

CHAPTER 3 EXISTING CONDITIONS AND ENVIRONMENTAL CONSEQUENCES

3.1 FRAMEWORK FOR ANALYSIS

To provide a framework for the analyses in this EA, the DAF defined a study area specific to each resource or sub-resource area. Referred to as a Region of Influence (ROI), these areas establish a boundary where possible effects from the considered alternatives would have a reasonable likelihood to occur. Beyond these ROIs, potential adverse effects on resources would not be anticipated. For the purposes of analysis, potential effects are described as follows:

- **Effects/Impacts** – changes to the human environment from the Proposed Action or Alternatives that are reasonably foreseeable and include the following (from 10 CFR § 1508.1):
 - Direct Effects – Impacts which are caused by the action and occur at the same time and place.
 - Indirect Effects – Impacts which are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
 - Cumulative effects – Impacts on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.
 - Effects include 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. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effects will be beneficial.
- **Beneficial** – positive effects that improve or enhance resource conditions
- **Adverse** – negative or harmful results
- **Significant** – obvious, observable, verifiable effects qualified as above one or more significance threshold(s); not mitigable to below significance.

When relevant to the analyses in this EA, potential effects are further defined as direct or indirect; short or long term; and temporary, intermittent, or permanent. To determine the potential for “significant” effects under the Proposed Action, the DAF defined impact thresholds to support the analyses in this EA.

Based upon the nature of the Proposed Action and the affected environment, both qualitative and quantitative thresholds were used as benchmarks to qualify effects. Further, each resource analysis section (i.e., **Sections 3.4–3.12**) concludes with a cumulative effects analysis considering the effects of the environment that results from incremental effects of the Proposed Action when added to the effects of other past, present, and reasonably foreseeable actions in the surrounding environs. -

**Table 3-1.
Past, Present, and Reasonably Foreseeable Actions**

Name	Map ID	Description	Timeframe	Approximate Distance from Project Location
Edwards AFB Phase 1 Restrictive Use Easement	A	In 2021, the DAF completed a permanent conservation agreement covering 14,631 of the total 93,000 acres of the Wind Wolves Preserve with funding from the REPI Program in conjunction with The Wildlands Conservancy and the TPL.	2021	<1 mile
Fast Freight Corridor I-5/State Route 99 Separation	B	The California Department of Transportation (Caltrans) proposed to improve the vertical clearance of the Interstate 5/State Route 99 Separation Bridge to comply with the Interstate 5 Freight Corridor standard. The work consists of lowering the profile of northbound State Route 99 by approximately 8 inches and southbound State Route 99 by approximately 1 foot between post miles L0.0 and 0.6. Two temporary lanes would be open to traffic for each direction of travel and the southbound truck route would remain open throughout construction. All work would be in the Caltrans right-of-way.	2021	1 mile
Tejon Ranchcorp – Grapevine Specific and Community Plan	C	The Grapevine Project was a proposal by Tejon Ranchcorp to develop an 8,010- acre master-planned community located at the southern end of the San Joaquin Valley, adjacent to the existing Tejon Ranch Commerce Center in unincorporated Kern County, California. The Kern County Planning and Natural Resources Department prepared and circulated a Draft and Final Environmental Impact Report for the Grapevine Specific and Community Plan in 2016. A lawsuit alleging that several substantive sections of the Final Environmental Impact Report failed to comply with California Environmental Quality Act requirements was filed on January 4, 2017. In 2019, a Supplemental Recirculated Environmental Impact Report corrected the specific deficiencies identified by the court in evaluating potential traffic, air pollution, greenhouse gases, noise, public health, and growth-inducing impacts. This project has been approved.	2015–2019	1 mile
Pastoria Solar	D	The project constructed a photovoltaic electrical generating facility with capacity to generate up to 115 megawatt hours of renewable electrical energy and store up to 40 megawatts of energy in a Battery Storage System. The project is situated on approximately 650 acres of privately owned land.	2020	2 miles
I-5 Grapevine Culvert Repair Project	E	Caltrans repaired concrete box culverts located within the median and outside shoulders of Interstate 5 between post miles 7.5 and 9.0 within the Tejon Pass in Kern County. Heavy rain and mud flows through this steep mountain pass during storms had damaged the concrete channel that lies between the northbound and southbound lanes of Interstate 5. Culverts along the channel have been damaged over time by the flow of storm water, mud, and debris, requiring repair.	2021	3 miles
California Aqueduct Bridge Rehabilitation and Seismic Retrofit	F	Caltrans proposes to rehabilitate and retrofit the California Aqueduct Bridge on State Route 166. The project is in Kern County east of Maricopa, 2.6 miles east of Old River Road and 5 miles west of Interstate 5. The existing structure would be left in place, and extra support would be added to the bridge where the structure currently is sagging and cracking. The project would also update the bridge rail to current standards, replace existing bridge dikes, and rehabilitate the existing pavement.	FY 2024–2025	5 miles
San Emidio Quarry Expansion Project	G	The project proponent requested a change in zone classification from Limited Agriculture to A Exclusive Agriculture within the southern half of Sections 13 and 14, Township 11 North, Range 22 West, in San Bernardino Base and Meridian; a conditional use permit to allow for an amended reclamation plan in accordance with the Surface Mining and Reclamation Act of 1975, and the expansion of an existing surface mining operation operated by Vulcan Materials Company from the existing 802 acres to a total of 4,011 acres. The project requested a conditional use permit for the operation of three new plants on the site; including a ready-mix concrete plant with a total annual capacity of 200,000 cubic yards, an asphaltic concrete plant to replace the existing temporary asphalt plant and to have a total annual capacity of 500,000 tons, and an asphalt and concrete processing plant capable of crushing up to 150,000 tons per year of asphalt concrete, broken Portland cement concrete and asphalt millings. This project was approved in 2016.	2016	10 miles
San Emidio New Town Specific Plan	H	The San Emidio New Town Specific Plan was approved in 1992 and proposed development of a 9,447-acre site located in unincorporated Kern County, approximately 35 miles south of the city of Bakersfield at the junction of Interstate 5 and State Route 99. The San Emidio Specific Plan is a master-planned community that provides a balanced mix of residential, commercial, public facility, and industrial land uses linked through a comprehensive network of parks, greenbelts, golf courses, and open space. The land use plan provides for the development of 20,219 residential dwelling units on 3,633.5 acres; 326.0 acres of commercial land; 526.0 acres of industrial land; 606.0 acres of educational and other public facilities uses; and 2,671.0 acres of open space, recreational, and resource management uses. The objective of the land use plan is to provide a mix of uses that will accommodate the residential, shopping, professional services, and recreational needs of the San Emidio community.	1992	1 mile

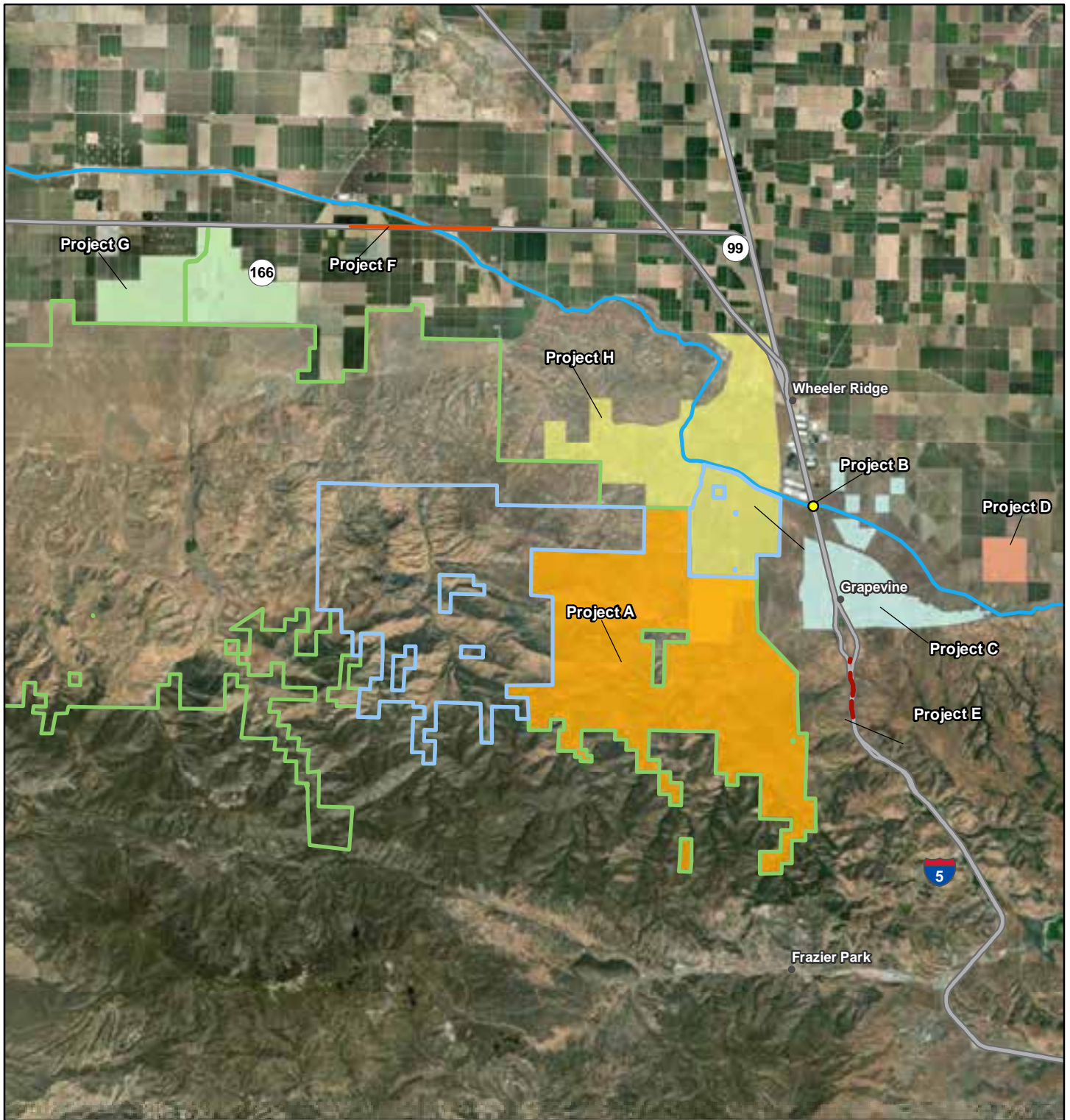
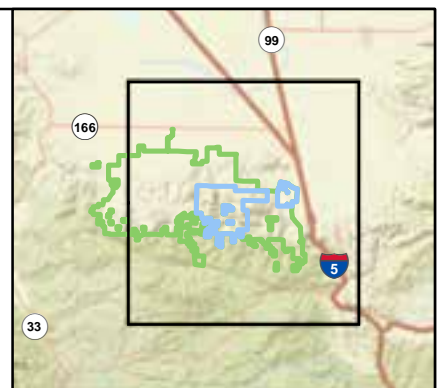


FIGURE 3-1
Regional Projects

- | | | |
|---------------------|-------------------------------|-----------|
| Project B | Proposed Action | Project D |
| California Aqueduct | Wind Wolves Preserve Boundary | Project G |
| Project E | Project A | Project H |
| Project F | Project C | |



Imagery: ESRI, 2022.
Coordinate System: WGS 1984 UTM Zone 11N



3.2 RESOURCES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

CEQ regulations state that federal agencies should “identify and eliminate from detailed study the issues which are not significant, or which have been covered by prior environmental review” ([40 CFR § 1501.9\(f\)\(1\)](#)). Accordingly, the DAF considered but eliminated from further analysis the following environmental resources:

- **Airspace** – The Proposed Action would not alter the current airspace configuration; the frequency, tempo, and volume of current aircraft training and operations would not change.
- **Hazardous Materials and Waste** –The proposed project area does not contain any hazardous waste sites, and the Proposed Action would not involve activities with the potential to generate any hazardous materials or waste.
- **Socioeconomics and Environmental Justice** – The Proposed Action would not involve any populated areas and there is no potential for impacts to either socioeconomic conditions or communities with environmental justice concerns.

3.3 RESOURCES CARRIED FORWARD FOR DETAILED ANALYSIS

Based on the results of internal and external scoping (see **Section 1.5**), the following resources were carried forward for analysis: air quality (including greenhouse gases and climate change); noise/acoustic environment; cultural resources; biological/natural resources; water resources; land use; infrastructure and utilities; earth resources; and safety and occupational health.

3.4 AIR QUALITY AND CLIMATE CHANGE

3.4.1 DEFINITION OF THE RESOURCES

Air pollution is a threat to human health and damages trees, crops, other plants, waterbodies, and animals. It creates haze or smog that reduces visibility in national parks and cities and interferes with aviation. To improve air quality and reduce air pollution, Congress passed the *Clean Air Act* ([42 USC § 7401](#) et seq., as amended) (CAA) and its amendments in 1970 and 1990, which set regulatory limits on air pollutants and help to ensure basic health and environmental protection from air pollution.

The California Air Resources Board created 35 air districts to evaluate compliance with the ambient air quality standards. The San Joaquin Valley Air Pollution Control District (SJVAPCD) contains the Wind Wolves Preserve in its entirety (Kern County, 2023a). The ROI for air quality is the SJVAPCD.

3.4.1.1 Criteria Pollutants

In accordance with CAA requirements, the air quality in any given region or area is measured by the concentration of various pollutants in the atmosphere. Measurements of these “criteria pollutants” in ambient air are expressed in units of parts per million (ppm) or in units of micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

The CAA directs USEPA to develop, implement, and enforce environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, USEPA developed numerical concentration-based standards (i.e., NAAQS) for pollutants that have been determined to impact human health and the environment. The USEPA also established both primary and secondary NAAQS under the provisions of the CAA. The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources in addition to maintaining visibility standards. A summary of the federal ambient air quality standards is outlined in **Table 3-2**.

**Table 3-2.
National and State Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards ^a	National Standards ^b	
		Concentration ^c	Primary ^{d,e}	Secondary
Ozone	1 hour	0.09 ppm (180 µg/m ³)	N/A	Same as primary standard
	8 hours	0.070 ppm (137 µg/m ³)	0.075 ppm (147 µg/m ³)	
Particulate Matter (PM ₁₀) ^f	24 hours	50 µg/m ³	150 µg/m ³	Same as primary standard
	Annual Arithmetic Mean	20 µg/m ³	N/A	
Fine Particulate Matter (PM _{2.5}) ^f	24 hours	N/A	35 µg/m ³	Same as primary standard
	Annual arithmetic mean	12 µg/m ³	12.0 µg/m ³	15 µg/m ³
Carbon Monoxide	1 hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	N/A
	8 hours	9.0 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	N/A
Nitrogen Dioxide ^g	1 hours	0.18 ppm (339 µg/m ³)	100 ppb (188 µg/m ³)	N/A
	Annual arithmetic mean	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)	Same as primary standard
Sulfur Dioxide ^h	1 hour	0.25 ppm (655 µg/m ³)	75 ppb (196 µg/m ³)	N/A
	3 hours	N/A	N/A	0.5 ppm
	24 hours	0.04 ppm (105 µg/m ³)	0.14 ppm (for certain areas) ^h	N/A
	Annual arithmetic mean	N/A	0.030 ppm (for certain areas) ^h	N/A
Lead ^{i,j}	30-day average	1.5 µg/m ³	N/A	N/A
	Calendar quarter	N/A	1.5 µg/m ³ (for certain areas)	Same as Primary Standard
	Rolling 3-month average	N/A	0.15 µg/m ³	
Visibility-Reducing Particles ^k	8 hours	(k)	No national standards	
Sulfates	24 hours	25 µg/m ³		
Hydrogen Sulfide	1 hour	0.03 ppm (42 µg/m ³)		
Vinyl Chloride	24 hour	0.01 ppm (26 µg/m ³)		

Sources: [USEPA NAAQS table](#); [CARB State Area Designations](#)

µg/m³ = micrograms per cubic meter; CARB = California Air Resource Board; N/A = not applicable; NAAQS = National Ambient Air Quality Standards; PM_{2.5} = particulate matter less than or equal to 2.5 microns in diameter; PM₁₀ = particulate matter less than or equal to 10 microns in diameter; ppb = parts per billion; ppm = parts per million; USEPA = US Environmental Protection Agency

Notes:

- a California standards for ozone, carbon monoxide, sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM₁₀, PM_{2.5}, and visibility-reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded.
- b National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 micrograms per cubic meter (µg/m³) is equal to or less than one. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

- c Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to parts per million (ppm) by volume, or micromoles of pollutant per mole of gas.
- d National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect public health (USEPA, 1996).
- e National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant (USEPA, 1996).
- f On December 14, 2012, the national annual PM_{2.5} primary standard was lowered from 15 µg /m³ to 12.0 µg /m³. The existing national 24-hour PM_{2.5} standards (primary and secondary) were retained at 35 µg /m³, as was the annual secondary standard of 15 µg /m³. The existing 24-hour PM₁₀ standards (primary and secondary) of 150 µg /m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
- g To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units of ppb. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
- h On June 2, 2010, a new 1-hour SO₂ standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO₂ national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. The USEPA has not made final designations on attainment status. Note that the 1-hour national standard is in units of ppb. California standards are in units of ppm. To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
- i The CARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
- j The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
- k In 1989, the Air Resources Board converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

Ozone is not usually emitted directly into the air but is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants, or “ozone precursors.” These ozone precursors consist primarily of nitrogen oxides and volatile organic compounds that are directly emitted from a wide range of emission sources. For this reason, regulatory agencies limit atmospheric ozone concentrations by controlling volatile organic compound pollutants (also identified as reactive organic gases) and nitrogen oxides.

