3.14.5. Stormwater System

The Santa Ynez River is the closest major stormwater drainage. High discharge and flooding may occur in the Santa Ynez River from November through April during periods of high precipitation, and there may be very little or no discharge during the drier months (VAFB, 2015).

The SLD 30's stormwater system diverts stormwater to low-lying areas as surface flow via streets, concrete-lined gutters, earthen ditches, and natural drainage systems. This stormwater drainage system is predominantly concrete-lined channels and subsurface piping, which generally divert the water to several natural drainages. Around the proposed Action Area, these drainages discharge into the Santa Ynez River (VAFB, 2015).

The proposed WPF site is currently undeveloped, with no stormwater drainage improvements. Surface runoff drains to the north into the Cañada Tortuga ravine.

Post-construction stormwater controls consistent with the NPDES Municipal General Permit and the VSFB Post-Construction Storm Water Standard must be incorporated into VSFB project designs. Prior to constructing a project, the construction contractor is required to obtain a NPDES Construction General Permit for the project. A Construction General Permit covers construction sites disturbing one or more acres of land. Construction contractors are responsible for developing a site-specific construction Stormwater Pollution Prevention Plan (SWPPP) or Erosivity Waiver and providing them to 30 CES/CEIE. Construction contractors are also responsible for implementing the Stormwater Pollution Prevention Plan; implementing and maintaining Best Management Practices (BMPs); performing inspections, monitoring, and analysis; and complying with Notice of Termination requirements.

3.14.6. Wastewater System

There are no existing connections to the wastewater system at the proposed WPF site. American Water, the owner and operator of the wastewater collection system at VSFB, would provide sewer

service to the proposed WPF site via a new force main from the proposed WPF site to an existing sewer lift station located northeast of Building 3000 (Gannett Fleming, et al., 2018). Wastewater from VSFB flows off-Base to the Lompoc Regional Wastewater Reclamation Plant, owned and operated by the City of Lompoc Utility Department. The SLD 30 has a discharge permit with the City of Lompoc Utility Department.

3.15. Land Use

Vandenberg SFB is located within SBC northwest of the City of Santa Barbara and south of the City of Santa Maria. The landscape of SBC is largely composed of agricultural lands and natural forest. Spanning more than 99,000 acres, VSFB accounts for roughly six percent of SBC's total land area. About 67 percent of VSFB is classified as natural open space. The remaining areas include residential, commercial, industrial, service, and administrative activities, requiring 520 miles of roads, 17 miles of railroad tracks, and approximately 1,000 buildings (DoD – Missile Defense Agency [MDA], 2008). Portions of VSFB are commonly referred to as North Base and South Base, with the Santa Ynez River and SR 246 (West Ocean Avenue) serving as the informal dividing line (VAFB, 2006).

There are 12 land use designations throughout VSFB (VAFB, 2015) including: Administrative, Air Education and Training Command, Agriculture/Grazing, Airfield, Community (Commercial and Service), Housing, Industrial, Launch Operations, Medical, Open Space, Outdoor Recreation, and Water/Coastal.

The proposed Action Area is in the North Base portion of VSFB, just south of the main airfield. Most existing development in this portion of VSFB includes industrial, launch complexes, and open space (DoD - MDA, 2008). The existing land use classification for the proposed WPF site is primarily open space (**Appendix A, Figure 3.11**) (VAFB, 2015).

Circuit B5 would occur in the following land use classification types: Industrial, Open Space and NRO Launch Operations. Circuit C3 would primarily involve land classified as Open Space with a minor component of Industrial (VAFB, 2015).

4. ENVIRONMENTAL CONSEQUENCES

4.1. Air Quality

4.1.1. Significance Thresholds

The USEPA General Conformity Rule (GCR) *de minimis* thresholds are used to provide an indication of the significance of potential impacts to air quality. These thresholds do not trigger a regulatory requirement; however, they provide a warning that the action is potentially significant. It is important for one to note that these *de minimis* thresholds only provide a clue to the potential impacts to air quality.

Given the GCR *de minimis* thresholds are the maximum net change an action can acceptably emit in non-attainment and maintenance areas, these threshold values would also conservatively indicate emissions from a Proposed Action within an attainment area would also be acceptable. A level of 100 tons per year is used based on the GCR *de minimis* threshold for the least severe non-attainment classification for all criteria pollutants (see 40 C.F.R. 93.153). The threshold level of

significance for air quality is defined as a violation of an ambient air quality standard or regulatory threshold.

4.1.2. Proposed Action

4.1.2.1. Construction

The Proposed Action includes constructing the proposed WPF, including the main SV processing facility with up to four bays, an integral utility plant for mechanical and electrical site support systems, a waste fuel and oxidizer propellant area, a gas storage area and the necessary security perimeter fencing, personnel entrances, and vehicle gates. Proposed WPF construction phases include site grading, trenching, building construction, and paving.

The Proposed Action also includes constructing two power circuits. Power circuits construction phases include site grading, trenching, and re-paving.

4.1.2.2. Heating

Heating the proposed WPF would be done using three natural gas boilers, each with a rated capacity of 15 million British thermal units per hour. Only two boilers will operate at any time; the third boiler will provide redundancy. The boilers will be capable of burning Number 2 fuel oil/diesel fuel as a back-up fuel.

4.1.2.3. Emergency Generators

Three, two-megawatt emergency generators are proposed for emergency back-up power. Only two generators would operate at any time; the third generator would provide redundancy. The proposed WPF would have one fire pump engine. The emergency generators and fire pump would burn Number 2 fuel oil/diesel fuel.

4.1.2.4. Tanks

Two, 10,000-gallon tanks are proposed for boiler diesel back-up fuel and to feed the generator and fire pump engine day tanks. Each generator and the fire pump will have small day-tanks for fuel storage. The small day-tanks are assumed to have negligible contributions to air emissions.

4.1.2.5. Personnel

During constructing the proposed WPF, civilian personnel would be onsite to oversee the construction process and support contractors would be onsite to conduct construction activities. Upon operating the proposed WPF, personnel would be onsite daily to operate the facility. Construction and operational personnel round-trip commuting would contribute air emissions from vehicle exhaust and was included in the emissions model.

4.1.2.6. SF_6

The Proposed Action would not entail installing SF_6 emitting circuit breaks or puffer switches to electricity transmission and distribution equipment.

4.1.2.7. Air Impact Analysis

The DAF's Air Conformity Applicability Model (ACAM) analyzed the potential air quality impact(s) associated with the Proposed Action per AFMAN 32-7002 *Environmental Compliance and Pollution Prevention, Chapter 4 Air Quality Compliance and Resource Management*; the EIAP (32 C.F.R. 989); and the GCR (40 C.F.R. 93 Subpart B). The intent of ACAM is to determine if the GCR applies to projects on federal property. The DAF ACAM significance thresholds are defaulted to DAF insignificance indicators; GCR *de minimis* thresholds are included for comparison purposes.

The ACAM estimated the total combined direct and indirect emissions associated with the Proposed Action on a calendar-year basis for the "worst-case" and "steady-state" (net gain/loss upon action fully implemented) emissions. The worst-case year emissions were compared against the DAF insignificance indicators and GCR *de minimis* thresholds. Anticipated criteria pollutant emissions for worst-case scenarios (varied by year per pollutant) and steady-state (year 2027) are included in **Table 4.1** and **Table 4.2**, respectively.

Table 4.1 – Worst-Case Anticipated Pollutant Emissions by Year

		INSIGNIFICANCE INDICATOR		GENERAL CONFORMITY DE MINIMIS THRESHOLDS		
Pollutant	**Action Emissions (ton/year)**	**Indicator (ton/year)**	**Exceedance (Yes or No)**	**Threshold (ton/year)**	**Exceedance (Yes or No)**	**Anticipated worst-case year**
VOC (Volatile Organic Compound)	0.523	100	No	100	No	2026
NO_x (Nitrogen Oxides)	3.822	100	No	100	No	2026
CO	4.185	250	No	100	No	2026
SO_x (Sulfur Oxides)	1.014	250	No	100	No	2026
PM_{10}	37.150	250	No	100	No	2024
$PM_{2.5}$	0.174	250	No	100	No	2026
Pb	0.000	25	No	25	No	N/A (zero emissions per year)
NH_3	0.029	250	No	100		2026
CO_2e	2679.4	-	N/A	-	N/A	2026

Source: ACAM Report Record of Air Analysis, 2023, Appendix D. GCR thresholds for attainment/unclassified areas are not available, therefore maintenance area thresholds are used for comparison purposes.

Table 4.2 – Steady-State Anticipated Pollutant Emissions, 2027

		INSIGNIFICANCE INDICATOR		GENERAL CONFORMITY DE MINIMIS THRESHOLDS	
Pollutant	**Action Emissions (ton/year)**	**Indicator (ton/year)**	**Exceedance (Yes or No)**	**Threshold (ton/year)**	**Exceedance (Yes or No)**
VOC	0.261	100	No	100	No
NO_x	2.939	100	No	100	No
CO	2.378	250	No	100	No
SO_x	1.010	250	No	100	No
PM_{10}	0.165	250	No	100	No
$PM_{2.5}$	0.145	250	No	100	No
Pb	0.000	25	No	25	No
NH_3	0.015	250	No	100	
CO_2e	2290.7	-	N/A	-	N/A

Source: ACAM Report Record of Air Analysis, 2023, Appendix D.

The ACAM Report Record of Air Analysis provides a summary of the analysis (**Appendix D**). Although SBC is in attainment and/or unclassified, none of the estimated emissions associated with the Proposed Action are above the DAF insignificance indicators nor GCR *de minimis* thresholds, indicating no significant impact to air quality. Therefore, no further air assessment is needed.

The California Emissions Estimator Model (CalEEMod) also analyzed potential air quality impact(s) associated with the Proposed Action. Inputs like those used in the ACAM were utilized for the CalEEMod. Results of the CalEEMod are included within **Appendix D**.

Based upon the results of the CalEEMod, the estimated emissions from construction do not exceed 25 tons/year for any pollutant, and offsets would not be required pursuant to the rules and regulations of the SBCAPCD. Before installing/constructing the generators, boilers, and fire pumps, an SBCAPCD issued Authority to Construct permit will be required.

Estimated emissions from the operation of the proposed project indicate the facility would need to obtain an SBCAPCD issued Permit to Operate. The emission estimates provided in the CalEEMod indicate the facility is not a major source of criteria or greenhouse gas pollutants and therefore would not require a Title V operating permit. Due to emission levels associated with operation, thresholds for an Air Quality Impact Analysis would not be exceeded and the analysis is unlikely to be required as a part of the Permit to Operate or Authority to Construct permit applications.

Effects of the Proposed Action on fugitive dust are expected to be minimal. No demolition is necessary and construction activities would adhere to the EPMs listed in **Appendix A, Exhibit 2.3**. Therefore, effects of the Proposed Action on fugitive dust would be less than significant.

4.1.3. No Action Alternative

Under the No Action Alternative, the Proposed Action would not be taken. Therefore, no air quality and no GHG impacts would occur.

4.2. Climate

4.2.1. Significance Thresholds

CARB has been inventorying GHG emission trends in California since 2000. Peak GHG emissions were recorded in 2004 at 486.2 million metric tons of CO_2e, with an average annual decline of emissions recorded since 2008 (CARB, 2022a). In accordance with the USEPA's Greenhouse Gas Reporting Program (GHGRP), codified at 40 C.F.R. Part 98, facilities are generally required to submit annual reports of GHG emissions if the emissions rate exceeds 25,000 metric tons of CO_2e per year from covered sources (USEPA 2023b). In VSFB's case, the sources covered would be general stationary fuel combustion sources as per 40 C.F.R. Part 98 Subpart C. According to VSFB, the Base's CO_2e annual emissions have remained below the GHGRP 25,000 metric ton reporting threshold. A review of USEPA's interactive website Facility Level Information on Greenhouse Gases Tool (FLIGHT) confirmed this, since VSFB is not a reporting facility under the GHGRP as of 2021.

4.2.2. Proposed Action

The ACAM Report Record of Air Analysis prepared in 2023 for this project includes projections for annual CO_2e emissions. The model presumes a proposed start date of 2024 and predicted steady state operations would be reached by 2027 with a GHG emissions rate of 2,290.7 metric tons of CO_2e per year. The predicted emissions for the Proposed Action would not exceed GHGRP thresholds. Vandenberg SFB does not anticipate exceeding the GHGRP thresholds as a result of the Proposed Action.

4.2.3. No Action Alternative

Under the No Action Alternative, the Proposed Action would not be taken. Therefore, no changes to the GHG emissions at VSFB would occur.

4.3. Noise

4.3.1. Significance Thresholds

Noise impacts from a project would be considered significant if, as per the Occupational Safety and Health Administration (OSHA) regulations, employees are subject to a sound exceeding an equivalent sound level (Leq) of 90 dB for an eight-hour period.

4.3.2. Proposed Action

According to OSHA regulations, employees should not be subjected to sound exceeding a Leq of 90 dB for an eight-hour period. This sound level increases by five dB with each halving of time (e.g., four-hour period at 95 dB). Exposure up to an Leq of 115 dB is permitted for a maximum of only 15 minutes during an eight-hour workday and no exposure above 115 dB is permitted. For this analysis, OSHA standards are used as the "not to exceed" criteria as they are the most appropriate standards available. In addition, for purposes of this EA "employees" would refer to personnel working on or visiting VSFB that are not associated with Proposed Action activities.

Instances of increased noise are expected during the Proposed Action construction phase. Typical construction equipment and operation noise levels are presented in **Table 4.3**.

Table 4.3 – Typical Noise Levels of Typical Construction Equipment

Construction Equipment	Typical Noise Level (dBA) at 50 Feet from Source
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	81
Grader	85
Jack Hammer	88
Loader	85
Paver	89
Pneumatic Tool	85
Pump	76
Roller	74
Saw	76
Scraper	89
Shovel	82
Truck	88

Source: FTA, 2006

Generally, for estimating noise emission, sound from a stationary source will diminish approximately five A-weight decibels (dBA) with each doubling of distance (FTA, 2006). For example, if noise from a source reaches 75 dBA at 50 feet, it will be 70 dBA at 100 feet, 65 dBA at 200 feet, 60 dBA at 400 feet and so on.

The proposed WPF site and Circuit C3 are not located adjacent to sensitive receptors, therefore adverse impacts resulting from construction noise are expected to be less than significant. A single sensitive receptor, the VSFB family campground, is located approximately 1,000 feet from Circuit B5. Given the distance of the VSFB family campground from the Circuit B5, adverse impacts resulting from construction noise are expected to be less than significant.

Noise would be generated from operating the proposed WPF and the vehicles associated with it. Aside from negligible heating, ventilation, and air conditioning related noise, most facilities on military bases do not generate high levels of noise themselves. Some industrial-related facilities may produce noise, and during power outages, operating emergency generators could cause minor, short-term noise impacts. The noise impact created by facility and vehicle operations; however, is rarely considered significant. The proposed WPF site and Circuit C3 are not located adjacent to sensitive receptors; therefore, adverse impacts resulting from operational noise are expected to be less than significant. Given constructing Circuit B5 would require burying the

electric lines, reducing or eliminating any noise generated by their operation, there would be no adverse impacts to noise associated once operational.

4.3.3. No Action Alternative

Under the No Action Alternative, the Proposed Action would not be taken. Therefore, no noise impacts would occur.

4.4. Biological Resources

4.4.1. Significance Thresholds

Impacts on biological resources would be considered significant if listed species or their habitats, as designated by federal agencies, were affected directly or indirectly by project-related activities. In addition, impacts on biological resources would be considered significant if a substantial loss, reduction, degradation, disturbance, or fragmentation occurred to the habitat or population of a native species.

4.4.2. Proposed Action

4.4.2.1. Vegetation

Vegetation communities and habitats within and adjacent to the proposed Action Area support federally listed threatened and endangered plant and wildlife species described below. The total potential loss of natural vegetation from constructing the facility, access road, installing new electrical lines and poles, and extending utilities to the facility would be approximately 108.8 acres represented by 14 different vegetation types. This assumes that the entire Action Area of 123.4 acres would be impacted during constructing and operating the Proposed Action. The Proposed Action was conceived to minimize vegetation disturbance to the greatest extent practicable. Disturbances due to construction activities would be kept to the minimum extent necessary. Native vegetation that is disturbed or removed in any areas temporarily impacted will be revegetated with local natives free of weeds and invasive species. Implementing the EPMs listed in **Appendix A, Exhibit 2.3** would reduce impacts on vegetation to less than significant.

4.4.2.2. Wildlife Species

An increase in dust, noise, and other construction related disturbances may indirectly and temporarily affect wildlife species in habitat surrounding the Proposed Action. Temporary disturbances that may be associated with the Proposed Action could potentially disrupt foraging, dispersal, and roosting activities amongst wildlife species in the area. These temporary disturbances due to human presence, noise, dust, etc., could cause common bird and wildlife species to avoid the work area and surrounding areas during construction. However, human activity and noise exists in nearby areas due to industrial and airfield operations. Common wildlife species are adapted to some level of anthropogenic disturbance and would most likely continue using adjacent areas and not be adversely affected. Therefore, temporary, incidental disturbances during construction would not result in adverse indirect impacts to wildlife species.

During vegetation clearing and construction, wildlife species individuals may be injured or killed due to using heavy equipment in this area. However, a qualified biological monitor would be

present during construction activities to ensure the extent of the construction activities are limited to the minimum area necessary to accomplish project activities. If practicable, native wildlife species would be relocated to the nearest suitable habitat to avoid direct impacts.

As described above, implementing the Proposed Action would potentially result in the permanent loss of plant communities that provide habitat for common wildlife species. However, the quantity of habitat that would be permanently lost would not measurably reduce regional populations of common wildlife species. Natural riparian and wetland habitats were avoided, by design, or spanned by the Proposed Action and would not be degraded or destroyed. As a result, no direct significant adverse impacts to common wildlife species should occur.

4.4.2.3. Listed Species

Potential impacts of the Proposed Action on state and federally listed species are discussed below. Implementing the EPMs outlined in **Appendix A, Exhibit 2.3** would ensure that impacts on state and federally listed species would be minimized.

Lompoc Yerba Santa

Project activities would result in temporary short-term loss and permanent long-term loss of vegetation within the proposed Action Area. The Action Area around Circuit C3 does not encroach within 160 feet of the 35th Street population of LYS. Approximately 63.13 acres of Maritime chaparral will be removed throughout the proposed Action Area; Maritime chaparral is potential habitat for LYS. Lompoc yerba santa has not been documented within the Action Area. Implementing the EPMs would ensure that LYS will not be disturbed. A qualified biological monitor would survey any potentially impacted areas for LYS prior to vegetation removal or construction to ensure no LYS are present. The monitor would also ensure that the distance between the 35th Street population and the construction area remains at least 150 feet.

Impacts to LYS were considered during the analysis of this project. By completely avoiding this species during the project design and implementing environmental protection measures (Appendix Z, Exhibit 2.3), the DAF determined that the Proposed Action should have "no effect" on LYS. Furthermore, the SLD 30 Integrated Natural Resources Management Plan (INRMP), Section 2.3.2.2 (Arctostaphylos Chaparral, Management) states that construction or development should avoid intact stands of chaparral and replace and enhance impacts are 2:1 (restored:impact). Therefore, impacts created to Maritime chaparral will be compensated for by existing INRMP programs, enhancing 126.26 acres.

Vernal Pool Fairy Shrimp (VPFS)

The Proposed Action was designed to avoid direct and indirect Impacts to any potentially suitable habitat for VPFS. During construction, the limit of disturbance will be minimized, vernal pools within 25 feet of the construction area will be protected with orange construction fencing, and proper erosion and sediment control measures would be implemented.

Impacts to VPFS were considered when analyzing this project. By completely avoiding this species during the project design and by implementing EPMs (**Appendix A, Exhibit 2.3**), the Proposed Action would not affect VPFS.

California Red Legged Frog (CRLF)

The Proposed Action was developed to avoid direct and indirect impacts to wetlands, vernal pools, and riparian areas that are considered potential aquatic habitats for CRLF. There are no impacts proposed in wetlands or pools within the proposed WPF facility Action Area. Circuit B5 Corridor was routed to avoid impacts to wetlands and pools along roads in the cantonment. Circuit C3 will be constructed using overhead poles and lines, thereby avoiding impacts to potential CRLF aquatic habitat. Much of the proposed Action Area would be considered potential upland and dispersal CRLF habitat due to nearby known CRLF localities and potential aquatic habitats. As such, CRLF may be found within the Action Area and, therefore, potentially affected by construction activities. Individuals could potentially be injured or killed if present during construction activities. However, this risk would be reduced by implementing EPMs outlined in **Appendix A, Exhibit 2.3** before vegetation clearing and when working near suitable CRLF habitat. One day before vegetation removal, a qualified biologist would conduct surveys for CRLF within the area to be impacted and relocate any CRLF present to the nearest suitable habitat outside of the impacted area. The monitor would also be present during vegetation removal and construction activities to relocate any CRLF encountered. The proposed WPF building site would be surrounded by three-foot-high silt fencing to inhibit wildlife, including CRLF, from entering the site. The fence would be monitored daily by the biological monitor for potential breaches or other issues.

The former 30 SW conducted ESA Section 7 consultation with the USFWS and determined the Proposed Action "may affect and is likely to adversely affect" the CRLF as per the BO(**Appendix D**). By implementing the EPMs outlined in the BO, the effects to CRLF would not be significant (**Appendix D**).

4.4.2.4.Special Status Species

Migratory Birds

The Proposed Action was developed to avoid and minimize disturbance to nesting habitat to the extent feasible. Habitat impact avoidance and minimization was achieved by combining numerous utility lines into shared corridors, re-using existing disturbed areas for the power circuits, and reducing the WPF footprint. However, there will be temporary and permanent vegetation impacts that will result in losing nesting habitat and potentially disrupting nesting birds. During final design and constructing the WPF the limits of earth disturbance would be further reduced to minimize the impacts to migratory bird habitats. If practicable, any vegetation clearing will occur outside of migratory bird nesting season (15 February through 15 August). If work occurs during nesting season, a qualified biologist would conduct bird nest surveys prior to project activities and delineate buffers around any nests that are found to prevent disturbance. The contractor would coordinate with 30 CES/CEIEA prior to work. Implementing these EPMs and given the abundance of suitable habitat in the vicinity, this adverse impact would be less than significant.

Monarch Butterfly

The Proposed Action was designed to avoid impacts to potential monarch butterfly winter roosting sites. The known monarch roosting site located south of 35th Street, between New Mexico Avenue and California Boulevard was avoided during project layout. No trees will be removed within areas of known monarch winter roosting sites (**Appendix A, Figure 3.2**) to avoid impacts to

overwintering monarch butterflies or their habitat. Impacts to the monarch butterfly and roosting sites are predicted to be less than significant.

Western Spadefoot Toad

Areas of known occurrence and breeding habitats were avoided during project layout. However, much of the proposed Action Area would be considered potential upland habitat for the western spadefoot toad due to nearby known localities and potential aquatic habitats. As such, western spadefoot toad may be found within the Action Area and, therefore, potentially affected by construction activities. Individuals could potentially be injured or killed if present during construction activities. However, this risk would be reduced by implementing EPMs outlined in **Appendix A, Exhibit 2.3**.

The Proposed Action was designed to avoid impacts to potential western spadefoot toad habitat and individuals. Impacts to the western spadefoot toad are predicted to be less than significant.

4.4.3. No Action Alternative

Under the No Action Alternative, the Proposed Action would not be taken. Therefore, no impacts to biological resources would occur.

4.5. Cultural Resources

4.5.1. Significance Thresholds

An adverse effect finding under Section 106 would be considered a significant impact. Historic properties would be adversely affected if the Proposed Action would alter, directly or indirectly, any of the characteristics that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. The process for assessing potential adverse effects, which are considered significant impacts, to historic properties is in the Section 106 implementing regulations at 36 C.F.R. Part 800, Subpart B.

4.5.2. Proposed Action

The DAF determined that the Proposed Action would result in no historic properties affected. The SHPO concurred on December 31, 2019 (**Appendix D**). In addition to consulting with the SHPO, the Section 106 implementing regulations also require federal agencies to consult with federally recognized tribes. That consultation includes soliciting input on DAF and USSF actions potentially affecting archaeological resources and traditional/religious activity areas. For the Proposed Action, the former 30 SW consulted with the Santa Ynez Band of Chumash Indians. The Tribe did not identify any additional resources of concern within the ASA and did not object to 30 SW's determination (**Appendix D**). Vandenberg SFB staff verified in 2023 that this data is considered up-to-date.

If cultural resources are seen during project-related ground-disturbing activities, all excavation will be halted to avoid disturbing the site or any nearby area reasonably suspected to include cultural resources. The 30 CES/CEIEA will be contacted so that the significance of the find can be assessed.

4.5.3. No Action Alternative

Under the No Action Alternative, the Proposed Action would not be taken. Therefore, no impacts to cultural resources would occur.

4.6. Geology and Earth Resources

4.6.1. Significance Thresholds

Impacts would be considered potentially significant if the project were to result in substantially increased erosion, landslides, soil creep, mudslides, and unstable slopes. Impacts would also be considered significant if they were to increase the likelihood of, or resulted in, exposure to earthquake damage, slope failure, foundation instability, land subsidence, or other severe geologic hazards. Geologic impacts may also be considered significant if they were to result in losing soil use for agriculture or habitat, losing a unique landform's aesthetic value, or losing mineral resources.

4.6.2. Proposed Action

4.6.2.1. Soils and Erosion

The Proposed Action associated activities would require constructing facilities and infrastructure primarily on land that was not previously developed. Vegetation would be cleared to construct the Proposed Action, temporarily exposing soils to wind and water erosion. The proposed project site is relatively flat with a slight slope trending from the southeast to the northwest. Due to this beneficial topography, earthwork volumes would be limited and local borrow soil would be needed to balance the site. Best Management Practices would be implemented under environmental protection measure Geology and Earth Resources-1 during ground-disturbing activities (**Appendix A, Exhibit 2.3**). No long-term erosion impacts would be expected from the Proposed Action.

4.6.2.2. Seismicity

The project site is not underlain by any mapped active faults. Although active faults located within the region could result in strong seismically induced ground shaking, the potential for surface fault rupture and liquefaction on VSFB would be minimal. Therefore, adverse impacts associated with seismically induced ground shaking would not be expected to occur.

4.6.3. No Action Alternative

Under the No Action Alternative, the Proposed Action would not be taken. Therefore, no impacts to geological or earth resources would occur.

4.7. Water Resources

4.7.1. Significance Thresholds

Impacts on water resources would be considered significant if a project were to cause substantial flooding or erosion; were to adversely affect any significant water body, such as a stream, lake, or bay; were to expose people to hydrologic hazards, such as flooding or tsunamis; or were to adversely affect surface water or groundwater quality or quantity. Impacts would also be

considered significant if existing stormwater runoff hydrology of the drainage area or areas would be substantially altered. Finally, impacts to WOTUS and wetlands are considered significant 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, alterations in hydrological function, or potential degradation of water quality due to temporary and permanent removal of vegetation upslope and adjacent to wetland and riparian areas.

4.7.2. Proposed Action

Construction activities may potentially affect surface water quality and groundwater quality. The contractor will implement a SWPPP under the NPDES Construction General Permit. The SWPPP will include BMPs for erosion and sediment controls, tracking controls, material storage, 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.

Temporary ground disturbance activities associated with the Proposed Action would not result in short-term and long-term erosion because erosion and sedimentation control measures would be fully implemented during ground disturbing activities to prevent and minimize soils and pollutants dispersion to surface waters. Exposed soils will be permanently stabilized with vegetation to prevent erosion and meet the NPDES Construction General Permit Notice of Termination requirements.

The Proposed Action cause minor changes to the surface stormwater movement at the proposed WPF site. Impacts to surface or ground waters along the power circuit portions of the proposed project are not anticipated. The proposed WPF pad, the proposed parking lot, and proposed access road would be impervious and would lead to increased volumes of surface runoff during and immediately following precipitation events. However, the proposed infiltration basins near the WPF will be designed to capture, infiltrate, and minimize any alteration to storm water runoff. A Storm Water Control Plan will be prepared for 30 CES Water Resources approval to meet the VSFB Post-Construction Storm Water Standard. In addition, the drainage swales will be designed to capture overland flow that may originate upslope of the proposed WPF and redirect it around the proposed facility. The Post-Construction Storm Water Standard also requires feasibly preserving existing vegetation.

Only one WOTUS feature exists within the wetlands study area along Circuit C3. It is an unnamed ephemeral tributary to the Santa Ynez River (**Appendix A, Figure 3.8**). The area would be spanned by power lines with two poles installed approximately 800 feet apart, outside of WOTUS, and no construction activity would occur between these poles. This stream also qualifies as a WOS. Another area along the northeastern portion of the WPF site qualifies as WOS, riparian forested habitat. The feature is outside the Action Area and has been avoided by the project.

The Proposed Action has been designed to eliminate impacts to jurisdictional WOTUS, WOS, and wetlands by modifying the design to avoid or span any wetlands or watercourses within the Action Area. A Central Coast RWQCB CWA Section 401 Water Quality Certification and a USACE CWA Section 404 Permit would not be required for the Proposed Action because no direct impacts to jurisdictional water bodies, drainages, or wetlands would occur. The USACE concurrence letter

is provided in **Appendix D**. Construction activities associated with the Proposed Action would not impact aquatic habitat.

The Proposed Action would not cause adverse impacts regarding erosion, groundwater, alteration of surface flow, or increased potentials for flooding within a drainage with the implementation of BMPs and EPMs (**Appendix A, Exhibit 2.3**).

The 2019 report prepared by USGAO on DOD military installations found that 102 installations, including some at VSFB, are at risk of water scarcity (USGAO, 2019). However, the report did not have sufficient information to conclude the degree to which specific installations are at risk of water scarcity. The USGAO recommended that the Office of the Secretary of Defense assess whether it should contact a coordinated, department-wide assessment aligned with leading practices, or rely on military department assessments to determine which specific DOD installations are at risk of water scarcity. The DOD concurred with USGAO's recommendation. The Proposed Action should be included in the assessment-approach that DOD determines it will take.

4.7.3. No Action Alternative

Under the No Action Alternative, the Proposed Action would not be taken. Therefore, no impacts to water resources would occur.

4.8. Aesthetics and Coastal Zone Resources

4.8.1. Significance Thresholds

A visual impact would be considered significant if it were to interfere with or to block views of aesthetically pleasing areas, such as the ocean, open space areas, or other scenic areas. A visual impact would also be considered significant if a project were to be aesthetically incompatible with surrounding areas, if a project were to substantially alter the natural character of an area, or if a project were to introduce a substantial amount of night lighting or glare to an area. An impact to coastal zone resources would be considered significant if a project was inconsistent with the policies of the CCA.

4.8.2. Proposed Action

The Proposed Action would entail constructing a building that is approximately 150 feet tall and approximately 1.6 miles east from the coastline. A visual analysis was performed from viewpoints along Surf Beach. Surf Beach is a public access area reached via Ocean Avenue to the south of the mouth of the Santa Ynez River. From most points along this beach, the view of the proposed WPF site would be fully obstructed by beach dunes or vegetation. A partially obstructed view of the proposed WPF would be available from the top of beach dunes or the low-lying area around the mouth of the Santa Ynez River. The top 70 feet of the proposed WPF building is estimated to likely be visible from portions of Surf Beach. The western edge of Burton Mesa obstructs the view of the bottom portion of the proposed WPF from the beach. Other buildings and manmade features surrounding the proposed WPF facility are also visible from Surf Beach. Because the facility is so far inland and surrounded by other visible manmade infrastructure, the Proposed Action would not have a significant adverse effect on visual resources.

Project lighting would be designed to provide the minimum illumination needed to achieve safety and security objectives. Lighting would be directed downward and shielded to focus illumination on desired areas. By implementing these measures, the Proposed Action would not have a significant adverse effect on visual resources.

The Proposed Action is not located within the California coastal zone but would be visible from the coastal zone. In 2019, the former 30 SW conducted a visual analysis of the Proposed Action as described above, to determine if there would be adverse impacts to the coastal zone, as defined by the Coastal Zone Management Act (CZMA) and CCA. The 30 SW determined that there would be no significant impacts to the coastal zone resulting from the Proposed Action and prepared a Negative Determination. On July 23, 2019, the CCC concurred with the 30 SW's determination (**Appendix D**).

As discussed in **Sections 4.3, Biological Resources, 4.4, Cultural Resources**, and above in this section, implementing the Proposed Action and associated EPMs (**Appendix A, Exhibit 2.3**) would have less than significant impacts on these resources, which would also ensure that the projects would be consistent with the CCA policies listed in **Appendix B** protecting these resources.

4.8.3. No Action Alternative

Under the No Action Alternative, the Proposed Action would not be taken. Therefore, no impacts to aesthetics or coastal zone resources would occur.

4.9. Transportation

4.9.1. Significance Thresholds

Project impacts on transportation would be considered significant if a project were to cause a substantial increase in traffic in relation to existing traffic load and capacity of the street system; if it were to exceed an established LOS standard; if it were to substantially increase hazards due to a design feature; if it were to result in inadequate emergency access or in inadequate parking capacity; or if it were to conflict with adopted policies, plans, or programs supporting alternative transportation.

4.9.2. Proposed Action

4.9.2.1. Regional Road Access

During the Proposed Action construction phase the regional roadway network would be temporarily affected. Increases in traffic volumes would mainly result from construction workers, equipment, and materials, traveling to and from the project site. During peak periods of construction, there would be approximately 80 workers on-site and approximately 80 to 120 construction worker trips per day. Construction workers would likely commute from within approximately a 20-mile radius of VSFB (from Lompoc/Santa Maria areas). However, since increases in traffic volumes associated with construction activities would be temporary, no long-term impacts to the regional transportation network would occur. There are no known weight limitations on local bridges that would affect delivering construction equipment, materials, or workers.

During operation, the proposed WPF would employ approximately 40 employees and generate approximately the same number of employee vehicle trips per day. Employees at the proposed WPF would likely commute from within approximately a 20-mile radius of VSFB (from Lompoc/Santa Maria areas). These increases would be minor and no significant adverse impacts to the regional transportation network would occur.

4.9.2.2. Local Road Access

Implementing the Proposed Action would temporarily affect the local roadway network on VSFB. Parking for construction vehicles would be at a designated area within the proposed WPF site. Local traffic impacts during construction would be minimal and temporary with no anticipated changes in LOS on local roads within VSFB. During the operational phase of the WPF vehicular traffic on the local roadway network would slightly increase. Traffic impacts would be minimal with no anticipated changes in LOS on local roads within VSFB. Some traffic restrictions would occur on local roads within VSFB during the transportation of payloads from the WPF to the launch complexes within VSFB due to the critical nature of this operation. However, these operations would occur during traffic off-peak hours, which would minimize the VSFB commuter and worker inconveniences.

4.9.2.3. VSFB Airfield

Constructing the Proposed Action would not affect the VSFB Airfield as construction related transportation would involve automobile and truck traffic only. During WPF operations, occasionally using the VSFB Airfield and Tow Road for SV transport to the proposed WPF site would be accommodated using standard operating procedures and would not create significant traffic or transportation impacts.

4.9.3. No Action Alternative

Under the No Action Alternative, the Proposed Action would not be taken. Therefore, no impacts to transportation would occur.

4.10. Socioeconomics

4.10.1. Significance Thresholds

The threshold of significance for impacts to socioeconomics would be a substantial increase in population or displacement of people or housing.

4.10.2. Proposed Action

Implementing the Proposed Action would result in few new temporary jobs during construction. During peak construction periods, approximately 100 workers would be on-site. The potential small number of new jobs would result in a minor employment increase during construction. No substantial increase in population or people or housing displacements would happen. Therefore, the short-term construction duration would have no effect on the socioeconomic environment of VSFB or the surrounding area due to the construction project's limited scale.

Once operational, the Proposed Action would employ approximately 40 staff. This would minimally increase local employment. No substantial increase in population or people or housing

displacements would happen. Therefore, implementing the Proposed Action would likely not adversely impact the local population and employment.

4.10.3. No Action Alternative

Under the No Action Alternative, the proposed WPF would not be constructed. The existing SV processing facilities at VSFB would continue to be used; therefore, causing no adverse impacts to the local population or employment rates.

4.11. Human Health and Safety

4.11.1. Significance Thresholds

An impact would be considered significant if it were to create a potential public health hazard or to involve improperly using, producing, or disposing of materials that pose a hazard to people in the affected area. An impact would also be considered significant if project activities were to pose a serious risk of fire, especially wildland fires, or were to involve potentially obstructing emergency response or evacuation routes in and around the proposed Action Area.

4.11.2. Proposed Action

Workers may be temporarily exposed to chemical, physical, and/or biological hazards associated with VSFB operations as discussed in **Chapter 3**. Potential hazards also exist within various VSFB hazard zones. Vandenberg SFB workers, including contractors, must follow federal OSHA, California's Division of Occupational Safety and Health (Cal OSHA) laws and regulations and Air Force and USSF Occupational Safety and Health Instructions. Following these laws, regulations, and Instructions precautions, as well as the EPMs (**Appendix A, Exhibit 2.3**), would minimize health and safety impacts to less than significant.

Constructing Circuit C3 would involve using concrete poles and Circuit B5 would run underground. These construction methods reduce the risk of fire associated with treated wooden poles, especially as these poles age.

The Proposed Action would intersect with an evacuation route three times. However, these intersections would occur along the proposed power circuits and involve borings under the road. During construction, the Proposed Action is unlikely to obstruct the evacuation route, and after construction no obstructions would occur.

Based on this analysis, and implementing EPMs (**Appendix A, Exhibit 2.3**), the Proposed Action would have less than significant effects on human health and safety.

4.11.3. No Action Alternative

Under the No Action Alternative, the Proposed Action would not be done. Therefore, no impacts to human health and safety would occur.

4.12. Hazardous Materials and Waste Management

4.12.1. Significance Thresholds

An impact involving hazardous materials and hazardous waste would be considered significant if its transport, use, or disposal posed a serious hazard to the public or the environment. Issues include potential accidents releasing hazardous materials; hazardous materials emissions, especially within one-quarter mile of a school; and violating any associated Federal, California, or SBC law, regulation, or applicable permit condition.

4.12.2. Proposed Action

Implementing the Proposed Action would require using hazardous materials. As described in **Chapter 3**, these hazardous materials are commonly used for construction projects and would be the same as the types that are currently used and managed on VSFB. Any emergency responses to spills during construction would follow the VSFB IEMP 10-2 (USSF, 2021). Therefore, impacts of the Proposed Action, during construction, on hazardous materials management should be less than significant.

Due to benzene soil vapor concentrations within Circuit B5 below the surface along 11th Street north of New Mexico Avenue, implementing EPMs found in **Appendix A, Exhibit 2.3** during construction will reduce effects on human health and safety to less than significant.

The Proposed Action, once operational, would generate hazardous waste like those already generated at VSFB. These include waste fuel, hydraulic fluids, oil rags, solvents, adhesives, paint and batteries, hydrazine, and nitrogen tetroxide. These hazardous wastes, in addition to any other unanticipated hazardous waste material (i.e., treated wood waste or old transformers) would be handled per the SLD 30 Hazardous Waste Management Plan. Spill contingency vessels would be in place for fuel, in case of an accidental tripping of the floor wash system. The emergency contingency containment will meet California Health and Safety Code, Division 20, Chapter 6.7, paragraph 25290.1 (design and construction requirements for USTs installed on or after July 1, 2004), and any spill emergency responses would follow the VSFB IEMP 10-2. Hazardous waste generated would be stored in compatible drums at the waste fuel and oxidizer propellant area (WPA) at the proposed WPF building site. The WPA, located North of the proposed WPF building, shall consist of the following:

- Two Hazard Waste Storage Areas, canopied and physically separated by curbing for collecting oxidizer waste and fuel waste.
- A 300-gallon underground Emergency Contingency Collection vessel for propellant fuel to collect minor spills from the floor drains inside the WPF.
- A 3,000 gallon aboveground emergency contingency collection vessel to collect rinsate from major fuel spills inside the WPF.

All components of the WPA would be designed per the requirements of the SLD 30 Plan 32-7043-A, Hazardous Waste Management Plan. The WPA would contain a collection accumulation point (CAP). The CAP's primary purpose is to support on-site collection of separated propellant waste fuel and oxidizer fluids and small volumes of contaminated soft goods (i.e. gloves, wipes, and gaskets). The WPA would be large enough to store ten 55-gallon drums, with a minimum aisle

space of 36 inches to allow inspection of each drum and unobstructed movement of personnel, fire protection equipment, spill control equipment and decontamination equipment. In addition, each bay's aisle space would be large enough to allow the use of a drum dolly. Ramp access for forklifts would be provided, and the drum storage area would be designed to provide secondary containment capable of holding a minimum of 66 gallons. These fluids would be stored on-site for a maximum of 45 days without a permit prior to being transported to an authorized TSDF.

The 300-gallon Emergency Contingency Collection vessel would be collocated adjacent to the CAP. The vessel will be designed to allow gravity flow from the proposed WPF trench drain inlet inverts. The vessel would include pumps to immediately convey fuel propellant spills into 55-gallon containers in the CAP. The vessel and piping from the proposed WPF would be designed with double walls and interstitial monitoring and leak detection.

Any incidental oxidizer spills in the WPF would be allowed to evaporate inside the building and would not be conveyed to the WPF. An area for incidental oxidizer waste, which would consist of very small quantities of condensate from scrubber vents and oxidizer rags, would be stored in the CAP area. The WPA would be designed to provide physical separation and separate secondary containment for the fuel and oxidizer areas.

A 3,000-gallon aboveground fuel emergency contingency collection vessel would be installed near the underground emergency contingency collection vessel. It shall be double-walled with interstitial monitoring and shall meet all AFMAN 32-1067, *Water and Fuel Systems,* AST tank requirements. The vessel would be sized to accommodate minor fuel spills and larger fuel spills that are washed into the drain from the WPF floor washdown system. The resulting rinsate collected in the vessel will be a 3:1 ratio of wash down water and spilled propellant fuel. The vessel would be located within the WPA to allow for waste tanker vacuum truck access. The tanker truck would then convey the waste to the appropriate off-site TSDF.

The WPA would be covered with an awning, sized to prevent rainwater intrusion into the area. All electrical equipment in the WPA would have a classification of Class 1, Division 2, Groups C and D. The WPA would be provided with internal communications or alarm system (voice or signal).

The WPA would be provided with weather resistant signs with the legend "Danger – Unauthorized Personnel Keep Out" to be posted at each entrance to the active portion of site, and at other locations, in sufficient numbers to be seen from any approach to this active portion. The legend must be legible from a distance of at least 25 feet. "No Smoking" signs must be conspicuously placed. "In Case of Emergency Dial 911 (Cell 805-867-7911)" signs would be posted in clear view. Signs identifying the hazardous waste site manager by name and manager's phone number would be present. Signs in areas containing incompatible materials must be provided to identify waste types, i.e., Ignitable, Reactive, and Corrosive.

The Proposed Action would use similar systems to those currently used at the VSFB and would then fall within current regulatory norms. The Proposed Action would not cause a significant increase in the amounts of hazardous materials or waste present on VSFB. Therefore, impacts of the Proposed Action on hazardous materials and waste management would be less than significant with implementing EPMs noted in **Appendix A, Exhibit 2.3**.

4.12.3. No Action Alternative

Under the No Action Alternative, the Proposed Action would not be done. Therefore, no impacts would occur due to hazardous materials use or hazardous waste generation.

4.13. Solid Waste Management

4.13.1. Significance Thresholds

Impacts from solid waste generation would be considered significant if a project were to result in noncompliance with applicable regulatory guidelines or if the volumes of solid waste generated by the Proposed Action were to exceed available waste management capacities.