The California Air Resources Board (CARB) has also adopted its own air quality standards in the state of California, known as the California Ambient Air Quality Standards (CAAQS) under the California CAA. The CAAQS are generally more stringent than the NAAQS and include air quality standards for all the criteria pollutants listed under NAAQS plus sulfates (SO₄), hydrogen sulfide (H₂S), vinyl chloride and visibility-reducing particulate matter. The California CAA established California's air quality goals, planning mechanisms, regulatory strategies and standards of progress aimed at meeting and/or exceeding CAA requirements for air quality. The California CAA requires attainment of CAAQS for criteria pollutants by the earliest practicable date. A summary of the state ambient air quality standards is outlined in **Table 3-2**.

3.4.1.2 General Conformity and Attainment

When a region or area meets NAAQS for a criteria pollutant, that region or area is classified as in “attainment” for that pollutant. When a region or area fails to meet NAAQS for a criteria pollutant, that region or area is classified as “nonattainment” for that pollutant. In cases of nonattainment, the affected state, territory, or local agency must develop a state implementation plan USEPA review and approval. The state implementation plan is an enforceable plan developed at the state level that lays out a pathway for how the state will comply with air quality standards. If air quality improves in a region that is classified as nonattainment, and the improvement results in the region meeting the criteria for classification as attainment, then that region is reclassified as a “maintenance” area.

Under the CAA, the General Conformity Rule requires proposed federal agency activities in designated nonattainment or maintenance areas (i.e., attainment areas reclassified from a prior nonattainment designation) to demonstrate conformity with the state implementation plan for attainment of NAAQS and CAAQS. Agencies are required to show that the net change in emissions from a federal proposed action would be below applicable *de minimis* threshold levels.

3.4.1.3 Greenhouse Gases

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere. These emissions are generated by both natural processes and human activities. The accumulation of GHGs in the atmosphere helps regulate the earth's temperature and contributes to global climate change. GHGs include water vapor, carbon dioxide, methane, nitrous oxide, ozone, and several hydrocarbons and chlorofluorocarbons. Each GHG has an estimated global warming potential, which is a function of its atmospheric lifetime and its ability to absorb and radiate infrared energy emitted from the earth's surface. The global warming potential of a particular gas provides a relative basis for calculating its carbon dioxide-equivalent (CO_{2e}) or the amount of CO_{2e} to the emissions of that gas. Carbon dioxide has a global warming potential of 1 and is therefore the standard by which all other GHGs are measured. The GHGs are multiplied by their global warming potential, and the resulting values are added together to estimate the total CO_{2e}.

The USEPA regulates GHGs primarily through a permitting program known as the GHG Tailoring Rule. This rule applies to GHG emissions from larger stationary sources. Additionally, USEPA promulgated a rule for large GHG emission stationary sources, fuel and industrial gas suppliers, and carbon dioxide injection sites if they emit 25,000 metric tons or more of CO_{2e} per year ([40 CFR § 98.2\(a\)\(2\)](#)).

Per the CEQ interim guidance released in January of 2023, "Agencies should exercise judgment when considering whether to apply this guidance to the extent practicable to an ongoing NEPA process." DAF guidance on applying and conducting a Social Cost of GHG Analysis is under development. DAF guidance will be released shortly and will provide specifics on applying Social Cost of GHG Analyses and ensure standardization across the DAF. Therefore, no Social Cost of GHG Analysis will be conducted for EAs and EISs that are currently ongoing.

3.4.2 EXISTING CONDITIONS

The SJVAPCD is in attainment for lead, nitrogen dioxide, sulfur dioxide, carbon monoxide and PM₁₀ under the NAAQS and CAAQS. The surrounding mountains and meteorology of the San Joaquin Valley make it difficult to meet federal and state ambient air quality standards for Ozone and PM_{2.5}; Interstate 5 and Highway 99 are major arterial transportation routes that run through the valley and are major contributors to pollution, along with population growth. A 2018 strategy for reduction of PM_{2.5} is in place for a 2025 attainment deadline. The region is in nonattainment for the 1997 standard of 84 ppb, the 2008 standard of 75 ppb, and the 2015 standard of 70 ppb. The region is continuing to make progress towards these standards with attainment of these air quality goals anticipated in 2023, 2031, and 2037, respectively (SJVAPCD, 2023).

3.4.3 ENVIRONMENTAL CONSEQUENCES

3.4.3.1 Evaluation Criteria

General Conformity applies to nonattainment and maintenance areas. If the emissions from a federal action proposed in a nonattainment area exceed annual *de minimis* thresholds identified in the General Conformity Rule, a formal conformity determination of that action is required.

3.4.3.2 Proposed Action

Under implementation of the Proposed Action, no new air emissions would be generated because the establishment of the RUE over the selected area would not involve any ground disturbance or construction

activity. The easement would not allow for future development to take place within the ROI, preserving the integrity of the existing DAF training mission and limiting emissions that would be anticipated to result from future growth within the RUE. This action would prevent the possibility of future air pollutant generation within this area as a result of construction, excavating, mining, drilling, dumping, tree removal, or industrial activities. The Proposed Action would not alter the existing training operations performed by Edwards AFB within the Bell X-1 Supersonic Corridor, VR 1257, and VR 1262. The implementation of the RUE would result in a long-term, positive impact to the air quality environment of the SJVAPCD by limiting commercial development that could negatively impact the goals set in place for attainment of ozone and PM_{2.5} standards under the NAAQS and CAAQS.

With implementation of the Proposed Action, the ROI would remain in its undeveloped, agricultural state and no ground disturbance or construction would occur; therefore, there is no requirement to conduct Air Conformity Applicability Model calculations per AFMAN 32-7002 and/or conformity determination as required per 40 CFR §93.153(c)(2)(xix) of the CAA. The Proposed Action would not result in exceedance of any air quality standards or permit levels and therefore would not result in adverse impacts to air quality or climate change.

3.4.3.3 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented. The property currently is used for conservation, and impacts to air quality would not occur. If the property owner pursued a sale of the land, the existing land use within the ROI could change and allow for future ground-disturbing activities that could contribute to air quality or climate change impacts; however, this action currently is not planned. The SJVAPCD would continue to pursue attainment for ozone and PM_{2.5}. Emissions would have the potential to adversely affect climate change by contributing to the concentration of criteria pollutants and/or GHGs in the atmosphere. The risk of encroachment on Edwards AFB training areas from development and/or incompatible land uses would continue, and the potential for regulatory restrictions that inhibit Edwards AFB's ability to engage in critical military activities would not be addressed. Developing another suitable location for this type of flight corridor would be highly speculative as well as cost prohibitive. The need to use land far away from installation and range boundaries would have an adverse impact on Edwards AFB's ability to train, test, and operate in the future.

3.4.3.4 Cumulative Impacts

There would be no air emissions associated with any construction and demolition activities under the Proposed Action, and the implementation of the RUE would prevent further development within the boundaries of the Wind Wolves Preserve. The estimated long-term state and federal emissions that are below threshold would remain the same. PM_{2.5} and Ozone would remain targets for future attainment within the SJVAPCD. Other projects identified within this air quality district, but outside of the Wind Wolves Preserve boundary, would have the potential to adversely contribute to overall air emissions; however, these would be managed in accordance with the SJVAPCD air quality guidelines on an individual project basis. The Proposed Action, along with the previous implementation of the Phase 1 RUE, would result in long-term, beneficial impacts to regional air quality. When considered in conjunction with the effects of other past, present, and reasonably foreseeable actions on and near the Wind Wolves Preserve, no significant adverse cumulative effects to air quality would be anticipated to occur with implementation of the Proposed Action.

3.5 NOISE/ACOUSTIC ENVIRONMENT

3.5.1 DEFINITION OF THE RESOURCES

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and are sensed by the human ear. Noise is generally described as unwanted sound. Unwanted sound can be grounded in objectivity (e.g., hearing loss or damage to structures) or subjectivity (e.g., an individual's level of tolerance or annoyance to different sounds). Noise events elicit varying responses within

a population or area based on the activity generating noise and its perceived importance and related factors, such as setting, time of day, exposure period or duration, and receptor sensitivity. In addition to humans, noise may also affect wildlife as indicated by behavioral changes during nesting, foraging, migration, or other life-cycle activities (USEPA, 1978).

Noise and sound levels are expressed in logarithmic units measured by decibels (dB). A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech equates to a sound level of approximately 60 dB, sound levels above 120 dB begin to be felt inside the human ear as discomfort, and sound levels between 130 and 140 dB are felt as pain (Berglund and Lindvall, 1995). To mimic the human ear's non-linear sensitivity and perception of different frequencies of sound, the spectral content is weighted to de-emphasize very low and very high frequencies to better replicate human sensitivity and is denoted as an A-weighted decibel (dBA). All sound levels presented in this document are in units dBA unless otherwise noted.

In accordance with US Department of Defense (DoD) guidelines and standard practice for environmental impact analysis documents, a noise analysis for DoD activity located in the state of California would generally use the Community Noise Equivalent Level (CNEL) as a primary metric. CNEL considers not only the number and characteristics of a noise event, but also provides a time-of-day adjustment, where operations occurring in the evening (7:00 pm until 10:00 pm) have a penalty, and operations occurring at night (10:00 pm until 7:00 am) have a larger penalty. These adjustments are intended to account for the annoyance factor to a larger percentage of the population who work in the daytime and relax and sleep in the evening and night. For analysis of a block of airspace that includes high-speed flight, there would also be both an onset rate adjustment (which provides an annoyance penalty for the “surprise” effect on human annoyance resulting from loud events that have fast rise times, such as from high-speed fighter aircraft overflying the observer at low altitude) as well as an adjustment for annual operations that are concentrated in short time frames (seasonal or exercise-related), which uses the “busy month” of the year as if it is the operational rate for the whole year. This metric is called CNEL_{mr}. The other possibly relevant noise metric in this situation would be the C-weighted Day-Night Average Noise Level (CDNL). CDNL is the standard metric to describe the cumulative effect of sonic booms and other impulsive noise events that are generally of short duration and contain high levels of low-frequency noise energy (impulsive “boom” events that can be “felt” as much as “heard”).

The *Noise Control Act of 1972* ([Public Law 92-574](#)) directs federal agencies to comply with applicable federal, state, and local noise control regulations. In 1974, the USEPA provided information suggesting that continuous and long-term noise levels greater than 65 dBA are normally unacceptable for noise-sensitive receptors such as residences, schools, churches, and hospitals (USEPA, 1974).

For noise, the ROI is the area under the special-use airspace that is included in the range complex serving Edwards AFB and Naval Air Station China Lake, as well as the areas immediately surrounding the air bases. Of these areas, the Wind Wolves Preserve is proximate to VR 1257, VR 1262, and the Bell X-1 Supersonic Corridor (see **Figure 1-2**).

3.5.2 EXISTING CONDITIONS

VR 1257 and VR 1262 are used by Edwards AFB-based aircraft and other military aircraft. There is also intermittent use of the Bell X-1 Supersonic Corridor. Detail on the Installation noise environment is provided in **Appendix B** of this EA.

3.5.3 ENVIRONMENTAL CONSEQUENCES

3.5.3.1 Proposed Action

Under the Proposed Action, there would be no additional flight operations within either of the two VRs within the ROI or the supersonic corridor. If the number of operations in the VRs were to increase, there would be a potential impact from the additional noise produced by more aircraft operating at low altitude in the vicinity

of the ROI. Because implementation of the Proposed Action would not increase the number of flight operations, there would be no impacts to the existing noise environment.

Noise is related to the source's distance from an observer and the power settings of the engines required to maintain different speeds. If the operations in the VRs were to change in their characteristics (such as altitudes and speeds flown), there could be potential impacts related to noise. Because implementation of the Proposed Action would not involve changes in operational characteristics, there would be no new noise or noise-induced impacts to noise-sensitive receptors, such as humans or wildlife.

Under the Proposed Action, there would be no changes to the numbers, types, or characteristics (e.g., speed, flight paths) of operations in the airspace within the supersonic corridor. Operations in the corridor are above 30,000 ft mean sea level, which is a DAF standard for minimizing sonic boom impacts on the ground in overland areas. The Proposed Action would not increase the number of operations or change the altitudes or characteristics of operations in the supersonic corridor, and there would be no potential for impacts that would need to be quantified to determine significance or severity. Because implementation of the Proposed Action would not involve changes to existing operations, there would be no impacts to the noise environment on the ground for noise-sensitive receptors, such as humans, wildlife, or structures.

3.5.3.2 No Action Alternative

Under the No Action Alternative, the proposed RUE would not be implemented. The property currently is used for environmental conservation, and impacts to the noise environment would not occur. If the property owner pursued a sale of the land, the existing land use within the ROI could change and allow for future activities that could contribute to impacts to the noise environment; however, this action currently is not planned. The risk of encroachment on Edwards AFB training areas from development and/or incompatible land uses would continue, and the potential for regulatory restrictions that inhibit Edwards AFB's ability to engage in critical military activities would not be addressed. Developing another suitable location for this type of flight corridor would be highly speculative as well as cost prohibitive. The need to use land far away from installation and range boundaries would have an adverse impact on Edwards AFB's ability to train, test, and operate in the future.

3.5.3.3 Cumulative Impacts

There would be no impacts to or from noise under the Proposed Action, and the implementation of the RUE would prevent further development within the boundaries of the Wind Wolves Preserve. The ongoing solar, gas, and mining developments nearby emphasize the growing demand for land within this region. When considered in conjunction with the effects of other past, present, and reasonably foreseeable actions on or near the Wind Wolves Preserve, no significant adverse cumulative effects to the noise environment would be anticipated to occur with implementation of the Proposed Action.

3.6 CULTURAL RESOURCES

3.6.1 DEFINITION OF THE RESOURCES

Cultural resources are any prehistoric or historic district, site, building, structure, or object considered important to a culture or community for scientific, traditional, religious, or other purposes. These resources are protected and identified under several federal laws and EOs, including the *Archaeological and Historic Preservation Act of 1960*, as amended ([54 USC § 300101](#) et seq.), the *American Indian Religious Freedom Act of 1978* ([42 USC § 1996](#)), the *Archaeological Resources Protection Act of 1979*, as amended ([16 USC §§ 470aa–470mm](#)), the *Native American Graves Protection and Repatriation Act of 1990* ([25 USC §§ 3001–3013](#)), the NHPA, as amended through 2016, and associated regulations ([36 CFR Part 800](#)). The NHPA requires federal agencies to consider effects of federal undertakings on historic properties prior to deciding or taking an action and integrate historic preservation values into their decision-making process. Federal agencies fulfill this requirement by completing the NHPA Section 106 consultation process, as set forth in 36 CFR Part 800. NHPA Section 106 also requires agencies to consult with federally recognized American

Indian tribes with a vested interest in the undertaking. NHPA Section 106 requires all federal agencies to seek to avoid, minimize, or mitigate adverse effects to historic properties (36 CFR § 800.1(a)).

Cultural resources include the following subcategories:

- Archaeological (i.e., prehistoric or historic sites where human activity has left physical evidence of that activity, but no structures remain standing);
- Architectural (i.e., buildings, structures, groups of structures, or designed landscapes that are of historic or aesthetic significance); and
- Traditional Cultural Properties (TCPs) (resources of traditional, religious, or cultural significance to American Indian tribes).

Significant cultural resources are those listed on the National Register of Historic Places (NRHP) or determined to be eligible for listing. To be eligible for the NRHP, properties must be 50 years old and have national, state, or local significance in American history, architecture, archaeology, engineering, or culture. They must possess sufficient integrity of location, design, setting, materials, workmanship, feeling, and association to convey their historical significance and meet at least one of four criteria for evaluation:

- 1) Associated with events that have made a significant contribution to the broad patterns of our history (Criterion A);
- 2) Associated with the lives of persons significant in our past (Criterion B);
- 3) Embody distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); and/or
- 4) Have yielded or be likely to yield information important in prehistory or history (Criterion D).

Properties that are less than 50 years old can be considered eligible for the NRHP under criteria consideration G if they possess exceptional historical importance. Those properties must also retain historic integrity and meet at least one of the four NRHP criteria (Criteria A, B, C, or D). The term “historic property” refers to National Historic Landmarks, NRHP-listed, and NRHP-eligible cultural resources.

For cultural resources analyses, the ROI is defined by the Area of Potential Effects, which is defined as the “geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist” ([36 CFR § 800.16\(d\)](#)) and thereby diminish their historic integrity. As there are no construction and/or ground-disturbing activities included as part the Proposed Action, the ROI for this EA is the Wind Wolves Preserve.

3.6.2 EXISTING CONDITIONS

Within the western Mojave Desert, evidence of human occupation extends to more than 12,000 years ago. A small number of Paleo Indian artifacts have been identified, suggesting that the prehistoric period may have begun as early as 10,000 B.C. Several Takic- and Numic-speaking groups lived and moved throughout the current location of Wind Wolves Preserve. Although their nomadic lifestyle did not generate elaborate architectural features, their adaptation to the harsh desert environment left behind an extensive record of material remains, mostly in the form of stone tools and the evidence of their production.

Several Native American groups most likely utilized this region in the Late Prehistoric and Historic time periods. The Proposed Action area is situated in a boundary zone between two distinct settlement and subsistence systems occupied by the Takic- and Numic-speaking groups. One system is associated with the mountains and coastal California, and the other is associated with the southwestern Great Basin. The adaptation of Takic-speakers to the California environment emphasized acorn exploitation and the occupation of permanent village sites. The adaptation of the Great Basin and related Southern Paiute groups is characterized by the use of pine and mesquite tree resources. Smaller, seasonal, and

geographically dispersed settlements were occupied as part of a wider-ranging annual hunting and foraging ground.

The ancestors of the federally recognized Tejon Tribe previously lived in the foothills of the Sierra Nevada mountains, along the southern tip of the San Joaquin Valley. They were formerly known as the Kitanemuk people. In 1853, Tejon lands became the first Indian reservation in California when Edward F. Beale established the “Sebastian Indian Reservation” on Rancho El Tejon lands, which later became part of the Tejon Ranch. Indigenous ancestors were forced to work on the Spanish-run ranch to remain on the land. In 1912, after much of the population was forcefully relocated, the Tejon Ranch was sold. Over the years, Tejon native people have primarily relocated to Bakersfield, California, due to natural disasters and land disputes (Tejon Indian Tribe, 2024).