4.13.2. Proposed Action

During Proposed Action construction, green waste associated with clearing vegetation and additional solid waste relating to construction activities would be generated. Solid waste generated during Proposed Action construction would include packaging materials (cardboard and plastic), scrap metal, pipes, wiring, and miscellaneous waste generated by onsite construction workers. Miscellaneous unrecyclable waste generated during construction would be disposed of off-Base at an approved facility. Implementing EPMs (**Appendix A, Exhibit 2.3**) would ensure that all solid and green waste would be minimized at VSFB. The Integrated Solid Waste Management Plan for VSFB requires source segregation of recyclable materials to the greatest extent possible (USSF, 2022). Therefore, by implementing these measures, solid waste impacts during construction would be less than significant.

The amount of solid waste generated is expected to be minimal, and largely consistent with administrative and personal material such as paper, cans, and bottles that would be recycled. The amount of solid waste generated is not expected to exceed allowable amounts. Therefore, the Proposed Action would have no adverse impacts on solid waste management at VSFB.

4.13.3. No Action Alternative

Under the No Action Alternative, the Proposed Action would not be taken. Therefore, no impacts to solid waste management would occur.

4.14. Utilities

4.14.1. Significance Thresholds

Impacts on utility systems would be considered significant if any of the following occurred as a result of the Proposed Action: exceedance of RWQCB wastewater treatment requirements; the need to construct new water or wastewater treatment facilities or expansion of existing facilities; the need to construct new stormwater drainage facilities or expansion of existing facilities. Impacts would also be considered significant if the project were to require utility supplies (such as water, natural gas, or electricity) that could not be met by existing entitlements or resources.

4.14.2. Proposed Action

4.14.2.1. Power

Power for the proposed WPF would be derived from two existing substations, both which the DAF owns. The total capacity of both substations is 40 megawatts. Minimal increases in electrical consumption would occur during construction.

During proposed WPF operation, electrical consumption would increase. However, increase would not result in an undue burden to VSFB's existing electrical capacity and usage. Therefore, no adverse impacts to electrical consumption are expected.

4.14.2.2. Sanitary Sewer

Sanitary sewer would run from the proposed WPF to an existing lift station north of Building 3000. The facility would require 61 gallons per minute. This would lead to approximately 480 gallons per day on average, or 2,000 gallons per day peak flow. The American Water and VSFB's Sanitary Sewer System operator has authorized this. These flows could be handled by the existing wastewater treatment facilities at VSFB and would not require expanding existing facilities. Therefore, sanitary sewer would have less than significant effects.

4.14.2.3. Water

The existing water line running through the proposed WPF would be intercepted and rerouted around the facility to the south. The water line would connect on the west side of the facility. The proposed WPF would require a maximum of 3,375 gallons per minute. American Water has confirmed that this amount can be supplied with the existing system; however, a fire pump would be required to provide necessary flow pressure. Therefore, impacts due to water would be less than significant.

Normal, non-emergency potable water use at the proposed facility would not produce a significant increase of groundwater demand. Therefore, impacts to the Barka Slough would not be significant.

4.14.2.4. Communication

Two new communication lines would be constructed, running from Building 3000 to the proposed WPF. A third communications line would run from an existing manhole along California Boulevard south of Building 3000 and the WPF. See **Section 2.4.2** and **Appendix A, Figure 2.3** for additional details on the proposed locations and routes. These communication lines would be buried in conduits installed in trenches. Additionally, these communication lines would originate from existing communications infrastructure and follow the same corridor to minimize impacts to biological resources. Impacts due to installing communication lines would not be significant.

4.14.2.5. Gas

A new gas line would run from the existing gas line along California Boulevard, tapping in between 32nd and 33rd Street. The proposed WPF would require 50 million British Thermal Units. The SLD 30 has confirmed that this amount is feasible to supply to the facility with no significant effect to gas supply to other facilities.

4.14.3. No Action Alternative

Under the No Action Alternative, the proposed WPF would not be constructed. Therefore, no new power lines would need to be built, resulting in no impacts to utilities.

4.15. Land Use

4.15.1. Significance Thresholds

An impact on land use would be considered significant if a project would result in land uses on the project site that are incompatible with, or would have a substantial adverse impact on, the existing character of adjacent land uses.

4.15.2. Proposed Action

Most of the proposed Action Area would occupy land that is currently undeveloped open space. Most of Circuit B5 and a small portion of Circuit C3 would use industrial land. A very small portion of the Proposed Action would coincide with NRO operations surrounding Building 3000. The Proposed Action would occur near developed areas and would not result in adverse impacts to adjacent land uses. Therefore, the Proposed Action would have less than significant effects on land use.

4.15.3. No Action Alternative

Under the No Action Alternative, the Proposed Action would not done. Therefore, no impacts to land use would occur.

4.16. Cumulative Impacts

4.16.1. Significance Thresholds

The CEQ regulations define a cumulative impact as the impact on the environment that results from the incremental impact of the action, when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time. A significant impact would occur if an individual project were to considerably contribute to cumulative impacts on the environment.

4.16.2. Past, Present, and Reasonably Foreseeable Future Actions in the Region of Influence

The effects of the Proposed Action and No Action Alternative in combination with the effects of other relevant past, present, and reasonably foreseeable future projects were evaluated in a cumulative effects analysis. The ROI for the Proposed Action is defined as the area over which effects of the Proposed Action could contribute to cumulative impacts on the environment. Therefore, the ROI includes VSFB (North Base and South Base). A list of relevant past, present, and reasonably foreseeable future actions that have been/would be constructed on VSFB at the same time as the Proposed Action is provided in **Table 4.4**.

Table 4.4 – Past, Present, and Reasonably Foreseeable Future Actions in the ROI

Federal Projects	Status
13th Street Bridge Replacement	Past
Installation of Cabins at Wall Beach	Past
Refurbishment of SLC-4E and SLC-4W (Space X)	Past
Regular Aircraft Take-offs and Landings	Past, Present, and Reasonably Foreseeable Future
Boeing X-37B Spaceplane Landings	Present
GBSD Infrastructure Construction Project	Present
SLC-3E Refurbishment Construction (ULA Vulcan Centaur)	Present
SLC-2E Demolition	Present
B-6 Power Line Replacement	Present
Further Infrastructure Development for Expanded Commercial Space Launch Capabilities	Reasonably Foreseeable Future
SLC-9 Construction Project	Reasonably Foreseeable Future
NRO Payload Processing Facility Construction	Reasonably Foreseeable Future
K-3 Power Line Replacement	Reasonably Foreseeable Future
A-1 Power Line Replacement	Reasonably Foreseeable Future
A-5 Power Line Replacement	Reasonably Foreseeable Future
Oak Mountain Power Line Replacement	Reasonably Foreseeable Future
South Loop 1 and 2 Power Line Replacement	Reasonably Foreseeable Future

4.16.3. Proposed Action

4.16.3.1. Air Quality

Vandenberg SFB has other projects in the ROI for the Proposed Action. Long-term emissions from the projects would not increase. Cumulative emissions from the Proposed Action combined with other concurrent projects and launch operations will not exceed the significance thresholds in SBC and nor will they produce any significant cumulative air quality impacts. This determination was made by reviewing this project's total emission impact with the cumulative estimated emissions from the planned concurrent projects where estimates were available.

4.16.3.2. Climate

Other projects are proposed at VSFB in the ROI of the Proposed Action. Cumulative GHG emissions from the Proposed Action and potentially concurrent projects would not exceed the EPA's reporting threshold of 25,000 metric tons of CO_2e. The GHG emissions would need to be measured for all projects within the ROI to determine if VSFB surpasses the GHGRP threshold and would require annual reporting to the EPA.

4.16.3.3. Noise

Construction activities within the proposed Action Area and construction and demolition activities for other projects would result in temporary, intermittent impacts localized to each project site. Construction projects are typically temporary, and the Proposed Action noise impact would not

contribute significantly to the noise on VSFB. Localized noise impacts will not create an adverse cumulative impact.

4.16.3.4. Biological Resources

The Proposed Action and other construction projects that involve ground-disturbing activities and related noise and traffic impacts could have temporary and localized effects on biological resources. Cumulative adverse impacts could result if concurrent projects, along with the Proposed Action, cause disturbances to special-status species or their habitats. Implementing the Proposed Action would result in temporary and permanent loss of habitat, potential loss of individual special status species, and potential disruption of foraging and breeding activities. Although the Proposed Action and other concurrent projects may disturb wildlife, these disturbances would be temporary, and wildlife would continue to use habitat in the periphery of the projects. By implementing the EPMs listed in **Appendix A, Exhibit 2.3** and the USFWS issued BO Proposed Action requirements (**Appendix D**), potential adverse effects would be less than significant. Additionally, SLD 30 routinely implements projects and specific measures and procedures set forth in its Integrated Natural Resources Management Plan (VSFB, 2021). This would tend to ensure project-specific and cumulative adverse effects to biological resources are avoided and minimized. Therefore, the Proposed Action, in combination with other past and planned activities, should not result in significant adverse cumulative impacts on biological resources.

4.16.3.5. Cultural Resources

Implementing the Proposed Action and other VSFB construction activities involving activities that disturb intact native soils or demolish structures over 50 years of age, could result in impacts to cultural resources. Cumulative impacts would result if project activities caused major ground disturbances in areas that may contain intact subsurface prehistoric or historic archaeological resources. Cumulative impacts would result from incremental changes that individually would not impact the NRHP eligibility or listing status of a historic property, but collectively and over time, would. The Proposed Action would have no effect on cultural resources and when combined with other VSFB foreseeable future projects would not result in cumulative impacts to cultural resources.

Implemented EPMs will minimize impacts on sensitive archaeological resources. The measures could include an archaeologist and Native American monitor being present during all ground-disturbing activities, if required by other project's mitigation measures or the Integrated Cultural Resources Management Plan (VSFB, 2023). If cultural resources are discovered during project-related ground-disturbing activities, all excavation would be halted until the significance of the find is assessed. Significant cumulative impacts from other projects and the Proposed Action are not expected.

4.16.3.6. Geology and Earth Resources

Cumulative projects at VSFB involving grading, excavations, and construction or demolition could result in erosion-induced sedimentation of adjacent drainages and water bodies. Potential cumulative effects would include an increase in soil disturbance associated with construction, demolition, and road building activities, substantially increased erosion, landslides, soil creep, mudslides, and unstable slopes. These impacts would be minimized by implementing EPMs and

using BMPs to minimize soil erosion and reduce fugitive dust. Cumulative VSFB projects could cause Erosion-induced sedimentation of surface drainages.

Regional projects are subject to seismically induced ground shaking from an earthquake on a local or regional fault. By incorporating modern construction engineering and safety standards, adverse seismic-related impacts at the project sites, as well as the projects in the region, should be avoided. Therefore, the Proposed Action, in combination with other past and planned activities, would not result in significant adverse cumulative impacts to geology and earth resources.

4.16.3.7. Water Resources

Temporary and localized impacts can result from cumulative construction projects within or adjacent to water bodies. Cumulative impacts to water resources could occur if other projects were to inadequately address water resources at project locations. However, projects on VSFB, including the Proposed Action, are required to utilize site-specific BMPs and conduct site restoration, as necessary, to minimize impacts to water quality. Impacts tend to be localized and temporary during the project duration. Additionally, the Proposed Action would not occur in any waterbody. Therefore, the Proposed Action would not contribute to cumulative negative effects to water resources.

4.16.3.8. Aesthetics and Coastal Zone Resources

The Proposed Action would not adversely affect aesthetics or CZMA and CCA policies. The cumulative projects identified in **Table 4.4** are all on VSFB and would conform to CZMA and CCA policies. These projects have been and would be assessed separately under NEPA and the effects would be analyzed and disclosed. The Proposed Action and other cumulative projects will not result in significant adverse cumulative effects on aesthetics and coastal zone resources.

4.16.3.9. Transportation

Cumulative construction and demolition projects on VSFB would contribute to increased traffic volumes in the region. However, given the low average daily traffic (ADT) volumes and good levels of service currently experienced on the roadways that would be affected by project activities on VSFB and nearby, and the relatively small increase in daily vehicle traffic that would be generated by the Proposed Action, cumulative adverse effects to the local or regional transportation network will not occur as a result of the Proposed Action.

4.16.3.10. Socioeconomics

The Proposed Action when combined with other past, present, and future projects would result in minor temporary increases in employment during construction and operations and there would be no significant cumulative impacts on socioeconomics.

4.16.3.11. Human Health and Safety

The Proposed Action and other concurrent projects on VSFB could result in increased risks to human health and safety. Implementing the Proposed Action and other similar actions at VSFB would slightly increase the short-term risk associated with construction contractors performing work at project locations. Contractors would be required to establish and maintain safety programs

that would protect to their workers and limit Base personnel exposure to construction hazards. Impacts would be minimal and confined to the immediate project sites.

The safety program would include coordinating with the Air Force Civil Engineer Center, Environmental Operations Division, Military Munitions Response Program manager and contact with the SLD 30 weapons safety specialist for information on SLD 30 policies on unexploded ordnance safety for construction work at VSFB. By implementing required safety measures there would be no significant cumulative impacts resulting from the Proposed Action and other anticipated projects.

4.16.3.12. Hazardous Materials and Waste Management

Managing any hazardous materials and waste would occur by complying with the SLD 30 Installation Emergency Management Plan (USSF, 2021) and the SLD 30 Hazardous Waste Management Plan (VSFB, 2022). Projects at VSFB must also follow the Integrated Solid Waste Management Plan. Environmental Protection Measures would be implemented to minimize hazardous materials or hazardous waste management impacts. The Proposed Action would minimally contribute to cumulative effects to hazardous materials and wastes in or around VSFB. Therefore, the Proposed Action and other projects would not result in significant cumulative impacts.

4.16.3.13. Solid Waste Management

The cumulative projects listed in **Table 4.4**, including the Proposed Action would result in an overall increase in solid waste generation resulting from vegetation clearing, construction, and waste produced during the operations of the Proposed Action. Solid waste would be minimized by complying with the Integrated Solid Waste Management Plan for VSFB (USSF, 2022) and implementing EPMs, including segregating, reusing, and recycling waste to the greatest extent practicable. This would reduce cumulative impacts of solid waste. Local landfills would be able to process the projected temporary increases in solid waste. No significant cumulative impacts on solid waste management are expected.

4.16.3.14. Utilities

The Proposed Action combined with the cumulative projects listed in **Table 4.4** would result in increased electrical consumption. However, this increase will not result in an undue burden to the existing electrical capacity and usage on VSFB. The Proposed Action and other concurrent projects on VSFB would result in minor increases in using other utilities. Overall, the Proposed Action and other cumulative projects will not result in significant adverse cumulative effects to utilities.

4.16.3.15. Land Use

The cumulative projects identified in **Table 4.4** are all on VSFB and would conform to DAF regulations and planning principles or comply with applicable County/State requirements. Cumulative projects would be modified during the project review process to ensure compatibility with existing land uses and consistency with management plans. Therefore, the Proposed Action and other cumulative projects will not result in significant adverse cumulative effects on land use.

4.16.4. No Action Alternative

Under the No Action Alternative, the Proposed Action would not be constructed. The No Action Alternative would have no impacts on the environment.

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APPENDIX A

Project Figures and Exhibits

1) Figures
2) Exhibits

1) **Figures**

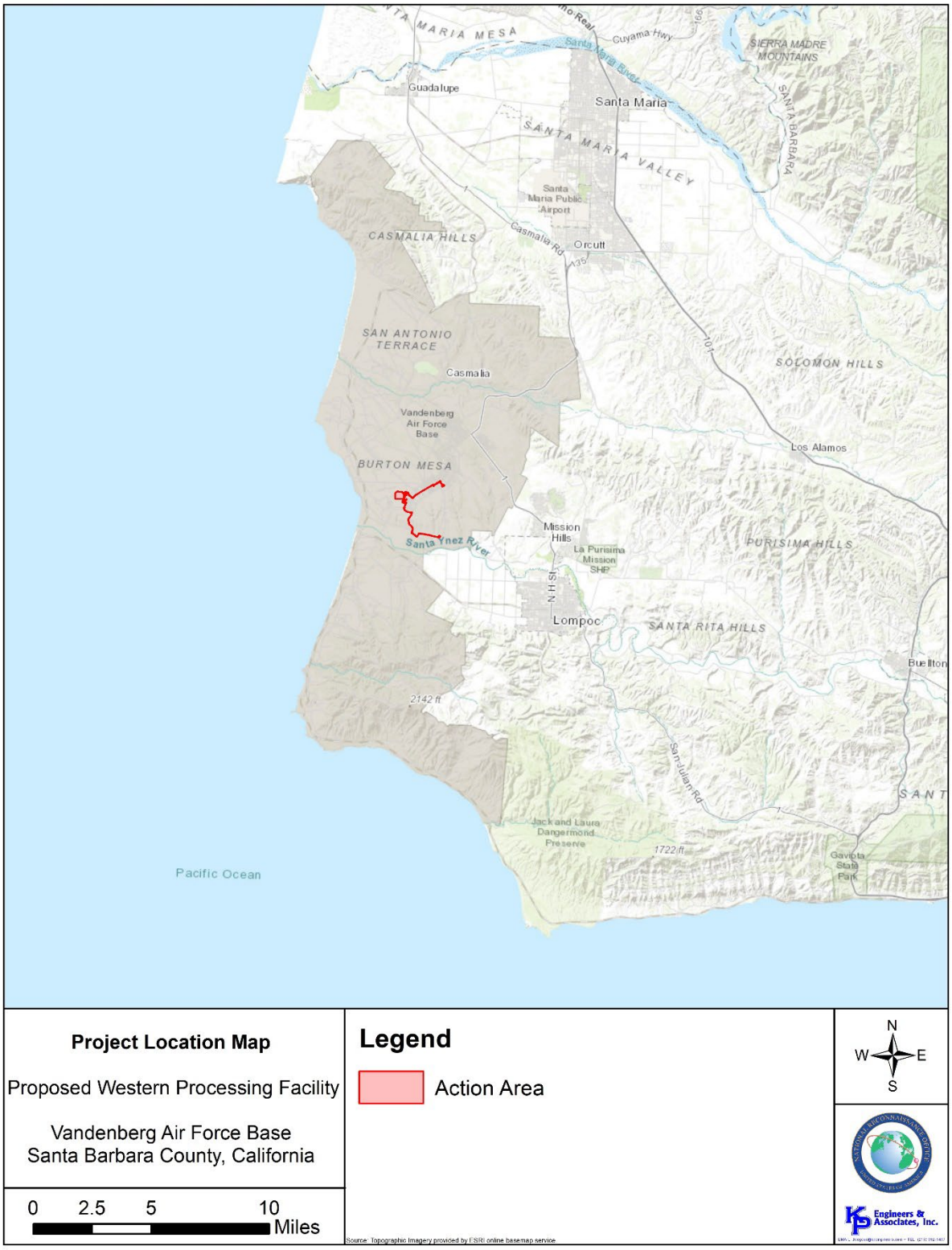

Figure 1.1 – Project Location Map

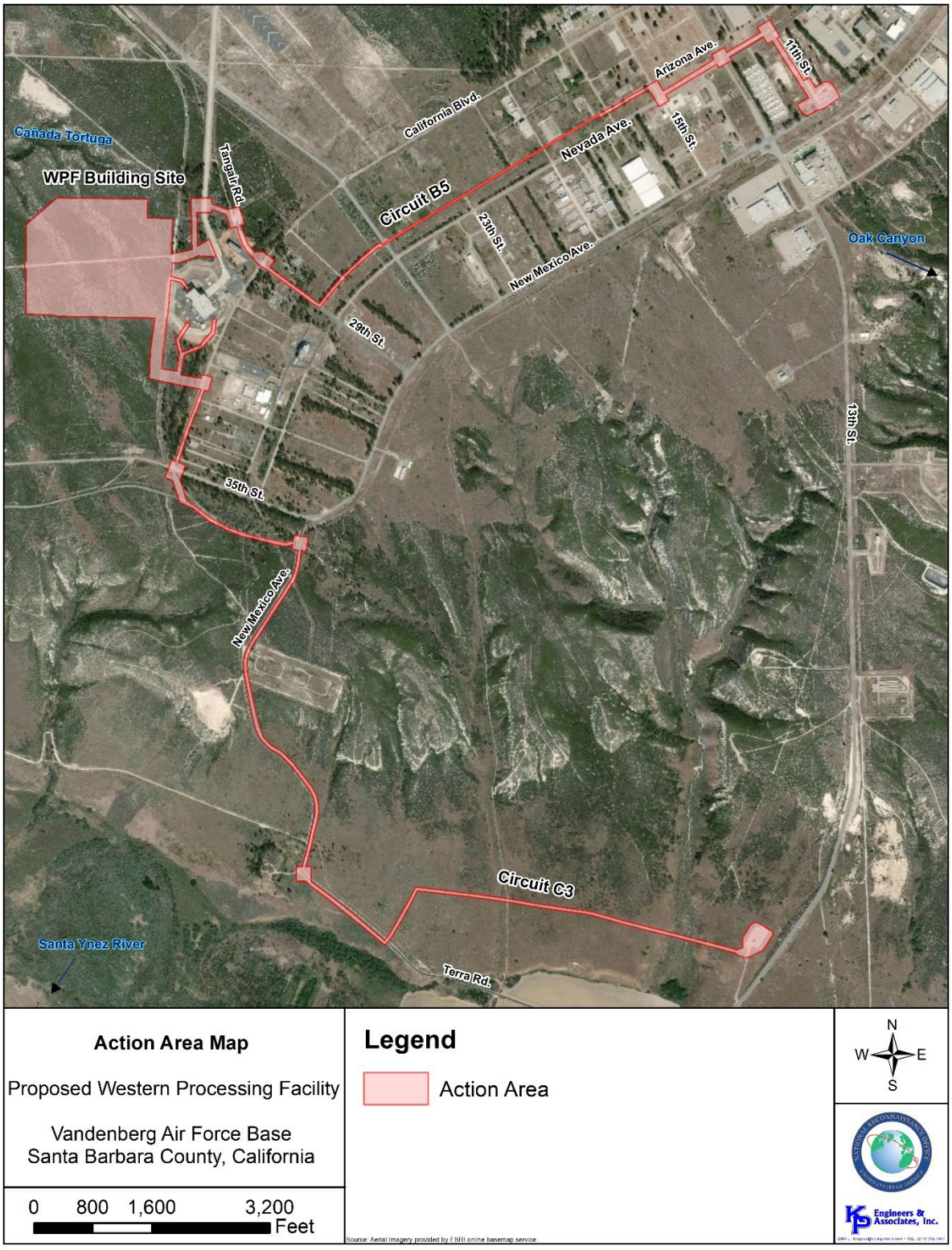

Figure 1.2 – Action Area Map

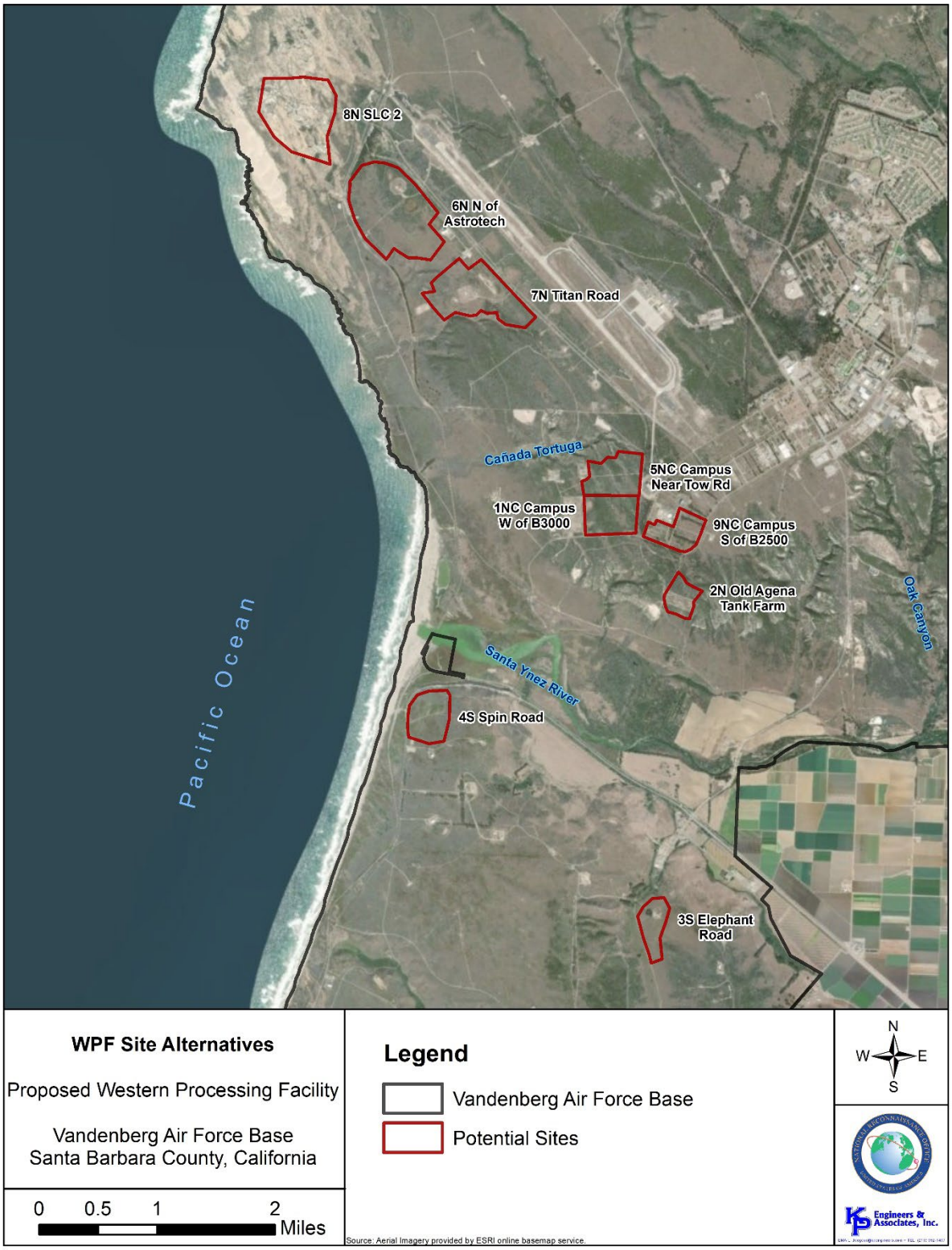

Figure 2.1 – WPF Site Alternatives

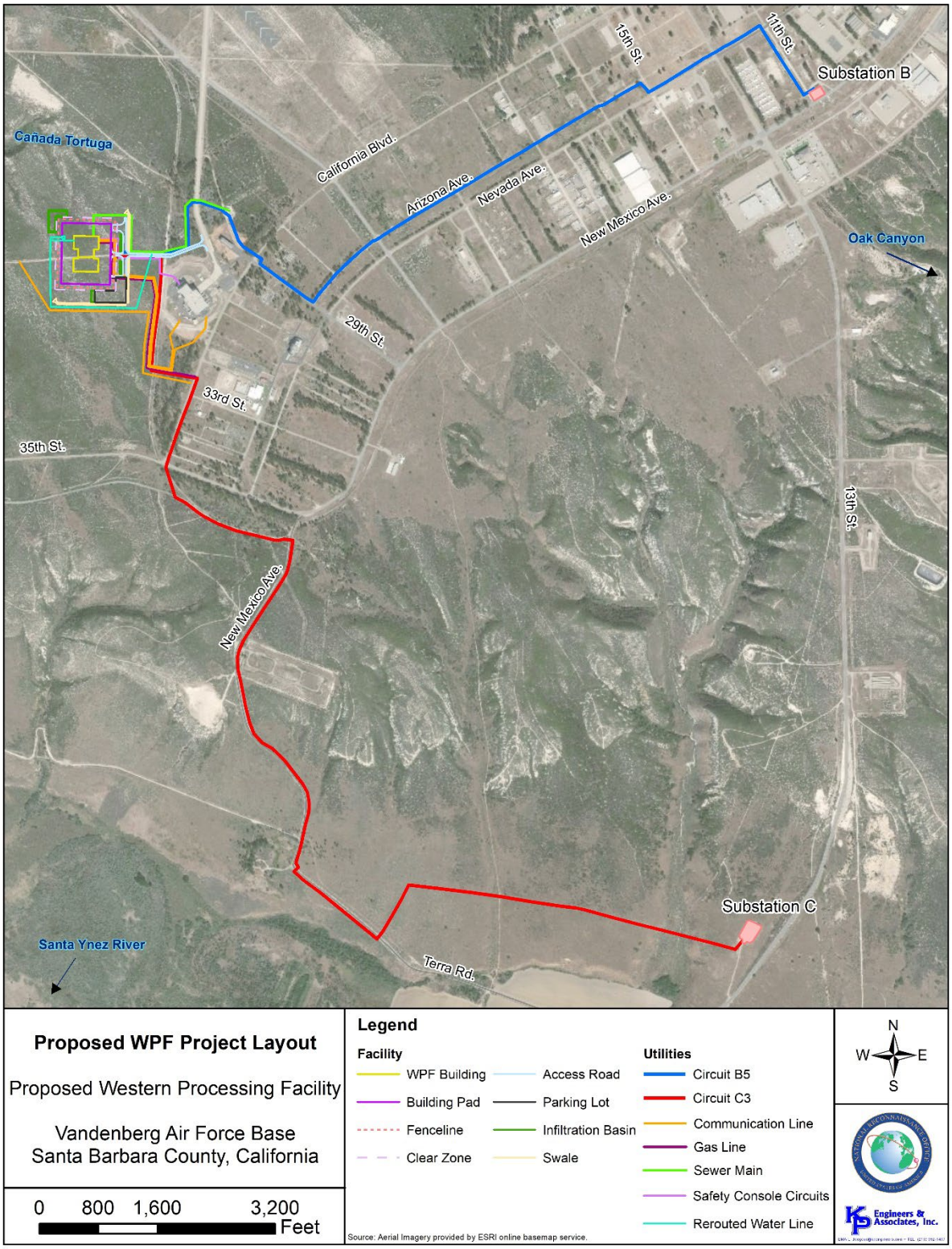

Figure 2.2 – Proposed WPF Project Layout

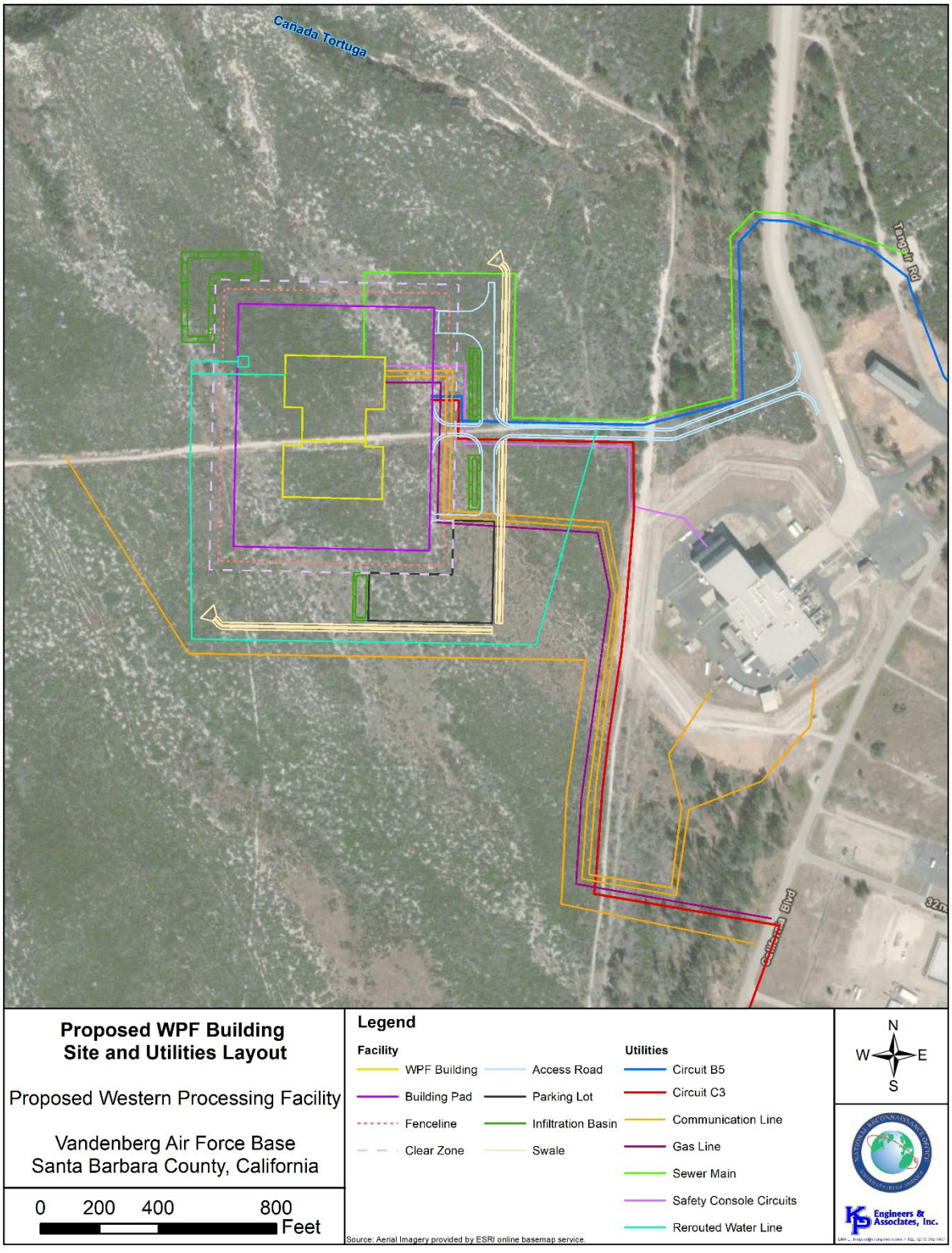

Figure 2.3 – Proposed WPF Building Site and Utilities Layout

Figure 2.4 – Proposed Circuit B5 Layout

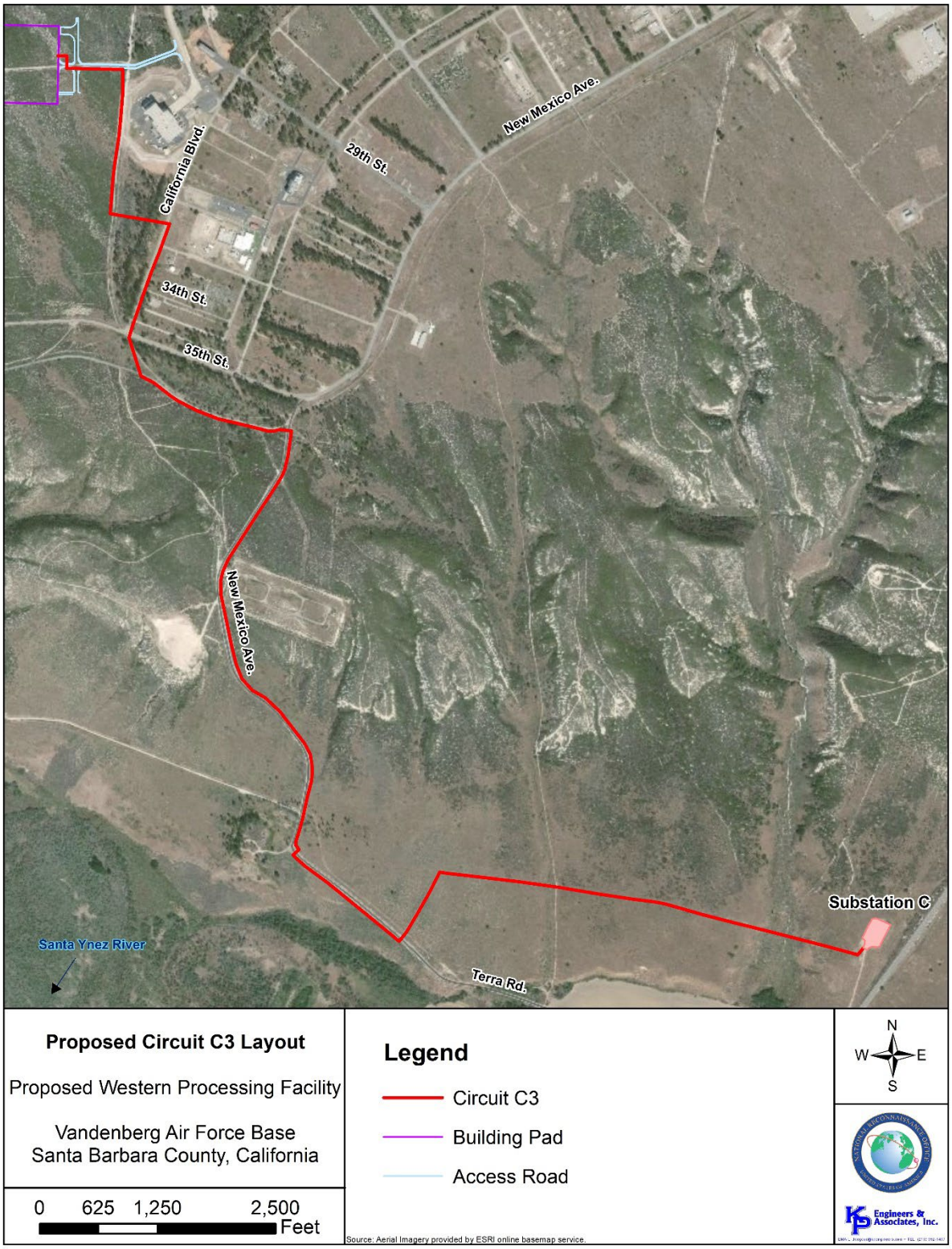

Figure 2.5 – Proposed Circuit C3 Layout

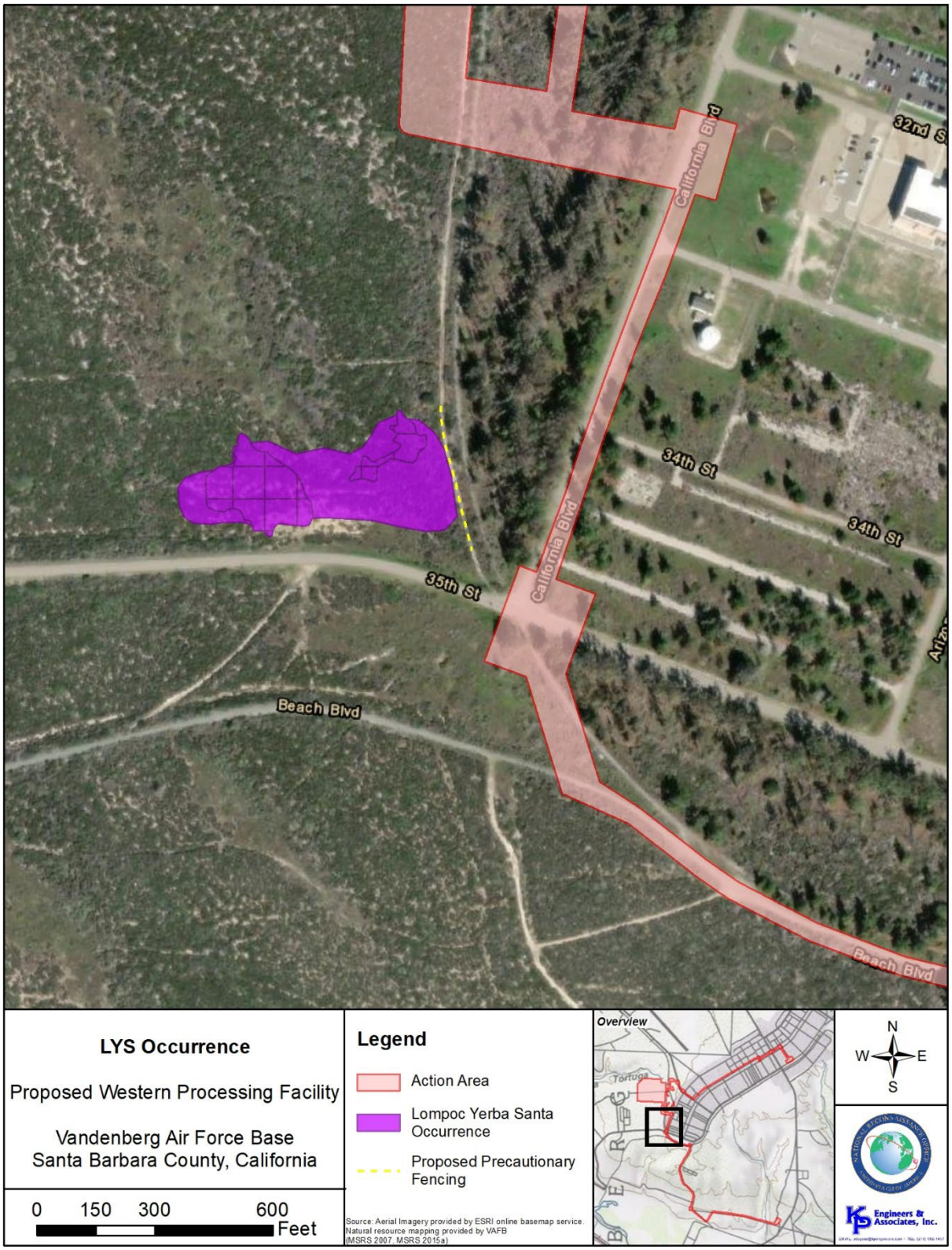

Figure 3.1 – Lompoc Yerba Santa Occurrence

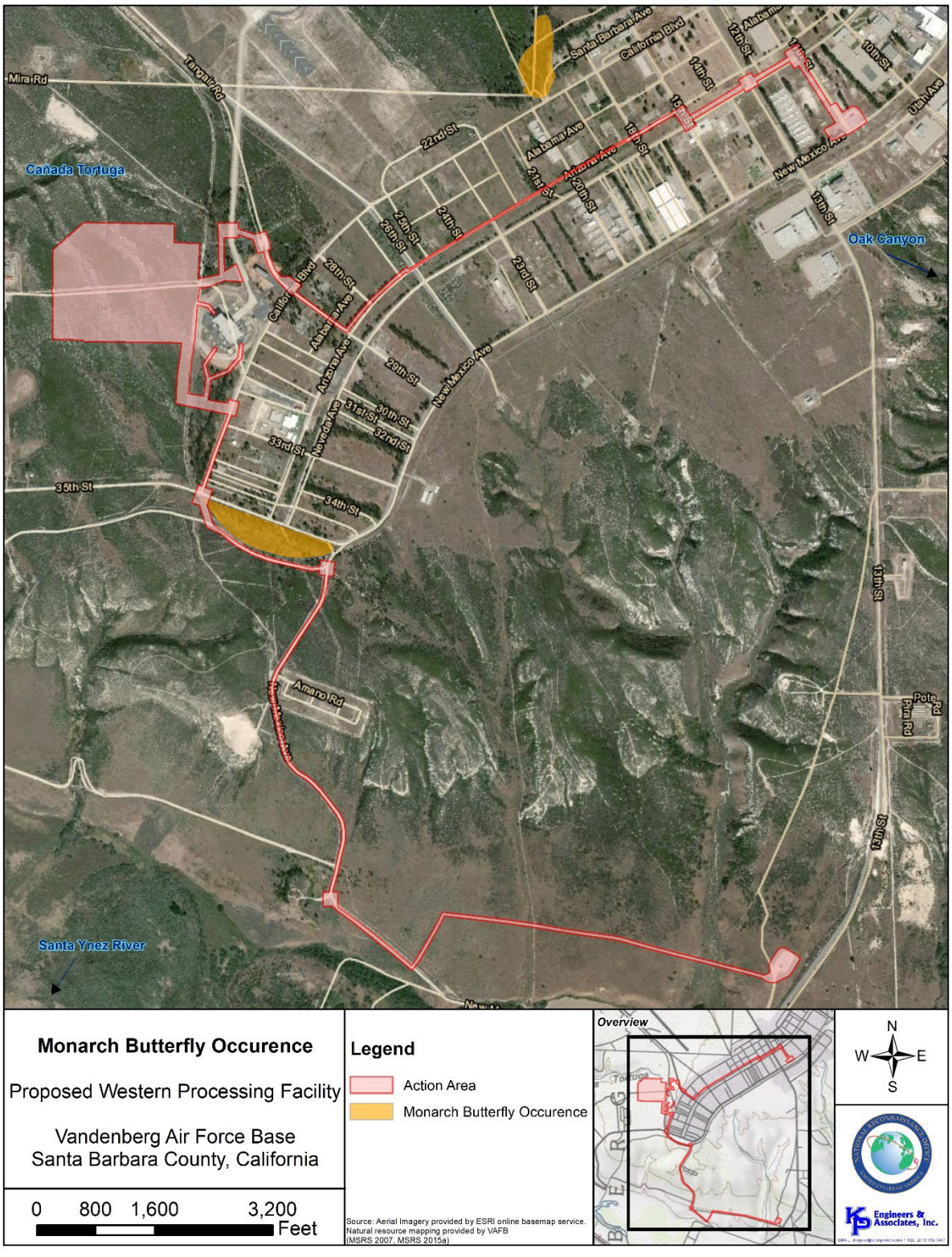

Figure 3.2 – Monarch Butterfly Occurrence

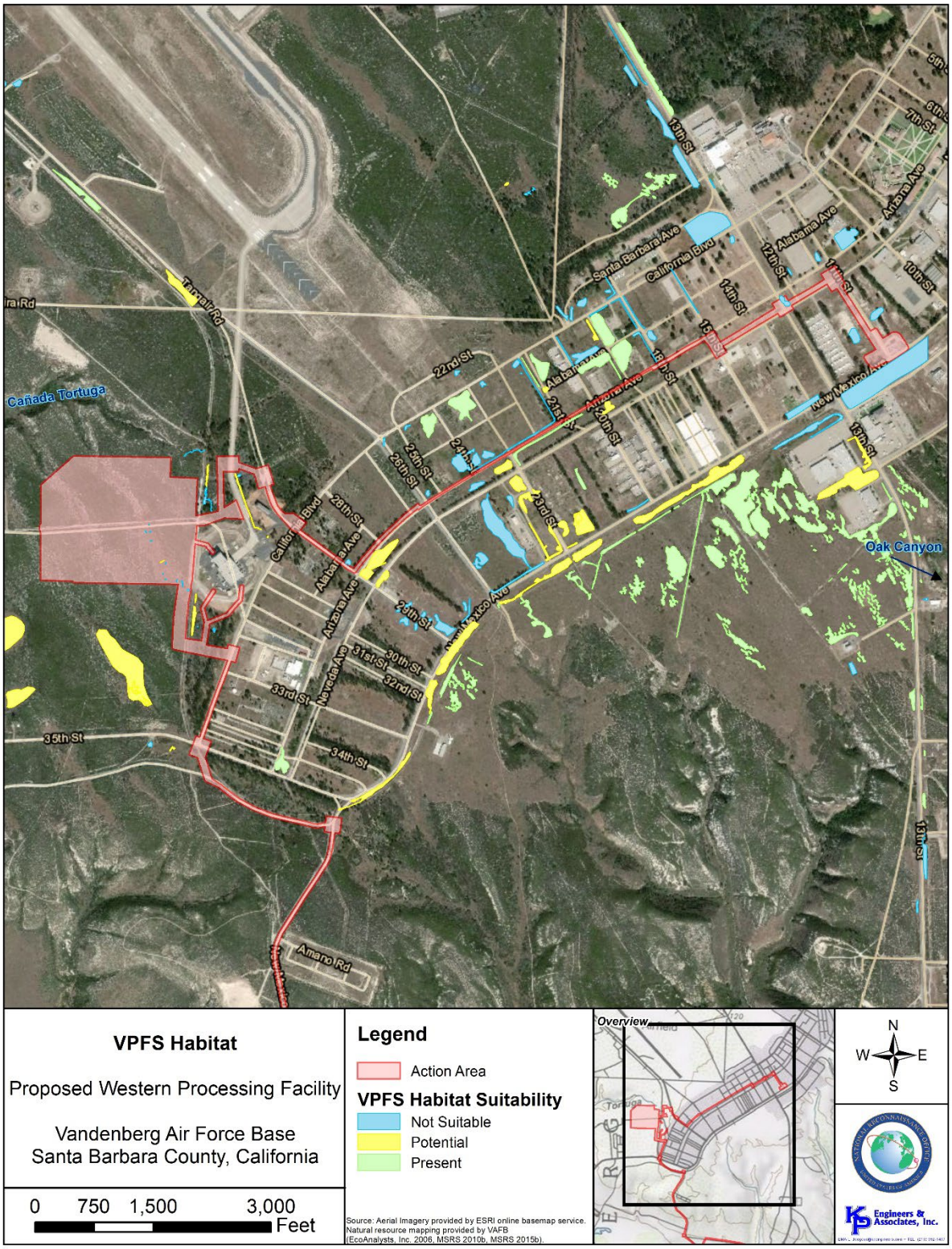

Figure 3.3 – Vernal Pool Fairy Shrimp Habitat

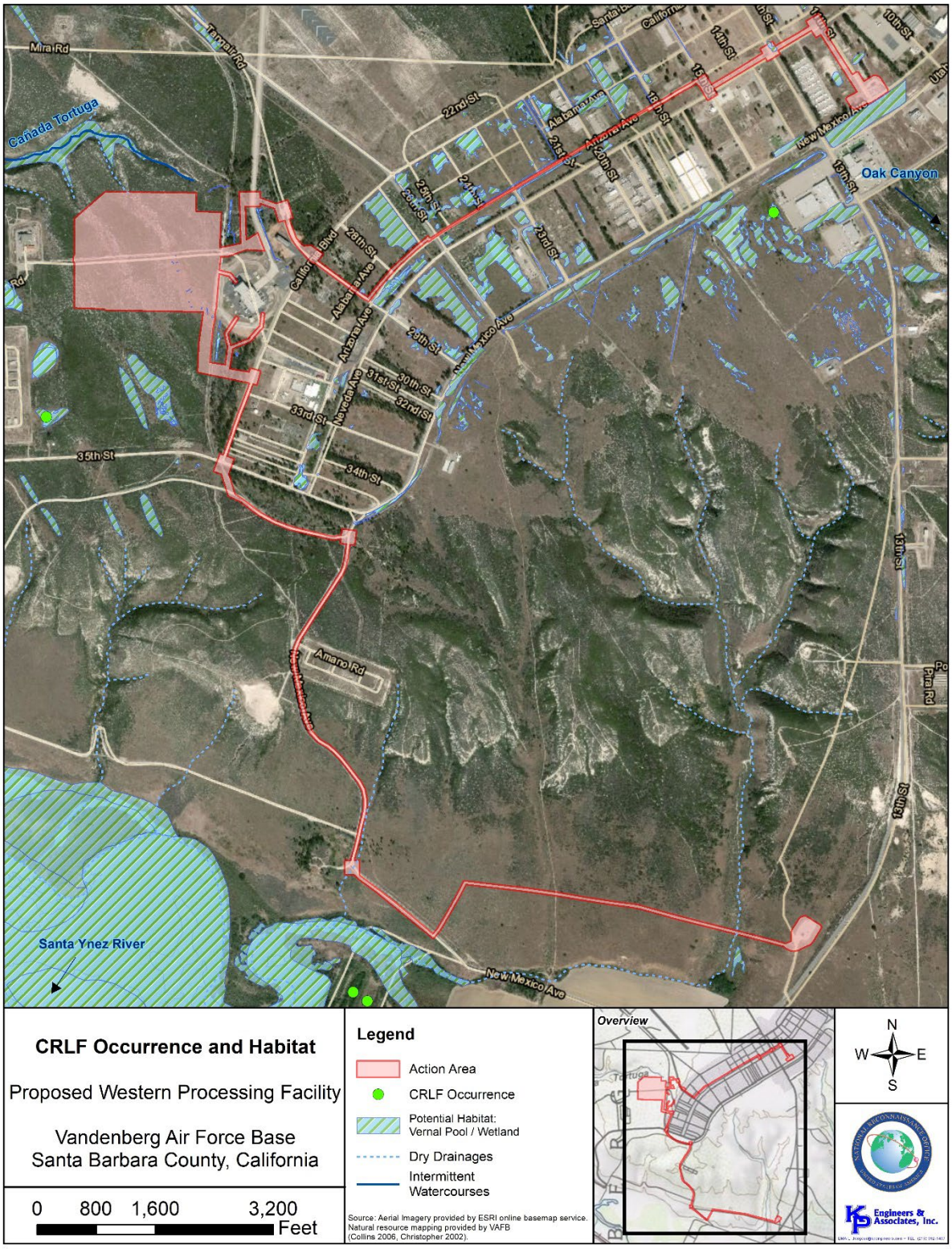

Figure 3.4 – California Red-Legged Frog Occurrence and Habitat

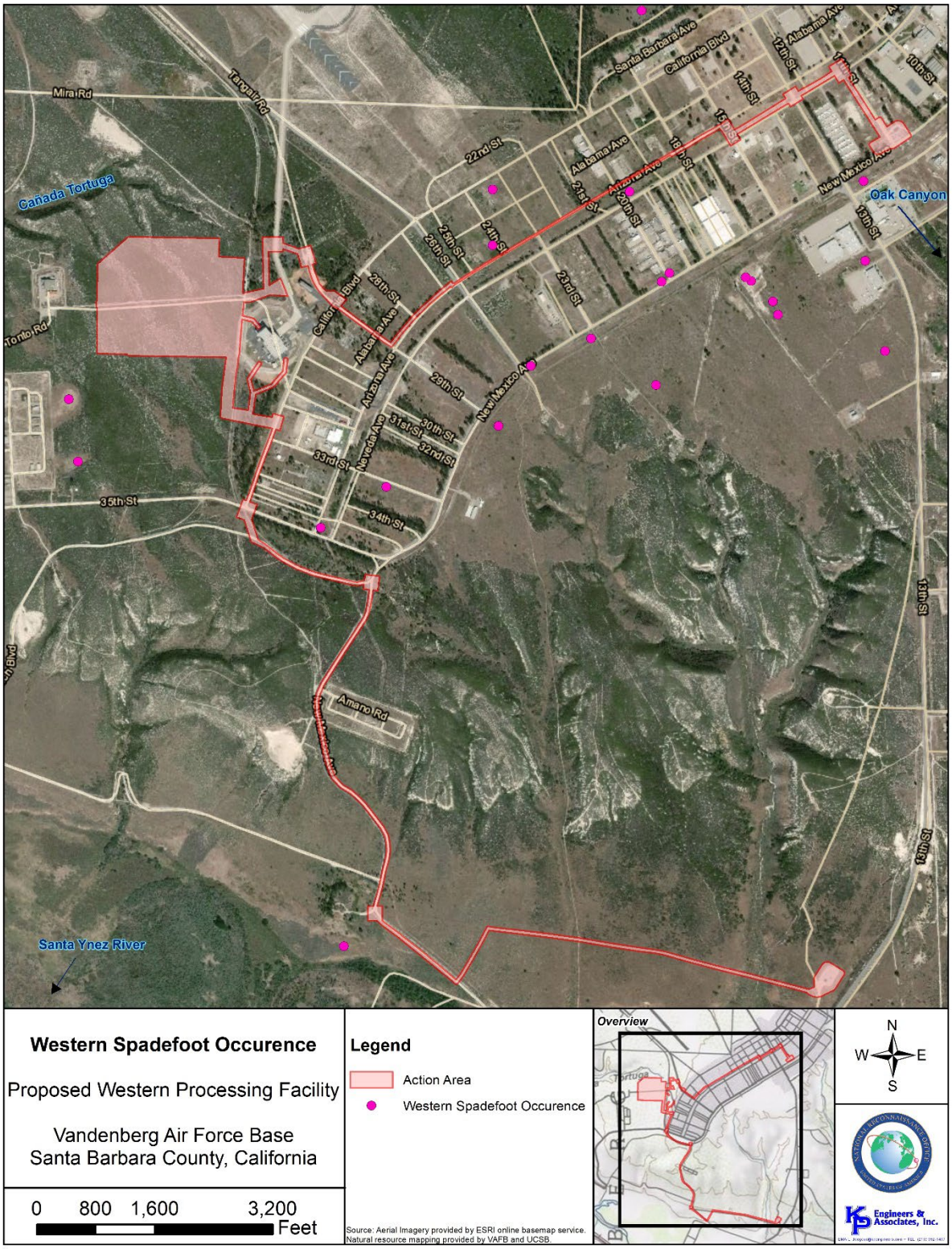

Figure 3.5 – Western Spadefoot Toad Occurrences

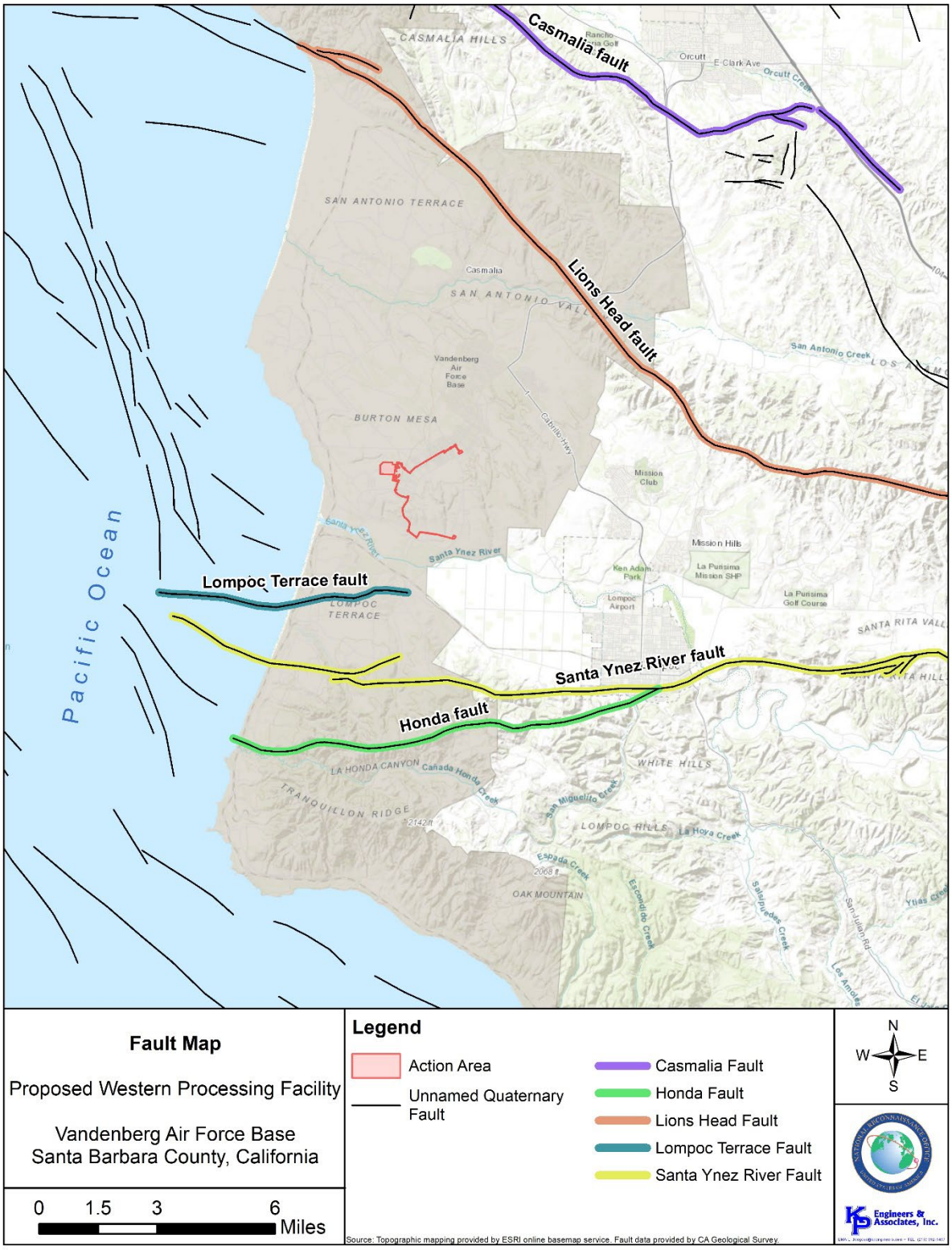

Figure 3.6 – Fault Map

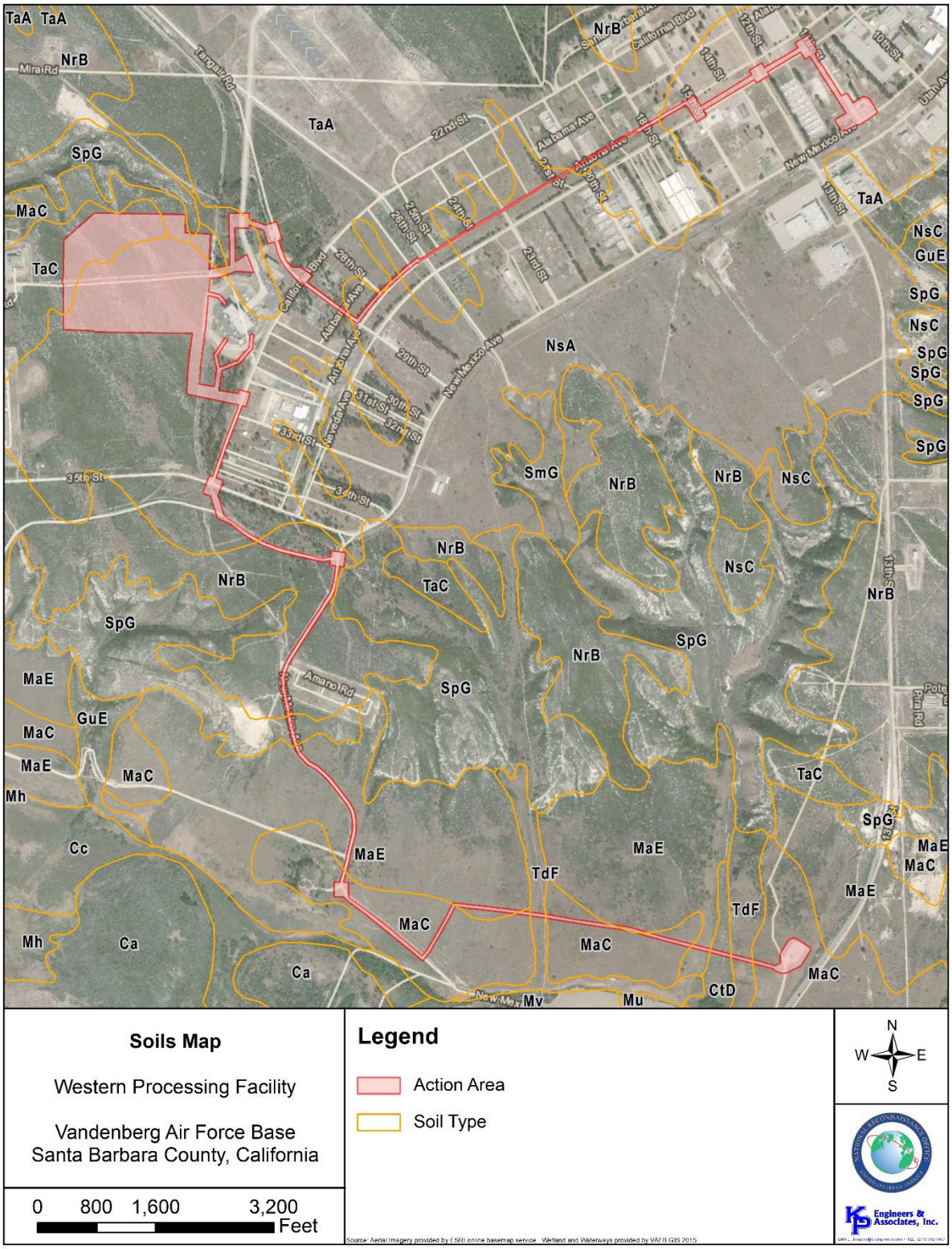

Figure 3.7 – Soils Map

Figure 3.8 – Water Resources Map

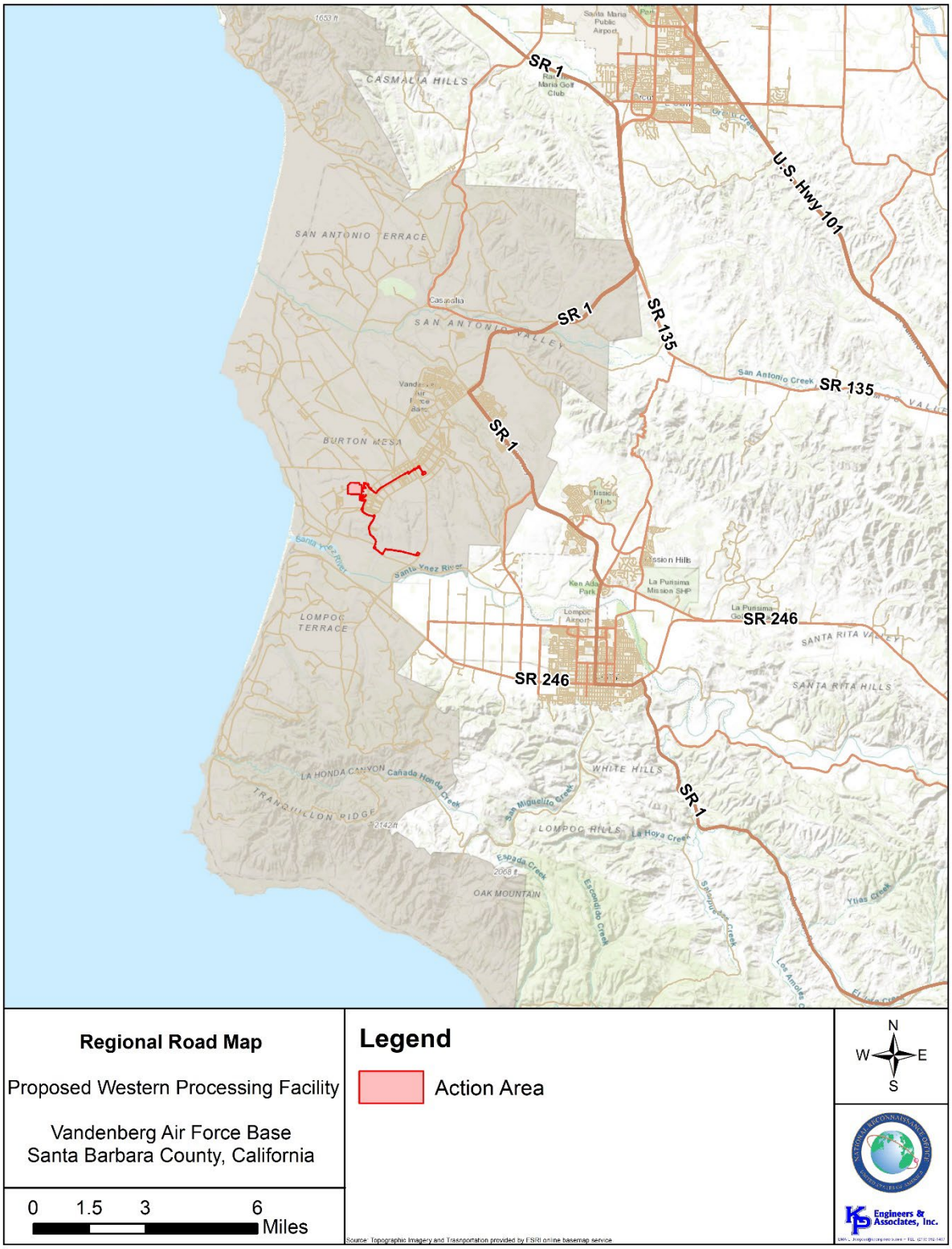

Figure 3.9 – Regional Road Map

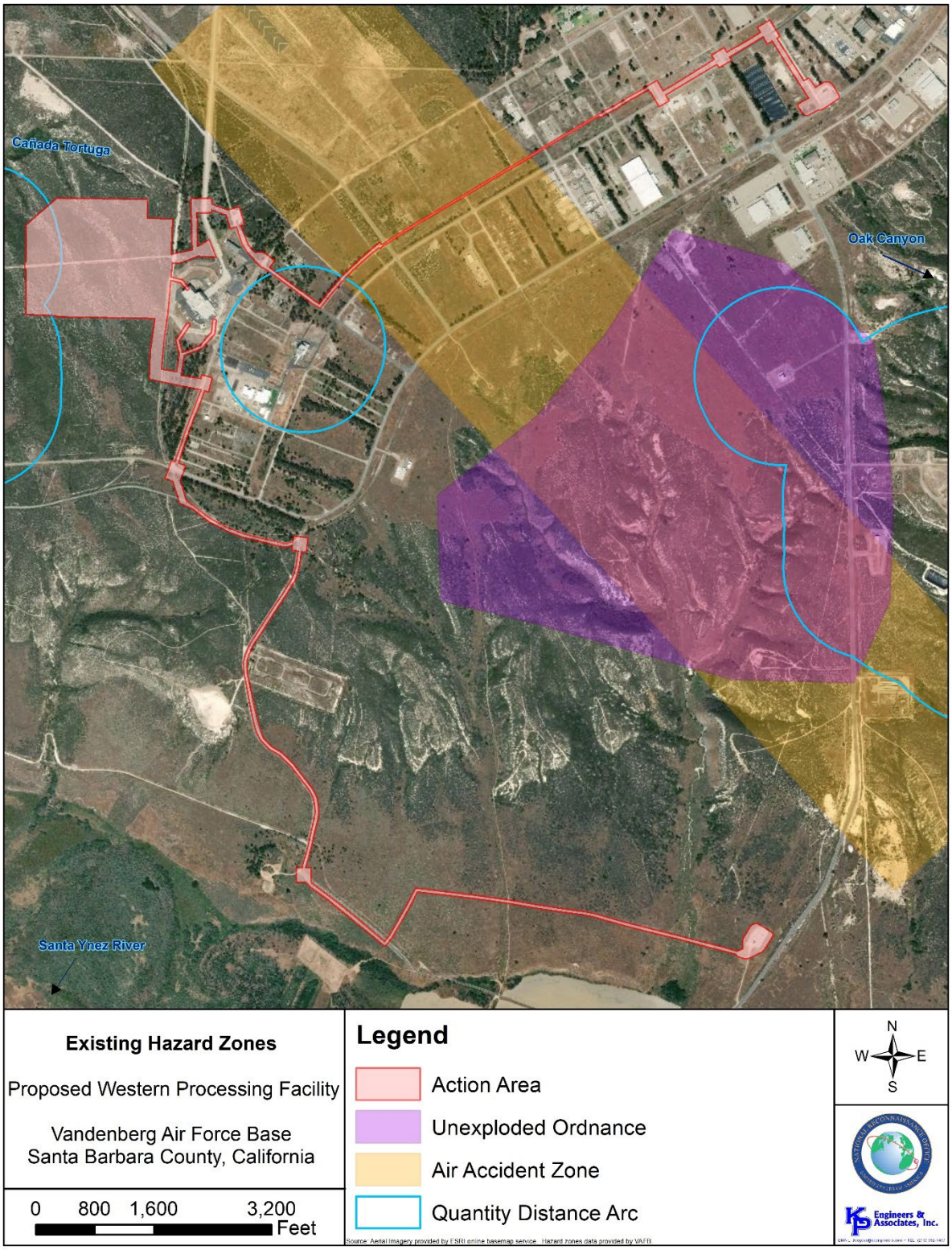

Figure 3.10 – Existing Hazard Zones

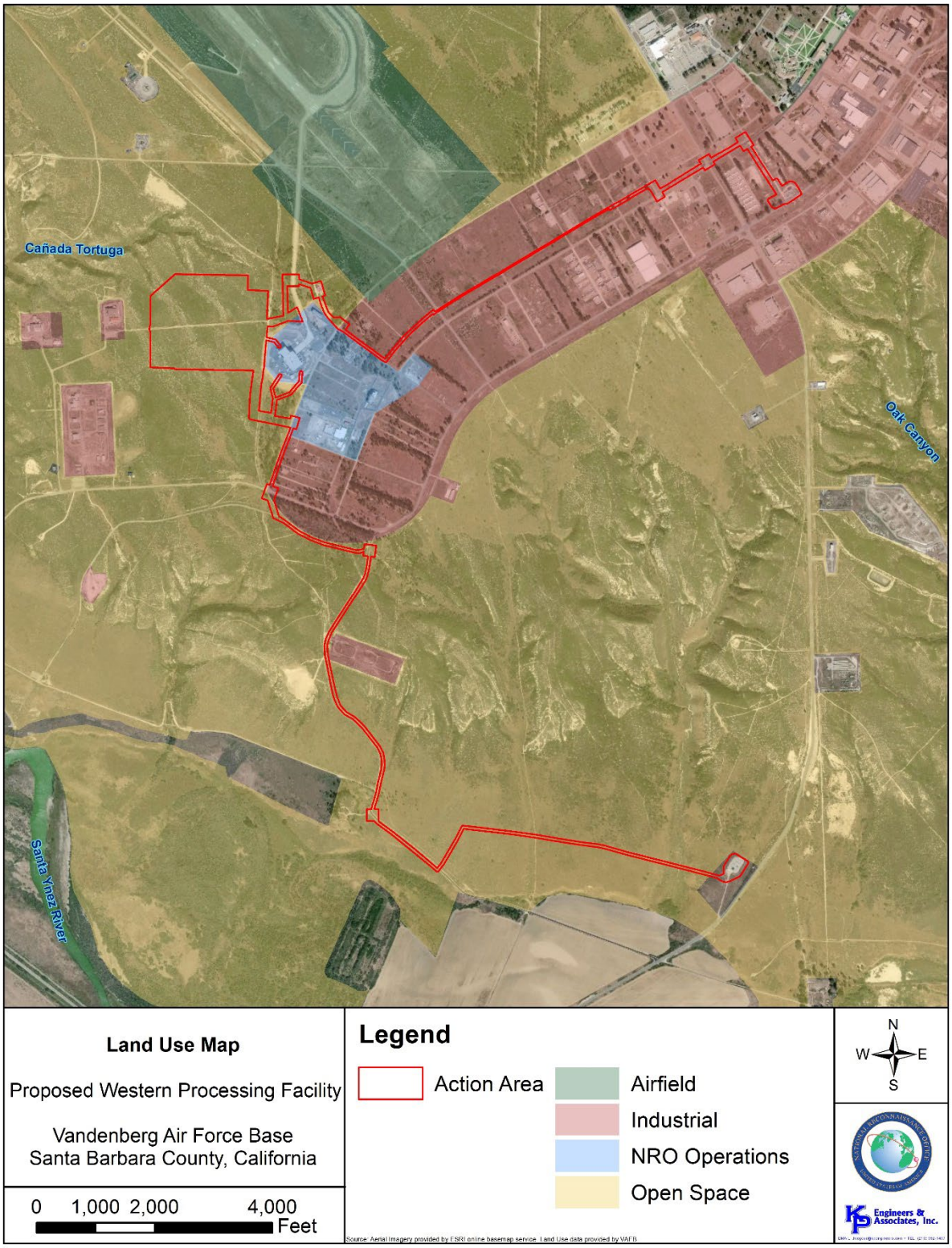

Figure 3.11 – Land Use Map

2) **Exhibits**

Exhibit 1.1 – Applicable Federal and State Regulations

Regulation	Requirements	Implications and Regulations
Federal Regulations		
American Indian Religious Freedom Act	To respect the practice of traditional American Indian religions, including access to religious sites and use of ceremonial items.	Identify potentially concerned tribes and consult with them during NEPA analyses.
Archaeological and Historic Preservation Act	Requires federal agencies to identify and recover data from archaeological sites threatened by their actions.	Conduct surveys, identify archaeological sites, consult with specialists and others during NEPA analyses.
Archaeological Resources Protection Act	Requires permits and provides for civil and criminal penalties for disturbing archaeological resources on federal and tribal land without a permit.	Archaeologists performing investigations on federal or Indian land must meet permit requirements (43 C.F.R. Part 7; also 36 C.F.R. Part 79, and 43 C.F.R. Part 3).
Clean Air Act	Requires agencies to comply with state air quality standards set in State Implementation Plans (SIPs).	Review SIP, measure current air quality, project potential changes, seek alternatives that meet standards in NEPA analyses (40 C.F.R. Part 50).
Clean Water Act	Requires a permit from the USACE for actions affecting "waters of the United States."	Identify potentially affected waters, consult with USACE during NEPA analyses, explore alternatives to minimize filling (33 C.F.R. Parts 320-330; 40 C.F.R. Parts 35, 116, 117, 122, 124, 125,131,133, 220, 401, 403).
Comprehensive Environmental Response, Compensation, and Liability Act	Requires reporting of releases and cleanup of hazardous substances.	Phase I and sometimes Phase II remediation studies (40 C.F.R. Part 373; 41 C.F.R. 101-47).
Coastal Zone Management Act	Prohibits the discharge of pollutants from a point source into navigable WOTUS, except in compliance with a National Pollutant Discharge Elimination System (40 C.F.R. Part 122) permit. Requires that the discharge of dredged or fill material into WOTUS does not violate state water quality standards.	Determine any effects within the coastal zone or affecting coastal resources. Complete Coastal Consistency Determinations if action is conducted within or potentially affecting coastal resources within the coastal zone (15 C.F.R. Part 930). Prepare negative determination if the Proposed Action would not affect coastal resources.

Regulation	Requirements	Implications and Regulations
Endangered Species Act	Requires consultation with USFWS to ensure actions do not jeopardize threatened or endangered species or their Critical Habitat.	Analyze impacts on fish, wildlife, plants, habitats. Ecosystem analysis. Consult with USFWS where potential effect exists (50 C.F.R. Part 402).
Energy Independence and Security Act	Requires any development or redevelopment project involving a federal facility with a footprint that exceeds 5,000 square feet to use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property regarding the temperature, rate, volume, and duration of flow.	Incorporate site planning, design, construction, and maintenance strategies for the property into proposed design to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property regarding the temperature, rate, volume, and duration of flow and calculate pre- and post-development hydrology.
Energy Policy Act	Requires that federal agencies significantly reduce their use of energy and reduce environmental impacts by promoting the use of energy-efficient and renewable energy technologies.	Analyze the use of energy-efficient and renewable energy technologies for potential incorporation into the project design.
EO 11990 – Protection of Wetlands	Requires agencies to minimize destruction, loss, or degradation of wetlands.	Delineate wetlands, pursue alternatives and mitigation to minimize loss.
EO 12088 – Federal Compliance with Pollution Control Standards	To prevent, control, and abate environmental pollution from federal facilities and activities.	Phase I, possible Phase II remediation studies.
EO 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations	Requires federal agencies to identify and address any disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.	Conduct social impact analyses, identify potentially affected populations, involve them in NEPA review, adjust public involvement to accommodate them, seek alternatives that avoid disproportionately adverse effects.
EO 13045 – Protection of Children from Environmental Health Risks and Safety Risks	Requires federal agencies to make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children; and address these risks in their policies, programs, activities, and standards.	Analyze project for potential environmental health or safety risks that may disproportionately affect children and seek feasible alternatives that avoid disproportionate effects to health and wellbeing of children.

Regulation	Requirements	Implications and Regulations
EO 14057 – Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability	Outlines policies intended to ensure that federal agencies prioritize actions that promote clean and sustainable operations which catalyze job opportunities in the clean energy industry	Consider incorporating principles of efficient waste reduction operations into the proposed project design.
Migratory Bird Treaty Act	Under the Act, taking, killing, or possessing migratory birds is unlawful.	Avoid impacts or harm to native migratory birds, their active nests, eggs, and young.
National Environmental Policy Act	Requires agencies to consider and document environmental impacts during project planning.	Consider impacts on the quality of the human environment, guided by national policy (40 C.F.R. Parts 1500-1508).
National Historic Preservation Act	Requires agencies to identify historic properties subject to effect by their actions, and to consult with SHPO and others about alternatives and mitigation.	Conduct surveys to identify historic properties, determine potential effects. Consult, execute, and implement agreements, document in NEPA documents (36 C.F.R. Part 800; also 36 C.F.R. Parts 60, 61, 65, 68).
Native American Graves Protection and Repatriation Act	Requires consultation with Indian tribes; repatriation of human remains, cultural items, other items. Requires development and implementation of a Plan of Action for treatment.	Identify culturally affiliated tribes or groups, consult with them, seek to develop plans of action, report in NEPA documents and implement as mitigation (43 C.F.R. Part 10).
Noise Control Act	Requires that each department, agency, or instrumentality of the executive, legislative, and judicial branches of the federal government having jurisdiction over any property or facility or engaged in any activity resulting, or which may result in, the emission of noise shall comply with federal, state, interstate, and local requirements respecting control and abatement of environmental noise.	Comply with local, state, and federal noise requirements by controlling noise to levels that do not jeopardize the health and welfare of civilians.

Regulation	Requirements	Implications and Regulations
Pollution Prevention Act	Requires that pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and that disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.	Consider incorporation of principles to prevent or reduce the source of pollution wherever feasible into the proposed project design.
Resource Conservation and Recovery Act	Regulates the generation, transportation, treatment, storage, and disposal of hazardous and solid waste, and USTs.	Phase I and possible Phase II remediation studies (40 C.F.R. Parts 260-281).
Superfund Amendments and Reauthorization Act	Requires plans for cleanup of contaminated sites, and disclosure to public of hazardous materials and processes.	Phase I and possible Phase II remediation studies (40 C.F.R. Part 373).
Toxic Substances Control Act	Regulates chemical substances, including polychlorinated biphenyls and asbestos.	Address in NEPA review (40 C.F.R. Part 761).
State Regulations		
California Coastal Act	Provides long-term protection of California's 1,100-mile coastline and constitute the standards used by the Coastal Commission in its coastal development permit decisions and for the review of local coastal programs prepared by local governments and submitted to the Commission for approval.	Comply with permitting and policies under the California Coastal Management Program set forth by the CCC (authority under the CZMA).
Porter-Cologne Water Quality Control Act	Protects waters of the state for the use and enjoyment of the people of California and declares that the protection of water resources be administered by the regional water quality control boards.	Adhere to waste discharge requirements, National Pollution Discharge Elimination System (NPDES) permitting requirements, and policies set forth in the regional water quality control plan.
California Endangered Species Act	Tracks and protects plant and wildlife species that are considered sensitive, rare, threatened, or endangered as identified by California Department of Fish and Wildlife.	SLD 30 is not subject to requirements of the California Endangered Species Act (CESA); however, SLD 30 protects and conserves species and plant communities considered sensitive by the state through their Integrated Natural Resources Management Plan.

Exhibit 2.1 – Potential WPF Sites Eliminated in Initial Screening

Site	Critical Concerns Leading to Elimination
4S, Spin Road	Potential security concerns with proximity to Amtrak train station and public beach access. Significant grading required. Distant from other NRO facilities. Highly likely CCC concerns.
3S, Elephant Road	Challenging topography (slopes above and below). Probably insufficient room for the proposed WPF. Distant from other NRO facilities.
8N, Space Launch Complex 2	Current infrastructure could potentially interfere with new construction. Likely delays in site evaluation due to current use. Located within an Installation Restoration Program site that currently is under investigation. Distant from other NRO facilities. Multiple threatened and endangered species concerns. Probable CCC concerns.
6N, North of Astrotech	Located near commercial railway – potential noise, vibration, and security issues. Distant from other NRO facilities. Multiple threatened and endangered species concerns. Probable CCC concerns.
2N, Old Agena Tank Farm	Former Installation Restoration Program site. Has had Preliminary Assessment, no issues found, no remediation done. Closed with the State and no land use controls are in place. Nonetheless, considered risky for potential contaminated soil issues upon major ground disturbance. Limited area available due to nearby slopes.
7N, Titan Road	Old Titan II launch complex. Known to have many underground structures that would pose complex construction problems/risks. Distant from other NRO facilities. Multiple threatened and endangered species concerns.

Source: Booz Allen Hamilton, 2018

Exhibit 2.2 – Estimated Equipment Usage for Construction of the Proposed Action

Expected Equipment	Expected Duration*
WPF and Site	
2 Bulldozers	6 months
4-6 Dump Trucks	6 months
2 Loaders	6 months
Grader	6 months
Cranes	20 months
Bush Hog	1 month
Chipper	1 month
Cement Trucks	6 months
Man Lifts	20 months
Fork Lifts	20 months
Water Trucks	15 months
Vacuum Trucks	1 months
Delivery Trucks	20 months
Asphalt Equipment	6 months
Utility Extensions	
Bulldozer	4 months
Backhoe	4 months
Power Lines	
Bulldozer	3 months
Grader	1 month
Loader	3 months
Water Truck	3 months
Welding Machine	3 months
Jack and Bore Machine	1 month
Backhoe	9 months
Static Truck/Tensioner	12 months
Bull Wheel Puller	12 months
Bucket Truck	12 months
Heavy Line Truck	12 months
Boom/Crane Truck	12 months
Flatbed Truck	12 months
Auger Truck w/ Compressor	12 months

*Estimated usage is based on five working days per week at eight hours per day.

Exhibit 2.3 – Environmental Protection Measures

AIR QUALITY-1 (AIR-1). The following measures will be implemented to control fugitive dust emissions during ground-disturbing activities:

- Water trucks or sprinkler systems will be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this will include wetting down areas in the late morning and after work is completed for the day. Watering frequency will be increased when wind speeds exceed 15 miles per hour. Whenever practicable, reclaimed water will be used. The use of excessive amounts of water, which could cause runoff or erosion, will be avoided.
- The amount of disturbed area at any given time will be minimized.
- On-site vehicle speeds will be limited to a maximum of 15 miles per hour.
- Gravel pads or rumble plates will be installed at all access points to prevent tracking mud onto public roads.
- If fill material is to be imported, exported, or stockpiled for more than two days, it will be covered, kept moist, or treated with soil binders to prevent dust generation. Trucks transporting fill to and from the site will be covered with a tarp from the point of origin.
- After clearing, grading, earth moving, or excavation is completed, the disturbed area will be treated by watering, revegetating, or spreading soil binders until the area is replanted.
- Designated personnel shall monitor the dust control program and order increased watering, as necessary, to prevent transporting dust off-site.
- Construction activities shall comply with Santa Barbara County Air Pollution Control District (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 best management practices (BMPs) to minimize dust from truck hauling, track-out/carry-out from active construction sites, and demolition activities.

AIR QUALITY-2 (AIR-2). The following measures will be implemented to reduce nitrogen oxides and fine particulate matter ($PM_{2.5}$) emissions from construction equipment:

- Before construction begins, any portable equipment meeting the criteria defined in the Regulation to Establish a Statewide Portable Equipment Registration Program Order, effective 30 November 2018 for the California Portable Equipment Registration Program will be registered in the program or have a valid SBCAPCD Permit to Operate.
- Whenever feasible, heavy-duty diesel-powered construction equipment manufactured after 2010 will be used.
- The size of the engine in equipment and number of pieces of equipment operating simultaneously for the project shall be minimized, to the extent practicable.
- Construction equipment will be maintained per manufacturer's specifications.
- If available, construction equipment with U.S. Environmental Protection Agency (USEPA) or California Air Resources Board (CARB) certified diesel catalytic converters, diesel oxidation catalysts, and diesel particulate filters will be used.
- Idling of heavy-duty diesel trucks during loading or unloading will be limited to five consecutive minutes per CARB requirements, and auxiliary power units will be used whenever feasible.
- Worker trips will be minimized through carpooling.