The archaeological resources associated with the western Mojave Desert region are divided into three broad time periods: Prehistoric, Historic, and Military. Although Spanish entry into California was initiated along the coast in the mid-1500s, evidence of the Historic Period does not appear in the western Mojave Desert region until the late 1800s. The Historic Period consisted of colonization, homesteading, agriculture, ranching, and mining activities. The Military Period began during the late 1920s with the introduction of general aviation activities near the dry lake beds in the region.

3.6.2.1 Archaeological Sites

There are a total of 20 archaeological sites within the ROI. The majority of the sites contain bedrock mortar, which is evidence of grinding grain, and/or cupules, which are evidence of the use of hand-held hammer stones. Along with the bedrock mortar and cupule sites are one cairn site, one pictograph site, one isolate, two multi-component archaeological features, and three rock-art sites.

3.6.2.2 Historic Architectural Properties

There are no recorded historic architectural properties within the ROI; however, there are two clusters of buildings. The first structure likely was built between 1956 and 1957 based on historic aerial data. From there, more structures start to appear in both historic aerials and historic topographic maps. Some of these structures are greater than 50 years old; however, they have not been evaluated for NRHP eligibility. These structures all pre-date The Wildlands Conservancy’s purchase of the Wind Wolves Preserve property in 1996. Since then, historic maps and aerials show no new developments.

3.6.2.3 Traditional Cultural Properties

There are no recorded TCPs within the ROI. However, the lack of recorded TCPs does not guarantee that there are no TCPs within the project boundary that have not yet been identified.

3.6.3 ENVIRONMENTAL CONSEQUENCES

3.6.3.1 Evaluation Criteria

Adverse impacts on cultural resources would occur if the Proposed Action or Alternatives results in the following:

- physically altering, damaging, or destroying all or part of a resource;
- altering characteristics of the surrounding environment that contribute to the resource’s significance;
- introducing visual or audible elements that are out of character with the property or alter its setting;
- neglecting the resource to the extent that it deteriorates or is destroyed; or

- the sale, transfer, or lease of the property out of agency ownership (or control) without adequate enforceable restrictions or conditions to ensure preservation of the property's historic significance.

For the purposes of this EA, an impact is considered significant if it alters the integrity of a NRHP-listed, eligible, or potentially eligible resource or potentially impacts TCPs.

3.6.3.2 Proposed Action

Archaeological Sites

The Proposed Action would not involve any ground-disturbing or construction activities; therefore, implementation of the RUE would not have the potential to disturb or alter any archaeological resources on the Wind Wolves Preserve. The restrictions put in place to limit future development would result in a benefit to these resources by preventing future construction or demolition activities near sensitive sites. The Proposed Action would not alter the existing training operations performed by Edwards AFB within the Bell X-1 Supersonic Corridor, VR 1257, and VR 1262 that occur above these resources. The Proposed Action would result in "no adverse effect" to archaeological resources within the ROI.

Historic Architectural Properties

The Proposed Action would not have the potential to disturb or alter any historic architectural properties. There are no previously identified NRHP-listed architectural resources within the ROI. The presence of structures over 50 years in age means that there is the potential for historic architectural resources to be identified; however, the implementation of the RUE would not involve any construction, demolition, or other ground-disturbing activities with the potential to impact these resources. The Proposed Action would result in "no adverse effect" to historic architectural properties within the ROI.

Traditional Cultural Properties

The Proposed Action would not have the potential to disturb or alter any TCPs. There are no previously identified TCPs within the ROI. The implementation of the RUE would not involve any construction, demolition, or other ground-disturbing activities and would therefore have no impact to any potential unrecorded TCPs that have yet to be identified. The Proposed Action would result in "no adverse effect" to TCPs within the ROI.

3.6.3.3 No Action Alternative

Under the No Action Alternative, the proposed RUE would not be implemented. The land currently is used for conservation purposes, and impacts to cultural resources would not occur. If the property owner pursued a sale of the land, the existing land use within the ROI could change and allow for developmental activities that could impact cultural resources; however, this action currently is not planned. The cultural resources located within the project area would remain unaltered from existing conditions. The risk of encroachment on Edwards AFB training areas from development and/or incompatible land uses would continue, and the potential for regulatory restrictions that inhibit Edwards AFB's ability to engage in critical military activities would not be addressed. Developing another suitable location for this type of flight corridor would be highly speculative as well as cost prohibitive. The need to use land far away from installation and range boundaries would have an adverse impact on Edwards AFB's ability to train, test, and operate in the future.

3.6.3.4 Cumulative Impacts

There would be no impacts to cultural resources under the Proposed Action, and the implementation of the RUE would prevent further development within the boundaries of the Wind Wolves Preserve. The ongoing solar, gas, and mining developments nearby emphasize the growing demand for land within this region. The implementation of the Proposed Action, along with the previous implementation of the Phase 1 RUE, would benefit the preservation of cultural resources in the long term. When considered in conjunction with the effects of other past, present, and reasonably foreseeable actions on and near the Wind Wolves

Preserve, long-term, beneficial cumulative effects to cultural resources would be anticipated to occur with implementation of the Proposed Action.

3.7 BIOLOGICAL/NATURAL RESOURCES

3.7.1 DEFINITION OF THE RESOURCES

Biological resources include native or invasive plants and animals; sensitive and protected floral and faunal species; and the associated habitats, such as wetlands, forests, grasslands, cliffs, and caves in which they exist. Habitat can be defined as the resources and conditions in an area that support a defined suite of organisms. The following is a description of the primary federal statutes that form the regulatory framework for the evaluation of biological resources.

The ROI for this resource is the Wind Wolves Preserve.

3.7.1.1 Invasive Species

Invasive species are non-native species in an ecosystem whose introduction causes or is likely to cause economic or environmental harm, or harm to human, animal, or plant health. EO 13751, *Safeguarding the Nation from the Impacts of Invasive Species*, requires federal agencies to identify actions that may affect invasive species; use relevant programs to prevent introductions of invasive species; detect, respond, and control such species; monitor invasive species populations; and provide for restoration of native species. Invasive species damage native habitat and impede management by outcompeting native species.

3.7.1.2 Endangered Species Act

The ESA established protection for threatened and endangered species and the ecosystems upon which they depend. Sensitive and protected biological resources include plant and animal species listed as threatened, endangered, or special status by USFWS. The ESA also allows the designation of geographic areas as critical habitat for threatened or endangered species. Under the ESA, an “endangered species” is defined as any species in danger of extinction throughout all, or a large portion, of its range. A “threatened species” is defined as any species likely to become an endangered species in the foreseeable future. USFWS maintains a list of candidate species being evaluated for possible listing as threatened or endangered under the ESA. Although candidate species receive no statutory protection under the ESA, USFWS has attempted to advise government agencies, industry, and the public that these species are at risk and may warrant protection under the ESA in the future.

The California Department of Fish and Wildlife (CDFW) oversees the *California Endangered Species Act* (CESA) and reviews and analyzes petitions for the listing of species to CESA. The *California Environmental Quality Act* is typically the driver of CESA, and projects subject to the *California Environmental Quality Act* that have the potential to significantly impact listed species must consult with CDFW.

3.7.1.3 Migratory Bird Treaty Act

The *Migratory Bird Treaty Act* ([16 USC § 703–112](#)) MBTA makes it unlawful for anyone to take migratory birds or their parts, nests, or eggs unless permitted to do so by regulations. Per the MBTA, “take” is defined as “pursue, hunt, shoot, wound, kill, trap, capture, or collect” ([50 CFR § 10.12](#)). Birds protected under the MBTA include nearly all species in the US except for non-native/human-introduced species and some game birds.

EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, requires all federal agencies undertaking activities that may negatively impact migratory birds to follow a prescribed set of actions to further implement MBTA. EO 13186 directs federal agencies to develop a Memorandum of Understanding with USFWS that promotes the conservation of migratory birds.

The *National Defense Authorization Act for Fiscal Year 2003* ([Public Law 107-314, 116 Stat. 2458](#)) provided the Secretary of the Interior the authority to prescribe regulations to exempt the armed forces from the incidental take of migratory birds during authorized military readiness activities. Congress defined military readiness activities as all training and operations of the US Armed Forces that relate to combat and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use. Further, in October of 2012, the *Authorization of Take Incidental to Military Readiness Activities* was published in the *Federal Register* ([50 CFR § 21.15](#)), authorizing incidental take during military readiness activities unless such activities may result in significant adverse effects on a population of a migratory bird species.

In December 2017, the US Department of the Interior issued M-Opinion 37050, which concluded that the take of migratory birds from an activity is not prohibited by the MBTA when the purpose of that activity is not the take of a migratory birds, eggs, or nests. On August 11, 2020, the US District Court, Southern District of New York, vacated M-Opinion 37050. Thus, incidental take of migratory birds is again prohibited. The interpretation of the MBTA remains in flux, and additional court proceedings are expected.

3.7.1.4 Bald and Golden Eagle Protection Act

The *Bald and Golden Eagle Protection Act of 1940* ([16 USC §§ 668–668d](#)) (BGEPA) prohibits actions to “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle [or any golden eagle], alive or dead, or any part, nest, or egg thereof.” Further, the BGEPA defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb,” and “disturb” is defined as “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, injury to an eagle, a decrease in productivity by substantially interfering with the eagle’s normal breeding, feeding or sheltering behavior, or nest abandonment by substantially interfering with the eagle’s normal breeding, feeding, or sheltering behavior.” The BGEPA also prohibits activities around an active or inactive nest site that could result in disturbance to returning eagles.

3.7.1.5 Aquatic Resources

Aquatic resources are habitats that contain either permanent or sufficient temporary water to support plant or wildlife species that require water or hydric soils for at least part of their life cycle.

3.7.2 EXISTING CONDITIONS

3.7.2.1 Vegetation

The landscape of the Wind Wolves Preserve includes a diverse array of ecosystems ranging in elevation and slope. Stands of big cone spruce (*Pseudotsuga macrocarpa*) and ponderosa pine (*Pinus ponderosa*) dominate the upper elevations, shifting to juniper (*Juniperus californica*) and pinyon (*Pinus monophylla*) forests and then to California blue oak (*Quercus douglasii*) and valley oak (*Quercus lobata*) savannas with extensive riparian wetlands as elevation decreases (The Wildlands Conservancy, 2023). A complex riparian corridor dotted with a mosaic of shrub like bladderpod (*Cleomella arborea*), mule fat (*Baccharis salicifolia*), and Allscale saltbush (*Atriplex polycarpa*) and tree species like runs through the property, terminating on the valley floor in an alluvial fan of saltbush and native shrubs (**Figure 3-2**). Spring and winter wet seasons convert the brown grassland to a colorful bloom of wildflowers including wild hyacinth (*Dichelostemma capitatum*), grape soda lupine (*Lupinus excubitus*), poppies (*Eschscholzia californica*), and red maids (*Calandrinia ciliata*) and lush grasses, which is highly desirable for raising grass-fed beef and other livestock (Conservation Land Group, 2010).

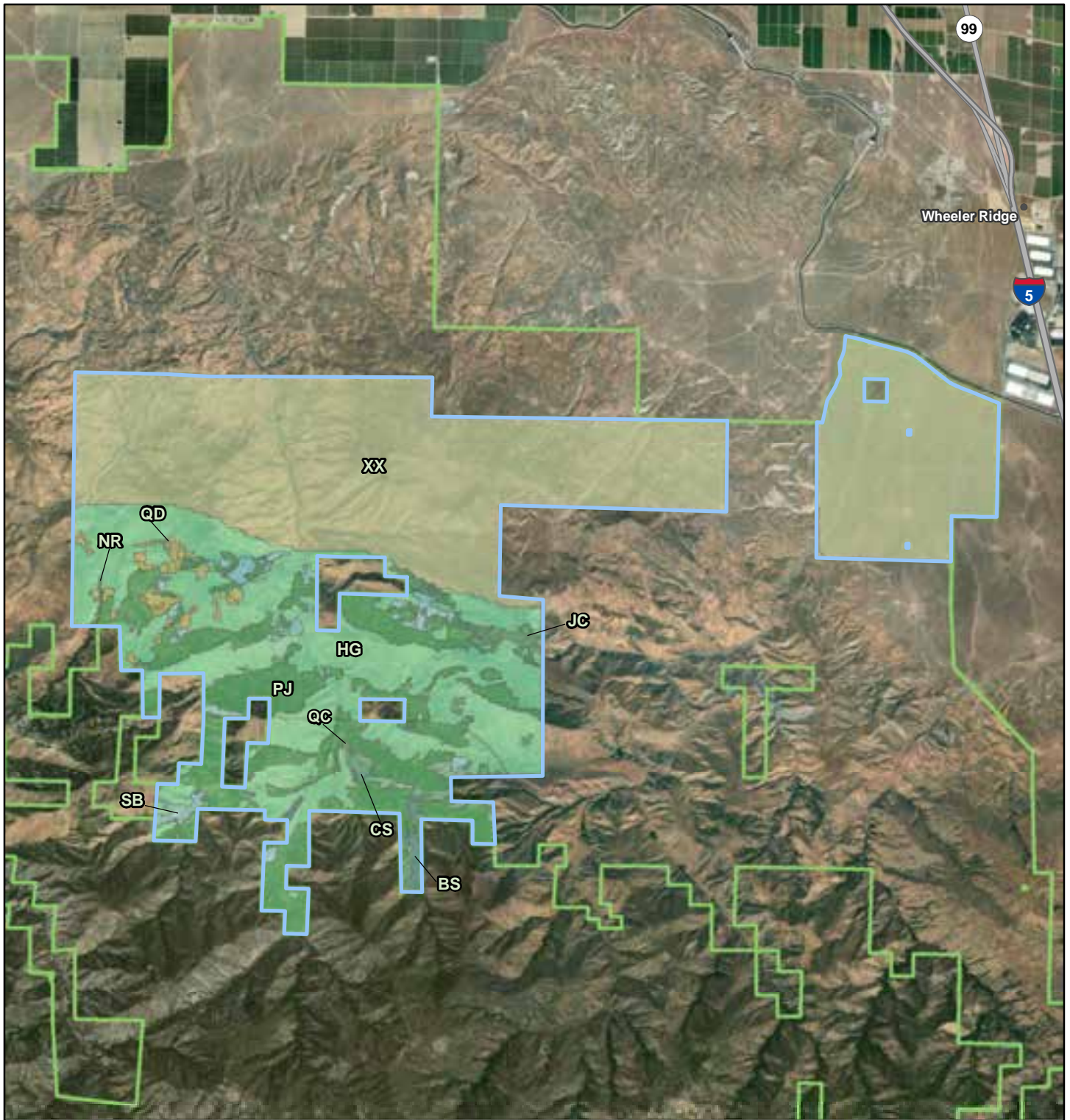
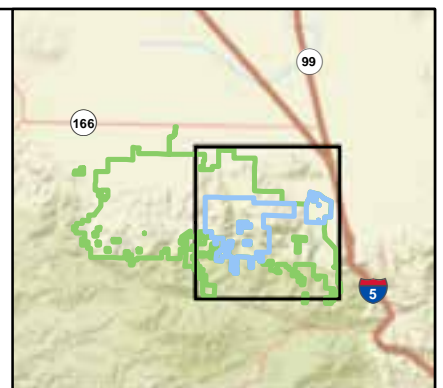


Figure 3-2
Vegetation

- | | | |
|--------------------------------|-------------------------|-------------------------------|
| Proposed Action | Blue Oak (QD) | Riparian Mixed Hardwoods (NR) |
| Wind Wolves Preserve Boundary | Buckwheat (SB) | Scrub Oak (CS) |
| Annual Grasses and Forbes (HG) | California Juniper (JC) | Singleleaf Pinyon Pine (PJ) |
| Basin Sagebrush (BS) | Canyon Live Oak (QC) | Unmapped (XX) |



Imagery: ESRI, 2022.
Coordinate System: WGS 1984 UTM Zone 11N



The Wildlands Conservancy currently allows cattle and sheep grazing (approximately 1,000 animals) to occur on the Wind Wolves Preserve through lease arrangements in order to support its conservation goals. Grazing occurs in various times throughout the fall to spring, depending on water availability within the area. Some grazing occurs in the summer months, particularly if the amount of grass and other plant matter remains high after winter stocking. There is also a beekeeping lease agreement, which focuses on creating and enhancing pollinator habitats through the promotion of annual wildflowers (Edwards AFB, 2021).

3.7.2.2 Invasive Species

Invasive plants known to occur within the Wind Wolves Preserve include tamarisk (*Tamarix* spp.), tocolate (*Centaurea melitensis*), yellow star thistle (*Centaurea solstitialis*), white horehound (*Marrubium vulgare*), Russian thistle (*Salsola* spp.), tree tobacco (*Nicotiana glauca*), summer mustard (*Hirschfeldia incana*), tumble mustard (*Sisymbrium altissimum*), and a variety of annual invasive grasses including wall barley (*Hordeum murinum*), great brome (*Bromus diandrus*), red brome (*Bromus rubens*), and common wild oat (*Avena fatua*). The reduction of these invasive species through prescriptive grazing is one of the conservation goals of the Wind Wolves Preserve. The cattle grazing arrangements currently work to control invasive grasses and support the continual regeneration of plants and improving conditions for the valley oak savannah and other upland tree pollinator shrubs such as bladderpod, California buckwheat (*Eriogonum fasciculatum*), and rubber rabbitbrush (*Ericameria nauseosa*) (Edwards AFB, 2021).