BIOLOGICAL RESOURCES-1 (BIO-1). The following measures will be implemented to minimize potential impacts during general earth disturbance and vegetation clearing activities:

- Disturbances shall be kept to the minimum extent necessary to accomplish project objectives.
- All excess materials excavated shall be removed and transported to a designated waste or fill site.

- Native vegetation that is disturbed or removed in any areas temporarily impacted will be revegetated with local natives from SLD 30's approved planting lists. The revegetation seed mix will be free of weeds and invasive species.
- In cases where short-term access is necessary, rubber-tired vehicles will be used to leave native vegetation intact and to minimize soil disturbance.
- Equipment vehicles (dozers, mowers, etc.) shall be cleaned of weed seeds prior to use in the project area to prevent the introduction of weeds. Prior to site transport, any skid plates shall be removed and cleaned. Equipment would be cleaned of weed seeds daily especially wheels, undercarriages, and bumpers. Prior to leaving the project area, vehicles with caked-on soil or mud shall be cleaned with hand tools such as bristle brushes and brooms at a designated exit area; vehicles may subsequently be washed at the Army and USAF Exchange Service car wash or approved wash area. Vehicles with dry dusted soil (not caked-on soil or mud), prior to leaving a site at a designated exit area, shall be thoroughly brushed; vehicles may alternatively be air blasted on site. Please coordinate with the biological monitor or 30th Space Wing, Installation Management Flight, Environmental Assets (30 CES/CEIEA) at (805)-606-5299 for required briefing and inspection of equipment vehicles on site.
- All erosion control materials used would be from weed-free sources and, if left in place following project completion, constructed from 100 percent biodegradable erosion control materials (e.g., erosion blankets, wattles, etc.).
- If practicable, native wildlife species would be relocated, if encountered, to the nearest suitable habitat to avoid direct impacts.

BIOLOGICAL RESOURCES-2 (BIO-2). The following measures will be implemented to minimize potential impacts on federally listed species protected under the jurisdiction of the USFWS:

- Qualified biological monitors, approved by USFWS and 30 CES/CEIEA, including personnel who are familiar with and possess necessary qualifications to identify special status species that may occur within the proposed Action Area and capture, handle, and relocate California red-legged frogs (CRLF; *Rana draytonii*), shall be present at all appropriate times during construction and monitor activities throughout the length of the project. The biological monitors shall be responsible for delineating areas where special-status species are located or concentrated, relocating special-status species during construction activities, and inspecting equipment and equipment staging areas for cleanliness and gas and oil leaks. Prior to starting construction activities, the name(s) and credentials of the biologist(s) who would conduct the monitoring, surveying, species relocation, and other biological field activities shall be submitted to the USFWS for their approval.
- The qualified biological monitor(s) shall brief all project personnel prior to participating in project implementation activities. At a minimum, the training would include a description of the listed species and sensitive biological resources occurring in the area, the general and specific measures and restrictions to protect these resources during project implementation, the provisions of the ESA and the necessity of adhering to the provisions of the ESA, and the penalties associated with violations of the ESA.
- Immediately prior to the start of construction, the qualified biological monitor(s) will inspect the Action Area work zone for CRLF and other wildlife (to include Western Spadefoot Toad). The biologist will relocate CRLF individuals beyond the Action Area work zone to the nearest suitable habitat outside of the work zone. Simultaneously, perimeter fencing will be established around the work zone to inhibit CRLF and other wildlife from entering the work zone for the duration of construction. The biological monitor will inspect the perimeter fencing on a regular basis to ensure that it is secure and effective at keeping CRLF out of the work zone. Construction may continue 24 hours per day, with no restrictions inside the fenced perimeter.
- A qualified biological monitor shall inspect any equipment left overnight prior to the start of work. Equipment would be checked for presence of special status species in the vicinity and for fluid leaks.

- One day prior to vegetation removal, a qualified biologist would conduct surveys for CRLF within the area to be impacted. Any CRLF present would be captured if possible and released at the nearest suitable habitat outside the area where vegetation is to be cleared. Because ground conditions change depending on rainfall and season, this location cannot be identified in advance. The monitor would also be present during vegetation removal to capture and relocate CRLF that may be encountered, to the extent that safety precautions allow. This monitor would also search for injured or dead CRLF after vegetation removal to document take.
- The WPF building site would be encircled with minimum 3-foot-high silt fencing, anchored with metal T-posts, and buried along the bottom edge to inhibit terrestrial wildlife, including CRLF, from entering the site. The biological monitor would inspect the fence daily and direct maintenance to ensure its efficacy.
- If any CRLF are encountered during construction activities that need to be moved out of harm's way, the biological monitor would capture them and relocate them to the nearest suitable habitat. Documentation of relocations will be completed per requirements in the Biological Opinion.
- A qualified biologist will survey all potentially impacted areas before removing vegetation or other construction related impacts to ensure that no Lompoc yerba santa (LYS; *Eriodictyon capitatum*), a federally endangered species, are present.
- A qualified biological monitor would survey any potentially impacted areas for LYS prior to vegetation removal or construction to ensure no LYS are present.
- The qualified biological monitor will be present to verify that the distance between the known LYS population and the construction area remains at least 150 feet.
- The 35th Street LYS population will be demarcated using a high-visibility temporary fence and signage adjacent to the dirt access road north of 35th Street to discourage vehicles and workers from accidentally accessing the LYS area.
- Vernal pools located within 25 feet of the construction area will be protected using high-visibility temporary fencing to avoid accidental equipment disturbance.
- Proper erosion and sediment control measures will be implemented when working near any vernal pool within 25 feet of the construction area to ensure that there are no impacts to any pools.

BIOLOGICAL RESOURCES-3 (BIO-3). The following measures will be implemented to minimize impacts on other non-federally listed special-status species (e.g., monarch butterfly overwintering site, migratory birds):

- Removing trees within mapped winter roosting sites (refer to Section 3.4) will not be allowed to avoid impacts to overwintering monarch butterflies or their roost sites.
- If practicable, any vegetation clearing will occur outside of migratory bird nesting season (15 February through 15 August). If work occurs during nesting season, a qualified biologist would conduct bird nest surveys prior to project activities and delineate buffers around any nests that are found to prevent disturbance. The contractor would coordinate with 30 CES/CEIEA prior to work.
- Trenches and holes will be fenced, backfilled, or covered at the end of each workday to prevent falls or entrapment of western spadefoot toad (*Spea hammondii*) and other wildlife. Covered trenches and holes will be inspected prior to or during the removal of coverings before work begins each day.
- If any western spadefoot toads are encountered during construction activities that need to be moved out of harm's way, the biological monitor would capture them and relocate them to the nearest suitable habitat.

CULTURAL RESOURCES-1 (CULT-1). The following measures will be implemented to minimize impacts on sensitive archaeological resources:

- If cultural resources are encountered during project-related ground-disturbing activities, all excavation will be halted to avoid disturbing the site or any nearby area reasonably suspected to

include cultural resources. The 30 CES/CEIE will be contacted so that the significance of the find can be assessed.

GEOLOGY and EARTH RESOURCES-1 (GEO-1). A Storm Water Pollution Prevention Plan (SWPPP) will be implemented to minimize erosion and impacts on stormwater quality during ground-disturbing activities.

- Erosion and sediment control measures will be in place throughout grading and development of the site until all disturbed areas are permanently stabilized.

WATER RESOURCES-1 (WR-1). The following measures will be implemented to minimize impacts on water resources and stormwater quality during ground-disturbing activities:

- The contractor will implement a Storm Water Pollution Prevention Plan (SWPPP) as part of the NPDES Construction General Permit. The SWPPP will describe BMPs including erosion and sediment controls, tracking controls, material storage, 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.
- Erosion and sediment control measures will be in place throughout grading and development of the site until all disturbed areas are permanently stabilized. Only 100-percent biodegradable erosion control materials would be left in place following project completion.
- Exposed soils will be permanently stabilized with vegetation to prevent erosion and meet the NPDES Construction General Permit Notice of Termination requirements.
- Dust emissions will be controlled.
- Trash will be contained and regularly disposed of. Any trash that escapes from containers shall be collected daily.
- All temporary sediment and erosion control devices including silt fence and wattles with plastic netting will be removed upon project completion.
- Construction materials will be stored in a manner that prevents contact with stormwater. Liquids, petroleum products and hazardous materials will be stored in approved containers and drums and placed in proper containment facilities covered prior to rain events.
- Conduct fueling in a designated location with appropriate spill prevention and control.
- Perform washout of concrete trucks off base or washout wastes into a properly constructed temporary pit where the concrete can set, be broken up and properly disposed of.
- Portable toilets should have secondary containment and be secured to the ground to prevent falling.
- Potential WOTUS (surface water drainages and wetlands) and vernal pools have been identified for avoidance on the construction plans.
- The placement of poles and access roads, vegetation removal, and heavy equipment access would be completely avoided in surface water drainages to the ordinary high-water mark. This includes dry drainages and drainage areas.
- A biological monitor would be required for work near surface water drainages to ensure that no impacts occur.
- The SLD 30 Post-Construction Storm Water Standard requires Low Impact Development measures to include: Site Design Measures, Source Control Measures, and Storm Water Retention and Treatment Measures. The predevelopment flow hydrology of the project site will be maintained or restored, to the maximum extent technically feasible. A Storm Water Control Plan will be prepared for approval by 30 CES Water Resources.
- Preservation of existing vegetation to the extent feasible.

HUMAN HEALTH and SAFETY (SAFE-1). The following measures will be implemented to minimize the potential for adverse impacts on human health and safety:

- DAF contractors and Space Force personnel will comply with federal Occupational Safety and Health Administration (OSHA), DAF Occupational Safety and Health, and California's Division of Occupational Safety and Health requirements over the entire project.
- DAF contractors will prepare and submit a health and safety plan to SLD 30 and will appoint a qualified individual as safety officer.
- Trenching activities associated with Circuit B5, particularly along 11th Street north of New Mexico Avenue, will be vented and the breathing zone monitored for benzene concentrations where work is being performed.
- Bore pits would be surrounded with lighting and barricades to avoid falls by people or animals.
- To minimize potential adverse impacts from biological hazards (such as from snakes and poison oak) and physical hazards (such as from rocky and slippery surfaces), awareness training will be incorporated into the worker health and safety protocol.
- The reroute of the water line would follow California Health & Safety Code (Title 22), Sections 64551 – 64604, California Waterworks Standards, as applicable.
- All chemicals, materials, and products used in drinking water construction or treatment that will meet the drinking water shall be listed as such per National Sanitation Foundation International (NSF) Standards 60 and 61, as applicable.
- All plumbing materials and products used in construction that will meet drinking water for fixtures intended to provide drinking water to the user shall conform to California's lead-free law as stated in Title 22, Sections 116875 - 116880. Additional information as referenced can be found in recent California legislation, as contained in Senate Bill (SB) 1334, SB 195, and AB 1953.
- Any activity requiring the connection to and the drawing of bulk water from the drinking water distribution system to support construction and repair projects shall require the approval and coordination of the Vandenberg Cross Connection Control and Backflow Prevention Program Manager, 30 CES Operations Management Flight, Utilities, 805-606-8158.
- Disinfection practices of water mains shall adhere to American Water Works Association Standard C651-05. All chemicals used that will meet drinking water shall be listed in NSF-60 as approved for disinfection. In addition, results from bacteriological testing shall be shared with 30th Civil Engineer Squadron Installation Management Flight Environmental Compliance (30 CES/CEIEC) and 30 MDG, Bioenvironmental Engineering, prior to placing the main in service.
- Personnel making decisions affecting the construction, installation, disinfection, testing, flushing, cleaning of water distribution and well system components as part of any project involving the installation of water mains, laterals, hydrants, and wells shall be certified by the California Department of Public Health as a Water Distribution System Operator D2. Refer to Title 22, Section 63770.
- Regarding the filling, cleaning, flushing, and dewatering of the rerouted water line, only uncontaminated water may be released to grade.
- Conditions for discharge of chlorinated water from waterline disinfection include:

a. The total chlorine residuals of the discharge shall not exceed 1.5 mg/L. Water may need to be captured and contained until the chlorine residual is reduced.

b. The discharge shall have a pH between 6.5 and 8.3. Water may need to be captured and contained until the pH is reduced.

c. The discharge shall not flow to a surface water, wetlands, storm drain, or stormwater conveyance system.

d. The discharge shall not be within 100 feet of a surface water or wetland, or at a point where the discharge can flow into a surface water or wetland.

HAZARDOUS MATERIALS and HAZARDOUS WASTE MANAGEMENT-1 (HAZ-1). The following measures will be implemented to minimize hazardous materials or hazardous waste management impacts:

- Hazardous materials would be procured through or approved for use by SLD 30 Hazardous Materials (HAZMART). The contractor will report monthly usage of hazardous materials to the HAZMART to meet legal reporting requirements.
- Hazardous materials would be properly stored and managed in secured areas.
- Chemical stockpile spill containment, if necessary, would be accomplished to minimize or preclude hazardous releases.
- Standard procedures would be used to ensure that all equipment is maintained properly and free of leaks during operation, and all necessary repairs are carried out with proper spill containment. All equipment operating within the project areas would be inspected regularly for fluid leaks. The construction contractor would submit a Spill Prevention Plan for 30 CES/CEIEA approval.
- Fueling and addition of oil/fluids to equipment would be done in predesignated areas over secondary containment to minimize risks from accidental spillage or release. Spill containment material would be placed around the equipment before fuel, or other hazardous substances such as oil or brake fluid, are brought in.
- All hazardous materials would be properly identified and used IAW manufacturer specifications to avoid accidental exposure to or release of hazardous materials required to operate and maintain construction equipment.
- If any equipment repairs are necessary, repair would not begin without implementation of a Spill Prevention Plan, and the presence of a qualified biological monitor on the project site.
- Hazardous waste shall be managed IAW the Hazardous Waste Management Plan, SLD 30 Plan 32-7043-A. The contractor is required to complete and submit a Community Awareness and Emergency Response form to 30 CES/CEIEC within 24 hours of a hazardous materials spill or release.

SOLID WASTE-1 (SW-1). Solid waste will be minimized by strict compliance with the SLD 30 Integrated Solid Waste Management Plan. Implementing the following measures will further minimize the potential for adverse impacts associated with solid waste:

- All materials that are disposed of off-Base will be reported to the 30 CES/CEIE Solid Waste Manager. Additionally, any materials recycled on-Base by processes other than the Base landfill, will be reported to the 30 CES/CEIE Solid Waste Manager at least quarterly, with copies of weight tickets and receipts provided.
- All human generated trash at the project site shall be disposed in proper containers and removed from the work site and disposed properly at the end of each workday. A large dumpster would be maintained at the staging area for this purpose. All construction debris and trash shall be removed from the work area upon completion of the project.

Exhibit 3.1 – Vegetation Type Descriptions

Vegetation Type	Description
Acacia	Dominated by the non-native acacia (*Acacia sp*.) shrub. Associated species include California sagebrush (*Artemisia californica*), coyote brush (*Baccharis pilularis*), and iceplant (*Carpobrotus chilensis* and *C. edulis*).
Central Coastal Scrub	Composition can vary, but California sagebrush occurs throughout this vegetation type. Coyote brush (*Baccharis pilularis*), California goldenbush (*Ericameria ericoides*), seacliff buckwheat (*Erigonum parvifolium*), sawtooth goldenbush (*Hazardia squarrosa*), deer weed (*Lotus scoparius*), and black sage (*Salvia mellifera*) are also associated with this vegetation type.
Central Coas–al Scrub - Maritime Chaparral	Transition between central coastal scrub and maritime chaparral and has components of both. Associated plants include chamise (*Adenostoma fasciculatum*), Purisima manzanita (*Arctostaphylos purissima*), California sagebrush, coyote brush, and coast live oak (*Quercus agrifolia*).
Central Coastal Scrub / Herb	Found in transitional areas between central coastal scrub and non-native grasses and forbs. It is often associated with periodic disturbances. Associated plants include California sagebrush, coyote brush, black mustard (*Brassica nigra*), ripgut brome (*Bromus diandrus*), California goldenbush, and black sage.
Depression / Seasonally Inundated Pool	This category was used for areas where water clearly collects seasonally with rainfall and vegetation had not re-established by the time of the survey. This category is not equivalent to vernal pools, which were not evident at the time of the survey and have been greatly reduced over the past six years of ongoing drought conditions.
Developed	Developed areas within the proposed Action Area included facilities, parking lots, and pavement where landscape plants may be found. These areas generally have limited vegetation consisting of planted trees and shrubs.
Disturbed / Cleared	Disturbed/Cleared areas may include firebreaks, construction zones, and similar areas that are actively or recently maintained such that there is little to no vegetation present. What species are found are usually ruderal shrubs and/or herbs.
–Iceplant - Herb	Iceplant/herb occurs where there are scattered patches of iceplant within an herb-dominated area. Associated plants include brome (*Bromus* sp.), iceplant, and veldt grass (*Ehrharta calycina*).
Maritime Chaparral	Relatively short-statured vegetation that often occurs within wind-blown areas and includes several species endemic to VSFB and the surrounding lands. The maritime chaparral on Burton Mesa is referred to as Burton Mesa chaparral (Odion, et al., 1992). Endemic dominant species include La Purisima manzanita (*Arctostaphylos purissima*), Santa Barbara ceanothus (*Ceanothus impressus* var. *impressus*), Lompoc ceanothus (*C. cuneatus* var. *fascicularis*), Purisima manzanita, and shagbark manzanita (*A. rudis*), in addition to chamise, toyon (*Heteromeles arbutifolia*), Santa

	Barbara mountain lilac (*Ceanothus impressus*), and black sage. On VSFB, Burton Mesa chaparral provides habitat for federally threatened Lompoc yerba santa (*Eriodictyon capitatum*) and Vandenberg monkeyflower (*Diplacus vandenbergensis*).
Maritime Chaparral / Herb	Occurs where there has been disturbance allowing native and/or non-native herbs to colonize spaces between chaparral plants. Maritime chaparral cover has been reduced to less than 40 percent in this vegetation type.
Native and Non-Native Herb	Includes areas where there is a high concentration of herbaceous plants, including brome, gumplant (*Grindelia camphorum*), and slender tarweed (*Hemizonia fasciculata*).
Non-Native Grasses and Forbs	Dominated by non-native grasses and/or forbs, including wild oats (*Avena* spp.), black mustard, brome, tocalote (*Centaurea melitensis*), and fennel (*Foeniculum vulgare*).
Non-Native Tree	Dominated by non-native trees, most frequently Monterey cypress, eucalyptus, and Monterey pine.
Pampas Grass	Occurs where pampas grass is found without any significant amount of maritime chaparral. It may occur as a monoculture or with limited amounts of central coastal scrub, non-native grasses, and/or forbs.
Road	This category was used to account for any paved roads within the proposed Action Area.
Ruderal	Ruderal areas are adjacent to paved and dirt roads where frequent disturbance (e.g. mowing, herbicide treatment, vehicle traffic, etc.) has limited the vegetation cover. If any vegetation occurs, the species are typically non-native grasses and herbs.
Veldt Grass	Found where veldt grass is strongly dominant and there is no significant shrub cover. These areas may often be monocultures.

APPENDIX B

Methodology and Analysis

B.1 Air Quality and Climate

B.1.1 Definition of Resource

The U.S. Environmental Protection Agency (USEPA) is responsible for enforcing the Clean Air Act (CAA) of 1970, as amended. Air quality is defined by ambient air concentrations of specific pollutants determined by the USEPA to be of concern with respect to the health and welfare of the public. The six major pollutants of concern, called "criteria pollutants," are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), suspended particulate matter less than or equal to 10 microns in diameter (PM_{10}), finer particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). The purpose of the CAA is to: 1) establish National Ambient Air Quality Standards (NAAQS); 2) to classify areas as to their attainment status relative to the NAAQS; 3) to develop schedules and strategies to meet the NAAQS; and 4) to regulate emissions of criteria pollutants and toxic air pollutants to protect public health and welfare. Under the CAA, individual States can adopt ambient air quality standards and other regulations, provided they are at least as stringent as federal standards (USEPA, 2022a).

The USEPA has established NAAQS for criteria pollutants (**Table B.1**). Areas that violate a federal air quality standard are designated as nonattainment areas. Once a nonattainment area becomes compliant with the NAAQs, it is designated as a maintenance area (USEPA, 2016a).

Ambient air quality refers to the atmospheric concentration of a specific compound (amount of pollutants in a specified volume of air) that occurs at a geographic location. The ambient air quality levels measured at a location are determined by emissions, meteorology, and chemistry and are generally reported as a mass per unit of volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., parts per million [ppm] by volume). Emission considerations include the types, amounts, and locations of pollutants emitted into the atmosphere. Meteorological considerations include wind and precipitation patterns affecting the distribution, dilution, and removal of pollutant emissions. Chemical reactions can transform pollutant emissions into other chemical substances.

Pollutant emissions refer to the amount of pollutants or pollutant precursors introduced into the atmosphere. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, SO_2, Pb, and some particulates, are emitted directly into the atmosphere from emission sources. Secondary pollutants, such as O_3, NO_2, and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. PM_{10} and $PM_{2.5}$ are generated as primary pollutants by various mechanical processes (e.g., abrasion, erosion, mixing, or atomization) or combustion processes. However, PM_{10} and $PM_{2.5}$ can also be formed as secondary pollutants through chemical reactions or by gaseous pollutants condensing into fine aerosols. Emissions that are considered "precursors" to criteria pollutants,

such as reactive organic gases and nitrogen oxides, which are precursors for O_3, are regulated to control the level of the pollutant (e.g., O_3) in the ambient air.

The State of California has identified four additional pollutants for ambient air quality standards: visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride (**Table B.1**). The California Air Resources Board (CARB) has also established air quality standards more stringent than the Federal air quality standards: California Ambient Air Quality Standards (CAAQS). Areas within California in which ambient air concentrations of a pollutant are higher than the state or federal standard are nonattainment for that pollutant (CARB, 2017).

Toxic air pollutants, also called hazardous air pollutants (HAPs), are a class of pollutants that do not have ambient air quality standards but are examined individually when there is a source of these pollutants. The State of California has identified particulate emissions from diesel engines as a toxic air pollutant, among other toxic air pollutants (CARB, 2018).

Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). These gases allow solar radiation (sunlight) into the Earth's atmosphere, but prevent radiative heat from escaping, thus warming the Earth's atmosphere, analogous to a greenhouse. These gases are often called greenhouse gases (GHG), which are emitted by both natural processes and human activities. Federal and state law defines GHGs as any of the following compounds: CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride (CHSC, 2017).

Greenhouse gases have varying global warming potentials (GWPs). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "measure of the total energy that a gas absorbs over a particular period of time (usually 100 years), compared to CO_2" (USEPA, 2016b). The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of one. The other main GHGs that have been attributed to human activity include CH_4, which has a GWP of 28 to 36, and N_2O, which has a GWP of 265 to 298. Carbon dioxide, and to a lesser extent CH_4 and N_2O, are products of combustion and are generated from stationary combustion sources as well as vehicles. High global warming potential gases also include GHGs that are used in refrigeration/cooling systems such as chlorofluorocarbons and HFCs (USEPA, 2017).

Table B.1 – Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS[1]		CAAQS[2]
		Primary[3]	Secondary[4]	Concentration[5]
O_3	1-Hour	-	Same as Primary Standard	0.09 ppm
	8-Hour	0.070 ppm		0.070 ppm
PM_{10}	24-Hour	150 µg/m^3	Same as Primary Standard	50 µg/m^3
	Annual Arithmetic Mean	-		20 µg/m^3

$PM_{2.5}$	24-Hour	35 µg/m^3	Same as Primary Standard	-
	Annual Arithmetic Mean	12.0 µg/m^3	15 µg/m^3	12 µg/m^3
CO	8-Hour	9 ppm	None	9.0 ppm
	1-Hour	35 ppm		20 ppm
NO_2	Annual Average	53 ppb	Same as Primary Standard	0.030 ppm
	1-Hour	100 ppb		0.18 ppm
SO_2 [6]	24-Hour	-	-	0.04 ppm
	3-Hour	-	0.5 ppm	-
	1-Hour	75 ppb	-	0.25 ppm
Pb [6]	30-Day Average	-	-	1.5 µg/m^3
	3-Month Rolling Average	0.15 µg/m^3	Same as Primary Standard	-
Hydrogen Sulfide	1-Hour	No Federal Standards		0.03 ppm
Sulfates	24-Hour			25 µg/m^3
Visibility Reducing Particles	8-Hour (10 am to 6 pm, Pacific Standard Time)			In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%.
Vinyl chloride[7]	24 Hour			0.–1 ppm

1 - NAAQS (other than O_3, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the USEPA for further clarification and current Federal policies.

2 - CAAQS for O_3, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, PM_{10}, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded.

3 - National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. Parts per billion (ppb) in this table refers to ppb by volume or micromoles of pollutant per mole of gas.

4 - National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

5 - Concentration expressed first in units in which it was promulgated. PPM in this table refers to ppm by volume or micromoles of pollutant per mole –f gas.

6 - The previous National SO_2 standards (0.14 ppm for 24-hour and 0.03 ppm for annual) will remain in effect for the following: "(1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a state implementation plan call under the previous SO_2 standards (40 C.F.R.” 50.4(3))" (U.S. Environmental Protection Agency, 2016a).

7 - The CARB has identified Pb 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.

$\mu g/m^3$ = milligrams per cubic meter

Sources: CARB, 2017 and USEPA, 2016a

B.1.2 Region of Influence

Identifying the region of influence (ROI) for air quality requires knowledge of the type of pollutant, emission rates of the pollutant source, proximity to other emission sources, and local and regional meteorology. For inert pollutants (all pollutants other than O_3 and its precursors), the ROI is generally limited to a few miles downwind from the source. However, for photochemical pollutants such as O_3, the ROI may extend much farther downwind. Ozone is a secondary pollutant that is formed in the atmosphere by photochemical reactions of previously emitted pollutants, or precursors (reactive organic gases, nitrogen oxides, and PM_{10}). The maximum effect of precursors on O_3 levels tends to occur several hours after the time of emission during periods of high solar load and may occur many miles from the source. Ozone and O_3 precursors transported from other regions can also combine with local emissions to produce high local ozone concentrations. The ROI for the Proposed Action is located within the SCCAB.

B.1.3 Regulatory Setting

B.1.3.1 Federal Requirements

The Clean Air Act Amendments (CAAA) (1990) established new deadlines for achieving the NAAQS, depending on the nonattainment severity. The USEPA requires each state to prepare an Infrastructure SIP, which describes how that state will address changes and comply with the NAAQS. For states with nonattainment areas, the USEPA requires that the SIP also include additional regulatory programs that are adopted by the state to achieve and maintain an attainment status. A SIP consists of goals, strategies, schedules, and enforcement actions that will lead the State to compliance with all federal air quality standards, including the NAAQS.

The CAAA also requires that states develop an operating permit program requiring permits for all major sources of pollutants. The program is designed to reduce mobile source emissions and control emissions of hazardous air pollutants through establishing control technology guidelines for various classes of emission sources.

A New Source Review is required when a source has the potential to emit any pollutant regulated under the CAA in amounts equal to or exceeding specified major source thresholds (100 or 250 tons per year for pollutants other than GHG), which are predicated on a source's industrial category. Through the SBCAPCD's permitting processes, all stationary sources undergoing construction or modification are reviewed and are subject to a New Source Review process.

Under 40 C.F.R. Part 93, federal agencies are required to demonstrate that federal actions conform with the applicable SIP. The USEPA general conformity rule applies to federal actions occurring in nonattainment or maintenance areas. Because Santa Barbara County is an unclassified/attainment area for all NAAQS, the General Conformity Rule does not apply to the Proposed Action at VSFB.

Executive Order (EO) 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability,* was signed on December 8, 2021, directing federal agencies to "achieve a carbon pollution-free electricity sector by 2035 and net-zero emissions economy-wide by no later than 2050" (CEQ, 2021). Executive Order 14057 sets sustainability goals for federal agencies, which include net-zero emission goals for buildings, reduction in greenhouse gas emissions, reduction in energy and potable water use intensity, and develop climate-focused sustainable operations with the appropriate workforce to support them.

Refrigerant systems are regulated by both the federal government and CARB. The CARB introduced the Refrigerant Management Program requiring facilities with refrigeration systems containing more than 50 pounds of high-GWP refrigerant to conduct and report periodic leak inspections, promptly repair leaks; and keep service records onsite. The regulation also requires service practices intended to minimize refrigerant emissions (CARB, 2009). Refrigerants shall not be released to the environment and shall always be captured. As such, 30 CES/CEIEC and 30 CES Heating, Ventilation, and Air Conditioning Shop will be contacted to ensure any newly installed refrigerant systems are annotated and accounted for as required by law.

Because CARB approved reducing sulfur hexafluoride emissions from electricity transmission and distribution equipment, installing circuit breaks or puffer switches must be reported to 30 CES/CEIEC.

B.1.3.2 Local Requirements

In Santa Barbara County, the SBCAPCD is responsible for administering federal and state air quality laws, regulations, and policies. Included in local air district tasks are monitoring air pollution, maintaining air quality standards through programs to control air pollutant emissions, and promulgating rules and regulations.

The SBCAPCD regulations require facilities that are building, altering, or replacing stationary equipment that may emit air pollutants to obtain an Authority to Construct permit. Further, SBCAPCD regulations require a stationary source of air pollutants to obtain a Permit to Operate. The local air districts are responsible for reviewing applications and approving and issuing these permits (SBCAPCD, 2018b). The NRO/OSL anticipates that the Proposed Action would require multiple stationary sources that would likely be required to obtain various permits. In addition, the SBCAPCD regulations require a stationary source that would emit 25 tons per year or more of any pollutant, except CO, in any calendar year during construction to obtain emission offsets (SBCAPCD, 2016). Due to particulate matter concerns, SBCAPCD Rule 345, *Control of Fugitive*

Dust from Construction and Demolition Activities, also regulates fugitive dust caused by construction activities that remain visible beyond the property line (SBCAPCD, 2010).

The SBCAPCD has authorization to issue CAA Title V operating permits on behalf of the USEPA, as outlined in 40 C.F.R Part 70. The Title V program refers to Title V of the CAA that governs permitting requirements for major industrial air pollution sources and consolidates all CAA requirements for the facility into one permit (USEPA, 2013). The SBCAPCD Regulation XIII (Part 70 Operating Permit Program) describes the applicability of Title V operating permits. The SBCAPCD regulations require Title V operating permits for any major source if it emits or has the potential to emit pollutants more than the federal major source thresholds: 100 tons per year for any criteria pollutant; 10 tons per year for a single HAP; and/or 25 tons per year of total/cumulative HAPs. The permit issued to a facility contains both state and federal portions and incorporates a reporting schedule (USEPA, 2018d). The SLD 30 has a Title V permit (permit # 13968) and must consider if new air emissions from DAF and tenant operations require permit revision.

On April 30, 2015, the SBCAPCD adopted revisions to their Environmental Review Guidelines to the California Environmental Quality Act (CEQA) by adding significance thresholds for GHG cumulative impacts. The SBCAPCD has adopted a screening threshold of 10,000 metric tons of CO_2 equivalents per year consistent with California Assembly Bill 32 (SBCAPCD, 2015). As a lead agency, the SBCAPCD is required to address the cumulative impacts of GHG emissions from the proposed project as part of their CEQA review during the permitting process, should permits be mandated. Should emissions exceed the screening threshold, mitigation measures could be required to reduce emissions of GHGs. If exposure to "toxic air contaminant emissions would be substantial," CEQA would require the NRO/OSL to "perform a risk assessment to evaluate cancer risks or health hazards" (University of California, 2002).

B.2 Noise

B.2.1 Noise Characteristics

Noise is typically defined as unwanted sound. Sound is defined as pressure variations in the air that the human ear can detect. Sound becomes undesirable if it interferes with communication, is intense enough to damage hearing, or diminishes the quality of the environment. Most areas are characterized by continuous sound sources, including natural sources, which create a background sound level, or ambient noise, with intermittent, intrusive sources that create sound peaks that are noticeably higher than the background levels. The extent to which an intrusive sound adversely affects a given human receptor in the environment depends on the degree to which the intruding sound exceeds the background sound level. Both background and intrusive sound may affect the quality of life in each environment. Human responses to sound vary with the characteristics of the sound source, the distance between the source and receptor, receptor sensitivity, and background sound level.

Sound energy travels in waves, and the rates of travel (i.e., frequencies) are measured in cycles per second, or Hertz (Hz). As sound energy radiates outward from its source, it decreases in intensity because of geometric spreading, atmospheric absorption, and ground attenuation (U.S. Army Center for Health Promotion and Preventive Medicine, 2005). The characteristics of sound include parameters such as level (amplitude), frequency, and duration.

B.2.2 Sound Level and Frequency

Sound can vary over an extremely large range of amplitudes. The decibel (dB), a logarithmic unit that accounts for the large variations in amplitude, is the accepted standard unit for the measurement of sound. Zero on the decibel scale is based on the lowest sound pressure that a healthy, unimpaired human ear can detect. Sound levels in dBs are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in sound energy, while 20 dB is 100 times more intense. Each 10-dB increase in sound level is perceived as approximately a doubling of loudness over a wide range of amplitudes.

Frequency relates to the number of pressure oscillations per second, or Hz. Humans can detect sounds ranging in frequency from approximately 20 to 20,000 Hz and are most sensitive to frequencies from 1,000 to 4,000 Hz (U.S. Army Center for Health Promotion and Preventive Medicine, 2005).

There are several methods for characterizing sound level. The most common is the A-weighted sound level, or dBA. This scale is generally used when assessing human receptors, as it gives greater weight to the sound frequencies most sensitive to the human ear. A person's judgement of the sound loudness has been shown to correlate well with the A-weighted values of those sounds (USAF, 2016b). Therefore, dBA is the primary sound metric used in analyzing sound effects, as its characteristics are reflective of the human ear's frequency response.

B.2.3 Sound Metrics

To assess potential effects from noise, one should consider both transient sound and continually varying sound levels. Transient sound is defined as an "event having a beginning and an end where the sound temporarily rises above the background and then fades into it" (U.S. Army Center for Health Promotion and Preventive Medicine, 2005). These types of sounds, measured in terms of Sound Exposure Level (SEL), are associated with vehicles driving by, aircraft overflights, or other impulse noise. The SEL is based on two characteristics of transient sound, duration and intensity, where a long duration, low-intensity event can be as impacting as a high-intensity, shorter event. The SEL is the total acoustic energy in an event normalized to one second (U.S. Army Center for Health Promotion and Preventive Medicine, 2005). This number represents all the acoustic energy for the event in a one-second period.

A continually varying sound level over a given period can be described as a single "equivalent" sound level (Leq). The Leq is the preferred method to describe sound levels that vary over time,

resulting in a single decibel value that considers the total sound energy over a specified period that includes both quiet periods and sound events. This measurement is used to describe continuous sound sources and may be obtained by averaging sound levels over a selected period. Equivalent sound levels can represent any length of time, but typically are associated with some meaningful period, such as an 8-hour Leq for an office, or a 1-hour Leq for a classroom lecture (U.S. Army Center for Health Promotion and Preventive Medicine, 2005). The Leq is often averaged over a 1-, 8-, or 24-hour period. The hourly Leq used for this report is denoted as dBA Leq(h).

B.2.4 Human Response to Noise

Sound level changes of 3 dBA are considered barely perceptible to most people. A change of 5 dBA is readily perceptible. An increase in sound pressure level of 10 dBA is perceived as being twice as loud, while a decrease of 10 dBA is perceived as being half as loud (FHWA, 2017). Typical nighttime sound levels in quiet residential areas have a sound level of about 35 to 45 dBA. Normal speech at three feet has a sound level of about 60 dBA. A diesel truck passing by at about 50 feet produces a sound level of about 90 dBA, while a jet flyover at 1,000 feet produces a sound level of about 100 dBA (MDOT, 2018). **Table B.2** shows other typical A-weighted noise levels that occur in various indoor and outdoor environments.

Table B.2 – Typical Noise Levels in Environment

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
Jet take-off at 200 feet	130	
Operating heavy equipment	120	
	110	Night club with music
Construction site	100	
	90	Boiler Room
Freight Train at 100 feet away	80	
	70	Classroom chatter
	60	Conversation at 3 feet
Urban area nighttime	50	
	40	Soft whisper at 5 feet away
North Rim of the Grand Canyon	30	
	20	Silent study room
	10	
Threshold of human hearing	0	Threshold of human hearing

Source: OSHA, 2013

B.3 Biological Resources

B.3.1 Regulatory Setting

Federal agencies are required under Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.), to assess the effect of any project on federally listed threatened and endangered species. Under Section 7, consultation with the U.S. Fish and Wildlife Service

(USFWS) and the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) is required for federal projects if such actions could directly or indirectly affect listed species (threatened, endangered, rare, or candidate) or destroy or adversely modify Critical Habitat. It is also DAF policy to consider listed and special status species recognized by state agencies when evaluating the impacts of a project. The Space Force determined that the WPF project would have no impact on species managed by NMFS, to include the southern steelhead (*Onchorhyncus mykiss*); therefore, no consultation with NMFS was required.

B.3.2 Methodology

ManTech SRS Technologies, Inc. (MSRS) biologists reviewed past survey reports, VSFB Geographic Information Systems (GIS) natural resources layers, USFWS Information for Planning and Consultation (IPaC) (USFWS, 2018a), and the California Natural Diversity Database (CNDDB) (CDFW, 2018a) to identify prior records of sensitive species and habitats that should be considered. Field surveys were also completed specifically for this project by MSRS in 2018 and 2019. The results of the research and field surveys were used to prepare a Preliminary Biological Analysis (MSRS, 2018), completed in 2018, and a Biological Assessment (BA) (Gannett Fleming, 2019a), completed in 2019, and are referenced herein.

MSRS biologists surveyed the proposed Action Area for sensitive species, suitable habitats for sensitive species, and vegetation types by conducting walking transects across the entire area during the spring of 2018 (26 March to 1 April). In addition to the six species identified prior to surveys as potentially occurring within the survey area, the surveyors maintained vigilance for any other sensitive species that could be encountered during the effort. Transects were circuitous through the Action Area since the vegetation was dense in places and access was sometimes difficult. Transects were spaced to ensure adequate coverage of the areas to detect species and habitat. Any sensitive species that was detected was documented and mapped with a hand-held Global Positioning System (GPS) unit (Trimble XT). In addition, sensitive habitats (i.e. host plants, vernal pools, bodies of water) were mapped using a hand-held GPS unit. Vegetation types were determined in the field during the site survey and delineated into polygons using a combination of field-based GPS mapping and aerial photograph interpretation. Vegetation classes were consistent with the 2009 VSFB vegetation classification (Wildscape Restoration, Inc., 2009). Most of the power line corridors were surveyed in the same manner in July and August of 2018. Additional areas added to the proposed Action Area were surveyed in the same manner in September 2018 (20 September to 28 September). Surveys and habitat assessments for VPFS within the proposed Action Area were conducted under a separate effort by MSRS in December 2018 through March 2019 (MSRS, unpubl. data).

B.4 Cultural Resources

B.4.1 Regulatory Setting

The National Environmental Policy Act (NEPA) requires Federal agencies to consider potential project effects to affected environments, including cultural resources. Section 106 of the National Historic Preservation Act (NHPA) also requires federal agencies to assess potential project related effects to historic properties that are listed or eligible for listing in the National Register of Historic of Places (NRHP), and under this regulation, SLD 30 must consult with the State Historic Preservation Office (SHPO) and other parties for projects that could affect a historic property. Historic Properties are districts, buildings, sites, structures, areas of traditional use, or objects with historical, architectural, archeological, cultural, or scientific importance. They include archeological resources (both prehistoric and historic), historic architectural resources (physical properties, structures, or built items), and traditional cultural properties (those important to living Native Americans for religious, spiritual, ancestral, or traditional reasons). The SLD 30 Integrated Cultural Resources Management Plan (VSFB, 2023) provides additional direction and policy specific to properties owned and managed by SLD 30.

B.4.2 Cultural Setting

The prehistory of California's central coast spans the entire Holocene and may extend back to late Pleistocene times. Excavations on VSFB reveal occupations dating back 11,000 years (Lebow, et al., 2015). These early occupants are thought to have lived in small groups that had a relatively egalitarian social organization and a forager-type land use strategy (Erlandson, 1994; Glassow, 1996; Greenwood, 1972; Moratto, 1984). Human population density was low throughout the early and middle Holocene (Lebow, et al., 2007). Cultural complexity appears to have increased around 3,000 to 2,500 years ago (King, 1981; 1990). At VSFB, that interval also marks the beginning of increasing human population densities and appears to mark the shift from a foraging to a collecting land use strategy (Lebow, et al., 2006; Lebow, et al., 2007). Population densities reached their peak around 600 to 800 years ago, corresponding to the full emergence of Chumash cultural complexity (Arnold, 1992).

People living in the VSFB area prior to historic contact are grouped with the Purisima Chumash (Landberg, 1965; Greenwood, 1978; King, 1984), one of several linguistically related members of the Chumash culture. In the Santa Barbara Channel area, the Chumash people lived in large, densely populated villages and had a culture that "was as elaborate as that of any hunter-gatherer society on earth" (Moratto, 1984). Relatively little is known about the Chumash in the VSFB region. Explorers noted that villages were smaller and lacked the formal structure found in the channel area (Greenwood, 1978). About five ethnohistoric villages are identified by King on VSFB, along with another five villages in the general vicinity (1984). Diseases introduced by early Euroamerican explorers, beginning with the maritime voyages of Cabrillo in A.D. 1542 to 1543, substantially impacted Chumash populations more than 200 years before Spanish occupation

began (Erlandson and Bartoy, 1995; 1996; Preston, 1996). Drastic changes to Chumash lifeways resulted from the Spanish occupation that began with the Portolá expedition in A.D. 1769.

Vandenberg SFB history is divided into the Mission, Rancho, Anglo-Mexican, Americanization, Regional Culture, and Suburban periods. The Mission Period began with the early Spanish explorers and continued until 1820. Mission La Purísima encompassed the VSFB area. Farming and ranching were the primary economic activities at the Mission. The Rancho Period began in 1820 and continued until 1845. Following secularization in 1834, the Alta California government granted former mission lands to Mexican citizens as ranchos. Cattle ranching was the primary economic activity during this period. The Bear Flag Revolt and the Mexican War marked the beginning of the Anglo-Mexican Period (1845 to 1880). Cattle ranching continued to flourish during the early part of this period, but severe droughts during the 1860s decimated cattle herds. The combination of drought and change in government from Mexico to the United States caused substantial changes in land ownership. Sheep ranching and grain farming replaced the old rancho system. Increased population densities characterize the Americanization Period (1880 to 1915). Beginning in the late 1890s, the railroad provided a more efficient means of shipping and receiving goods and supplies, which in turn increased economic activity. Ranching and farming continued during the early part of the period of Regional Culture (1915 to 1945), until property was condemned for Camp Cooke (Palmer, 1999).

The Suburban Period (1945 to 1965) began with the end of World War II. In 1956, the army transferred 64,000 acres of North Camp Cooke to the USAF, and it was renamed the Cooke USAF Base. Construction of missile launch complexes began in 1957. In 1958, the Base had its first missile launch, the Thor, and was renamed VAFB (Palmer, 1999). The Base played a very important role in the Cold War with every ballistic missile in the U.S. arsenal ground- and flight-tested at VAFB and thousands of military personnel receiving training under operational conditions. In addition, VAFB was the only Base where military satellites could be safely launched into polar orbit and, thus, proved critical to the military space program during the Cold War (Nowlan, et al., 1996).

B.4.3. Known Cultural Resources in the Vicinity

Data sources examined included the Base Comprehensive Plan GIS, U.S. Geological Survey topographic maps, and reports from previous archaeological investigations (**Table B.4**).