3.7.2.3 Wildlife

The Wind Wolves Preserve is the largest privately owned nature preserve in California and the area serves as an important wildlife movement corridor in the San Emigdio mountains between the Coast and Transverse ranges to the west and the Tehachapi Mountains and Southern Sierra Nevada Ranges to the east. The preserve contains a broad range of wildlife habitats due to the range of elevations and size of the property. California condor, black bear, mountain lion, and mule deer historically have moved through the region. The preserve is host to many smaller species including foxes, badgers, mice, shrews, squirrels, and lizards. In 1998, The Wildlands Conservancy in partnership with the CDFW, coordinated an effort to restore a population of tule elk at Wind Wolves Preserve. Nineteen tule elk were initially released, and several translocations have taken place over the years. All translocated elk were marked with ear tags or radio collars. Since 1998, the herd has increased significantly. Habitat improvements and rangeland enhancements such as wildlife troughs, riparian fencing, native plant restoration, rotational grazing management, and mineral blocks support the elk population and other wildlife. To monitor the population, herd health, and landscape improvements, The Wildlands Conservancy staff and volunteers conduct an annual tule elk count at the end of summer. In 2022, a total of 445 elk were counted (The Wildlands Conservancy, 2022).

3.7.2.4 Aquatic Resources

The ROI has numerous stream corridors, some of which contain freshwater emergent, freshwater forested/shrub, and riverine wetland habitat. The Wildlands Conservancy performs ongoing restoration of riparian habitat across the Wind Wolves Preserve.

3.7.2.5 Threatened or Endangered Species

The Wind Wolves Preserve property serves as an important wildlife movement corridor and habitat link between the Coastal Ranges, San Joaquin Valley, Southern Sierra Nevada Mountains (Tehachapi Mountains), Western Mojave Desert, and Transvers Ranges. The Air Force used the USFWS's IPaC tool to obtain a current list of potential threatened and endangered species and migratory birds that may occur within the ROI. **Table 3-3** lists the results of the IPaC data search.

The San Joaquin kit fox (*Vulpes macrotis mutica*) has been observed within the Wind Wolves Preserve directly to the north of the ROI; however, these recorded occurrences date back to 1998, and there are no recent observations within the ROI. Habitat suitability models point to the northeast corner of the ROI as

having low to moderate suitability for the San Joaquin kit fox, and the enhancement of kit fox habitat is a listed goal of the Wind Wolves Preserve (California State University [CSU], 2011a). Improvements to valley floor saltbush shrub habitats are anticipated in support of the future expansion of this species (Edwards AFB, 2021).

**Table 3-3.
Federally Listed Species with Potential to Occur within the Wind Wolves Preserve**

Species	Type	Federal Status	Critical Habitat Present
Buena Vista Lake ornate shrew (<i>Sorex ornatus relictus</i>)	Mammal	Endangered	No
Giant kangaroo rat (<i>Dipodomys ingens</i>)	Mammal	Endangered	No
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	Mammal	Endangered	No
Tipton kangaroo rat (<i>Dipodomys nitratooides nitratooides</i>)	Mammal	Endangered	No
California condor (<i>Gymnogyps californianus</i>)	Bird	Endangered	No
Least Bell's vireo (<i>Vireo bellii pusillus</i>)	Bird	Endangered	No
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	Bird	Endangered	No
Blunt-nosed leopard lizard (<i>Gambelia silus</i>)	Reptile	Endangered	No
Northwestern pond turtle (<i>Actinemys marmorata</i>)	Reptile	Proposed Threatened	No
Monarch butterfly (<i>Danaus plexippus</i>)	Insect	Candidate	No
Vernal pool fairy shrimp (<i>Branchinecta lynchi</i>)	Crustacean	Threatened	No

The giant kangaroo rat (*Dipodomys ingens*) has no historic occurrences on or near the ROI; however, kangaroo rats have been reported on both the east and west sides of the Wind Wolves Preserve, indicating that their presence within the preserve is likely (CSU, 2011a).

Approximately 6,686 acres of California condor (*Gymnogyps californicus*) range intersect with the ROI. The California condor makes its nest in cliff caves in the mountains, and some have also made nests in the cavities of giant sequoia redwood trees. The species raises one chick at a time, laying eggs in late winter or spring. The eggs take approximately two months to hatch, and the chicks need over a year before they are capable of living on their own. They are mainly threatened by lead poisoning, poison bait, and various environmental pollutants. Additionally, human activity in condor nesting ranges has led to an increase in the number of ravens which threaten condor eggs and chicks (CDFW, 2023). Extreme conservation efforts began in the 1970s to prevent the California condor from extinction when it was discovered that only a few dozen remained in the wild. Since then, the population has steadily increased and there are approximately 186 wild condors in the state of California (US Department of the Interior, 2020). The conservation effort is ongoing with the goal of developing three distinct reproducing populations: two in the wild and one in captivity with a minimum of 150 birds in each, at which point it is expected that the condor population would no longer be in danger of extinction (CDFW, 2023).

Riparian bird surveys conducted on the Wind Wolves Preserve helped document the presence of both the southwestern willow flycatcher (*Empidonax traillii extimus*) and least Bell's vireo (*Vireo bellii pusillus*) within the preserve, although both were documented outside the ROI. Both species were once widespread in the valley and are now relegated to small pockets of breeding birds. As riparian habitat restoration efforts continue, these small pockets may be important for re-colonization of these species in the San Joaquin Valley. The Wind Wolves Preserve supports these species because of land area, habitat diversity, and habitat quality (CSU, 2010).

The blunt-nosed leopard lizard (*Gambelia silus*) has been observed within the ROI primarily in the northeastern portion. This species has a historic presence within the preserve and population monitoring is recommended for the goals of the endangered species report (CSU, 2011a). Improvements to valley floor saltbush shrub habitats are anticipated in support of the future expansion of federally endangered blunt-nosed leopard lizard habitat (Edwards AFB, 2021).

State listed species of concern with the potential to occur on the Wind Wolves Preserve include the San Joaquin antelope squirrel (*Ammospermophilus nelsonii*), San Joaquin whip snake (*Coluber flagellum ruddocki*), short-nosed kangaroo rat (*Dipodomys nitratooides brevinasus*), tricolored blackbird (*Agelaius tricolor*), and western burrowing owl (*Athene cunicularia hypugaea*). Bakersfield cacti (*Opuntia basilaris* var. *treleasei*) are known to occur in the northeastern portion of the ROI. There are active and ongoing efforts for the conservation of this cactus within Kern County that focus on the need for permanent conservation, protection from impacts, habitat management, surveys, and education (CSU, 2011b).

Wind Wolves Preserve undertakes efforts to meet conservation objectives in relation to threatened and endangered species. These objectives include ensuring that upper elevations provide habitat for the federally endangered California condor, improving of riparian habitats and water quality, and creating suitable nesting conditions for flycatchers and avian species including the federally endangered least Bell's vireo and southwestern willow flycatcher.

3.7.2.6 Migratory Birds

Migratory bird species protected under the federal MBTA have the potential to occur within the Wind Wolves Preserve. Tricolored blackbirds have been observed within three locations on the northern portion of the ROI associated with the Echo Canyon, Three Springs, and Willow Springs breeding colonies. The southwestern willow flycatcher and the burrowing owl have also been observed in the central northern portion of the ROI. Loggerhead shrike (*Lanius ludovicianus*) and Northern harrier (*Circus hudsonius*) have also been observed within the preserve (CSU, 2011a). Bald and golden eagles are protected under the BGEPA; however, neither species is known to occur within the Wind Wolves Preserve. Edwards AFB maintains a Bird/Wildlife Aircraft Strike Hazard (BASH) program to prevent and reduce wildlife-related hazards to aircraft operations.

3.7.3 ENVIRONMENTAL CONSEQUENCES

3.7.3.1 Evaluation Criteria

The level of impact on biological resources is based on the following:

- importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource;
- proportion of the resource that would be affected relative to its occurrence in the region;
- sensitivity of the resource to the proposed activities; and
- duration of potential ecological impact.

Adverse impacts on biological resources would occur if the Proposed Action negatively affects species or habitats of high concern over relatively large areas, or if estimated disturbances cause reductions in population size or distribution of a species of high concern.

As a requirement under the ESA, federal agencies must provide documentation that ensures that the agency's proposed actions would not adversely affect the existence of any threatened or endangered species. The ESA requires that all federal agencies avoid "taking" federally threatened or endangered species (which includes jeopardizing threatened or endangered species habitat). Section 7 of the ESA establishes a consultation process with USFWS that ends with either a "No Effect" determination by the federal agency or a biological opinion from USFWS that the Proposed Action either would or would not jeopardize the continued existence of a species.

3.7.3.2 Proposed Action

Vegetation

No adverse impacts to vegetation would occur from implementation of the Proposed Action. The establishment of the RUE would not involve any ground-disturbing activities, and there would be no potential for direct impacts to vegetation. The RUE would not impact the ability of the existing leased cattle grazing and/or beekeeping operations to continue in their current state. Conservation actions associated with the RUE include restricting the removal, destruction, or cutting of trees, shrubs, or other vegetation, except as required for fire breaks, maintenance of foot trails or existing roads, health of the population, or utilities. The implementation of the proposed RUE would result in beneficial impacts to the management of vegetation within the project area.

Invasive Species

No impacts to invasive species or invasive species management efforts would occur from implementation of the Proposed Action. The establishment of the RUE would not involve any ground-disturbing activities, and there would be no potential for adverse impacts to invasive species. There would be no opportunity for the introduction of invasive species on equipment since there would be no construction or demolition activities associated with the Proposed Action. The cattle grazing and beekeeping agreements would be unaffected by the proposed RUE and the benefits of the program on invasive species management would continue.

Wildlife

No adverse impacts to wildlife would occur from implementation of the Proposed Action. The establishment of the RUE would not involve any ground-disturbing activities, and there would be no potential for adverse impacts to wildlife or habitats. The RUE would result in a beneficial impact to the Wind Wolves Preserve's ability to continue habitat restoration activities within the project area by preventing conflicting land development.

Aquatic Resources

No impacts to aquatic resources would occur from implementation of the Proposed Action. The establishment of the RUE would not involve any ground-disturbing activities, and there would be no potential for adverse impacts to aquatic habitats. The RUE would result in a beneficial impact to the Wind Wolves Preserve's ability to continue habitat restoration activities within the project area by preventing conflicting land development.

The Proposed Action would not alter the existing training operations performed by Edwards AFB within the Bell X-1 Supersonic Corridor, VR 1257, and VR 1262 above the project area.

Threatened or Endangered Species

No adverse effects to threatened or endangered species or other state listed species would occur from implementation of the Proposed Action. No ground-disturbing activity would occur with the Proposed Action and none of the observed species would have the potential to be impacted by the establishment of the RUE. There is no critical habitat identified for any of the listed species, and no potential future habitat would be impacted by the Proposed Action. Additionally, there is no critical habitat for any threatened or endangered aquatic species within the ROI. Implementation of the Proposed Action would restrict residential and industrial development within the ROI, along with other activities detrimental to wildlife. These restrictions would maintain the natural wildlife corridor, thereby benefiting the previously observed listed species who use the area. Additionally, the Proposed Action would directly benefit the conservation goals established by the Wind Wolves Preserve. The Proposed Action would not alter the existing training operations performed by Edwards AFB within the Bell X-1 Supersonic Corridor, VR 1257, and VR 1262 above the project area and the noise environment would remain unchanged. The DAF has determined that the Proposed Action would have No Effect on federally or state listed threatened or endangered species.

Migratory Birds

Migratory bird species are known to occur in the ROI; however, no adverse impacts to migratory birds would be expected to occur under the Proposed Action, and no impacts to bald or golden eagles would occur. The Proposed Action would not alter the existing training operations performed by Edwards AFB within the Bell X-1 Supersonic Corridor, VR 1257, and VR 1262 above the project area and the noise environment would remain unchanged. The greatest risk to flight operations from a BASH perspective is around the flightline during takeoff and landing procedures. The area over the RUE is located approximately 48 miles from the Installation. Aircraft entering the RUE would be cruising at an altitude of 30,000 feet or greater and would have a reduced risk of strikes since birds generally fly at altitudes between 2,000 and 12,000 feet, with the California condor averaging 15,000 feet. Edwards AFB would continue to abide by current BASH guidelines for the safe operation of flight training activities above the RUE. The restrictions put in place by the Proposed Action would prohibit commercial or residential development in the ROI, providing a long-term benefit to migratory birds by preventing future destruction of their potential habitat.

3.7.3.3 No Action Alternative

Under the No Action Alternative, the proposed RUE would not be implemented. The property currently is used for environmental conservation, and impacts to biological resources would not occur. If the property owner pursued a sale of the land, the existing land use within the ROI could change from conservation purposes and allow for developmental activities that could impact biological resources; however, this action currently is not planned. The risk of encroachment on Edwards AFB training areas from development and/or incompatible land uses would continue, and the potential for regulatory restrictions that inhibit Edwards AFB's ability to engage in critical military activities would not be addressed. Developing another suitable location for this type of flight corridor would be highly speculative as well as cost prohibitive. The need to use land far away from installation and range boundaries would have an adverse impact on Edwards AFB's ability to train, test, and operate in the future.

3.7.3.4 Cumulative Impacts

Implementation of the Proposed Action would be anticipated to result in beneficial impacts to biological resources, as the RUE would prevent further development in the Wind Wolves Preserve. Projects in the immediate vicinity of the Proposed Action include solar and energy developments as well as highway infrastructure improvements. An approximately 8,000-acre community is planned to the east of the Proposed Action area near Grapevine in support of the Tejon Ranch Commerce Center, including housing and community services. These projects could result in adverse impacts to the resources in the area through the reduction of suitable habitat, potential increases in noise, and direct removal of vegetation. However, the Proposed Action, in addition to the previous implementation of the Phase 1 RUE, would offer beneficial impacts to biological resources by reinforcing the restrictions on development and ground disturbance that have the potential to impact listed species, which would help to mitigate potential adverse impacts that could occur under other development in the area. When considered in conjunction with the effects of other past, present, and reasonably foreseeable actions on or near the Wind Wolves Preserve, no significant adverse cumulative effects to biological resources would be anticipated to occur with implementation of the Proposed Action.

3.8 WATER RESOURCES

3.8.1 DEFINITION OF THE RESOURCE

Water resources include surface water, groundwater, stormwater, wetlands, and floodplains. The *Federal Water Pollution Control Act of 1948*, as amended by the *Clean Water Act (33 USC § 1251 et seq.)* (CWA), was enacted to protect water resources vulnerable to contamination and quality degradation. The CWA provides the authority to establish water quality standards, control discharges into surface and subsurface waters (including groundwater), develop waste treatment management plans and practices, and issue permits for discharges. A National Pollutant Discharge Elimination System (NPDES) permit under Section

402 of the CWA is required for discharges into navigable waters. The USEPA oversees the issuance of NPDES permits at federal facilities as well as water quality regulations (CWA, Section 401) for both surface and groundwater.

The ROI for water resources is the Middle-Kern-Upper-Tehachapi-Grapevine subbasin (**Figure 3-4**).

3.8.1.1 Surface Water and Wetlands

The USEPA defines surface waters as waters of the US, which are primarily lakes, rivers, estuaries, coastal waters, and wetlands. Waters of the US, or jurisdictional waters, including surface water resources as defined at [33 CFR § 328.3](#), are regulated under Sections 401 and 404 of the CWA and Section 10 of the *Rivers and Harbors Act*. Man-made features not directly associated with a natural drainage, such as upland stock ponds and irrigation canals, are generally not considered jurisdictional waters.

The US Army Corps of Engineers ([33 CFR § 328.3](#)) and USEPA ([40 CFR § 120.2\(c\)\(1\)](#)) define wetlands 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.” Wetlands are a subset of waters of the US, and those deemed “jurisdictional” are regulated under Section 404 of the CWA. When a federal agency’s proposed action requires a Section 404 wetlands permit, states are provided authority to enforce surface water quality standards under Section 401 of the CWA by review of the proposed action and permit application. The natural-function benefits of wetlands include flood control, groundwater recharge, maintenance of biodiversity, wildlife habitat, recreational opportunities, and maintenance of water quality.

Pursuant to the CWA, the California State Water Resources Control Board (SWRCB) sets and enforces quality standards for the state’s rivers, streams, lakes, wetlands, ocean, and groundwater. Nine Regional Water Boards are responsible for enforcing standards and regulations on a local level, and the Wind Wolves Preserve falls within the Region 5 Water Quality Control Board (California Regional Water Quality Control Board Central Valley Region, 2018; SWRCB, 2013).

3.8.1.2 Stormwater

Stormwater is surface runoff generated from precipitation and has the potential to introduce sediments and other pollutants into surface waters. Stormwater is regulated under the CWA Section 402 NPDES program. Impervious surfaces such as buildings, roads, parking lots, and even some natural soils increase surface runoff. Stormwater management systems are designed to contain runoff on site during construction and to maintain predevelopment stormwater flow characteristics following development through either the application of infiltration or retention practices. The *Energy Independence and Security Act* ([42 USC § 17094](#)) establishes stormwater design requirements for development and redevelopment projects. Under these requirements, federal facility projects larger than 5,000 ft² must maintain or restore, to the maximum extent feasible, the predevelopment hydrologic conditions of the property with respect to the water temperature, rate, volume, and duration of flow.

3.8.1.3 Groundwater

Groundwater is water that exists in the saturated zone beneath the earth’s surface in pore spaces and fractures, and includes aquifers. Groundwater is recharged via water moving below the ground’s surface through these pore spaces (e.g., precipitation and surface water bodies) and via water moving upward from lower aquifers. Groundwater is an essential resource that can be used for drinking, irrigation, and/or industrial processes, and can be described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations. Groundwater quality and quantity are regulated under several different programs, including the *Safe Drinking Water Act*, which helps protect aquifers that are critical to water supply.

3.8.1.4 Floodplains

Floodplains are areas of low-level ground along rivers, stream channels, or coastal waters that provide a broad area to fill with, and temporarily store, floodwater. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Floodplains are subject to periodic or infrequent inundation due to rain or melting snow. The risk of flooding is influenced by local topography, the frequency of precipitation events, and the size and characteristics of the watershed that contains the floodplain.

The Federal Emergency Management Agency (FEMA) evaluates and maps flood potential, which defines the 100-year (regulatory) floodplain. The 100-year floodplain is an area that has a one-percent annual chance of inundation by floodwater (FEMA, 2023). Federal, state, and local regulations often limit development in floodplains to passive uses, such as recreational and preservation activities, to reduce the risks to property and human health and safety.

EO 11988, *Floodplain Management*, provides guidelines that agencies should follow as part of their decision-making process on projects that have potential impacts to, or within, the floodplain. This EO requires that federal agencies avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and avoid direct and indirect support of floodplain development wherever there is a practicable alternative. If there is no way to avoid impacts to a floodplain, agencies are required to prepare a Finding of No Practicable Alternative to accompany the FONSI. EO 13690, *Establishing a Flood Risk Management Standard and Process for Further Soliciting and Considering Stakeholder Input*, established a Federal Flood Risk Management Standard and a process for further soliciting and considering stakeholder input; however, this EO was later revoked by Section 6 of EO 13807, *Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure*. EO 13807 did not revoke or otherwise alter EO 11988.

3.8.2 EXISTING CONDITIONS

3.8.2.1 Evaluation Criteria

Surface Waters and Wetlands

The ROI includes riparian and wetland habitats (**Figure 3-3**). Various small streams have perennial water flow in their upper watersheds, with dry ephemeral alluvial floodplains in their lower elevations. Heavy rain events can cause flash flooding on the valley floor in these steep fast draining systems. Small wetlands emerge in various locations along the foothills and at spring seeps in the hillsides. Natural springs and seeps also serve livestock as needed.

The ROI contains approximately 238 acres of wetlands. Approximately 11 acres are classified as freshwater emergent wetlands, 45 acres are classified as freshwater forested/shrub wetlands, and 182 acres are classified as riverine wetlands (National Wetlands Inventory, 2023).

Stormwater

Stormwater becomes an issue when a large amount of precipitation falls onto impervious surfaces and is unable to properly absorb into the ground. This causes the stormwater to run off these surfaces, washing various pollutants such as petroleum products, salt, pesticides, sediments, and other substances into local waterways where there is no opportunity for pollutants to be filtered through the soil before the stormwater enters groundwater and/or nearby bodies of water. The ROI is primarily undeveloped and does not contain significant impervious surfaces that would inhibit water infiltration (**Figure 3-4**).

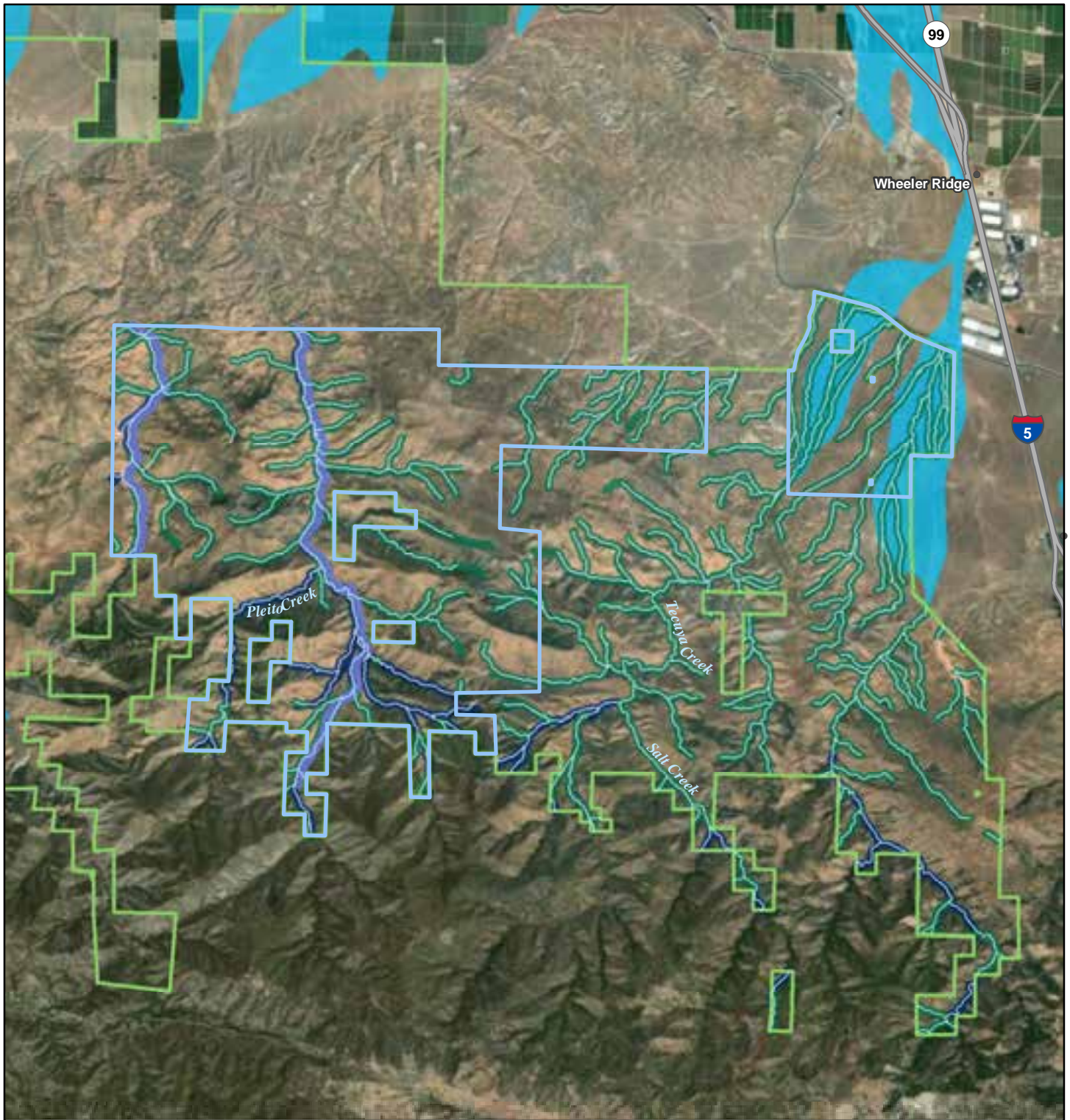
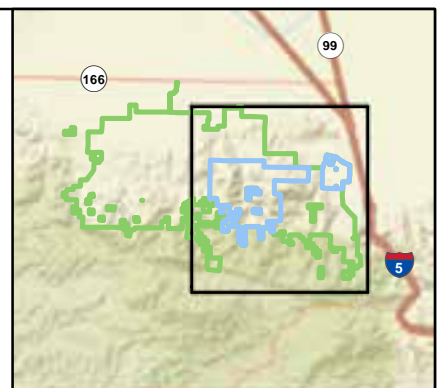


FIGURE 3-3
Streams, Wetlands, and Floodplains

- | | |
|---|---|
|  Freshwater Emergent Wetland |  Stream |
|  Freshwater Forested/Shrub Wetland |  Proposed Action |
|  Restoration Creeks |  Wind Wolves Preserve Boundary |
|  Riverine Wetland |  100-Year Floodplain |



Imagery: ESRI, 2022.
Coordinate System: WGS 1984 UTM Zone 11N



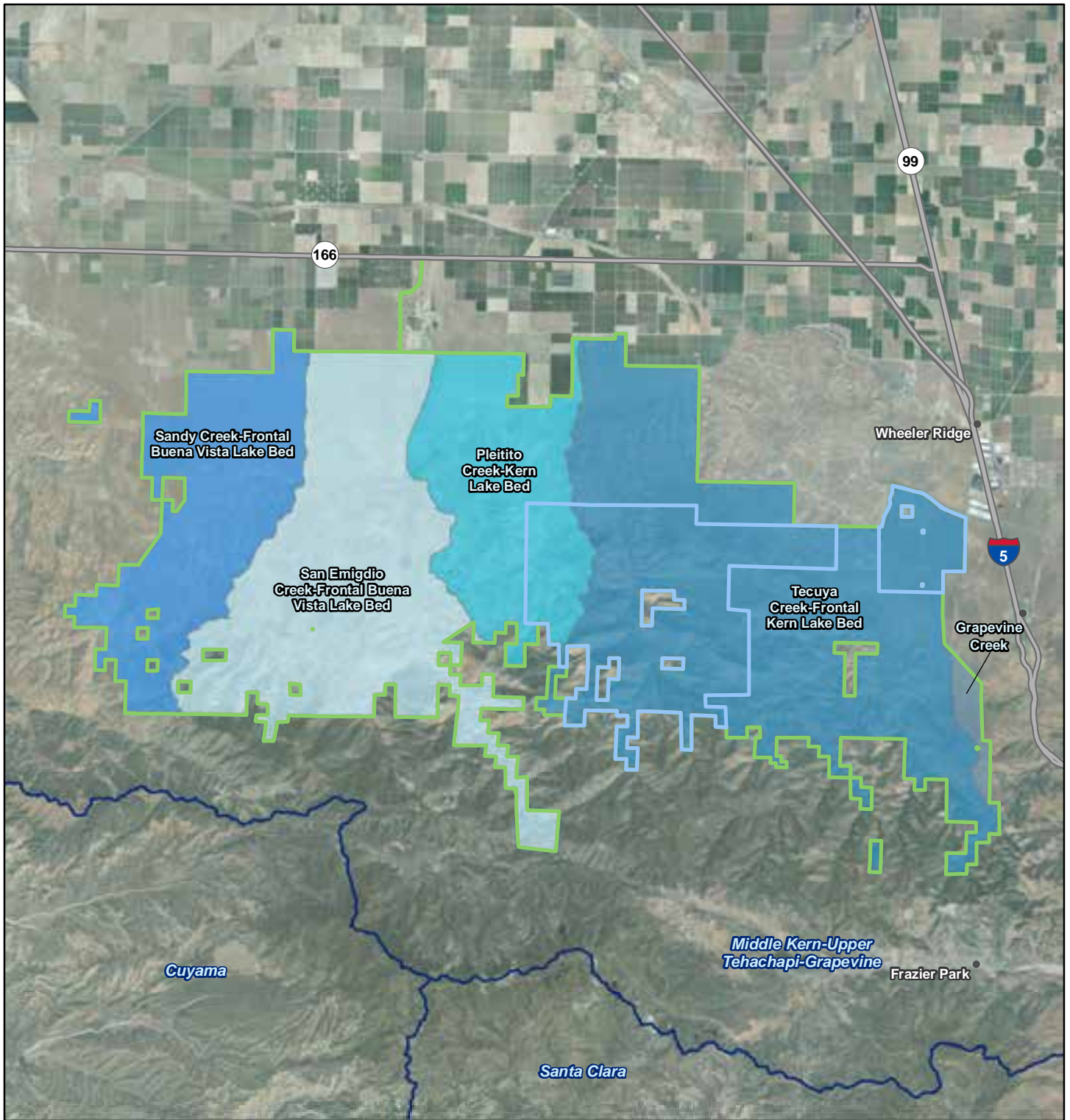
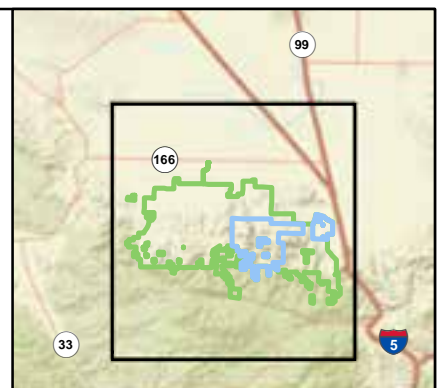


FIGURE 3-4
Watersheds and Basins

- | | |
|--|--|
| Proposed Action | San Emigdio Creek-Frontal Buena Vista Lake Bed Watershed |
| Wind Wolves Preserve Boundary | Sandy Creek-Frontal Buena Vista Lake Bed Watershed |
| Grapevine Creek Watershed | Sub-Basin Boundary |
| Pleitito Creek-Kern Lake Bed Watershed | Tecuya Creek-Frontal Kern Lake Bed Watershed |



Imagery: ESRI, 2022.
Coordinate System: WGS 1984 UTM Zone 11N



Increases in stormwater runoff due to more frequent and intense precipitation events can also cause flood events. Floods occur naturally in California and benefit local ecosystems by maintaining a natural balance of erosion and sedimentation, replenishing soils, recharging groundwater, and supporting various riverine floodplain habitats that are home to sensitive species. These floods become a concern when they take place in more urbanized areas where they can result in loss of life and property, and economic impacts from damage to critical infrastructure, and valuable agricultural land being taken out of production (California Department of Water Resources [CDWR], 2023a). The Wind Wolves Preserve is not an urbanized area. While some land within Wind Wolves is used for agricultural purposes, it is primarily used for grazing.

Groundwater

The Wind Wolves Preserve is in the Tulare Lake Hydrologic Region (HR), as defined by the CDWR. The Tulare Lake HR uses more groundwater than all other HRs in the state, accounting for approximately 28 percent of California's total annual water use. The region is home to one-third of California's agricultural land and supports crops including almonds and pistachios. Approximately 95 percent of the groundwater the Tulare Lake HR consumes annually is used for agriculture. Groundwater levels in most parts of the Tulare Lake HR have been declining over approximately the last 20 years. Natural recharge comes primarily from stream seepage along the eastern subbasin and the Kern River; however, the largest overall source of recharge is applied irrigation water. Shallow groundwater presents problems for agriculture in the western portion of the basin, where high total dissolved solids, sodium chloride, and sulfate are present (CDWR, 2006).

Within the Tulare Lake HR, the Wind Wolves Preserve falls within the Kern County groundwater subbasin, one of the nine basins in the HR required to form Groundwater Sustainability Agencies (GSAs) under California's *Sustainable Groundwater Management Act of 2014* (SGMA). The SGMA mandated that GSAs be formed in the State's high- and medium-priority basins and subbasins by June 30, 2017 to help manage California's local groundwater resources. Over 260 GSAs in more than 140 basins were formed by the SGMA's initial planning milestone; however, as the SGMA continues to be implemented and the priorities and boundaries of some basins change, new GSAs will be formed, and existing GSAs may want to reorganize, consolidate, or withdraw from managing all or part of a basin. These 260+ GSAs were required to submit groundwater sustainability plans (GSPs) to the CDWR by the end of 2022 and were required to begin implementing these plans upon submission. The northeastern portion of the ROI falls within the White Wolf GSA (**Figure 3-5**) (CDWR, 2023e). The White Wolf Subbasin GSP was approved on 26 October 2023 and establishes a sustainability goal, including historic and existing conditions, criteria and monitoring protocols, and projects for maintaining sustainability. The stated goal of the White Wolf GSA is to:

Cooperatively continue to maintain an economically-viable groundwater resource within the White Wolf Subbasin that supports the current and future beneficial users of groundwater by utilizing the area's groundwater resources within the local sustainable yield and avoiding undesirable results."

The GSP establishes that the primary use of groundwater in the subbasin is to supply irrigated agriculture, with an increasing trend of high nitrate, total dissolved solids, and sodium observed in monitoring wells due to this usage (EKI, 2021).

Floodplains

Approximately 1,334 acres of the ROI are located within a 100-year floodplain (**Figure 3-3**). Natural floodplains often serve to reduce flood risk by slowing runoff and storing floodwater, with the exception of steep valleys and coastal bluffs. Natural floodplains also provides many benefits to a functioning natural system, including surface water quality management, groundwater recharge, biological productivity, fish and wildlife habitat protection, and natural flood and erosion control (FEMA, 2022).