Table B.4 – Previous Archaeological Investigations within the Archeological Study Area

Authors	VSFB Report No.	Report Title
Glassow et al. (1976)	1976-01	*Evaluation of Archaeological Sites on Vandenberg Air Force Base, Santa Barbara County, California*

Authors	VSFB Report No.	Report Title
Glassow (1977)	1977-01	*An Intensive Archaeological Survey of Five Areas on Vandenberg Air Force Base, Santa Barbara County, California*
WESTEC Services (1981)	1981-04	*Geophysical Evaluation, Vandenberg Air Force Base, Santa Barbara County, California, for Union Oil Company of California.*
Greenwood and Foster (1984)	1984-12	*Replacement Cable Project and Fiber-Optic Cable Project, Vandenberg Air Force Base, Santa Barbara County, California*
King et al. (1985)	1985-12	*Cultural Resources. In Union Oil Project/Exxon Project Shamrock and Central Santa Maria Basin Area Study Environmental Impact Statement, Technical Appendix G*
Gibson (1987)	1987-09	*Results of Archeological Survey for a Fence Improvement Project and Two Pasture Management Projects, Vandenberg Air Force Base, California*
Bergin and King (1989)	1989-12	*Survey and Inventory of Archaeological Properties for the Backbone Fiber-Optic Transmission Project, Vandenberg Air Force Base, Santa Barbara County, California*
Woodman et al. (1991)	1991-06	*Western Chumash Prehistory: Resource Use and Settlement in the Santa Ynez River Valley*
Crane (1994)	1994-15	*Survey and Inventory of Historic Properties for the RSA Fiber-Optic Transmission System, North Vandenberg Air Force Base, Santa Barbara County, California*
Eisentraut (1995)	1995-11	*Cultural Resources Investigation for Proposed Improvements to 18 Septic Tank Systems, Vandenberg Air Force Base, Santa Barbara County, California*
Gerber and Eisentraut (1998)	1998-01	*Archaeological Survey Report, Concrete/Asphalt Rubble Processing Facility Alternative 3, Vandenberg Air Force Base, California*
Carbone and Mason (1998)	1998-03	*Final Technical Report Phase I, II, and III Archaeological Survey for Cultural Resource Inventory, Vandenberg Air Force Base, Santa Barbara County, California*
Lebow and Ryan (1998)	1998-06	*Cultural Resources Condition on Vandenberg Air Force Base, Fiscal Year 1998: Zones 6 and 7*
Hodges et al. (2000)	2000-04	*Archaeological Survey of the Azalea and Halloween Wildfire Areas on North Vandenberg Air Force Base, Santa Barbara County, California*
Lebow and Peterson (2008)	—	*Archaeological Survey for the Vandenberg Air Force Base Cantonment General Plan, Santa Barbara County, California*

Source: Applied Earthworks, 2018

B.5 Geology and Earth Resources

No additional methodology or analyses for Geology and Earth Resources are discussed in this Appendix. Refer to Section 3.6 of Affected Environment.

B.6 Water Resources

B.6.1 Regulatory Setting

In California, the State Water Resources Control Board (SWRCB) and the Regional Water quality Control Board (RWQCB) administer the Clean Water Act (CWA) and state water regulations. The CWA mandates that point source discharges to surface water or to the ocean (WOTUS) are subject to the National Pollutant Discharge Elimination System (NPDES) permit program. In California, there are NPDES General Permits for municipal, industrial and construction site discharges. The Central Coast RWQCB is the local agency responsible for the VSFB area.

The California Porter-Cologne Water Quality Act provides a framework for establishing beneficial uses of water resources and the development of local water quality objectives to protect these beneficial uses. State regulations require a Waste Discharge Requirements (WDR) for permitting discharge.

The NPDES General Permit coverage for Construction Activities is required for construction projects equal to or greater than one acre in size with the potential for discharge to WOTUS. The permit requires the implementation of a Stormwater Pollution Prevention Plan (SWPPP), which describes best management practices (BMPs) to prevent pollutant and sediment discharges from the construction site. The NPDES Construction General Permit also requires site inspections, monitoring (sampling) and reporting to evaluate the effectiveness of the permit implementation actions.

A portion of VSFB is covered under the NPDES Small Municipal Separate Storm Sewer System (MS4) General Permit. The VSFB Post-Construction Storm Water Standard is required by this permit. The Post-Construction Storm Water Standard applies to projects that create and/or replace 2,500 SF or more impervious surface area within the cantonment area and those projects that create and/or replace 5,000 square feet or more of impervious surface area within the VSFB boundary. In these cases, a Storm Water Control Plan shall be prepared during design and shall be approved by 30 CES/CEIE Water Resources. Projects that create and/or replace 5,000 square feet or more of impervious surface shall implement Low Impact Development measures to include: Site Design Measures, Source Control Measures, and Storm Water Retention and Treatment Measures. Storm water retention and treatment measures will maintain or restore, to the maximum extent technically feasible, the predevelopment flow hydrology of the drainage area or areas.

Under Section 401 of the CWA, a federal agency cannot issue a permit or license for an activity that may result in a discharge to WOTUS until the state where the discharge would originate has

granted or waived Section 401 Water Quality Certification. A CWA Section 401 Water Quality Certification from the Central Coast RWQCB is not required under the Proposed Action because no direct impacts to water bodies or wetlands would occur.

Section 404 of the CWA regulates the discharge of dredged or fill material into WOTUS, including wetlands. Section 404 permits are reviewed and issued by the U.S. Army Corps of Engineers (USACE). A CWA Section 404 Permit from the USACE is not required under the Proposed Action because no direct impacts to water bodies or wetlands would occur.

In addition to federal protections afforded by the CWA, aquatic resources are protected in California through regulation of activities within inland streams, wetlands, and riparian areas. The RWQCB and the California Department of Fish and Wildlife (CDFW) both hold jurisdiction over similar features as the USACE, along with additional features such as riparian habitat, ground water, and a broader scope of isolated and ephemerally present surface waters. The California Porter-Cologne Water Quality Control Act (PCWQCA) gives the State very broad authority to regulate WOS which are defined as surface water or groundwater, including saline waters. The local RWQCB administers the PCWQCA and determines the exact definition of WOS within its region.

The Water Code defines "waters of the state" broadly to include "any surface water or groundwater, including saline waters, within the boundaries of the state." "Waters of the state" includes all "waters of the U.S." under any current or prior definition.

Executive Order 11988, *Floodplain Management*, directs all federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Preparing a Finding of No Practicable Alternative would be required for DAF projects having the potential to impact floodplains, per this EO.

The Water Quality Control Plan for Ocean Waters of California (Ocean Plan) controls the discharge of waste to the ocean to prevent degradation of marine communities or threats to public health. It establishes beneficial uses and water quality objectives for the protection of ocean waters. The Ocean Plan and the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California were amended in 2015 to prohibit the discharge of trash.

B.7 Aesthetics and Coastal Zone Resources

B.7.1 Aesthetics

No additional methodology or analyses for Aesthetics is discussed in this Appendix. Refer to Section 3.8 of Affected Environment.

B.7.2 Coastal Zone Resources

The proposed Action Area lies completely outside of the California Coastal Zone.

Projects that could affect areas within the coastal zone are subject to the Coastal Zone Management Act (CZMA), the federal law that protects the nation's coastlines. Section 306 of the CZMA gave the States, including California and the California Coastal Commission (CCC), authority over activities within the coastal zone. The CCC subsequently developed the California Coastal Management Program, the key policy component of which is the California Coastal Act (CCA). The CCC ensures the public concerns of statewide importance are reflected in local decisions regarding coastal development.

Coastal Act policies are as follows:

- Providing for maximum public access to the coast;
- Protecting marine and land resources, including environmentally sensitive habitat areas, such as wetlands, riparian corridors and creeks, rare and endangered species habitat, and marine habitat, such as tidepools;
- Protecting the scenic beauty of the coastal landscape;
- Maintaining productive coastal agricultural lands; and
- Locating coastal energy and industrial facilities and other development where they will have the least adverse impact.

Coastal Consistency Determinations must be completed for all federal actions conducted within or potentially affecting coastal resources within the coastal zone, per the CZMA and following the procedures outlined in NOAA's Federal Consistency Regulations (15 C.F.R. Part 930). Negative Determinations are prepared if a Proposed Action would not affect coastal resources.

B.8 Transportation

No additional methodology or analyses for Transportation is discussed in this Appendix. Refer to Section 3.9 of Affected Environment.

B.9 Socioeconomics

No additional methodology or analyses for Socioeconomics is discussed in this Appendix. Refer to Section 3.10 of Affected Environment.

B.10 Human Health and Safety

The area considered for health and safety issues includes areas potentially affected by Proposed Action construction. Construction activities could have workers potentially exposed to conditions that could adversely impact their health and safety. Accidents and injuries associated with construction activities are common, posing significant risk to health and safety. Physical hazards

(e.g., confined spaces, uneven terrain, holes, and ditches) and biological hazards (e.g., rattlesnakes, ticks, black widow spiders, and poison oak) may occur.

Heavy equipment may use hazardous materials, primarily petroleum, oil, and lubricants. The potential exists for unexpected releases of these materials, which would generate hazardous waste. The construction contractor would transport hazardous material used in or resulting from the Proposed Action. A permitted hazardous waste hauler would transport hazardous waste (**Section 3.12**).

Industrial hygiene and ground safety during construction activities would be the construction contractor's responsibility. Industrial hygiene responsibilities include monitoring and exposure to workplace chemicals, radiation, physical hazards, hearing and respiratory protection, medical monitoring of workers subject to chemical exposures, and overseeing all hazardous or potentially hazardous operations. Ground safety responsibilities include protection from hazardous situations and hazardous materials.

B.11 Hazardous Materials and Waste Management

No additional methodology or analyses for Hazardous Materials and Waste Management is discussed in this Appendix. Refer to Section 3.12 of Affected Environment.

B.12 Solid Waste Management

No additional methodology or analyses for Solid Waste Management is discussed in this Appendix. Refer to Section 3.13 of Affected Environment.

B.13 Utilities

No additional methodology or analyses for Utilities is discussed in this Appendix. Refer to Section 3.14 of Affected Environment.

B.14 Land Use

No additional methodology or analyses for Land Use is discussed in this Appendix. Refer to Section 3.15 of Affected Environment

APPENDIX C

Interagency and Intergovernmental Coordination for Environmental Planning

In accordance with 32 C.F.R. Part 989.14(l), SLD 30 will involve other federal agencies, state, Tribal, and local governments, and the public in preparation of an Environmental Assessment (EA). In meeting this requirement, as well as meeting the requirements of EO 12372 *Intergovernmental Review of Federal Programs*, SLD 30 notified and consulted with relevant federal and state agencies on the Proposed Action and alternatives to identify potential environmental issues and regulatory requirements associated with project implementation. The following discussion summarize the agency coordination and consultations that have been completed. All coordination records are in **Appendix D**:

- **U.S. Army Corps of Engineers (USACE)** – Coordination was completed with USACE related to Waters of the U.S. (WOTUS). A wetlands delineation study was prepared under Sections 401 and 404 of the Clean Water Act.
- **U.S. Fish and Wildlife Service (USFWS) –** The former 30 SW determined that the Proposed Action may affect threatened or endangered species and consultation with USFWS was completed under section 7 of the Endangered Species Act (ESA). The USFWS issued a Biological Opinion that identified potential impacts to threatened or endangered species and any required mitigation of those impacts as part of the Proposed Action.
- **California Coastal Commission (CCC)** – The Proposed Action is not located within the California coastal zone but may be visible from the coastal zone. The former 30 SW analyzed the Proposed Action to determine if there would be adverse impacts to the coastal zone, as defined by the Federal Coastal Zone Management Act (CZMA) and California Coastal Act (CCA). The 30 SW determined that there would be no significant adverse impacts to the coastal zone resulting from the Proposed Action and prepared a Negative Determination. The CCC concurred with the 30 SW's determination.
- **California State Historic Preservation Office (SHPO)** – The Proposed Action is a federal undertaking subject to complying with Section 106 of the National Historic Preservation Act (NHPA). A cultural resources survey was prepared for the National Reconnaissance Office (NRO) to cover the area encompassed by the three alternative sites being considered at the time of the survey, utility extension areas, and potential electric utility supply corridors (Applied Earthworks, 2018). The former 30 SW initiated consultation with SHPO under 36 C.F.R. Part 800. The 30 SW determined that the Proposed Action would have no adverse effect to any properties listed in or potentially listed in the National Register of Historic Places (NRHP). The SHPO concurred with 30 SW's determination of no adverse effect to historic properties.
- **Santa Ynez Band of the Chumash Indians (SYBCI) Tribal Government** – The NHPA implementing regulations at 36 C.F.R. Part 800, direct federal agencies to coordinate and consult with Native American tribal governments whose interests might be directly and substantially affected by activities on federally administered lands. The former 30 SW

consulted with SYBCI on the Proposed Action. The 30 SW determined that the SYBCI had no concerns about the proposed undertaking.

APPENDIX D

Additional Consultation / Analysis

1) USACE Consultation
2) USFWS Consultation
3) California Coastal Commission Consultation
4) SHPO Consultation and Native American Tribal Consultation
5) Air Quality Analysis
6) Public Notification and Review

All consultation and analysis completed in 2019, 2020 or earlier were reviewed to determine if agency notifications or re-initiations of consultation were required IAW state and federal regulations. Findings concluded that no changes or updates to completed consultations are required, unless specifically noted in the subsections of this Appendix.

1) **USACE Consultation**

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, LOS ANGELES DISTRICT
60 SOUTH CALIFORNIA STREET, SUITE 201
VENTURA, CALIFORNIA 93001-2598

August 28, 2019

SUBJECT: Determination of Need for Department of the Army Permit

Darryl York, Chief of Conservation
30 CES/CEIEA
1028 Iceland Avenue
Vandenberg AFB, California 93737

Dear Mr. York:

I am responding to your request (File No. SPL-2019-00571-TS) dated July 11, 2019, for clarification whether a Department of the Army (DA) permit is required for the Vandenberg Air Force Base Western Processing Facility located near the airstrip on Vandenberg Air Force Base, near the city of Lompoc, Santa Barbara County, California.

The Corps' evaluation process for determining if you need a permit is based on whether or not the proposed project is located within or contains a water of the United States, and whether or not the proposed project includes an activity potentially regulated under Section 10 of the Rivers and Harbors Act or Section 404 of the Clean Water Act. If both conditions are met, a permit would be required.

Based on the attached approved jurisdictional determination dated August 28, 2019 (enclosed), it appears the Vandenberg Air Force Base Western Processing Facility project site does not contain waters of the United States pursuant to 33 CFR Part 325.9.

I have also determined the proposed project does not require a permit under Section 404 of the Clean Water Act pursuant to 33 CFR Part 323.4. Notwithstanding this determination, your proposed project may be regulated under other Federal, State, and local laws. If any aspect of your proposed project is located within the vicinity of an existing U.S. Army Corps of Engineers water resources development project, you may be required to seek permission from the Corps pursuant to 33 USC 408 ("Section 408") and/or real estate related permissions.

Alterations/modifications to completed Corps projects requires a Corps permission pursuant to Section 408. In addition, real estate permissions may be necessary if the proposed project would affect United States real estate interests managed by the Corps. You are advised that the Corps' issuance of this letter does not preclude or discharge your obligation to acquire a Section 408 permission(s) or real estate permission(s) from the Corps should such permissions be required for you to undertake your proposed project. For information on our Section 408 request process or to determine whether a Section 408 or real estate permission is required, please contact our Engineering Division at spl.408permits@usace.army.mil.

If you have any questions, please contact me at (805) 585-2146 or via email at theresa.stevens@usace.army.mil. Thank you for participating in the Regulatory Program. Please help me to evaluate and improve the regulatory experience for others by completing the customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Sincerely,

Aaron O. Allen, Ph.D.
Chief, North Coast Branch
Regulatory Division

Enclosure

CF [in cases where we determine no permit is required]:
USFWS-Ventura
NMFS-Long Beach
EPA-Los Angeles
California DFW-Region 5
RWQCB-Region 3

Regulatory Program

INTERIM APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers
This form should be completed by following the instructions provided
in the Interim Approved Jurisdictional Determination Form User Manual.

SECTION I: BACKGROUND INFORMATION

A. COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (AJD): August 28, 2019

B. ORM NUMBER IN APPROPRIATE FORMAT (e.g., HQ-2015-00001-SMJ): SPL-2019-00571-TS

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State:CA County/parish/borough: Santa Barbara County City: Near Lompoc
Center coordinates of site (lat/long in degree decimal format): Lat. 34.712406, Long. -120.57415.
Map(s)/diagram(s) of review area (including map identifying single point of entry (SPOE) watershed and/or potential jurisdictional areas where applicable) is/are: ☐ attached ☒ in report/map titled Assessment of Potential Wetlands for National Reconaissance Office Western Processing Facility (ManTech SRS Technologies, Inc. June 2019).
☐ Other sites (e.g., offsite mitigation sites, disposal sites, etc.) are associated with this action and are recorded on a different jurisdictional determination (JD) form. List JD form ID numbers (e.g., HQ-2015-00001-SMJ-1): .

D. REVIEW PERFORMED FOR SITE EVALUATION:
☐ Office (Desk) Determination Only. Date: .
☒ Office (Desk) and Field Determination. Office/Desk Dates: 29 July 2019 Field Date(s): 21 Mach 2019.

SECTION II: DATA SOURCES

Check all that were used to aid in the determination and attach data/maps to this AJD form and/or references/citations in the administrative record, as appropriate.
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant. Title/Date: See above citation for wetland delineation report.
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☒ Data sheets/delineation report are sufficient for purposes of AJD form. Title/Date: See above citation for wetland delineation report.
☐ Data sheets/delineation report are not sufficient for purposes of AJD form. Summarize rationale and include information on revised data sheets/delineation report that this AJD form has relied upon: .
Revised Title/Date: .
☐ Data sheets prepared by the Corps. Title/Date: .
☐ Corps navigable waters study. Title/Date: .
☐ CorpsMap ORM map layers. Title/Date: .
☐ USGS Hydrologic Atlas. Title/Date: .
☐ USGS, NHD, or WBD data/maps. Title/Date: .
☐ USGS 8, 10 and/or 12 digit HUC maps. HUC number: .
☐ USGS maps. Scale & quad name and date: .
☐ USDA NRCS Soil Survey. Citation: .
☐ USFWS National Wetlands Inventory maps. Citation: .
☐ State/Local wetland inventory maps. Citation: .
☐ FEMA/FIRM maps. Citation: .
☐ Photographs: ☐ Aerial. Citation: . or ☐ Other. Citation: .
☐ LiDAR data/maps. Citation: .
☐ Previous JDs. File no. and date of JD letter: .
☐ Applicable/supporting case law: .

☐ Applicable/supporting scientific literature: .
☒ Other information (please specify): Planning Level Mapping of Aquatic Resources for Vandenberg Air Force Base, California, ERDC July 2018).

SECTION III: SUMMARY OF FINDINGS

Complete ORM "Aquatic Resource Upload Sheet" or Export and Print the Aquatic Resource Water Droplet Screen from ORM for All Waters and Features, Regardless of Jurisdictional Status – Required

A. RIVERS AND HARBORS ACT (RHA) SECTION 10 DETERMINATION OF JURISDICTION:
☐ "*navigable waters of the U.S.*" within RHA jurisdiction (as defined by 33 CFR part 329) in the review area.
- **Complete Table 1 - Required**

NOTE: If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Section 10 navigable waters list, DO NOT USE THIS FORM TO MAKE THE DETERMINATION. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Section 10 RHA navigability determination.

B. CLEAN WATER ACT (CWA) SECTION 404 DETERMINATION OF JURISDICTION: "*waters of the U.S.*" within CWA jurisdiction (as defined by 33 CFR part 328.3) in the review area. **Check all that apply.**
☐ (a)(1): All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide. (Traditional Navigable Waters (TNWs))
- **Complete Table 1 - Required**

☐ This AJD includes a case-specific (a)(1) TNW (Section 404 navigable-in-fact) determination on a water that has not previously been designated as such. Documentation required for this case-specific (a)(1) TNW determination is attached.

☐ (a)(2): All interstate waters, including interstate wetlands.
- **Complete Table 2 - Required**

☐ (a)(3): The territorial seas.
- **Complete Table 3 - Required**

☐ (a)(4): All impoundments of waters otherwise identified as waters of the U.S. under 33 CFR part 328.3.
- **Complete Table 4 - Required**

☒ (a)(5): All tributaries, as defined in 33 CFR part 328.3, of waters identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.
- **Complete Table 5 - Required**

☐ (a)(6): All waters adjacent to a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3, including wetlands, ponds, lakes, oxbows, impoundments, and similar waters.
- **Complete Table 6 - Required**

☐ Bordering/Contiguous.
Neighboring:
☐ (c)(2)(i): All waters located within 100 feet of the ordinary high water mark (OHWM) of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3.
☐ (c)(2)(ii): All waters located within the 100-year floodplain of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3 and not more than 1,500 feet of the OHWM of such water.
☐ (c)(2)(iii): All waters located within 1,500 feet of the high tide line of a water identified in paragraphs (a)(1) or (a)(3) of 33 CFR part 328.3, and all waters within 1,500 feet of the OHWM of the Great Lakes.

☐ (a)(7): All waters identified in 33 CFR 328.3(a)(7)(i)-(v) where they are determined, on a case-specific basis, to have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.
- **Complete Table 7 for the significant nexus determination. Attach a map delineating the SPOE watershed boundary with (a)(7) waters identified in the similarly situated analysis. - Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.

☐ (a)(8): All waters located within the 100-year floodplain of a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3 not covered by (c)(2)(ii) above and all waters located within 4,000 feet of the high tide line or OHWM of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3 where they are determined on a case-specific basis to have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.
- **Complete Table 8 for the significant nexus determination. Attach a map delineating the SPOE watershed boundary with (a)(8) waters identified in the similarly situated analysis. - Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.

C. NON-WATERS OF THE U.S. FINDINGS:

Check all that apply.

☐ The review area is comprised entirely of dry land.

☐ Potential-(a)(7) Waters: Waters that DO NOT have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Table 9 and attach a map delineating the SPOE watershed boundary with potential (a)(7) waters identified in the similarly situated analysis. - Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.

☐ Potential-(a)(8) Waters: Waters that DO NOT have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Table 9 and attach a map delineating the SPOE watershed boundary with potential (a)(8) waters identified in the similarly situated analysis. - Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.

☐ Excluded Waters (Non-Waters of U.S.), even where they otherwise meet the terms of paragraphs (a)(4)-(a)(8):

- **Complete Table 10 - Required**

☐ (b)(1): Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA.

☐ (b)(2): Prior converted cropland.

☐ (b)(3)(i): Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary.

☐ (b)(3)(ii): Ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands.

☐ (b)(3)(iii): Ditches that do not flow, either directly or through another water, into a water identified in paragraphs (a)(1)-(a)(3).

☐ (b)(4)(i): Artificially irrigated areas that would revert to dry land should application of water to that area cease.

☐ (b)(4)(ii): Artificial, constructed lakes and ponds created in dry land such as farm and stock watering ponds, irrigation ponds, settling basins, fields flooded for rice growing, log cleaning ponds, or cooling ponds.

☐ (b)(4)(iii): Artificial reflecting pools or swimming pools created in dry land.[1]

☐ (b)(4)(iv): Small ornamental waters created in dry land.[1]

☐ (b)(4)(v): Water-filled depressions created in dry land incidental to mining or construction activity, including pits excavated for obtaining fill, sand, or gravel that fill with water.

☐ (b)(4)(vi): Erosional features, including gullies, rills, and other ephemeral features that do not meet the definition of tributary, non-wetland swales, and lawfully constructed grassed waterways.[1]

☐ (b)(4)(vii): Puddles.[1]

☐ (b)(5): Groundwater, including groundwater drained through subsurface drainage systems.[1]

☐ (b)(6): Stormwater control features constructed to convey, treat, or store stormwater that are created in dry land.[1]

☐ (b)(7): Wastewater recycling structures created in dry land; detention and retention basins built for wastewater recycling; groundwater recharge basins; percolation ponds built for wastewater recycling; and water distributary structures built for wastewater recycling.

☒ Other non-jurisdictional waters/features within review area that do not meet the definitions in 33 CFR 328.3 of (a)(1)-(a)(8) waters and are not excluded waters identified in (b)(1)-(b)(7).

- **Complete Table 11 - Required.**

D. ADDITIONAL COMMENTS TO SUPPORT AJD: The potential wetlands in the study area are clustered on a dune terrace that is known to have clay soil layers which can result in perched water and saturated soils near Canada Tortuga. However, none of the potential wetlands exhibited all three parameters which define jurisdictional wetlands in California. In addition, these dune swale/pond features have no surface connectivity to Canada Tortuga or the Santa Ynez River. There is also an unnamed ephermeral tributary to the Santa Ynez River in the study area that

[1] In many cases these excluded features will not be specifically identified on the AJD form, unless specifically requested. Corps Districts may, in case-by-case instances, choose to identify some or all of these features within the review area.

would be spanned by a proposed utility line. The tributary meets the definition of a tributary in the 2015 Clean Water Rule and is considered jurisdictional waters of the U.S. (33 CFR 328 (a)(5)).

Jurisdictional Waters of the U.S.

Table 1. (a)(1) Traditional Navigable Waters

(a)(1) Waters Name	(a)(1) Criteria	Rationale to Support (a)(1) Designation Include High Tide Line or Ordinary High Water Mark indicators, when applicable.
N/A	Choose an item.	N/A

Table 2. (a)(2) Interstate Waters

(a)(2) Waters Name	Rationale to Support (a)(2) Designation
N/A	N/A

Table 3. (a)(3) Territorial Seas

(a)(3) Waters Name	Rationale to Support (a)(3) Designation
N/A	N/A

Table 4. (a)(4) Impoundments

(a)(4) Waters Name	Rationale to Support (a)(4) Designation
N/A	N/A
N/A	N/A

Table 5. (a)(5)Tributaries

(a)(5) Waters Name	Flow Regime	(a)(1)-(a)(3) Water Name to which this (a)(5) Tributary Flows	Tributary Breaks	Rationale for (a)(5) Designation and Additional Discussion. Identify flowpath to (a)(1)-(a)(3) water or attach map identifying the flowpath; explain any breaks or flow through excluded/non-jurisdictional features, etc.
Unnamed tributary	Ephemeral	Santa Ynez River	Yes	The unnamed tributary trends from north to south and connects directly into the Santa Ynez River. Breaks in the connection to the Santa Ynez River are due to topography, an active agricultural field, and/or hydrology and hydraulics insufficient to result in uninterrupted flow and connectivity to the river. Due to the tributary being located in the dunes complex and due to the parent soils in the dune complex, the flow regime is ephemeral; however an OHWM is present. The hydrology of this tributary has likely been adversely affected by the ongoing multi-year regional drought. The tributary would be unaffected by the project because the power lines would span the tributary and footings for support poles would be construction outside waters of the U.S.
N/A	Choose an item.	N/A	Choose an item.	N/A
N/A	Choose an item.	N/A	Choose an item.	N/A
N/A	Choose an item.	N/A	Choose an item.	N/A

Table 6. (a)(6) Adjacent Waters

(a)(6) Waters Name	(a)(1)-(a)(5) Water Name to which this Water is Adjacent	Rationale for (a)(6) Designation and Additional Discussion. Identify the type of water and how the limits of jurisdiction were established (e.g., wetland, 87 Manual/Regional Supplement); explain how the 100-year floodplain and/or the distance threshold was determined; whether this water extends beyond a threshold; explain if the water is part of a mosaic, etc.
N/A	N/A	N/A
N/A	N/A	N/A

N/A	N/A	N/A
N/A	N/A	N/A

Table 7. (a)(7) Waters

SPOE Name	(a)(7) Waters Name	(a)(1)-(a)(3) Water Name to which this Water has a Significant Nexus	Significant Nexus Determination Identify SPOE watershed; discuss whether any similarly situated waters were present and aggregated for SND; discuss data, provide analysis, and summarize how the waters have more than speculative or insubstantial effect on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water, etc.
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Table 8. (a)(8) Waters

SPOE Name	(a)(8) Waters Name	(a)(1)-(a)(3) Water Name to which this Water has a Significant Nexus	Significant Nexus Determination Identify SPOE watershed; explain how 100-yr floodplain and/or the distance threshold was determined; discuss whether waters were determined to be similarly situated to subject water and aggregated for SND; discuss data, provide analysis, and then summarize how the waters have more than speculative or insubstantial effect the on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water, etc.
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Non-Jurisdictional Waters

Table 9. Non-Waters/No Significant Nexus

SPOE Name	Non-(a)(7)/(a)(8) Waters Name	(a)(1)-(a)(3) Water Name to which this Water DOES NOT have a Significant Nexus	Basis for Determination that the Functions DO NOT Contribute Significantly to the Chemical, Physical, or Biological Integrity of the (a)(1)-(a)(3) Water. Identify SPOE watershed; explain how 100-yr floodplain and/or the distance threshold was determined; discuss whether waters were determined to be similarly situated to the subject water; discuss data, provide analysis, and summarize how the waters did not have more than a speculative or insubstantial effect on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water.
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Table 10. Non-Waters/Excluded Waters and Features

Paragraph (b) Excluded Feature/Water Name	Rationale for Paragraph (b) Excluded Feature/Water and Additional Discussion.
N/A	N/A
N/A	N/A

Table 11. Non-Waters/Other

Other Non-Waters of U.S. Feature/Water Name	Rationale for Non-Waters of U.S. Feature/Water and Additional Discussion.
Sixteen seasonal dune swales and seasonal ponds	A wetland delineation was completed for the cluster of dune swale/pond features that would be permanently impacted as a result of the proposed development. None of the dune swale/pond features exhibited and OHWM or all three wetland parameters even though the delineation was completed during an above-average rainfall year (2019) and in a soil matrix that includes clay soil layers which can perch water, support hydrophitic vegetation and create saturated soil conditions. The data collected in the delineation report (data sheets) indicates none of the sixteen seasonal dune swales and seasonal ponds are jurisdictional.

2) **USFWS Consultation**

United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2019-F-0616

October 25, 2019

Beatrice L. Kephart
Chief, Installation Management Flight
30 CES/CEI
1028 Iceland Avenue
Vandenberg Air Force Base, California 93437

Subject: Biological Opinion on the National Reconnaissance Office Western Processing Facility, Vandenberg Air Force Base, Santa Barbara County, California (2019-F-0616)

Dear Ms. Kephart:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the U.S. Air Force's (Air Force) proposal to construct the National Reconnaissance Office (NRO) Western Processing Facility (WPF) on north Vandenberg Air Force Base and its effects on the federally endangered El Segundo blue butterfly (*Euphilotes battoides allyni*) and the federally threatened California red-legged frog (*Rana draytonii*), in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 et seq.). We have based this biological opinion on information that accompanied your June 27, 2019, request for formal consultation (B. Kephart, Air Force, in litt. 2019), information from correspondence from your staff (R. Evans, Air Force, pers. comm. 2019), and information in our records. These documents, and others relating to the consultation, are located at the Ventura Fish and Wildlife Office.

BIOLOGICAL OPINION

DESCRIPTION OF THE ACTION

The Air Force proposes to construct a new NRO WPF building on a concrete pad measuring approximately 665 feet by 825 feet with an attached "L-shaped" asphalt parking lot measuring approximately 420 feet by 345 feet. A security fence surrounding the concrete pad and parking lot would be offset 50 feet from the concrete pad, and a 30-foot clear zone is proposed. This project would be 75 acres in total and would take place in phases between 2021 and 2024.

Two electrical circuit corridor updates are proposed for the WPF construction project, the B5 and C3. The Circuit B5 corridor originates at Substation B on New Mexico Ave near 11th Street. The power line to the WPF would be installed entirely underground running along and through Arizona Avenue, turning northwest along 29th Street and under California Boulevard, then follow Tangier Road north, then west, then going south towards Building 3000, and finally heading west to end at the concrete pad. This corridor would be approximately 12,700 feet in length, and the construction area width is estimated at 25 feet. The total area trench would be 0.6 acre. Road crossings would be installed using open trench or horizontal bore techniques. These bores would require entry and exit bore pits on both sides of each road crossing measuring approximately 10 feet by 15 feet by 5 feet deep. The total footprint for this portion of the project is estimated to be 7.3 acres, and construction on the Circuit B5 corridor would take place in 2021.

The Circuit C3 corridor originates at Substation C, which is located approximately 2,000 feet north of the intersection of 13th Street and Terra Road. This power line would be installed above ground on concrete poles spaced approximately every 100 to 200 feet. Installing the 40- to 50-foot tall concrete poles would require drilling holes approximately 8 feet deep, which would be immediately backfilled after installation. The total construction area for this corridor is approximately 10.6 acres. Though there is no specific timeframe in place for this portion of the project, the Air Force states that it would occur outside of the El Segundo blue butterfly flight season.

Avoidance and Minimization Measures

1. Qualified biologists will be on site during all phases of the proposed actions.
2. All project personnel will be educated with a project-specific environmental awareness briefing, which will include information about the El Segundo blue butterfly and California red-legged frog, as well as what to do if any are observed during the project.
3. Service-approved biologists will inspect the site for California red-legged frogs immediately before starting construction, and relocate frogs when necessary.
4. Perimeter fencing will be established around the work zone to inhibit California red-legged frogs and other wildlife from entering the work zone.
5. Service-approved biologists will inspect the perimeter fencing daily.
6. Disturbances will be kept to the minimum extent necessary to accomplish project objectives.
7. All excess materials excavated will be removed and transported to a designated waste or fill site.
8. All erosion control materials used will be from weed-free sources and, if left in place following project completion, they will be constructed from 100 percent biodegradable erosion control materials.
9. All human generated trash at the project site will be disposed of in proper containers, removed from the work site, and disposed of properly at the end of each workday. A large dumpster may be maintained at the staging area for this purpose. All construction debris and trash will be removed from the work area upon project completion.

10. Equipment vehicles (dozers, mowers, etc.) will be cleaned of weed seeds prior to use in the project area to prevent the introduction of weeds. Prior to site transport, any skid plates will be removed and cleaned. Equipment will be cleaned of weed seeds daily, especially wheels, undercarriages, and bumpers. Prior to leaving the project area, vehicles with caked-on soil or mud will be cleaned with hand tools such as bristle brushes and brooms at a designated exit area; vehicles may subsequently be washed at the approved wash area. Vehicles with dry dusted soil will be thoroughly brushed prior to leaving a site at a designated exit area; vehicles may alternatively be air blasted on site.
11. Fueling of equipment will be conducted in pre-designated location within the staging area and spill containment materials will be placed around the equipment before refueling.
12. A qualified biologist will inspect any equipment left overnight prior to starting work. Equipment will be checked for presence of nearby special status species and for fluid leaks.
13. No holes or trenches will be left open overnight. Plywood sheets or steel plates will be used to cover holes or trenches. The Service-approved biologist will inspect these locations before resuming work.
14. One day prior to removing vegetation, a Service-approved biologist will conduct surveys for California red-legged frogs within the area to be impacted. Any California red-legged frogs present will be captured and released at the nearest suitable habitat outside the area where vegetation is to be cleared. The Service-approved biologist will also be present during vegetation removal to capture and relocate any California red-legged frogs and will search for injured or dead California red-legged frogs after vegetation removal.
15. A Service-approved biologist will be present to identify and count the number of seacliff buckwheat (*Eriogonum parvifolium*) plants that are impacted, defined as those that are removed, damaged, or soil impacted within one meter of the plant by construction activities.
16. Habitat enhancement will be performed within suitable habitat on north VAFB by removing invasive plants at a 2:1 ratio (area of habitat enhanced through invasive plant removal to area of potential El Segundo blue butterfly habitat impacted) and propagating and planting seacliff buckwheat at a 2:1 ratio (number of plants planted to number of plants impacted or removed).
17. A qualified biologist will survey all potentially impacted areas prior to vegetation removal or other construction related impacts to ensure that no Lompoc yerba santa (*Eriodictyon capitatum*) are present.
18. The qualified biologist will be present to verify that the distance between the known Lompoc yerba santa population and the construction area remains at least 150 feet.
19. The 35th Street Lompoc yerba santa population will be protected using a high-visibility temporary fence and signage adjacent to the dirt access road north of 35th Street to discourage vehicles and workers from accidentally accessing the area.
20. Vernal pools located within 25 feet of the construction area will be protected using high-visibility temporary fencing to avoid accidental equipment disturbance.
21. Proper erosion and sediment control measures will be implemented when working near any vernal pool within 25 feet of the construction area.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATION

Updates to the regulations governing interagency consultation (50 CFR part 402) will become effective on October 28, 2019 [84 FR 44976]. Because this consultation was pending and will be completed prior to that time, we are applying the previous regulations to the consultation. However, as the preamble to the final rule adopting the new regulations noted, "[t]his final rule does not lower or raise the bar on section 7 consultations, and it does not alter what is required or analyzed during a consultation. Instead, it improves clarity and consistency, streamlines consultations, and codifies existing practice." Thus, the updated regulations would not be expected to alter our analysis.

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 Code of Federal Regulations (CFR) 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the range-wide condition of the El Segundo blue butterfly and California red-legged frog, the factors responsible for those conditions, and their survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the El Segundo blue butterfly and the California red-legged frog in the action area, the factors responsible for those conditions, and the relationship of the action area to the survival and recovery of the El Segundo blue butterfly and the California red-legged frog; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the El Segundo blue butterfly and California red-legged; and (4) the Cumulative Effects, which evaluates the effects of future, non-Federal activities, that are reasonably certain to occur in the action area, on the El Segundo blue butterfly and the California red-legged frog.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the current status of the El Segundo blue butterfly and the California red-legged frog, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of the El Segundo blue butterfly and the California red-legged frog in the wild by reducing the reproduction, numbers, and distribution of those species.

STATUS OF THE SPECIES

El Segundo Blue Butterfly

Legal Status

The El Segundo blue butterfly was federally listed as endangered on June 1, 1976 (41 Federal Register (FR) 22041). We have not designated critical habitat for the subspecies. We issued a recovery plan for the El Segundo blue butterfly on September 28, 1998 (Service 1998) and completed a 5-year status review for the subspecies in 2008 (Service 2008).

Natural History

The El Segundo blue butterfly is in the family Lycaenidae. It is one of five subspecies comprising the polytypic species, the square-spotted blue butterfly (*Euphilotes battoides*). Like all species in the genus *Euphilotes*, the El Segundo blue butterfly spends its entire life cycle in intimate association with a species of buckwheat, in this case seacliff buckwheat; however, the nearly complete association of all life stages with a single plant is unique among North American butterflies. El Segundo blue butterfly adults mate, nectar, lay eggs, perch, and in most cases probably die on seacliff buckwheat flower heads (Mattoni 1990, p. 277).

The adult stage of the El Segundo blue butterfly generally begins in early June and concludes in early to mid-September. The onset of this stage is closely synchronized with the beginning of the flowering season for seacliff buckwheat (Mattoni 1990, p. 278; Pratt and Ballmer 1993, pp. 266). Adult females fly to seacliff buckwheat flower heads where they mate with males that are constantly moving among flower heads (Service 1998, p. 8). The El Segundo blue butterfly lays eggs in seacliff buckwheat flower heads, and the eggs hatch within 3 to 5 days. The larvae then undergo four instars to complete growth, a process that takes 18 to 25 days (Service 1998, p. 9). Larvae remain concealed within flower heads and initially feed on pollen, then switch to feeding on seeds sometime during the first and second instar (G. Pratt, University of California Riverside, pers. comm. 2006a).

At the end of the fourth instar, larvae disperse from the flower heads, fall or crawl to the ground, and pupate in the soil. This typically occurs by September, by which time seacliff buckwheat plants have generally senesced. Larvae may find a suitable site directly underneath seacliff buckwheat plants or migrate (wander) away from the plant to a more suitable site. This wandering stage is short (likely 1 day or less). Larvae may travel up to approximately 25 feet from the nearest seacliff buckwheat plant, but we expect that most larvae remain within the immediate vicinity of a seacliff buckwheat plant (R. Arnold, Entomological Consulting Services, pers. comm. 2013a, b). Larvae pupate in sandy soils, clay soils, shale, sandstone, and even cracks and softer portions of road, and seem to prefer softer soils compared to harder substrates (Arnold, pers. comm. 2013a, b). Once they find a suitable site, larvae burrow into the ground and remain there until at least 0.5 inch of rain penetrates the soil to accumulate enough moisture for the pupae to develop into an adult (Pratt, pers. comm. 2006a).

The adult butterfly emerges the following June; however, some pupae remain in diapause for 2 or more years (Service 1998, p. 8). Some pupae at every site likely remain in diapause every year (some pupae stay in diapause each year even in good years) (Arnold, pers. comm. 2013a, b).

The population dynamics of the El Segundo blue butterfly are closely aligned with the seacliff buckwheat. Although individual plants may live 20 years or more, young plants generally do not flower until their second year of growth (Arnold and Goins 1987, p. 175). Younger and older plants do not produce as many flowers as middle-aged buckwheat plants, which support the most butterflies (Arnold and Goins 1987, p. 175). Field observations suggest that most solitary seacliff buckwheat plants less than about 5 years of age do not produce enough flowers for larvae to effectively utilize them (Arnold and Goins 1987, p. 175). Thus, survival of the El Segundo blue butterfly is dependent upon maintenance of middle-aged seacliff buckwheat plants, plus recruitment of younger plants to replace older individual plants that senesce (Arnold and Goins 1987, p. 175).Arnold (1986, pp. 1-37) conducted capture-recapture studies in Los Angeles County. He reported that the majority of El Segundo blue butterflies moved 100 feet or less between captures (Arnold 1986, p. 17). Approximately 93 percent of females and males moved 200 feet or less between captures (Arnold 1986, p. 18). We note that Arnold derived the 200-foot distance from studies at the relatively small site on the Chevron Refinery (Chevron) in El Segundo. The Chevron site is approximately 1.5 acres and is surrounded by urban areas. The area contains high concentrations of seacliff buckwheat plants that grow in close proximity to one another. Therefore, adult El Segundo blue butterflies would not have to disperse very far to locate suitable seacliff buckwheat flower heads. In contrast, the preserve at the Los Angeles International Airport (LAX) is 200 acres and the seacliff buckwheat plants are widely scattered. At the LAX site, El Segundo blue butterflies were detected dispersing up to 1.36 miles (7,200 feet), and the average movement of individuals at LAX was more than twice that of individuals at the Chevron location (Arnold 1986, p. 17). Additionally, adult El Segundo blue butterflies routinely dispersed up to 0.5 mile from occupied locations to colonize restoration sites in Los Angeles and Redondo Beach (ManTech SRS Technologies 2010, p. 7). Because biologists have documented El Segundo blue butterflies dispersing farther distances in larger areas that contain more widely scattered plants, the 200-foot distance may represent the lower end of the dispersal capability of the El Segundo blue butterfly. Based on the habitat and area at VAFB, we expect that dispersal distance would be greater in Santa Barbara County where the seacliff buckwheat plants are much less dense, as it was at the LAX site compared to the Chevron site; however, we do not know, through actual measurement, the minimum, average, or maximum dispersal distances of the El Segundo blue butterfly in Santa Barbara County.

Rangewide Status

For the years following the subspecies' recognition as a new taxon (Shields 1975, pp. 10-11), researchers presumed the El Segundo blue butterfly was endemic to southwestern Los Angeles County in coastal southern California. Museum records and reports reveal that the El Segundo blue butterfly was once widespread on the El Segundo sand dunes (Donahue 1975, p. 46) and specimens were collected at El Segundo, Redondo Beach, Manhattan Beach, and at several

locations on the Palos Verdes peninsula (Shields 1975, p. 11). Currently, the El Segundo blue butterfly occurs at four locations in Los Angeles County: the Ballona Wetlands, the Airport Dunes, the Chevron Preserve, and Malaga Cove (Service 2008, pp. 7-8).