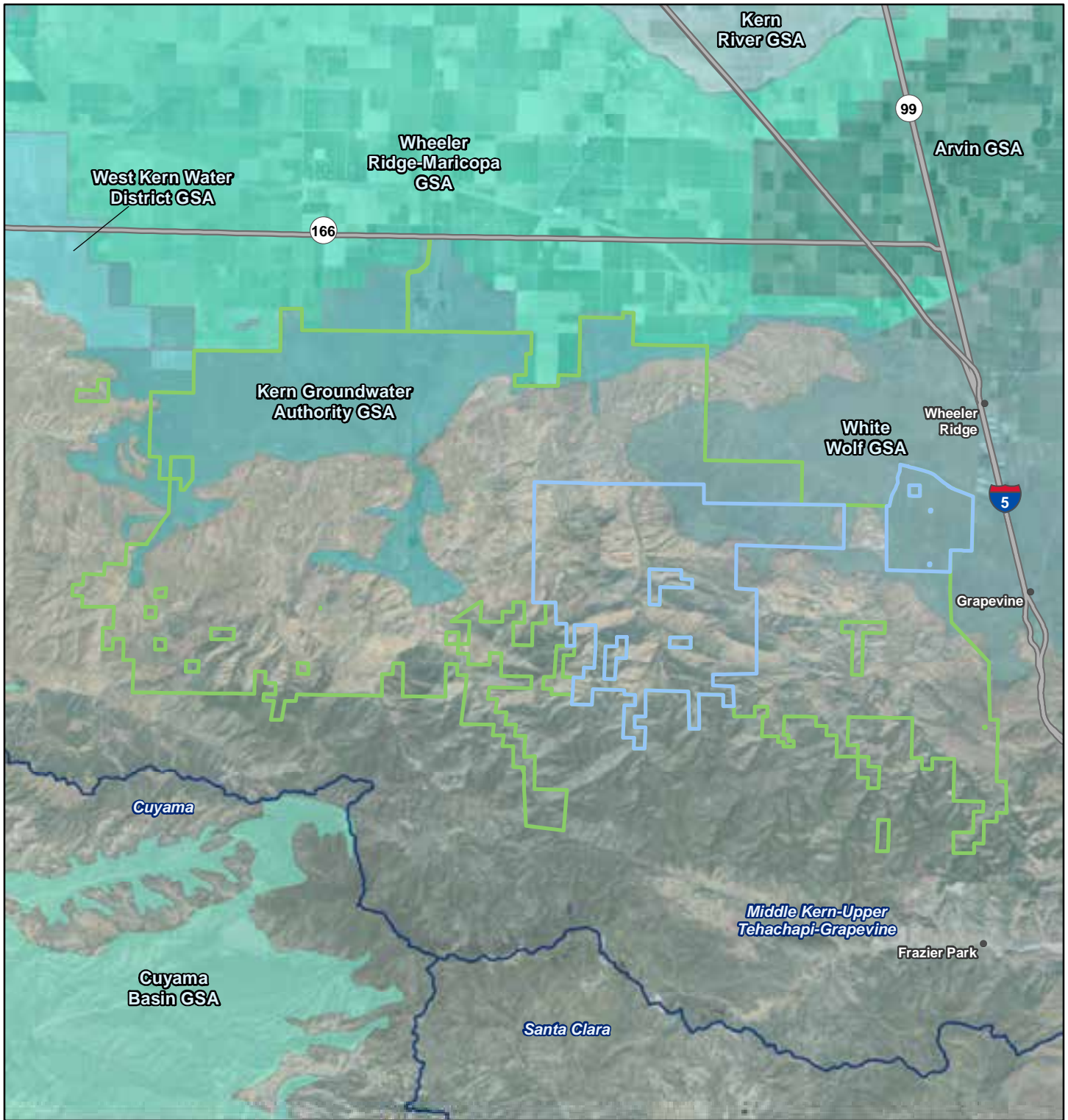
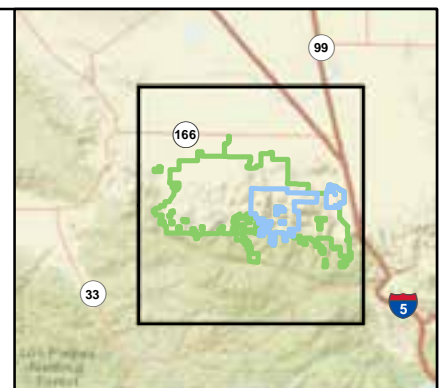


FIGURE 3-5
Groundwater Sustainability Agencies

- | | |
|--------------------------------|------------------------------|
| Proposed Action | Kern River GSA |
| Wind Wolves Preserve Boundary | Sub-Basin Boundary |
| Arvin GSA | West Kern Water District GSA |
| Cuyama Basin GSA | Wheeler Ridge-Maricopa GSA |
| Kern Groundwater Authority GSA | White Wolf GSA |



Imagery: ESRI, 2022.
Coordinate System: WGS 1984 UTM Zone 11N



3.8.3 ENVIRONMENTAL CONSEQUENCES

Potential adverse impact(s) on water resources would include:

- fill or dredge of jurisdictional waters of the US subject to Sections 401 and 404 of the CWA;
- the unauthorized release of contaminants into an “impaired” waterbody subject to a Total Maximum Daily Load, or the calculation of the maximum amount of a pollutant allowed to enter a waterbody where the waterbody will meet and continue to meet water quality standards for that particular pollutant;²
- non-compliance with applicable stormwater management requirements for the prevention, control, and minimization of erosion and sedimentation;
- development within a 100-year floodplain without full consideration of alternatives and methods that would avoid, prevent, or minimize adversely affecting its functional value; and
- the unmitigated release of a regulated contaminant into the environment with potential to enter groundwater.

3.8.3.1 Proposed Action

Surface Waters and Wetlands

Implementation of the Proposed Action would not involve any ground-disturbing activities, and there would be no potential for adverse impacts to surface waters or wetlands. The Proposed Action would have long-term beneficial impacts on surface waters by protecting them from impacts associated with future development, such as potential filling of wetlands or indirect impacts as a result of increased sedimentation and erosion. Restrictions would be put in place under the RUE preventing construction activities, land uses, and activities that could adversely impact surface waters, resulting in long-term, beneficial impacts to water quality. There would be beneficial impacts to surface waters and wetlands under implementation of the Proposed Action.

Stormwater

Implementation of the Proposed Action would not involve any ground-disturbing activities, and there would be no potential for adverse impacts to stormwater resources. There would be no change in impervious surface area associated with implementation of the Proposed Action and stormwater conditions would be unaffected. The proposed RUE would result in long-term, beneficial to stormwater resources by prohibiting any future alterations of the surface topography that could result in changes to stormwater and preventing increases in impervious surface area. There would be beneficial impacts to stormwater resources under the Proposed Action.

Floodplains

Implementation of the Proposed Action would not involve any ground-disturbing activities, and there would be no potential for adverse impacts to floodplains; therefore, a Finding of No Practicable Alternative would not be required, in accordance with EO 11988. Long-term, beneficial impacts to floodplains would be observed under the Proposed Action by preventing further development within the areas where the ROI and the floodplains overlap. The proposed RUE would help to preserve their natural function resulting in beneficial impacts to floodplains under the Proposed Action.

Groundwater

Implementation of the Proposed Action would not involve any ground-disturbing activities with the potential to result in adverse groundwater impacts. Long-term beneficial impacts on groundwater and water quality would occur under the Proposed Action by allowing the land to remain in its natural state and allowing the

² <https://www.epa.gov/tmdl/overview-total-maximum-daily-loads-tmdls>

natural water cycle to occur uninterrupted by built infrastructure. Restrictions under the proposed RUE include prohibitions on conducting any activities detrimental to water quality, including excavating, draining, dredging, mining, drilling, removing, or exploring for extraction of minerals, loam, soil, sands, gravel, rocks, or other material on or below the surface of the property. There would be beneficial impacts to groundwater resources under the Proposed Action.

3.8.3.2 No Action Alternative

Under the No Action Alternative, the proposed RUE would not be implemented. The property currently is used for environmental conservation, and impacts to water resources would not occur. If the property owner pursued a sale of the land, the existing land use within the ROI could change from conservation purposes and allow for developmental activities that could impact water resources; however, this action currently is not planned. Development activities in the ROI could be detrimental to water quality, which could put additional strain on groundwater resources via water draws to supply new construction and built environments or encroach into the 100-year floodplain. The risk of encroachment on Edwards AFB training areas from development and/or incompatible land uses would continue, and the potential for regulatory restrictions that inhibit Edwards AFB's ability to engage in critical military activities would not be addressed. Developing another suitable location for this type of flight corridor would be highly speculative as well as cost prohibitive. The need to use land far away from installation and range boundaries would have an adverse impact on Edwards AFB's ability to train, test, and operate in the future.

3.8.3.3 Cumulative Impacts

There would be no adverse impacts to water resources associated with ground-disturbing activities under the Proposed Action, and the implementation of the RUE, in addition to the previous implementation of the Phase 1 RUE, would prevent further development within the Wind Wolves Preserve. This would preserve water resources in their current state resulting in beneficial impacts. Projects within the immediate vicinity of the Proposed Action include solar and energy developments as well as highway infrastructure improvements. An approximately 8,000-acre community is planned to the east of the ROI near Grapevine in support of the Tejon Ranch Commerce Center including housing and community services. These projects would have the potential to result in additional impacts to the water resources in the area, including additional water draw, but would be managed at a project level in accordance with state and federal guidelines. The Proposed Action would result in beneficial impacts to water resources in the ROI. When considered in conjunction with the effects of other past, present, and reasonably foreseeable actions on and near the Wind Wolves Preserve, no significant adverse cumulative effects water resources would be anticipated to occur with implementation of the Proposed Action.

3.9 LAND USE

3.9.1 DEFINITION OF THE RESOURCE

The term "land use" refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws; however, no nationally recognized convention or uniform terminology has been adopted for describing land use categories. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions. Land use on the Wind Wolves Preserve falls under the zoning laws of Kern County, CA.

The ROI for land use is the Wind Wolves Preserve and surrounding area.

3.9.2 EXISTING CONDITIONS

Land use in Kern County is guided by the *Kern County General Plan*, which lays out a broad plan for the county's future leading up to 2040. Through various planning elements, the document addresses future development projects, infrastructure needs, economic growth opportunities, and strategic land usage to

ensure an intentional pattern for future urban growth and resource management that can support an environment capable of sustaining a vibrant economy (Kern County, 2009).

The General Plan also serves to guide and support the Kern County Zoning Ordinance, which establishes zoning districts throughout the county and regulates land use and development according to specific standards and requirements. Kern County utilizes a traditional zoning type, generally classifying zoning districts into agricultural, residential, commercial, industrial, and special purpose. The Zoning Ordinance also includes combining districts that allow for certain modifications in the types of land use permitted, such as allowing boarding of horses in rural residential areas or allowing petroleum extraction in areas zoned for certain types of commercial land use (Kern County, 2023b).

In addition to the General Plan, Kern County maintains an Airport Land Use Compatibility Plan. The plan is intended to ensure that planned land uses are compatible with public airports and military aviation bases and to manage encroachment of incompatible land uses that could adversely affect those operations, as both are important to the Kern County economy (Kern County, 2012).

The Wind Wolves Preserve is located entirely within Kern County, and land uses permitted on the property are therefore determined by the Kern County Zoning Ordinance. Under this ordinance, the Wind Wolves Preserve is primarily zoned as an exclusive agriculture (A) district, with smaller pockets of land zoned as limited agriculture (A-1) districts (**Figure 3-6**).

A-zoned districts are areas that are designated as suitable for agricultural uses. These districts are used to prevent incompatible uses from encroaching on agricultural lands, and to prevent premature conversion of such lands to nonagricultural uses. Activities permitted in these areas are primarily limited to agricultural uses, such as growing and harvesting crops and breeding and raising animals, as well as agricultural industry uses such as animal products processing. A-zoned districts also allow related/compatible uses including use as a wildlife/nature preserve, the construction of residences that provide housing for on-site farm labor employees, commercial uses/services limited to temporary Christmas tree and fruit sales, animal husbandry instruction/classes and horse boarding and training, utility and communication facilities, resource extraction and energy development uses such as mineral, oil, or gas exploration or small wind energy systems, and miscellaneous uses like flood control facilities, water storage or groundwater recharge facilities.

A-1-zoned districts are areas suitable for a combination of estate-type residential development (residential living environments with larger lot sizes), agricultural uses, and other compatible uses. The other compatible uses largely mirror those permitted in A-zoned districts, although in A-1-zoned districts, agricultural industry is not permitted, residential uses do not include farm employee housing, commercial uses do not include animal husbandry instruction or horse boarding/training, and fewer resource extraction and energy development and miscellaneous uses are permitted. Additionally, institutional uses such as public utility buildings are approved for A-1 districts (Kern County, 2023b).

The area surrounding the Wind Wolves Preserve consists of zoning for A and A-1, Recreation and Forestry, Residential Suburban, and Special Planning districts (see **Figure 3-6**). Recreation and Forestry districts designate land for the conservation and use of natural resources and for compatible recreation uses (e.g., parks, playgrounds, and fishing ponds). Residential Suburban districts allow for an expansion of the number and types of permitted domestic agricultural uses within rural residential areas, and Special Planning districts are meant to provide opportunities for creative and innovative land uses (consistent with the land use category that applies to the property) that could not occur in other districts due to various Kern County zoning standards.

Within the ROI, which functions as a nature/wildlife preserve under its A-district zoning, easements are currently in place that allow for certain agricultural activities to take place, including cattle and sheep grazing, beekeeping as well as utility easements, all of which are consistent with other uses that are permitted in districts with A or A-1 zoning.

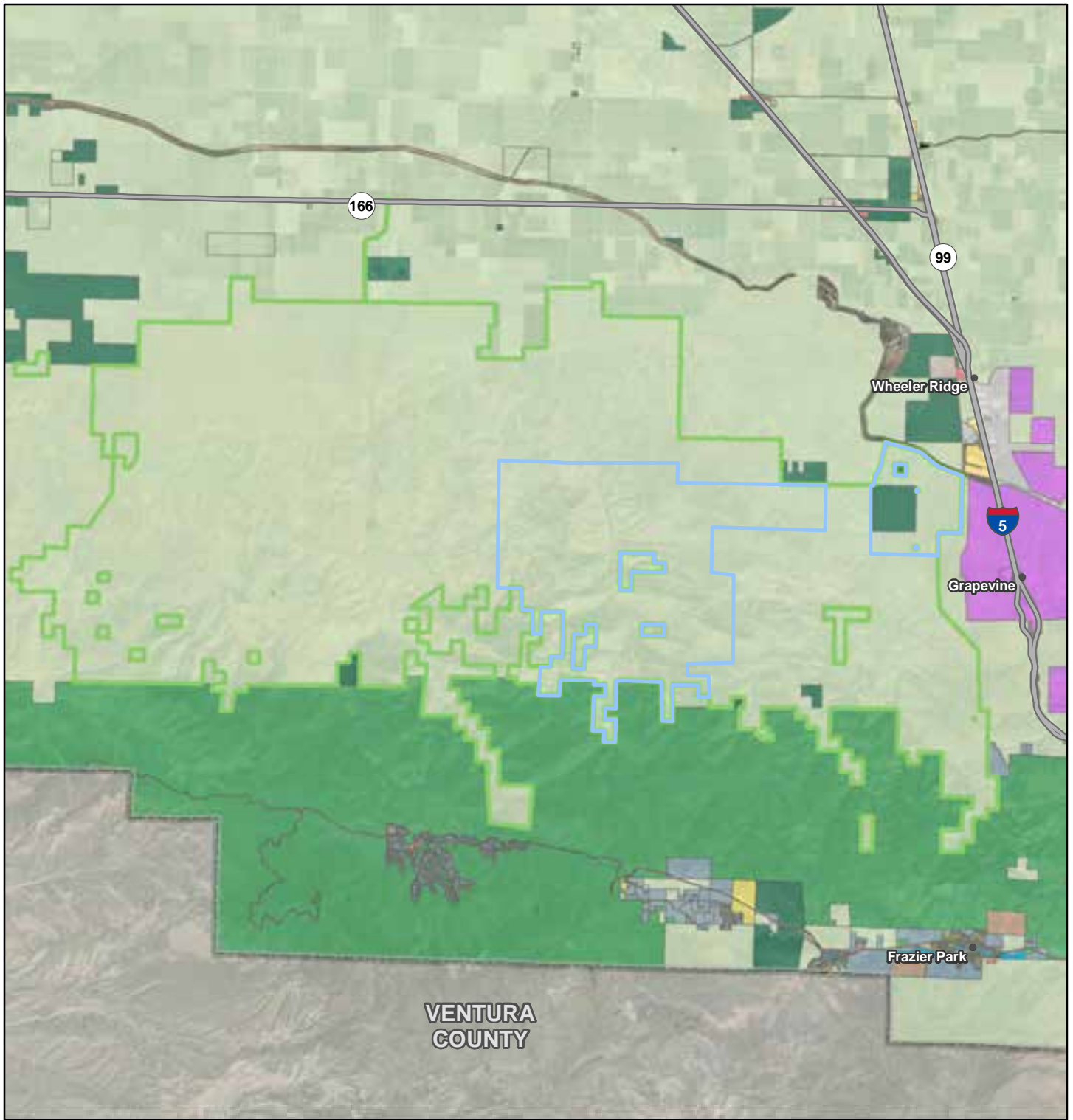


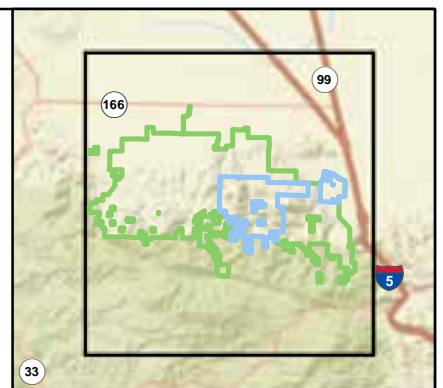
FIGURE 3-6
Land Use

- | | | | |
|-------------------------------|--------------------------|----------------------------|---------------------------|
| Proposed Action | General Commercial | Low-Density Residential | Neighborhood Commercial |
| Wind Wolves Preserve Boundary | General Industrial | Medium-Density Residential | Open Space |
| Commercial Office | High-Density Residential | Medium Industrial | Recreation Forestry |
| Agriculture | Highway Commercial | Mobilehome Park | Special Planning District |
| Estate | Light Industrial | Mobilehome Subdivision | |
| Floodplain Primary | Limited Agriculture | Natural Resources | |



0 5 Mile

Imagery: ESRI, 2022.
Coordinate System: WGS 1984 UTM Zone 11N



3.9.3 ENVIRONMENTAL CONSEQUENCES

3.9.3.1 Evaluation Criteria

Potential impacts on land use are based on the level of land use sensitivity in areas potentially affected by a proposed action as well as compatibility of the action with existing land use conditions. In general, a land use impact would be adverse if it meets one of the following criteria:

- inconsistency or non-compliance with existing land use plans or policies;
- precluded the viability of existing land use;
- precluded continued use or occupation of an area;
- incompatibility with adjacent land use to the extent that public health or safety is threatened; or
- conflict with planning criteria established to ensure the safety and protection of human life and property.

3.9.3.2 Proposed Action

The Proposed Action would directly support the goals of five out of the six planning elements included in the Kern County General Plan: the Land Use/Conservation/Open Space Element, the Noise Element, the Safety Element, the Energy Element, and the Military Readiness Element. However, the underlying General Plan includes a portion of the property permitted for residential, commercial, and industrial use under the San Emidio New Town Specific Plan, while the zoning continues the interim use of agriculture A (Exclusive Agriculture) and A-1 (Limited Agriculture). The Proposed Action, as described in **Section 2.2**, would have the potential to prevent certain activities that are typically permitted in A-zoned districts, including any new excavation, vegetation clearing, agricultural processing facilities allowed “by-right” and that are industrial uses, and residential uses, which are allowed in all agricultural zones; however, existing agreements, including the cattle grazing lease and electrical utility easement, would remain in place, and the existing activities covered under those agreements would be unaffected. In consultation with Kern County, Edwards AFB would request that Wind Wolves apply for an application to the county for those portions of the San Emidio New Town Specific Plan that are within the Proposed Action area be rescinded for consistency. As the landowner, Wind Wolves has full authority to request the Kern County General Plan change. This action would support the full implementation of the RUE and ensure that 1) no future changes to the Wind Wolves mission or Board could request permits to implement the San Emidio New Town Specific Plan and 2) the regional planning documents, such as the Kern County Housing Element, is not placed in jeopardy through the RUE use restrictions.