Seacliff buckwheat occurs over a larger range than the known range of the El Segundo blue butterfly. Seacliff buckwheat occurs from southern San Diego County to northern Monterey County (Pratt, pers. comm. 2006b; Reveal and Rosatti 2012, pp. 1083-1111). The southern extent of the El Segundo blue butterfly's known distribution is Malaga Cove in Los Angeles County and before it was discovered in Santa Barbara County in 2005, the northern extent of its known distribution was the Ballona Wetlands in Los Angeles County. The El Segundo blue butterfly appears further limited to areas with high sand content (Service 1998, p. 2).

The El Segundo blue butterfly was reported to occur at VAFB in 2005 by Dr. Gordon Pratt and in 2007 by Dr. Pratt and Dr. Richard Arnold (Pratt, pers. comm. 2006a; L. Bell, Air Force, pers. comm. 2007). After this report, questions arose whether the butterflies observed at VAFB were actually the El Segundo blue butterfly or a morphologically similar species. The genus *Euphilotes* is complex and diverse. Mattoni (1988, pp. 173-185) reported cases of cryptic speciation in the genus (i.e., some distantly related species are very similar morphologically). Entomologists typically use wing characters to identify butterflies; however, wing characters are not as useful in *Euphilotes* (as a genus) because they can vary between individuals within the same taxon (and particularly in the *E. battoides* complex). In these instances, additional information and other characters are necessary for a definitive identification such as larval host plant, genitalia morphology, flight season, location, and genetics (G. Ballmer, University of California Riverside, pers. comm. 2006).

Because butterflies in the genus *Euphilotes* can be very similar morphologically yet substantially different genetically (Mattoni 1990, pp. 277-304; Pratt 1994, pp. 387-416), individual male butterflies were collected to compare the genetic signatures among the butterflies from VAFB with known El Segundo blue butterflies from Los Angeles County (Pratt and Stouthamer 2008, 32 pp.). We have reviewed the results of the genetic study and determined that the resulting information was not conclusive enough to make a determination that the butterfly in question is not the El Segundo blue butterfly.

Given that the geographic separation between the known occurrences of El Segundo blue butterfly in Santa Barbara County and Los Angeles County is approximately 120 miles, and considering the relatively limited dispersal capability of the El Segundo blue butterfly, the butterflies observed at VAFB may not be El Segundo blue butterflies, but rather an undescribed, cryptic species with the same morphology, larval food plant, flight season, and genitalia. On the other hand, the El Segundo blue butterfly may have had a continuous distribution between Santa Barbara and Los Angeles Counties at one time, but the populations may have separated over time either naturally or by anthropogenic causes. The distribution of seacliff buckwheat, the butterfly's limited dispersal capabilities, and the increasing fragmentation of native habitat in this region support this concept.

A third possibility is that the butterflies currently have a continuous distribution between Santa Barbara and Los Angeles Counties, but have not yet been documented in the intervening areas; however, no El Segundo blue butterfly occurrences have been documented in the intervening areas between the populations in Santa Barbara and Los Angeles Counties. Another possibility is that El Segundo blue butterflies do not currently occupy the areas between Santa Barbara and Los Angeles Counties. They may have dispersed from one area to another. A long-distance dispersal event is more likely to occur during one dispersal event rather than multiple events in a stepping-stone fashion because the probability of a single longer dispersal event is greater than the combined probability of two (or more) consecutive shorter dispersal events (Gillespie et al. 2012, p. 49; Crisp et al. 2011, p. 69). Strong wind events (e.g., Santa Ana winds, hurricanes) are a widely recognized mechanism for successful long distance dispersal events and have been determined to be the vector for the successful colonization of remote islands by plants, animals (e.g., butterflies), and arthropods, which are generally less dispersive (Gillespie et al. 2012, pp. 48-49; Zimmerman 1948, p. 206).

Based on wing morphology, flight period, genitalia, and host plant association, the individuals on VAFB were determined to be more similar to El Segundo blue butterfly than to any other known *Euphilotes* species or *E. battoides* subtaxon (Ballmer, pers. comm. 2006; Pratt, pers. comm. 2006b). Therefore, we consider this species to be El Segundo blue butterfly until we receive demonstrative information indicating otherwise.

Threats

Urbanization and land conversion have fragmented the historical range of the El Segundo blue butterfly such that extant populations now operate as independent units rather than parts of a metapopulation or a single, cohesive, wide-ranging population (Service 2008, pp. 4, 25, 27). Smaller populations have higher probabilities of extinction than larger populations because their low abundance renders them susceptible to inbreeding, loss of genetic variation, high variability in age and sex ratios, demographic stochasticity, and other random, naturally occurring events such as droughts, disease, or epidemics (Soulé 1987, p. 189). Additionally, isolated populations are more susceptible to elimination by stochastic events because the likelihood of recolonization following such events is negatively correlated with the extent of isolation (Wilcox and Murphy 1985, pp. 881-883). Given the low dispersal potential of El Segundo blue butterflies, the likelihood that this subspecies would naturally recolonize a site decreases as the distance between the occupied sites increases. Therefore, if El Segundo blue butterflies are extirpated from a site that is a greater distance from an occupied site than the subspecies' dispersal distance, the site may not be recolonized.

Habitat fragmentation is detrimental to small, isolated populations and produces edge effects that facilitate the introduction of invasive nonnative plant species that may outcompete and displace seacliff buckwheat (Service 2008, pp. 4, 25). Relatively fast-growing invasive nonnative plants such as acacia (*Acacia* spp.), and iceplant (*Carpobrotus* spp.), other buckwheat species

(*Eriogonum* spp.), and nonnative grasses such as veldt grass (*Ehrharta calycina*) compete with seacliff buckwheat and decrease the likelihood that seacliff buckwheat will sprout and mature (Mattoni 1990, p. 300).

Furthermore, Pratt (1987, p. 1) observed numerous insects living in seacliff buckwheat inflorescences (and presumably competing) with El Segundo blue butterfly larvae, including lepidopterous larvae in the families of Cochylidae, Gelechiidae, Geometridae, Riodinidae, and even other Lycaenidae. Parasitoids (e.g., Branchoid wasp (*Cortesia* spp.)) and small predators may also affect El Segundo blue butterflies (Mattoni 1990, pp. 279, 300).

In general, the El Segundo blue butterfly is threatened by competition, predation, and parasitism by other insects utilizing seacliff buckwheat; loss of habitat and habitat fragmentation due to development; and loss of habitat due to displacement of seacliff buckwheat by nonnative vegetation.

Recovery

We wrote the recovery plan for the El Segundo blue butterfly prior to the discovery of the species on VAFB, so the plan does not consider the El Segundo blue butterfly on the Base. The recovery plan for the El Segundo blue butterfly identifies four recovery units (Ballona, Airport, El Segundo, and Torrance) to conserve and maintain the species' distribution and its genetic diversity throughout its range (Service 1998, pp. 15-20). The plan states that at least one population is needed in each of the four units to reduce the risk of extinction from random events that may affect any one local area.

The recovery of the El Segundo blue butterfly is dependent on protection of occupied and potential habitat (but not known to be occupied). Occupied habitat contains individuals of the subspecies and associated habitat used for breeding, feeding, shelter, and/or as a dispersal corridor. Areas that contain El Segundo sand dune and are not currently occupied by El Segundo blue butterflies, but could be managed and restored, constitute potential habitat for the subspecies. Colonization of potential areas by El Segundo blue butterflies would result in increased numbers of individuals, ultimately expanding the number and size of populations until the subspecies reaches the point where it can be downlisted to threatened. According to the recovery plan (Service 1998, pp. 26-35), the El Segundo blue butterfly can be considered for downlisting to threatened status when:

1. At least one secure population in each of the four recovery units is permanently protected. The Airport Dunes located in the Airport recovery unit contains the largest population of the butterfly and is the most likely one that can survive disease, predators, parasites, and other perturbations. The Airport Dunes must be one of the protected populations.
2. Each of the four populations are managed to maintain coastal dune habitat dominated by local native species including seacliff buckwheat.

3. As determined by a scientifically credible monitoring plan, each of the four populations must exhibit a statistically significant upward trend (based on transect counts) for at least 10 years (approximately 10 butterfly generations). Population management in each recovery unit must ensure that discrete population growth rates are maintained at or above 1.0, indicating a stable or increasing population.
4. A program is initiated to inform the public about the El Segundo blue butterfly and its habitat.

California red-legged frog

Legal Status

The California red-legged frog was federally listed as threatened on May 23, 1996 (61 FR 25813). Revised critical habitat for the California red-legged frog was designated on March 17, 2010 (75 FR 12816, Service 2010). The Service issued a recovery plan for the species on May 28, 2002 (Service 2002).

Natural History

The California red-legged frog uses a variety of habitat types, including various aquatic systems, riparian, and upland habitats. They have been found at elevations ranging from sea level to approximately 5,000 feet. California red-legged frogs use the environment in a variety of ways, and in many cases, they may complete their entire life cycle in a particular area without using other components (i.e., a pond is suitable for each life stage and use of upland habitat or a riparian corridor is not necessary). Populations appear to persist where a mosaic of habitat elements exists, embedded within a matrix of dispersal habitat. Adults are often associated with dense, shrubby riparian or emergent vegetation and areas with deep (greater than 1.6 feet) still or slow-moving water; the largest summer densities of California red-legged frogs are associated with deep-water pools with dense stands of overhanging willows (*Salix* spp.) and an intermixed fringe of cattails (*Typha latifolia*) (Hayes and Jennings 1988, p. 147). Hayes and Tennant (1985, p. 604) found juveniles to seek prey diurnally and nocturnally, whereas adults were largely nocturnal.

California red-legged frogs breed in aquatic habitats; larvae, juveniles, and adult frogs have been collected from streams, creeks, ponds, marshes, deep pools and backwaters within streams and creeks, dune ponds, lagoons, and estuaries. They frequently breed in artificial impoundments such as stock ponds, given the proper management of hydro-period, pond structure, vegetative cover, and control of exotic predators. While frogs successfully breed in streams and riparian systems, high spring flows and cold temperatures in streams often make these sites risky egg and tadpole environments. An important factor influencing the suitability of aquatic breeding sites is the general lack of introduced aquatic predators. Accessibility to sheltering habitat is essential for the survival of California red-legged frogs within a watershed and can be a factor limiting population numbers and distribution.

During periods of wet weather, starting with the first rains of fall, some individual California red-legged frogs may make long-distance overland excursions through upland habitats to reach breeding sites. In Santa Cruz County, Bulger et al. (2003, p. 90) found marked California red-legged frogs moving up to 1.7 miles through upland habitats, via point-to-point, straight-line migrations without regard to topography, rather than following riparian corridors. Most of these overland movements occurred at night and took up to 2 months. Similarly, in San Luis Obispo County, Rathbun and Schneider (2001, p. 1302) documented the movement of a male California red-legged frog between two ponds that were 1.78 miles apart in less than 32 days; however, most California red-legged frogs in the Bulger et al. (2003, p. 93) study were non-migrating frogs and always remained within 426 feet of their aquatic site of residence (half of the frogs always stayed within 82 feet of water). Rathbun et al. (1993, p. 15) radio-tracked three California red-legged frogs near the coast in San Luis Obispo County at various times between July and January; these frogs also stayed close to water and never strayed more than 85 feet into upland vegetation. Scott (2002, p. 2) radio-tracked nine California red-legged frogs in East Las Virgenes Creek in Ventura County from January to June 2001, which remained relatively sedentary as well; the longest within-channel movement was 280 feet and the farthest movement away from the stream was 30 feet.

After breeding, California red-legged frogs often disperse from their breeding habitat to forage and seek suitable dry-season habitat. Cover within dry-season aquatic habitat could include boulders, downed trees, and logs; agricultural features such as drains, watering troughs, spring boxes, abandoned sheds, or hay-ricks, and industrial debris. California red-legged frogs use small mammal burrows and moist leaf litter (Rathbun et al. 1993, p. 15; Jennings and Hayes 1994 p. 64); incised stream channels with portions narrower and deeper than 18 inches may also provide habitat (61 FR 25814). This type of dispersal and habitat use, however, is not observed in all California red-legged frogs and is most likely dependent on the year-to-year variations in climate and habitat suitability and varying requisites per life stage.

Although the presence of California red-legged frogs is correlated with still water deeper than approximately 1.6 feet, riparian shrubbery, and emergent vegetation (Jennings and Hayes 1994, p. 64), California red-legged frogs appear to be absent from numerous locations in its historical range where these elements are well represented. The cause of local extirpations does not appear to be restricted solely to loss of aquatic habitat. The most likely causes of local extirpation are thought to be changes in faunal composition of aquatic ecosystems (i.e., the introduction of non-native predators and competitors) and landscape-scale disturbances that disrupt California red-legged frog population processes, such as dispersal and colonization. The introduction of contaminants or changes in water temperature may also play a role in local extirpations. These changes may also promote the spread of predators, competitors, parasites, and diseases.

Rangewide Status

The historical range of the California red-legged frog extended coastally from southern Mendocino County and inland from the vicinity of Redding, California, southward to northwestern Baja California, Mexico (Storer 1925, p. 235; Jennings and Hayes 1985, p. 95;

Shaffer et al. 2004, p. 2673). The California red-legged frog has sustained a 70 percent reduction in its geographic range because of several factors acting singly or in combination (Davidson et al. 2001, p. 465).

Threats

Over-harvesting, habitat loss, non-native species introduction, and urban encroachment are the primary factors that have negatively affected the California red-legged frog throughout its range (Jennings and Hayes 1985, pp. 99-100; Hayes and Jennings 1988, p. 152). Habitat loss and degradation, combined with over-exploitation and introduction of exotic predators, were important factors in the decline of the California red-legged frog in the early to mid-1900s. Continuing threats to the California red-legged frog include direct habitat loss due to stream alteration and loss of aquatic habitat, indirect effects of expanding urbanization, competition or predation from non-native species including the bullfrog, catfish (*Ictalurus* spp.), bass (*Micropterus* spp.), mosquito fish (*Gambusia affinis*), red swamp crayfish (*Procambarus clarkii*), and signal crayfish (*Pacifastacus leniusculus*). Chytrid fungus (*Batrachochytrium dendrobatidis*) is a waterborne fungus that can decimate amphibian populations, and is considered a threat to California red-legged frog populations.A 5-year review of the status of the California red-legged frog was initiated in May 2011, but has not yet been completed.

Recovery

The 2002 final recovery plan for the California red-legged frog (Service 2002) states that the goal of recovery efforts is to reduce threats and improve the population status of the California red-legged frog sufficiently to warrant delisting. The recovery plan describes a strategy for delisting, which includes: (1) protecting known populations and reestablishing historical populations; (2) protecting suitable habitat, corridors, and core areas; (3) developing and implementing management plans for preserved habitat, occupied watersheds, and core areas; (4) developing land use guidelines; (5) gathering biological and ecological data necessary for conservation of the species; (6) monitoring existing populations and conducting surveys for new populations; and (7) establishing an outreach program. The California red-legged frog will be considered for delisting when:

1. Suitable habitats within all core areas are protected and/or managed for California red-legged frogs in perpetuity, and the ecological integrity of these areas is not threatened by adverse anthropogenic habitat modification (including indirect effects of upstream/downstream land uses).
2. Existing populations throughout the range are stable (i.e., reproductive rates allow for long-term viability without human intervention). Population status will be documented through establishment and implementation of a scientifically acceptable population monitoring program for at least a 15-year period, which is approximately 4 to 5 generations of the California red-legged frog. This 15-year period should coincide with an average precipitation cycle.

3. Populations are geographically distributed in a manner that allows for the continued existence of viable metapopulations despite fluctuations in the status of individual populations (i.e., when populations are stable or increasing at each core area).
4. The species is successfully reestablished in portions of its historical range such that at least one reestablished population is stable/increasing at each core area where California red-legged frog are currently absent.
5. The amount of additional habitat needed for population connectivity, recolonization, and dispersal has been determined, protected, and managed for California red-legged frogs.

The recovery plan identifies eight recovery units based on the assumption that various regional areas of the species' range are essential to its survival and recovery. The recovery status of the California red-legged frog is considered within the smaller scale of recovery units as opposed to the overall range. These recovery units correspond to major watershed boundaries as defined by U.S. Geological Survey hydrologic units and the limits of the range of the California red-legged frog. The goal of the recovery plan is to protect the long-term viability of all extant populations within each recovery unit. Within each recovery unit, core areas have been delineated and represent contiguous areas of moderate to high California red-legged frog densities that are relatively free of exotic species such as bullfrogs. The goal of designating core areas is to protect metapopulations that combined with suitable dispersal habitat, will support long-term viability within existing populations. This management strategy allows for the recolonization of habitat within and adjacent to core areas that are naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of the California red-legged frog.

ENVIRONMENTAL BASELINE

Action Area

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 Code of Federal Regulations 402.02). The action area for this biological opinion includes 75 acres on the Burton Mesa, north of the Santa Ynez River and west of 13th street on north VAFB.

Habitat Characteristics of the Action Area

The action area for the proposed NRO WPF building lies within the greater Burton Mesa, which mostly consists of maritime chaparral and scrub intermixed with grassy openings and vernal pools. The action area contains coastal chaparral, developed areas (e.g. roads), vernal pools, and seacliff buckwheat. The vernal pools are suitable habitat for California red-legged frogs and vernal pool fairy shrimp (*Branchinecta lynchii*), seacliff buckwheat is suitable habitat for El Segundo blue butterfly, and the action area contains suitable and occupied habitat for Lompoc yerba santa.

Existing Conditions in the Action Area

The action area for the proposed NRO WPF building contains developed lands, as an existing road running through the proposed project site within partially disturbed coastal chaparral habitat. The areas relating to the circuit corridors are generally developed and disturbed with existing circuit corridors and roads along their proposed routes. Seacliff buckwheat exists along the proposed C3 corridor, in developed and disturbed land, along an existing road. The proposed B5 corridor has vernal pools, of various states of occupancy throughout the route. The proposed corridor routes are generally highly developed and along existing roads.

Previous Consultations in the Action Area

The Service has previously consulted on the effects of routine operations and maintenance activities at VAFB on the El Segundo blue butterfly and California red-legged frog in the 2015 Programmatic Biological Opinion (Service 2015). The Service concluded that these routine operations and maintenance activities would not jeopardize the continued survival or recovery of these species.

Status of the Species in the Action Area

The nearest known locations of El Segundo blue butterfly are approximately 2.9 and 4.9 miles from the action area. Though the C3 corridor portion of the project contains approximately 483 seacliff buckwheat, surveys indicate there are no known El Segundo blue butterfly occurrences within the accepted 1.36 miles dispersal range. The action area is considered "suitable but unknown to be occupied" habitat for the El Segundo blue butterfly.

California red-legged frog are known to occur sporadically within the action area. Historical survey information states that California red-legged frog have occurred 0.35 mile from the proposed NRO WPF facility in 2006, 0.25 mile from the C3 corridor in 2002, and 0.10 mile from the B5 corridor in 2002. There are multiple vernal pools within the action area, which have supported, and may currently support, California red-legged frogs. However, based on 2018 surveys, California red-legged frogs were not present in the action area, but those surveys were not species specific.

Recovery of the El Segundo Blue Butterfly

While the recovery plan for the El Segundo blue butterfly did not contemplate the role of VAFB in the species' recovery, the Air Force has taken numerous steps to conserve the species on the base. The 5-year review does not specify the recovery function of San Antonio Creek for the El Segundo blue butterfly. The species is considered in the INRMP for the base and measures to conserve the El Segundo blue butterfly and its host plant. The positive conservation measures for the El Segundo blue butterfly the Air Force has implemented at VAFB so far include: (1) surveys to further delineate the species' occurrence on the base; (2) removal of invasive plants from hundreds of acres of potentially suitable habitat; (3) cooperated with research through U.C.

Riverside and U.C. Santa Barbara; (4) public outreach; and (5) funding pioneering research into commensal relationships between the El Segundo blue butterfly and harvester ants (*Messor* spp., *Pogonomyrmex* spp.). Therefore, although the recovery plan for the El Segundo blue butterfly did not consider the potential presence of the species at VAFB, the Air Force has made a positive effort to conserve the species on the base, which would be consistent with other recovery efforts.

Recovery of the California Red-Legged Frog

The action area and Vandenberg Air Force Base in general, are within the Northern Transverse Ranges and Tehachapi Mountains Recovery Unit for the California red-legged frog. The action area is also within the Santa Maria River-Santa Ynez River Core Area defined in the recovery plan (Service 2002). The recovery unit was described in the recovery plan as having a "high recovery status," meaning the unit supports many populations of the species, has many areas of high habitat quality, and threat levels that ranged from low to high. Some protections are afforded to the California red-legged frog on Vandenberg Air Force Base due to implementation of the Air Force's Integrated Natural Resources Management Plan. So far, the Air Force has implemented several actions that provide a positive conservation benefit: (1) public outreach and education; (2) working with researchers from University of California Santa Barbara, the U.S. Geological Survey, and Department of the Navy, including chytridiomycosis studies; (3) surveys for new populations; (4) monitoring of known populations; and other actions. These efforts are consistent with the goals from the recovery plan of protecting known populations; protecting suitable habitat, corridors, and core areas; developing land use guidelines; gathering biological and ecological data necessary for conservation of the species; and monitoring existing populations and conducting surveys for new populations.

EFFECTS OF THE ACTION

El Segundo Blue Butterfly

Construction activities may have direct effects on El Segundo blue butterfly through trampling or crushing of the butterfly, larvae, and host plant by personnel or vehicles in the course of construction activities. El Segundo blue butterfly are not known to occur in this exact locality, but seacliff buckwheat are present in the action area. Based on these reasons, we conclude that direct effects on the El Segundo blue butterfly through trampling or crushing are low, if any.

Effects on Recovery

The recovery plan for the El Segundo blue butterfly did not contemplate the role of VAFB in the subspecies' recovery because we finalized the plan prior to the observations of this subspecies in Santa Barbara County. Similarly, the 2008 5-year review does not specify the recovery function of VAFB for the El Segundo blue butterfly.

The Integrated Natural Resources Management Plan for VAFB considers the subspecies and includes measures to conserve the El Segundo blue butterfly and its host plants. The positive conservation measures for El Segundo blue butterfly the Air Force has implemented at VAFB so far include: (1) surveys to further delineate the subspecies' occurrence on, and off, the Base; (2) removal of invasive plants from potentially suitable habitat; (3) cooperation with research through U.C. Riverside and U.C. Santa Barbara; (4) public outreach; and (5) funding research such as commensal relationships between El Segundo blue butterfly and harvester ants. Therefore, although the recovery plan for El Segundo blue butterfly did not consider the potential presence of the subspecies at VAFB, nor does the 2008 5-year review specify a recovery function of the Base, the Air Force has made a positive effort to conserve the El Segundo blue butterfly on VAFB, which would be consistent with other recovery efforts.

California Red-legged Frog

Construction activities may have direct effects on the California red-legged frog through trampling or crushing by personnel or vehicles in the course of construction activities. California red-legged frogs are not known to occur in this exact locality, but are present within the known dispersal range. The vernal pools in the action area could be breeding habitat for California red-legged frog during the breeding season. The known dispersal distance could likely have resulted in a new population or permanent California red-legged frog habitat within the action area. Based on these reasons, we conclude that direct effects on the California red-legged frog through trampling or crushing are low.

Effects on Recovery

Because the action area is within a recovery unit with "high recovery status," the proposed actions are not likely to reduce the potential contribution of the action area to the conservation of the California red-legged frog. In other words, the populations of California red-legged frog in the recovery unit are considered plentiful and many of those are of high quality. Overall, the effects to the species and its habitat would be relatively minor and temporary, so we anticipate that the proposed project will not diminish the species' ability to recover.

Summary of Effects

Effects on El Segundo blue butterfly and California red-legged frog from the NRO WPF construction are likely low. Construction activities will likely have a negligible effect on the recovery on El Segundo blue butterfly and California red-legged frog.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. We do not consider future Federal actions that are unrelated to the proposed action in this section because they require separate consultation pursuant to section 7 of the Act. We are unaware of any future State, tribal, local or private actions that are reasonably certain to occur in the action area.

CONCLUSION

The regulatory definition of "to jeopardize the continued existence of the species" focuses on assessing the effects of the proposed action on the reproduction, numbers, and distribution, and their effect on the survival and recovery of the species being considered in the biological opinion. For that reason, we have used those aspects of El Segundo blue butterfly, and California red-legged frog status as the basis to assess the overall effect of the proposed action on the species.

El Segundo Blue Butterfly

Reproduction

The proposed project would result in the loss of seacliff buckwheat in suitable but not known to be occupied habitat on VAFB; however, the total amount of suitable habitat is relatively small and there is suitable habitat located nearby. The Air Force would compensate for these impacts by performing habitat enhancement, consisting of seacliff buckwheat plantings and invasive plant control at a 2: 1 ratio, in suitable habitat on north VAFB. This habitat enhancement is expected to result in additional breeding habitat for the El Segundo blue butterfly on VAFB. In addition, based on the avoidance and minimization measures the Air Force has proposed, no project activities beyond the vegetation removal are expected to affect breeding El Segundo blue butterflies. Therefore, we conclude that the proposed project would not reduce El Segundo blue butterfly reproduction appreciably in the action area or rangewide.

Numbers

We currently consider seacliff buckwheat plants in the vegetation removal area to be habitat that is suitable but not known to be occupied by El Segundo blue butterflies, and therefore we assume that butterflies may be present. However, we are unable to determine the number of El Segundo blue butterflies that may be present in the area at the time of the vegetation removal because the numbers and location of individuals in the action area can vary from year to year. Vegetation removal activities could directly affect individual El Segundo blue butterfly larvae and diapausing pupae to the point of injury or death; however, we expect that adult butterflies would be able to move out of harm' s way to suitable habitat nearby. In addition, based on the avoidance and minimization measures the Air Force has proposed, no project activities beyond the vegetation removal are expected to cause injury or mortality, or otherwise reduce the number

of El Segundo blue butterflies in the action area. The number of El Segundo blue butterflies we expect to be affected by the vegetation removal activities is small relative to populations within the action area and those in the entirety of the subspecies' range. Therefore, we conclude that the proposed project would not reduce the number of El Segundo blue butterfly appreciably in the action area or rangewide.

Distribution

The proposed project could displace El Segundo blue butterflies from a portion of the action area, and could cause injury or mortality; however, as described above, the total amount of area affected is small and there is suitable habitat nearby. Based on the avoidance and minimization measures the Air Force has proposed, no project activities beyond the vegetation removal are expected to affect the distribution of El Segundo blue butterfly in the action area. In addition, the proposed El Segundo blue butterfly habitat enhancement may result in a slight increase in distribution of the subspecies on VAFB. Therefore, we conclude that the effects of the proposed project would not reduce the distribution of the El Segundo blue butterfly in the action area or rangewide.

Recovery

The recovery plan for the El Segundo blue butterfly did not contemplate the role of VAFB in the subspecies' recovery because we finalized the plan prior to the observations of this subspecies in Santa Barbara County. Regardless, the proposed action would not result in any appreciable change in reproduction, population numbers, or distribution of the El Segundo blue butterfly and thus would not preclude the Service's ability to implement any of the measures identified in the recovery plan for the subspecies. Therefore, we conclude that the proposed action would not appreciably reduce the likelihood of recovery of the El Segundo blue butterfly rangewide.

Conclusion for the El Segundo Blue Butterfly

After reviewing the current status of the El Segundo blue butterfly, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the construction of the Air Force's proposal to build a new NRO WPF building and related activities described herein on VAFB is not likely to jeopardize the continued existence of the El Segundo blue butterfly, because:

1. The Project would not appreciably reduce reproduction of the species either locally or rangewide;
2. The Project would affect a small number of individuals at most, and would not appreciably reduce numbers of the El Segundo blue butterfly at the local level or rangewide;
3. The Project would not reduce the species' distribution either locally or rangewide; and
4. The Project would not cause any effects that would appreciably preclude our ability to recover the species.

California Red-legged Frog

Reproduction

The proposed project would not result in a loss of California red-legged frog breeding habitat, and are not expected to adversely affect breeding behavior or effort. In addition, the Air Force would implement measures to minimize the risk of adverse effects to California red-legged during dispersal, breeding season or during above-average wet conditions. Therefore, we do not expect that breeding efforts for the California red-legged frogs would be affected by the proposed activities and conclude that the proposed project would not reduce California red-legged frog reproduction in the action area, in the Northern Transverse Ranges and Tehachapi Mountains Recovery Units, or rangewide.

Numbers

We are unable to determine the number of California red-legged frogs that could occur in the action area and may be affected by proposed project because existing survey data are insufficient to estimate population numbers, and the numbers of individuals in the action area likely vary from year to year. The proposed activities could directly and indirectly affect individual California red-legged frogs to the point of injury or death, although we expect injury or mortality to be minimal based on the avoidance and minimization measures the Air Force has proposed. The number of California red-legged frogs we expect to be affected by the proposed activities is very small relative to VAFB populations and those in the entirety of the species' range. Therefore, we conclude that the proposed project would not reduce the number of California red-legged frog in the action area, in the Northern Transverse Ranges and Tehachapi Mountains Recovery Units, or rangewide.

Distribution

The proposed project could temporarily displace California red-legged frogs from portions of the action area and could cause injury or mortality; however, the Air Force would implement measures to minimize the risk of adverse effects on California red-legged frogs. Project activities could reduce habitat quality and availability, and result in localized change is the distribution of California red-legged frogs that may occur there; however, the best available information indicates that the species is likely to occupy this area only infrequently, during dispersal events or above average rain years. Therefore, we conclude that the effects of the proposed project would not reduce the distribution of the California red-legged frog in the action area, in the Northern Transverse Ranges and Tehachapi Mountains Recovery Units, or rangewide.

Recovery

The action area lies within the Northern Transverse Ranges and Tehachapi Mountains Recovery Units. The proposed action would not result in any appreciable change in reproduction, population numbers, or distribution of the California red-legged frog and would not preclude the

Service's ability to implement any of the measures identified in the recovery plan for the species. Therefore, we conclude that the proposed action would not appreciably reduce the likelihood of recovery of the California red-legged frog in the Recovery Unit or rangewide.

Conclusion for the California Red-legged Frog

After reviewing the current status of the California red-legged frog, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the Air Force's proposal to build a new NRO WPF building and related activities on VAFB is not likely to jeopardize the continued existence of the California red-legged frog, because:

1. The Project would not appreciably reduce reproduction of the species either locally or rangewide;
2. The Project would affect a very small number of individuals, and would not appreciably reduce numbers of the California red-legged frog at the local level or rangewide;
3. The Project would not appreciably reduce the species' distribution either locally or rangewide; and
4. The Project would not cause any effects that would appreciably preclude our ability to recover the species.

After reviewing the current status of the El Segundo blue butterfly and California red-legged frog, the environmental baseline for the action area, the effects of the construction activities, and the cumulative effects, it is the Service's biological opinion that the Air Force's construction of the NRO WPF building and related activities likely would not jeopardize the continued existence of El Segundo blue butterfly or California red-legged frog.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened wildlife species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

In June 2015, the Service finalized new regulations implementing the incidental take provisions of section 7(a)(2) of the Act. The new regulations also clarify the standard regarding when the Service formulates an Incidental Take Statement [50 CFR 402.14(g)(7)], from "...if such take

may occur" to "...if such take is reasonably certain to occur." This is not a new standard, but merely a clarification and codification of the applicable standard that the Service has been using and is consistent with case law. The standard does not require a guarantee that take will result; only that the Service establishes a rational basis for a finding of take. The Service continues to rely on the best available scientific and commercial data, as well as professional judgment, in reaching these determinations and resolving uncertainties or information gaps.

Regulations adopted in 2015 allow for Incidental Take Statements to rely on the use of "surrogates" for estimating the amount of take that is reasonably certain to occur as a result of the proposed action in certain circumstances. To use a surrogate to estimate take, the following criteria must be met: (1) the Incidental Take Statement must describe the causal link between the surrogate and the take of the listed species; (2) the Incidental Take Statement must explain why it is not practical to express the amount or extent of anticipated take or to monitor take-related impacts in terms of individuals of the listed species; and (3) the Incidental Take Statement must set a clear standard for determining when the level of anticipated take of the listed species has been exceeded.

El Segundo Blue Butterfly

We anticipate that El Segundo blue butterflies could be subject to take in the form of harm, injury, and mortality. Removing or damaging seacliff buckwheat plants could result in injury or mortality of individual butterflies because this subspecies spends the vast majority of its life in close association with its host plant. Because of their cryptic nature and because evidence of dead or injured individuals would likely be destroyed by equipment used during the project, detecting dead or injured El Segundo blue butterflies would be extremely difficult; however, if El Segundo blue butterflies are occupying the plants to be removed, the take of El Segundo blue butterflies can be anticipated by destruction of habitat containing seacliff buckwheat.

We are unable to determine the number of El Segundo blue butterflies that may be present in the area at the time of the vegetation removal because the numbers and location of individuals in the action area can vary from year to year. In addition, we cannot quantify the precise numbers of El Segundo blue butterflies that may be killed or injured as a result of the proposed removal of 483 seacliff buckwheat because the number of individuals associated with any single plant or pupating underground varies.

Consequently, we are unable to reasonably anticipate the actual number of El Segundo blue butterflies that would be taken by the proposed project. The use of seacliff buckwheat plants as a surrogate for the take of individual butterflies is appropriate because reliance on finding injured or dead individuals would likely underestimate the actual effects of the action; i.e., the number of individual butterflies found dead or injured is going to be lower than what actually occurs. By using the habitat to determine the level of take we anticipate, we have a measurable accurate estimation of the actual impact.

The Environmental Baseline, Effects Analysis, and Conclusion sections of this biological opinion indicate that adverse effects to El Segundo blue butterflies would likely be minor given the nature of the proposed activities and the habitat currently recognized as suitable but not known to be occupied. We anticipate that any El Segundo blue butterflies occupying the 483 seacliff buckwheat plants that would be removed during vegetation removal activities associated with construction of the NRO WPF facilities will be taken through injury or mortality. Therefore, if the number of seacliff buckwheat plants removed or destroyed in construction of the WPF NRO site and associated activities exceeds 483 seacliff buckwheat plants, the Air Force must contact our office immediately to reinitiate formal consultation with the Service.

California Red-legged Frog

We anticipate that some California red-legged frogs could be taken as a result of the proposed action. We expect the incidental take to be in the form of injury and mortality. We cannot quantify the precise number of California red-legged frogs that may be taken as a result of the actions that Air Force has proposed because California red-legged frogs move over time; for example, animals may have entered or departed the action area since the time of pre-construction surveys. The protective measures proposed by Air Force are likely to prevent mortality or injury of most individuals. In addition, finding a dead or injured California red-legged frog is unlikely.

Consequently, we are unable to reasonably anticipate the actual number of California red-legged frogs that would be taken by the proposed project; however, we must provide a level at which formal consultation would have to be reinitiated. The Environmental Baseline and Effects Analysis sections of this biological opinion indicate that adverse effects to California red-legged frog would likely be low given they have not been regularly observed in the action area, and we, therefore, anticipate that take of California red-legged frogs would also be low. We also recognize that for every California red-legged frog found dead or injured, other individuals may be killed or injured that are not detected, so when we determine an appropriate take level we are anticipating that the actual take would be higher and we set the number below that level.

Similarly, for estimating the number of California red-legged frogs that would be taken by capture, we cannot predict how many may be encountered for reasons stated earlier. While the benefits of relocation (i.e., minimizing mortality) outweigh the risk of capture, we must provide a limit for take by capture at which consultation would be reinitiated because high rates of capture may indicate that some important information about the species' in the action area was not apparent (e.g., it is much more abundant than thought). Conversely, because capture and relocation can be highly variable, depending upon the species and the timing of the activity, we do not anticipate a number so low that reinitiation would be triggered before the effects of the activity were greater than what we determined in the Effects Analysis.

Therefore, if either 2 adult, subadult, or juvenile California red-legged frogs are found dead or wounded or if 5 adult, subadult, or juvenile California red-legged frogs are captured and relocated, the Air Force must contact our office immediately to reinitiate formal consultation. Project activities that are likely to cause additional take should cease as the exemption provided pursuant to section 7(o)(2) may lapse and any further take could be a violation of section 4(d) or 9.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species.

REASONABLE AND PRUDENT MEASURES

The measures described below are non-discretionary, and must be undertaken by the Air Force or made binding conditions of any grant or permit issued to the Air Force as appropriate, for the exemption in section 7(o)(2) to apply. The Air Force has a continuing duty to regulate the activity covered by this incidental take statement. If the Air Force (1) fails to assume and implement the terms and conditions or (2) fails to require the Air Force to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Air Force must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR 402.14(i)(3)].

The Service' s evaluation of the effects of the proposed action includes consideration of the measures developed by the Air Force, and repeated in the Description of the Proposed Action portion of this biological opinion, to minimize the adverse effects of the proposed action on the El Segundo blue butterfly, and California red-legged frog. Any subsequent changes in the minimization measures proposed by the Air Force may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR 402.16.

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of the El Segundo blue butterfly, and California red-legged frog during the project activities analyzed in this biological opinion:

> The Air Force must implement measures to minimize the loss of host plants for the El Segundo blue butterfly and to reduce the potential for injury or mortality of California red-legged frogs.

TERMS AND CONDITIONS

To be exempt from the prohibitions in section 9 of the Act, the Air Force must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

The following terms and conditions implement the reasonable and prudent measure:

1. The Air Force must flag seacliff buckwheat for avoidance.
2. The Air Force must request our approval of any biologist who will conduct activities related to this biological opinion at least 30 days prior to any such activities being conducted. A qualified biologist(s) is more likely to reduce adverse effects based on their expertise with the covered species. Please be advised that possession of a 10(a)(1)(A) permit for the covered species does not substitute for the implementation of this measure. Authorization of Service-approved biologists is valid for this consultation only.
3. California red-legged frogs must be relocated from all areas where project activities would occur near riparian or aquatic habitat and that may result in injury or mortality of these individuals. California red-legged frogs may only be captured by hand or dip net and transported in buckets separate from other species. When capturing and removing California red-legged frogs, the Service-approved biologist(s) must minimize the amount of time that animals are held in captivity. To further reduce the time a California red-legged frog is in captivity, the Air Force must identify an area to relocate individuals (receiver site) prior to surveys. California red-legged frogs must be maintained in a manner that does not expose them to temperatures or any other environmental conditions that could cause injury or undue stress.
4. To avoid transferring disease or pathogens between aquatic habitats during the course of surveys and handling of California red-legged frogs, the Service approved biologist(s) must follow the Declining Amphibian Population Task Force's Code of Practice. A copy of this Code of Practice is enclosed. You may substitute a bleach solution (0.5 to 1.0 cup of bleach to 1.0 gallon of water) for the ethanol solution. Care must be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat.

REPORTING REQUIREMENTS

The Air Force must provide a written report to the Service within 60 days following completion of the proposed project. The report must state the impacts to habitat for the El Segundo blue butterfly (i.e., loss of host plants). The report must also disclose the number of El Segundo blue butterfly, and California red-legged frog killed or injured, describing the circumstances of the mortalities or injuries if known. The report must also document the number and size of any California red-legged frogs relocated from the action area, the date and time of relocation, and a description of relocation sites. The report must contain a brief discussion of any problems encountered in implementing minimization measures, results of biological surveys, and any other pertinent information. We encourage you to submit recommendations regarding modification of or additional measures that would improve or maintain protection of listed species, while simplifying compliance with the Act.

DISPOSITION OF DEAD OR INJURED SPECIMENS

Within three working day of locating a dead or injured El Segundo blue butterfly, or California red-legged the Air Force must make initial notification by telephone and writing to the Ventura Fish and Wildlife Office in Ventura, California, (2493 Portola Road, Suite B, Ventura, California 93003, (805) 644-1766). The notification must include the time and date, location of the carcass, a photograph, cause of death if known, and any other pertinent information.

Care must be taken in handling injured animals to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible state for later analysis. Injured animals must be transported to a qualified veterinarian. If any injured El Segundo blue butterflies or California red-legged frogs survive, the Air Force should contact us regarding their final disposition.

The remains of El Segundo blue butterflies, or California red-legged frogs must be placed with educational or research institutions holding the appropriate State and Federal permits, such as the Santa Barbara Natural History Museum (Contact: Paul Collins, Santa Barbara Natural History Museum, Vertebrate Zoology Department 2559 Puesta Del Sol, Santa Barbara, California 93460, (805) 682-471 1, extension 321).

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

1. We recommend that the Air Force advise Service-approved biologist(s) to relocate other native reptiles or amphibians found within work areas to suitable habitat outside of project areas if such actions are in compliance with State laws.
2. We recommend that dead California red-legged frogs found in areas under the Air Force's jurisdiction be tested for amphibian disease.
3. We recommend that the Air Force investigate the efficacy of capture and moving of California red-legged frogs to determine if use of this minimization measure reduces adverse effects of project actions on the species. As part of this, information on repeat capture and behavior of individuals post-movement should be noted.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in the request. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion.

If you have any questions about this biological opinion, please contact Jennifer Strotman at (805) 677-3343, or by electronic mail at jennifer_strotman@fws.gov.

Sincerely,

Stephen P. Henry
Field Supervisor

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IN LITTERIS

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

12 Mar 2020

MEMORANDUM FOR ALL INTERESTED PARTIES

FROM: 30 CES/CEI
1028 Iceland Ave
Vandenberg AFB CA 93437-6010

SUBJECT: Notice Regarding Change of Protected Status for Vandenberg Air Force Base (VAFB) Blue Butterfly

1. On March 9, 2020, U.S. Fish and Wildlife Service (USFWS) issued a memo (attached) stating that a recent genome-wide sequencing project "unambiguously" determined that the species of butterfly found on VAFB and assumed to be the Federally endangered El Segundo Blue Butterfly (ESBB) is in fact NOT the ESBB and therefore is not afforded protection as a federally listed species. VAFB has been managing this species as the federally-listed ESBB since shortly after discovery on base in 2004. The blue butterfly found on VAFB shared the same overall wing and genitalic morphology, coastal dune habitat, and unique hostplant (coastal buckwheat) as the listed ESBB. Numerous USFWS Biological Opinions (BO) were issued since then, including the Programmatic Biological Opinion, that included requirements for mitigation and monitoring. Now, this determination means that these requirements are no longer required to be implemented as conditions of the BOs. However, we will still need to protect the other 16 listed species that are found on VAFB.

2. If you need additional information or have questions, please contact me by phone or email at (805) 605-7924 or beatrice.kephart@us.af.mil. My point of contact is Mr. Darryl York at (805) 605-8684 or by email darryl.york@us.af.mil.

BEATRICE L. KEPHART
Chief, Installation Management Flight

Attachment:
USFWS Memo, March 9, 2020

United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
2020-TA-0285

March 9, 2020

Beatrice L. Kephart
30 CES/CEI
1028 Iceland Avenue
Vandenberg Air Force Base, California 93437

Subject: Change in Status of the *Euphilotes* Butterflies on Vandenberg Air Force Base, Santa Barbara County, California

Dear Ms. Kephart:

We are writing to address a change in status of the *Euphilotes* butterflies on Vandenberg Air Force Base (VAFB) based on the results of a recent study (Dupuis et al. 2020) that determined that they are not the federally endangered El Segundo blue butterfly (*Euphilotes battoides allyni*). We address that this change in status to a non-listed taxon relieves the U.S. Air Force from consultation requirements for the El Segundo blue butterfly under section 7 of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 et seq.) at VAFB. Additionally, we discuss potential conservation actions for this taxon moving forward, which may allow us to preclude a need for a future listing.