The RUE would prevent future incompatible land uses with the existing military training operations in the area; the current land use and zoning of the ROI would remain unchanged. The Proposed Action would preserve the military’s present and future mission-critical use of the Bell X-1 Supersonic Corridor and the VR 1257 and VR 1262 flight corridors, preventing further commercial, industrial, and residential development near these training areas. The Proposed Action would prohibit future land uses that could negatively impact the military mission but would not change the existing functional land use within the ROI. The RUE would be entirely located within the Wind Wolves Preserve and would not inhibit the preserve’s existing and ongoing goal of environmental preservation. The Proposed Action would not change land use, would be consistent with existing land use with the requested rescission action, and would not affect future adjacent land use.

3.9.3.3 No Action Alternative

Under the No Action Alternative, the proposed RUE would not be implemented. The land use in the ROI would remain unaltered from existing conditions; however, the additional development restrictions would not be put in place. The potential would exist for future development to occur within the Wind Wolves Preserve, including the full implementation of the San Emidio New Town Specific Plan, and development

would be guided by the zoning restrictions in place. The risk for land use conflicts near Edwards AFB training areas would continue, and the potential for regulatory restrictions that inhibit military activities would not be addressed. The risk of encroachment on Edwards AFB training areas from development and/or incompatible land uses would continue, and the potential for regulatory restrictions that inhibit Edwards AFB's ability to engage in critical military activities would not be addressed. Developing another suitable location for this type of flight corridor would be highly speculative as well as cost prohibitive. The need to use land far away from installation and range boundaries would have an adverse impact on Edwards AFB's ability to train, test, and operate in the future.

3.9.3.4 Cumulative Impacts

There would be no impacts to land use associated with the Proposed Action; the implementation of the RUE, in addition to the previous implementation of the Phase 1 RUE, would prevent further development and/or re-zoning within the boundaries of the Wind Wolves Preserve. Current easements would remain in place, allowing the activities they permit to continue. Projects within the immediate vicinity of the Proposed Action include highway infrastructure improvements and solar projects, as well as energy developments that involve re-zoning from agricultural to commercial and high-density residential uses. An approximately 8,000-acre community is planned to the east of the ROI in support of the Tejon Ranch Commerce Center, including approximately 4,600 acres for residential and commercial usage and 3,200 acres designated as exclusive agriculture. Small acreage amounts are also set aside for community services, parks, and schools. If not rescinded, the San Emidio New Town Specific Plan portion with the RUE restrictions would cause an inconsistency and conflict with Kern County's Housing Element and State Housing law. Further, the county is obligated to issue permits based on the entitlements obtained, and the Proposed Action could not be legally honored by the county. The rescission of the San Emidio New Town Specific Plan portions by Wind Wolves would resolve all of these potential impacts. These projects may result in changes to zoning around the boundary of the Wind Wolves Preserve; however, the Proposed Action would prevent changes to the existing functional land use of the ROI. When considered in conjunction with the effects of other past, present, and reasonably foreseeable actions on and near the Wind Wolves Preserve, no significant adverse cumulative effects to land use would be anticipated to occur with implementation of the Proposed Action.

3.10 INFRASTRUCTURE AND UTILITIES

3.10.1 DEFINITION OF THE RESOURCE

Infrastructure consists of the systems and structures that enable a population in a specified area to function. Infrastructure is wholly man-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as developed. Infrastructure components include transportation and utility systems, solid waste management, and sanitary and storm sewers. The availability of infrastructure and its capacity to support more users, including future development of an area, are generally regarded as essential to continued economic growth.

Transportation is defined as the system of roadways, highways, and transit services that provide entrances to/outlets from a particular location, as well as access to regional goods and services. Utilities include electrical, potable water, sanitary sewage/wastewater, and communications systems. Solid waste management is primarily concerned with landfill capacity for disposal of non-hazardous solid waste (e.g., construction waste) generated in an area or by a population. Stormwater infrastructure includes the man-made conveyance systems that function in tandem with natural drainages to collect and control the rate of surface runoff during and after a precipitation event. In urbanized areas, stormwater that is not discharged to a waterbody is conveyed to sanitary sewers, which are systems that collect, move, and treat liquid waste prior to its discharge back into the environment.

The ROI for this resource is the Wind Wolves Preserve and the supporting infrastructure.

3.10.2 EXISTING CONDITIONS

3.10.2.1 Transportation

The Wind Wolves Preserve can be entered via the publicly accessible Maricopa Highway/CA-166. Small ranch roads, which are not accessible to the public, exist throughout the Wind Wolves Preserve. These roads provide access for staff to perform maintenance activities across the preserve and serve as fuel breaks for wildfires. Utility service roads are used to access a California Energy Commission transmission line that crosses a small portion of the northeast corner of the ROI (**Figure 3-7**). These roads are not frequently traveled and are used to maintain the Wind Wolves Preserve, as needed.

3.10.2.2 Electricity

The California Energy Commission operates a 500-kilovolt power line that crosses a small portion of the northeastern corner of the ROI. There are no service lines within the ROI due to the lack of built space.

3.10.2.3 Natural Gas

Operations for the Pleito Creek Oil Lease are located within the Wind Wolves Preserve. There is no natural gas infrastructure within the ROI; therefore, natural gas resources are not evaluated in this EA.

3.10.2.4 Solid Waste

Kern County Public Works manages the handling and disposal of solid waste. Waste generated at the Wind Wolves Preserve are sent to the Taft Landfill Site for disposal. The ROI does not contain any space open to the public and does not have any industrial, commercial, or residential sources with which to generate waste. There would be no potential to impact solid waste management; therefore, solid waste is not evaluated in this EA.

3.10.2.5 Potable Water Supply

The California Aqueduct is located along the northeastern border of the ROI. The aqueduct carries water from the Sacramento-San Joaquin Delta to the San Joaquin Valley and Southern California. Water troughs and spouts are dispersed throughout the ROI in support of the cattle grazing operations (see **Section 3.7.2.1**) but are not used for human consumption. Water structures within the ROI include multiple spring sites, tanks, troughs, pipelines for conveyance and storage of water for human and livestock consumption, and the wellhead for water supply.

3.10.2.6 Sanitary Sewer/ Wastewater

The ROI is largely undeveloped and does not contain any sewer infrastructure; therefore, sanitary sewers/wastewater is not evaluated in this EA.

3.10.2.7 Communications

The ROI is undeveloped and does not contain any communications infrastructure; therefore, communications systems are not evaluated in this EA.

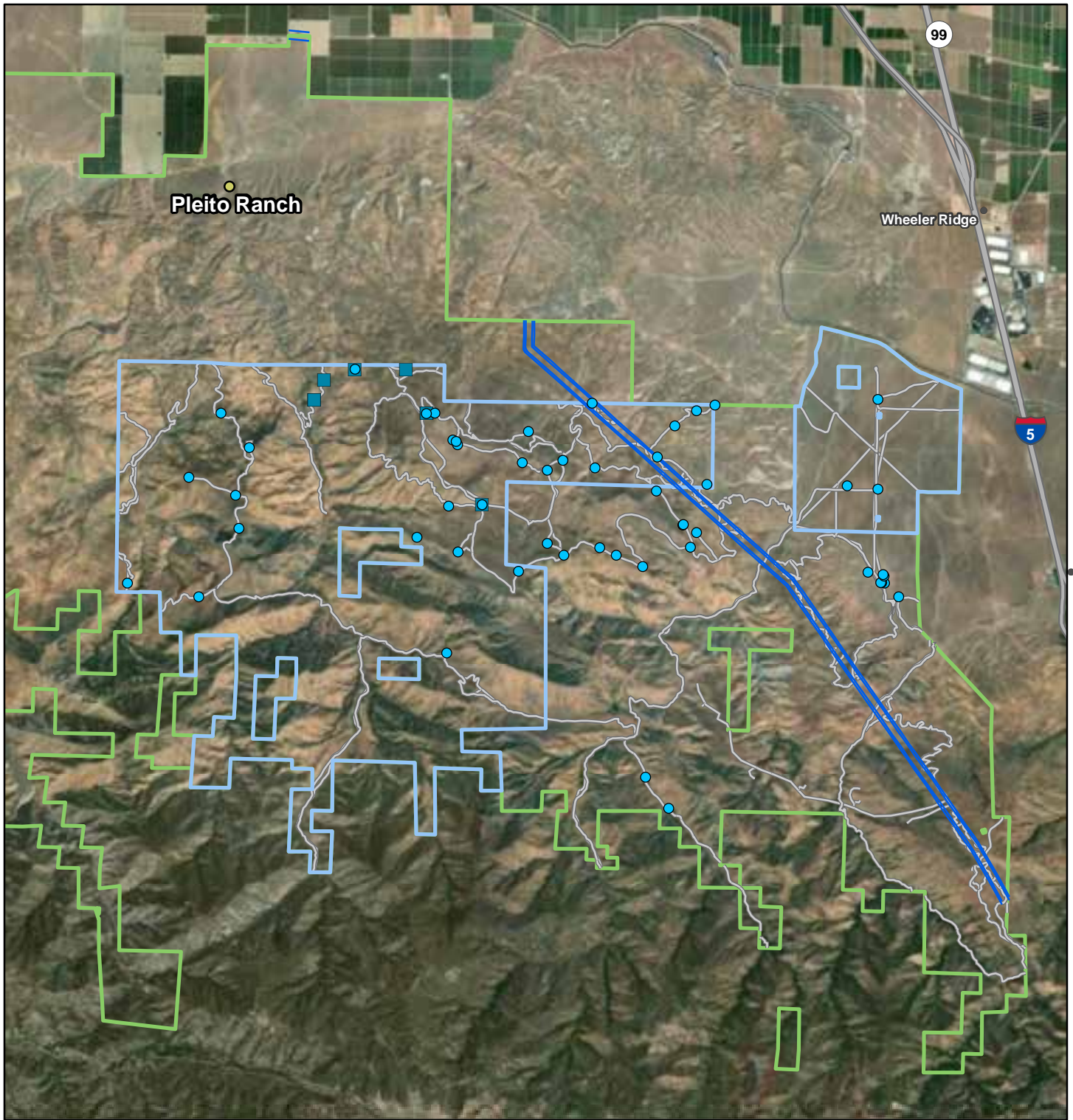
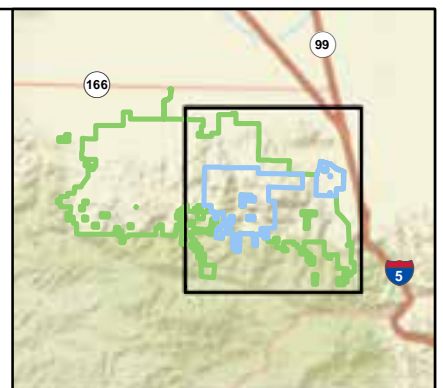


FIGURE 3-7
Infrastructure and Utilities

- Pleito Ranch
- Water Pump
- Water Trough
- Electrical Transmission Lines
- Proposed Action
- Wind Wolves Preserve Boundary



Imagery: ESRI, 2022.
 Coordinate System: WGS 1984 UTM Zone 11N



3.10.3 ENVIRONMENTAL CONSEQUENCES

3.10.3.1 Evaluation Criteria

The DAF defines a significant effect on or from infrastructure, including transportation and utilities, within the ROI as one or more of the following:

- measurable change or service reduction within the regional transportation network;
- prolonged or repeated interruption of public transportation services regionally;
- prolonged or repeated service disruptions to utility end users; and/or
- substantial increase in utility demand relative to existing and planned regional uses.

3.10.3.2 Proposed Action

Transportation

The Proposed Action would not involve any construction or ground-disturbing activities, and there would be no potential for any direct impacts to the ranch roads and utility corridors that serve the ROI. The RUE would prohibit the use of off-road vehicles; however, transportation across the Wind Wolves Preserve would continue to function as it does currently, and the implementation of the RUE would not impact roadway resources.

Electricity

The Proposed Action would not involve any construction or ground-disturbing activities, and there would be no potential for any adverse impacts to the electrical utility corridor that crosses the northeast corner of the ROI. The ROI is largely undeveloped and there are no distribution lines within its bounds. The RUE would prohibit development activities that could demand expanded electrical infrastructure, preventing additional draw on the regional power supply.

Potable Water Supply

The Proposed Action would not involve any construction or ground-disturbing activities, and there would be no potential for any adverse impacts to the California Aqueduct that borders the northeast corner of the ROI or to the waterspouts and troughs found within the area. The RUE would prohibit any activities that could have the potential to adversely impact water quality, and the Proposed Action would result in long-term, beneficial impacts to the potable water supply.

3.10.3.3 No Action Alternative

Under the No Action Alternative, the proposed RUE would not be implemented. The property currently is used for environmental conservation, and impacts to infrastructure and utilities would not occur. The few infrastructure and utilities resources in the ROI would remain unaltered from existing conditions, and the additional restrictions against development would not be put in place. The risk for land use conflicts near installations would continue, and the potential for regulatory restrictions that inhibit military activities would not be addressed. The risk of encroachment on Edwards AFB training areas from development and/or incompatible land uses would continue, and the potential for regulatory restrictions that inhibit Edwards AFB's ability to engage in critical military activities would not be addressed. Developing another suitable location for this type of flight corridor would be highly speculative as well as cost prohibitive. The need to use land far away from installation and range boundaries would have an adverse impact on Edwards AFB's ability to train, test, and operate in the future.

3.10.3.4 Cumulative Impacts

There would be no impacts to infrastructure and utilities associated with the Proposed Action, and the implementation of the RUE would prevent further development within the boundaries of the Wind Wolves Preserve that would have the potential to increase demand on various infrastructure components. Transportation improvement projects and aqueduct maintenance around the preserve would have the potential to alter or improve the infrastructure in the greater area; however, the Proposed Action would maintain existing conditions within the ROI. When considered in conjunction with the effects of other past, present, and reasonably foreseeable actions on and near the Wind Wolves Preserve, no significant adverse cumulative effects to infrastructure and utilities would be anticipated to occur with implementation of the Proposed Action.

3.11 EARTH RESOURCES

3.11.1 DEFINITION OF THE RESOURCE

Geological resources include geology, topography, and soils, the characteristics of which help determine whether land is suitable for development. Geology refers to the structure and configuration of surface and subsurface features. Characteristics of geology include the physical features of the land, subsurface rock types, and structural elements. Over long periods of time, geological processes determine topography: the shape, height, and position of the land surface. Soil refers to the unconsolidated materials overlying bedrock or other parent material. Soils are defined by their composition, slope, and physical characteristics. Attributes of soil, such as elasticity, load-bearing capacity, shrink-swell potential, and erodibility, determine its suitability to support a particular land use, including development.

The ROI for earth resources is the Wind Wolves Preserve.

3.11.2 EXISTING CONDITIONS

3.11.2.1 Geology

The northern San Emigdio mountains consist primarily of uplifted marine sedimentary rocks, mostly sandstones, layered over granitic basement rock which represents the far southern end of the Sierra Nevada “batholith” or granitic core. The San Emigdio mountains were formed through a combination of crustal compression along a prominent local curve in the San Andreas Fault (known as the “Big Bend”) and uplift of the underlying granitic basement rock. This compression and uplift resulted in the formation of steep, deeply cut slopes underlain by erosive sandstones and mudstones in the southern and central regions, and the formation of alluvial fans, or gentle, triangle-shaped deposits made up of gravel, sand, and other smaller pieces of sediment, along the base of the mountains in the northern and northeastern regions (DoD, 2021). The San Andreas Fault runs through the mountains, briefly crossing into the Wind Wolves Preserve at two points on its southern boundary, and the Pleito-Wheeler Ridge fault system runs through the northern portion of the preserve (California Department of Conservation, 2015).

3.11.2.2 Topography

Elevation in the ROI ranges from a low of approximately 1,280 feet to a high of approximately 4,800 feet above mean sea level. The compression and uplift that gave way to the San Emigdio mountains was instrumental in influencing the topographical features on the Wind Wolves Preserve. This is evident in both the steep, deeply cut slopes that characterize the southern and central regions of the Wind Wolves Preserve and the gentler alluvial fans leading to lower-relief areas found in the northern and northeastern regions.

3.11.2.3 Soils

The ROI contains approximately 34 different soil types; soils comprising 1 percent or more of the ROI are listed below in **Table 3-4**. Approximately 48 percent of the ROI is made up of three soil associations: the Loslobos-Calleguas association, the Pleito-Emidio-Loslobos association, and the Balcom-Rock outcrop complex. The Loslobos series of soils is well drained with high slopes, typically found on hills and mountaintops (CSRL, 2006). The Pleito series of soils is slightly less sloped and found on terraces and alluvial fans (CSRL, 2007). The Balcom series of soils is found on hills and was formed from material that has weathered away from soft shale and sandstone (CSRL, 2001). All three series are characterized by deep, well-drained soils that are typical of the region.