In 2004, populations of *Euphilotes* butterflies were discovered on VAFB sharing the same overall wing and genitalic morphology, coastal dune habitat, and unique hostplant as the El Segundo blue butterfly. A preliminary genetic sequencing project (Pratt and Stouthamer 2008) found that the VAFB butterflies shared similar mtDNA haploypes to El Segundo blue butterflies, but also found shared haplotypes between other members of the *E. battoides* group. The authors concluded that the VAFB populations were most likely El Segundo blue butterflies, although they also recommended additional analysis. Therefore, based on the best available science at the time, we considered the *Euphilotes* butterflies on VAFB to be El Segundo blue butterflies, which are listed as endangered on the Federal List of Endangered and Threatened Wildlife (41 FR 22041 22044).

A recent genome-wide sequencing project (Dupuis et al. 2020) unambiguously found that the *Euphilotes* butterflies at VAFB are not *Euphilotes battoides allyni* (El Segundo blue butterfly), but rather represent a divergent genomic lineage. Despite sharing morphological features and a seemingly unique host and habitat with the federally endangered El Segundo blue butterfly, this lineage is more closely related to geographically proximate populations in Ventura County. Since these populations are not the El Segundo blue butterfly, they do not share its Federal

listing status. However, the ongoing conservation of these butterfly populations as part of ecosystem-wide conservation efforts within VAFB remains important. In addition, the blue butterfly populations on VAFB may represent their own unique and limited species that could warrant future protection under the Act.

Vandenberg Air Force Base's ongoing conservation of the *Euphilotes* butterflies at VAFB has provided benefits to numerous listed species and habitat on base, including the federally endangered California least tern (*Sterna antillarum browni*), beach layia (*Layia carnosa*), Vandenberg monkeyflower (*Diplacus vandenbergensis*), Lompoc yerba santa (*Eriodictyon capitatum*), Gaviota tarplant (*Deinandra increscens* ssp. *villosa*), and federally threatened western snowy plover (*Charadrius nivosus nivosus*) and California red-legged frog (*Rana draytonii*). More than a decade of surveys, monitoring, mapping, and habitat restoration have provided substantial conservation benefits to native habitat and key information on the geographic distribution of the *Euphilotes* butterflies on VAFB. Given the new information in Dupuis et al. (2020), this taxon does not currently have Federal listing status. Therefore, we will not be conducting consultation for effects on the taxon under section 7 of the Act. The Air Force and the Service should remove the El Segundo blue butterfly from any pending consultations. Any Air Force commitments to the El Segundo blue butterfly or its habitat in completed consultations will no longer be required. However, we encourage you to continue conservation of these potentially sensitive *Euphilotes* butterflies and their habitat on VAFB as specified in your Integrated Natural Resource Management Plan developed under the Sikes Act. The Service is happy to assist you in developing measures that will continue benefit multiple species.

Because we do not fully know the range and distribution of the *Euphilotes* butterflies on VAFB at this time, we propose meeting with you to discuss entering into a voluntary and mutually beneficial Conservation Management Agreement. The goal of the Conservation Management Agreement would be to demonstrate the value of VAFB's past conservation efforts for the *Euphilotes* butterflies and their habitat on base and to identify conservation efforts that would continue to the extent that listing would not be warranted should the Service be petitioned to list the taxon under the Act in the future. Such an Agreement would provide a long-term benefit to the Air Force's mission to advert any future listing of this butterfly by reducing the regulatory workload for both the Air Force and the Service and increasing the flexibility for future projects on VAFB.

Thank you for your dedication and continued interest in the conservation of sensitive, threatened, and endangered species. If you have any additional questions, please feel free to contact me at (805) 677–3333 or by electronic mail at steve_henry@fws.gov.

Sincerely,

Stephen P. Henry
Field Supervisor

LITERATURE CITED

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3) **California Coastal Commission Consultation**

DEPARTMENT OF THE AIR FORCE
30TH SPACE WING (AFSPC)

Beatrice L. Kephart
30 CES/CEI
1028 Iceland Avenue
Vandenberg AFB CA 93437-6010

Mr. Larry Simon
Federal Consistency Supervisor
California Coastal Commission
45 Fremont Street, Suites 1900 & 2000
San Francisco CA 94105-2219

Dear Mr. Simon

Under the Federal Coastal Zone Management Act of 1972, as amended, Section 307c(1), and 15 CFR Part 930, the U.S. Air Force (AF) determined that the construction of a proposed satellite processing facility at Vandenberg Air Force Base (AFB) will not affect any coastal uses or resources and therefore, does not require a consistency determination.

Project Description

The proposed action is to construct a Western Process Facility (WPF) and associated utility infrastructure. The WPF main function is preparing satellites for space launch. The WPF will be composed of the main satellite processing building constructed on a concrete pad supported by stormwater facilities, utilities, access road, and two power circuit corridors. Access roads will connect the facility to existing nearby roadways.

Project Purpose

Currently, satellite vehicle processing facilities on VAFB lack sufficient capability and capacity to support launch requirements forecasted by the National Reconnaissance Office (NRO) in the near future. The proposed facility would consolidate, increase capacity, and improve satellite vehicle processing facilities on VAFB to aid in accommodating launch schedules and reconnaissance missions in the future for the NRO. Other sites were evaluated for suitability, but the selected site was chosen due to its accessibility, proximity and reliability of utilities and power, safety and security, and minimal environmental impacts.

Aesthetics

Constructing the proposed WPF will not adversely affect the views available to civilians visiting and utilizing the public access at Surf Beach. Public access point to Surf Beach is approximately

2.5 miles southwest of the proposed WPF. The beach extends nearly 2 miles north of this access point until reaching sea bluffs. The proposed WPF would not be visible for the majority of this stretch unless standing near or at the top of the sand dunes.

Approximately 0.75 miles of the beach near the mouth of the Santa Ynez River would not have the view fully obstructed by the sand dunes on the beach. However, less than half of the proposed WPF would be able to be seen from these locations and it would fall behind existing buildings and infrastructure. The proposed WPF would be a light tan color that matches surrounding buildings and would not be visually imposing.

Determination

The AF determined that constructing the WPF would not have significant impacts to natural, cultural and paleontological resources, access to the coast, or coastal scenic and visual qualities. We find the placement of the WPF will not affect the coastal zone and does not require a consistency determination.

If you need additional information, or if you have any questions, please do not hesitate to call me at (805) 605-7924, or email me at beatrice.kephart@vandenberg.af.mil. You can also direct your questions or comments to Tracy Curry at tracy.curry-bumpass@us.af.mil.

Sincerely

BEATRICE L. KEPHART
Chief, Installation Management Flight

Attachment:
1. WPF Visual Assessment.

STATE OF CALIFORNIA -- NATURAL RESOURCES AGENCY GAVIN NEWSOM, *Governor*

CALIFORNIA COASTAL COMMISSION
45 FREMONT STREET, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200

July 23, 2019

Beatrice L. Kephart
Chief, Installation Management Flight
30 CES/CEI
ATTN: Tracy Curry-Bumpass
1028 Iceland Avenue
Vandenberg AFB, CA 93437-6010

Re: **ND-0019-19** Air Force Negative Determination, Western Process Facility, Vandenberg Air Force Base, Santa Barbara Co.

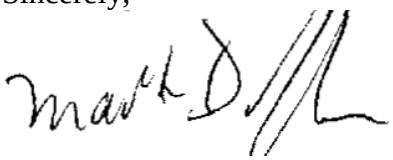
Dear Ms. Kephart:

The Coastal Commission staff has reviewed the above-referenced negative determination for the construction of a satellite processing facility (the Western Process Facility, or WPF) on northern Vandenberg Air Force Base (VAFB). The facility would be used to prepare satellites for space launches. The project would include associated infrastructure (stormwater facilities, access road, and electrical supply). The facility would be located near existing buildings and a tall water tower located along Talo Rd. (southwest of the site), and west of an existing large building (Building 3000) on Tangair Rd. While the height and scale of the proposed facility, at 150 ft. tall, and 480 ft. by 340 ft. in area, would exceed the height and area of nearby development (Building 3000 is 95 ft. tall, and 425 ft. by 210 ft. in area, and the water tower is 100 ft. tall), at the Commission staff's request the Air Force has included the attached visual analysis depicting the visibility of the WPF from shoreline and other areas of VAFB that are open to public access. The Air Force's negative determination states:

> *Constructing the proposed WPF will not adversely affect the views available to civilians visiting and utilizing the public access at Surf Beach. Public access point to Surf Beach is approximately 2.5 miles south west of the proposed WPF. The beach extends nearly 2 miles north of this access until reaching sea bluffs. The proposed WPF would not be visible for the majority of this stretch unless [the viewer is] standing near or at the top of the sand dunes.*
>
> *Approximately 0.75 miles of the beach near the mouth of the Santa Ynez River would not have the view fully obstructed by the sand dunes on the beach. However, less than half of the proposed WPF facility would be able to be seen from these locations and it wou1d fall behind existing buildings and infrastructure. The proposed WPF would be a light tan color that matches surrounding buildings and would not be visually imposing.*

Based on this analysis, we **agree** with the Air Force's conclusion that the project would not affect coastal views, or any other coastal resources. We therefore **concur** with your negative determination made pursuant to 15 CFR 930.35 of the NOAA implementing regulations. Please contact Mark Delaplaine at (415) 904-5289 if you have any questions regarding this matter.

Sincerely,



(for) JOHN AINSWORTH
Executive Director

Attachment: Visual Perspective Information for CA Coastal Commission

cc: Ventura District

4) **SHPO Consultation and Native American Tribal Consultation**

State of California • Natural Resources Agency
Gavin Newsom, *Governor*

DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION
Lisa Ann L. Mangat, *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

December 31, 2019

Reply in Reference To: USAF_2019_1211_001

Lieutenant Colonel Jason M. Aftanas
Commander, 30th Civil Engineer Squadron
1172 Iceland Avenue
Vandenberg AFB, CA 93437-6011

Re: Section 106 Consultation for the National Reconnaissance Office's Western Processing Facility Construction Project, Vandenberg AFB (USAF letter of November 22, 2019 and e-mail of December 23, 2019)

Dear Colonel Aftanas:

The United States Air Force (USAF) is initiating consultation with the State Historic Preservation Officer (SHPO) on the above-cited undertaking in accordance 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.

The USAF proposes to construct a new spacecraft processing facility at Vandenberg Air Force Base, which would contain a spacecraft processing facility, parking lots, access roads, utilities and other infrastructure within the area of potential effects (APE), which contains 75 acres. Improvements to overhead electrical lines would occur along two corridors running between two substations and the new facility. All of the activities involved in this proposed undertaking and the APE are described adequately in your submission.

As documentation for its determination of effect, the USAF submitted a cultural resources survey report prepared by Josh Smallwood (Center for the Environmental Management of Military Lands) and Christopher Ryan (USAF) and dated November 2019. A records review of the VAFB's cultural resources records identified CA-SBA-3575H as being located in the APE and CA-SBA-3581 and CA-SBA-3583 as being outside of the APE, but adjacent to it.

Succinctly, the status of those cultural resources is as follows:

- CA-SBA-3575H consists of disjunct segments of World War II Camp Cooke masonry drainage ditches. Previously, the USAF had determine these drainage ditches to be ineligible for listing on the National Register of Historic Places (NRHP) and the SHPO concurred with that determination on August 14, 2017 (USAF_2017_0731_001);
- CA-SBA-3581 and CA-SBA-3583 are low-density lithic scatters that were field tested in 2000 by 15 and 8 shovel test pits (STPs) respectively. Those STPs yielded only two pieces of lithic debitage; and
- CA-SBA-3581 and CA-SBA-3583 were evaluated by the USAF for their eligibility for listing on the NRHP and the USAF has determined that neither is eligible for listing.

On November 22, 2019, the USAF initiated consultation with Mr. Freddie Romero of the Santa Ynez Band of Chumash Indians (SYBCI) in regards to this proposed undertaking. On December 23, 2019, Mr. Romero responded that the SYBCI Elders Council had no concerns about the proposed undertaking and they agreed with the USAF's proposed mitigation measures as listed.

Based on the records review, previous and current pedestrian surveys, and the tribal consultation, the USAF has determined that a finding of No Historic Properties Affected is appropriate for this proposed undertaking. The USAF has requested the SHPO to review and comment on that finding, its determination of ineligibility, and the identification of the APE. After reviewing the information submitted by the USAF, the SHPO has the following comments:

1) The SHPO has no objections to your identification and delineation of the area of potential effects pursuant to 36 CFR Parts 800.4 (a)(1) and 800.16(d);
2) The SHPO concurs that CA-SBA-3581 and CA-SBA-3583 are not eligible for listing on the NRHP for the reasons described in your report; and
3) The SHPO does not object to your Finding of No Historic Properties Affected, as described above, pursuant to 36 CFR Part 800.5(c)(1).

Be advised that under certain circumstances, such as an unanticipated discovery or a change in project description, the USAF may have additional future responsibilities for this undertaking under 36 CFR Part 800. Should cultural artifacts be encountered during ground disturbing activities, please halt all work until a qualified archaeologist can be consulted on the nature and significance of such artifacts.

If you have any questions or concerns, please contact Ed Carroll of my staff at (916) 445-7006 or Ed.Carroll@parks.ca.gov.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

DEPARTMENT OF THE AIR FORCE
30TH SPACE WING (AFSPC)

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

25 November 2019

Mr. Freddie Romero
Santa Ynez Band of Chumash Indians
P.O. Box 517
Santa Ynez CA 93460

Dear Freddie

The National Reconnaissance Office (NRO) proposes to construct a new spacecraft processing facility and associated infrastructure in the main cantonment area of North Vandenberg Air Force Base (VAFB) in Santa Barbara County, California. The proposed *NRO Western Processing Facility Construction Project* would include expanding the existing NRO campus by approximately 75 acres and constructing the spacecraft processing facility, a parking lot, roads, perimeter security fencing, and associated utilities. The new facility would require dedicated electrical circuits extending from two existing substations. VAFB determined the proposed project 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]. With this letter and attached report, VAFB is continuing consultation with the Santa Ynez Band of Chumash Indians.

VAFB carried out a reasonable and good-faith cultural resources investigation to identify historic properties within the area of potential effects (APE) that fulfills federal agency responsibilities pursuant to 36 CFR 800.4(a)-(d). One historic-period cultural resource is within the APE: CA-SBA-3575H comprises several disjunct segments of World War II Camp Cooke masonry drainage ditches; it already has been evaluated as not eligible for the National Register of Historic Places (NRHP) (OHP Reference # USAF_2017_0731_001).

The cultural resources investigation included historic property identification efforts within the boundary of two alternatives that were considered but then eliminated from further consideration. Two prehistoric archaeological sites were evaluated within the larger archaeological study area: CA-SBA-3581 and CA-SBA-3583. Neither site met any of the NRHP criteria of significance and were determined by VAFB as not eligible for listing on the NRHP. Although neither of these two sites is within the APE, VAFB still is requesting concurrence from the SHPO on their NRHP eligibility status.

No historic properties exist within the APE. Details of the investigation are provided in the attachment. Although VAFB has reached a Section 106 finding of no historic properties affected

for this undertaking, VAFB recognizes that the Santa Ynez Band of Chumash Indians may have concerns beyond the purview of the National Historic Preservation Act. Therefore, I am seeking any additional comments or concerns you may have about cultural resources. I would appreciate receiving any feedback as part of this consultation within the next 30 calendar days. Please feel free to let me know if you require additional time. 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
Archaeologist
Installation Management Flight

Attachment:
Identification of Historic Properties, National Reconnaissance Office's Western Processing Facility

From:	Freddie Romero
To:	RYAN, CHRISTOPHER D GS-12 USAF AFSPC 30 CES/CEANC
Cc:	LOETZERICH, ROSCOE M GS-12 USAF AFSPC 30 CES/30 CEIEA
Subject:	[Non-DoD Source] Re: Continuing Consultation: NRO Western Processing Facility Construction
Date:	Monday, December 23, 2019 11:46:27 AM

Chris,

SYBCI Elders are ok with this project and the agreed mitigation measures as listed. Should you need anything further, let me know.

Freddie Romero
Cultural Resources Coordinator
SYBCI Elders Council
805-688-7997
805-403-2873

From: RYAN, CHRISTOPHER D GS-12 USAF AFSPC 30 CES/CEANC <christopher.ryan.7@us.af.mil>
Sent: Monday, November 25, 2019 1:24 PM
To: Freddie Romero <FRomero@santaynezchumash.org>
Cc: LOETZERICH, ROSCOE M GS-12 USAF AFSPC 30 CES/30 CEIEA <roscoe.loetzerich.1@us.af.mil>
Subject: Continuing Consultation: NRO Western Processing Facility Construction

5) **Air Quality Analyses**

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

b. Action Title: National Reconnaissance Office Satellite Vehicle Western Processing Facility (WPF)

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2024

e. Action Description:

The proposed action is to provide a facility that could support payload processing activities and offer operational flexibility by allowing different NRO programs the ability to conduct their SV processing activities simultaneously. Payload processing is comprised of a set of activities performed on a spacecraft or satellite to ensure the payload is flight-ready prior to its integration onto the launch vehicle.

The action would include:
• Utility exenstions, power line installation, and associated access roads
• WPF payload processing building encompassing:
- Processing/encapsulation bays for post-ship inspections and test, mechanical launch preps, electrical launch processing tests, propellant loading, ordnance installs and checkouts, preps for/and encapsulation, and required launch pad electrical test and launch countdown activities
- Each bay would be supported by control room space, a conference room, a User's room, a break room, a trailer/logistics support room, a garment change room, and support space for oxidizer and fuel conditioning
- Airlocks/transfer aisles would provide 100,000 class clean and explosive safe processing space to support equipment arrivals and departures from the facility, as well as transfers internal to the facility (e.g., moving between processing bays to support payload fairing installation [i.e., encapsulation])
- The remaining space would be allocated to security and access control, rest rooms, and facility support functions (e.g., communication rooms)
- The proposed facility would be classified as a hazardous processing facility where compounds such as hydrazine and nitrogen tetroxide would be present in large quantities during propellant loading operations

• Chain-link security fence surrounding the building: Much of the area within the fence would be a paved asphalt or concrete pad to accommodate the WPF support buildings and maneuvering of transporter vehicles.
• Utility Annex.
• Boilers.
• Emergency generators for use during electrical power outages. The generators would also be run briefly to perform monthly maintenance.
• Fuel oil tanks for the emergency generators.
• Pressure vessels to support gaseous nitrogen, gaseous helium, and breathing air systems.
• Propellant spill containment tanks for hydrazine and nitrogen tetroxide.
• A paved parking area adjacent to, but outside the security fence.
• Asphalt access roads.
• External light fixtures, including security lighting, for the pad, roadways, and parking area.

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

f. Point of Contact:

Name:	Jasmine Sodemann
Title:	Environmental Consultant
Organization:	Gannett Fleming, Inc.
Email:	jsodemann@gfnet.com
Phone Number:	608.327.5045

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

_____ applicable
__X__ 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 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:

2024

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.520	100	
NOx	2.541	100	
CO	3.235	250	
SOx	0.009	250	
PM 10	37.150	250	
PM 2.5	0.099	250	
Pb	0.000	25	No
NH3	0.021	250	
CO2e	891.9		

2025

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR

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

		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.476	100	
NOx	2.054	100	
CO	3.220	250	
SOx	0.008	250	
PM 10	0.094	250	
PM 2.5	0.082	250	
Pb	0.000	25	No
NH3	0.017	250	
CO2e	714.7		

2026

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.523	100	
NOx	3.822	100	
CO	4.185	250	
SOx	1.014	250	
PM 10	0.205	250	
PM 2.5	0.174	250	
Pb	0.000	25	No
NH3	0.029	250	
CO2e	2679.4		

2027 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.261	100	
NOx	2.939	100	
CO	2.378	250	
SOx	1.010	250	
PM 10	0.165	250	
PM 2.5	0.142	250	
Pb	0.000	25	No
NH3	0.015	250	
CO2e	2290.7		

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.

_____ _____

Jasmine Sodemann, Environmental Consultant DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

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

- Action Title: National Reconnaissance Office Satellite Vehicle Western Processing Facility (WPF)

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2024

- Action Purpose and Need:

The USAF 30 Space Launch Delta (SLD) at Vandenberg Space Force Base (VSFB) is the United States Air Force (USAF) Space Command organization responsible for Department of Defense (DoD) space and missile launch activities on the West Coast of the United States. VSFB's mission includes launching satellites destined for polar or near-polar orbit, and test-launching ballistic missiles. The 30 SLD supports West Coast launch activities for the USAF, National Reconnaissance Office (NRO), other Department of Defense organizations, Missile Defense Agency, National Aeronautics and Space Administration, foreign nations, and various private industry contractors. A satellite vehicle (SV) processing facility provides a location to conduct all of the specialized operations necessary to prepare a satellite for launch. These operations must take place in a secure and exceptionally clean space. Extensive study by NRO/Office of Space Launch determined that the current SV processing facilities at Vandenberg Space Force Base, California, lack sufficient capability and capacity to support requirements for launches in the near future.

- Action Description:

The proposed action is to provide a facility that could support payload processing activities and offer operational flexibility by allowing different NRO programs the ability to conduct their SV processing activities simultaneously. Payload processing is comprised of a set of activities performed on a spacecraft or satellite to ensure the payload is flight-ready prior to its integration onto the launch vehicle.

The action would include:
• Utility exenstions, power line installation, and associated access roads
• WPF payload processing building encompassing:
- Processing/encapsulation bays for post-ship inspections and test, mechanical launch preps, electrical launch processing tests, propellant loading, ordnance installs and checkouts, preps for/and encapsulation, and required launch pad electrical test and launch countdown activities
- Each bay would be supported by control room space, a conference room, a User's room, a break room, a trailer/logistics support room, a garment change room, and support space for oxidizer and fuel conditioning
- Airlocks/transfer aisles would provide 100,000 class clean and explosive safe processing space to support equipment arrivals and departures from the facility, as well as transfers internal to the facility (e.g., moving between processing bays to support payload fairing installation [i.e., encapsulation])
- The remaining space would be allocated to security and access control, rest rooms, and facility support functions (e.g., communication rooms)
- The proposed facility would be classified as a hazardous processing facility where compounds such as hydrazine and nitrogen tetroxide would be present in large quantities during propellant loading operations

• Chain-link security fence surrounding the building: Much of the area within the fence would be a paved asphalt or concrete pad to accommodate the WPF support buildings and maneuvering of transporter vehicles.
• Utility Annex.
• Boilers.

• Emergency generators for use during electrical power outages. The generators would also be run briefly to perform monthly maintenance.
• Fuel oil tanks for the emergency generators.
• Pressure vessels to support gaseous nitrogen, gaseous helium, and breathing air systems.
• Propellant spill containment tanks for hydrazine and nitrogen tetroxide.
• A paved parking area adjacent to, but outside the security fence.
• Asphalt access roads.
• External light fixtures, including security lighting, for the pad, roadways, and parking area.

- Point of Contact

Name: Jasmine Sodemann
Title: Environmental Consultant
Organization: Gannett Fleming, Inc.
Email: jsodemann@gfnet.com
Phone Number: 608.327.5045

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Construction of WPF Building Site
3.	Construction / Demolition	Powerline Corridors B & C
4.	Heating	Natural Gas Heating for the Building
5.	Emergency Generator	Diesel Emergency Generators and Fire Pump
6.	Tanks	Diesel fuel tanks for back-up boiler fuel, generators, and fire pump
7.	Personnel	During Operation
8.	Personnel	During Construction
9.	Heating	Fuel Oil Backup for Boilers

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location

County: Santa Barbara
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Construction of WPF Building Site

- Activity Description:

The WPF Complex will consist of a 45 acre (1,960,000 sq. ft.) compound including the main Spacecraft (SC) Processing Facility, an integral Utility Plant (UP) for mechanical and electrical site support systems, a Waste Fuel and Oxidizer Propellant Area (WPA), a Gas Storage Area (GSA) and the necessary security perimeter fencing, personnel entrances and vehicle gates.

The grading and excavating/trenching for this phase of work does not include utility connections outside the Complex.

- Activity Start Date

Start Month: 1

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Start Month: 2024

- Activity End Date
Indefinite: False
End Month: 6
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.772273
SO_x	0.014585
NO_x	4.758967
CO	5.225787
PM 10	29.394828

Pollutant	Total Emissions (TONs)
PM 2.5	0.181791
Pb	0.000000
NH_3	0.016342
CO_2e	1424.4

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 1
Number of Days: 15

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 1960000
Amount of Material to be Hauled On-Site (yd^3): 106000
Amount of Material to be Hauled Off-Site (yd^3): 55000

- Site Grading Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	2	8
Other Construction Equipment Composite	2	8
Rubber Tired Dozers Composite	2	8
Scrapers Composite	2	8
Tractors/Loaders/Backhoes Composite	2	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 40

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1564	0.0026	0.9241	0.7301	0.0368	0.0368	0.0141	262.83
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.164	000.003	000.093	001.268	000.017	000.006		000.025	00285.560
LDGT	000.217	000.004	000.177	001.754	000.018	000.007		000.027	00356.560
HDGV	000.273	000.005	000.286	002.004	000.029	000.010		000.052	00545.059
LDDV	000.026	000.002	000.237	000.323	000.031	000.020		000.008	00225.935
LDDT	000.017	000.003	000.082	000.161	000.025	000.013		000.009	00309.267
HDDV	000.176	000.007	002.043	000.559	000.124	000.067		000.033	00760.601
MC	005.697	000.002	000.762	018.634	000.019	000.008		000.053	00210.432

2.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Trenching/Excavating Phase

2.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 3
Start Year: 2024

- Phase Duration
Number of Month: 1
Number of Days: 0

2.2.2 Trenching / Excavating Phase Assumptions

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft^2): 5000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings

Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Trenchers Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 40

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1564	0.0026	0.9241	0.7301	0.0368	0.0368	0.0141	262.83
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.164	000.003	000.093	001.268	000.017	000.006		000.025	00285.560
LDGT	000.217	000.004	000.177	001.754	000.018	000.007		000.027	00356.560
HDGV	000.273	000.005	000.286	002.004	000.029	000.010		000.052	00545.059

LDDV	000.026	000.002	000.237	000.323	000.031	000.020		000.008	00225.935
LDDT	000.017	000.003	000.082	000.161	000.025	000.013		000.009	00309.267
HDDV	000.176	000.007	002.043	000.559	000.124	000.067		000.033	00760.601
MC	005.697	000.002	000.762	018.634	000.019	000.008		000.053	00210.432

2.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Building Construction Phase

2.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 24
Number of Days: 0

2.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 75000
Height of Building (ft): 150
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	6
Forklifts Composite	2	6
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Generator Sets Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0303	0.0006	0.2464	0.2674	0.0091	0.0091	0.0027	61.061
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875
Welders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0227	0.0003	0.1427	0.1752	0.0059	0.0059	0.0020	25.653

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.164	000.003	000.093	001.268	000.017	000.006		000.025	00285.560
LDGT	000.217	000.004	000.177	001.754	000.018	000.007		000.027	00356.560
HDGV	000.273	000.005	000.286	002.004	000.029	000.010		000.052	00545.059
LDDV	000.026	000.002	000.237	000.323	000.031	000.020		000.008	00225.935
LDDT	000.017	000.003	000.082	000.161	000.025	000.013		000.009	00309.267
HDDV	000.176	000.007	002.043	000.559	000.124	000.067		000.033	00760.601
MC	005.697	000.002	000.762	018.634	000.019	000.008		000.053	00210.432

2.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)

BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.4 Paving Phase

2.4.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 7

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Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 6
Number of Days: 0

2.4.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 810000

- Paving Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Paving Equipment Composite	2	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1564	0.0026	0.9241	0.7301	0.0368	0.0368	0.0141	262.83
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.164	000.003	000.093	001.268	000.017	000.006		000.025	00285.560
LDGT	000.217	000.004	000.177	001.754	000.018	000.007		000.027	00356.560
HDGV	000.273	000.005	000.286	002.004	000.029	000.010		000.052	00545.059
LDDV	000.026	000.002	000.237	000.323	000.031	000.020		000.008	00225.935
LDDT	000.017	000.003	000.082	000.161	000.025	000.013		000.009	00309.267
HDDV	000.176	000.007	002.043	000.559	000.124	000.067		000.033	00760.601
MC	005.697	000.002	000.762	018.634	000.019	000.008		000.053	00210.432

2.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / $acre)^2$ / acre)

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location
County: Santa Barbara
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Powerline Corridors B & C

- Activity Description:
Powerline B – approximately 7 acres to be graded, 1.1 acres to be trenched, re-paving of 1250 ft of Arizona Ave at 4 ft width (5,000 sq. ft.).
Powerline C – approximately 10 acres to be graded, no trenching required.

- Activity Start Date
Start Month: 1
Start Month: 2024

- Activity End Date
Indefinite: False
End Month: 3
End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.092228
SO_x	0.001459
NO_x	0.513750
CO	0.567063
PM 10	7.866457

Pollutant	Total Emissions (TONs)
PM 2.5	0.022950
Pb	0.000000
NH_3	0.000405
CO_2e	143.4

3.1 Site Grading Phase

3.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2024

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- Phase Duration
Number of Month: 1
Number of Days: 0

3.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 740520
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Site Grading Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Scrapers Composite	2	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 40

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0584	0.0013	0.2523	0.5090	0.0100	0.0100	0.0052	119.71
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1564	0.0026	0.9241	0.7301	0.0368	0.0368	0.0141	262.83
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.164	000.003	000.093	001.268	000.017	000.006		000.025	00285.560
LDGT	000.217	000.004	000.177	001.754	000.018	000.007		000.027	00356.560
HDGV	000.273	000.005	000.286	002.004	000.029	000.010		000.052	00545.059
LDDV	000.026	000.002	000.237	000.323	000.031	000.020		000.008	00225.935
LDDT	000.017	000.003	000.082	000.161	000.025	000.013		000.009	00309.267
HDDV	000.176	000.007	002.043	000.559	000.124	000.067		000.033	00760.601
MC	005.697	000.002	000.762	018.634	000.019	000.008		000.053	00210.432

3.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.2 Trenching/Excavating Phase

3.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 1
Number of Days: 0

3.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 47916
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

- Trenching Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Trenchers Composite	2	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 40

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0584	0.0013	0.2523	0.5090	0.0100	0.0100	0.0052	119.71
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1564	0.0026	0.9241	0.7301	0.0368	0.0368	0.0141	262.83
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.164	000.003	000.093	001.268	000.017	000.006		000.025	00285.560
LDGT	000.217	000.004	000.177	001.754	000.018	000.007		000.027	00356.560
HDGV	000.273	000.005	000.286	002.004	000.029	000.010		000.052	00545.059
LDDV	000.026	000.002	000.237	000.323	000.031	000.020		000.008	00225.935
LDDT	000.017	000.003	000.082	000.161	000.025	000.013		000.009	00309.267
HDDV	000.176	000.007	002.043	000.559	000.124	000.067		000.033	00760.601
MC	005.697	000.002	000.762	018.634	000.019	000.008		000.053	00210.432

3.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.3 Paving Phase

3.3.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2024

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- Phase Duration
Number of Month: 1
Number of Days: 0

3.3.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 5000

- Paving Default Settings
Default Settings Used: No
Average Day(s) worked per week: 5

- Construction Exhaust

Equipment Name	Number Of Equipment	Hours Per Day
Paving Equipment Composite	2	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 40

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.3.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour)

Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0584	0.0013	0.2523	0.5090	0.0100	0.0100	0.0052	119.71
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1564	0.0026	0.9241	0.7301	0.0368	0.0368	0.0141	262.83
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.164	000.003	000.093	001.268	000.017	000.006		000.025	00285.560
LDGT	000.217	000.004	000.177	001.754	000.018	000.007		000.027	00356.560
HDGV	000.273	000.005	000.286	002.004	000.029	000.010		000.052	00545.059
LDDV	000.026	000.002	000.237	000.323	000.031	000.020		000.008	00225.935
LDDT	000.017	000.003	000.082	000.161	000.025	000.013		000.009	00309.267
HDDV	000.176	000.007	002.043	000.559	000.124	000.067		000.033	00760.601
MC	005.697	000.002	000.762	018.634	000.019	000.008		000.053	00210.432

3.3.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / $acre)^2$ / acre)

4. Heating

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Santa Barbara
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Natural Gas Heating for the Building

- Activity Description:
Three 15 mmBtu/hr boilers are proposed. One boiler is redundant and only two boilers will operate at any given time.

- Activity Start Date
Start Month: 1
Start Year: 2026

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.070714
SO_x	0.007714
NO_x	1.285714
CO	1.080000
PM 10	0.097714

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.097714
Pb	0.000000
NH_3	0.000000
CO_2e	1547.9

4.2 Heating Assumptions

- Heating
Heating Calculation Type: Rated Capacity Method

- Rated Capacity Method

Rated Capacity of boiler/furnance (MM Btu): 30
Type of fuel: Natural Gas
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105

- Default Settings Used: Yes

- Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

4.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

4.4 Heating Formula(s)

- Heating Fuel Consumption ft^3 per Year
FC_{RC}= OT * RC / HV / 1000000

FC_{RC}: Fuel Consumption for Rated Capacity Method
OT: Operating Time Per Year (hours)
RC: Rated Capacity of boiler/furnance (MM Btu)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

- Heating Emissions per Year
HE_{POL}= FC * EF_{POL} / 2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

5. Emergency Generator

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Santa Barbara
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Diesel Emergency Generators and Fire Pump

- Activity Description:
Three, 2 MW emergency generators are proposed. One is redudant, thus only 2 will operate at any given time. Also one 200 HP fire pump is proposed. All engines would be fired on diesel.

- Activity Start Date
Start Month: 1

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Start Year: 2026

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.030953
SO_x	0.000540
NO_x	1.119657
CO	0.297422
PM 10	0.034973

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.034973
Pb	0.000000
NH_3	0.000000
CO_2e	57.5

5.2 Emergency Generator Assumptions

- Emergency Generator
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

- Default Settings Used: No

- Emergency Generators Consumption
Emergency Generator's Horsepower: 2882
Average Operating Hours Per Year (hours): 30

5.3 Emergency Generator Emission Factor(s)

- Emergency Generators Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.000716	0.0000125	0.0259	0.00688	0.000809	0.000809			1.33

5.4 Emergency Generator Formula(s)

- Emergency Generator Emissions per Year
$AE_{POL} = (NGEN * HP * OT * EF_{POL}) / 2000$

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

6. Tanks

6.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Santa Barbara
Regulatory Area(s): NOT IN A REGULATORY AREA

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- Activity Title: Diesel fuel tanks for back-up boiler fuel, generators, and fire pump

- Activity Description:

Two 10,000 gallon tanks are proposed for boiler back-up fuel and to feed the generator day tanks. Three day tanks, one for each generator, are proposed at 200 gallons each. The fire pump engine is assumed to have a 100 gallon tank. The smaller tanks are assumed to have negligible contributions to the emissions.

- Activity Start Date

Start Month: 1
Start Year: 2026

- Activity End Date

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.003468
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

6.2 Tanks Assumptions

- Chemical

Chemical Name: Fuel oil no. 2
Chemical Category: Petroleum Distillates
Chemical Density: 7.1
Vapor Molecular Weight (lb/lb-mole): 130
Stock Vapor Density (lb/ft^3): 0.000129553551395334
Vapor Pressure: 0.0055
Vapor Space Expansion Factor (dimensionless): 0.068

- Tank

Type of Tank: Horizontal Tank
Tank Length (ft): 27.25
Tank Diameter (ft): 8.5
Annual Net Throughput (gallon/year): 26618

6.3 Tank Formula(s)

- Vapor Space Volume

VSV = (PI / 4) * D^2 * L / 2

VSV: Vapor Space Volume (ft^3)
PI: PI Math Constant
D^2: Tank Diameter (ft)
L: Tank Length (ft)
2: Convertion Factor (Vapor Space Volume is assumed to be one-half of the tank volume)

- Vented Vapor Saturation Factor

VVSF = 1 / (1 + (0.053 * VP * L / 2))

VVSF: Vented Vapor Saturation Factor (dimensionless)
0.053: Constant
VP: Vapor Pressure (psia)
L: Tank Length (ft)

- Standing Storage Loss per Year

SSL_{VOC} = 365 * VSV * SVD * VSEF * VVSF / 2000

SSL_{VOC}: Standing Storage Loss Emissions (TONs)
365: Number of Daily Events in a Year (Constant)
VSV: Vapor Space Volume (ft^3)
SVD: Stock Vapor Density (lb/ft^3)
VSEF: Vapor Space Expansion Factor (dimensionless)
VVSF: Vented Vapor Saturation Factor (dimensionless)
2000: Conversion Factor pounds to tons

- Number of Turnovers per Year

NT = (7.48 * ANT) / ((PI / 4.0) * D * L)

NT: Number of Turnovers per Year
7.48: Constant
ANT: Annual Net Throughput
PI: PI Math Constant
D^2: Tank Diameter (ft)
L: Tank Length (ft)

- Working Loss Turnover (Saturation) Factor per Year

WLSF = (18 + NT) / (6 * NT)

WLSF: Working Loss Turnover (Saturation) Factor per Year
18: Constant
NT: Number of Turnovers per Year
6: Constant

- Working Loss per Year

WL_{VOC} = 0.0010 * VMW * VP * ANT * WLSF / 2000

0.0010: Constant
VMW: Vapor Molecular Weight (lb/lb-mole)
VP: Vapor Pressure (psia)
ANT: Annual Net Throughput
WLSF: Working Loss Turnover (Saturation) Factor
2000: Conversion Factor pounds to tons

7. Personnel

7.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Santa Barbara
Regulatory Area(s): NOT IN A REGULATORY AREA

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- Activity Title: During Operation

- Activity Description:
civilians – 40
support contractors - 6-10 maintenance workers/contractors

- Activity Start Date
Start Month: 1
Start Year: 2026

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.151657
SO_x	0.001494
NO_x	0.071018
CO	0.885113
PM 10	0.008750

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.003243
Pb	0.000000
NH_3	0.015308
CO_2e	162.8

7.2 Personnel Assumptions

- Number of Personnel
Active Duty Personnel: 0
Civilian Personnel: 40
Support Contractor Personnel: 10
Air National Guard (ANG) Personnel: 0
Reserve Personnel: 0

- Default Settings Used: No

- Average Personnel Round Trip Commute (mile): 40

- Personnel Work Schedule
Active Duty Personnel: 5 Days Per Week
Civilian Personnel: 5 Days Per Week
Support Contractor Personnel: 5 Days Per Week
Air National Guard (ANG) Personnel: 4 Days Per Week
Reserve Personnel: 4 Days Per Month

7.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

7.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e

LDGV	000.139	000.002	000.072	001.003	000.014	000.005		000.025	00241.071
LDGT	000.190	000.003	000.140	001.434	000.016	000.006		000.027	00314.132
HDGV	000.235	000.005	000.222	001.615	000.025	000.009		000.052	00465.357
LDDV	000.018	000.002	000.157	000.243	000.023	000.014		000.008	00183.680
LDDT	000.014	000.003	000.064	000.137	000.022	000.011		000.009	00278.098
HDDV	000.147	000.006	001.685	000.474	000.106	000.058		000.033	00666.113
MC	005.142	000.002	000.643	015.891	000.016	000.007		000.053	00177.342

7.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year
$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)
NP: Number of Personnel
WD: Work Days per Year
AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year
$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year
$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

8. Personnel

8.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Santa Barbara
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: During Construction

- Activity Description:
- # civilians – 3 on-site on average
- # support contractors – 25-35 on average (at times 80-100)

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- Activity Start Date
Start Month: 1
Start Year: 2024

- Activity End Date
Indefinite: No
End Month: 12
End Year: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.393132
SO_x	0.004685
NO_x	0.204436
CO	2.468650
PM 10	0.023086

Pollutant	Total Emissions (TONs)
PM 2.5	0.008705
Pb	0.000000
NH_3	0.034902
CO_2e	427.4

8.2 Personnel Assumptions

- Number of Personnel
Active Duty Personnel: 0
Civilian Personnel: 3
Support Contractor Personnel: 35
Air National Guard (ANG) Personnel: 0
Reserve Personnel: 0

- Default Settings Used: No

- Average Personnel Round Trip Commute (mile): 40

- Personnel Work Schedule
Active Duty Personnel: 5 Days Per Week
Civilian Personnel: 5 Days Per Week
Support Contractor Personnel: 5 Days Per Week
Air National Guard (ANG) Personnel: 4 Days Per Week
Reserve Personnel: 4 Days Per Month

8.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

8.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.164	000.003	000.093	001.268	000.017	000.006		000.025	00285.560
LDGT	000.217	000.004	000.177	001.754	000.018	000.007		000.027	00356.560
HDGV	000.273	000.005	000.286	002.004	000.029	000.010		000.052	00545.059
LDDV	000.026	000.002	000.237	000.323	000.031	000.020		000.008	00225.935
LDDT	000.017	000.003	000.082	000.161	000.025	000.013		000.009	00309.267

HDDV	000.176	000.007	002.043	000.559	000.124	000.067		000.033	00760.601
MC	005.697	000.002	000.762	018.634	000.019	000.008		000.053	00210.432

8.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year
$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)
NP: Number of Personnel
WD: Work Days per Year
AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year
$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year
$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

9. Heating

9.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Santa Barbara
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Fuel Oil Backup for Boilers

- Activity Description:
All three boilers could burn fuel oil for 48 hours each per year and still be considered gas boilers.

- Activity Start Date
Start Month: 1
Start Year: 2026

- Activity End Date

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.004629
SO_x	0.999771
NO_x	0.462857
CO	0.115714
PM 10	0.023143

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005786
Pb	0.000000
NH_3	0.000000
CO_2e	522.5

9.2 Heating Assumptions

- Heating
Heating Calculation Type: Rated Capacity Method

- Rated Capacity Method
Rated Capacity of boiler/furnance (MM Btu): 45
Type of fuel: Fuel Oil No. 2
Type of boiler/furnace: Industrial (10 - 250 MMBtu/hr)
Heat Value (MMBtu/gal): 0.14

- Default Settings Used: No

- Boiler/Furnace Usage
Operating Time Per Year (hours): 144

9.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000 gal)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.2	43.2	20	5	1	0.25			22579

9.4 Heating Formula(s)

- Heating Fuel Consumption gallons per Year
$FC_{RC} = OT * RC / HV / 1000$

FC_{RC}: Fuel Consumption for Rated Capacity Method
OT: Operating Time Per Year (hours)
RC: Rated Capacity of boiler/furnance (MM Btu)
HV: Heat Value (MMBtu/gal)
1000: Conversion Factor

- Heating Emissions per Year
$HE_{POL} = FC * EF_{POL} / 2000$

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Industrial Park	75.00	1000sqft	1.72	75,000.00	0
User Defined Industrial	17.00	User Defined Unit	17.00	0.00	0
Other Asphalt Surfaces	0.11	Acre	0.11	4,791.60	0
Other Asphalt Surfaces	18.60	Acre	18.60	810,216.00	0
Parking Lot	145.00	1000sqft	3.33	145,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.1	**Precipitation Freq (Days)**	37
Climate Zone	4			**Operational Year**	2029
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Lot acerage based on anticipated project size, "user defined industrial" land use is for power coordior to provide facility power.

Construction Phase - Total days based on project schedule.

Grading - Area to be graded based off project estimates.

Stationary Sources - Emergency Generators and Fire Pumps -

Stationary Sources - Process Boilers - Facility has three natual gas fired boilers, however one is for redundancy and therefore only two boilers will operate at any given time. Therefore the number of equipment has been listed as "2".