Table 3-4.
Soil Types Associated with the Proposed Action^a

Symbol	Name	Slopes (%)	Acres in ROI	Percent of ROI	Farmland Status
191	Guijarral sandy loam	2–9	639.4	3.6	Farmland of statewide importance
192	Guijarral-Klipstein complex	2–5	327.4	1.8	Farmland of statewide importance
390	Pleito sandy clay loam	0–2	182.0	1.0	Prime farmland if irrigated
391	Pleito sandy clay loam	2–5	876.5	4.9	Prime farmland if irrigated
395	Pleito-Emidio-Loslobos association	15–75	2,567.8	14.3	Not prime farmland
396	Pleito-Loslobos association	15–75	254.4	1.4	Not prime farmland
400	Loslobos-Xeric Torriorthents, very gravelly-Badland association	30–50	470.9	2.6	Not prime farmland
401	Loslobos loam	50–100	432.7	2.4	Not prime farmland
403	Loslobos-Calleguas association	30–100	3,962.8	22.1	Not prime farmland
404	Loslobos sandy loam, moist	40–85	275.6	1.5	Not prime farmland
500	Bitcreek sandy clay loam	2–5	203.7	1.1	Prime farmland if irrigated
531	Tehachapi gravelly loam	5–30	316.6	1.8	Not prime farmland
540	Xeric Torriorthents-Badland complex	30–75	312.5	1.7	Not prime farmland
560	Laval-Pleitito complex	1–5	277.5	1.5	Not prime farmland
590	Gorman-Typic Xerorthents, mesic-Xerorthents, shallow, complex	30–100	531.5	3.0	Not prime farmland
600	Positas-Bitcreek complex	2–9	251.1	1.4	Prime farmland if irrigated
610	Balcom-Rock outcrop complex	50–75	2,147.7	12.0	Not prime farmland
670	Harrisranch-Rock outcrop complex	50–75	1,343.2	7.5	Not prime farmland
690	Dibble-Geghus complex	50–75	984.3	5.5	Not prime farmland

Source: United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS), 2022

Note:

a Soil types that make up less than 1 percent of the ROI were not included in Table 3-4.

Soils are rated to indicate the extent to which their physical features limit their potential to support a specific use such as local roads and streets. Soils can be rated “not limited,” “somewhat limited,” or “very limited,” with the level of performance decreasing and amount of necessary maintenance increasing for soils with more limitations (**Figure 3-8**). This is due to various characteristics of these soils, including subsidence risk, slope, and shrink-swell potential.

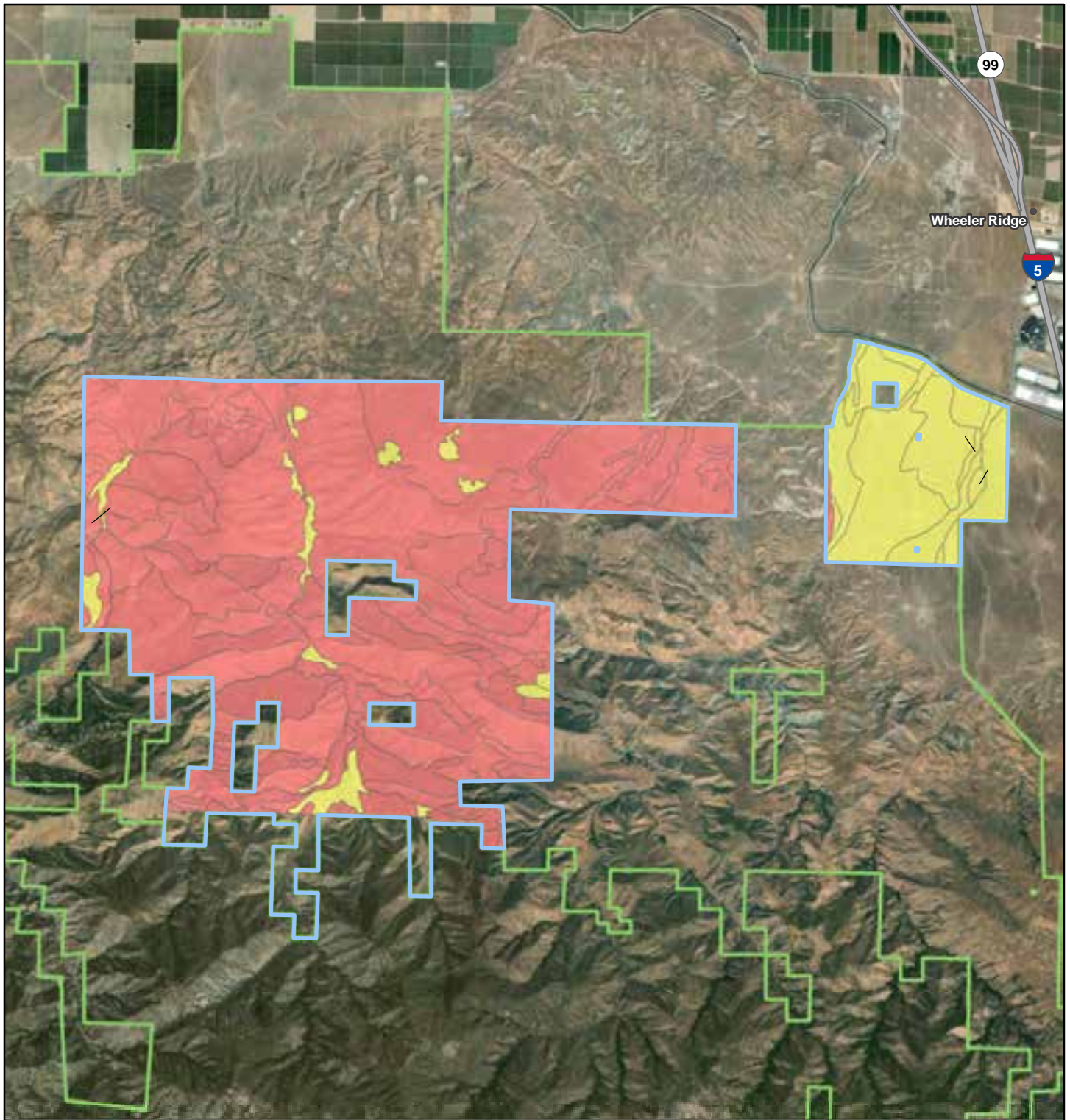
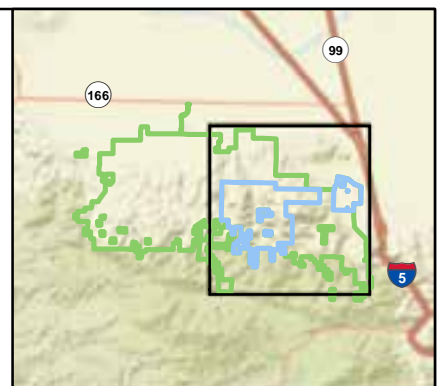


FIGURE 3-8
Soil Rating for Shallow Excavation

- Proposed Action
- Wind Wolves Preserve Boundary
- Somewhat Limited
- Very Limited



Imagery: ESRI, 2022.
Coordinate System: WGS 1984 UTM Zone 11N



Subsidence refers to the gradual settling or sudden sinking of the ground due to displacement or removal of earth materials below the surface. It can have numerous causes, including natural soil compaction or collapse, and can also weaken and cause damage to buildings and infrastructure (Herrera-García et al., 2021; USGS, 2019). The Wind Wolves Preserve is within the Tulare Lake HR, which experienced more land subsidence over the previous decade than any other HR in California, with the area occupied by the Wind Wolves Preserve seeing downward vertical ground displacement ranging from approximately 0.1 to 1.0 feet during that timeframe (CDWR, 2020).

Sloped ground is prone to soil creep, where soil materials gradually move downhill (Fairbridge, 1968). Sloped ground and soil creep can cause issues with the functionality and structural stability of buildings and infrastructure over time (Crosetto et al., 2018). Soils with higher shrink-swell potential, or expansive soils, expand and contract with changes in soil moisture levels, which can cause considerable damage to any structures those soils support, including roads (Barman, 2022).

Approximately 99.9 percent of soils within the ROI are rated as “somewhat limited” or “very limited” in terms of their suitability for shallow excavations and for the construction of small commercial buildings, dwellings with basements, and dwellings without basements. Soils rated as “somewhat limited” can be expected to perform fairly with moderate maintenance needed if its limitations are managed with special planning and design considerations. Soils rated as “very limited” can be expected to perform poorly and require high levels of maintenance even after major engineering and design procedures (USGS, 2019).

3.11.2.4 Prime Farmland

Prime farmland is protected under the *Farmland Protection Policy Act of 1981* and is defined as land other than urban or built-up land or water areas that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. Four of the soil types listed in **Table 3-4** are considered prime farmland “if irrigated”: the two Pleito sandy clay loam varieties, Bitcreek sandy clay loam, and Positas-Bitcreek complex. These soils make up approximately 8.4 percent of the ROI. Two of the soil types listed in **Table 3-4**, Gujarral sandy loam and Gujarral-Klipstein complex, are considered “Farmland of Statewide Importance,” which refers to soil that has recently been used for agriculture and is similar to but does not meet all the criteria for prime farmland (California Department of Conservation, 2023). These soils make up approximately 5.4 percent of the ROI.

3.11.3 ENVIRONMENTAL CONSEQUENCES

3.11.3.1 Evaluation Criteria

Potential adverse impact(s) on earth resources would include:

- substantial alteration of unique, valued, or beneficial geologic or topographic conditions;
- substantial soil loss or erosion off site;
- measurable loss or degradation of a valued or beneficial soil function; and
- disturbance of soils with contaminant(s) above regulatory threshold(s).

3.11.3.2 Proposed Action

Geology

The underlying geology of the ROI would not change under the Proposed Action. No ground-disturbing actions would occur, and there would be no potential for impacts to geology with implementation of the Proposed Action.

Topography

The topography of the ROI would not change under the Proposed Action. No ground-disturbing actions would occur, and there would be no potential for impacts to topography with implementation of the Proposed Action.

Soils

The Proposed Action would not involve any ground-disturbing activities. The RUE would protect soils from potential disturbance by preventing future ground-disturbing activities through the limitation of permitted land uses and activities in the ROI, resulting in long-term, beneficial impacts to soils. The prevention of future development and ground-disturbing activities would allow the soils to continue performing the natural functions they serve in the local ecosystem.

The Proposed Action would also have long-term, beneficial impacts on soils by ensuring the land remains available for its current agricultural use. The ROI currently relies on prescriptive grazing by cattle primarily in the spring to support various resource objectives, including reducing invasive annual grasses, supporting the ecological function of native plant communities, and promoting native biodiversity in the rangelands. Reducing invasive grasses with grazing, not relying on the use of pesticides to control unwanted invasive species, and promoting the growth of native plants all benefit soil health and function. Pesticides can have negative effects on various organisms that are responsible for many crucial soil functions, including carbon transformation, nutrient cycling, and soil structure maintenance (Gunstone et al., 2021). Invasive plants tend to weaken the soil structure, making it more susceptible to compression and erosion, and can deplete the soil of important nutrients (Drake et al., 2016; State of Nevada, 2023a; Teixeira et al., 2020). Conversely, native plants promote soil health by positively contributing to nutrient cycling in the soil and generally tend to have deeper, more extensive root systems that help maintain a strong soil structure and reduce vulnerability to erosion and compression (Working Lands for Wildlife, 2018).

Prescriptive grazing also supports the objective of reducing wildfire fuel, which benefits soils in multiple ways. Damage from wildfires can create favorable conditions for invasive plants to flourish, leading to the previously mentioned negative impacts on soil health, and wildfires themselves can kill soil organisms that are important for nutrient cycling and stabilization. Additionally, wildfires can evaporate moisture in the soil, leading to soil dehydration; cause combustion of organic matter and volatilize sulfur and nitrogen which in turn leads to hydrophobicity and a loss of soil structure; increase susceptibility to erosion; and generally decrease biological soil crust cover, biomass, and species diversity. Hotter fires lead to more damage, and in semi-arid and arid areas, the landscape can take decades to centuries to fully recover. Overall, wildfires reduce the availability of important nutrients in the soil, increase soil erosion by degrading stabilizers like the biological soil crust, and can impair soil ecosystem function for decades while the landscape recovers from the aftermath (Fenstermaker, 2012; State of Nevada, 2023b).

The majority of soils found in the ROI are rated as “very limited” for supporting various construction-related activities. The RUE would prevent the disturbance and weakening of those soils that are poorly suited to support development without and often despite intensive structural interventions intended to stabilize it. Overall, the Proposed Action would have long-term beneficial impacts to soils within the ROI.

Prime Farmland

The ROI is zoned for agricultural land uses. While it currently is not used for producing crops, the land does provide feed for the cattle that graze there as a part of natural resource management on the Wind Wolves Preserve. The Proposed Action would not result in a change to this land use, and restrictions imposed on activities permitted within the ROI would not affect the agriculture activities currently taking place under existing leases and agreements. Beneficial impacts on prime farmland would occur by allowing the land in the ROI to maintain its agricultural zoning classification and allowing it to remain available for other potential agricultural purposes in the future.

3.11.3.3 No Action Alternative

Under the No Action Alternative, the proposed RUE would not be implemented. The property currently is used for environmental conservation, and impacts to earth resources would not occur. If the property owner pursued a sale of the land, the existing land use within the ROI could change from conservation purposes and allow for developmental activities that could impact earth resources via ground disturbance or construction; however, this action currently is not planned. The risk of encroachment on Edwards AFB training areas from development and/or incompatible land uses would continue, and the potential for regulatory restrictions that inhibit Edwards AFB's ability to engage in critical military activities would not be addressed. Developing another suitable location for this type of flight corridor would be highly speculative as well as cost prohibitive. The need to use land far away from installation and range boundaries would have an adverse impact on Edwards AFB's ability to train, test, and operate in the future.

3.11.3.4 Cumulative Impacts

There would be no impacts to earth resources under the Proposed Action, and the implementation of the RUE would prevent further development within the boundaries of the Wind Wolves Preserve. Mining operation expansions and oil lease development around the preserve would have the potential to contribute to the amount of soil disturbance in the surrounding area, as well as the transportation, energy, and community developments near Grapevine; however, the Proposed Action would maintain existing soil conditions within the ROI. When considered in conjunction with the effects of other past, present, and reasonably foreseeable actions on or near the Wind Wolves Preserve, no significant adverse cumulative effects to earth resources would be anticipated to occur with implementation of the Proposed Action.

3.12 SAFETY AND OCCUPATIONAL HEALTH

3.12.1 DEFINITION OF THE RESOURCES

This section discusses safety and occupational health concerns associated with ground and flight activities. Ground safety considers safety issues associated with ground operations and maintenance activities. Ground safety also considers the safety of personnel and facilities on the ground that may be placed at risk from flight operations in the vicinity of the airfield and in the airspace. Clear Zones and Accident Potential Zones around an airfield restrict the public's exposure to areas where there is a higher accident potential. Flight safety considers aircraft risks such as midair collisions, bird/wildlife-airstrike hazards, and in-flight emergencies.

The ROI for this resource area is the Wind Wolves Preserve.

3.12.2 EXISTING CONDITIONS

3.12.2.1 Ground Safety

Ground safety would include Wind Wolves Preserve maintenance, existing lease industrial operations, and motor vehicle use. Ground mishaps can occur from the use of equipment or materials and from construction, demolition, and maintenance functions. Wildfires present a ground safety risk as well, and to manage this risk thatch reduction efforts are in place across the entire preserve via targeted grazing. This program reduces the amount of available vegetative fuel that could contribute to wildfires.

3.12.2.2 Flight Safety

The Proposed Action area is located underneath the existing Bell X-1 Supersonic Corridor and VRs 1257 and 1262. The potential for aircraft mishaps during flight is a public concern with regard to flight safety; however, the Proposed Action does not involve new flight activities or modifications to existing flight activities. Ground development, including visual hazards, has the potential to disrupt the safety of military training operations. Edwards AFB maintains a BASH program to prevent and reduce wildlife-related

hazards to aircraft operations. The Base Flight Safety Office manages the BASH Reduction Program on Edwards AFB.

3.12.3 ENVIRONMENTAL CONSEQUENCES

3.12.3.1 Evaluation Criteria

Impacts from the Proposed Action are assessed according to the potential to increase or decrease safety risks to personnel, the public, property, or the environment. For the purposes of this EA, an impact is considered significant if DAF Occupational Safety and Health Administration criteria are exceeded or if the Proposed Action results in unacceptable safety risk to DAF or Wind Wolves Preserve personnel.

3.12.3.2 Proposed Action

Ground Safety

The Proposed Action would prohibit the use of off-road vehicles for recreational purposes. The existing lease for the thatch reduction via grazing would continue in its existing state and the ability for the Wind Wolves Preserve to maintain wildfire prevention efforts would be unimpeded. No development or demolition activity would occur, eliminating the need to require implementation of construction safety protocols.

Flight Safety

The Proposed Action would prohibit residential, commercial, or industrial development that could pose a risk to or have the potential to be incompatible with the safety of military flight training operations. Lighting would also be restricted, as well as smoke, glares, or other visual hazards that pose a risk to flight safety. The Proposed Action would not alter the existing training operations performed by Edwards AFB within the Bell X-1 Supersonic Corridor, VR 1257, and VR 1262. Edwards AFB would continue to abide by current BASH guidelines for the safe operation of flight training activities within the area over the RUE. The Proposed Action would result in long-term, beneficial impacts to flight safety by removing the possibility of potential risks and conflicts in the future.

3.12.3.3 No Action Alternative

Under the No Action Alternative, the proposed RUE would not be implemented. Safety and occupational health would remain unaltered from existing conditions; however, additional restrictions against development associated with the Proposed Action would not be put in place. The risk for land use conflicts that could pose a threat to the safety of flight training operations in this area would not be addressed. Under the No Action Alternative, incompatible land uses would impact critical, at-risk military mission capabilities, and potentially jeopardize flight safety conditions for Edwards AFB aircrews. Distractions on the ground as a result of development such as light or smoke and dust can result in hazardous conditions for flight crews. Developing another suitable location for this type of flight corridor would be highly speculative as well as cost prohibitive. The need to use land far away from installation and range boundaries would have an adverse impact on Edwards AFB's ability to train, test, and operate in the future.

3.12.3.4 Cumulative Impacts

There would be no impacts to the safety and occupational health environment, and implementation of the RUE would prevent further development within the boundaries of the Wind Wolves Preserve. Improvements to roadway interchanges and bridge structures would improve the ground safety environment in the surrounding area, and the Proposed Action would contribute to improvements in-flight safety within the ROI. Flight safety would be improved through the prevention of development within both the ROI, eliminating potentially dangerous conflicts with flight operations. When considered in conjunction with the effects of other past, present, and reasonably foreseeable actions on or near the Wind Wolves Preserve, beneficial cumulative effects to ground safety and beneficial cumulative effects to flight safety would be anticipated to occur with implementation of the Proposed Action.

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