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Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	30.00	23.00
tblConstructionPhase	NumDays	75.00	130.00
tblConstructionPhase	NumDays	740.00	130.00
tblConstructionPhase	NumDays	55.00	21.00
tblConstructionPhase	NumDays	30.00	22.00
tblConstructionPhase	NumDays	75.00	43.00
tblConstructionPhase	NumDays	740.00	523.00
tblConstructionPhase	NumDays	55.00	262.00
tblGrading	AcresOfGrading	390.00	18.10
tblGrading	AcresOfGrading	129.00	45.11
tblGrading	AcresOfGrading	34.50	18.10
tblGrading	AcresOfGrading	33.00	45.11
tblLandUse	LotAcreage	0.00	17.00
tblStationaryBoilersUse	AnnualHeatInput	0.00	131,400.00
tblStationaryBoilersUse	AnnualHeatInput	0.00	720.00
tblStationaryBoilersUse	BoilerRatingValue	0.00	15.00
tblStationaryBoilersUse	BoilerRatingValue	0.00	15.00
tblStationaryBoilersUse	NumberOfEquipment	0.00	2.00
tblStationaryBoilersUse	NumberOfEquipment	0.00	3.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	2,882.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	200.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	500.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	500.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	3.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00

2.0 Emissions Summary

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.4249	3.5650	3.7943	9.8400e-003	0.8676	0.1285	0.9961	0.3991	0.1190	0.5182	0.0000	890.1097	890.1097	0.1827	0.0328	904.4618
2026	0.3356	2.9262	3.2822	9.3100e-003	0.7420	0.0937	0.8358	0.2851	0.0875	0.3725	0.0000	855.9090	855.9090	0.1235	0.0484	873.4104
2027	0.4314	3.5309	4.7264	0.0121	0.4889	0.1171	0.6060	0.1329	0.1094	0.2422	0.0000	1,115.0704	1,115.0704	0.1613	0.0627	1,137.7871
2028	0.1150	0.9416	1.2834	3.1700e-003	0.1225	0.0324	0.1549	0.0333	0.0303	0.0635	0.0000	290.7200	290.7200	0.0453	0.0153	296.4096
Maximum	**0.4314**	**3.5650**	**4.7264**	**0.0121**	**0.8676**	**0.1285**	**0.9961**	**0.3991**	**0.1190**	**0.5182**	**0.0000**	**1,115.0704**	**1,115.0704**	**0.1827**	**0.0627**	**1,137.7871**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.4249	3.5650	3.7943	9.8400e-003	0.5275	0.1285	0.6560	0.2169	0.1190	0.3359	0.0000	890.1090	890.1090	0.1827	0.0328	904.4611
2026	0.3356	2.9262	3.2822	9.3100e-003	0.5352	0.0937	0.6289	0.1830	0.0875	0.2705	0.0000	855.9086	855.9086	0.1235	0.0484	873.4099
2027	0.4314	3.5309	4.7264	0.0121	0.4889	0.1171	0.6060	0.1329	0.1094	0.2422	0.0000	1,115.0698	1,115.0698	0.1613	0.0627	1,137.7865
2028	0.1150	0.9416	1.2834	3.1700e-003	0.1225	0.0324	0.1549	0.0333	0.0303	0.0635	0.0000	290.7198	290.7198	0.0453	0.0153	296.4094
Maximum	**0.4314**	**3.5650**	**4.7264**	**0.0121**	**0.5352**	**0.1285**	**0.6560**	**0.2169**	**0.1190**	**0.3359**	**0.0000**	**1,115.0698**	**1,115.0698**	**0.1827**	**0.0627**	**1,137.7865**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**24.63**	**0.00**	**21.09**	**33.44**	**0.00**	**23.77**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2025**	**3-31-2025**	2.2071	2.2071
2	**4-1-2025**	**6-30-2025**	1.7594	1.7594
3	**7-1-2025**	**9-30-2025**	0.0193	0.0193
5	**1-1-2026**	**3-31-2026**	0.9689	0.9689
6	**4-1-2026**	**6-30-2026**	0.7564	0.7564
7	**7-1-2026**	**9-30-2026**	0.7536	0.7536
8	**10-1-2026**	**12-31-2026**	0.7665	0.7665
9	**1-1-2027**	**3-31-2027**	0.7410	0.7410

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10	**4-1-2027**	**6-30-2027**	1.0541	1.0541
11	**7-1-2027**	**9-30-2027**	1.0657	1.0657
12	**10-1-2027**	**12-31-2027**	1.0784	1.0784
13	**1-1-2028**	**3-31-2028**	1.0586	1.0586
14	**4-1-2028**	**6-30-2028**	0.0080	0.0080
		Highest	2.2071	2.2071

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4755	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.5700e-003	4.5700e-003	1.0000e-005	0.0000	4.8700e-003
Energy	6.5500e-003	0.0596	0.0500	3.6000e-004		4.5300e-003	4.5300e-003		4.5300e-003	4.5300e-003	0.0000	188.6801	188.6801	0.0213	3.6200e-003	190.2900
Mobile	0.0796	0.0901	0.6679	1.3000e-003	0.1591	9.5000e-004	0.1600	0.0426	8.9000e-004	0.0435	0.0000	120.1911	120.1911	8.9300e-003	6.5600e-003	122.3679
Stationary	4.3404	17.5936	21.9172	0.0965		1.5207	1.5207		1.5149	1.5149	0.0000	15,883.4744	15,883.4744	0.5064	0.0000	15,896.1355
Waste						0.0000	0.0000		0.0000	0.0000	19.3127	0.0000	19.3127	0.9577	0.0000	43.2541
Water						0.0000	0.0000		0.0000	0.0000	6.1363	8.6831	14.8193	0.0225	0.0135	19.4098
Total	**4.9020**	**17.7433**	**22.6375**	**0.0981**	**0.1591**	**1.5262**	**1.6852**	**0.0426**	**1.5203**	**1.5629**	**25.4490**	**16,201.0333**	**16,226.4823**	**1.5168**	**0.0237**	**16,271.4621**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4755	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.5700e-003	4.5700e-003	1.0000e-005	0.0000	4.8700e-003
Energy	6.5500e-003	0.0596	0.0500	3.6000e-004		4.5300e-003	4.5300e-003		4.5300e-003	4.5300e-003	0.0000	188.6801	188.6801	0.0213	3.6200e-003	190.2900
Mobile	0.0796	0.0901	0.6679	1.3000e-003	0.1591	9.5000e-004	0.1600	0.0426	8.9000e-004	0.0435	0.0000	120.1911	120.1911	8.9300e-003	6.5600e-003	122.3679
Stationary	4.3404	17.5936	21.9172	0.0965		1.5207	1.5207		1.5149	1.5149	0.0000	15,883.4744	15,883.4744	0.5064	0.0000	15,896.1355
Waste						0.0000	0.0000		0.0000	0.0000	19.3127	0.0000	19.3127	0.9577	0.0000	43.2541
Water						0.0000	0.0000		0.0000	0.0000	6.1363	8.6831	14.8193	0.0225	0.0135	19.4098
Total	**4.9020**	**17.7433**	**22.6375**	**0.0981**	**0.1591**	**1.5262**	**1.6852**	**0.0426**	**1.5203**	**1.5629**	**25.4490**	**16,201.0333**	**16,226.4823**	**1.5168**	**0.0237**	**16,271.4621**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	-265.9800
Total	**-265.9800**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Power Cooridor Site Preparation	Site Preparation	1/1/2025	2/1/2025	5	23	
2	Power Cooridor Trenching	Grading	1/1/2025	7/1/2025	5	130	
3	Power Cooridor Construction	Building Construction	1/1/2025	7/1/2025	5	130	
4	Power Cooridor Paving	Paving	3/1/2025	3/31/2025	5	21	
5	WPF Site Preperation	Site Preparation	1/1/2026	2/1/2026	5	22	
6	WPF Grading & Trenching	Grading	2/1/2026	4/1/2026	5	43	
7	WPF Construction	Building Construction	4/1/2026	4/1/2028	5	523	
8	WPF Paving	Paving	4/1/2027	3/31/2028	5	262	

Acres of Grading (Site Preparation Phase): 18.1

Acres of Grading (Grading Phase): 18.1

Acres of Paving: 22.04

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Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Power Cooridor Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Power Cooridor Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Power Cooridor Trenching	Excavators	2	8.00	158	0.38
Power Cooridor Trenching	Graders	1	8.00	187	0.41
Power Cooridor Trenching	Rubber Tired Dozers	1	8.00	247	0.40
Power Cooridor Trenching	Scrapers	2	8.00	367	0.48
Power Cooridor Trenching	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Power Cooridor Construction	Cranes	1	7.00	231	0.29
Power Cooridor Construction	Forklifts	3	8.00	89	0.20
Power Cooridor Construction	Generator Sets	1	8.00	84	0.74
Power Cooridor Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Power Cooridor Construction	Welders	1	8.00	46	0.45
Power Cooridor Paving	Pavers	2	8.00	130	0.42
Power Cooridor Paving	Paving Equipment	2	8.00	132	0.36
Power Cooridor Paving	Rollers	2	8.00	80	0.38
WPF Site Preperation	Rubber Tired Dozers	3	8.00	247	0.40
WPF Site Preperation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
WPF Grading & Trenching	Excavators	2	8.00	158	0.38
WPF Grading & Trenching	Graders	1	8.00	187	0.41
WPF Grading & Trenching	Rubber Tired Dozers	1	8.00	247	0.40
WPF Grading & Trenching	Scrapers	2	8.00	367	0.48
WPF Grading & Trenching	Tractors/Loaders/Backhoes	2	8.00	97	0.37
WPF Construction	Cranes	1	7.00	231	0.29
WPF Construction	Forklifts	3	8.00	89	0.20

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

WPF Construction	Generator Sets	1	8.00	84	0.74
WPF Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
WPF Construction	Welders	1	8.00	46	0.45
WPF Paving	Pavers	2	8.00	130	0.42
WPF Paving	Paving Equipment	2	8.00	132	0.36
WPF Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Power Cooridor Site Preparation	7	18.00	0.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
Power Cooridor Trenching	8	20.00	0.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
Power Cooridor Construction	9	435.00	170.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
Power Cooridor Paving	6	15.00	0.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
WPF Site Preperation	7	18.00	0.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
WPF Grading & Trenching	8	20.00	0.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
WPF Construction	9	435.00	170.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
WPF Paving	6	15.00	0.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

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3.2 Power Cooridor Site Preparation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2174	0.0000	0.2174	0.1152	0.0000	0.1152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0284	0.2902	0.2060	4.4000e-004		0.0125	0.0125		0.0115	0.0115	0.0000	38.4870	38.4870	0.0125	0.0000	38.7982
Total	**0.0284**	**0.2902**	**0.2060**	**4.4000e-004**	**0.2174**	**0.0125**	**0.2299**	**0.1152**	**0.0115**	**0.1267**	**0.0000**	**38.4870**	**38.4870**	**0.0125**	**0.0000**	**38.7982**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	3.0000e-004	3.5000e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2800e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	0.9123	0.9123	3.0000e-005	3.0000e-005	0.9218
Total	**4.7000e-004**	**3.0000e-004**	**3.5000e-003**	**1.0000e-005**	**1.2800e-003**	**1.0000e-005**	**1.2800e-003**	**3.4000e-004**	**1.0000e-005**	**3.5000e-004**	**0.0000**	**0.9123**	**0.9123**	**3.0000e-005**	**3.0000e-005**	**0.9218**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Power Cooridor Site Preparation - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0978	0.0000	0.0978	0.0519	0.0000	0.0519	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0284	0.2902	0.2060	4.4000e-004		0.0125	0.0125		0.0115	0.0115	0.0000	38.4870	38.4870	0.0125	0.0000	38.7982
Total	**0.0284**	**0.2902**	**0.2060**	**4.4000e-004**	**0.0978**	**0.0125**	**0.1103**	**0.0519**	**0.0115**	**0.0634**	**0.0000**	**38.4870**	**38.4870**	**0.0125**	**0.0000**	**38.7982**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	3.0000e-004	3.5000e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2800e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	0.9123	0.9123	3.0000e-005	3.0000e-005	0.9218
Total	**4.7000e-004**	**3.0000e-004**	**3.5000e-003**	**1.0000e-005**	**1.2800e-003**	**1.0000e-005**	**1.2800e-003**	**3.4000e-004**	**1.0000e-005**	**3.5000e-004**	**0.0000**	**0.9123**	**0.9123**	**3.0000e-005**	**3.0000e-005**	**0.9218**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Power Cooridor Trenching - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4010	0.0000	0.4010	0.2162	0.0000	0.2162	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1886	1.8163	1.7115	4.0300e-003		0.0735	0.0735		0.0676	0.0676	0.0000	354.2904	354.2904	0.1146	0.0000	357.1550
Total	**0.1886**	**1.8163**	**1.7115**	**4.0300e-003**	**0.4010**	**0.0735**	**0.4745**	**0.2162**	**0.0676**	**0.2838**	**0.0000**	**354.2904**	**354.2904**	**0.1146**	**0.0000**	**357.1550**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9400e-003	1.9100e-003	0.0220	6.0000e-005	8.0300e-003	4.0000e-005	8.0700e-003	2.1300e-003	3.0000e-005	2.1700e-003	0.0000	5.7292	5.7292	2.0000e-004	1.8000e-004	5.7889
Total	**2.9400e-003**	**1.9100e-003**	**0.0220**	**6.0000e-005**	**8.0300e-003**	**4.0000e-005**	**8.0700e-003**	**2.1300e-003**	**3.0000e-005**	**2.1700e-003**	**0.0000**	**5.7292**	**5.7292**	**2.0000e-004**	**1.8000e-004**	**5.7889**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Power Cooridor Trenching - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1805	0.0000	0.1805	0.0973	0.0000	0.0973	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1886	1.8163	1.7115	4.0300e-003		0.0735	0.0735		0.0676	0.0676	0.0000	354.2900	354.2900	0.1146	0.0000	357.1546
Total	**0.1886**	**1.8163**	**1.7115**	**4.0300e-003**	**0.1805**	**0.0735**	**0.2540**	**0.0973**	**0.0676**	**0.1649**	**0.0000**	**354.2900**	**354.2900**	**0.1146**	**0.0000**	**357.1546**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9400e-003	1.9100e-003	0.0220	6.0000e-005	8.0300e-003	4.0000e-005	8.0700e-003	2.1300e-003	3.0000e-005	2.1700e-003	0.0000	5.7292	5.7292	2.0000e-004	1.8000e-004	5.7889
Total	**2.9400e-003**	**1.9100e-003**	**0.0220**	**6.0000e-005**	**8.0300e-003**	**4.0000e-005**	**8.0700e-003**	**2.1300e-003**	**3.0000e-005**	**2.1700e-003**	**0.0000**	**5.7292**	**5.7292**	**2.0000e-004**	**1.8000e-004**	**5.7889**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Power Cooridor Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0889	0.8105	1.0455	1.7500e-003		0.0343	0.0343		0.0323	0.0323	0.0000	150.7476	150.7476	0.0354	0.0000	151.6336
Total	**0.0889**	**0.8105**	**1.0455**	**1.7500e-003**		**0.0343**	**0.0343**		**0.0323**	**0.0323**	**0.0000**	**150.7476**	**150.7476**	**0.0354**	**0.0000**	**151.6336**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0128	0.5139	0.1715	1.9400e-003	0.0643	2.9600e-003	0.0673	0.0186	2.8300e-003	0.0214	0.0000	193.6181	193.6181	8.9200e-003	0.0286	202.3637
Worker	0.0640	0.0415	0.4785	1.3600e-003	0.1746	7.9000e-004	0.1754	0.0464	7.2000e-004	0.0471	0.0000	124.6107	124.6107	4.3000e-003	4.0000e-003	125.9091
Total	**0.0768**	**0.5555**	**0.6500**	**3.3000e-003**	**0.2390**	**3.7500e-003**	**0.2427**	**0.0650**	**3.5500e-003**	**0.0685**	**0.0000**	**318.2288**	**318.2288**	**0.0132**	**0.0326**	**328.2728**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Power Cooridor Construction - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0889	0.8105	1.0455	1.7500e-003		0.0343	0.0343		0.0323	0.0323	0.0000	150.7475	150.7475	0.0354	0.0000	151.6334
Total	**0.0889**	**0.8105**	**1.0455**	**1.7500e-003**		**0.0343**	**0.0343**		**0.0323**	**0.0323**	**0.0000**	**150.7475**	**150.7475**	**0.0354**	**0.0000**	**151.6334**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0128	0.5139	0.1715	1.9400e-003	0.0643	2.9600e-003	0.0673	0.0186	2.8300e-003	0.0214	0.0000	193.6181	193.6181	8.9200e-003	0.0286	202.3637
Worker	0.0640	0.0415	0.4785	1.3600e-003	0.1746	7.9000e-004	0.1754	0.0464	7.2000e-004	0.0471	0.0000	124.6107	124.6107	4.3000e-003	4.0000e-003	125.9091
Total	**0.0768**	**0.5555**	**0.6500**	**3.3000e-003**	**0.2390**	**3.7500e-003**	**0.2427**	**0.0650**	**3.5500e-003**	**0.0685**	**0.0000**	**318.2288**	**318.2288**	**0.0132**	**0.0326**	**328.2728**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Power Cooridor Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.6100e-003	0.0901	0.1531	2.4000e-004		4.3900e-003	4.3900e-003		4.0400e-003	4.0400e-003	0.0000	21.0202	21.0202	6.8000e-003	0.0000	21.1902
Paving	0.0289					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0385**	**0.0901**	**0.1531**	**2.4000e-004**		**4.3900e-003**	**4.3900e-003**		**4.0400e-003**	**4.0400e-003**	**0.0000**	**21.0202**	**21.0202**	**6.8000e-003**	**0.0000**	**21.1902**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.3000e-004	2.6700e-003	1.0000e-005	9.7000e-004	0.0000	9.8000e-004	2.6000e-004	0.0000	2.6000e-004	0.0000	0.6941	0.6941	2.0000e-005	2.0000e-005	0.7014
Total	**3.6000e-004**	**2.3000e-004**	**2.6700e-003**	**1.0000e-005**	**9.7000e-004**	**0.0000**	**9.8000e-004**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.6941**	**0.6941**	**2.0000e-005**	**2.0000e-005**	**0.7014**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Power Cooridor Paving - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.6100e-003	0.0901	0.1531	2.4000e-004		4.3900e-003	4.3900e-003		4.0400e-003	4.0400e-003	0.0000	21.0202	21.0202	6.8000e-003	0.0000	21.1902
Paving	0.0289					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0385**	**0.0901**	**0.1531**	**2.4000e-004**		**4.3900e-003**	**4.3900e-003**		**4.0400e-003**	**4.0400e-003**	**0.0000**	**21.0202**	**21.0202**	**6.8000e-003**	**0.0000**	**21.1902**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.3000e-004	2.6700e-003	1.0000e-005	9.7000e-004	0.0000	9.8000e-004	2.6000e-004	0.0000	2.6000e-004	0.0000	0.6941	0.6941	2.0000e-005	2.0000e-005	0.7014
Total	**3.6000e-004**	**2.3000e-004**	**2.6700e-003**	**1.0000e-005**	**9.7000e-004**	**0.0000**	**9.8000e-004**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.6941**	**0.6941**	**2.0000e-005**	**2.0000e-005**	**0.7014**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 WPF Site Preperation - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2227	0.0000	0.2227	0.1118	0.0000	0.1118	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0272	0.2776	0.1970	4.2000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	36.8137	36.8137	0.0119	0.0000	37.1113
Total	**0.0272**	**0.2776**	**0.1970**	**4.2000e-004**	**0.2227**	**0.0120**	**0.2346**	**0.1118**	**0.0110**	**0.1228**	**0.0000**	**36.8137**	**36.8137**	**0.0119**	**0.0000**	**37.1113**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	2.6000e-004	3.1000e-003	1.0000e-005	1.2200e-003	1.0000e-005	1.2300e-003	3.2000e-004	0.0000	3.3000e-004	0.0000	0.8445	0.8445	3.0000e-005	3.0000e-005	0.8530
Total	**4.2000e-004**	**2.6000e-004**	**3.1000e-003**	**1.0000e-005**	**1.2200e-003**	**1.0000e-005**	**1.2300e-003**	**3.2000e-004**	**0.0000**	**3.3000e-004**	**0.0000**	**0.8445**	**0.8445**	**3.0000e-005**	**3.0000e-005**	**0.8530**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 WPF Site Preperation - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1002	0.0000	0.1002	0.0503	0.0000	0.0503	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0272	0.2776	0.1970	4.2000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	36.8136	36.8136	0.0119	0.0000	37.1113
Total	**0.0272**	**0.2776**	**0.1970**	**4.2000e-004**	**0.1002**	**0.0120**	**0.1121**	**0.0503**	**0.0110**	**0.0613**	**0.0000**	**36.8136**	**36.8136**	**0.0119**	**0.0000**	**37.1113**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	2.6000e-004	3.1000e-003	1.0000e-005	1.2200e-003	1.0000e-005	1.2300e-003	3.2000e-004	0.0000	3.3000e-004	0.0000	0.8445	0.8445	3.0000e-005	3.0000e-005	0.8530
Total	**4.2000e-004**	**2.6000e-004**	**3.1000e-003**	**1.0000e-005**	**1.2200e-003**	**1.0000e-005**	**1.2300e-003**	**3.2000e-004**	**0.0000**	**3.3000e-004**	**0.0000**	**0.8445**	**0.8445**	**3.0000e-005**	**3.0000e-005**	**0.8530**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 WPF Grading & Trenching - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1534	0.0000	0.1534	0.0738	0.0000	0.0738	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0624	0.6008	0.5661	1.3300e-003		0.0243	0.0243		0.0224	0.0224	0.0000	117.1884	117.1884	0.0379	0.0000	118.1359
Total	**0.0624**	**0.6008**	**0.5661**	**1.3300e-003**	**0.1534**	**0.0243**	**0.1777**	**0.0738**	**0.0224**	**0.0961**	**0.0000**	**117.1884**	**117.1884**	**0.0379**	**0.0000**	**118.1359**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	5.7000e-004	6.7200e-003	2.0000e-005	2.6600e-003	1.0000e-005	2.6700e-003	7.1000e-004	1.0000e-005	7.2000e-004	0.0000	1.8339	1.8339	6.0000e-005	6.0000e-005	1.8524
Total	**9.2000e-004**	**5.7000e-004**	**6.7200e-003**	**2.0000e-005**	**2.6600e-003**	**1.0000e-005**	**2.6700e-003**	**7.1000e-004**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**1.8339**	**1.8339**	**6.0000e-005**	**6.0000e-005**	**1.8524**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 WPF Grading & Trenching - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0690	0.0000	0.0690	0.0332	0.0000	0.0332	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0624	0.6008	0.5661	1.3300e-003		0.0243	0.0243		0.0224	0.0224	0.0000	117.1882	117.1882	0.0379	0.0000	118.1357
Total	**0.0624**	**0.6008**	**0.5661**	**1.3300e-003**	**0.0690**	**0.0243**	**0.0933**	**0.0332**	**0.0224**	**0.0556**	**0.0000**	**117.1882**	**117.1882**	**0.0379**	**0.0000**	**118.1357**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	5.7000e-004	6.7200e-003	2.0000e-005	2.6600e-003	1.0000e-005	2.6700e-003	7.1000e-004	1.0000e-005	7.2000e-004	0.0000	1.8339	1.8339	6.0000e-005	6.0000e-005	1.8524
Total	**9.2000e-004**	**5.7000e-004**	**6.7200e-003**	**2.0000e-005**	**2.6600e-003**	**1.0000e-005**	**2.6700e-003**	**7.1000e-004**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**1.8339**	**1.8339**	**6.0000e-005**	**6.0000e-005**	**1.8524**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.8 WPF Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1347	1.2283	1.5843	2.6600e-003		0.0520	0.0520		0.0489	0.0489	0.0000	228.4407	228.4407	0.0537	0.0000	229.7831
Total	**0.1347**	**1.2283**	**1.5843**	**2.6600e-003**		**0.0520**	**0.0520**		**0.0489**	**0.0489**	**0.0000**	**228.4407**	**228.4407**	**0.0537**	**0.0000**	**229.7831**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0186	0.7620	0.2547	2.8800e-003	0.0975	4.3600e-003	0.1018	0.0281	4.1700e-003	0.0323	0.0000	288.0478	288.0478	0.0139	0.0426	301.0937
Worker	0.0914	0.0568	0.6701	1.9900e-003	0.2646	1.1100e-003	0.2658	0.0703	1.0200e-003	0.0714	0.0000	182.7402	182.7402	5.9200e-003	5.6800e-003	184.5810
Total	**0.1100**	**0.8188**	**0.9248**	**4.8700e-003**	**0.3621**	**5.4700e-003**	**0.3676**	**0.0985**	**5.1900e-003**	**0.1037**	**0.0000**	**470.7880**	**470.7880**	**0.0199**	**0.0483**	**485.6747**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.8 WPF Construction - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1347	1.2283	1.5843	2.6600e-003		0.0520	0.0520		0.0489	0.0489	0.0000	228.4404	228.4404	0.0537	0.0000	229.7829
Total	**0.1347**	**1.2283**	**1.5843**	**2.6600e-003**		**0.0520**	**0.0520**		**0.0489**	**0.0489**	**0.0000**	**228.4404**	**228.4404**	**0.0537**	**0.0000**	**229.7829**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0186	0.7620	0.2547	2.8800e-003	0.0975	4.3600e-003	0.1018	0.0281	4.1700e-003	0.0323	0.0000	288.0478	288.0478	0.0139	0.0426	301.0937
Worker	0.0914	0.0568	0.6701	1.9900e-003	0.2646	1.1100e-003	0.2658	0.0703	1.0200e-003	0.0714	0.0000	182.7402	182.7402	5.9200e-003	5.6800e-003	184.5810
Total	**0.1100**	**0.8188**	**0.9248**	**4.8700e-003**	**0.3621**	**5.4700e-003**	**0.3676**	**0.0985**	**5.1900e-003**	**0.1037**	**0.0000**	**470.7880**	**470.7880**	**0.0199**	**0.0483**	**485.6747**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.8 WPF Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0237	0.9881	0.3321	3.7300e-003	0.1291	5.6200e-003	0.1348	0.0373	5.3700e-003	0.0426	0.0000	373.9698	373.9698	0.0189	0.0554	390.9525
Worker	0.1145	0.0685	0.8375	2.5600e-003	0.3506	1.3800e-003	0.3520	0.0932	1.2700e-003	0.0945	0.0000	235.1362	235.1362	7.2000e-003	7.1200e-003	237.4373
Total	**0.1382**	**1.0565**	**1.1696**	**6.2900e-003**	**0.4798**	**7.0000e-003**	**0.4868**	**0.1304**	**6.6400e-003**	**0.1371**	**0.0000**	**609.1059**	**609.1059**	**0.0261**	**0.0625**	**628.3897**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.8 WPF Construction - 2027

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0237	0.9881	0.3321	3.7300e-003	0.1291	5.6200e-003	0.1348	0.0373	5.3700e-003	0.0426	0.0000	373.9698	373.9698	0.0189	0.0554	390.9525
Worker	0.1145	0.0685	0.8375	2.5600e-003	0.3506	1.3800e-003	0.3520	0.0932	1.2700e-003	0.0945	0.0000	235.1362	235.1362	7.2000e-003	7.1200e-003	237.4373
Total	**0.1382**	**1.0565**	**1.1696**	**6.2900e-003**	**0.4798**	**7.0000e-003**	**0.4868**	**0.1304**	**6.6400e-003**	**0.1371**	**0.0000**	**609.1059**	**609.1059**	**0.0261**	**0.0625**	**628.3897**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.8 WPF Construction - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0444	0.4053	0.5228	8.8000e-004		0.0172	0.0172		0.0161	0.0161	0.0000	75.3738	75.3738	0.0177	0.0000	75.8168
Total	**0.0444**	**0.4053**	**0.5228**	**8.8000e-004**		**0.0172**	**0.0172**		**0.0161**	**0.0161**	**0.0000**	**75.3738**	**75.3738**	**0.0177**	**0.0000**	**75.8168**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.7000e-003	0.2412	0.0817	9.1000e-004	0.0322	1.3600e-003	0.0335	9.2800e-003	1.3000e-003	0.0106	0.0000	91.3340	91.3340	4.8300e-003	0.0136	95.4914
Worker	0.0270	0.0157	0.1983	6.2000e-004	0.0873	3.2000e-004	0.0876	0.0232	3.0000e-004	0.0235	0.0000	56.9846	56.9846	1.6600e-003	1.6900e-003	57.5290
Total	**0.0327**	**0.2569**	**0.2800**	**1.5300e-003**	**0.1195**	**1.6800e-003**	**0.1212**	**0.0325**	**1.6000e-003**	**0.0341**	**0.0000**	**148.3186**	**148.3186**	**6.4900e-003**	**0.0152**	**153.0204**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.8 WPF Construction - 2028

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0444	0.4053	0.5228	8.8000e-004		0.0172	0.0172		0.0161	0.0161	0.0000	75.3737	75.3737	0.0177	0.0000	75.8167
Total	**0.0444**	**0.4053**	**0.5228**	**8.8000e-004**		**0.0172**	**0.0172**		**0.0161**	**0.0161**	**0.0000**	**75.3737**	**75.3737**	**0.0177**	**0.0000**	**75.8167**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.7000e-003	0.2412	0.0817	9.1000e-004	0.0322	1.3600e-003	0.0335	9.2800e-003	1.3000e-003	0.0106	0.0000	91.3340	91.3340	4.8300e-003	0.0136	95.4914
Worker	0.0270	0.0157	0.1983	6.2000e-004	0.0873	3.2000e-004	0.0876	0.0232	3.0000e-004	0.0235	0.0000	56.9846	56.9846	1.6600e-003	1.6900e-003	57.5290
Total	**0.0327**	**0.2569**	**0.2800**	**1.5300e-003**	**0.1195**	**1.6800e-003**	**0.1212**	**0.0325**	**1.6000e-003**	**0.0341**	**0.0000**	**148.3186**	**148.3186**	**6.4900e-003**	**0.0152**	**153.0204**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 WPF Paving - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0901	0.8453	1.4359	2.2500e-003		0.0412	0.0412		0.0379	0.0379	0.0000	197.1897	197.1897	0.0638	0.0000	198.7840
Paving	0.0217					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1119**	**0.8453**	**1.4359**	**2.2500e-003**		**0.0412**	**0.0412**		**0.0379**	**0.0379**	**0.0000**	**197.1897**	**197.1897**	**0.0638**	**0.0000**	**198.7840**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9800e-003	1.7800e-003	0.0218	7.0000e-005	9.1300e-003	4.0000e-005	9.1600e-003	2.4300e-003	3.0000e-005	2.4600e-003	0.0000	6.1199	6.1199	1.9000e-004	1.9000e-004	6.1798
Total	**2.9800e-003**	**1.7800e-003**	**0.0218**	**7.0000e-005**	**9.1300e-003**	**4.0000e-005**	**9.1600e-003**	**2.4300e-003**	**3.0000e-005**	**2.4600e-003**	**0.0000**	**6.1199**	**6.1199**	**1.9000e-004**	**1.9000e-004**	**6.1798**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 WPF Paving - 2027

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0901	0.8453	1.4359	2.2500e-003		0.0412	0.0412		0.0379	0.0379	0.0000	197.1894	197.1894	0.0638	0.0000	198.7838
Paving	0.0217					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1119**	**0.8453**	**1.4359**	**2.2500e-003**		**0.0412**	**0.0412**		**0.0379**	**0.0379**	**0.0000**	**197.1894**	**197.1894**	**0.0638**	**0.0000**	**198.7838**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9800e-003	1.7800e-003	0.0218	7.0000e-005	9.1300e-003	4.0000e-005	9.1600e-003	2.4300e-003	3.0000e-005	2.4600e-003	0.0000	6.1199	6.1199	1.9000e-004	1.9000e-004	6.1798
Total	**2.9800e-003**	**1.7800e-003**	**0.0218**	**7.0000e-005**	**9.1300e-003**	**4.0000e-005**	**9.1600e-003**	**2.4300e-003**	**3.0000e-005**	**2.4600e-003**	**0.0000**	**6.1199**	**6.1199**	**1.9000e-004**	**1.9000e-004**	**6.1798**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 WPF Paving - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0297	0.2789	0.4738	7.4000e-004		0.0136	0.0136		0.0125	0.0125	0.0000	65.0626	65.0626	0.0210	0.0000	65.5886
Paving	7.1600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0369**	**0.2789**	**0.4738**	**7.4000e-004**		**0.0136**	**0.0136**		**0.0125**	**0.0125**	**0.0000**	**65.0626**	**65.0626**	**0.0210**	**0.0000**	**65.5886**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3000e-004	5.4000e-004	6.8400e-003	2.0000e-005	3.0100e-003	1.0000e-005	3.0200e-003	8.0000e-004	1.0000e-005	8.1000e-004	0.0000	1.9650	1.9650	6.0000e-005	6.0000e-005	1.9838
Total	**9.3000e-004**	**5.4000e-004**	**6.8400e-003**	**2.0000e-005**	**3.0100e-003**	**1.0000e-005**	**3.0200e-003**	**8.0000e-004**	**1.0000e-005**	**8.1000e-004**	**0.0000**	**1.9650**	**1.9650**	**6.0000e-005**	**6.0000e-005**	**1.9838**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 WPF Paving - 2028

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0297	0.2789	0.4738	7.4000e-004		0.0136	0.0136		0.0125	0.0125	0.0000	65.0625	65.0625	0.0210	0.0000	65.5886
Paving	7.1600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0369**	**0.2789**	**0.4738**	**7.4000e-004**		**0.0136**	**0.0136**		**0.0125**	**0.0125**	**0.0000**	**65.0625**	**65.0625**	**0.0210**	**0.0000**	**65.5886**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3000e-004	5.4000e-004	6.8400e-003	2.0000e-005	3.0100e-003	1.0000e-005	3.0200e-003	8.0000e-004	1.0000e-005	8.1000e-004	0.0000	1.9650	1.9650	6.0000e-005	6.0000e-005	1.9838
Total	**9.3000e-004**	**5.4000e-004**	**6.8400e-003**	**2.0000e-005**	**3.0100e-003**	**1.0000e-005**	**3.0200e-003**	**8.0000e-004**	**1.0000e-005**	**8.1000e-004**	**0.0000**	**1.9650**	**1.9650**	**6.0000e-005**	**6.0000e-005**	**1.9838**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0796	0.0901	0.6679	1.3000e-003	0.1591	9.5000e-004	0.1600	0.0426	8.9000e-004	0.0435	0.0000	120.1911	120.1911	8.9300e-003	6.5600e-003	122.3679
Unmitigated	0.0796	0.0901	0.6679	1.3000e-003	0.1591	9.5000e-004	0.1600	0.0426	8.9000e-004	0.0435	0.0000	120.1911	120.1911	8.9300e-003	6.5600e-003	122.3679

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Industrial Park	252.75	190.50	93.00	422,381	422,381
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
User Defined Industrial	0.00	0.00	0.00		
Total	252.75	190.50	93.00	422,381	422,381

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Industrial Park	6.60	5.50	6.40	59.00	28.00	13.00	79	19	2
Other Asphalt Surfaces	6.60	5.50	6.40	0.00	0.00	0.00	0	0	0

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	6.60	5.50	6.40	0.00	0.00	0.00	0	0	0
Parking Lot	6.60	5.50	6.40	0.00	0.00	0.00	0	0	0
User Defined Industrial	6.60	5.50	6.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Industrial Park	0.512325	0.057014	0.206318	0.140374	0.024305	0.006187	0.011219	0.006234	0.000948	0.000543	0.028133	0.003250	0.003150
Other Asphalt Surfaces	0.512325	0.057014	0.206318	0.140374	0.024305	0.006187	0.011219	0.006234	0.000948	0.000543	0.028133	0.003250	0.003150
Parking Lot	0.512325	0.057014	0.206318	0.140374	0.024305	0.006187	0.011219	0.006234	0.000948	0.000543	0.028133	0.003250	0.003150
User Defined Industrial	0.512325	0.057014	0.206318	0.140374	0.024305	0.006187	0.011219	0.006234	0.000948	0.000543	0.028133	0.003250	0.003150

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	123.8431	123.8431	0.0200	2.4300e-003	125.0677
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	123.8431	123.8431	0.0200	2.4300e-003	125.0677
NaturalGas Mitigated	6.5500e-003	0.0596	0.0500	3.6000e-004		4.5300e-003	4.5300e-003		4.5300e-003	4.5300e-003	0.0000	64.8370	64.8370	1.2400e-003	1.1900e-003	65.2223
NaturalGas Unmitigated	6.5500e-003	0.0596	0.0500	3.6000e-004		4.5300e-003	4.5300e-003		4.5300e-003	4.5300e-003	0.0000	64.8370	64.8370	1.2400e-003	1.1900e-003	65.2223

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Industrial Park	1.215e+006	6.5500e-003	0.0596	0.0500	3.6000e-004		4.5300e-003	4.5300e-003		4.5300e-003	4.5300e-003	0.0000	64.8370	64.8370	1.2400e-003	1.1900e-003	65.2223
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.5500e-003**	**0.0596**	**0.0500**	**3.6000e-004**		**4.5300e-003**	**4.5300e-003**		**4.5300e-003**	**4.5300e-003**	**0.0000**	**64.8370**	**64.8370**	**1.2400e-003**	**1.1900e-003**	**65.2223**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Industrial Park	1.215e+006	6.5500e-003	0.0596	0.0500	3.6000e-004		4.5300e-003	4.5300e-003		4.5300e-003	4.5300e-003	0.0000	64.8370	64.8370	1.2400e-003	1.1900e-003	65.2223
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.5500e-003**	**0.0596**	**0.0500**	**3.6000e-004**		**4.5300e-003**	**4.5300e-003**		**4.5300e-003**	**4.5300e-003**	**0.0000**	**64.8370**	**64.8370**	**1.2400e-003**	**1.1900e-003**	**65.2223**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Industrial Park	1.28775e+006	119.1475	0.0193	2.3400e-003	120.3256
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	50750	4.6956	7.6000e-004	9.0000e-005	4.7420
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**123.8431**	**0.0200**	**2.4300e-003**	**125.0677**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Industrial Park	1.28775e+006	119.1475	0.0193	2.3400e-003	120.3256
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	50750	4.6956	7.6000e-004	9.0000e-005	4.7420
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**123.8431**	**0.0200**	**2.4300e-003**	**125.0677**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4755	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.5700e-003	4.5700e-003	1.0000e-005	0.0000	4.8700e-003
Unmitigated	0.4755	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.5700e-003	4.5700e-003	1.0000e-005	0.0000	4.8700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1203					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3550					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.2000e-004	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.5700e-003	4.5700e-003	1.0000e-005	0.0000	4.8700e-003
Total	**0.4755**	**2.0000e-005**	**2.3400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.5700e-003**	**4.5700e-003**	**1.0000e-005**	**0.0000**	**4.8700e-003**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1203					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3550					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.2000e-004	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.5700e-003	4.5700e-003	1.0000e-005	0.0000	4.8700e-003
Total	**0.4755**	**2.0000e-005**	**2.3400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.5700e-003**	**4.5700e-003**	**1.0000e-005**	**0.0000**	**4.8700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	14.8193	0.0225	0.0135	19.4098
Unmitigated	14.8193	0.0225	0.0135	19.4098

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Industrial Park	17.3438 / 0	14.8193	0.0225	0.0135	19.4098
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**14.8193**	**0.0225**	**0.0135**	**19.4098**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Industrial Park	17.3438 / 0	14.8193	0.0225	0.0135	19.4098
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**14.8193**	**0.0225**	**0.0135**	**19.4098**

8.0 Waste Detail

8.1 Mitigation Measures Waste

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	19.3127	0.9577	0.0000	43.2541
Unmitigated	19.3127	0.9577	0.0000	43.2541

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Industrial Park	93	19.3127	0.9577	0.0000	43.2541
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**19.3127**	**0.9577**	**0.0000**	**43.2541**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Industrial Park	93	19.3127	0.9577	0.0000	43.2541
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**19.3127**	**0.9577**	**0.0000**	**43.2541**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	3	0	500	2882	0.73	Diesel
Fire Pump	1	0	500	200	0.73	Diesel

Boilers

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
Boiler	2	0	131400	15	CNG
Boiler	3	0	720	15	Diesel

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Boiler - CNG (5 - 75 MMBTU)	0.7085	1.4454	12.6249	0.0773		0.9791	0.9791		0.9791	0.9791	0.0000	14,024.2484	14,024.2484	0.2688	0.0000	14,030.9684
Boiler - Diesel (0 - 9999 MMBTU)	2.6200e-003	0.0562	0.0386	1.7400e-003		7.7100e-003	7.7100e-003		1.9300e-003	1.9300e-003	0.0000	174.9600	174.9600	1.5100e-003	0.0000	174.9978
Emergency Generator - Diesel (750 - 9999 HP)	3.5472	15.8627	9.0445	0.0171		0.5218	0.5218		0.5218	0.5218	0.0000	1,646.1863	1,646.1863	0.2308	0.0000	1,651.9562
Fire Pump - Diesel (175 - 300 HP)	0.0821	0.2293	0.2092	3.9000e-004		0.0121	0.0121		0.0121	0.0121	0.0000	38.0797	38.0797	5.3400e-003	0.0000	38.2132
Total	**4.3404**	**17.5936**	**21.9172**	**0.0965**		**1.5207**	**1.5207**		**1.5149**	**1.5149**	**0.0000**	**15,883.4744**	**15,883.4744**	**0.5065**	**0.0000**	**15,896.1355**

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-265.9800	0.0000	0.0000	-265.9800

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Scrub	62 / 43.4	-265.9800	0.0000	0.0000	-265.9800
Total		**-265.9800**	**0.0000**	**0.0000**	**-265.9800**

CalEEMod Emission Threshold Comparison														
	CalEEMod Mitigated Construction (2022)					CalEEMod Mitigated Operational (2022)							State Significance Treshold	Federal Significance Threshold
Pollutant	**2025**	**2026**	**2027**	**2028**	**Maximum**	**Area**	**Energy**	**Mobile**	**Stationary**	**Waste**	**Water**	**Total**		
NOx (ton/yr)	3.565	2.9262	3.5309	0.9416	**3.565**	2.00E-05	0.0596	0.0901	17.5936	N/A	N/A	**17.7433**	N/A	100
CO (ton/yr)	3.7943	3.2822	4.7264	1.2834	**4.7264**	2.34E-03	0.05	0.6679	21.9172	N/A	N/A	**22.6375**	N/A	100
SO2 (ton/yr)	9.84E-03	9.31E-03	0.0121	3.17E-03	**0.0121**	0	3.60E-04	1.30E-03	0.0965	N/A	N/A	**0.0981**	N/A	100
PM10 (ton/yr)	0.656	0.6289	0.606	0.1549	**0.656**	1.00E-05	4.53E-03	1.60E+00	1.5207	0	0	**1.6852**	N/A	100
PM 2.5 (ton/yr)	0.3359	0.2705	0.2422	0.0635	**0.3359**	1.00E-05	4.53E-03	0.0435	1.15149	0	0	**1.5629**	N/A	100
CO2e (MT/yr)	904.4611	873.4099	1137.7865	296.4094	**1137.7865**	4.87E-03	190.29	122.3679	15896.136	43.2541	19.4098	**16271.4621**	10000	25000

State Significance Threshold:

Pollutants: Not Available (N/A). California's South Coast Air Quality Management District (AQMD) has developed statewide Implementation Guidance, but CARB has not established statewide pollutant threshold standards as of 2008. (http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf?sfvrsn=2)

GHG (CO2e): CA's Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (https://ww2.arb.ca.gov/mrr-data)

Federal significance thresholds:

Pollutants: EPA General Conformity De Minimis Tables (https://www.epa.gov/general-conformity/de-minimis-tables)

GHG (CO2e): EPA GHGRP (https://www.epa.gov/ghgreporting)

6) **Public Notification and Review**